



# Drew University's Climate Action Plan

September 2010

## The Presidents' Climate Commitment

Drew University is deeply concerned about the unprecedented scale and speed of climate change and its potential for large-scale, adverse health, social, economic and ecological effects. Through its long-term commitment to sustainability, Drew University is helping to transform the current climate crisis from a challenge to an opportunity. In January 2008, Drew University President Robert Weisbuch joined college and university presidents across the country in signing *The Presidents' Climate Commitment*. In doing so Drew University committed to neutralize greenhouse gas emissions associated with university activities and accelerate the research and education needed to minimize anthropogenic climate change.

Through *The Presidents' Climate Commitment*, Drew University models the commitment to civic engagement and responsible global citizenship central to its mission statement. Confronting the challenges of sustainability across the curriculum enhances Drew University's efforts to provide an engaged and socially relevant education. By developing and implementing a comprehensive plan for carbon neutrality, and involving faculty, staff, and students in the process, Drew University helps to create engaged and responsible citizens intellectually prepared to meet the challenges of climate change. Drew University's commitment to carbon neutrality will augment student, faculty and staff recruitment, community and governmental support, and educational and research capabilities. It will also reduce and stabilize operating costs, an increasingly important issue in the current financial climate. Lastly, by taking tangible steps to combat climate change, and being publically accountable for our decisions, Drew University will become a regional leader in the stewardship of natural resources. In joining *The Presidents' Climate Commitment*, Drew University pledged to develop and implement a comprehensive plan that includes:

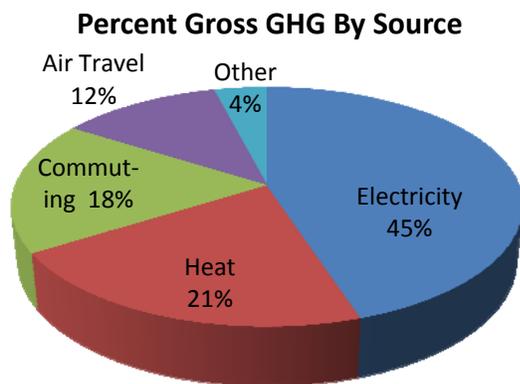
- An annual greenhouse gas inventory of the school;
- The establishment of a timeline leading to carbon neutrality;
- Two or more short-term "tangible actions" that begin to address the issue of climate change;
- The enhancement of sustainability issue in the curriculum; and
- Sharing plans and progress reports in an effort to facilitate progress at other institutions.

# Drew University's Greenhouse Gas Emissions

## I. Current Emissions: 2008 GHG Inventory.

According to the 2008 greenhouse gas (GHG) inventory, Drew University was responsible for the emission of **19,432 metric tons of CO<sub>2</sub> equivalent greenhouse gases (CO<sub>2</sub>e)**. This corresponds to 8.3 metric tons CO<sub>2</sub>e per full-time-equivalent student. (See Appendix A for GHG inventory methodology.) This value is 37% higher than the average of several peer institutions.<sup>1</sup> For comparison, per capita US and world averages are 19 and 4.4 metric tons CO<sub>2</sub>, respectively.

The greenhouse gas inventory includes fuel and electricity to heat and power buildings, fuel for running the university fleet, landfill waste, and travel. In terms of specific sources, emissions are attributed to electricity (45%), heat (21%), commuting of faculty, staff and students (18%), student air travel (9%), faculty and staff air travel (3%), and other (4%).



Drew University's greenhouse gases emissions depend on: (1) the number of people on campus; (2) the number of buildings; (3) the complexity of equipment and services provided; (4) the efficiency of the equipment using electricity, producing hot water, and generating heat; and (5) the particular fuels burned to generate electricity off-campus and provide heat and hot water on campus.

