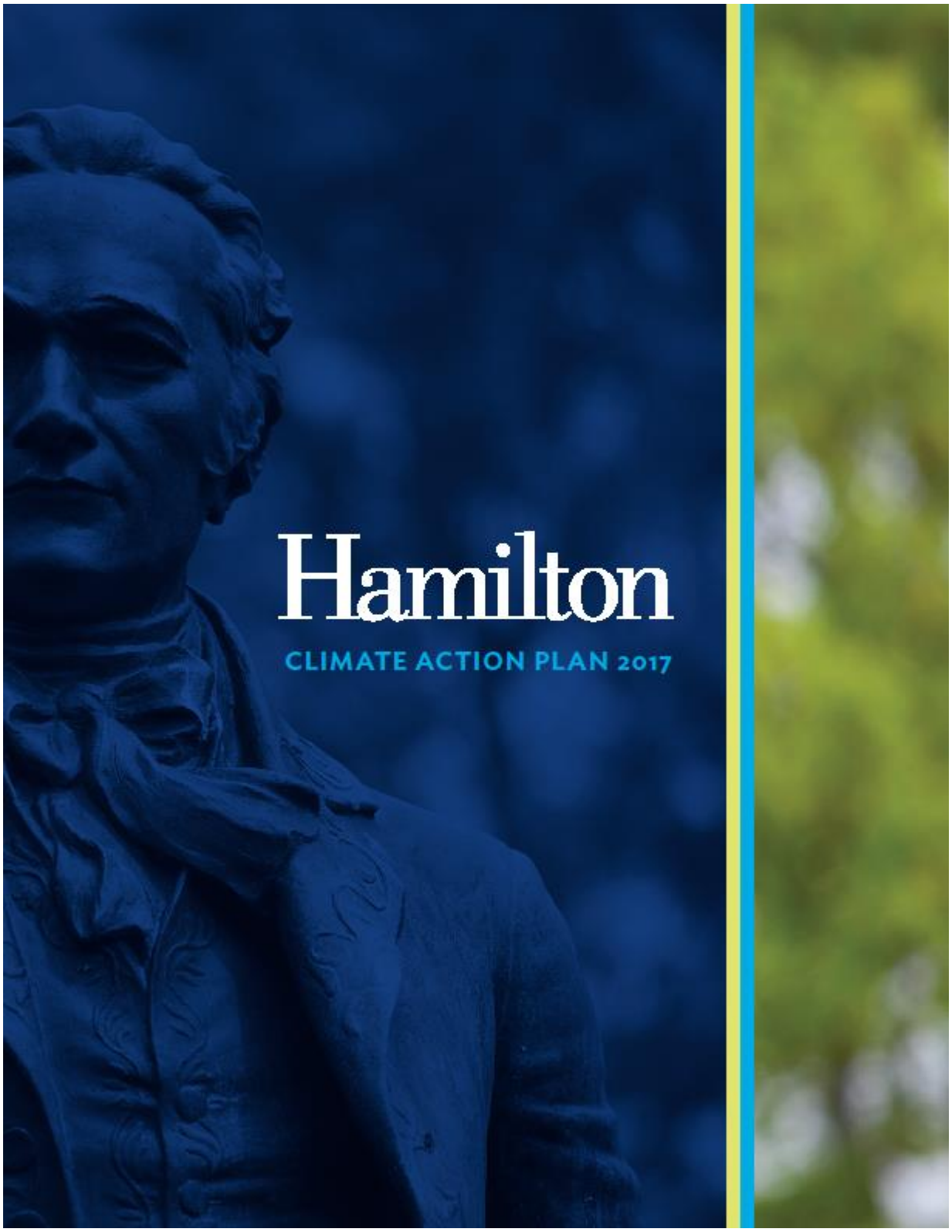
Hamilton
CLIMATE ACTION PLAN 2017

HAMILTON CLIMATE ACTION PLAN

CLIMATE ACTION PLAN

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EXECUTIVE SUMMARY

Hamilton's Climate Action Plan provides a framework for reducing carbon emissions with the ultimate goal of being carbon neutral. Interim goals include reducing Hamilton's 2007 baseline carbon inventory 20 percent by 2015, subsequent reductions of 20 percent every ten years for an 80 percent reduction by 2045, and carbon neutrality by 2050. As noted by a member of Hamilton's Green Team, this plan should be considered an "adaptable response"[1] to the environmental concerns we face. The plan should be modified and updated as our experience grows and technology develops.

The Climate Action Plan establishes baseline renovation and construction standards, including energy consumption targets. It also outlines heating and cooling guidelines for facility operations, purchasing polices for appliances and equipment, renewable energy investments that are planned, and strategies for recycling, transportation and conservation.

Education efforts are also discussed. Education efforts are aimed at sending Hamilton students out into the world to serve as knowledgeable and responsible citizens engaged with the environment.

INTRODUCTION

Hamilton College prepares young people to be active contributors to the modern world. To that end the College educates students to consider the impact of their decisions on the earth's climate and resources. Hamilton's residential environment promotes learning through all aspects of students' lives. The classroom for sustainability includes traditional classes and laboratories, campus-wide programs and actions, and efforts in the surrounding central New York community.

Hamilton College has been a leader in sustainable concerns for many years. Founded as the Hamilton-Oneida Academy in 1793 and formally chartered in 1812, the College is the third oldest institution of higher learning in New York State. Hamilton has been committed to environmental stewardship on its beautiful and historic hilltop campus for over 200 years. In 2007, under the leadership of President Joan Hinde Stewart, Hamilton joined the American College and University Presidents' Climate Commitment (ACUPCC). The Hamilton College Sustainability Committee, also known as the "Green Team," was formed at that time and charged with forwarding the College's sustainability efforts.

[1] E. Williams, 2009.

