BROWN

SEVENTH ANNUAL SUSTAINABILITY PROGRESS REPORT

Office of Sustainable Energy & Environmental Initiatives,
Facilities Management

Prepared by the Energy & Environmental Team

Fall 2014

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I. Executive Summary

It has been an interesting if not exciting time for the Sustainability Office this year. Through the Sustainability Strategic Planning and Advisory Committee (SSPAC), we made significant progress in developing high level sustainability goal recommendations across operational areas including dining, transportation, energy, water and recycling. We continue to foster our important regional and peer-institutional networks, hosting both the New England Campus Sustainability Consortium (NECSC) and the Ivy+ Sustainability Summit.

But there have been challenges; we had one of the coldest winters in the past 20 years. That said, our Greenhouse Gas (GHG) emissions actually increased for the first time since we established GHG goals, although we are still ahead of our interim target (Actual: 26.6% vs Target: 25%). The cold winter played a significant role in this increase, especially when combined with the growth in energy needs for new research equipment and lab space. Since inception of our GHG reduction plan, we have added new systems and equipment whose energy consumption equivalent is 6,000 Metric Tons of Carbon Dioxide Equivalents (MTCDE) (8% of our 2007 baseline emissions).

These systems and equipment will continue to grow as the campus naturally meets its research and teaching missions. This fact only reasserts the importance of energy efficiency investments. Since 2008, we have already invested approximately $23 million, which has reduced our carbon footprint by almost 15,000 MTCDE, surpassing our original energy efficiency plan. We have plans to invest at least an additional $10 million to help achieve our 42% goal, albeit with lower returns on investment as the opportunities for reductions become harder to find. Beyond energy use, we strive to find additional opportunities for resource reduction, completing a preliminary water-use audit and a student-led waste audit, both aimed at identifying baseline measures towards establishing real goals and opportunities.

Lastly, we have reorganized our office to better support a more comprehensive campus wide sustainability plan and better serve student and academic programs that engage the campus as a living lab. Our staff now includes two energy engineers, a student engagement coordinator, and a sustainability manager dedicated to supporting and implementing the SSPAC recommendations. Brown University continues to expand and evolve its sustainability efforts, building on past success and integrating its goals within a growing network of trained and engaged members of the Brown community.

The Office of Sustainable Energy & Environmental Initiatives (E&E Office) is proud to share this report with our partners and friends throughout the Brown University community and our peer institutions.

Brown Sustainability Timeline

Sept 2013: Brown co-hosts 'A Better World by Design' Conference

Oct 2013: Divest Coal Decision

Oct 2013: Brown attends AASHE Conference

Oct 2013: Brown attends BU EcoReps Symposium

Nov 2013: SSPAC Phase One convenes

Nov 2013: Brown student waste audit

Nov 2013: Brown attends UN Climate Change Meeting in Warsaw

Dec 2013: Brown convenes Environmental Task Force

Jan 2013: BERT opens for classes

March 2014: Brown attends Smart & Sustainable Campuses

March 2014: Brown Unplugged dorm energy savings competition

March 2014: SSPAC Poster Session

April 2014: Brown University Earth Week

April 2014: Institute for the Study of Environment and Society launched

May 2014: Brown hosts NECSC and Ivy+ Sustainability Summit

May 2014: Brown University Clean Break donates 22 tons

June 2014: Brown attends ISCN Conference

June 2014: Resilient RI Act passes Rhode Island Congress

III. Facilities Management

For **Existing Buildings**: Reduce greenhouse gas emissions to 42 percent below 2007 levels (equivalent to 15 percent below 1990 levels) for existing buildings.

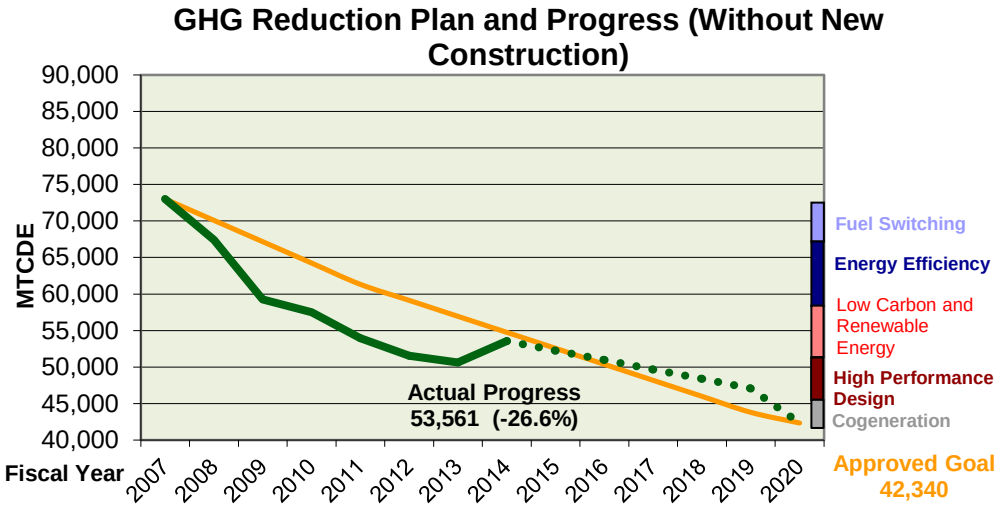
For **New Construction:** Limit greenhouse gas emissions by reducing energy consumption for all newly constructed facilities to between 25 percent and 50 percent below the standard required by state code. New construction will, **at a minimum**, meet a silver standard in Leadership in Energy and Environmental Design (LEED®) certification, furthering sustainability goals.

For **Acquired Buildings:** A reduction of greenhouse gas emissions for all newly acquired facilities by a minimum of 15 percent and as much as 30 percent.

