

# **Campus Sustainability Plan & Climate Action Plan**

**Denison University  
2012**

**Campus Sustainability Committee (2011-2012)**

## **Sustainability Vision**

Denison University strives to become an exemplary steward of our natural world and a leader in environmental, economic and social sustainability. We believe that this tripartate approach to sustainable practices will support the well being of the entire college. To further this goal, Denison will incorporate sustainable practices into its daily operations, as well as educate all members of the Denison community on the interdependence of human welfare and the state of the planet.

Our mission at Denison is intimately connected to the larger mission of sustainability. As we seek to become “discerning moral agents and active citizens” we also share a “concern for community in which the principles of human dignity and ethical integrity are paramount.” The Sustainability Committee at Denison understands that sustainably cultivating our earth’s resources ensures the welfare of human societies as well as the maintenance of the dynamic ecosystems on which we all depend. We believe the recommendations of this Sustainability Committee are founded upon core values found in Denison’s mission statement. Indeed, sustaining our earth’s resources and providing equitable access to these resources is a central issue of the sustainability movement and is also central to the mission of the college.

Our vision for this Sustainability document is to stay close to the core principles and values of the Sustainability Plan even though improving technologies and methodologies may require us to revise some of the original action items. Overall, we hope to see Denison move toward carbon neutrality and sustainable workplace practices that provide economic and social equity for the many constituents that exist on this campus.

## **Introduction**

Just as the vision for sustainability is rooted strongly in Denison’s commitment to the Liberal Arts, Denison’s Sustainability Plan is rooted strongly in our campus commitment to working together as a community. The Plan began with the work of the Fall 2007 Environmental Studies Practicum class and the Task Force on Institutional Environmental Policy. The task force’s report in April of 2008 established the Campus Sustainability Committee (CSC) and led to the hiring of Denison’s first Campus Sustainability Coordinator. In the Spring of 2010, Denison became a signatory of the American College and University Presidents’ Climate Commitment. The following year the CSC worked to establish a strategy for developing a sustainability plan for the campus. Throughout the Fall 2011 semester, four advisory groups, including representatives from relevant areas of the College and focused on different facets of campus sustainability, convened on campus. In addition, the Fall 2011 Environmental Studies Practicum class researched and wrote a Climate Action Plan for the campus. The CSC compiled the multitude of ideas for short- and long-term goals that came out of the advisory groups and practicum class into this Plan and a Digital Archive (web address) that includes additional specific and longer term initiatives. The goals and action steps presented here combine the work of individuals involved in the entire process into a framework designed to help Denison decrease its environmental impact.

In its fullest definition, sustainability encompasses not only stewardship of the environment and our natural resources but practices that foster social justice and global economic sustainability. These three legs of sustainability are equally important and the Denison community has resources and

talent devoted to strengthening each area. This SP focuses primarily on action steps toward increased environmental stewardship. The CSC recognizes that many of the aspects of social justice and economic sustainability are addressed in other campus initiatives and publications, and hopes that in time collaborations will develop across these fronts as the University moves to foster and promote all aspects of sustainability.

The goals and action steps that follow are divided into nine categories: Energy & Climate; Water; Grounds; Waste; Dining; Transportation; Purchasing; Teaching, Education & Research; and Co-curricular & Community. Each goal is an ongoing, larger objective to move Denison forward in becoming a leader in environmental stewardship. In the three year timespan of this Plan, the CSC hopes that the college makes significant progress toward achieving these goals. The action steps that follow each goal provide the campus community with specific measures to help us achieve the goal; *they are intended to be completed in the next three years.*

In fall 2014 the CSC will evaluate progress on this Plan and then in the spring 2015, the CSC will develop and submit a revised sustainability plan accounting for the progress the campus has made and updating goals and action steps for the next three years. Many of the current action steps involve significant research and investigation into alternate technologies and practices. In future Plan revisions, these steps will become implementable changes depending on the outcome of these investigations. Subsequent revisions may also begin to incorporate the many interconnections between the three legs of sustainability thus including not only environmental stewardship but also a greater emphasis on social and economic sustainability.

By signing the American College and University Presidents' Climate Commitment, Denison committed to reducing greenhouse gas emissions and moving toward campus carbon neutrality. Carbon neutrality or a zero carbon footprint occurs when all college activities that lead to the emission of carbon dioxide or other greenhouse gases are balanced by Renewable Energy Certificates (RECs). Carbon emissions are grouped: scope 1 emissions include on campus emissions primarily from the college heating plant and campus vehicles, scope 2 emissions arise from electricity used on campus, and scope 3 emissions include indirect emission sources such as commuting, college air travel, and waste disposal. To achieve carbon neutrality, Denison must reduce consumption, adopt lower carbon heating and energy sources, and purchase RECs. Reducing resource use will necessarily involve education and policy shifts that change consumption behavior as well as system efficiency upgrades. Successful completion of the action steps contained in this Plan will drastically decrease campus CO<sub>2</sub> emissions through conservation initiatives that range from a decrease in landfilled waste to more efficient hot water use. The CSC envisions that Denison will invest significantly in on-site renewable energy generation that powers both campus and our educational mission to increase student engagement with this central issue of our time rather than simply purchasing RECs. Denison is committed to strive for carbon neutrality by 2030. By setting our date for carbon neutrality at 2030, Denison will be able to drastically decrease the amount of energy campus requires, remain flexible as we monitor technological developments, and evaluate then develop the best practices and timeline that will lead toward sustainable carbon neutrality.

Goal 5 of the Energy and Climate section begins to address the steps needed to adopt a low carbon heating fuel source and to build low carbon energy sources on campus. This goal is unique in the document because it outlines *long-term* planning rather than three year action steps. While natural gas is often cited as a lower carbon alternative to coal, the CSC is wary Denison moving to a long-term

dependence on natural gas, which due to changes in drilling practices may prove not be a more sustainable energy source than coal. Denison's progress toward carbon neutrality will depend heavily on the future introduction of new renewable energy technologies. The minimal specifics given on renewable energy sources in this Plan reflects the CSC's understanding that best practices will change rapidly in the next several years.