This Climate Action Plan is a collaborative effort that includes faculty, staff, trustees and current and former students. A Hamilton alumni group, Graduates for a Greener Hamilton (GGH), was an instrumental voice in the College's decision to sign the commitment and has representation on the Green Team. Current students have played a vital role by participating on Green Team subcommittees and writing portions of the Green House Gas Emissions Summary Report for the ACUPCC. In the coming years, current and former students will be instrumental in furthering the commitment, its various tangible actions, and the goal of carbon neutrality.

Hamilton College is committed to being a role model for positive climate action by becoming climate neutral over time. Environmental education and stewardship will continue to be a priority. Students, faculty and staff at Hamilton College will work to protect and sustain a healthy environment through institutional processes, management of facilities and educational activities.

Information about sustainability activities at Hamilton can be found here: http://www.hamilton.edu/campuslife/sustainability

GREEN TEAM GOALS

The committee is charged with recommending programs and actions that achieve tangible progress toward community education and climate neutrality. This commitment extends from greenhouse gas reduction to pollution prevention and resource conservation. To fulfill its commitment, the Green Team established these goals:

- Reduce Hamilton College's carbon emission 40% by the year 2025. Hamilton College will reduce its energy consumption and pursue the development and use of renewable energy sources. The goal is to achieve climate neutrality by 2050.
- Develop programs to raise awareness and encourage conservation by all members of the community. Provide tools and incentives for conservation efforts.
- Continue to use Leadership in Energy and Environmental Design (LEED) guidelines for design in new construction and major renovations.
- Use space efficiently to minimize the size of the physical plant and its consequent energy consumption

- Ensure that the College's academic and non-academic practices and processes minimize the use of hazardous materials and the production of hazardous waste.
- Continuously improve Hamilton's recycling program.
- Emphasize and support the procurement of local products, encourage the development of local resources and reduce transportation emissions.
- Focus procurement on products that contribute to sustainability, including those products that are energy efficient, made with recycled content, and have the capacity to be recycled when their use has ended.
- Manage the Hamilton College Arboretum, forest and other landholdings to maximize their potential to store carbon, while ensuring their health, sustainability and contribution to the educational mission.
- Support and encourage curricular programming for environmental education.

CAMPUS EMISSIONS

Hamilton completed its first carbon inventory in 2007, which captured emission data back to 2000. In 2007, Hamilton's baseline carbon inventory was 25,042 net metric tons of carbon dioxide emissions annually. By 2009, as a result of ongoing sustainability efforts, Hamilton reduced its carbon output approximately 24.5 percent to 18,870 net metric tons. The net emissions for 2016 dropped to 13,765 metric tons, 8 percent below Hamilton's 2025 goal.

Seventy-two percent of Hamilton's greenhouse gas production continues to be attributable to its facilities' electrical and heating fuel use, while 12 percent is the result of solid waste disposal. (See Figure 1 for individual source emissions – data represents gross tonnage.)