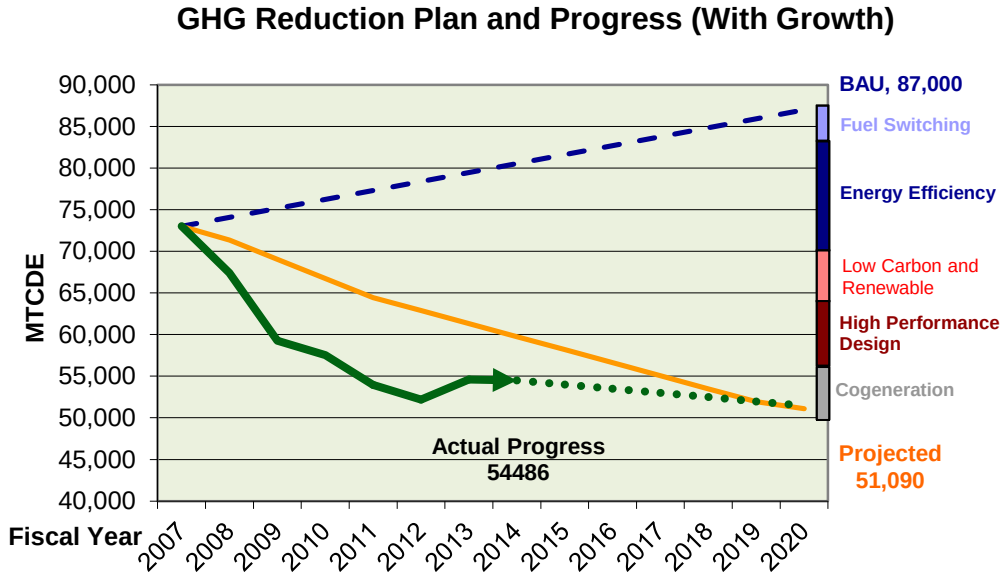
KEY:
MTCDE = Metric Tons of Carbon Dioxide Equivalent
BAU = Business as Usual
"**With Growth**" = newly constructed buildings post 2007
The yellow line represents the projected level of carbon dioxide (CO_2) emissions reduced over time through the strategies listed on the right side of the chart and described in the report below.
The dark blue line indicates the level of CO_2 emissions that would be released if greenhouse reduction Goals were not implemented.
The green line indicates the actual decrease in CO_2 emissions since implementing the strategies listed on the right hand side of the chart and described in the report below.

A. Greenhouse Gas Goals

The University announced Brown's first **Greenhouse Gas Goals** on January 24, 2008. The goals are as follows:



Approved Goal is based on 42% below 2007 for existing buildings.

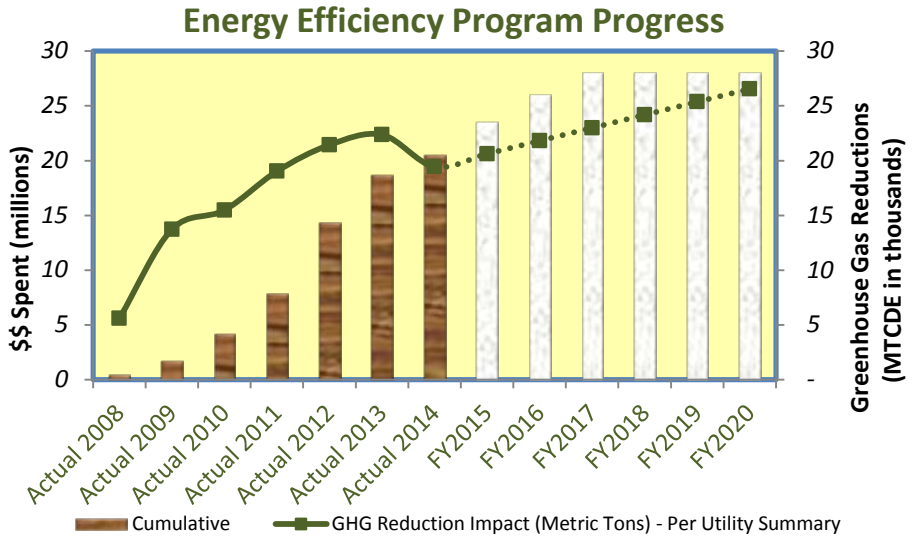


Projection is based on 42% below 2007 for existing buildings, up to 50% better than code for new construction, and up to 30% better than code for acquired buildings.

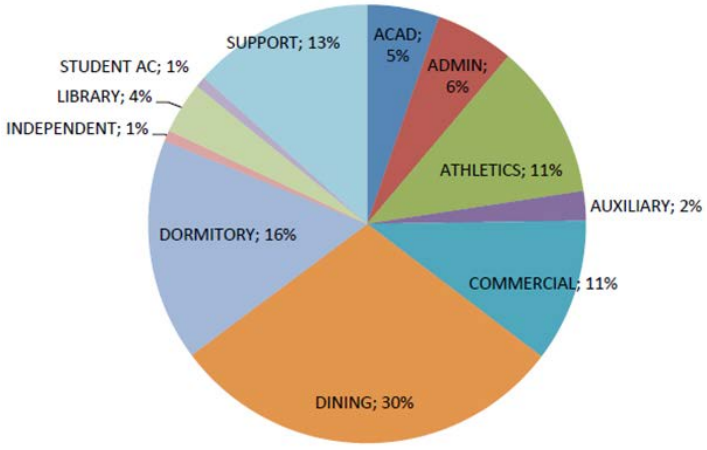
B. Energy Efficiency

The energy efficiency investments in existing buildings are being achieved by:

1. **Steam System Condensate**: Over 1,400 steam traps throughout campus buildings were replaced along with other improvements to increase the efficiency of the overall heating systems and improve system performance.
2. **Lighting and Lighting Controls**: A total of 93 buildings were upgraded between 2009 and 2014 with implementation costs of approximately $3 million and an estimated annual savings of $609,000 for an average payback of 5 years and an internal rate of return of 20 percent.



3. **Retro-Commissioning** (RCx) for Existing Buildings: This program evaluates facilities both from an operational and system design perspective, identifying efficiency opportunities through improving how existing systems are operated and/or through replacement of existing systems or equipment.
4. **Brown Ongoing Commissioning (BOCx)**: As part of its ongoing and continuous building commissioning program, Brown deployed "SkySpark" software to test its ability to identify wasteful and/or unknown energy practices during normal building operation. The software downloads data from Brown's existing controls systems and uses the data to determine if buildings are using energy effectively. In addition, we created a process to engage operations staff to minimize repeat "Sparks."



C. Water Audit

Brown University commissioned an evaluation of water consumption data for the campus, with the ultimate goal of reducing water consumption. These results will inform what areas of campus could benefit the most through conservation efforts.