This Sustainability Plan is Denison's first comprehensive road map of practices that lower its ecological and resource impact. In developing this plan and vision, we have drawn heavily on the commitment to sustainability as put forth by the Task Force on Institutional Environmental Policy and the President's commitment to climate neutrality as stated on the [Sustainability website](#). The continuing evolution of this plan will help bring the University into the 21st century by allowing us to consciously evaluate the standards and practices that are used across campus, all in the light of better efficiency and stewardship of its resources. This Plan is an opportunity for Denison to lay a course that establishes a firm foundation for the challenges ahead. Changes to campus operations necessarily involve the allocation of time, talent, and monetary resources. Just as the Denison community collaborated to create this Plan, the CSC hopes that the whole Denison community and not just the administration will continue to contribute to the prioritization and execution of the goals and action steps that follow.

## **Sustainability Goals & Action Steps**

### Climate & Energy

Denison is already addressing energy-efficiency and working to reduce its carbon footprint. Just in the last year, Denison has initiated a campus wide energy audit that has identified numerous energy reduction opportunities for the College. In conjunction with the audit, Denison has established its first revolving loan fund, the Green Hill Fund, that has enabled the College to begin investing in energy conservation measures that both save vital resources and reduce carbon dioxide emissions attributed directly to campus operations.

Over the past five years Denison eCO<sub>2</sub>\* emissions have averaged 79.4 million pounds annually. Last year Denison's was responsible for 76.6 million pounds of eCO<sub>2</sub> emissions. In that same time period total square footage of maintained building space has increased by 100,000 ft<sup>2</sup> to 1.8 million ft<sup>2</sup>. Approximately 80% of eCO<sub>2</sub> emissions are directly attributable to electricity use, heating, and cooling of campus buildings.

\*Carbon dioxide equivalency (eCO<sub>2</sub>) is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO<sub>2</sub> that would have the same global warming potential.

Goal 1 – Collect and disseminate data and information on campus energy use to enable better assessment and increase awareness in the campus community.

Action Steps:

- Collect and analyze monthly consumption information for all utilities: electricity, water, natural gas, steam, coal, gasoline, and diesel. Organize data on consumption by areas such as academic, general and residences
- Install utility metering systems to collect real time data where possible

- Establish a campus energy dashboard to allow the campus community to see energy use by building. Install electronic displays in buildings, especially residence halls
- Identify a benchmarking tool to compare building energy use on campus and with similar buildings on other campuses (such as USEPA Energy Star rating system) and establish benchmarking goals

Goal 2 – Reduce energy consumption by establishing policies and educating the community about standards that encourage behavior change.

- Establish and disseminate campus-wide temperature, humidity, indoor air quality and lighting standards. Establish policies to enforce compliance in existing and new buildings
- Create educational materials explaining policies and conservation programs specifically targeted to students, faculty and staff
- Develop and disseminate efficiency standards and appropriate use guidelines for energy using office and personal equipment and appliances such as refrigerators and space heaters. Utilize existing policy and procedure documents such as the “Guide to the General Operating Procedures” and “Green Office Certification” to help communicate with the community
- Utilize students and the campus community to help investigate, monitor and reduce consumption such as, turning off lights in academic buildings and to help create educational programs

Goal 3 – Maintain established indoor environmental quality (IEQ) standards and operate existing buildings in an energy-efficient and environmentally sustainable manner.

Action Steps:

- Identify and implement a sustainable ‘Green Standard’ for the maintenance and operation of buildings across campus
- Establish a ‘Green Cleaning Program’ and require all products used in cleaning buildings to be ‘certified’ products unless written documentation is provided
- Establish policies and programs to reduce the need to heat and cool buildings and spaces when unoccupied, after normal working hours or when the campus is on break
- Upgrade or install equipment, sensors and control strategies to reduce reduce lighting and HVAC energy consumption wherever feasible
- Re-commission existing equipment and control systems on a regular basis, investigate continuous commissioning programs, and upgrade or replace inefficient equipment to keep systems operating at peak efficiencies
- Survey all major buildings for energy conservation measures (ECM’s) and establish a program to implement economically feasible projects as quickly as possible
- Provide domestic hot water only where needed or required by code and investigate alternative methods for producing domestic hot water that improve energy efficiency
- Eliminate the use of chilled water drinking fountains across campus by replacing broken refrigerated units with fountains that do not have refrigeration
- Better control humidity to maintain healthy indoor environments

Goal 4 – Design, construct and renovate buildings to a rigorous, innovative sustainability standard.

Action Steps:

- Ensure that all new construction and major renovations are designed and built to a sustainable standard such as LEED Silver. Work closely with design teams to include best practices and start with the greenest possible design
- Include sustainability and efficiency decisions in all future planning decisions. Vigorously challenge the need to expand square footage across campus
- Review Certification Programs and identify an appropriate method to ensure that Denison will be an innovator in green building construction. Review the advantages and disadvantages of obtaining documented certification and consequences of obtaining them
- Commission all HVAC and lighting systems on projects more than \$250,000
- Require Life Cycle Cost analysis on HVAC, electrical, plumbing and building systems on projects more than \$500,000

Goal 5 – Address main sources of Scope 1 and Scope 2 CO<sub>2</sub> emissions.

Reduce carbon dioxide emissions, pollution and environmental degradation from current energy sources (one to five years).

Action Steps:

- Pilot ways to use less coal in the Central Heating Plant. For example, fire up coal boilers later and use natural gas during “swing” months
- Investigate opportunities to make the University’s cooling plant more efficient

Implement renewable energy to reduce carbon dioxide emissions from the use of fossil fuels (one to ten years).

Action Steps:

- Assess technological advances and the costs and benefits of different renewable energy sources and renewable energy credits to determine the most efficient and cost effective method for increasing renewable energy use on campus
- Establish specific targets for percentage of energy from on-site renewable energy generation and off-site renewable energy credits
- Implement on-site renewable energy and purchase renewable energy credits to meet established renewable energy targets
- Include an educational component connected to any renewable energy development on campus or purchase of renewable energy credits

Change main sources of heating, cooling and electricity to reduce carbon dioxide emissions, pollution, and environmental degradation (one to twenty years).

