



2012

**CAMPUS
SUSTAINABILITY
PLAN**



A key to reading this plan:



Built Environment & Land Use



Energy & Climate



Food & Dining Services



Purchasing



Academic & Educational Experience



Community Building & Social Equity



Transportation



Waste



Water

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LETTER from the PRESIDENT



I am pleased to present Lehigh University's Campus Sustainability Plan. This plan is the result of a campus-wide effort by students, faculty, and staff to address short- and long-term goals for Lehigh, building on the key themes of the University's Strategic Plan. We seek to build upon our successes in integrating sustainability into our academic mission and operational processes. We have teaching, research and service work that contributes to a better understanding of and use of natural resources and a more sustainable operation on campus and beyond. Our residential, administrative, student-life and dining activities are all areas where we can enact the practices we discuss in our academic mission.

Each of us is responsible for the success of these goals and for sustaining the momentum needed to achieve them. We must combine our individual and collective energy to coordinate efforts across campus for the benefit of Lehigh University and the community at large.

This plan sets forth ambitious goals. But I am confident that, working together, Lehigh University will become a more sustainable campus.

Alice P. Gast
President

LETTER from the SUSTAINABILITY COORDINATOR



In February 2011, 65 students, faculty and staff gathered for a series of workshops to discuss visions for a sustainable campus, past and ongoing sustainability efforts, achievable goals and metrics to capture our successes. For the past 13 months, working groups gathered feedback from the campus community and further refined the nine sections of the Campus Sustainability Plan. Lehigh's Sustainability Plan is result of this monumental interdepartmental and interdisciplinary collaborative process.

The Campus Sustainability Plan frames our path forward and defines targeted goals that will improve natural systems, educational opportunities, community building, operational processes, infrastructural investments, social and behavioral norms, and personal awareness. While some goals require our operational or academic units to be the champions of change, other goals leverage operational-academic partnerships. Most importantly, Lehigh's Campus Sustainability Plan advances the intellectual footprint of the university in an environmentally responsible, socially equitable and financially sound manner.

Delicia Nahman
Sustainability Coordinator

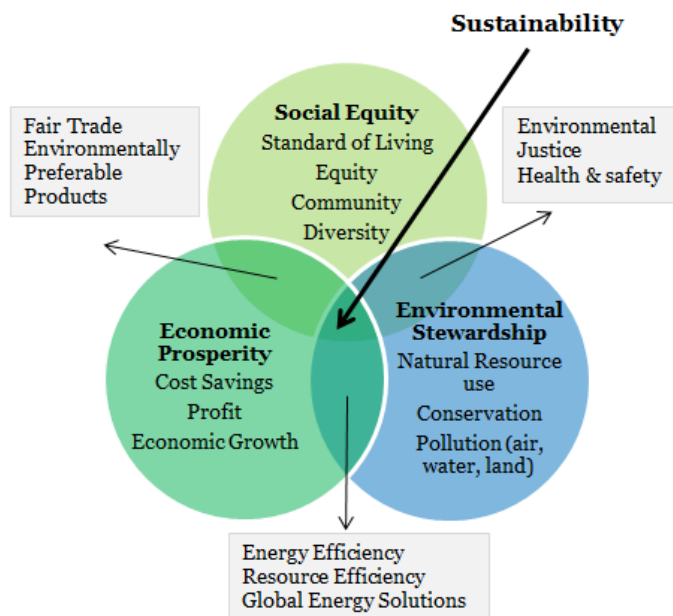
INTRODUCTION

The impacts of environmental degradation and climate change on the quality of life for humans call for creative and systemic shifts in the way we think about our demand for, and use of, finite resources. Equally important, we must consider how the distribution of these resources impacts the ability of society to meet their basic needs.










With 2,355 acres and more than 150 buildings, Lehigh is in a distinctive position to make significant contributions in addressing these grand challenges both in and out of the classroom. In order to teach new generations of leaders to address the coming challenges, we must demonstrate the application of sustainability principles through academic, work place and residential experiences, creating new behaviors, partnering with the community, and continually seeking and embracing new technological solutions.

Lehigh's Sustainability Plan is an interdisciplinary and interdepartmental effort that establishes a long-term vision for sustainability with meaningful short and intermediate-term goals. The plan will build upon our past accomplishments, articulate the University's Climate Commitment and also inform the Campus Master Plan, all in support of the University's Strategic Plan. While the goal of integrating sustainability into our administrative, academic and operational processes is embedded throughout this plan, it has been divided into nine consumable sections. To guide you through the document, each area of focus has an icon.

While having nine sections is intended to identify specific measureable goals, they are not siloed efforts. Instead, these goals are mutually supportive and reinforce Lehigh's overall commitment to sustainability. This plan identifies goals shared among sections using one of the nine icons. Some of the common goals shared among areas of focus are below.



The three spheres of sustainability: Social Equity, Environmental Stewardship, and Economic Prosperity

GOALS									
Reduce disposable water bottle use								✓	✓
Create a safer, more pedestrian friendly campus	✓						✓		
Increase access to and availability of campus green spaces	✓				✓				
Use environmentally friendly materials that can be reused/recycled during construction	✓			✓				✓	
Install and renovate lighting fixtures	✓	✓							
Improve energy efficiency and energy conservation in new and old buildings	✓	✓							
Support Southside development and community partnerships			✓			✓	✓	✓	
Increase amount of local, organic, fair trade food options			✓	✓		✓			
Create campus-wide composting program			✓					✓	
Move toward zero waste			✓	✓				✓	

BUILT ENVIRONMENT & LAND USE

VISION: Lehigh will be a campus where the principles of sustainability are clearly evident in the built environment and surrounding landscape, and where these principles guide design, development, and maintenance processes in terms of both environmental sensitivity and supporting an inclusive and equitable community



The built environment and land use of a community ultimately affects the surrounding area: built structures impact water and energy consumption as well as CO₂ emissions and impervious land coverings such as parking lots and roads can disrupt natural hydrology. In the United States, buildings account for 40% of all energy consumption and contribute to 39% of CO₂ emissions¹. With 2,355 acres of land and more than 150 buildings, Lehigh faces distinctive challenges and opportunities to reduce our resource use and illustrate our commitment to environmental stewardship.

