Brandeis University
CLIMATE ACTION PLAN

PRESIDENT'S TASK FORCE ON CAMPUS SUSTAINABILITY

October 2016

Sustainable Brandeis

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Table of Contents

President's Task Force on Campus Sustainability

In October 2015, Interim President Lisa Lynch convened the 25-member President's Task Force on Campus Sustainability. The immediate impetus was news that since 2009, when the University issued its first Climate Action Plan, its carbon footprint had increased rather than decreased as intended. The Task Force was instructed to reinvigorate the university's commitment to sustainability by updating the university's original 2009 Climate Action Plan. This revised plan focuses on measures that reduce emissions relatively quickly and includes strategies to ensure implementation.

PRESIDENT'S TASK FORCE ON CAMPUS SUSTAINABILITY 2015 – 2016 MEMBERS

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James Gray, Vice President for Campus Operations

Matt Smetana '17, Brandeis Senate Sustainability Committee Chair

Sabine von Mering, Professor of German, and Women's, Gender and Sexuality Studies

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Laura Goldin, Professor of the Practice of Environmental Studies

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Eric Olson, Senior Lecturer at the Heller School

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Summary

Since its founding in 1948, Brandeis has been committed to social justice. Climate change presents a serious threat to all human life and especially to vulnerable communities. It is imperative that we act to reduce our carbon footprint to fulfill our commitment to social justice, to carry out our mission of ensuring that students remain deeply concerned about the welfare of others and appreciate the power and responsibilities that come with knowledge[1], and to reflect our responsibility to the global community in light of the 2015 Paris Agreement.

In 2008, Brandeis University became a charter signatory to the American College and University Presidents' Climate Commitment, which committed the University to develop a Climate Action Plan to achieve carbon neutrality.[2] The University's first Climate Action Plan set 2050 as the University's deadline for achieving carbon neutrality. The President's Task Force on Campus Sustainability began updating the original plan in October 2015, and was specifically charged with outlining near-term actions to reduce the University's carbon footprint.

Emissions Reduction Goal

Our short-term goal is to reduce energy-related emissions by 10% by fiscal year (FY) 2018, and 15% by FY 2020, over a baseline of FY 2015 emissions. Achieving this goal would be considered a significant improvement in the context of several years of zero carbon reduction. The emissions reduction goal will be reviewed annually, and further reduction commitments will be made as we assess our progress.

Community effort and wise policies for building energy use are immediate opportunities for carbon reduction. Though we face significant physical and financial challenges, drawing on the passion of our community is an immediate opportunity for the university to address our campus's carbon footprint. A significant portion of our campus energy usage can be reduced by engaging our community to reduce energy waste. Data from universities comparable to Brandeis suggest that energy use could potentially decline by 25% per square foot based on community effort and continued pursuit of best practices in building maintenance and technology upgrades.

Brandeis is engaged in a long list of best practices for carbon reduction. However, our aspirations exceed our current efforts. This plan aims to create the structure to pursue

[1] Brandeis University Mission Statement, http://www.brandeis.edu/about/mission.html
[2] The American College and University Presidents' Climate Commitment is now called the Carbon Commitment (www.presidentsclimatecommitment.org).

those aspirations and achieve meaningful results through policy, facilities maintenance, community effort, education, and energy and technology innovations.

Figure 1. Approaches to Carbon Reduction at Brandeis

Brandeis Achievements

Brandeis has a significant history of carbon reduction efforts. The table below outlines the best practices with regard to carbon reduction that are in place today. A timeline of our broader climate action initiatives is available in the Appendix.

Table 1. Established Sustainability Best Practices at Brandeis

Best Practice	Description
Campus energy management policy	Brandeis drafted a comprehensive energy management policy in 2015 – 2016
Campus-wide building automation system	Brandeis partners with Siemens' APOGEE system
Building design standards	New construction or renovations must meet LEED gold standard or equivalent
Dedicated fund for student-led sustainability projects	Brandeis Sustainability Fund
Renewable energy on site	Gosman gym solar array; Charles River Grad Housing solar thermal arrays; active solar power purchase agreement for additional solar on campus pending as of 2016
Peak load shedding during summer	Turn It Off! program
Community engagement around powering/shutting down over winter breaks	Brandeis Winter Power Down
Including sustainability in new student and new employee orientations	As of 2016, all new employee orientations include a presentation by the Sustainability Manager, and undergraduate and graduate students receive sustainability education during orientation
Residence hall sustainability competitions	As of 2015, all first-year residence halls are engaged in an energy and recycling competition, and other residence halls are engaged as building-level metering permits
Composting in dining halls	Dining hall composting was re-launched in 2016
Building electrical sub-metering	All campus buildings have electrical sub-meters; thermal sub-metering is being investigated
Ongoing building electricity usage analysis	The Office of Facilities Services maintains a database that analyzes current and historical electricity usage by building

Aspirations for the Future

With a significant challenge ahead, the Task Force has developed the following list of best practices for carbon reduction that our community should investigate further.