Action Steps:

- Investigate alternatives to the use of coal in the Heating Plant, including but not limited to: co-generation, alternative fuels such as a bio-fuel or natural gas, decentralizing or relocating a centralized plant to minimize heat loss
- Determine conditions for efficient implementation of co-generation and if these conditions are possible on campus or in coordination with the Granville community

- Investigate alternatives to the use of coal-generated electricity in the production of cooling water for air conditioning, including but not limited to: geothermal systems, absorption cooling, and thermal storage
- Include, along with engineering and economic life cycles analysis, a thorough investigation of potential future technology and trends impacting the potential carbon footprint of the various energy sources

## Water

Since 2005 Denison has reduced its annual consumption of treated potable water by over four million gallons. In addition, the College has shifted to using well water and rainwater cisterns for its limited irrigation applications. More recently, Facilities Services has begun to upgrade faucets, showerheads, and toilets around campus with low flow alternatives.

Goal 1 – Reduce the use of water and the energy used to heat, transport, and treat water

Action Steps:

- Continue to upgrade all fixtures on campus to low flow fixtures
- Track and publicize the water savings from fixture upgrades
- Create a water use dashboard online for all buildings that are individually metered
- Continue “Water Wars” and expand participation through better publicity
- Explore the installation of underground cisterns or additional inputs into the existing system to collect runoff from buildings
- Adopt a policy that all future construction projects where irrigation is included must include rainwater storage opportunities
- Review annually building code and Health Department initiatives and research alternative equipment and systems such as composting toilets and gray water systems
- Minimize the need for irrigation by installing automatic controls to monitor ground moisture content
- Adopt a campus policy that once through water cooled equipment will only be used when it is the most overall sustainable option available

## Grounds

Denison has a strong commitment to maintaining the integrity and aesthetics of its campus grounds. In the past year, Denison established its first campus arboretum and was recognized through the Arbor Day Foundation as a Tree Campus USA. Shifting to more sustainable practices can both enhance the landscape and reduce the College’s environmental footprint as it strives to maintain roads, sidewalks, and green spaces while ensuring that iconic vistas and landscaping around campus are preserved.

Goal 1 – Reduce the impact of Denison’s campus landscape through the use of appropriate technology and maintenance practices.

Action Steps:

- Expand the amount of land that receives less mowing
- Reduce the use of petroleum based fertilizer

- Explore alternative equipment, development of policies, procedures and processes used to maintain the campus and identify best practices that reduce labor and reliance on non-organic and petroleum based chemicals
- Determine best practice for increasing use of compost tea as a primary campus fertilizer source
- Plant native, deer resistant, and low maintenance shrubs, trees, and plantings and include the Tree and Landscape Committee in dialogue with landscapers when selecting new plantings
- Expand the planting of trees wherever possible
- Install an experimental pervious material parking lot
- Explore opportunities to reduce the quantity and improve the quality of storm water runoff
- Develop a long term storm water management plan
- Create a complete map of campus underground utilities (electric, steam tunnels, irrigation, water, gas)
- Establish an Integrated Pest Management Plan

Goal 2 – Engage the campus in a discussion to determine a balanced strategy that preserves the utility and overall aesthetics of the campus grounds while reducing resource use and impact of surface water runoff.

Action Steps:

- Publicize current fertilizer, herbicide, insecticide, and chemical ice melt use and vigorously explore less environmentally harmful alternatives
- Utilize the Tree and Landscape Committee to help identify and disseminate the long-term vision and specific plans to improve the campus landscape environment.
- Maintain and update the campus tree inventory on an annual basis
- Add signage to explain the benefits of decreased maintenance and other green grounds initiatives
- Identify a process to review the need and installation of any hard surfaces and remove any hard surfaces found to be unnecessary
- Survey the community to determine the expected aesthetic and variety of uses of the campus grounds
- Create a rainwater garden on campus

## Waste

Over the past six years Denison has increased its recycling rate from 23% to 34% and now recycles over 302 tons per year. During that same time campus waste has decreased 26% to 571 tons last year. In addition the college has a campus composting program that collects food waste from both campus dining halls as well as all senior apartments.

Goal 1 – Reduce waste and increase campus recycling and composting through a combination of policies, procedures and increased community outreach.

Action Steps:

- Install a pulper to increase items that are compostable and assess its effectiveness
- Provide more education about composting in dining halls
- Institute a campus wide system for compost collection

- Create a recycling point person for each academic and residential building and steering committee to identify best models for location dependent recycling
- Improve recycling in residence halls by installing larger recycling bins and expanding recycling options
- Expand participation in “Recyclemania” through better publicity
- Collect and recycle more construction waste from summer and regular small scale projects
- Track and publicize monthly waste land-filled, recycling rate, and compost generated
- Educate campus community about ways to reduce consumption and promote reuse and sharing of campus resources
- Research viable waste reductions targets and set a goal for the 2013-2014 school year

## Dining

Denison is just beginning to explore sustainable dining options for campus. In 2009, 19% of food purchases (total dollars spent) were made locally - within Ohio. In 2011, 23% of food purchases were local. In addition, Denison and its food service provider, Sodexo, have been looking at ways to reduce food waste, conserve water, increase composting, and provide service-ware that is more environmentally friendly in carryout and catering operations.

Goal 1 – Move food purchases from unsustainable choices toward more sustainable choices. Unsustainable options may include: concentrated animal feeding operations (CAFO) raised animal products, genetically modified organisms (GMOs), highly processed foods, and heavily packaged items. Foods may be considered more sustainable if they are one or more of the following: locally grown, ethically produced, seasonal, vegetarian, fair trade, produced without antibiotics or hormones, produced with minimal or no pesticide, herbicide, fungicide, or petroleum based fertilizer.

Action Steps:

- Increase local food purchases (measured in total food dollars spent) by 5% annually
- The campus food service provider will collect data on sustainability of dining and food related purchases (per the goal above), assess sustainability of products, and find and purchase viable alternative products that better meet the goals

Goal 2 – Strategically invest in our dining facilities (Curtis & Huffman Dining Halls, The Bandersnatch, and Slayter Union) by renovating existing facilities, planning for sustainability in new facilities, and adding equipment where needed to support local, seasonal food and composting initiatives.