IV. Campus Waste Management and Reduction Practices

A. Recycling : Brown's recycling rate is a reflection of total tonnage of recyclables through our Waste Hauling service, i.e. cardboard, paper, bottles, cans. In FY 2014, Brown University recycled 18 percent of its campus waste as a result of campus initiatives. When including materials from construction and demolition projects, 36 percent of campus waste was recycled.
B. GameDay Recycling: In fall 2013, EcoReps participated in the GameDay Recycling Challenge. Student volunteers collected recyclables during pre-game tailgating and the football game, totaling over 1200 pounds of recyclables and achieving a 29 percent diversion rate for the game.
C. Composting: Facilities Management delivered over 68 tons of leaf and yard waste for composting at the Rhode Island Resource Recovery Corporation in Johnston, Rhode Island. The Grounds Office also donates material to eight local urban gardens. Additionally, Facilities Management helped fund the Green Event initiative[1], which collected close to one ton of compostable material from Brown events.
D. Books: The library system partners with Better World Books to dispense unwanted and unneeded textbooks and other collegiate literature for resale. A portion of the proceeds are donated to charities. Books that cannot be sold are donated to soldiers serving overseas and to school programs.
E. Student Move-out Donations ("Clean Break"): The FY 2014 program partnered with the Furniture Bank and Good Will to collect and distribute donated items. This years' effort resulted in the collection of over 24 tons of donated goods.
F. Solar Powered Trash Compactors: Implemented in 2011, these BigBelly compactors reduce the gas and labor associated with frequent trash collection.
G. Electronics (e-waste) Recycling: On average, 33 tons of electronics are properly disposed of annually through secure and environmentally preferable methods with a company that is e-Stewards and National Association for Information Destruction (NAID) certified.
H. Brown Bookstore: Since 2012, the Bookstore Tech Center collected and properly recycled approximately 75,000 pounds of E-waste. In FY 2014, thanks to its partnership with Cartridge World, Brown used over 1250 recycled cartridges, preventing the units from ending up in landfill[2].
I. Battery Recycling: Collection boxes for primary single batteries and secondary rechargeable batteries are located at six convenient buildings on campus. Approximately one ton of batteries are diverted from the landfill annually in this manner.
J. Incandescent and Compact Fluorescent Bulb Recycling: Students and staff can give their burned out bulbs to a custodian, who will store them in a special box located in the building's storage closet. Brown recycled 8.9 tons of bulbs and ballasts in FY 2014.
K. Surplus: Scheduled for implementation in FY 2015, Brown Facilities Management and Brown Purchasing have begun the process of building an online surplus management system. This system will better facilitate reuse and donation of unwanted items.

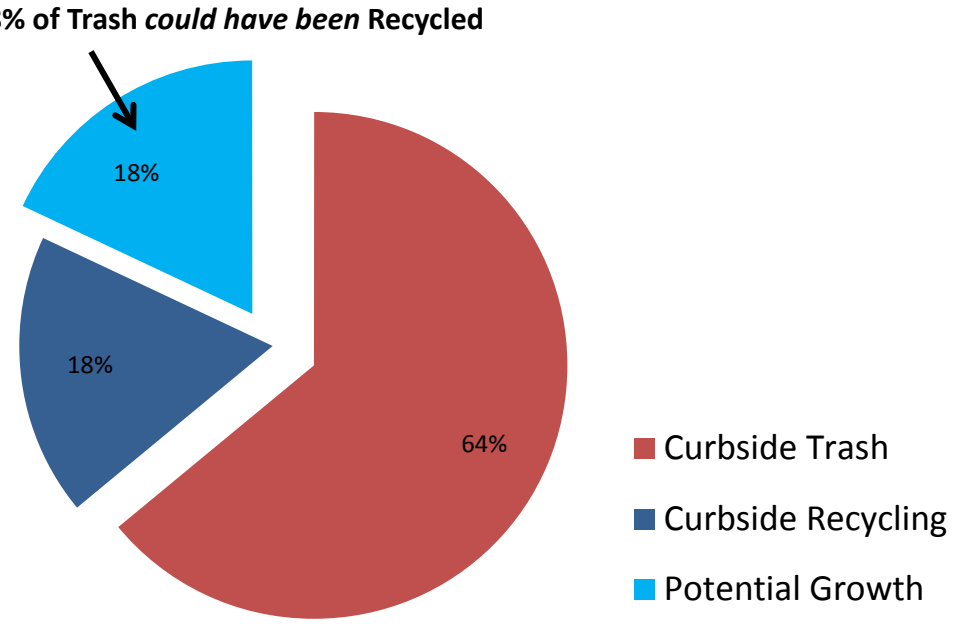
[1] See Green Event on page 14.
[2] Romauld. M. (Personal E-mail dated 27 Aug 2014).

L. Campus Waste Audit

In fall 2013, EcoReps completed a residence hall waste audit in order to determine student recycling success. The results were as follows:

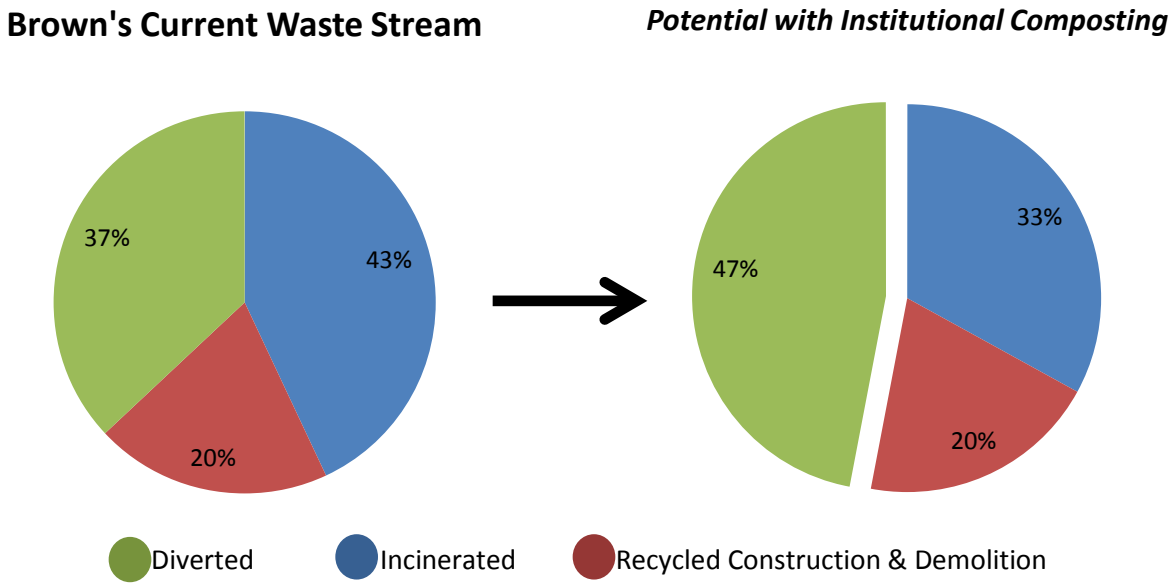
Campus	% Recycling in Trash	% Trash in Recycling
East	10	14
Keeney	12	7
Pembroke	14	8
Wriston	36	52
Average	**18**	**20**

The Brown community achieved an 18% recycling rate for curbside waste in FY 2014. Based on the student-run dorm waste audit, **18% of the campus trash could in fact have been recycled**, which would significantly improve the overall recycling rate.



In FY 2014, Brown reported a 127.3 tonnage **increase** in TRASH from FY 2013. Conversely, in large part due to the contamination of curbside recyclables, Brown reported a 46.2 tonnage **decrease** in RECYCLING.

M. Diversion Rate: A better illustration of Brown's sustainability efforts is shown through our diversion rate, which captures all elements of the Brown waste stream that are removed from the general incineration process, i.e. recycling, small-scale composting, re-purposing and donating unwanted items. Various groups on campus, including Green Event, SCRAP, and SSPAC explored campus-wide composting options, which, if implemented, could significantly improve Brown's campus diversion.