Table 2. Carbon Reduction Strategies for Future Investigation

Description	Approach
Innovative Sourcing of Renewable Energy	We should investigate all serious options for purchasing renewable energy including from off-site developments. Brandeis should investigate such opportunities through the university's energy purchasing contractor.
On-site cogeneration in our central heating plant	Converting some or all of our existing steam boiler system in our central heating plant to a combined-heat-and-power system would dramatically increase the efficiency of the use of our natural gas. A study to determine the feasibility of this is underway.
Renewable fuel oil fuel for central boilers	One of the four steam boilers in our central heating plant could be converted to use renewable fuel oil derived from biomass. A study to determine the feasibility of this fuel in our plant is being considered.
Regular trainings and workshops for all staff members	Enrolling staff in the sustainability effort could be accelerated if well-executed trainings and workshops around campus sustainability were available and staff attendance were expected.
Green Revolving Fund and/or Green Annual Fund	Green revolving funds commit savings from energy efficiency to be used in future energy-efficiency investments. Though the mechanisms vary, they have been successfully implemented at several universities. In addition, many Brandeis alumni may be willing to support Brandeis's efforts through donations to a green annual fund.
More aggressive new building and renovation standards	Our current standard is that new campus buildings and renovations must meet LEED Gold standard or equivalent. A higher LEED standard, or another standard we determine, could replace this going forward.
Carpool Matching/ Rideshare Solution	The Department of Campus Operations is launching a pilot software program in fall 2016, to assist Brandeis community members by identifying rideshares and reduce single-occupant vehicle trips.

Brandeis Greenhouse Gas Inventory

Brandeis University measures the following emissions as part of its greenhouse gas inventory:

Scope 1	Stationary combustion: use of natural gas and oil in onsite equipment such as the central heating plant, residential heating, boilers, water heaters, etc.
	Direct transportation: Fuel used by university-owned vehicles
	Refrigerants: Refrigerants used in the operation of on-campus refrigeration equipment.
Scope 2	Purchased electricity
Scope 3[3]	Faculty, staff and student commuting
	University-funded air travel booked via the University's travel agency
	Electricity transmission and distribution losses

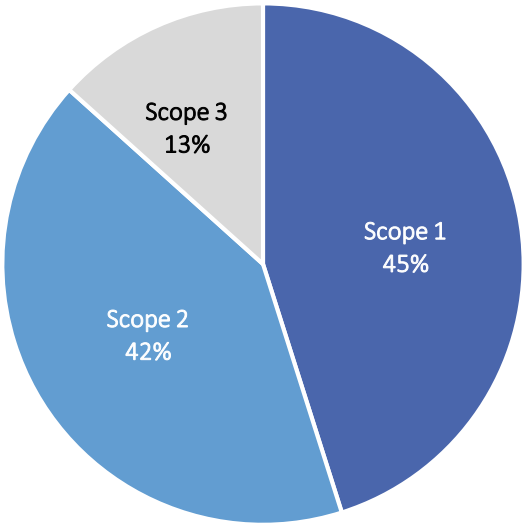


Figure 2. Brandeis Emissions by Scope, FY 2015

Brandeis's immediate carbon footprint primarily reflects Scope 1 and 2 emissions. These are therefore the focus of the short- to medium-term mitigation strategies outlined in this climate action plan.

[3] Additional Scope 3 emissions sources may be included in the future, depending on the University's ability to measure and control those sources.

Approximately 99% of Brandeis's Scope 1 and 2 emissions — or 87% of our total Scope 1, 2 and 3 emissions — are due to our building energy usage.

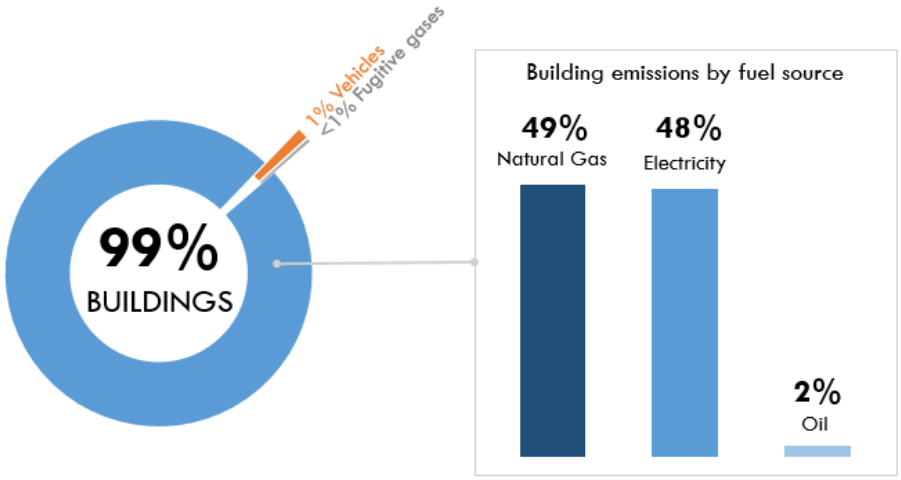


Figure 3. Brandeis Scope 1 and 2 Emissions by Source, 2015

Benchmarking research in 2015 concluded that Brandeis uses approximately 25% more energy per gross square foot than our peers, considering comparable campuses and physical plants.