Lehigh can reduce these impacts by retrofitting existing buildings with high efficiency, low waste systems, properly diverting and disposing of construction and demolition waste and ensuring all new buildings are up to standards for LEED certification. Lehigh will facilitate the implementation of sustainable practices and procedures for built structures and natural landscapes that support the education, research, and neighborhood revitalization goals of Lehigh's sustainability plan.

Best Practices at Other Leading Institutions

Surrounding Environment Awareness

Because of University of Virginia's age and close proximity to two creeks, the university also has taken into account the importance of historic preservation and water management in their sustainability efforts. This sensitivity to the university's borders has become an integral feature in their Guidelines for Sustainable Buildings and Environmental Design.

Campus Efforts Completed or Ongoing

Built Environment Operations

- STEPS building designed and constructed in accordance with green building guidelines leading it to receive LEED Gold certification
- Buildings are temperature regulated by day/night conditions, weekends, and during semester breaks relative to building occupancy and usage
- Existing equipment has been replaced (e.g., chillers, variable frequency drives) with more energy-efficient models in some buildings
- Green cleaning program has been implemented in select buildings
- Renovations consider green guidelines regarding energy consumption, use of environmentally preferable materials, indoor environmental quality, and water consumption; improvements are being implemented, where feasible. However, no requirement for standards to be met exists.



The new STEPS Building received LEED Gold Certification

¹US Green Building Council. 2011.



Campus Efforts Completed and Ongoing (cont.)

Land Use Operations

- Converted old roads into pedestrian walkways in some areas
- Use of native and drought tolerant plant species in landscaping
- STEPS building declared wildlife habitat in 2011 by the National Wildlife Foundation
- Limited use of chemicals on green space
- Controlled use of irrigation systems
- Composting of campus wastes turned into mulch
- Where possible, calcium chloride is used instead of rock salt for snow/ice removal
- Movement is underway to expand the community garden

Establish a policy that all new construction projects will be built to USGBC LEED Silver standards

-Lehigh University Climate Commitment

Goals

Short Term (1-3 years)

- 1) Identify and adopt the for new construction and renovation projects and use environmentally friendly materials wherever possible
- 2) Continue systematic replacement of equipment/system components during routine and scheduled maintenance
- 3) Utilize integrated pest management where necessary for control of destructive insects and/or animals
- 4) Identify and implement green practices related to chemical usage and elimination and/or control of invasive plants and select new plantings based on adaptation to the natural environment
- 5) Design and construct safe and eco-friendly pedestrian pathways and bicycle paths around campus that connect to South Bethlehem Greenway
- 6) Implement priority recommendations for the installation and renovation of external lighting fixtures in order to address safety concerns

Intermediate (4-9 years)

- 1) Establish a policy that all new construction and renovation projects will be built to USGBC LEED Silver or equivalent standards
- 2) Develop a set of guiding principles regarding the selection of preferred products and materials for construction and renovation projects
- 3) Develop a list of preferred products and materials for ongoing building and maintenance
- 4) Retrofit existing buildings and integrate sustainable design into new construction in order to improve efficiency and contribute to energy conservation
- 5) Utilize sustainable practices for location, design, and material selection for new and replacement installations of external hardscapes
- 6) Commit to implementing a comprehensive forest management plan



ENERGY & CLIMATE

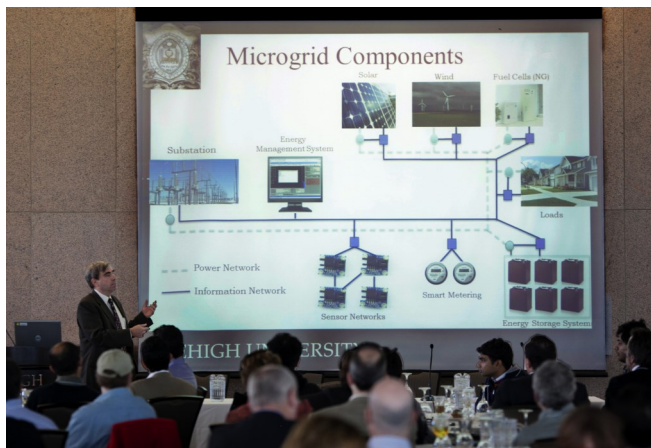
VISION: Lehigh will be a leader in fostering multi-disciplinary and interdepartmental collaboration toward net climate neutrality



The recognition of the impacts of environmental degradation and climate change on the quality of life for humans call for creative and systemic shifts in the way we think about our demand for, and use of,

finite resources. Worldwide demand for energy, a significant contributor to rising greenhouse gas emissions, and the management of its supply, delivery, economics and consumption, is one of the most vexing sets of challenges facing modern society.

Lehigh University understands this grand challenge and is invested in doing its part to reduce our impact. By conducting comprehensive energy audits and creating an Energy Plan, Lehigh will be able to prioritize projects and recommendations for all university buildings that will lead to sustainability in the area of energy and climate, thereby helping to constrain growth in energy use.

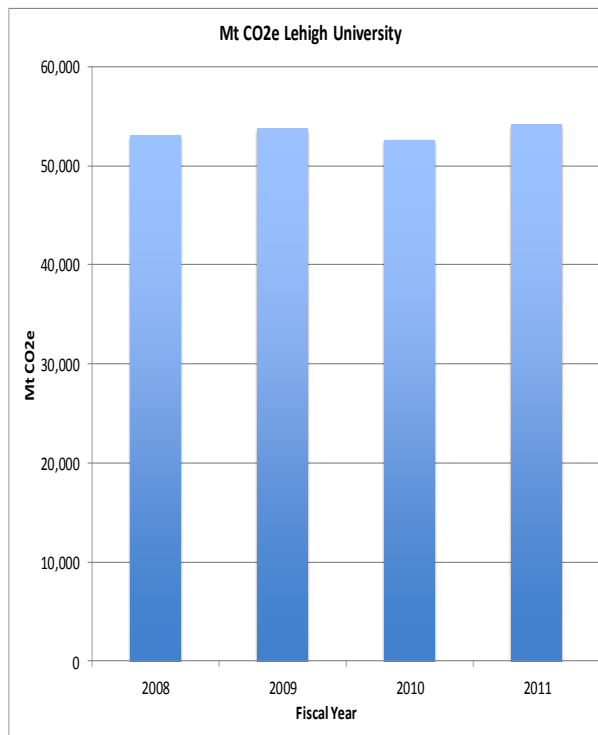


Professor Rick Blum lectures about new Smart Grid technology

Best Practices at Other Leading Institutions

Overall Energy Conservation

Penn State University (PSU) has several programs tackling energy conservation. These include continuous commissioning, energy conservation measures, and energy savings measures. These programs continually update and maintain Penn State buildings, HVAC systems, and other systems. PSU has recently invested \$40 million into retrofitting existing buildings and has established requirements to ensure that all future construction be LEED certified. Although Penn State has increased in square footage over the past decade, energy usage per square foot has decreased.