Brown's organic matter diversion (food donations, local pig farms, small-scale compost) counts for roughly 12% of our overall diversion rate. Best in class peers institutions with large-scale campus-wide composting attribute over 20% of their overall diversion to this practice.

N. Student Summer Waste Audit: Facilities Management hired a full-time intern for the summer to complete a non-residential building waste audit. Based on the findings and recommendations from the audit, Brown aspires to fix inconsistencies in recycling signage and infrastructure, hoping to better educate the full community.

O. Recommendations:

- Residence Life invites EcoReps to host targeted trainings in every residence hall, using a peer-to-peer FAQ session on recycling.
- Students complete a campus-wide audit of residence hall trash rooms for appropriate signage and receptacles before move-in both fall and spring semester.
- Students and staff dispose of personal waste in designated trash rooms, where educational signage on appropriate recycling practices has been strategically placed.
- Brown looks at institutional composting options, specifically for major events where significant waste is generated.

V. Campus Highlights

Working Group Members
Team Lead
*Denotes additional stakeholder

Waste & Recycling
Ginger Gritzo - E&E
Henry Huppert - EH&S
Donna Butler - FM
Haily Tran - Undergraduate, emPOWER
Kevin Venturini - Purchasing
Jessica Fields - Undergraduate, emPower

Food
Margaret Klawunn - Campus Life
Gina Guiducci - Dining
Pat Vetere - FM
Daniel Sambor - Undergraduate, SCRAP
Gretchen Gerlach - Undergraduate, FM intern
Micah Swann - Undergraduate, emPower
*Arisa Lohmeier - Undergraduate, Green Event
*Rich Bova - Residential Life
*Dawn King - CES

Energy & Water
Chris Powell -E&E
Mike McCormick - PD&C
Adam McGovern - BioMed
Chris Bull - Engineering School
Ravi Pendse - CIS
Jeff Baum - Undergraduate, emPower
Samuel Lee - Undergraduate

Transportation
Beth Gentry -Transportation
Cathy Lutz - Anthropology
Melissa Meo -Purchasing
Kurt Teichert - CES
Emily Koo - City of Providence
Alan Harlam - Swearer Center
Arielle Johnson - Undergraduate, Bikes@Brown
*Leah Haykin - Undergraduate, Bikes@Brown

Using the framework of six criteria (Academic Integration, Community Inclusion, Personal Impact, Metrics, Communication, Structure & Accountability), teams developed high level goals and ultimately drafted detailed project ideas, based on best practices research, to support those goals.

A. The Sustainability Strategic Planning & Advisory Committee
In March of 2011, undergraduate students presented a proposal to the Brown University Community Council encouraging the University to develop a Sustainability Strategic Plan. The Sustainability Strategic Planning and Advisory committee (SSPAC) was convened by the Provost's office in fall 2012. The group was charged with creating a draft proposal, for consideration by the Provost and the President, for a Sustainability Strategic Plan for Brown University.

The committee identified priority areas in which Brown can develop robust goals and reporting mechanisms. These will be incorporated into a larger plan, which will include key metrics and implementation ideas. The committee shared the priority areas with the Provost, President and Brown community in December 2012. An interim report, including a prioritized set of recommendations, was presented to the Brown University Community Council (BUCC) and the Corporation in spring 2013.

In November 2013, the E&E Office convened four SSPAC Working Groups: Food, Energy & Water, Transportation, and Waste & Recycling. Each member was selected based on his or her expertise and leadership within the university. Assigning a lead for each group, the office also strived to maintain the model of integrating faculty, students, staff. Teams convened monthly for facilitated meetings with specific, measured outcomes.

Members of the Energy & Water group complete a cost-benefit analysis exercise

B. The Environmental Task Force[3]

The Environmental Task Force took the charge from the Provost of developing a campus response to global environmental change, especially climate change, to position Brown as a leader in this domain. The more specific elements of the charge were:

- contextualizing the existing efforts of the standing committee on campus sustainability;
- identifying additional ways to integrate education on environment and sustainability all across the curriculum and beyond;
- examining engagement opportunities that exist for students through the Swearer Center and suggesting new ones;
- suggesting types of activities members of the Brown community might wish to engage in to contribute to the societal response to Climate Change;
- suggesting ways that campus leadership might help members of our community to engage in such activities.

Roster
Leah VanWey (chair, Sociology and Environmental Change Initiative)
Amy Carroll (PAUR)
Forrest Gander (Literary Arts)
Catherine Gao (undergraduate representative)
Solomon Goldstein-Rose (undergraduate representative)
Sherine Hamdy (Anthropology)
Patrick Heller (Sociology and Watson Institute)
Isabella Levy (undergrad rep)
Matt Margetta (staff, Environmental Change Initiative)
Roger Nozaki (Swearer Center and Associate Dean of the College)
Chris Powell (Facilities Management)
Sophie Purdom (undergraduate representative)
Kelsey Ripp (MD '16)
Keith Spangler (Geological Sciences, PhD '18)
Derek Stein (Physics)
Ed Steinfeld (Political Science)
Amy Teller (Sociology, PhD '19)
Haily Tran (undergrad representative)
Peter Voss (Corporation)
Greg Wellenius (Epidemiology)

To address the broad and more specific aspects of the charge, the Task Force proposes one overarching goal for the campus and a series of more detailed goals and procedures for working toward those goals.[4]

[3] BDH Article 5 Nov 2013
[4] Final Report 23 April 2014

C. Ivy+Sustainability Summit

In May 2014, Brown University hosted the 4th Annual Ivy+ Sustainability Summit. The three day conference brought together leaders from member instutions to frame their strategic plan as a collective group. The Brown University planning team worked with the Green Event student group and achieved a Green Event Gold certification.

Attendees

Steve Lanou, Deputy Director: MIT
Sarah Zemanick, Sustainability Management Specialist: Cornell
Dan Roth, Campus Sustainability Director: Cornell
Ginger Chapman, Director of Sustainability: Yale
Keri Enright-Kato, Sustainability Program Manager: Yale
Amber Garrard, Education & Outreach Manager: Yale
Shana Weber, Director, Office of Sustainability: Princeton
Jessica Prata, AVP Environmental Stewardship: Columbia
Allie Schwartz, Assistant Manager, Communications & Data: Columbia
Alicia Murasaki, Interim Director of Sustainability: UChicago
Ignacio Tagtachian, Manager: UChicago
Tavey Capps, Environmental Sustainability Director: Duke
Dan Garofalo, Environmental Sustainability Director: UPenn
Heather Henriksen, Director, Office of Sustainability: Harvard
Chris Powell, AVP Sustainable Energy & Environmental Initiatives: Brown
Ginger Gritzo, E&E Programs Coordinator: Brown
Kurt Teichert, Senior Lecturer: Brown
Audrey Stewart, Director, Office of Sustainability: Georgetown
Rosi Kerr, Director, Office of Sustainability: Dartmouth
Ashley Pennington (Johns Hopkins) and **Fahmida Ahmed** (Stanford) via Skype

Ivy+ attendees at Brown University

D. Dorm Energy & Efficiency Project (DEEP)

In the spring of 2011, Brown began a pilot program using an integrated approach to improve energy efficiency in residence halls on campus. During the Dorm Energy Efficiency Program (DEEP) pilot, Facilities Management provided efficiency upgrades to a targeted dorm while simultaneously educating its residents about the upgrades to their building and the personal choices they can make to save energy. DEEP aims to increase energy efficiency in two ways: (1) infrastructure upgrades and (2) targeted behavior and outreach programming. In FY 2014, we focused on six undergraduate residence halls: Morriss, Champlin, Miller, Metcalf, Emery, and Woolley.