It is possible, even likely, that Drew's GHG emissions will rise due to the fulfillment of existing goals and future plans. In particular, President Weisbuch has

announced a 20% growth goal for the number of students in the College of Liberal Arts and growth of the Casperson School of Graduate Studies by the establishment of new Master's level programs. It is expected that this growth in students along with the addition of faculty and staff will result in additional emissions from electricity, travel and commuting. There are current plans for major renovations of both the University Center and Hall of Sciences, though it is expected that energy efficiency and other green features will limit any increases in building emissions. In addition, increasing demands for services may also increase energy use and hence emissions. A notable example of this over the past decade has been increasing demand for information technology services.

Since the GHG inventory was conducted in 2008, growth factors include the addition of McLendon Hall (Drew's L.E.E.D. Silver residence hall) and re-occupation of Asbury Hall in 2010-2011. Although Drew's emissions rose to 20,718 metric tons CO<sub>2</sub>e in 2009 and could continue to rise in 2010, *we have defined our goals in absolute terms relative to the 2008 GHG inventory*. Greenhouse gas inventories will be conducted annually to track emissions in terms of absolute metrics of tons emitted, relative metrics of emissions per FTE community member, and emissions per square foot of buildings. However, we will measure our progress reducing greenhouse gas emissions in terms of absolute reductions of greenhouse gas emissions.

***Drew University aims to reach carbon neutrality by 2035.***

## II. The Goal: Carbon Neutral.

The overall aim of *The Presidents' Climate Commitment* is for each signatory college and university to become carbon neutral as soon as is feasible. This entails (1) reducing greenhouse gas emissions as much as possible and (2) compensating for the remaining greenhouse gas emissions through the use of offsets. The ways in which we intend to achieve these goals are explained in the following sections.

<sup>1</sup> Comparison based on energy audits made public by Bard, Dickenson, Gettysburg, Union, and Ursinus Colleges.

Our goals are set with reference to the 2008 GHG inventory, in terms of absolute reductions of tons of greenhouse gas emissions. These goals are modeled on the New Jersey state greenhouse reduction goals.

**Table 1. Target GHG Reductions.**

Year	Cumulative Reduction of GHG	% of Remaining Emissions to be Offset
2015	20%	0%
2020	35%	25%
2025	50%	50%
2030	65%	75%
2035	80%	100%

Achieving a 20% reduction in 4-5 years is ambitious but feasible given the recommendations in the Drew University Energy Assessment discussed below. The intention of the 2025 and 2035 targets, for example, is that Drew reduces greenhouse gas emissions by 50% and 80% respectively. The intention is also that by 2025, 50% of remaining emissions in that year will be offset. If Drew does not achieve a 50% reduction of emissions by 2025, it will need to offset a larger amount of emissions. By 2035, 100% of remaining emissions would be offset and Drew University will achieve carbon neutrality.

### III. Understanding Carbon Offsets.

Although we should emphasize actual reductions of GHG, offsets will be required to become carbon neutral. We understand offsets to be any purchased reductions of GHG emissions off the Drew University campus. Conventionally, there are three types of offsets: (1) those purchased from vendors, (2) carbon emissions certificates sold on markets such as the Chicago Climate Exchange, and (3) offset projects that are entered into directly with a partnering organization. A fourth option is green power - the option to purchase renewable energy (i.e., lower carbon emission) from our electricity provider. Although this is not technically an offset, it does have two similar attributes: it is available for an additional cost and its sole benefit to the purchaser is its impact on emissions.

Offsets may be purchased from companies, such as Terrapass, that reduce greenhouse gas emissions by reforesting land or replacing coal-fired electricity generation with other low carbon sources. Certificates on carbon markets represent the reduction of greenhouse gas emissions by a power plant or other emitter. Partnered offsets are arrangements where a university provides funding and perhaps some technical expertise to a NGO or local government which creates a project that sequesters carbon or provides renewable electricity. All of these “offset” options would entail a cost to Drew that provides an important benefit: the offsetting of greenhouse gases still being emitted by Drew directly or indirectly. Unlike expenditures that directly reduce emissions by increasing efficiency or reducing wasted energy, neither offsets nor green power purchases have the benefit of reducing operating costs.