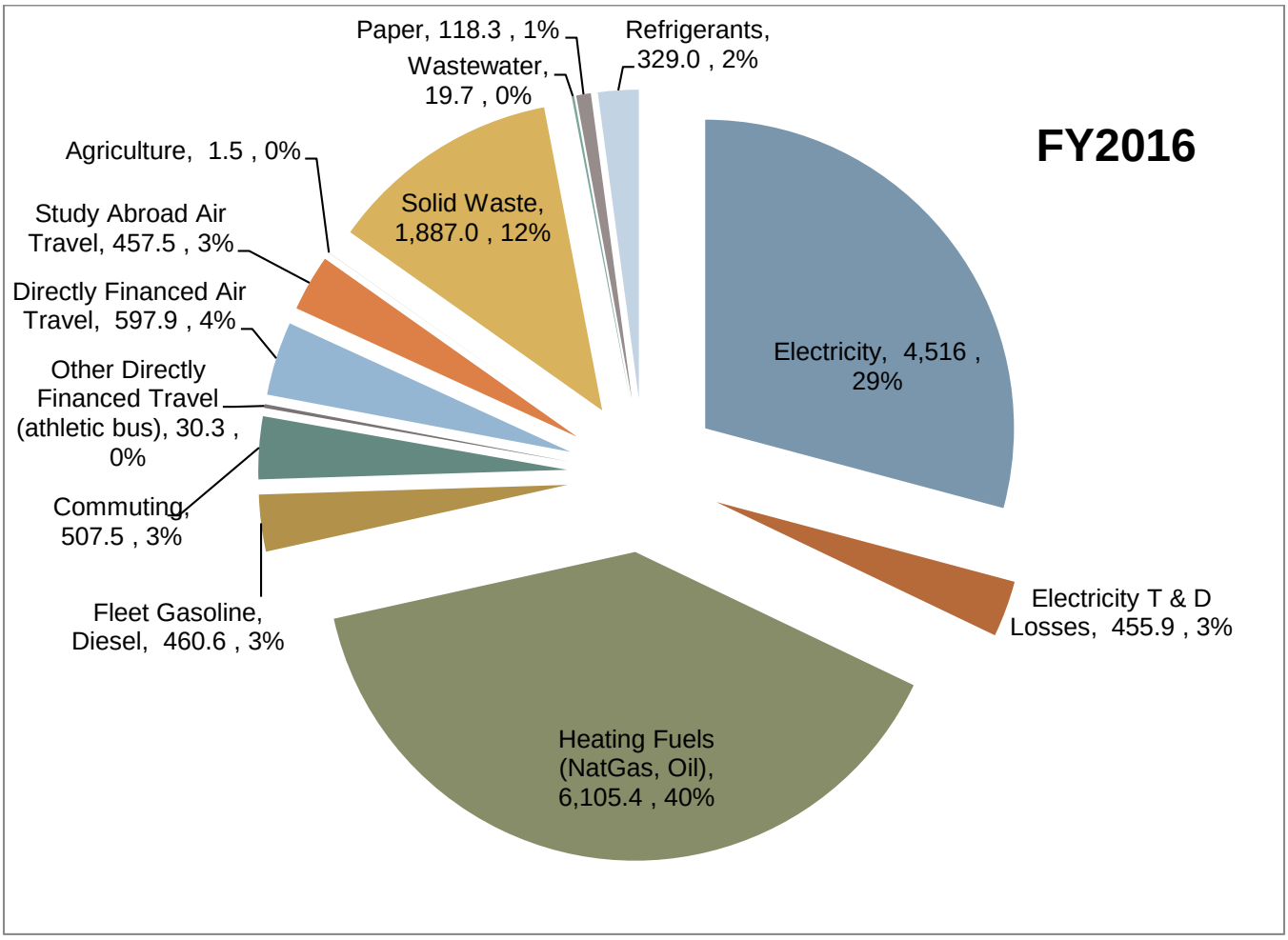

Figure 1: Distribution of Carbon Emissions at Hamilton

To make significant strides in reducing its emissions, Hamilton must work across a broad front: improving the energy efficiency of its facilities, creating strong conservation programs, and developing opportunities to employ emerging technologies. While energy reduction is paramount, Hamilton also strives to be a good steward of the environment by managing and sustaining environmental programs currently in place.

ZERO EMISSION GOAL

The long term goal for Hamilton College is to be carbon neutral. Interim goals, measured from the baseline year of 2007, have been established to help the College move toward climate neutrality.

- FY2015: 20 percent reduction (20,000 MTCO2e)
- FY2025: 40 percent reduction (15,000 MTCO2e)
- FY2035: 60 percent reduction (10,000 MTCO2e)
- FY2045: 80 percent reduction (5,000 MTCO2e)
- FY2050: Carbon Neutral

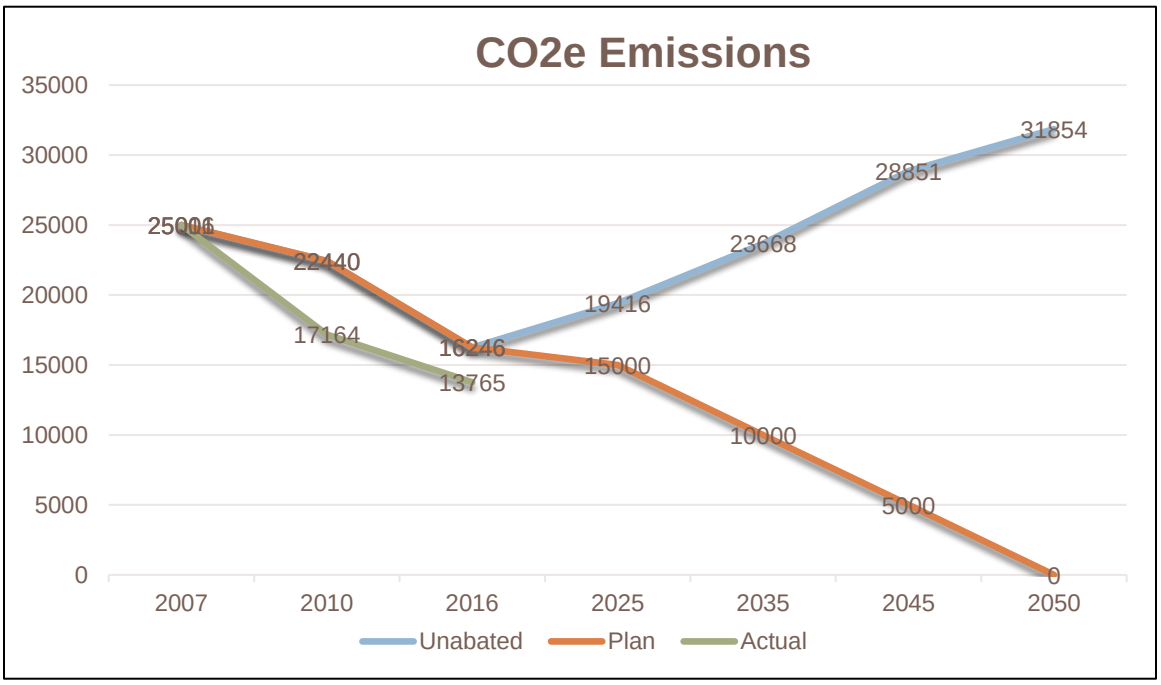

Figure 2: Projected Carbon Emission Level for Hamilton with and without Climate Action Plan

The actions needed to achieve the reductions planned through 2025 are outlined in this report. Plans beyond that timeframe will be developed as technology evolves. The primary strategies employed to make reductions are two-fold: affirmation and implementation of policies that encourage conservation and result in energy efficiency, and physical improvement of buildings and equipment that result in less energy being consumed.

The focus of this plan is to concentrate resources directly on reducing the College's carbon footprint by implementing tangible actions on campus.

GREEN POLICIES

Implementing green actions has been a customary practice at Hamilton. Recycling programs were implemented in 1991; the Science Center employed efficient geothermal heating and cooling, Skenandoa House was the first historic building in New York State to achieve LEED[2] Silver Certification, and wind and solar energy sources have been implemented for Kirner-Johnson and the Outdoor Leadership Center. A campus landscape master plan, implemented in 2002, mandates a "pedestrian campus" to reduce vehicular traffic, minimize expansion of parking lots and reduce unnecessary fuel consumption.

Hamilton purchased its first renewable energy in July 2004 for the newly renovated Skenandoa House. Hamilton expanded its purchase of renewable energy credits to 6.2 million kilowatt hours in FY2010. These values include 100 percent green power for Skenandoa House, the Kirner-Johnson Building and the Sadove Student Center. The purchase of carbon offsets will be reviewed at each milestone date.