Action Steps:

- Invest in a freezer facility (possibly in conjunction with Granville Schools) to allow greater access to local produce year round
- Renovate kitchen prep spaces as needed to accommodate more varied and dirtier food supplied by local farmers
- Upgrade HVAC systems and dining hall serving areas to accommodate made to order stations within the dining rooms
- Increase opportunities to use reusable and recycleable containers for catering and carryout options

Goal 3 – Facilitate greater community education and involvement in sustainable dining initiatives.

Action Steps:

- Instigate community education initiatives such as annual dining hall tours, posters, and table tents to showcase sustainable dining on campus
- Evaluate and improve channels for student input and involvement into dining
- Establish a system for formal annual review of the campus dining provider that increases the accountability of the food services provider on sustainability related issues, establishes sustainability as an important factor in the selection of the provider for our campus, and provides a formal space and time for dialogue between the provider and campus stakeholder groups

### Transportation

Denison strives to maintain a pedestrian-friendly campus that reduces the need for vehicle travel while on campus. As a residential college very few students actually commute to classes each day. However, Denison employees live an average of 10.9 miles from campus, with more than 30% living greater than 20 miles from campus and approximately 14% of employees walk or carpool to work on a daily basis. The College's location limits its ability to use public transportation as a means for students and employees to get to and from campus.

Denison's owns and maintains 93 vehicles in its fleet (not including lawn mowers and gas powered tools) that last year accounted for less than 1% (605,000 lbs) of Denison's eCO<sub>2</sub> emissions.

The College has limited ability to track eCO<sub>2</sub> emissions attributed to off-campus college travel (e.g. athletic teams, air travel, & rental cars). Air travel alone accounted for over 8% (6.2 million pounds) of the eCO<sub>2</sub> emissions for the College in 2011.

Goal 1 – Move toward a more efficient and better managed University fleet.

Action Steps:

- Evaluate current fleet management system and improve for greater efficiency. This would include making non-specialized vehicles part of a central pool and providing an online reservation system through which campus members can reserve appropriate vehicles from that pool for university business
- As part of fleet management, evaluate vehicle use by major fleet users, including security and facilities. Determine if some vehicles could be replaced with more efficient types of vehicles (cars in place of vans or SUVs) or if some vehicle use could be accomplished with alternative transport such as golf carts, Segways or bikes
- Establish a purchasing policy for campus vehicles that assesses both the need for a given vehicle and type of vehicle proposed for purchase or replacement, with the goal to purchase the most fuel efficient vehicles for our money
- Research the costs and benefits of alternative fuel and high efficiency vehicles (such as biodiesel, hybrid, electric, and/or compressed natural gas) for addition to the fleet. Establish a pilot program to test the best possibilities as fleet vehicles are replaced

Goal 2 – Reduce driving on campus while encouraging alternatives like ride-sharing, biking, and walking.

Action Steps:

- Increase the cost of student parking permits over 3 years to \$150, while maintaining and publicizing a discounted rate (\$25) for the Orange lot. Use additional funds to support programs listed below
- Expand and support the Bike Share program. Necessary steps include the purchase of additional bikes and hiring a student worker to perform routine maintenance
- Evaluate, and if deemed beneficial, facilitate the placement of one or more cars from a third party car share program (such as ZipCar) on campus. The car(s) would be available for private use by students, staff, and faculty, as well as possibly as a supplement to the University fleet when necessary
- Evaluate current shuttle programs available to students for transport to Columbus, the airport, and area shopping. Expand shuttle service as appropriate
- Publicize bike share, car share options, ride share boards, and shuttle services to reduce the use of and need for a car on campus
- Evaluate and improve walking access to campus from surrounding neighborhoods (repair stairways, add pathways and sidewalks if needed to better connect campus to the village).
- Evaluate and improve bicycle access to campus from surrounding neighborhoods as well as bicycle parking options on campus (consider adding bike racks and/or bike sheds)

Goal 3 – Evaluate and reduce the environmental impact of air travel by students, staff and faculty.

Action Steps:

- Collect data on air travel related to university business
- Collect data on student travel that is part of their educational experience (such as study abroad, conference, or research trips)
- Research ways to reduce the carbon footprint associated with air travel

## Purchasing

Central to the concept of sustainable procurement is developing methods that reduce the need to make new purchases of goods and services by better controlling inventory and better utilizing existing resources.

In 2010 Denison adopted its first Sustainable Purchasing Guide that identifies numerous environmentally preferable and socially responsible purchasing practices for the college. Denison recognizes the need to evaluate purchasing decisions based on full life cycle analysis and cradle-to-cradle impacts.

Goal 1 – Continue to assess purchasing practices on campus and define target areas where sustainability of purchasing could most effectively be improved.

Action Step:

- Conduct a campus wide assessment of purchasing practices and determine where purchasing could be made more efficient and sustainable. Create a priority list for change, targeting areas that will reap the greatest benefits first
- Update and distribute lists of preferred vendors/products for items like office furniture and office supplies, evaluating vendors on sustainability and price. This effort might be

coordinated, building on existing resources, through Denison's Purchasing Department and/or the Ohio Five Procurement Office

- Purchase more durable items where possible and facilitate reuse or redistribution of items no longer needed.
- Create a scorecard that looks at the environmental, educational and economic impacts of each large decision, especially building projects and large purchases
- Create an online inventory system for surplus items

Goal 2 – Increase awareness of the Sustainable Purchasing Policy and to provide resources to support individuals in complying with the policy.

Action Steps:

- Evaluate and consider revising the current Sustainable Purchasing Policy. Consider including more specific standards on certain widely used items (plastic cups, indoor paint, paper, etc.)
- Working through department heads and AAAs, educate the campus community about the Sustainable Purchasing Policy and resources available through the purchasing office and the Ohio Five Procurement Office to support sustainable purchasing
- Encourage use of preferred vendors/products lists to ensure the quality of purchases

### Teaching, Education & Research

Education is at the core of Denison's sustainability efforts. The College offers numerous sustainability-focused and sustainability-related courses. Many faculty are including sustainability concepts within their curricula and an increasing number of faculty are exploring threads of sustainability within their research.

Denison students are choosing sustainability-themed courses and research as part of their overall Denison academic program. The number of students pursuing majors in environmental studies and taking courses within environmental studies and other related programs has doubled over the last five years.