Metric tons of Carbon Dioxide emitted by Lehigh University each year



Campus Efforts Completed or Ongoing

Thermal Efficiency

- Restarted a campus-wide steam trap survey/repair program
- Empowered an in-house “insulation guru” to continuously monitor and address areas of heat loss
- Required energy efficiency beyond code minimum on new construction/alterations

Electrical Efficiency

- Created energy engineering fund to fast-track small projects
- Standardized equipping outdoor lighting with light sensors
- New campus standard for occupancy sensors for air conditioning, using high efficiency units in replacement projects, and having condensers cleaned on a regular schedule
- Implementation of electric demand response program
- Installed meters to review electrical usage at substation in real time
- Upgraded and/replaced lighting with either metal halide or T5HO lights at Rauch Field House, EWFM Library, Stabler, and tennis courts

Goals

Short Term (1-3 Years)

- 1) Reduce Lehigh’s energy consumption by 3% by 2015
- 2) Create and expand comprehensive baseline of energy consumption by building
- 3) Create energy assessment guidelines for new construction and renovations and set timeline for performing audits all existing buildings
- 4) Create an Energy Plan that addresses campus growth and building needs, energy efficiency retrofits, behavior change opportunities, renewable energy opportunities, and future reduction targets
- 5) Install occupancy sensors and programmable thermostats / timers for lighting/power/HVAC
- 6) Reduce energy loss to open fume hood sashes
- 7) Define a set of temperature control guidelines for new and existing buildings
- 8) Convert underused public computing sites to wireless lounges
- 9) Develop a plan to improve energy efficiency within our computing services
- 10) Using our annually updated GHG inventory, create a Climate Action Plan

Intermediate (4-9 Years)

- 1) Implement energy efficiency plan within computing services
- 2) Implement Energy Plan
- 3) Implement Climate Action Plan

Long Term (10+)

- 1) Whole scale lighting retrofit
- 2) Convert steam heat to hot water heat
- 3) Convert from locally generally chilled water to central chilled water production
- 4) Improve energy efficiency based on Power Usage Effectiveness (PUE) and through the increased purchase of Energy Star and EPEAT products

The worldwide demand for energy and our ability to alter the environment mean that, in effect, we must manage the planet’s resources and viability.

-Lehigh University Strategic Plan



FOOD & DINING SERVICES

VISION: Sustainability should be at the forefront of every food decision - quality of food, impact and knowledge of where and how it is produced, purchased and disposed of. Lehigh University will be a leader in the local food system: partnering, producing and educating the consumer



Consuming food that is sourced locally and organically is better for the environment and the economy. Many methods associated with current large-scale agricultural operations are

unsustainable as they are water intensive, heavily reliant on petro-based fertilizers and pesticides, and ultimately result in soil erosion. These factors all lead to an increase in CO₂ emissions, thus harming the environment in multiple ways. Local, organic food growing techniques are less resource intensive, are not chemically dependent, and enhance soil fertility. Growing food in a more sustainable manner is also healthier for farm workers and consumers, as foods are not sprayed with synthetic chemicals.

Lehigh University can be a leader in sustainable food practices by improving upon and expanding existing procedures such as local and organic food procurement. Purchasing more locally produced foods will reduce transportation costs, as well as contribute to the local economy. Growing, consuming and distributing food grown locally including on campus will not only cut down on costs and help maintain more of food's nutritional value, but it also will enhance the students' educational experience.



Best Practices at Other Leading Institutions

Sustainable Food Purchasing

In 2010, American University measured the amount of food purchased that is produced within 250 miles and/or certified to one or more of the following: USDA Organic, Fair Trade, Food Alliance, Rainforest Alliance, Marine Stewardship Council, and Protected Harvest. They found that 36% of food purchased met one or more of the sustainability criteria above, totaling over \$300,000 in food cost.

Campus Efforts Completed or Ongoing

Lehigh Dining Services

From three dining halls, eight retail facilities, and a catering program, Lehigh Dining, run by Sodexo, serves 7,500 meals daily.

- Approximately 10% of food/beverage purchases are organic and another 10% local
- Reusable Mug Program
- Composting on-site in 2 student restaurants
- Cooking oil is recycled off campus and converted into bio-diesel.
- Xpress Nap napkin holders reduce amount of napkins taken at one time
- Approximately \$52,000 (1.5 %) of purchases are certified Fair Trade including coffee, tea, and ice cream
- Offer Eco-ToGo Container in 3 student restaurants; decreasing approximately 50,000 Styrofoam containers annually and \$25,000 in cost
- Trayless dining facilities
- Eco-friendly dishwashing system used in all dining areas



Campus Efforts Completed or Ongoing (cont.)

Lehigh Community Garden

Lehigh Community Garden (LCG) is an acre of land on Lehigh University's Goodman Campus providing a communal garden as well as 43 individual 10' x 17' plots for Lehigh community members to grow food. It has the potential to produce fresh organic food for Lehigh dining services as well as for local communities that lack it. LCG is also used by academic courses that utilize the spaces for teaching.

Farmers' Markets: Bethlehem and SteelStacks

The Bethlehem Farmers' Market is a community/university market that runs once a week from May through October at Campus Square. There is also a year-around Farmers' Market at the SteelStacks campus, which is within walking distance of the Lehigh campus. Each of these markets are part of the "Buy Fresh Buy Local" Lehigh Valley chapter, and while not all food and produce are certified organic, preference is given to vendors using organic methods and those operating within Lehigh, Northampton and Berks counties.