FACILITIES

In support of the American College and University Presidents' Climate Commitment, Hamilton College has implemented a green building policy: Hamilton will design and construct to the Silver LEED standards developed by the U.S. Green Building Council. Hamilton College has three LEED certified buildings (Skenandoa – Silver 2006, Kirner-Johnson – Gold 2009, Sadove Student Center – Gold 2010). The decision to pursue actual certification will be made on a project-by-project basis.

Hamilton's Physical Plant maintenance practices are consistently reviewed and modified to develop best practices for operations that are environmentally sensitive and have minimal impact on the environment. The priority is to reduce or eliminate damage to the environment, assist in reducing Hamilton's direct and indirect carbon emissions, and reduce our energy consumption with engineering practices and conservation measures.

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[2] LEED refers to the Leadership in Energy and Environmental Design certification system sponsored by the U.S. Green Building Council. Additional information is available at www.usgbc.org

Hazardous materials are not a direct contributor to global warming, but they have a major impact on the environment. If not used and disposed of correctly, these products directly influence our personal wellbeing and are extremely harmful to nature. Hamilton has developed an aggressive program to manage hazardous materials and the waste generated from their use. The College will seek to minimize the use of hazardous materials in all its operations to reduce the production and disposal of hazardous waste.

Hamilton College has used sustainable practices throughout its history. These include use of local products such as stone for its buildings and reuse of its buildings through thoughtful renovations. In recent years the College has harvested stone from demolished building when possible to reuse in new construction. Management of College buildings and grounds has been sensitive to their impact on the local environment. Hamilton will continue to manage, operate and maintain its facilities and grounds in a manner that supports and enhances the environment locally and globally. Controlling the number and size of buildings on the campus and the amount of pavement reduces the College's carbon footprint and storm water run-off. Hamilton will look to reuse existing space, eliminate excess square footage, and maintain a pedestrian campus to avoid expansion of pavement.

ENERGY STANDARDS

Hamilton's annual energy use in FY2007 was 117,100 British Thermal Unit (btu) per gross square foot. The goal when renovating existing buildings will be to reduce annual average energy consumption to 90,000 btus per gross square foot of space. For new buildings our goal is to achieve a maximum energy usage of 50,000 btus per gross square foot. As of FY2016, Hamilton's average energy use was 101,300 btus per gross square foot. Recently renovated buildings have lower energy use per square foot (Morris House, 100,000 btu/gsf to 88,000 btu/gsf, McIntosh Residence Hall 92,000 to 72,000) and two recently constructed facilities have not achieved 50,000, but have come below or at 90,000 (Kennedy Theatre and Studio Arts-85,000 and Wellin Museum-90,000).

Whenever available, new appliances and other electrical equipment on campus will be *Energy Star* compliant.

HEATING AND COOLING GUIDELINES

Heating and cooling guidelines for the campus are intended to balance productivity and comfort with efforts to minimize energy consumption. In warmer months, cooling will be adjusted to between 76 and 80 degrees Fahrenheit. In cooler months, spaces will be heated to between 66 and 70 degrees. Certain facilities will be maintained at lower winter temperatures, including

- Scott Field House: 63 to 67 degrees Fahrenheit

- Alumni Gym: 63 to 67 degrees Fahrenheit
- Blood Fitness Center: Exercise areas 63 to 67 degrees Fahrenheit, with the multi-purpose room and dance studio set to between 70 and 72 degrees for program support
- The Wellin Museum: 70 degrees Fahrenheit

These guidelines will be modified to support preservation requirements for archival material and art work, and to support specific educational programs that require different environmental requirements.

ENERGY REDUCTION INVESTMENTS

RENEWABLE ENERGY & FUEL MIX IMPROVEMENTS

Hamilton has already invested in supplemental wind and solar systems for Kirner-Johnson and solar power for the Outdoor Leadership Center (November 2008; 25 metric tons of carbon emission reduction). Hamilton College's 2009 Climate Action Plan stated a goal to increase its use of renewable energy use on campus by 3 percent or 750,000 kilowatt-hours by 2025. In 2016, Hamilton College, under an agreement with SolarCity, is constructing a 2,000mwAC 12-acre solar field to produce 3,700,000 kilowatt-hours of solar energy annually for campus use. The agreement will be in place until 2038. The array is expected to produce approximately 15% of the College's current power needs. The renewable energy goal will be achieved once the solar array is installed and operational, likely in the fall of 2017.

As more renewable energy is developed for the local and national grid, the resultant fuel mix in Upstate New York will improve. The FY2006 mix for the electricity purchased by Hamilton was .9562 pounds of carbon emissions per kilowatt-hour. As of 2016, the Upstate New York Grid has improved to .4560 pounds per kilowatt-hour, thus providing a significant reduction in our Scope 2 emissions.

LIGHTING UPGRADES

Emerging technologies have been employed, which have exceeded our original estimates for exterior lighting of 12 percent (21,000 kilowatt-hours and 7.6 metric tons of carbon emissions annually). As of 2016, exterior lighting savings were 312,000 kwh annually. Interior lighting upgrades achieved savings as anticipated to reduce consumption of 10 percent by 2015, saving 1.5 million kilowatt hours annually. By 2020, our goal is to reduce lighting loads by an additional 600,000 kwh. (See figure 3 progress as of 2016.)