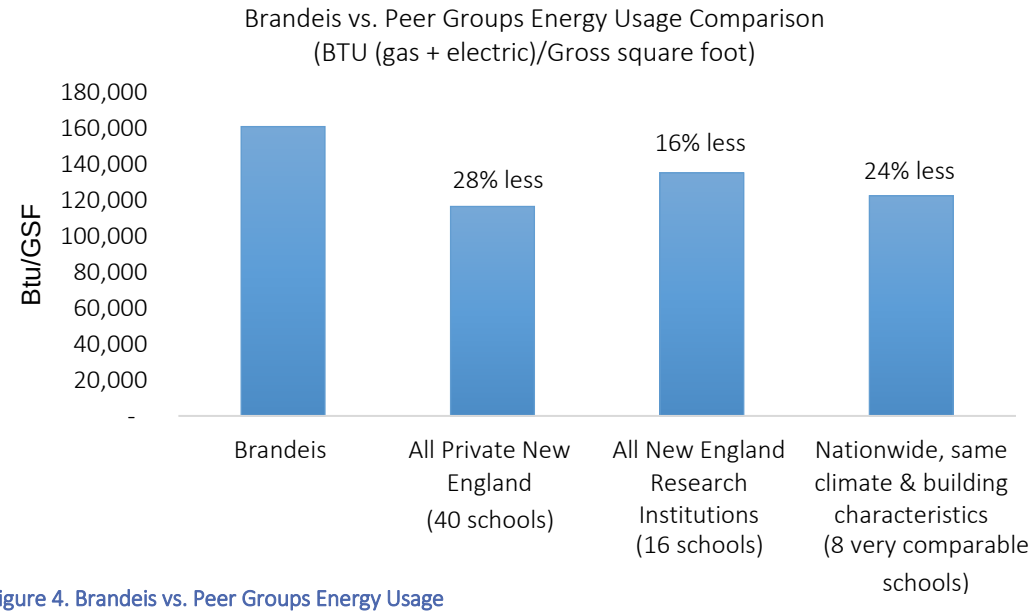


Figure 4. Brandeis vs. Peer Groups Energy Usage

Progress: 2008 – 2015

From 2008 – 2015 Brandeis University's Scope 1 and 2 emissions increased by 1%, due to increased energy usage. This reflects, in part, an expansion of both the student body and the campus physical plant. Nonetheless, our carbon footprint would have increased by 8% instead of just 1% if the New England electric grid had not dramatically reduced its carbon intensity from 2008 – 2015.

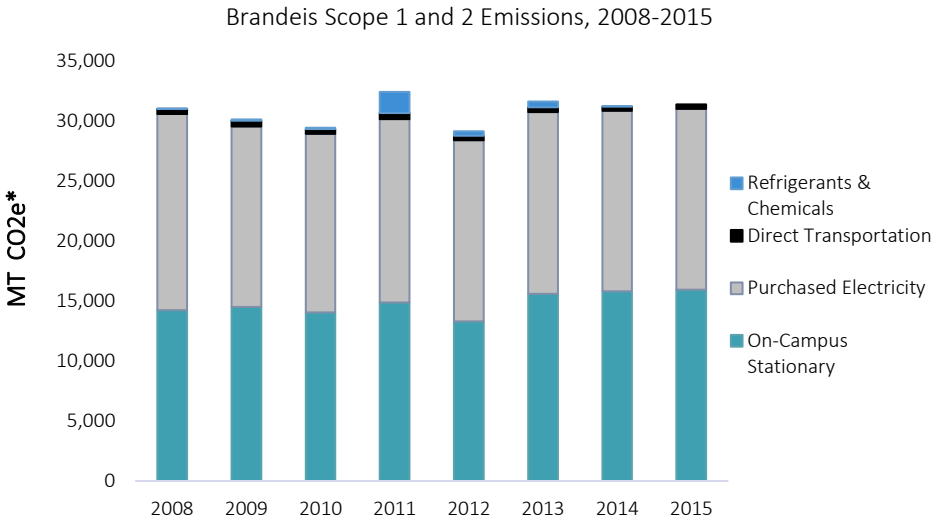


Figure 5. Brandeis Scope 1 and 2 Emissions, 2008-2015

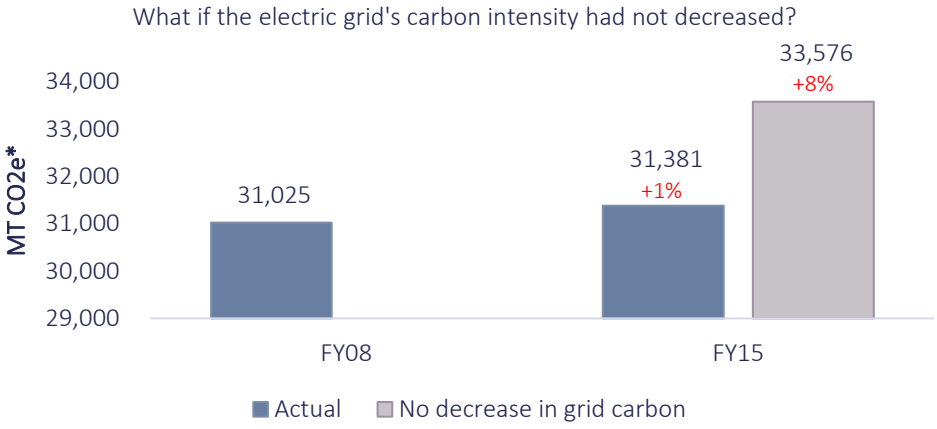


Figure 6. Illustration of Brandeis' carbon footprint with and without grid carbon intensity reduction

*Metric tonnes of carbon dioxide-equivalent

Opportunities and Challenges Associated with Reducing Our Footprint

Opportunities

Cultural Opportunities

Brandeis University was founded on principles of social justice. While many universities include social justice as part of their current missions, Brandeis is truly rooted in the principle, and our student and faculty groups are a reflection of that. Drawing on these existing groups, we can begin to generate the larger-scale community "buy-in" to drive campus-wide climate action.

Student and faculty groups represent a small but vocal population that can be engaged to participate in sustainability efforts. Students have passionately advocated for environmental action and sustainability for many years. They voted to create the Brandeis Sustainability Fund, which helps fund initiatives on campus, at approximately $50,000 annually. Existing student initiatives include Brandeis Climate Justice, Farmer's Club, Senate Sustainability Committee, Students for Environmental Action, and the Brandeis Sustainability Ideation Challenge. Student activists and Brandeis alumni are involved with Students for a Just and Sustainable Future, a multi-campus student coalition extending beyond Brandeis. Students have also been at the forefront of alliances linking climate justice with other social justice issues. In fall 2015, student activists submitted a proposal for an environmental literacy requirement to the University Curriculum Committee.