Timeline

1. Installation of Thermostatic Radiator Valves (TRV) -- Summer 2013
2. Installation of Behavior Signs in each room -- August 2013
3. Communicated with residents and residential assistants -- Sept 20, 2013
4. Eco Rep Training -- Oct 2, 2013
5. Energy Showcase and Energy Pledges -- Oct 18
6. Dorm Storm -- Oct 18-21
7. Window Observations -- Feb & December
8. Reminder posters and emails -- November 2013 and January 2014
9. Survey -- April 28-May 27
10. Heating season: Oct 18 -- May 25

Findings: The average percentage of open windows did not appear to vary substantially between control buildings and experimental buildings within this study (1% open in experimental buildings vs. 1.6% open in control buildings). The open rates in both groups are noticeably lower than we have observed in previous years. Whereas the control dorm in year one had an average of 11.2% of the building's windows open, the average percentage of open windows for all control dorms in the Pembroke Year 2 study (1.6%) represents an 86% reduction in the past three years. Additionally, the average number of windows open in the experimental dorm in the Diman study was 4.4%. This year's average number of windows open in the Pembroke Year 2 Study (1%) thus represents a 77% decrease in average number of windows over the past three years for experimental dorms**.**

E. Green Labs[5]

The E&E Office partnered with GreenerU to work with Brown's Biomedical Facilities Planning & Operation and Environmental Health & Safety (EH&S) staff to continue the development of a Green Lab Program. The Green Lab Program includes two components: practices and policies that can be implemented across campus through EH&S; and a specialty behavior pilot program designed and implemented in the Sidney E. Frank Hall for Life Sciences Building. The development, implementation and evaluation of this program will provide the framework for a possible expansion of Green Lab Behavior Programs across campus. Based on the findings from walking focus groups and meetings, a pilot behavior program was developed to target key occupant behaviors that could reduce energy, waste, and/or water use in the Sidney E. Frank Hall for Life Sciences building. The two key behaviors targeted in the pilot are shutting fume hood sashes and turning equipment off when not in use.

A red 'stop' sticker placed on equipment means that this equipment should stay on at all times.
A yellow 'caution' sticker placed on equipment means that lab users should contact the person whose name is written on the sticker before turning off equipment.
A green 'go' sticker placed on equipment means that it can and should be turned off when not in use.

"Shut the Sash" reminders have been placed on the side of fume hoods by EH&S, who cover this topic during lab safety training. Stoplight stickers [6]have been employed in two pilot labs to encourage lab users to turn off equipment that might otherwise be left on and protects research by ensuring that equipment that is being actively used is left on.

Two labs participated in the 2013-2014 pilot study. Lab managers Suzanne Hosier and Alexander Jaworski were nominated for participation; each was given the stickers and walked through their respective labs to implement as he/she deemed necessary. Each completed a brief survey on the program.

Key Findings Year One:

- Implementation and understanding of the stickers are effective and easily understood.
- Both managers recommend the program expand throughout Brown University labs.
- The recommendations developed from the 2013/2014 academic year are to:
    - Target shared departmental lab equipment; these users deal with the equipment less often and would benefit more from additional instruction.
    - Determine memorable metrics that could better illustrate energy savings potential.

[5] February 2014 'Greener Labs' Report
[6] Brown.edu featured story: Traffic light stickers may save lab energy safely.

F. FY 2014 New Construction, High Performance Design and Leadership in Energy and Environmental Design (LEED®)

Perry and Marty Granoff Center for the Creative Arts

As Brown University constructs, rebuilds or expands its infrastructure, Facilities Management's Planning Design & Construction office will be required to limit greenhouse gas emissions by reducing energy consumption for all newly constructed facilities to at least 25 percent with a goal of 50 percent below the standard required by state code. New construction will, **at a minimum**, meet a silver standard in U.S. Green Building Council LEED® certification program. The standards of LEED® certification are silver, gold, and platinum.

Categories in which points are earned are sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design. Projects at Brown, which have already achieved LEED® or are designed and registered to achieve LEED® certification, can be viewed at the interactive campus map and include:

Achieved Silver:
Sidney E. Frank Hall for Life Sciences, (NC-v2.1), 2009
Metcalf Complex (NC-v2.2), 2013

Achieved Gold:
Rhode Island Hall (NC-v2.2), 2010
Stephen Robert '62 Campus Center (Cl-v2.0), 2011
Medical Education Building (NC-v2.2), 2012
Perry and Marty Granoff Center for the Creative Arts (NC-v2.2), 2012
315 Thayer Street (NC-v3), 2013
Hunter Laboratory[7] (NC-v3), 2014
Miller and Metcalf Residence Halls (NC-v3), 2014
Nelson Fitness Center (NC-v3), 2013

Miller and Metcalf Residence Halls

Building for Environmental Research and Teaching

[7] A high-tech research greenhouse

G. Green Event

Green Event is a student driven, campus-wide initiative that aims to advise and assist in event planning in order to encourage better food sourcing, materials use, and waste management practices. Students consult with event planners, build relationships, and determine a Green Event certification framed by a checklist[8]. Events receive an overall diversion rate and are awarded a logo to be used in marketing their efforts. The 2014 pilot program was funded by the Brown Custodial Office, the E&E Office, and the Brown/RISD Hillel center. As of Spring 2014, over **50 events** received certification and over **800 pounds of organic material** was composted.