Goals

Short Term (1-3 years)

- 1) Create baseline of current food purchases based on categories such as local, organic, and Fair Trade
- 2) Set clear and achievable % increase(s) in the aforementioned categories for food and beverage related purchases to be met by years 2015, 2022, 2025
- 3) Create a Sustainable Food Policy that includes food and beverages targets, waste practices
- 4) Divert "usable" food from the trash and create a food donation program, where feasible
- 5) Promote reusable mug and container program and provide continued incentive for its use

Intermediate (4-9 years)

- 1) Expand healthy and sustainable dining program by educating campus population on food waste, healthy eating options, and current wellness and nutrition program
- 2) Move toward a sustainable food system on campus by starting to grow select produce for consumption on campus and for distribution in the community
- 3) Ensure that all pre and post consumer waste in dining halls is composted by 2015 with an expansion to eateries by 2020
- 4) Increase the total food purchases that meet at least one of the four sustainability criteria (local, humane, eco-sensitive, and fair trade)



Students living in the Green House work to grow their own food



PURCHASING

VISION: As a research and educational institution committed to higher learning and public service, Lehigh is in a good position to set an example and lead others toward a more sustainable future. The University wields tremendous purchasing power—a position that demands a high level of responsibility and stewardship



Purchasing Environmental Preferable Products, such as recycled paper content and EPEAT computers offers great promise through integration of cradle-to-cradle design thereby lessening global pressure for virgin resources during sourcing, ensuring more efficiency during use and reducing wasteful and often harmful end products from entering the waste stream. Additionally, purchasing locally can reduce CO₂ emissions significantly due to reduced transportation related emissions and recent studies reveal that one third of money spent locally is directly invested back into the local economy, thereby strengthening the case for purchasing local products.

Leveraging the University's buying power by partnering with local businesses and local peer institutions, when possible, can impact the strength of the local community. As an institution for higher learning, Lehigh is equipped with the knowledge and expertise to be proactive in our transition toward sustainability and the ability to educate our campus community about the importance and feasibility of these initiatives. By facilitating the acquisition of resources in a manner that supports the education, research, and neighborhood revitalization mission, the university will be able to transition the campus community towards a cradle-to-cradle approach that supports environmentally preferable and socially responsible products.

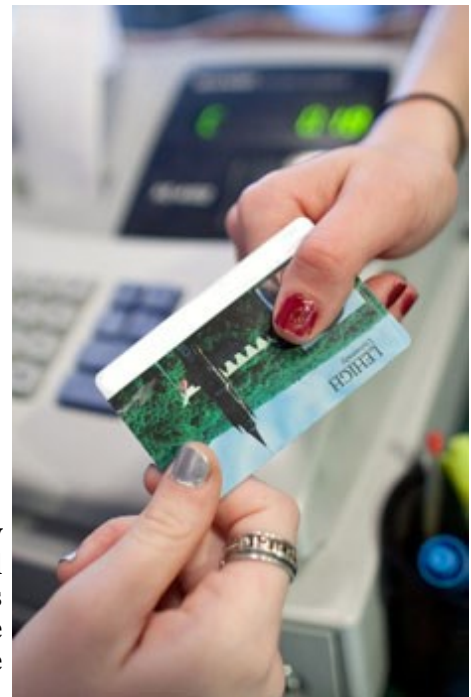
In contributing to a sustainable future, Lehigh envisions:

- Campus wide engagement toward sustainable practices through policy, analysis, implementation, and action
- Incentives for programs that meet or exceed goals established for environmentally preferable processes and sustainable design
- Shifts toward greater energy-efficiency and conservation, environmentally preferable products and services, and socially responsible business practices
- Standardization of sustainable commodities/services across the University

Best Practices at Other Leading Institutions

Purchasing from Suppliers Carrying Green Products

Carnegie Mellon University developed a preferred listing of suppliers that includes environmental guidelines. The University is including the following specifications in their environmental guidelines: does the supplier collect and recycle packaging, does the supplier offer greener alternative to common products like recycled materials and low-impact chemical alternatives, is the supplier local, and does the supplier offer products from local manufacturers. Cornell University has also required contracts with their vendors, and only purchases from those who either: offer a price agreement, support the local economy, or meet a criteria for diverse business classifications.



Campus Efforts Completed or Ongoing

Purchasing Services has been incorporating principles of sustainable design into the procurement process whenever possible and is looking to expand the scope of this effort through the creation of a formalized Sustainable Purchasing Policy.

Green Purchasing Guidelines include incorporating standards for greater energy-efficiency, green chemicals, recycled content by percentage, low mercury/cadmium/lead content, and responsible end of life management programs that include recycling, reuse, and refurbishment. The following is a list of current practices in sustainable procurement

- Green Purchasing Guidelines created in 2010
- Asa's Attic (Surplus Property Disposal) allows surplus items to be bought and reused
- Printing & Mailing Services uses 100% recycled stationary and copy paper with 30% recycled content as standard. Also coordinates printer toner cartridge recycling services
- Certified Green Seal Chemicals and 100% recycled content paper in all restrooms and kitchen areas
- Lehigh University's Office of Purchasing Services has launched Terracycle, a program that works with Office Depot to collect used writing utensils and their packaging and the supplies are then shipped back and recycled into things like gift bags, picture frames, and clipboards
- Lehigh Valley Association of Independent Colleges (LVAIC) conducted a Request for Proposal (RFP) for course paper and cleaning products, including qualification of green alternatives

Goals

Short Term (1-3 years)

- 1) Implement all electronic commerce, processes and web based equipment sharing
- 2) Identify Environmentally Preferable Products (EPP) opportunities including implementing recycled content copy paper standards, making business case for baseline products and services and expanding purchase of organic/local foods
- 3) Implement Sustainable Purchasing Policy that aims at minimizing or reducing GHG emissions, expand education program

Intermediate (4-9 years)

- 1) Execute EPP product and service standards and programs across commodity and services areas, specifically addressing LTS and Facilities with a focus on Services/Trades, Commodities/Materials, Construction/Renovation/Maintenance and Vendor compliance with EPP standards
- 2) Launch Diverse and Local Supplier Program
- 3) Implementation of continuous improvement with focus on enhancements to policy, education and outreach programs

Long Term (10+ years)

- 1) All products are compliant with defined EPP standards
- 2) Purchase products that can be easily recycled or have minimal packaging in order to support the goal of zero waste output from University locations and at events
- 3) Policy, education and outreach program expansion

Adopt a purchasing policy that will minimize or reduce greenhouse gasses through the purchase of products that save energy in their production, transportation, and operation.