Existing faculty initiatives include the Mandel Humanities Center Working Group: Climate Change: A Threat to Human Civilization and Life as We Know It, Faculty Against the Climate Threat, and the Climate Change Initiative faculty listserv. One hundred fifty members of the faculty also signed on to a petition to request that the Board of Trustees divest the Brandeis endowment from fossil fuel stocks.

Financial Opportunities

Solar. The current landscape for investing in solar energy is highly amenable to adding solar capacity on campus, due in large part to state incentives. The university has begun the process of a solar power purchase agreement (PPA), which would increase the amount of solar photovoltaic (PV) panels on campus at virtually no cost to the university. However, based on the small amount of usable rooftop and parking lot space available relative to campus electrical usage, and as the average solar installation is only approximately 15% efficient, the resulting new solar panels would only provide

approximately 1 – 2% of our campus electricity needs. Moreover, based on the terms defined in the PPA that make it financially possible to install the panels, Brandeis could not claim any carbon reduction from the solar for many years.[4] (This is also the case with the existing solar thermal and solar panels on campus.) Nevertheless, adding solar to campus is still an opportunity to show leadership, improve resilience, add renewable energy to the electric grid, and help reduce carbon emissions to the atmosphere.

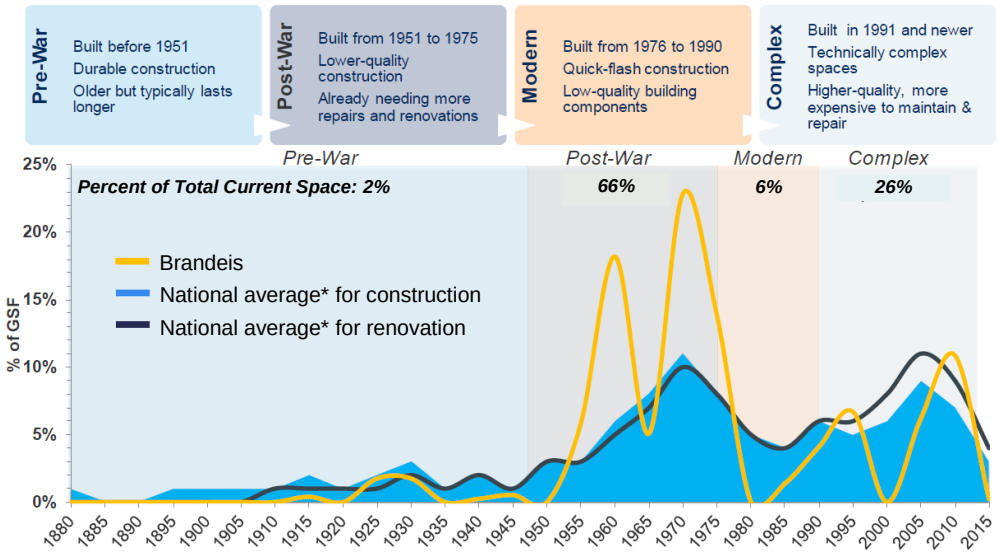
Student Fund. The Brandeis Sustainability Fund is a recurring funding source for sustainability projects on campus. Designated for undergraduate projects, it is maintained by student fees of approximately $50,000 per year. The current constitution that governs the fund allows for project proposals to address myriad sustainability issues on campus. However, changes to the fund could be proposed to focus the monies in a way that would ensure it is used for carbon-reducing projects.

Challenges

Physical Challenges

As explained in the Greenhouse Gas Inventory, the vast majority of our carbon footprint is a result of energy used in our buildings. Over 60 percent of our campus buildings were constructed in the post-war era (1951 – 1975), before energy efficiency was an important consideration in building design, which today is standard. As a result of both design and age, our buildings are deteriorating quickly, requiring ever-increasing amounts of both energy and costly maintenance to operate while keeping occupants comfortable. The figure below shows Brandeis's campus building square footage by the era in which it was built.

[4] Solar renewable energy certificates (SRECs) represent the environmental attributes of solar energy generation. The sale of SRECs for several years of a solar installation's operation enables institutions, through power purchase agreements, to add solar to their facilities at no up-front cost.



*Based on higher education institutions in the Sightlines database

Figure 7. Brandeis building gross square footage (GSF) by year and time period constructed. Source: Sightlines 2016

Third-party research has found that campuses that have made progress on their carbon footprint are those that have invested more in building envelopes (such as windows, roofs, and walls) and mechanical systems. However, campuses with aging buildings require ever-increasing investment just to keep systems running at steady levels of efficiency and energy consumption. [5]

Financial Challenges

The university budget allocates funding to maintain our campus facilities annually, however that funding has consistently fallen far below recommended levels. This has resulted in a backlog of deferred maintenance that is growing faster than our peers. The age of our space and lack of appropriate levels of investment in existing facilities can put stress on the operational resources to keep up with daily maintenance. Given the state of our building stock, our budget for facilities maintenance would ideally be triple or quadruple the current budget of approximately $10 million per year to maintain building envelopes and mechanical systems, and catch up on their associated deferred maintenance. However, the capital budget that is available is not expected to be higher than $10 million per year going forward and must be spread across all capital projects, not just those that improve building systems and could impact energy efficiency.

[5] The State of Sustainability in Higher Education, Sightlines, 2015, http://www.sightlines.com/insight/state-of-sustainability-in-higher-ed-2015/

Strategies to Reduce Carbon Emissions

Community effort and wise policies for building energy use are immediate opportunities for carbon reduction. This section outlines specific strategies for reducing energy use on campus and engaging the community.