Event	Compost (lb.)	Recycling (lb.)	Food Recovery	Trash (lb.)	% Diverted
2012 Eco Reps Symposium	**68**	20	33	5	**96%**
2013 Local Food Forum	**54**	5.4	190	6.8	**97%**
2013 Orientation Total	**145.9**	105.2	0	157.6	**61%**
2013 Rosh Hashanah	**56.6**	20.2	0	5.2	**94%**
2013 Better World by Design	**202.4**	205.7	137	56.7	**91%**
Haffenreffer 250th Reception	**15.8**	10.4	0	0.1	**99%**
2014 Theories in Action	**57.4**	30	0	16	**84%**
2014 Earth Day Food Celebration	**305**	0	0	0	**100%**

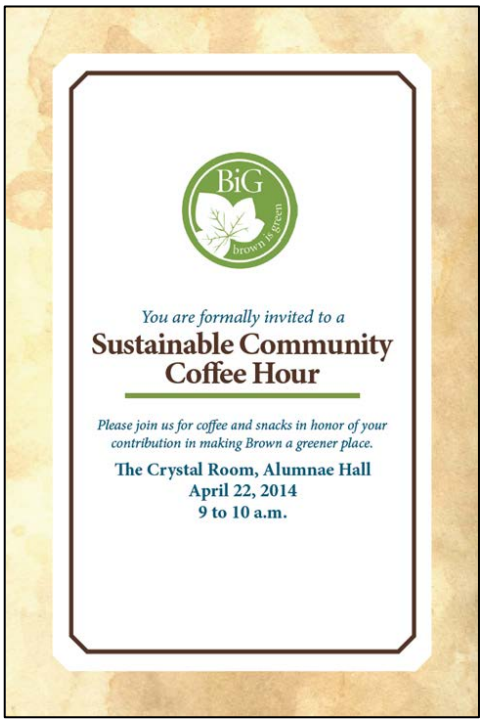
[8] Checklist 2014

H. Brown Unplugged

In its 4th year, the three week energy savings competition was a huge success. Students hosted a variety of outreach events, including an open mic night, a dodgeball tournament and an LED bulb give-away. Residents of the winning hall, Emery-Woolley/Morriss-Champlin, were invited to a dinner hosted by President Paxson where five new bikes were raffled.

I. The Sustainable Community Coffee Hour

On Earth Day 2014, Brown hosted its first Sustainable Community Coffee Hour. This event brings together student groups, staff, and faculty based on their involvement in various campus sustainability initiatives. Members of our Sustainable Community were served an appreciative Green Event certified breakfast while a slideshow featuring Brown's various efforts throughout the year scrolled in the background. Dave Larson delivered a welcome speech and students raffled off prizes to attendees. A Sustainable Community Newsletter is sent out each quarter to update and maintain this important network.



J. Earth Week 2014

The 2014 Brown Earth Week[9] was an ambitious collection of events planned and run by the student group, emPOWER. The planning committee, chaired by sophomore Haily Tran, targeted various Brown community audiences through mindful and varied events. Key events included a staff plant give-away, a Green Event certified Local Food celebration [10]at the Sharpe Refectory, a salsa-making workshop, a film screening hosted in the new BERT auditorium, and a community Earth Week Fair.

[9] Brown Earth Week Facebook
[10] Brown.edu Earth Week 2014:It's all about sustainability

K. Divest Coal[11]

In fall 2013, the Corporation decided not to divest the University's endowment from coal companies. After a year of debate and a strong show of student activism led by Brown Divest Coal, the Corporation's decision to reject divestiture sparked a series of protests.[12]

Following the announcement, President Paxson shared their insights in a community-wide email[13], encouraging students to support "significant and impactful initiatives to position the university as a leader in combating climate change locally, nationally and around the globe."

Divest Coal members partnered with environmental studies and sociology professor Timmons Roberts, who runs Brown's Climate and Development Lab. The group redirected to help advance climate-related causes in the university's home state.[14]

L. The Resilient Rhode Island Act

Students and community members show support for bill outside the RI Statehouse

In spring 2014, members of the Brown community[15] teamed up with Rep. Arthur Handy to push the *Resilient Rhode Island Act*, aimed at helping the state prepare for climate change.[16] On June 19th, the Bill officially passed both the RI House and Senate.

Highlights from the Bill's legislation include:

- Creating a science and technical advisory board with nine members to keep the executive climate change council abreast of important developments in scientific and technical information relating to climate change and resiliency;
- Conducting a vulnerability assessment throughout the state, advancing the state's understanding of how to adapt to the effects of climate change, and identifying and communicating adaptation strategies to Rhode Islanders;
- Developing a plan that includes strategies, programs and actions to meet targets for greenhouse gas reductions as follows: (i) Ten percent (10%) below 1990 levels by 2020; (ii) Forty-five percent (45%) below 1990 levels by 2035;(iii) Eighty percent (80%) below 1990 levels by 2050;
- The bill ensures that state agencies incorporate climate preparedness in their planning, develop short- and long- term greenhouse gas emissions reductions plans, and support efforts to expand RI's green economy and infrastructure.

[11] BDH Article 28 Oct 2013
[12] BDH Article 22 Oct 2013
[13] Paxson, C. E-mail to University 27 Oct 2013
[14] ProJo Article 16 March 2014
[15] Brown Alumni Magazine May/June 2014
[16] Resilient RI Act 2014

VI. Student Groups and Initiatives

Brown University fosters a large and varied student, environmental community. From campus gardens, bike share programs, conferences, energy initiatives and more, Brown students drive our momentum and success[17].

1. emPOWER is Brown's student environmental umbrella organization. emPOWER's common meeting time and collaborative structure create a strong sense of community among member groups that address a wide variety of sustainability issues. The following student groups are included under emPOWER.

a. Beyond the Bottle is an organization working to eliminate the supply and demand of bottled water on Brown's campus. Their work involves coordinating with staff and faculty to find and implement new strategies for providing alternatives to purchased bottled water for daily consumption and at special events and meetings.

b. Bikes @ Brown strives to facilitate bike usage and increase its prevalence on Brown's campus and throughout the Ocean State. Through this group, Brown community members can rent bikes or bring their own for free repairs.

c. Climate Action League (formerly BCAF) focuses on hands on projects and research to reduce Brown University's carbon footprint by providing resources to students with ideas for on-campus carbon reduction projects. Past projects include residence hall low-flow showerhead retrofits, Thayer Street recycling bins, Andrews Dining waste station signage, and partnership with the J.T. Owens Park green infrastructure outreach project.

d. The Brown Divest Coal Campaign was a student run campaign formed in fall 2012. It called on Brown University to divest from the 15 largest coal companies in the United States on the grounds that it is contrary to the values of the University to invest in companies that perpetuate global climate change and precipitate severe health impacts at every stage of coal production and burning. Specifically, they asked Brown to divest from the ten largest coal-burning utilities and five largest coal-mining companies.

[17] With over 300 student organizations, we captured our most prevalent for the report. There are more groups doing great work on campus.

In the two years of the campaign, the Brown University community showed strong support for divestment. More than 2600 people signed the petition, including hundreds of alumni, faculty and staff. The Undergraduate Council of Students voted to support coal divestment in March of 2013; and in April the Advisory Committee on Corporate Responsibility in Investment Policies, the official University body devoted to overseeing the endowment, made a formal recommendation that the University divest.