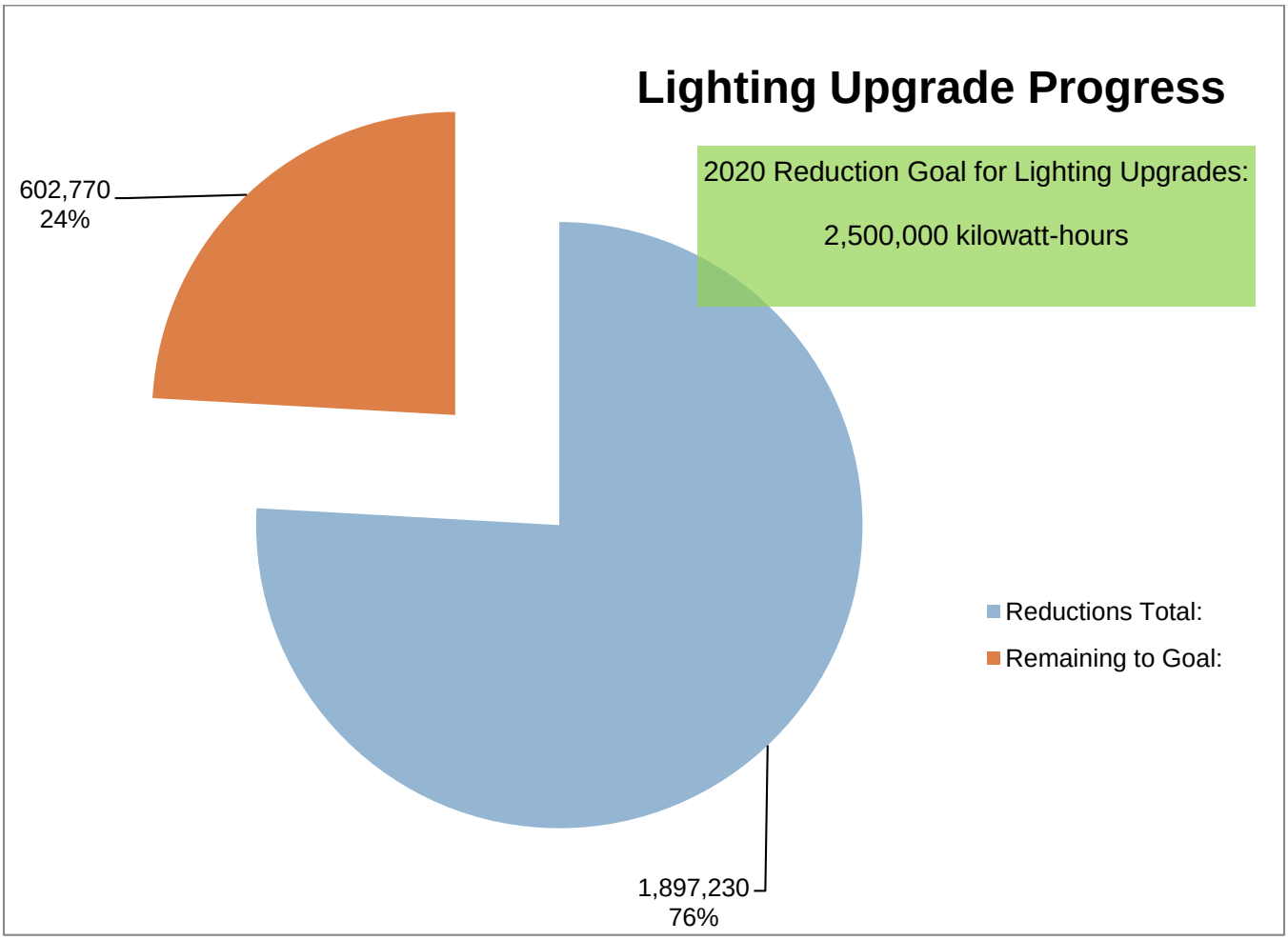

Figure 3

BUILDING HEATING AND ENVELOPE IMPROVEMENTS

Renewal and Replacement renovation projects that reduce energy consumption in campus buildings continue to be identified, and will be prioritized based on availability of funding and potential energy cost savings. Window replacements, coupled with heating system upgrades increase opportunities for improved efficiency as the heating system can be more appropriately sized with improvements to the building envelope. This methodology has been used for Major, Minor, McIntosh, Keehn and Root residence halls where energy reductions of 25% were achieved with a resultant decrease in emissions of 210 metric tons of CO2e. Additional energy and building retrofit projects will be identified and completed to further reduce energy consumption and help meet carbon reduction goals. An additional reduction of 182,000 kwh and 196,000 therms will be required by 2020 to meet our original targets of a 15% reduction in heating energy.

CONSERVATION

Ongoing recycling programs will continue to be advanced to improve our recycling capacity. Hamilton College desires an overall achievement of an annual 40% recycling rate.

Hamilton will continue to use energy management equipment for computers and AV equipment in public locations and classrooms to minimize energy consumption. Machines are put to sleep after a period of inactivity and automatically shut down for the night.

Installation of lighting control, occupancy sensors for lighting and heating/ventilating systems will be explored and implemented wherever opportunities for their use exist.

FLEET, TRANSPORTATION & AIR TRAVEL

Hamilton's vehicle fleet has increased over the past 10 years, and includes eight-cylinder engines and larger trucks needed to plow heavy snow. Many short trips required in and around campus make the fleet relatively inefficient to operate. Since 2006, the Physical Plant has started to replace the larger inefficient vehicles with smaller, more fuel efficient models. Physical Plant will continue to explore opportunities to improve the fuel efficiency and operation of its vehicles. As of 2016, Hamilton has achieved a 23 percent reduction in fleet emissions since our baseline year 2007.

Commuting to Hamilton by Hamilton faculty and staff contributes 3 percent to Hamilton's carbon footprint. The College will promote carpooling for employees and students through the campus "Ride Share" Board on the My Hamilton web site.

Hamilton's study abroad program has three locations: Spain, France and China. Air travel for this program accounts for 3% of Hamilton's emissions. This is an unavoidable part of important academic programs, so no reductions are anticipated.