Reducing Energy Use on Campus

Energy Conservation and Management Policy

Establishing and enforcing an institutional policy on energy usage is considered best practice among our peers. These policies indicate appropriate building temperatures during winter and summer and over breaks, establish guidelines for the use of appliances such as space heaters, and set expectations for the entire community around energy consumption on campus. Brandeis had such a policy in the late 1990s, but the policy is no longer in force. A new Energy Conservation and Management Policy written by the Task Force was approved by both the Faculty and Student senates in the spring of 2016.

Facilities Maintenance

Achieving the proposed carbon reduction goals will require significant investment in our physical plant. The Department of Facilities Services committed in 2015 to identifying the University's most promising opportunities for improving energy efficiency and some of these projects are already underway. Nonetheless, resources are limited, so this list of opportunities will likely persist for many years.

Table 3. Facilities Maintenance Priorities

Description	Approach
Building Re-commissioning	
Facilities Services will continue evaluating recommissioning for every building on campus	• Heller-Brown and Shapiro Campus Center were studied in 2015, and Mandel Center for the Humanities in 2016
Lighting Retrofits & Controls Upgrades	
Lighting opportunities, including incentive programs from state and utility sources, must be continually reviewed	• Facilities Services will create a structured lighting efficiency review process and prioritize improvements including retrofits
Building Envelope Improvements	
In most buildings, we can improve both energy efficiency and occupant comfort by replacing windows, adding or improving vestibules, and similar projects	• Facilities Services maintains a prioritized list of buildings needing envelope improvements, and will continue to address those needs as budgets allow
Expand Solar Panels on Campus	
Brandeis is committed to expanding on-site installations of solar panels, though we are limited by rooftop and parking lot space	• An agreement to increase campus solar capacity through a power purchase agreement (PPA) is pending as of 2016. • The Department of Campus Operations will investigate PPAs for additional onsite solar going forward, including on new construction.
Building Construction and Renovation Guidelines	
Brandeis has an existing policy that new buildings and renovations meet LEED Gold equivalent or better standards, but this has not been reviewed in several years	• The Department of Campus Operations will review existing standards and propose whether new standards should be put in place.

The Cost of Reducing Our Carbon Footprint

Calculating the cost to reduce our carbon footprint in the future is a formidable challenge. History has shown that energy efficiency projects implemented on campus can be completed and even verified to have resulted in the energy savings as expected, yet overall campus energy use can remain relatively flat. Factors such as weather, increasing plug load, increasing age and lack of investment in buildings, occupancy changes (e.g., increased summer programming on campus, enrollment, etc.), and other variables can cloud our ability to see carbon reductions from smaller projects.

Moreover, while each of our buildings has an individual electric meter, no building has electric metering on systems within buildings, so benefits resulting from changes to systems or technologies within buildings cannot be isolated and measured individually. In addition, very few buildings have individual gas-consumption meters. Thus, measuring savings from projects that impact natural gas usage usually rely on calculations rather than actual measurements.

For example, from 2012 – 2015, Brandeis invested nearly $9 million in the Brandeis Energy Savings Program, a set of deferred maintenance projects that would result in greater energy efficiency, reduced utility costs and a reduced carbon footprint. The projects completed during that time were estimated to save approximately 4% of our annual electricity use, and 2% of our annual natural gas use (see table below).

Table 4. Investments and Intended Savings from the 2012-2015 Sustainable Energy Program

INVESTMENT	ANNUAL COST SAVINGS	EST. ANNUAL ELECTRICITY SAVINGS	EST. ANNUAL NATURAL GAS SAVINGS
$8.7 million	$500,000	1,875,000KWH (~4% of annual electricity use)	5,375 MMBTU (~2% of annual gas use)

Despite these important and much needed investments, however, energy use from 2012 – 2015 remained essentially flat. Using the metering we have available, the projects were found to show the expected savings several months following project completion. However, overall campus energy usage did not reflect the sustained, long-term composite savings as expected (because of some or all of the factors mentioned earlier). This once again supports the finding that campuses with aging buildings need to invest at

ever-increasing levels just to keep systems running at the same level of efficiency and keep energy consumption stable. [6]

The table below lists various projects that were included in the 2012-2015 program, the associated costs, and the resulting carbon savings.

Table 5. Selected Projects from 2012-2015 Sustainable Energy Program, Costs and Details

Building	Project Description	Approximate Investment	Carbon Reduction (MT CO2e*)
Kosow	Controls upgrade, new DDC, setback basement AHU, repair heat recovery.	$80,000	**88**
Kutz	New chiller and cooling tower, and VFD	$500,000	**11**
Faculty Center	New air-cooled condensing unit, refurbish AHU, conversion to VAV.	$150,000	**56**
Administration Complex	New cooling tower and chiller.	$425,000	**6**
Farber	Lighting controls.	$315,000	**4**
Volen	Occupancy schedule, demand control ventilation, lab space pressurization control, re-commissioning, environmental room controls, pump VFDs.	$300,000	**247**
Slosberg	New chiller.	$275,000	**14**
Sherman	Replace 2 roof-top units, upgrade controls in kitchen hoods, replace fan motors, add VFDs to fan units.	$416,000	**120**
Gosman	Replace existing energy recovery equipment. Replace existing air-cooled chiller. Add VFDs to field house exhaust fans.	$750,000	**134**
Rosenstiel	Connect 6th floor to central CHW plant, controls improvements, heat recovery system. Upgrade lab ventilation controls and add occupancy-based setback.	$430,000	**58**
Usdan	Install new chiller(s), refurbish cooling tower, and install variable frequency drives.	$605,000	**258**
Shapiro Science Center	Occupancy controls on hoods in labs.	$18,000	**134**
Total		**$4,264,000**	**1,130**
Cost per MT CO2e		**$3,773**	

*Metric tonne of carbon dioxide equivalent

A primary conclusion based on these investments is that even with what seems like significant investment, and with short-term energy savings verification, seeing long-term, sustained energy and carbon savings from multiple small projects across campus is not guaranteed. Many variables can obscure any direct relationship between guaranteed carbon reduction and dollars invested. While pursuing energy-savings projects remains

[6] The State of Sustainability in Higher Education, Sightlines, 2015, http://www.sightlines.com/insight/state-of-sustainability-in-higher-ed-2015/

critical, this example demonstrates the difficulty in estimating the cost to improve our campus to the degree that a major carbon reduction would be measurable and verifiable.