Offsets offer a problematic solution to Drew University’s greenhouse gas emissions. First, both the spirit and letter of the Presidents’ Climate Commitment require member institutions to reduce their own greenhouse gas emissions and to use offsets only for what emissions cannot be eliminated. Second, there is the question of how the bodies selling the offsets have reduced emissions. We believe emission reductions associated with offsets must be attained in a socially and environmentally responsible manner. Finally, there is the financial issue as commercial offsets range in price from \$10 - \$100 per ton.

The climate reduction goals specified above do not include offsets in the first target year for three reasons. First, we do not wish to undermine the campus effort to reduce emissions. Second, offsets only counter emissions and do not provide other financial benefits to the university. In light of recent large increases in electricity rates, reducing emissions by cutting waste energy and increasing efficiency is a much better expenditure than purchasing offsets. Finally, the markets for offsets are evolving. Careful research is needed to determine which of the three types of offsets best fits the environmental goals and moral, social, and reliability concerns of Drew University. This research should be undertaken and a clear offset policy should be developed in the next three years.

# Drew University's Climate Action Plan Summary

## IV. Improving Energy Efficiency: Heating, Electricity & Purchasing.

Heating and electricity account for the largest source of Drew University's GHG emissions (66%) and offer the greatest opportunities for reducing emissions. (See Appendix B for complete Energy Report.)

### 4.1. Existing Situation at Drew.

Drew's central heating plant, which primarily burns natural gas, produces heat and hot water for 12 buildings on campus. Several additional mini-plants, which also burn natural gas, heat two or three buildings each. A geo-thermal field provides ~40% of the heating and all of the cooling requirements for McLendon Hall. The remaining buildings on campus - many of which were once private homes - have individual heating and hot water equipment. For cooling, this last group uses window air conditioner units, a highly inefficient system. Drew University purchases electricity from the Borough of Madison and does not have control over the fuel mix used to generate the electricity.

### 4.2. Proposal for Improving Efficiency.

A Drew University Energy Assessment was completed in March 2010. This assessment will provide the basis for the first round of greenhouse gas emission reductions from electricity and heating until an energy master plan can be developed. [This process of developing an energy master plan is currently in its initial phase.] The Assessment offers a three-part program for reducing both energy costs and greenhouse gas emissions, primarily from conservation and increased efficiency. Implementation of this plan will be accomplished through an energy management contract.

**Phase I:** Short-term optimization program estimated to reduce emissions by 635 metric tons CO<sub>2</sub>e, cutting building electrical use by 603,248 kwh with a payback period of 0.4 years. Energy conservation measures include changing operating set points, optimizing boiler plant energy, deactivating systems based on outside ambient temperatures, holiday curtailment policies, etc.

**Phase II:** Long-term optimization program estimated to reduce emissions by 1881 metric tons, lowering building electric use by 3,027,100 kwh with a payback period of 2.7 years. This phase continues optimization programs, installs new controls, increases or replaces insulation, deactivates boilers and chillers when not needed, incorporates additional reset strategies, etc. It also includes student and staff awareness programs, new power management software, replacement of fluorescent exit signs, upgrading lighting fixtures and building energy awareness into the curriculum.

**Phase III:** Long-term capital investment, which if fully implemented, is estimated to reduce emissions by 2,146 metric tons, cutting electricity consumption by 3,315,314 kwh with a payback period of 13.2 years. This phase involves replacement of equipment such as chillers, hot water heaters, solar hot water heating for the swimming pool, heat recovery coils, and boilers with more energy efficient models. It also includes replacement of windows, installation of window film and insulation, solar heating of the swimming pool, further upgrades of lighting and of building management systems.

Together, these actions would reduce emissions by an estimated 4,662 metric tons CO<sub>2</sub>e or 24% of Drew's 2008 emissions.

### 4.3. Energy Efficient Purchasing Policy.

Stand alone electrical equipment (i.e., equipment plugged into electrical outlets) accounts for at least 20-25% of the electricity consumption associated with campus buildings. To reduce unnecessary electricity consumption, Drew will purchase the most energy efficient appliances, equipment and machinery possible, while ensuring that it performs well for intended uses. Towards this aim, Drew will adopt an Energy Star Purchasing Policy as one of our short-term tangible actions. (See Appendix B, Section B.4 for complete policy.)