LAND MANAGEMENT

Hamilton may be able to achieve a reduction in its carbon footprint through reforestation of College-owned lands and forest management plans. As a part of Peter Woodruff's spring 2009 senior thesis, Peter stated, "At Hamilton College, 200 acres of reforested cropland and golf course property have the potential to offset the campus' annual C emissions by 547.7 metric tons of C-dioxide equivalents (MT C02e), a 2.28% average annual emissions reduction." In a more recent study, the 2016 Sustainability Interns (Olivia Shehan and Emma Karsten) created an updated proposal applying Woodruff's theory to the current status of the golf course. Construction of new athletic fields have reduced the golf course

from 50 acres to 30 acres, but the land still has the potential to benefit the campus. Shehan and Karsten drafted a proposal to repurpose these 30 acres to include a new cross-country course, research and educational opportunities, and the reforestation of the remainder of this land to sequester 43.4 tons of carbon annually.

Further, since Hamilton owns hundreds of otherwise pristine acres of forested land, Shehan and Karsten proposed hiring a local forester (Dr. Steven Bick) to catalog and measure the carbon sequestration potential of two substantial plots of forested land. The Reservoir tract and D'Agostino forest contain approximately 465 acres of forested land, which (according to Dr. Bick) could potentially sequester 651 tons of carbon annually, or 3.6% of Hamilton's greenhouse gas emissions. Dr. Bick began the forest carbon accounting work in the winter of 2017, and the results are pending. To take full advantage of this carbon offset, Hamilton may only take credit for the carbon sequestration occurring from these plots after committing to certain forest stewardship principles, which include but are not limited to the following:

- Increased opportunities for teaching and research;
- A long-term commitment to open space protection;
- Facilitating low-impact recreational opportunities; and
- Limited timber harvesting for the principle purpose of promoting tree/forest health.

When the full report from Dr. Bick is received the Green Team will be engaged in discussing the findings and making a recommendation to the College's senior staff about what may be achievable to implement.

EDUCATIONAL EXPERIENCES

As a residential liberal arts college, Hamilton defines education in the broadest terms. Every encounter and opportunity a student has on campus is developmental, so education is a thread throughout the living-learning experience. Sustainability becomes, therefore, an integral consideration in many facets of a Hamilton education.

ENVIRONMENTAL CURRICULUM AND RELATED FACULTY RESEARCH

Hamilton has increasingly included environmental issues in its curriculum. Many courses in biology and geosciences emphasize direct study of the environment, while other disciplines add environmental topics in literature, policy, economics, ethics, religion, and technology. Courses on the Adirondack Park and on Global Warming provide focused study of environmental issues. However, the Environmental Studies Program is the centerpiece of the college's curriculum on climate change and other environmental issues.

The College began its interdisciplinary Program in Environmental Studies in 1991 and expanded it in 2005 by adding a concentration (major) to the existing minor. Since then, the number of concentrators has grown rapidly. By 2016, Environmental Studies had become the eighth most popular major chosen by Hamilton sophomores. This interdisciplinary program aims to provide students an understanding of core environmental concepts like sustainability, holism, uncertainty, risk, place, environmental justice, and benefit-cost analysis. The program encourages both empirical and theoretical study of environmental issues and brings together perspectives across several disciplines in the humanities, social sciences and natural sciences. Working closely with distinguished faculty members in biology, geosciences, government, economics, anthropology, philosophy, English, Africana studies, women's studies, history, chemistry, physics, sociology, geography, fine arts, and other disciplines, students investigate environmental issues, perspectives, and values with rigor and imagination. A highly popular foundational course on the science, politics, and economics of climate change is one of the centerpieces of the program, as is an advanced seminar on climate science. Climate change is also a key topic in courses throughout the major.

Faculty teaching in Environmental Studies and related areas have conducted research into a variety of dimensions of climate change. This includes work on Antarctic ice shelf disintegration, climatic records in lake sediments, the impacts of climate change on butterflies and migratory songbirds, the economics of energy, public opinion on environmental issues, the relationship between climate change and place-attachment, and the implications of climate change for liberalism and civic republicanism in the United States. They have presented this research at national and international conferences in top-ranked academic journals and have also published opinion pieces in media outlets like *USA Today* and *The Huffington Post*.

The Environmental Studies Program and other campus offices have also brought a wide variety of speakers to campus to discuss issues related to climate change, including former Vice President Al Gore, climatologists Michael Mann and Richard Alley, policy experts Michael Dorsey and Oren Cass, environmental sociologist Dorceta Taylor, disaster expert Laura Steinberg, environmental economist Michael Greenstone, and NOAA official Peter Oppenheimer. The Environmental Studies Program also hosted a debate on fossil fuel divestment featuring speakers from national organizations on both sides of the issue. Hamilton will continue to develop courses and programs across the curriculum that include climate change and other environmental issues as a focus. Increasingly, hiring decisions by individual departments, from Geosciences to Government to Art History, reflect an interest in environmentally related teaching and scholarship.

Hamilton's liberal arts curriculum has undergone an informal transition over the past forty years, as many of its academic departments have changed how they do business following the creation of the Environmental Protection Agency in 1970. Hamilton continues to adopt the highest safety standards in laboratories, art facilities, and other areas that handle hazardous materials as part of the educational and research process. We will continue to actively educate students about working with hazardous materials to minimize its use and reduce the production of hazardous waste.

HAMILTON ADIRONDACK PROGRAM

Hamilton launched its Adirondack Program in pilot mode in the fall of 2015. Students who experience this place-based program spend a semester engaged in rigorous academics in the classroom, in the field and in wilderness settings. They work with faculty and regional experts and organizations, focusing on environmental issues that have global implications and applications. The goal of the interdisciplinary program is to extend these vital lessons into students' future careers and life plans.

The Hamilton Adirondack Program is located in Keene, NY, about 14 miles from Lake Placid and 20 miles from the Adirondack Park Agency and the NYS Department of Environmental Conservation regional headquarters. It is also centrally located near many regional resources for student research, internships, and community engagement. And it boasts quick access to a variety of outdoor leadership and recreation opportunities, such as hiking, ice and rock climbing, cross-country and downhill skiing, boating and paddling, fishing and much more.

The pilot program is approved for three years and will then be evaluated. Continuation will depend on student interest, financial viability, and development of mission.