Community Engagement

The University cannot reduce energy use without assistance from the community. Students, faculty, and staff must understand the change that is needed and they must be encouraged to contribute their efforts toward achieving that change.

The following are ways in which Brandeis is moving forward to ensure community buy-in. More details and new initiatives will be developed in 2016/17:

- Frequent exchanges with the senior leadership team
- Regular in-depth consultation with all campus constituencies
- Frequent, clear, and transparent communication about goals and steps to achieve them
- Updated signage in all buildings across campus
- An updated website
- Active outreach to members of the community throughout the academic year
- Close cooperation with standing and elected bodies, such as the Faculty Senate, Division Heads and Department Chairs, the University Advisory Committee, the Student Union, the Student Senate Sustainability Committee, and others
- Continuous requests for community input

A successful communication and education strategy includes educating all members of the community about climate change and their role in addressing it here on campus and beyond, and reiterating the urgency of climate action. It requires that everyone understand that “business as usual” is not an option.

In addition to the actions above, we propose a range of strategies to inform and motivate our community, as outlined in the table below.

Table 6. Community Engagement Priorities

Description	Approach
Sustainability Campaign Kickoff	
Current students and employees need to understand Brandeis policies and expectations around energy use, recycling, and other areas	• Presentations about sustainability goals and progress will be made to staff and faculty during existing department, staff or other meetings.
Campaigns on Lighting, Holiday Shutdowns, and other Specific Behaviors	
Frequent, planned reinforcement of key activities is needed to channel the community's efforts towards reducing energy overuse.	• The Communication and Education subcommittee is drafting a plan to encourage specific behaviors • The focus will be creating fun, engaging and effective messaging through a variety of channels
Data Communication & Transparency	
A lack of information currently impedes community engagement in energy efficiency. Goals and progress towards those goals should be communicated at least annually	• Suitable outlets for this information include the Sustainable Brandeis website, television in Shapiro Campus Center, and student outlets including the Justice, the Hoot, and WBRS
New Employee Orientation	
New employees will learn about policies and expectations for energy usage, recycling and other key initiatives	• Slides introducing Sustainable Brandeis are included in new employee orientation as of spring 2016. The manager of sustainability programs will deliver the information personally

New Student Orientation	
New students will learn about Brandeis's sustainability program and their responsibilities in supporting our sustainability goals	• Starting in 2016-2017, Sustainable Brandeis will be a part of the new student orientation packet • Energy and recycling will be featured in the orientation video • A sustainability education game and display will be up in Shapiro Campus Center at the end of orientation week • Printed orientation guides will discuss what to bring/not to bring to campus as well as policies and expectations around energy, waste, and recycling
Campus Sustainability Competitions	
Energy and recycling competitions between buildings each semester will incentivize and teach occupants how to use less energy and better handle waste. The first competition of its kind was held in fall 2015 between the two first-year residence quads.	• Annual energy competitions including Massell and North Quads to foster early engagement of new students • Trophy presentation to winner of each competition
Brandeis Sustainability Fund (BSF)	
The Brandeis Sustainability fund provides roughly $50,000 per year for student sustainability projects	• The BSF board will discuss how to focus substantially on projects that should reduce the University's carbon footprint
Call for Community-Sourced Solutions	
Our community of talented and informed individuals is never short of valuable ideas; we should not waste these any more than we should waste energy	• In fall 2016, the Sustainable Brandeis sponsored deiSic, the first-ever 24-hour sustainability ideation challenge, a student initiative to spark sustainability solutions on campus

Climate Change Education

Education is the essential foundation for engaging the community in our collective emissions reductions. Brandeis should champion climate change education as a key component of its social justice mission. However, with fewer than three full-time Environmental Studies Program faculty members, few courses focused on climate change, no research faculty focused on climate science, and extremely limited resources within the College of Arts and Sciences, the Carbon Commitment's requirement to make climate change and carbon reduction a part of the curriculum and other educational experiences for all students, and expand research in climate change and carbon reduction, must be a longer-term goal.

To address the need for climate education, Brandeis should create a subcommittee of faculty and students to explore educational opportunities in a resource-limited environment. The focus will be on teaching climate change as a social justice issue. The goal of this effort is to ensure that no student graduates from Brandeis without an understanding of the importance of climate change and its impact on social issues.

Climate change research and teaching is currently housed primarily in the Environmental Studies Program and in the Heller School's Sustainable International Development Program, with a few other programs on campus devoting parts of courses and attention to the topic.

Important gaps in the curriculum must be filled, such as course offerings in Climate Science, Climate Modeling, Climate History, Climate Politics, Climate Justice, and Climate and Energy. A shared understanding of the severity of the climate crisis and the solutions available requires a broadly interdisciplinary approach, not just in the sciences, but also in the arts, social sciences, and humanities.

Faculty should be incentivized, encouraged, and supported in researching and implementing sustainable practices in their courses and in their research, but also in committees, programs, departments, centers, institutes, councils, and divisions. This includes considerations about teaching/research materials, events, and conference travel.