-Lehigh University Climate Commitment



ACADEMIC & EDUCATIONAL EXPERIENCE

VISION: Lehigh as an institution has a critical role in promoting, embracing and being a leader in sustainability education and lifestyles at Lehigh and beyond. Lehigh must increase awareness of sustainability for the Lehigh community through curricular, co-curricular/lifestyle, and research programs



Through its primary mission of integrating teaching, research and service to others, Lehigh University contributes to addressing the challenges of the 21st century in several important ways. As a premier

residential research institution, internationally recognized for research excellence and a distinctive student experience, Lehigh is deeply committed to inter-disciplinary research activity spanning the colleges that position us to address some of the world's most pressing challenges. Lehigh also engages students through pedagogies inside and outside the classroom to create distinctive learning opportunities. The university influences generations of students whose future behaviors and decisions are shaped by the actions of the University's leaders and what they learn from their campus experience. The integration of sustainability throughout the curricular and educational experience creates future leaders best equipped for the challenges of this century.

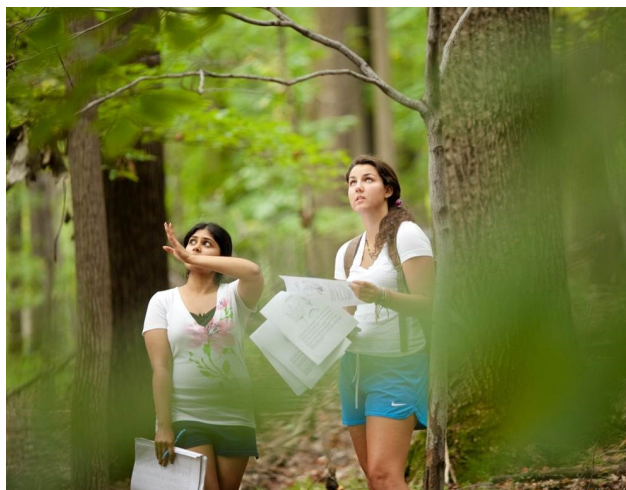
Faculty and staff will prepare students to address the significant challenges of the 21st century by creating experiential learning opportunities that explore the complex convergences of environmental, social and economic factors underlying today's challenges. By doing so, Lehigh graduates are in a position to create truly sustainable solutions for our resource-strapped future. Through the creation of a campus that (1) is a model of sustainability in practice, teaching and research and (2) can serve as living laboratory, Lehigh will enhance awareness and knowledge of sustainable practices, and ensure that these practices are woven into the educational experience.

Best Practices at Other Leading Institutions

Faculty Excellence in Sustainability

The University of Vermont's Sustainability Faculty Fellows Program serves as an example of successfully integrating sustainability into courses across disciplinary boundaries, working with a modest budget, provost-level support, and a handful of dedicated campus partners.

Welcoming its first cohort in 2009, the program brought together sixteen faculty members from across disciplines via luncheons, a two-day January retreat, and online communications. The faculty revised existing syllabi and created new courses for 2010-2011. This enthusiastic, broadly interdisciplinary exchange of ideas indicated deep interest in integrating sustainability principles into undergraduate education. The program continued in 2010-2011 with internal funding for a new cohort.



Campus Efforts Completed or Ongoing

Curricular

- Undergraduate and graduate sustainability related degrees such as Environmental Studies, Environmental Policy Design, and Energy Systems Engineering

Research

- Faculty involvement in numerous projects such as photovoltaic, water quality and resource management, solar energy, environmental policy, etc.

Co-Curricular

- Student on-campus organizations such as Green Action, Engineers Without Borders, and Society of Environmental Engineers
- Eco-Rep program in residential halls educating students on how to live more sustainable lifestyles and changing student behavior
- SustainabLEHIGH, a new student pre-orientation program geared towards sustainability
- The Green House is an environmentally themed community serving as a hub for people who value environmental awareness in their living space.
- Community-engagement efforts such as the South Side Initiative, Integrated Product Development (IPD) course focused on South Side community gardens, Integrated Learning Experience (ILE) course focused on designing the Bethlehem Greenway, design course focused on making zero negative impact products for sale to community

Goals

Short Term (1-3 years)

- 1) Assess sustainability literacy of campus community including how many courses are sustainability-focused and sustainability related
- 2) Increase awareness of current sustainability courses, for interested students, researchers/faculty, and external audiences
- 3) Assess and increase the knowledge and practice of sustainable lifestyle within the Lehigh community, within residential and Greek community and within laboratory and office spaces
- 4) Increase access to and availability of campus green spaces and buildings to serve as living laboratories for curricular and co-curricular activities
- 5) Increase awareness of co-curricular activities, organizations, programs, committees and resources that pertain to sustainability
- 6) Document faculty research projects relating to sustainability and provide information on funding opportunities
- 7) Incorporate sustainability into student experience at Lehigh with particular focus on student's first year, Greek accreditation requirements, residential living and co-curricular opportunities

Intermediate (4-9 years)

- 1) Further develop sustainability learning outcomes at the undergraduate level
- 2) Improve funding and/or specify funding structures for educational initiatives that incorporate sustainability into existing coursework
- 3) Create a cross-college co-curricular certificate program in Sustainability
- 4) Increase the greening of living and working spaces
- 5) Further integrate sustainability into curricula by providing incentives to faculty to develop or modify course syllabi

We aspire to an environment where the academic and living experiences merge into an integrated experience

-Lehigh University Strategic Plan

Long Term (10+ years)

- 1) Create and distribute a sustainability research-focused newsletter
- 2) Become a leader in identification and development of sustainable practices associated with Lehigh's areas of study and research.



COMMUNITY BUILDING & SOCIAL EQUITY

VISION: Lehigh will be a campus where equity and inclusivity are woven into policy, principle, and action at all levels of the institution. All members of the campus community will openly welcome diverse individuals and groups. The university will achieve its social equity and community goals through collaboration and leadership shared with community partners



With increasing climate variability, economic uncertainty and loss of natural resource capital, communities must rethink their strategies for resilience in an increasingly interdependent world. Equitable distribution and use of resources must be balanced with the necessary physical, social, human and natural capital in order to plan for long-term sustainable growth.

Lehigh is dedicated to creating a sustainable community that is predicated on equity, diversity and inclusiveness being integrated into our operational processes and into our relationship with the surrounding community. As we promote diversity and equity through educational programming, ensure quality of life standards for all campus members, and continue to be integrally involved with the larger community building processes we will enrich Lehigh's relationship with residents across the region and around the world.