FACULTY/STUDENT RESEARCH COLLABORATION

Faculty at Hamilton College, as noted above, are teacher-scholars who engage in research that complement the College's liberal arts program. Hamilton undergraduates are taught by faculty who have active research agendas related to sustainability. The involvement of Hamilton faculty with sustainability research enhances the quality of the undergraduate instruction on these issues and fosters a deeper engagement with issues of sustainability among the students. In addition, an important part of the faculty scholarship is collaborative research with students. Undergraduates have the opportunity to work side-by-side across all academic disciplines on important scientific projects, professional art projects, political and economic analyses, and research in other fields such as humanities and linguistics. These initiatives bring students closer to sustainability issues wherever

they intersect with the interdisciplinary interests of Hamilton faculty. Aside from the vital intellectual engagement and public distinction that research brings to Hamilton, students develop expertise in a discipline through these research collaborations as they learn to solve problems and to write and speak about their projects. The collaborations occasionally lead to students making public presentations at regional, national, and international conferences and to coauthoring papers published in scholarly journals. The number of environmental and sustainability based projects by students and faculty are increasing rapidly.

Several prestigious and noteworthy faculty and student-faculty research efforts fall directly under the sustainability umbrella:

ARTHUR LEVITT PUBLIC AFFAIRS CENTER SUSTAINABILITY PROGRAM

This broad-based, multifaceted initiative promotes academic research on sustainable practices and the policies to achieve them, as well as hands-on learning experiences for Hamilton students. Student grants related to sustainability research have covered a range of topics, including media coverage of climate change, natural disasters and economic structures in China, community supported agriculture, and the economics of fossil fuels and alternative energies. The Levitt Center, often in collaboration with the Environmental Studies Program, regularly brings speakers to campus to discuss climate change and related issues.

ONEIDA LAKE AND ROME SAND PLAINS

Seniors majoring in Environmental Studies have pursued thesis projects in and on Oneida Lake. For example, one project used the carbon isotope lab to study input of particulate carbon into the lake as it reflects land use, agricultural practices, and storm runoff.

Student-faculty collaborative research has focused on habitat management and studies of rare species in the Rome Sand Plains. This research project has included two Hamilton faculty members and a group of two to four students every summer since 2000.

ENVIRONMENTAL MOLECULAR SCIENCES INITIATIVE (EMSI)

With support from the Sherman Fairchild foundation, the EMSI has given Hamilton the capacity to use rigorous analytical methods to investigate environmental materials at the molecular level. Subjects of research include brown fields and iron-reducing bacteria.

Hamilton will continue to foster and support student and faculty research that focuses on environmental issues and sustainability practices.

OUTREACH

GROUPS AND ACTIVITIES

- **Hamilton Sustainability Coordinators (HSC)**. A student group working under the Offices of Physical Plant and Environmental Protection, Safety & Sustainability that strives to improve green practices on campus by educating students, hosting annual activities that promote sustainable consciousness, and facilitating communication between students and faculty.
- **Hamilton Environmental Action Group (HEAG)**. A student-run organization that improves campus sustainability through education, advocacy, and strategic partnerships across the campus community.
- **Slow Food Hamilton College (SFHC)**. A student-run organization that hosts events to encourage students to learn about food production, understand the challenges facing the global food system, and promote food that is good, clean and fair for all.
- **Adirondack Adventure**. An orientation program that introduces about half of all first-year students to the natural beauty and physical challenges of the Adirondack Mountains. While camping, hiking, kayaking, and canoeing in the Adirondacks, students bond with their peers and gain a greater appreciation for the wilderness.
- **Take Back the Tap**. A HEAG initiative to reduce bottled water consumption and promote tap water use. The 2016 Bottled Water Reduction Program removes bottled water from residence hall vending machines and the Howard Diner and prohibits catered events with fewer than 100 attendees from ordering bottled water. In conjunction with reducing bottled water consumption, HEAG promotes tap water use by educating the community and facilitating the installation of additional water bottle filling stations across campus. HEAG is working with the administration to reduce Hamilton's consumption of plastic bottled water to 4,000 bottles by 2020.
- **Green Week**. A week-long event, sponsored by HEAG, that consists of fun and educational activities focused on environmental advocacy. Green Week events include an Earth Day fair, inflatable bounce houses, a reusable water bottle giveaway, and an energy conservation challenge.
- **Hamilton Cram and Scram**. An annual effort to collect, and later sell or donate, unwanted materials from student residence halls at the end of each year. The Hamilton Sustainability Coordinators and Physical Plant donate surplus bedding, clothing, books, and food items to local charities. Cram and Scram diverts substantial waste from landfills, supports charitable organizations, and enables students to purchase inexpensive dormitory items.
- **RecycleMania**. A national, eight-week competition that motivates college students and staff to increase recycling efforts and reduce waste generation. Hamilton has participated in this

competition since 2005. The Hamilton Sustainability Coordinators use this opportunity to encourage the campus community to reduce, reuse, and recycle.

- **Energy Conservation Challenge**. An annual inter-dorm competition (staged by HEAG) that promotes energy conserving behaviors through friendly contests. Throughout the month of the competition, HEAG publicizes energy saving tips via posters and all-campus emails. HEAG uses the college's Building Dashboard website to determine which residence halls reduce their energy use the most.
- **Club Ento**. A student-run organization that promotes entomophagy and sustainable food such as cricket-flour cookies and chocolate covered silkworms.
- **Hamilton College Beekeepers**. A student-run organization that focuses on the practice of keeping bees, harvesting honey, and raising queen bees by grafting queen cells. Hamilton raises a swarm of bees on campus and aims to increase awareness of the importance of bees.
- **Hamilton Outing Club**. A student-run organization that promotes awareness and appreciation for the wilderness by making the outdoors more accessible to the community. The Outing Club provides gear for trips, organizes campus-wide activities, and helps train and educate students and future trip leaders.