Goal 1 – Develop resources to support the inclusion of sustainability themes in the curriculum and sustainability research.

Action Steps:

- Compile resources that help faculty understand how sustainability fits with their own research and teaching interests
- Develop a collection of pedagogical readings, assignments, prompts, and questions that can be used to teach sustainability in the classroom
- Create local TED talks/podcasts
- Hold workshops for faculty, in a venue such as the Fall Faculty Conference, on integrating sustainability issues into the curriculum
- Create a collaborative database to share all of these resources across the campus community
- Sponsor a GLCA/Five Colleges of Ohio Sustainability Summit with breakout groups for faculty and student groups to share best practices

Goal 2 – Enhance the curriculum with sustainability-related courses.

Action Steps:

- Develop 1-credit sustainability courses also related to the campus theme
- Encourage FYS 101 and 102 classes to incorporate sustainability issues
- Establish a sustainability-focused FYS 103
- Encourage interdisciplinarity and team teaching in the area of sustainability
- Mark courses that are related to sustainability with the CAP logo in the catalog

Goal 3 – Encourage and track sustainability-related research

Action Steps:

- Encourage faculty to participate in MACADEMIA (a collaboration database)
- Find a donor to support summer research on sustainability
- Network with faculty and students to increase their participation in sustainability related research
- Create a sustainability-themed learning community to enhance faculty development
- Create a local database to track student and faculty research topics

Goal 4 – Maintain the Denison University Biological Reserve as a functional ecological landscape that provides habitat for native species and serves as a resource for sustainability-related research and education.

Action steps:

- Continue programs to remove invasive species and consider targeted reintroduction of native species.
- Expand the Tree Species Trail as a teaching tool for Denison students as well as the wider community.
- Promote opportunities to use the biological reserve in teaching.
- Establish a dialogue between the biological reserve committee and the sustainability committee to help support the needs and mission of the biological reserve.

### Co-Curricular & Community

Sustainability is a concept that should pervade all aspects of the college experience and include both students and employees of the college. The integration of sustainability into the campus culture need not require new programs and activities, but rather should be a theme that encourages collaboration among groups so that all can benefit from better communication and utilization of resources.

Currently there are five student groups on campus (Green Team, Denison Fair Trade Alliance, Garden of Hope, Environmental Education Club, and People Endorsing Agricultural Sustainability) that are directly involved with sustainability and sustainability related projects. In addition there are a few student groups that indirectly address components of sustainability in the activities they do both on and off campus.

Denison's sustainability efforts cannot be limited to only the campus; sustainability should include community outreach. Opportunities for civic engagement and service-learning are vital to developing a broad and comprehensive view of sustainability that includes the environmental, economic and social implications of sustainable development.

Goal 1 – Increase communication and collaboration among campus groups.

Action Steps:

- Hold semi-annual planning meetings for campus groups interested in sustainability/diversity to coordinate schedules, budgets, and events
- Create a unified campus calendar and use it for all sustainability events
- Provide incentives such as increased funding for groups who regularly collaborate
- Facilitate a sustainability summit for students, faculty and staff that includes other colleges and universities in an effort to share best-practices and encourage collaboration on sustainability initiatives.
- Develop an integrated marketing plan for sustainability that includes both on campus and off campus outreach. This should include collaboration with University Communications, Alumni Relations, and Admissions.

Goal 2 – Educate the entire Denison community on sustainability issues and encourage sustainable living

Action Steps:

- Develop a Denison specific Carbon Footprint Calculator
- Develop a workshop for faculty and staff covering sustainable work place practices
- Include sustainability in the orientation programs for first-year students and new faculty and staff
- Present a sustainability update once a year at a General Faculty Meeting
- Track community service of employees and recognize these efforts
- Report student service hours on official transcripts
- Collaborate with the Community Health Involvement Committee and the Wellness Coalition to educate the community on environmental issues related to health
- Hold a Sustainability Festival open to the Granville community
- Organize a sustainability forum and/or planning retreat and invite all sustainability-related campus groups, area non-profits, representatives from the Alford Center for Service Learning and Licking County schools

## **Implementation**

### Reporting

Tracking Denison’s sustainability progress is crucial to the implementation and success of this plan. The College currently tracks institutional GHG emissions and it utilizes the Sustainability Tracking Rating & Assessment System (STARS) to monitor overall campus sustainability efforts and actions. Furthermore, the Campus Sustainability Committee writes an annual report that is available to the whole campus community. These assessments and reviews meet the requirements set forth by the American College & University Presidents’ Climate Commitment.

### Financing & Prioritization

Denison University is committed to sustainability and to achieving the goal of climate neutrality. Due to both time and fiscal constraints, the college cannot immediately address all of the Action

Steps outlined in this plan. Cost will be one of the factors that will determine the order in which projects are selected and completed. Project and program costs and return-on-investment are not always easily determined and have not been calculated for this plan. Another factor that will determine which action steps will be prioritized is the effect on eCO<sub>2</sub> emissions that can be mitigated. It is important to note that most projects that reduce emissions are also reducing energy consumption, which correlates with decreased operating costs.

A third, and perhaps most important factor in the selection process will be how well a project fits within the overall educational mission of the college. While much of campus sustainability and climate action are tied to operations and maintenance of the College's facilities and grounds, the biggest impact on sustainability is rooted in how students, faculty, and staff engage with campus sustainability and how well it gets woven into the fabric of our campus community. Many of the Action Steps in the sustainability plan involve education, outreach, changing behaviors, and developing new processes and programs for how the College will address sustainability.

### **Conclusion**

Denison clearly has a commitment to sustainability and reducing its impact on the environment by achieving carbon neutrality and striving towards true sustainability. With this plan, we now have a specific, meaningful road map to get there. This plan integrates the ACUPCC-required institutional action plan for climate neutrality into a more comprehensive sustainability plan. It is intended to guide Denison's approach to sustainability in all its operations both on and off campus and to encourage collaboration locally and with other institutions of higher education. This plan is also intended to engage all parts of the Denison community in building a sustainable future.

We believe this plan is a starting point, not the end point. We will continually review progress against our goals and revise our plan as new technologies are developed and the external environment changes. We encourage students, faculty, staff and the broader community to participate in making this plan a reality and welcome feedback and input to this work on an ongoing basis.