Over the summer of 2014, the campaign transitioned into the Fossil Free Brown campaign which is demanding that Brown divest from the top 200 fossil fuel companies. The transition to all fossil fuels was made in order to more effectively address the impacts of the entire fossil fuel industry on both climate and human well-being.[18]

e. EcoReps work with the department of Facilities Management to help foster a campus culture that embraces environmental conservation and sustainable resource management. EcoReps are passionate, environmentally-minded individuals who work to raise environmental awareness within the Brown community.

f. Green Event started as a final project for an environmental stewardship class in Spring 2012. In 2013-2014, Green Event was requested for over 50 events, collecting over 800 pounds of compost. Green Event Certification provides a simple framework for reducing waste, lowering our carbon footprint, supporting local businesses, and educating consumers.

g. The Healthy Housing Hub aims to align the resources of Brown University, local nonprofit agencies, and members of the community to address energy efficiency, sustainable living, and primary environmental health concerns in order to improve the state of healthy housing in Rhode Island.

h. Rhode Island Student Climate Coalition (RISCC)) is a statewide alliance of students and youth working for a clean, safe, and just future for all. In addition to the chapter at Brown, there are also chapters at other Rhode Island colleges and universities. RISCC is a political action group that fights climate change through creative projects and lobbying. They host activism training, organize actions related to local and national climate policy in Rhode Island and Washington DC, and work to increase commitment to climate justice in the local community.

[18] Greene, R. (Personal E-mail dated 13 Aug. 2014).

i. SCRAP, Brown's Student Composting Initiative, is working towards making composting more easily accessible to the Brown community. Its mission is to increase composting education, awareness, and practice through an improved campus-wide composting system in order to complete a zero-waste food cycle at Brown.

h. Solar Decathlon: Techstyle Haus[19] is a joint project between students from Brown University, the Rhode Island School of Design (RISD), and the University of Applied Sciences Erfurt, Germany (FHE) to design and build a unique, solar-powered house for the Solar Decathlon Europe (SDE) competition. The Solar Decathlon Europe is an international competition that challenges twenty collegiate teams to design and build sustainable homes powered exclusively by solar energy.

j. The Sustainable Food Initiative (SuFI) is a student group working with Brown and the community to provide local, organic food options. They do this through managing an on-campus, student-run garden and organizing food-related workshops.

In addition to emPOWER, the following student initiatives had a strong campus presence in FY 2014.

2. The Brown Market Shares program developed out of SuFI as a campus-based food distribution program. Inspired by the Community Supported Agriculture (CSA) model, the program partners with regional farmers and producers to bring fresh, local, and sustainably-produced food to the university community. The program is fueled almost entirely by volunteer labor and is directed by a six person coordinating team.

3. West House is Brown's Environmental Program House. Fourteen students live in the house during the academic year. The House is open to visitors every Friday for Open Dinner Night at 6:30 pm. All food prepared in West House is vegetarian or vegan; and they strive to purchase primarily local, seasonal produce. Each resident also has a house job, with responsibilities ranging from coordinating environmental initiatives to managing the garden and backyard compost system.

[19] Photo courtesy of http://www.techstylehaus.com

4. Food Recovery Network at Brown (FRN@Brown) is a network of students at Brown University volunteering to recover the surplus food from campus dining halls and special events and donate it to hungry men, women, and children in the Providence area. FRN partners with Brown Dining services and recovers food every day of the week from seven campus eateries. FRN@Brown is a member of the Food Recovery Network, a national movement to create student-led food recovery groups on every college campus in the country. In 2014, Brown Dining Services was officially certified by the national Food Recovery Network.

5. Outdoor Leadership Environmental Education Project (OLEEP) is a mentoring program for Metropolitan Regional Career and Technical Center (Met) high school students. Brown volunteers engage with Met students in one-on-one mentoring relationships, weekly environmental education/science workshops, and camping or backpacking trips. OLEEP strives to foster individual environmental awareness, experiential science education, personal challenge, and leadership skills in Brown and Met students as they learn from each other.[20]

6. Rainwater for Humanity[21] (R4H) is a collaborative social enterprise initiated by Brown University students in partnership with local organizations in Kerala, India. To address the potable water crisis in the region, R4H finances the construction of rainwater harvesting tanks under a sustainable pay-per-use water vending model and trains rural women to manage each structure. Every tank supplies a group of families with affordable and accessible water for their drinking and cooking needs throughout the dry season, safeguarding community health and increasing household savings.

7. A Better World by Design is an annual student organized conference that brings a global community of innovators to Providence, Rhode Island to reach across disciplines and unite under a common goal: building a better world. Presenters share engaging stories, workshops teach creative skills, and discussions re-frame perspectives. Better World is an immersive experience that deepens our understanding of the power of design, technology, and enterprise to engage our communities and sustain our environment.

[20] Rothenberg, J. (Personal email dated September 1, 2013).
[21] Flores, D. (Personal email dated August 27, 2013).

VII. Research and Teaching in Sustainability

As members of a leading research institution, Brown faculty and students collaborate on cutting edge research initiatives, many of which reach the national stage. Several projects and courses integrate society and the environment, helping to engage and educate Brown students in the conversation of sustainability, no matter their declared concentration.

A. FY 2014 Featured Research Projects

Guilty: Crabs are killing N.E. saltmarshes, *PLoS ONE*
Indonesian climate shift linked to glacial cycle, *Proceedings of the National Academy of Sciences*
A better water wing to harvest tidal energy, *Advanced Research Projects Agency-Energy*
Image or reality, the *Journal of Geophysical Research: Biogeosciences*.
Doing good by doing research in R.I., *Brown School of Public Health*
Legacy soil pollution, *Science of the Total Environment*
CES Senior Research Poster Presentations

B. Courses

Receiving nearly 1,400 responses, the results from the FY 2014 Student Attitudes & Awareness Survey[22], suggest that three quarters of respondents took a course that is either focused on or related to the topic of social and environmental sustainability.

C. Tri-Lab (Teaching, Research and Impact)

Brown University's Swearer Center enters its second year of Tri-Lab, a new initiative that brings together students, faculty and community practitioners to engage with a complex social issue and collaboratively develop, refine and test solutions to the issue. The selected topic for the coming school year is a focus on Healthy Food and Access. In a similar vein, the following year's group (FY 2015) will study Climate Change and Environmental Justice[23].

D. Institute for the Study of the Environment and Society

Based on the recommendation of the Environmental Task Force the Board of Fellows has approved creation of an Institute for the Study of Environment and Society (ISES) in the coming academic year. Hosted in the newly opened Building for Environmental Research and Teaching, ISES will bring together faculty from the Center for Environmental Studies and the Environmental Change Initiative, aiming to build on Brown's existing strength and leadership.