Faculty are also perfectly positioned – through joint projects, conferences, and publications – to inquire about and share best practices they learn about from colleagues at other institutions.

The subcommittee will investigate the following approaches to incorporating climate change into the curriculum and other educational opportunities:

Providing more resources to the Environmental Studies Program

The Environmental Studies Program is currently staffed by 2.25 full-time faculty. Any commitment to ensure that all students graduate with a proper understanding of climate change would require more teaching resources.

The Task Force believes that environmental studies is an area of potential growth for the university and, as such, should be resourced more adequately.

The subcommittee will investigate the potential for a climate and social justice-oriented cluster hire. A cluster hire is a group of 3 – 4 faculty in various departments who have overlapping interests. This group of faculty serves multiple departmental needs and can be the foundation for climate change education going forward. This would ideally include at least one climate scientist.

Cluster hires have worked well for the university in the past, and with that precedent, the subcommittee could envision a cluster hire that serves the entire university while also addressing specific needs of various departments. With its clear link to social justice, this field could also be an ideal case for target-of-opportunity hires.

Work with the Center for Teaching and Learning (CTL) to provide faculty training

The CTL could facilitate training for Brandeis faculty who are willing and interested in incorporating climate change issues into their teaching, regardless of the subject. Other universities have had success in providing such training, and the subcommittee could model their efforts accordingly. This would provide a way to help distribute teaching about climate change and related social issues throughout the university by leveraging existing resources.

Support the environmental literacy requirement presented to the Undergraduate Curriculum Committee (UCC) in fall 2015

In fall 2015, a team of students and faculty developed an environmental literacy requirement and presented it to the UCC. The team, led by the Student Senate Sustainability Committee, found that the current undergraduate academic program has enough courses that meet the proposal's requirement. The proposal was tabled to become part of the larger overhaul of university requirements by the Dean of Arts and Sciences' Task Force, which began its work in April 2016. The subcommittee should work closely with the Task Force on University Requirements to ensure no one graduates from Brandeis without a basic understanding of the science of, the risks posed by, and the solutions for climate change.

Implementation Structure and Function

To ensure that the updated climate action plan is implemented, a constant, concerted effort across the community will be required in four main areas: energy and infrastructure; community engagement; data measurement, verification & reporting; and education via the curriculum. Sustainable Brandeis will create four working groups to carry out this work. Each team will meet quarterly and report on its progress to the Vice President for Campus Operations and the Manager of Sustainability Programs.

The overall goals of the implementation structure are to:

1. Maintain accountability to the community. The Brandeis community must hold working groups accountable for reductions in our carbon footprint, including annual reporting and visibility of results.
2. Communication. Success requires that the goals and strategy of the climate action plan are communicated to everyone in our community. This will require frequent messages through a variety of media.
3. Ongoing measurement and celebration of progress. We must continually monitor our carbon footprint, report results annually, and celebrate our successes.
4. Bi-annual review of the climate action plan. The climate action plan must be reviewed and updated regularly.

Short-term Goals for Academic Year 2016 – 2017

Fall 2016:

- Publish the climate action plan
- Educate the community about our new Energy Management and Conservation Policy
- Recruit volunteers for sustainability working groups
- Prioritize addressing climate change at all levels of decision-making
- Hold brainstorming sessions with members of campus community
- Support DEISIC, the first Brandeis sustainability ideation challenge, a 24-hour think-tank where teams of students collaborate on ideas to pitch to a team of judges, including Campus Operations staff, to improve campus sustainability
- Provide all-campus educational opportunities including:
    - The screening of 'Merchants of Doubt' with Naomi Oreskes on Tuesday, October 18, 2016 at 6pm in Wasserman Cinematheque
    - Climate Reality presentation on October 20, 2016, presented by Heller School alumna Patricia Nuñez-Garcia
- Provide regular opportunities for education around climate change and how to reduce our carbon footprint

Implementation Structure

Each working group will create a plan that addresses mitigation strategies and the needs of the community. Each plan will detail the team's goals for the year, specific actions to achieve those goals, the members assigned to each task, and the measures of success for each action. The Vice President for Campus Operations and the Manager of Sustainability Programs will be responsible for reviewing and approving the plans in the fall, and each team will present results from their activities for review each spring.

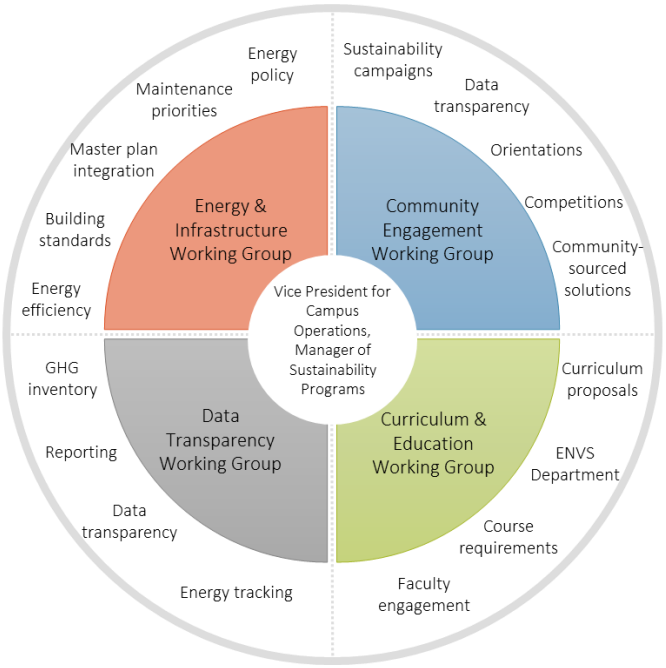


Figure 8. Sustainability Working Group Implementation Structure

Implementation Working Groups

Energy & Infrastructure Working Group

Overall Objectives

- Reduce the amount of energy consumed for heating and cooling campus
- Reduce the amount of electricity consumed on campus
- Ensure that the facilities maintenance priorities laid out in this plan are carried out