## Acknowledgements

Developing a comprehensive sustainability plan for the college was a long and arduous task that took multiple years and the efforts of many people to realize. It is the collective body of work of the following individuals and groups that has resulted in the synthesis of Denison University's first Campus Sustainability Plan. We extend our gratitude to the following members of the Denison community for their time, energy, and support:

### Denison University President

Dr. Dale Knobel

### Campus Sustainability Committee 2011 - 2012

Debra Andreadis - Library  
Marlaine Browning - Academic Events  
Art Chonko - Facilities  
Dr. Annabel Edwards (Chair) - Chemistry  
Eleanor Gates '15 - Student  
Matt Hughes - Registrar  
Nicki Jimenez '12 - Student  
EB Jo '13 - Student  
Jeremy King - Sustainability  
Dr. Erik Klemetti - Geosciences  
Seth Patton - Finance & Management  
Dr. Heather Rhodes - Biology  
Juan Pablo Sarmiento '13 - Student  
Phil Waite - Chemistry

### Sustainability Advisory Groups

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Dr. Susan Garcia – Associate Provost  
Cheryl Johnson - ITS  
Dr. Susan Kanter – Writing Center  
Dr. Jordan Katz - Chemistry  
Cookie Sunkle – The Gilpatrick Center

#### *Operations Group*

Trent Edmunds - ITS  
Aaron Fuleki - ITS  
Steve Gauger – Environmental Health & Safety  
Chris Hardy - Building Services  
Dr. Wes Walter - Physics  
Chelsea White – Annual Fund

*Co-Curricular & Community Group*

Stephanie Agosta – Human Resources  
Mark Anthony Arceno – Multicultural Affairs  
Bill Fox – Residential Education  
Dr. Erin Henshaw - Psychology  
Stephanie Hunt-Theophilus – Entrepreneurship Program  
Heather Johnston Welliver – Academic Support & Enrichment  
Susan Kosling - Dance  
Bradley Pearson – Residential Education  
Paul Pegher – University Communications  
Jing Zhu '12 – Student

*Dining, Purchasing & Transportation Group*

Dennis Aydogan '13 - Student  
John Beckman – Campus Services  
Kristin Busch – Dining Services - Sodexo  
Niles Gebele – Dining Services - Sodexo  
Laurie MacKenzie-Crane – Office Services  
Dr. Anna Nekola – First Year Programs  
David Selby - ITS

**2011 Environmental Studies Junior Practicum Class**

Dr. Olivia Aguilar – Environmental Studies  
Jonathan Akpapunam '13 – Student  
Diana Argueta '13 – Student  
Beth Armitage '13 – Student  
Meredith Burger '13 – Student  
Amber Colburn '13 – Student  
Lia Crosby '13 – Student  
Christopher Economos '13 – Student  
Anna Farrell '13 – Student  
Nick Garafola '13 – Student  
Eunbyeol Jo '13 – Student  
Alana Kaiser '13 – Student  
Sam Kaiser '13 – Student  
Jeff Maier '13 – Student  
Shane Richmond '13 – Student  
Adam Severs '13 – Student  
Melanie Stolp '13 – Student  
Hilary Zdanowski '13 – Student

**Denison Facilities Services Department**

Barb Burgess – Building Services  
Mark Comisford – Grounds & Roads  
Bob Jude – Energy & Construction  
Ken Wiegand – Engineering

### **Past Campus Sustainability Committee Members 2009 – 2011**

Dr. Abram Kaplan – Environmental Studies  
Dr. Andrew McCall (Chair) – Biology  
Dr. Joanna Mitchell – Modern Languages  
Lauren Sabo '11 – Student  
Grace Summers '13 – Student  
Jen Steurer – Administrative Assistant - Alumni Relations  
Scott Walker – Energy & Construction Manager  
Sky Wallin '11 - Student

### **Task Force on Institutional Environmental Policy**

Meredith Atwood '09 - Student  
Art Chonko – Director of Facility Services  
Sarah Grannemann '08 - Student  
Chris Hardy – Building Services  
Dr. Abram Kaplan – Environmental Studies  
Seth Patton – VP of Finance & Management  
Dr. Tom Schultz – Biology

## Appendices

### Additional information from the Sustainability Advisory Groups

*These goals, action steps and items were not included in the final Sustainability Plan for the college, however, their value for historical reference and for their potential for future inclusion, merit their archiving in the appendices of this document.*

#### General Campus Sustainability Goals (Derived from Operations Advisory Group)

- Have an integrated marketing plan for the sustainability plan
- Engage the community in a discussion about how we should prioritize environmental, educational and economic factors when making decisions
- In decisions made by the College, always consider environmental impacts (such as carbon dioxide and sustainability) and educational opportunities, not just economics

#### Action Steps

- In the idea development phase broadly explore all possible options
- Set criteria for how to evaluate the options
- Set baseline for energy use as a basic litmus test of impact of project or purchase
- Require the identification of the least carbon-footprint option for each large decision
- Apply the priorities decided upon by the community when making final decision
- Designate a person on the committees making financial decisions to ensure that sustainability is considered
- Disseminate this information to the community so the evaluation and decision making process is transparent
- Sustainability orientation for first-year students and new faculty and staff to help create a culture of sustainability
- Annual presentation at a General Faculty Meeting about sustainability issues

#### Climate & Energy

Goal – Make buildings as energy-efficient as possible.