Best Practices at Other Leading Institutions

Building Community Partnerships

Both Colgate University and Trinity College have developed strong partnerships and civic engagement initiatives with their local communities. Colgate has initiated community based research and co-curricular skill building opportunities for faculty and students to engage in new strategies for teaching and learning. Trinity College is part of a broad network of partnerships that stimulate neighborhood renewal, employment opportunities and neighborhood business development .



Campus Efforts Completed or Ongoing

There are many programs and services available that support and encourage multiculturalism and diversity on campus including:

- Newly restructured Council for Equity and Community
- Support groups on Lehigh's campus for faculty, students, and staff including Office of Multicultural Affairs, LGBTQIA Services, Multicultural Resource Center
- The Community Service Office has contact with over 100 agencies and runs major programs throughout the academic year. Lehigh averages 50,000 hours of volunteer work per year in the greater Lehigh Valley community.
- There are a number of Middle and High School Programs including:
 - Homework clubs
 - Broughal Middle School collaboration
 - STAR, an intervention program for at-risk children
 - STEM, a program where Lehigh students teach elementary through high school students science, technology, engineering, and math
 - C.O.A.C.H., a service program where Lehigh student-athletes connect with middle and high school students
 - CHOICES, a program designed to interest middle school girls in science and math
- Annual scholarships to economically disadvantaged students from Bethlehem Area School District
- Campus-Community initiatives including Greenway project, Bethlehem Community Gardens, Great South Side Sale and South Side Initiative
- GoldPLUS, which works like a debit card and is encoded on the campus ID, is accepted by roughly 80 off-campus who have been totaling around \$1 million in sales per year therefore strengthening the economic prosperity of the community.

Goals

Short Term (1-3 years)

- 1) Develop additional policies related to equity, diversity and inclusiveness and community building
- 2) Educate Lehigh members about Socially Responsible Investment (SRI) opportunities as part of retirement investment options.
- 3) Improve community knowledge of public events on Lehigh's campus
- 4) Create a competitive wage comparison report
- 5) Promote a safe and secure campus and community and increase participation in current programs that connect Lehigh and the community
- 6) Present and obtain feedback on service learning/internship community engagement plan
- 7) Improve campus education on issues of diversity and inclusion
- 8) Increase use of Fair Trade products on campus

We consider our neighborhood an integral part of campus life and we strive to learn from it and collaborate with our community to bring new levels of vibrancy.

-Lehigh University Strategic Plan

Intermediate (4-9 years)

- 1) Encourage and invest in economic development and housing opportunities within walking distance of campus which will enhance Southside amenities, improve the business climate, and lessen the need for commuting, parking, and transportation
- 2) Encourage and train campus constituents on constructive service learning/internship standards and practice
- 3) Expand continuing education and scholarship opportunities for community members from 2011 baseline

Long Term (10+)

- 1) Ensure that Lehigh employees and contracted employees earn a competitive wage
- 2) Achieve a consistent, constructive relationship with Lehigh's community partners
- 3) Expand continuing education and scholarship opportunities for community members



TRANSPORTATION

VISION: Lehigh University will partner with the largest employers in the Lehigh Valley, institutions of higher education (LVAIC), as well as our own faculty, staff, and students, and serve as a catalyst for change. We will engage the community on shared transportation issues and resources and create a visible, viable and sustainable transportation model contributing to the success of Lehigh's Climate Commitment



Transport systems have significant impacts on the environment, accounting for between 20% and 25% of world energy consumption and CO₂ emissions. The global impacts of fossil fuel extraction, production, distribution, and utilization can have far-reaching and often irreversible, political, environmental, and health impacts. Fossil fuel usage has already resulted in an observed 1.3 degree (F) increase in global temperature, which has had adverse effects ranging from biodiversity loss to catastrophic weather patterns². For this reason, improving the sustainability of transportation systems, even at a small scale, can have a profound impact on the environment.

Lehigh University can be a leader in the Lehigh Valley by modeling sustainable transportation systems. While the university's topography is challenging, there are creative solutions that can result in reductions in transportation-related greenhouse gas emissions and costs in the long term. By strengthening the campus shuttle system and creating incentives for alternative modes of transportation use, Lehigh will not only realize cost savings through a decreased need for capital-intensive parking structures but also see health benefits for Lehigh campus and the community.



²National Oceanic and Atmospheric Administration. 2010.



Best Practices at Other Leading Institutions

Encouraging Alternative Transportation

Shuttle systems at Colorado State have significantly more routes and buses per student, door-to-door options, and a higher percentage of alternative fuels such as natural gas, electric, or hybrid electric used by their fleets. To incentivize the use of public transit, UC Berkeley and UW Madison offer bus and/or rail passes at deeply discounted or completely subsidized rates to faculty and staff resulting in increased ridership rates. Duke University offers carpoolers both preferential parking and a tiered discount based on number of people in a carpool.

Improve and create incentives for the use of the campus bus system by faculty, staff, students, and visitors to the university

-Lehigh University Climate Commitment

Campus Efforts Completed or Ongoing

Fleet Vehicles

Lehigh University now offers EPA certified SmartWay rental cars and sedans, which increase fuel efficiency upwards of 10-15%, for faculty and staff use.

GPS Fleet Management System

The website will enable Lehigh University to enhance the level of service to the student community by providing access to the real-time location of all buses.

Telework Program

Human Resources has been working on a Telework Policy for employees; a form of virtual commuting. Ideally, the Telework Policy will reduce Greenhouse Gas emissions from commuting to and from Lehigh and provide ease in space planning pressures.

Car Pooling & Commuting

An online forum, while not yet widely used, has been created for faculty and staff to participate in ridesharing.

Buses/Shuttle System

A majority of Buses and Shuttles operate on diesel fuel that has about 40% higher fuel economy than gasoline. Lehigh's Transportation team is currently testing and researching the use of renewable biodiesel on a select number of buses.