Tasks

- Continually assess energy efficiency needs and recommend projects to increase energy efficiency on campus
- Investigate establishing new building construction and renovation guidelines
- Seek out innovative solutions and funding mechanisms for energy and infrastructure needs

Community Engagement Working Group

Objectives

- Reduce the amount of energy used due to community behavior
- Raise the level of climate change awareness and leadership behavior of students, faculty, and staff
- Set expectations of the community around sustainable behavior

Tasks

- Develop a plan to educate every community member on the need to act on climate change
- Implement the community engagement priorities
- Continually assess engagement efforts and reshape and reprioritize accordingly
- Communicate the goals and strategy of the climate action plan to everyone in our community using a variety of media

Data Transparency Working Group

Objectives

- Continually monitor and assess the energy and emissions from campus operations
- Provide support to other teams as requested

Tasks

- Provide periodic reports and updates as required by the Carbon Commitment
- Develop data and tools required to meet the goals of data communication and transparency priorities
- Advocate for better data tracking mechanisms where necessary

Curriculum & Education Working Group

Objectives

- Continually assess and recommend avenues to ensure that no student graduates from Brandeis without an understanding of the importance of climate change and its impact on social issues
- Elevate the discussion of resources provided to the Environmental Studies program

Tasks

- Develop and implement a plan to achieve greater climate change literacy using existing resources and courses
- Provide faculty training opportunities for integrating climate change into existing course curricula
- Support an environmental literacy requirement

Appendix A: The Carbon Commitment

We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset – engaged, committed, smart students – allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions.

We have begun to experience the effects of climate change in our communities and we understand that these effects are projected to become more severe and damaging. We recognize that mitigation and adaptation are complementary strategies for reducing the likelihood of unmanageable change, managing the risks, and taking advantage of new opportunities created by our changing climate.

We believe colleges and universities must exercise leadership in their communities and throughout society by providing the knowledge, research, practice, and informed graduates to create a positive and sustainable future. Along with other aspects of sustainability, campuses that address the climate challenge by reducing greenhouse gas emissions and by integrating resilience into their curriculum, research, and campus operations will better serve their students and meet their social mandate to help create a vital, ethical, and prosperous civil society.

We further believe that exerting leadership in addressing climate change will reduce our long-term energy costs and the costs of climate disturbance, increase our quality of life, attract excellent students and faculty, and build the support of alumni and local communities.

We have resolved to take action in one of the following Climate Leadership Commitments. We believe carbon neutrality and resilience are extremely high priority areas of action for all institutions and we aim to lead the nation in these efforts. We urge others to join us in transforming society towards a sustainable, healthy, and more prosperous future.

1) Develop a Climate Action Plan to achieve carbon neutrality *
    a. Within two months of signing this document, create internal institutional structures to guide the development and implementation of the Plan
    b. Within one year of the implementation start date, complete a greenhouse gas emissions inventory and identify near term opportunities for greenhouse gas reduction. Report these in the first annual evaluation of progress

c. Within two years of the implementation start date complete the Plan, which will include:
    - A target date for achieving carbon neutrality as soon as possible
    - Interim target dates for meeting milestones that will lead to carbon neutrality**
    - Mechanisms and indicators for tracking progress
    - Actions to make carbon neutrality a part of the curriculum and other educational experiences for all students
    - Actions to expand research in carbon neutrality

d. Review, revise if necessary, and resubmit the climate action plan not less frequently than every five years

2) Submit an annual evaluation of progress

a. Within one year of the implementation start date, and every year thereafter, complete an annual evaluation of progress

b. Make the action plan, annual evaluation of progress (including greenhouse gas inventory), publicly available by submitting them to Second Nature's reporting system for posting and dissemination.

* The plan may be designed to augment an existing sustainability plan, written as part of a new sustainability plan, or as a standalone plan. An online guide is available that provides information on successful institutional structures, helpful templates on climate action plans, useful indicators of progress, guidance for reporting and much more.

** Assistance for developing interim milestones and a number of example tangible actions are available online and are regularly updated.

Appendix B: Timeline of Climate Action at Brandeis

1996	• Brandeis establishes a University Heating Policy, setting an average temperature of 68 degrees (66 to 70 degree range) for all buildings during occupied hours in the winter.
2004	• First of 4 major energy savings programs launched, over $10 million invested over 3 years
2006	• Second energy savings program launched, $7 million invested over 3 years • Brandeis adopts Statement on Environmentally Responsible Design and Construction • Office of Capital Projects establishes policy of creating projects at a LEED Silver (or greater) equivalent standard
2007	• Brandeis signs Presidents Climate Commitment • First sustainability program established, Brandeis Campus Sustainability Initiative
2009	• Third energy savings program launched • First Brandeis Climate Action Plan completed • Office of Capital Projects establishes policy of creating projects at a LEED Gold (or greater) equivalent standard
2010	• Gosman solar panels installed • Student-funded Brandeis Sustainability Fund established for student sustainability projects
2012	• Fourth energy savings program launched ($8 million debt authorized by the Board of Trustees)
2013	• Charles River Apartments solar thermal system installed
2015	• President's Task Force on Campus Sustainability convened • Manager of Sustainability Programs hired • Turn It Off energy conservation/peak demand management program launched • Winter Power Down communications program launched • Building recommissioning studies launched in several buildings across campus • Several envelope improvement projects completed on campus buildings
2016	• Brandeis Energy Conservation and Management Policy established