THE HAMILTON COLLEGE ARBORETUM & THE COMMUNITY FARM GARDEN

The Hamilton Arboretum includes 400 acres of managed land on the College campus and traces its origins to 1850 and the Root Glen. The mission and purpose of the Hamilton College Arboretum is to:

> *…preserve the stately historic campus landscape, building upon the diversity of the collection with sustainable species, and reinforcing the aesthetic character of the campus. Additionally, it seeks to provide visitors with a broader understanding of the campus landscape and promote long-term stewardship of the environment.*

The Root Glen, a collection of formal and informal gardens and walking paths within the Arboretum, is linked historically to the Root family. The history of the Glen can be found here: https://www.hamilton.edu/arboretum/root-glen/root-glen-history

The Hamilton Arboretum provides educational opportunities through tours and educational seminars for local arborists and interested enthusiasts. The Arboretum speaker series, six speakers throughout the winter months, is well attended, drawing many people from the local community. Arboretum and Root Glen maps are available in an information gazebo at the entrance to the Root Glen gardens. The walking trails and Arboretum tour receive active use from the public and campus community members. By integrating sustainability through community outreach and education, the Hamilton College Arboretum promotes environmental stewardship on and off campus. The College receives grants from

New York State to help support Arboretum efforts. Further information about the Arboretum can be found here: https://www.hamilton.edu/arboretum

Hamilton experimented with a community farm model. Land on campus was allocated, fenced and plowed and student workers ran the farm garden for several summers. For the coming summer the farm will be fallow as student interest has waned. In addition, the College established a small "1812 Garden" in support of the Food for Thought class. This garden is also not currently active. For summer 2017 we plan that student interns will look at college farm garden models and make a recommendation for the future of the Hamilton farm garden.

COMMUNITY SERVICE & STRATEGIC LOCAL PARTNERSHIPS

Hamilton College has a long tradition of creating community service and service-learning programs that integrate the College community with the Mohawk Valley region and beyond. These programs enable Hamilton students, faculty members and staff to focus on a broad range of social, economic and environmental challenges including:

- Hamilton Association for Volunteering, Outreach & Charity (HAVOC)
- Alternative Spring Break (ASB)
- Students Helping in the Naturalization of Elders (Project SHINE)
- Hamilton College Community Outreach Campaign
- Each year volunteers from Hamilton join with 50 to 100 other people from the greater Utica community to help clean up the Utica Marsh

In addition, the Hamilton College Town-Gown Fund Committee administers and distributes annual grants to local education, public safety and other community organizations in the Town of Kirkland. In 2016, eight grants totaling nearly $65,000 were awarded, bringing the total financial investment in the local community to $693,744 over the past 16 years.

One example of community involvement is a student-initiated Community Garden Project, an effort to create a garden at the FX Matt (public housing) apartments. Former refugees of the Soviet Union, Belarus, Somalia and Ukraine transformed an empty lot of grass to a place where families of different backgrounds could create beauty and abundance in vegetable and flowers, gardening together in peace. They started the gardening process in advance of the outdoor growing season in Hamilton's

greenhouse. There are 30 raised-bed garden plots, each 12 ft. by 16 ft. by 20 ft. in dimension. Each plot is registered to a specific family living within the housing complex. The Utica Municipal Housing Authority built a fence around the gardens and provided access to water. The Community Foundation and Home Depot also provided significant support.

In the coming years, Hamilton College intends to make significant reductions in its carbon footprint through conservation and efficiency. Simultaneously, summer interns will be asked to include community outreach projects as part of their summer work. For example, in summer 2016 the interns completed a trout stream cleanup project in coordination with local, county and state officials along the Oriskany Creek. For information, see this link:

https://www.hamilton.edu/news/story/sustaining-an-interest-in-the-environment

FINANCING PLAN

Appendix A outlines specific project areas identified to date with the funding required, which once implemented, will move Hamilton towards climate neutrality. The projects will be funded from the annual budget using renewal and replacement funds. Hamilton will also work with state and federal agencies to obtain funding. Since 2007, Hamilton has completed over 90 energy reduction projects, expending over $6 million. In addition, Hamilton College has worked to reduce its storm water discharge rates to reduce its impact on the local Root Glen drainage basin. Hamilton has expended over $600,000 over the past three years, reducing discharge flows 40.5 cubic feet per second (10% reduction) into the Root Glen watershed.

TRACKING PROGRESS

Hamilton College will track its progress toward carbon neutrality through regular inventories of its carbon emissions and reviews of environmental programs to ensure they meet intended objectives.

Specific metrics include:

- Total carbon emissions from inventory updates
- Dashboard Elements
    - Gross square footage per student – density factor
    - Carbon emissions per student
    - Carbon emissions per gross square foot – density factor
    - Energy expended (btu) per gross square foot

- Energy use levels needed to meet carbon emission reductions by 2025:
  - Electricity: 23,000,000kwh (FY09 use 25,839,000kwh or a 11 percent reduction required)
  - Natural Gas: 1,000,000 therms (FY09 use of 1,267,000 therms or a 21 percent reduction)
  - Gasoline Fleet and College Travel: 47,000 gallons (FY09 use of 60,000 gal or 22 percent reduction)
  - Diesel Fuel (includes athletic bus travel): 13,000 gallons (FY09 use 14,045 gal or 7 percent reduction)
  - Renewable Energy Credits: 6,200,000kwh (Constant- no increase)
  - Installation of Solar Field: 3,750,000kwh annually

APPENDIX A

Project Description	Cost	Metric Tons CO2e Reductions	Cost per MTCO2e
Convert Electric Heat to Natural Gas	$5,625,000	881	$6,384
Upgrade HVAC Systems	$1,764,000	78	$22,548
Upgrade Building Insulation	$210,000	43	$4,890
Lighting Upgrades	$1,261,000	397	$3,175
Window Replacements	$4,224,500	69	$61,210