## V. Buildings & Renovations.

Drew University recognizes that responsible design should minimize the environmental impact and lifetime operational costs of University owned buildings. Building designs that are environmentally responsible promote energy efficiency, land stewardship and resource conservation, which, in turn, preserve the natural resources of the Drew community and the surrounding region. Financially, building design that incorporates life-cycle cost analysis is important to responsible long-term fiscal planning for the University.

The adoption of Drew University Environmentally Responsible Building Guidelines as official University Policy will minimize the carbon footprints of new buildings and major building renovations on campus. Key guidelines of this policy include:

- Require that all new construction is built to LEED Silver standard or equivalent;
- Evaluate each building project individually for pursuing LEED ratings beyond the “silver” level;
- Include an architect on the design team with environmentally responsible design experience and are LEED Accredited Professionals;
- Evaluate a building’s lifecycle costs in addition to initial construction costs;
- Use resource conservation technology to improve water and energy efficiency beyond industry baseline.
- Present for consideration, building features which reduce environmental impact even if they have no economic payback.

Energy conservation should be looked at as a priority and the project team should strive to exceed LEED Silver standards in this area. (See Appendix C for complete Environmentally Responsible Building Guidelines.)

## VI. Transportation.

In 2008, emissions from transportation accounted for 31% of the total Drew emissions including: faculty, staff, and student commuting (18%), air travel for study abroad (9%), faculty and staff conference travel (3%), and campus fleet vehicle emissions (1%).

Recent reductions in campus fleet emissions were achieved by replacing old vehicles with electric vehicles and instituting a no idling policy. Emissions associated with commuting, study abroad and conferences, on the other hand, present major challenges that will require long-term strategies and are therefore a secondary priority of this first Climate Action Plan. We should, however, begin to research long-term options including, but not limited to: expanded pre-tax transit options to encourage further use of public transportation; video conferencing technologies to reduce faculty, staff, and trustee air travel; subsidies to support faculty and staff purchasing homes in Madison to reduce commuting emissions; and incentives for faculty, staff, and student ride sharing. New efficiency technologies, such as hybrid and electric vehicles, and new federal CAFÉ standards will also impact future emissions. Nonetheless, carbon offsets will be required to completely address transportation emissions. (See Appendix D for complete Transportation Report.)

## VII. Other GHG Reductions.

Emissions associated with food service, waste management and grounds represent approximately 3% of Drew’s total emissions and are thus considered a secondary priority in this first Climate Action Plan.

**Food Service:** Aramark food service has made strides in reducing energy consumption and waste by eliminating trays and reducing use of paper products. Energy efficiency has been considered when purchasing new equipment, and efforts to locally source food and support organic agriculture have also been undertaken. Additional areas include: composting food waste, reduction or elimination of disposable beverage containers (e.g., water bottles), further investment in compostable cutlery and plates, and ways to increase energy efficiency of food/coffee carts on campus.

**Waste Management:** Drew should strive for 100% recycling of all recyclable products in the waste stream and should explore ways to reduce the amount of trash produced. For example, CNS is investigating the use of bulk packaging for student computers, which would reduce the amount of cardboard. Purchasing should seek out innovative manufacturers and distributors who

reduce the amount of disposable packaging needed, and ensure that any necessary packaging is recyclable.

**Grounds:** The Facilities crew currently composts or recycles most landscaping waste. Efforts should be made to eliminate 2-cycle engines and replace them with more efficient engines or manual processes.

## VIII. Building a Culture of Sustainability.

Developing a culture of sustainability at Drew University is crucial to our Climate Action Plan goals. A culture of sustainability will support Drew University's commitment to carbon neutrality. Drew University will foster this culture of sustainability through the following recommendations:

- Incorporate sustainability in Drew's revised Mission Statement;
- Increase communication and coordination among faculty, staff, and students across the University;
- Expand the environmental offerings of the Drew International Seminars and Theological School cross-cultural trips and expand Drew's study abroad programs with environmental studies components;
- Continue to expand the course offerings and integration in the curricula across the schools;
- Review the institutional policies that contribute structural restraints to behavior;
- Consider a student-led initiative to institute an undergraduate environmental honor code;
- Consider the long-term potential of adding a sustainability requirement to the College of Liberal Arts' general education requirements.