Goals

Short Term (1-3 Years)

1) Lehigh will educate, encourage, and promote alternative forms of transportation and other viable forms of work such as distance learning, video conferencing, telecommuting and flexible schedules, where appropriate

Intermediate (4-9 Years)

- 1) Lehigh will begin to phase-in parking adjustments that will reduce the number of vehicle permits issued by 15%, proposing to eliminate cars for sophomores and improve use of a car sharing service
- 2) Lehigh will optimize the fuel efficiency of our fleet vehicles and bus services by optimizing bus routes, developing a plan for vehicle and bus replacement, and utilizing 20% biodiesel in our buses

Long Term (10+)

- 1) Encourage and invest in economic development and housing opportunities within walking distance of campus which will enhance Southside amenities, improve the business climate, and lessen the need for commuting, parking, and transportation thereby improving overall sustainability
- 2) Develop policies that support Southside economic and community development and continue partnering with other Lehigh Valley entities



WASTE

VISION: Lehigh will take a multidisciplinary approach to addressing the problem of waste both locally and on a broader scale. By embracing the principle of zero waste, the Lehigh community can create a sustainable campus that serves as a model for others



Waste serves as a clear indicator or “flag” for the unsustainable side of human and institutional activity, and it guides us to areas of possible improvement. Lehigh can promote a 21st century commitment to sustainable waste solutions that goes beyond simply managing waste--that is, a commitment to zero waste. Zero waste is the most meaningful target because it moves beyond trash management to look at the whole system and its efficiencies and inefficiencies.

Lehigh will foster a waste-conscious culture through continuous education, student involvement in classroom and real-world experiences, and by raising awareness of resources used. The university will monitor and measure consumption, implement operational improvements, and minimize economic costs to reduce, reuse, and divert waste. By adopting a cradle-to-cradle approach, Lehigh will create the appropriate incentives and disincentives to move the campus toward zero waste. As an institution that continually seeks to improve waste towards zero waste, we need to ask these questions:

- How can we eliminate waste at the input source? How can we make this a higher priority than waste disposal?
- How can we tie disposal costs to the initial purchase cost?
- Where are we using disposable goods and what durable alternatives are there?
- How can we motivate individuals and departments to be more responsible in resource use, and to make choices that reduce waste?



Lehigh University Eco-Reps conduct a waste audit to understand campus behavior patterns



Campus Efforts Completed or Ongoing

LEHIGH WASTE STREAM (TONS)

ACADEMIC YEAR	SOLID WASTE	SINGLE STREAM RE-CYCLING	COMPOSTING	TOTAL	DIVERSION RATE
2010-2011	1269.32	333.18	658.29	2260.79	44%
2011-2012	716.07	263.75	384.28	1364.1	48%
YTD	1985.39	596.93	1042.57	3624.89	46%

data as of January 2012

Best Practices at Other Leading Institutions

Hazardous Waste

University of California—Santa Barbara uses a waste management hierarchy of source reduction, recovery/reuse on-site, recycling off-site, treatment, and disposal. There is a chemical exchange inventory for use within the university. The Environmental Health and Safety Department (EH&S) goes through the chemicals and places items that might be reused into the program. They take pictures of each chemical and post them on the web site. The chemicals stay with EH&S until somebody requests them.

Continuously improve the recycling program and reduce waste production at all campus facilities.

-Lehigh University Climate Commitment

Goals

Short Term (1-3 years)

- 1) Establish consistent, regular, comparable measures of all kinds of waste on campus and within one to two years of establishing comprehensive measures, set an overarching goal for waste reduction (e.g. 50% reduction over 2011/12 figures)
- 2) Increase participation in repurposing and recycling through procurement of products that reduces packaging waste and one-time use, new signage, awareness and incentive programs, and through greater participation in current diversion programs such as Move-Out
- 3) Implement campus-wide e-waste program for all Lehigh community members
- 4) Expand Lehigh's composting program to encompass more food/dining areas
- 5) Find strategies to minimize hazardous waste on campus such as increasing visibility of battery disposal options, strengthening coordination among departments and researchers purchasing the same materials, and exploring chemical substitution strategies and inventory control to reduce hazardous substances in laboratories
- 6) Explore the use of sustainable construction and renovation practices including local material purchasing and material reuse
- 7) Ensure that materials from construction and demolition are recycled and/or reused

Intermediate (4-9 years)

- 1) Eliminate recyclables entering the waste stream and provide incentives to manage waste in a sustainable manner
- 2) Explore strategies that reduce the use of plastics, especially single use and convenience plastics on campus
- 3) Expand composting program beyond dining halls into other building types
- 4) Minimize hazardous/chemical waste
- 5) Establish policies for managing construction waste and recycling

Long Term (10+)

- 1) Using baseline data starting with 2011, demonstrate significant progress toward the goal of zero waste. Eliminate recyclables in waste stream and ensure our recyclables are recycled in a sustainable manner
- 2) Remove all organic, compostable waste from solid waste stream
- 3) Strengthen central purchasing and disposal policy for hazardous & chemical waste; minimize use of hazardous chemicals where possible



WATER

VISION: Lehigh University will improve water quality and reduce overall water consumption in order to ensure a reliable and clean supply of this valuable resource, in a future that is likely to be threatened by water insecurity



Sustainable use of water is becoming increasingly important everyday throughout the world. Though nearly 70% of the Earth's surface is covered in water, only 2.5% of it is fresh water and less than 1% of all the water on earth is available for direct human use. Therefore, using water carefully and sustainably is imperative.

Lehigh will educate members of the campus community as to the sources and fate of our water, both locally and on a global scale, with the goal of promoting sustainable practices. Lehigh University will use water more efficiently as well as increase the quality of water leaving its campus, by researching current areas for improvement, improving infrastructure and fostering positive behavioral change.

Best Practices at Other Leading Institutions

Quality and quantity of water leaving campus

Lehigh is one of many institutions to install Green Roofs, which helps reduce runoff. Other schools have replaced traditional asphalt with more permeable surfaces to help reduce runoff from paved areas. The University of Colorado-Denver and University of Kansas have both started placing rain gardens around campus to help treat runoff and replenish groundwater stores.