Action Steps:

- De-lamp unnecessary lights: Remove excessive lights during building renovations, based on the sustainability coordinator's estimates as to which rooms could function with fewer lights and still have enough light to see sufficiently. The timeline for this initiative is contingent upon future construction projects
- Make sure lights that are on all the time are the most sustainable option, e.g. re-lamp bulbs with LEDs
- Install Daylight Sensors in Academic Buildings. These use photocells to compensate for natural light and dim indoor lighting accordingly
- All new laundry machines should be energy- and water-efficient
- Put controls on vending machines to turn off lights/power when possible
- In the dining halls, replacement equipment should be as efficient as possible
- Overhaul outdated HVAC systems lacking functional controls. (Within 10 years) Currently Denison has fragmented HVAC units in older buildings. By installing efficient central

HVAC systems, Denison could achieve the most economic and energy-efficient HVAC usage over time

- Prioritize HVAC control and handler upgrades in 5, 10, 25 and 50-year plans, including high-efficiency windows and doors, weather stripping, air handlers, HVAC control systems, thermostats, steam piping insulation and replacement
- Allow for on-site system controls that enable individuals to reduce unnecessary or unwanted heating and cooling. (Within 15 years)
- Investigate if we are setting up infrastructure in new/renovated buildings to be adaptable
- Following investigation in first steps, reduce/eliminate domestic hot water in academic buildings
- Install a couple natural gas or hybrid heat pump point-of-use/on-demand heaters in each building for cleaning purposes (within 10 years)
- Dehumidification (basements): Install vapor barriers in basements to inhibit moisture penetration and excess dehumidifier runtime (basements of Admissions and Financial Aid; satellite houses). (Within 5 years)
- Improve temperature controls by floor or room in all residence halls
- Investigate recapturing heat from the top floors down to lower floors in residence halls
- In future infrastructure upgrades, look for passive opportunities for air flows

Goal – Decide how to interact with LEED certification and Energy Star certification for both new and existing buildings. The advisory group discussed the following goals and open questions that we forward to the Sustainability Committee for further discussion.

### **Water**

Action Steps:

- Drinking fountain and water bottle filling station specific replacement goal
- Irrigation metering
- Marking the storm sewers no dumping
- Green roofs
- Research into DU's depletion of the water table
- Develop rain gardens for education and stormwater management, possibly outside smaller buildings such as Gilpatrick and Beth Eden

### **Grounds**

Action Steps:

- Develop specific goals related to native plants, chemical fertilizer and pesticide/herbicide use
- Leave natural areas in a natural state (this is already current practice)

### **Waste**

Action Steps:

- Target per person goals for waste
- Increased number of recycling bins across campus
- Compost bin in Slayter

- Student jobs for recycling sorting or compost managing
- Investigate what is the most effective way for the Denison community to recycle (comingling versus sorted)
- Investigate options for increasing recyclable/compostable containers at Slayter

## **Dining**

### Dining Purchasing

#### Action Steps:

- Increase percentage of locally-sourced food by 5% by 2015; local *and sustainable* doubling current purchases in 5 years
- Purchase milk and cream from local, organic or sustainable source
- Purchase fish from sustainable sources using the Monterey Aquarium Guide to Seafood
- For 75% of purchases to know sustainability and ethical sources—know where it's coming from
- Reduced purchase of processed foods
- Purchase products with minimal packaging
- No GMO foods
- Continue/increase to purchase biodegradable and caustic-free cleaning supplies
- "Food Alliance" standards; definition of "sustainable"; third party verification of labels
- Work with Houston Farms to develop cannery/preservation system so we can get more from them throughout the year
- Add 1 position to facilitate coordinating with local farmers and increasing number of local farms we work with (help to meet the first goal of upping our percentage)
- Partnerships with local businesses that could help source local/sustainable foods
- Build greenhouse to grow more on Denison land (ask Niles for more on this)
- Meeting local farmers through CIFT and local food hub, using their on-site storage

### Dining Preparation

#### Action Steps:

- Adding Pre-prep kitchen to wash and process local foods (get the mud off!)
- Making sure that prep methods minimize water use, waste production via composting
- Anything we make dining halls do we should require of Slayter to the best we can (example of making burger patties in dining halls and then brought to Slayter); improving snack bar (Slayter) to allow for increased on-site preparation

### Dining Behavior

#### Action Steps:

- Create labeling system for use across all campus dining facilities and events (can devise symbols "O" for organic, "L" for local, "FT" for fair trade, "HF" for hormone-free, etc. and create reusable velcro buttons or whatever for menu signs)
- Offer tours of dining facilities for students, faculty, staff to orient them to labeling system, where food comes from, explain what we're proud of, what happens to food waste, where

our leftovers get donated too, etc. Other educational/orienting opportunities so we can educate the community on what we're doing?; Increase education and outreach surrounding issues of local/sustainable foods, composing, social responsibility (e.g. tours, table-tents, showcase local farmers, highlighting certain meals, more interaction with chefs)

- Food/dining has a specific part in new student orientations
- Aligning "choice" of foods with sustainability goals—themed meals, tailor our options for sustainable reasons (has to be *owned* by the university)
- Benefits of making informed decisions on what you eat—health, sustainability, cost
- Develop better website from dining services
- Connecting to fac/staff at end of year when support staff have more time, having meeting for support staff to engage with catering and see what our options are (doing in in January)
- Outreach to purchasing agents; effecting positive change among producers through Denison's purchasing decisions
- How to incentivize behavior a la "Water Wars" for composting, reusable containers, etc.

### Dining Waste

#### Action Steps:

- Incorporate new composting stations into Huffman and Curtis to help facilitate and educate about composting practices
- Recyclable or compostable take-out containers
- Training Sodexo staff on how to reduce waste and be more efficient with resources
- Purchase food pulpers for Curtis and Huffman OR invest in chipper for more efficient composting (do we also need to allocate more land for compost piles?) – Moved to “Waste”
- Install dishwashing facilities in ALL campus dining locations, including any new buildings with snack bar or other food service
- With dishwashing system could now create program of re-usable take-out containers, system can run on deposit basis (make it pricey to incentivize return of containers)

### Dining Data

#### Action Steps:

- Create/find definition of "sustainable" or "local" for our community =>need a task force to decide what "sustainable" means for us? (or via Food Alliance?)
- Dining services creates an annual report (can be online) that provides info for Denison community on what we're doing with our \$. [Sodexo has a tool that uses varying metrics associated with dining services (energy consumption, waste, education, etc.)]
- Want to be able to collect data in such a way as to compare with other schools
- Be aware of food miles. Centralized hubs for products vs. individual suppliers: which reduces our food miles, has a bigger impact

## **Transportation**

#### Action Steps:

- Parking and hookups for electric cars
- Discourage first years from bringing cars to campus

- Priority parking for high-efficiency/mileage vehicles in multiple places on campus for faculty, staff, AND students (as with Lower Campus Lot parking spots for Bryant Arts Center)
- Rideshare website for students for both local/daily and vacation travel (students can post where they want to go, or where they would like riders to travel with them)
- Incentives for students to NOT use their cars (not use very often or within a limit, perhaps could be entered in a drawing for gift certificates for local businesses?)
- Incentives for faculty to walk, bike, other non-motorized travel
- Can we create a biodiesel vehicle that runs on our own fryer oil
- Enforce/promote the limited- and no-idling policy that's already in place
- Charge for student shuttles (or will only go if a minimum are riding). See also cost offsets via raising student parking fees in next section
- Discouraging student parking on West College, Broadway, Mulberry: can we ask the Village to regulate parking time? Idea: residents/faculty can park unlimited with permit and all other parking is two-hour or one-hour only before 5pm (to allow for parking for music/Suzuki parents and after hours arts events)
- Do we have our own fuel depot on campus? Can we get E85 for campus or at a local filling station?