(See Appendix E for the complete Education Report.)

*A culture of sustainability will support  
Drew University's commitment  
to carbon neutrality.*

## IX. Financial Considerations.

The proposals discussed above that are designed to reduce or offset Drew's greenhouse gas emissions have a price tag. The major categories of costs are: the short and long term energy optimization programs, an energy management contract, the long terms energy capital management program, the slightly higher construction costs of green building, possibly higher prices for Energy Star products, and – in the future – the costs of purchased green power or offsets.

However, many of the proposals will have financial benefits of reducing energy costs and operating expenditures. Some may also have benefits through greater productivity and reduced illness due to better air quality, more appropriate temperature settings, and increased day-lighting (in new buildings) as is noted in the literature on green building. In addition, this thorough and comprehensive program will continue to enhance Drew University's reputation and position as an innovator in sustainability on campus and in environmental and sustainability education.

While the proposals will have these benefits, they will have some net costs, particularly the deeper the cuts in emissions and the greater the percentage of remaining emissions which are offset. All financing options for the proposed changes should be explored, including grants and subsidies, the deferred maintenance budget, the capital campaign, targeted development efforts, and other corporate, non-governmental and governmental support.

Many universities have found that a revolving energy efficiency fund is an effective way to finance a significant education in energy consumption over time. In effect, a fund with a given starting level of capital is established to reduce energy waste and increasing energy efficiency via proposals such as those in the Energy and Transportation sections above. Some or all of the savings from reduced energy consumption are then used to replenish the fund on a continuing basis.

## Recommendations for Implementation

To ensure that the Climate Action Plan is fully implemented and meets the emission targets discussed above, the following should be done in addition to the specific implementation proposals outlined above.

- The President of the University should meet annually with administrators, the Sustainability Coordinator, and the Sustainability Committee to review progress in meeting emission targets.
- The relevant committee(s) of the Board of Trustees should review progress annually.
- The Climate Action Plan should be reviewed biannually and revised accordingly to ensure that emission targets are achieved.
- The Climate Action Plan should become part of fund-raising efforts on consistent basis and a green fund should be established to support energy efficient upgrades and green building and renovations.
- An on-going group should meet regularly to discuss the financial aspects of implementing the Climate Action Plan. This group should have representatives from the office of the Vice President of Administration and University Relations, the office of the Vice President of Finance and Business Affairs, Facilities Services, the Sustainability Committee, and the Socially Responsible Investments Committee. This group should examine financial aspects of offsets and green power, as well as collecting information on available grants and other outside support for the Climate Action Plan.
- The Sustainability Committee should communicate progress toward meeting the Climate Action Plan's goals to students, staff, faculty, trustees, administrators, alumni/ae and stakeholders off-campus (e.g., the local community, environmental groups). The intention will be to get the greatest possible "buy-in" and participation in reaching our emissions reduction goals.
- Once the Climate Action Plan has been accepted by the Board of Trustees, the Sustainability Committee should consider what structure and connections to other groups on campus will best facilitate full implementation of the Plan. This will involve considering the best way to work with the faculties, student government organizations and environmental organizations of all three schools as well as administration, staff, trustees and alumni.

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Supporting information may be found in the following documents at [www.drew.edu/sustainability](http://www.drew.edu/sustainability)

[Appendix A: Greenhouse Gas Inventory Methodology](#)

[Appendix B: Energy Report – Electricity, Heating & Purchasing](#)

[Appendix C: Environmentally Responsible Building Guidelines](#)

[Appendix D: Transportation Report](#)

[Appendix E: Education Report – Building a Culture of Sustainability](#)

[Appendix F: The Scientific Basis of Climate Change](#)

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