Dr. Arup K. SenGupta is known for his work removing arsenic from water supplies

Campus Efforts Completed or Ongoing

Water Consumption on Campus

- On-going education is addressed in residence halls via Eco-Rep program
- Many low flow shower heads, low flush toilets and urinals and auto-flush toilets and urinals have been installed in campus buildings, especially residential buildings
- Turf watering on the Goodman Campus athletic fields is done through a system of on-site water wells
- Avg. Residence Hall/Greek House student = 49 gallons/person per day compared to the national average of 89 gallons/person
- Automatic irrigation systems were currently timer controlled, but were capable of being converted into “smart” systems

Access to quality drinking water on campus

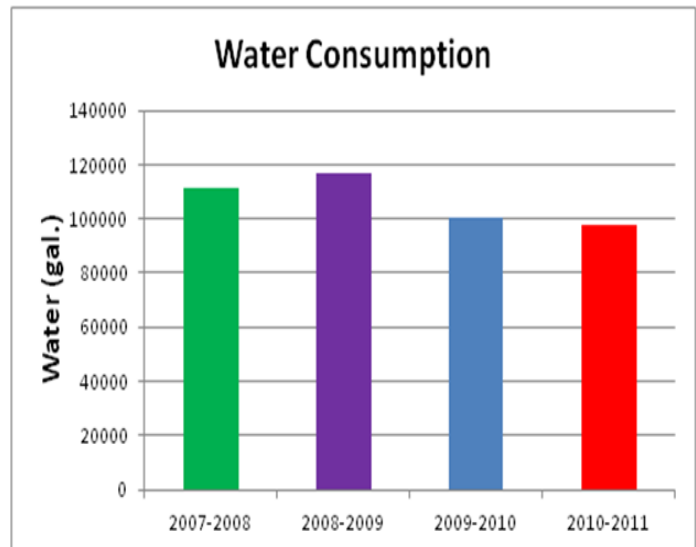
- Several athletic events and large campus events (graduation, freshman move in) have made water stations (with disposable cups available)



Campus Efforts Completed and Ongoing (cont.)

Quality and quantity of water leaving campus

- New construction creates limited runoff increases by using detention facilities
- Ice melt products are limited as much as possible and calcium chloride is substituted for sodium chloride as much as possible
- Landscape designs use native species and therefore require less water and there is limited use of pesticides and fertilizers, thus improving runoff quality
- The STEPS building has 8,000 sq. ft. of green roof to limit runoff
- Exterior cleaning of walks and building walls done with pressurized water and not cleaning chemicals
- Empowered a Facilities “water team” to reduce chemical and water use on cooling towers



Goals

Short Term (1-3 Years)

- 1) Reduce water consumption on campus by performing water-use audits based on meter readings
- 2) Regularly monitor and publish quantity and quality of water in effort to improve access to quality drinking water on campus

Intermediate (4-9 Years)

- 1) Purchase products that are not manufactured with water-intensive methods or do not require excessive water to use
- 2) Improve quality and reduce quantity of water leaving campus by investigating more green roof candidates
- 3) Reduce bottled water consumption by implementing new refillable water bottle friendly stations and limit sales of bottled water at campus stores

Long Term (10+)

- 1) Reduce water consumption on campus via grey water use and replacement of outdated toilets, showerheads, faucets etc. with low-flow devices
- 2) Eliminate bottled water consumption



LEHIGH UNIVERSITY

SUSTAINABILITY METRICS

The following will be used to measure the success of the Campus Sustainability Plan:

General Profile
Faculty (Tenure & Non-Tenure)
Staff
Total Faculty & Staff
Faculty Teaching Each Semester
Courses Offered Each Semester
Students Enrolled On-Campus
Students Enrolled Off-Campus
Total Students Enrolled
Graduate Students Enrolled
Undergraduate Students Enrolled
Number of Campus Buildings
Total Square Footage
Built Environment & Land Use
Indoor Air Quality
Number of LEED Certified Buildings
Number of LEED Certified square ft.
Pounds of Fertilizers Used
Pounds of Pesticides/Fungicides/Herbicides Used

Climate & Energy
Total Building Energy Consumption
CO2 & CH4 Emissions Per Building
Gas/Oil Usage Per Building
Total Electricity Consumption (kWh)
% Renewable Energy purchased
% Open Fume Hood Sashes Converted to High-Efficiency
% Steam Heat Systems Converted to Hot Water Heat
Number of Occupancy Sensors
Number of Thermostat Timers in Buildings
Number of Buildings with Card Access
% of Underused Public Computing Sites Converted to Wireless Lounges
Number of Chillers Replaced with Energy Efficient Models
Transportation
Total Campus Fleet
% of Fleet Fueled with B20 or Higher Biofuel
% of Fleet Fueled with E85 or Higher Ethanol
% of Fleet Fueled with Hydrogen
% of Fleet Fueled with Compressed Natural Gas
% of Fleet Gas-Electric and/or Diesel-Electric Hybrids
% of Fleet Plug-in Hybrid and/or 100% Electric
Commuters Walking and/or Biking
Commuters Carpooling and/or Using Public Transit
Availability of Public Transit Discounts through School
Availability of Telecommuting Programs
Enrollment in Telecommuting Programs
Availability of Carpool Matching System
Average Commuter Distance

Academics & Educational Experience

Number of Sustainability-Related Courses

Number of Sustainability-Focused Courses

Undergraduate Programs in Sustainability

Graduate Programs in Sustainability

Green Working Spaces on Campus

Faculty Members Utilizing Green Spaces in Courses

Number of Incentives for Developing Sustainability Courses

Sustainability Info Sessions Offered

Extracurricular Activities/Clubs with a "Green" Focus

FTE student participation in "Green" Activities/Clubs

Community Building & Social Equity

Sustainably Responsible Investment (SRI) Workshops/Info Sessions

Participation at SRI Info Sessions and Workshops

Hours of Community Service Participation

Diversity and Inclusion Focused Courses

Diversity and Inclusion Related Courses

Students Enrolled in Diversity/Inclusion Courses

Workshops/Programs about Diversity/Inclusion

Participants at Diversity/Inclusion Workshops/Programs

Waste
Pounds of Trash
Pounds of Hazardous Waste
Pounds of Single stream Recycling
Pounds of Compost Generated
Pounds e-Waste Collected
% Single-use Plastic in Recycling, Trash
% Trash cans with Nearby Recycling Bin
% Campus Buildings with Composting Capabilities
Availability of Classes/Programs about Waste Choices
Participation in Waste-focused Programs
Waste Reduction
Waste Diversion
Water
Water Consumption
Water Consumption/Building
% of Buildings with Monitoring Systems for Quality/Quantity
Storm Water Management/Tests
Availability of Info Sessions about Water Consumption
Participation in Info Sessions about Water Consumption

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