### **Purchasing**

#### Non-dining purchasing/waste procedures

##### Action Steps:

- Getting more sustainability themed components in the general op guide and doing training. (Like harassment course? Staff and faculty take an online course?)
- Set some guidelines for purchasing within the Ohio 5
- Seek items and sources that use less packing materials
- Comprehensive assessment of campus purchasing to identify opportunities for conservation (where are we buying, are we duplicating purchases) A student project? Need more training on this
- Needs to be an online database of campus surplus (better inventorying of surplus items)
- Need approval for use of gift funds? Push them through a system
- Can we measure quantities of recycling vs. waste from different departments and offices around campus? Like water wars, trying to teach good habits

### **Co-Curricular and Community**

#### Co-Curricular

- Create student sustainability education programs
- Create residence hall fellows program to further sustainability communications among/to students.
- Utilize communications resources to combine campus groups to create a broader message that will streamline number of events, allow groups to combine events and open up communications between groups
- One date/one event (helps communicate more broadly, efficiently)

- Provide training for advisors to student organizations that would clarify their role. Include messages like how to help students communicate with other groups, how to prevent over programming; provide guidelines for advisors (initial meeting questions- what is it you need from me; how can I help you); 5 questions to ask your advisee group, (Ex. do you know how to use OrgSync.)
- Have faculty advisor meetings to communicate plans that would: facilitate collaboration and communication between student groups; facilitate collaboration and communication between academic departments
- Dedicate weeks to a certain topic and all activities pertaining to this would happen that week, i.e., Mental Health Awareness Week, Earth Week, Love your Body Week (EDIT' group), etc.
- Incorporate a sustainability officer/leadership role within DCGA
- Hold a sustainability summit for all groups

### Diversity & Affordability

- Develop ways to measure the success of Denison's diversity and sustainability initiatives to determine the programs' effectiveness
- Collect and analyze Denison's employee and student retention rates
- Develop programs to support minority students at Denison
- Develop programs to support students with disabilities at Denison
- Develop support group for 1st generation students (or all students in need); create a working group of faculty to help support them; provide registration help; have skills workshops on note taking, time management, etc
- Create a program that teaches students academic skills, with special attention to reading and writing at a collegiate level
- Provide more affordable faculty/staff housing and strengthen current execution of this program; Provide Career Services support for faculty and support staff spouses – formalize it (possibly using outside service). Analyze and adjust pay rates
- Launch programs to encourage collaboration and build bridges between diversity groups- 4 main groups – religious, racial, Greek, athletics. Involve DCGA; hold an annual campus-wide team-building event with a sustainability theme; thoughts:
  1. Oberlin (last April) had a campus wide event – Fri night dinner, Sat. all day
  2. Do something shorter and away from the lecture based model – experiential/embodied/hands-on
- Identify all sustainability-focused campus organizations and hold voluntary events (e.g., annual pre-budget collaboration retreat) to facilitate collaborations

### Human Resources

- Conduct a periodic assessment of employee satisfaction. Include questions about wage/benefits including childcare, health care, and grievances. Data is reported back to HR, PC, and senior staff – it is used to refine and improve on employee benefits. Data is made available upon request (pieces of it) OR a Summary report – strengths/weaknesses would be reviewed
- Increase professional development opportunities for faculty and staff  
Use Listening for a Change as a model– one program that crosses all audiences - good effort

toward community building; Women Making Decisions – so popular and good way to talk to women of all levels re: how approach professionalism

- Evaluate Denison's effectiveness in providing living wages to all employees.
- Conduct a thorough review of employment practices at Denison examining the sustainability of employee retention based on university compensation plans and their disparity across all institutional pay grades with the goal of increasing retention.

### Public Engagement

- Develop programs to more consistently track student service hours to see where the behavior is happening, i.e. Students making good connections

Goal – By 2020, 100% of Denison students will be engaged in community service.

Action step:

- Create a tiered program to benchmark community service per grade level (i.e. First years complete x hours/semester; 2nd year – incrementally more hours and attend sustainability forum; 4th year –capstone project = certification/distinction)
- Create a Community fellows program for sustainability  
Note: Goal in not to add one more thing they have to do; instead it is to capture what they already do? Make it reasonable and include depth of experience. Not a competition; don't want to add more to their plate
- Create a student web page (service opportunities, testimonials, etc.)

Goal – Increase communication and collaboration among all sustainability related groups.

Action Step:

- Provide access to fresh, healthy foods on campus (PEAS, community garden, HS garden, Farmer's Market, The Works)
- Provide/sell reusable water bottles and work to eliminate the use of disposable water bottles
- Provide motivator that encourages regular participation (i.e., enhanced planning funds)
- Include Alfred Center as a partner – who is doing outreach on campus? Gear these messages to all involved and have a summit at the beginning of the year

Goal – Investigate participation in fair labor organizations

Action Step:

- Establish a fair trade products section and/or storefront in the Denison bookstore

Goal – Increase awareness of small enterprise

Action Step:

- Hold an event featuring the venture fund (grant writing)– show examples of entrepreneurs doing this work; invite guest speakers

Goal – Create a sustainability education module that would be recorded on transcripts

Goal – Institutionalize sustainability training for faculty and staff that moves beyond the idea of sustainability as a green initiative and provides application steps for sustainable practices in the work place

Action Step: Have a class for faculty and staff, which covers sustainable work place practices