[22] Further results on page 31
[23] Tri-Lab announces next steps at Open House

VIII. Departmental Reporting

A. Brown Dining Services (BDS)

BDS is committed to improving the local food system through sustainable initiatives, which work to support local farmers, reduce waste output, and purchase fairly-traded, sustainably-sourced and environmentally-friendly foods.

BROWN DINING SERVICES SUSTAINABILITY INITIATIVE

BDS's commitment to sustainability is demonstrated by the following initiatives:

1. **Community Harvest:** The Community Harvest program began in September 2002 as an initiative to increase Brown's support of food producers in the Rhode Island region. The program, now in its 15th year, focuses on sustainable purchasing at the local level. Community Harvest supports local growers, food producers, processors, and practices artisanal craftsmanship through food. Additionally, the program contributes to strengthening the local food system through educational programs as well as by providing a large-scale, steady purchaser for local farms.

2. **Farmer Partnerships:** BDS developed and has maintained committed relationships with the farmers who were part of the original initiative to bring fresh, local produce to the dining halls. As BDS aims to expand the program each year, it has established relationships with many additional farms so that today, BDS works with over 30 local farms. Dining Services also works with many producers, processors and distributors of local food and dairy products, including continued support of the Rhode Island Dairy Farms Cooperative, a group of 8 dairy farms located throughout the state.

3. **Farm Fresh Rhode Island:** BDS is a founding partner of Farm Fresh Rhode Island (FFRI), an organization that started in 2004 as collaboration between the Center for Environmental Studies, the Rhode Island Foundation, the Rhode Island Division of Agriculture, and BDS. FFRI is a non-profit organization whose mission is to strengthen the local Rhode Island food system by creating stronger, healthier connections between producers, consumers, and the environment. Currently, FFRI manages eight urban farmers' markets in the greater Providence area, and with BDS, co-manages a weekly market held on Brown's campus in the fall and late spring.

4. The **Market Mobile**, a FFRI initiative developed in the winter of 2008-09, provides a centralized distribution system for Rhode Island farmers. Each week farmers post prices for their available products through a central online price list. Local restaurants and institutions view the list and place orders. The Market Mobile picks up farmers' weekly deliveries from one central location and delivers them according to a scheduled route.

5. The **Real Food Initiative:** In 2009, as a result of a grassroots effort by a group of students, BDS met the *Real Food Challenge*. The goal was to create a process through which all food purchasing decisions consider four main criteria: whether foods are local, ecological, fair, and humane. Additionally, students worked towards the capability to trace and track food purchases to determine how they stacked up to the *Real Food Calculator*. Additional student intern positions were created to assist BDS with this process and in moving the campaign forward.

    a. Brown Dining was one of the first institutions in the nation to pilot the Real Food Calculator to track and assess its purchases. Today, BDS is one of over 340 colleges and high schools nationwide that supports just and sustainable agricultural systems.
    b. Currently, BDS has increased its percentage of purchases at the Blue Room to 50 percent Real Food. The Calculator has enabled BDS to assess how well food purchases measure up against the criteria. Areas of focus have included milk, cage-free eggs, beef, fish, shellfish, and coffee.
    c. As of today, BDS has already surpassed their 2014 goal of having 35 percent of food purchases meet the Real Food criteria, standing now at 39.9 percent. BDS received the Pioneer Award from the Real Food Challenge for its work on this initiative.

6. **Green Catering**: On top of the sustainable purchasing decisions founded in the Real Food Criteria, Brown Catering Services has begun developing options for sustainable catering. These meals include a focus on local, seasonal items that consider minimal packaging and waste. These meals are served on compostable Greenware and feature signage with information on local vendors.

7. **ISES Nitrogen Footprint Research Project:** Brown University was selected as one of three schools to pilot the Nitrogen Footprint calculator. Developed by UVA, Brown and UNH will collect and contribute to this effort, aspiring to complete these calculations in 2015.

8. **After the Harvest and Waste Reduction Strategies:** The After the Harvest (AtH) initiative, part of the Community Harvest initiative, began during Hunger and Homelessness week in 2005. As a result, BDS has successfully coordinated efforts to both reduce food waste and reroute overproduced food appropriate for donation to local hunger relief programs.

9. **Food Donations:** Since 2005, BDS has donated over 60,000 pounds of local food to local organizations including The Rhode Island Community Food Bank, Providence Rescue Mission, McCauley House, City Year, and Camp Street Ministries.

    a. In 2012, Brown Dining Services furthered this effort by partnering with We Share Hope, a local organization committed to recovering unused food from manufacturers, restaurants, hospitals, and colleges in Rhode Island and Southern Massachusetts for distribution to organizations that serve the poor and hungry. During the 2012-2013 academic year, Dining Services was able to donate over 16,900 pounds of food to this worthwhile program.

10. **Recycling & Reusables:** Brown Dining Services assists with Brown Universities waste diversion through the following initiatives:
    a. The dining hall 'to-go' program offers compostable takeout containers, cups, and napkins for students who choose to take their food out. These containers are designed to decompose in two years.
    b. In the spring of 2010, BDS implemented Eco To-Go, a reusable takeout container program. Besides offering the container, BDS also worked to educate students about landfill waste and the benefits of re-use. A YouTube video was produced by a BDS intern and made available through the Dining Services web page.
    c. In addition, BDS sells reusable mugs in its retail units. Beverages purchased in a reusable mug are offered at a discount.

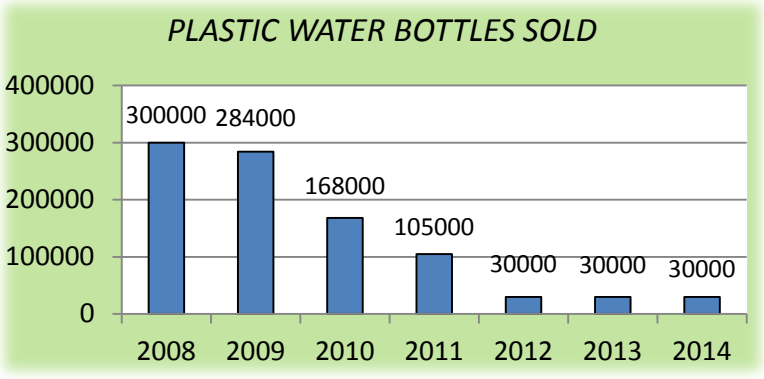
11. **Newport Biodiesel:** BDS has partnered with Newport Biodiesel, a local company that takes used fry-oil and turns it into usable fuel for diesel engines and home heating. Brown's donated oil, combined with oil from other local food establishments, goes through a refining process before it is ready to be used as a recycled, renewable, sustainable fuel. Four dining locations participate in the program: Verney-Woolley, Sharpe Refectory, Josiah's, and the Faculty Club. Between the four locations they have donated 17,000 gallons of oil and grease since 2010.[24]

[24] Rossi, P. (Personal email dated September 5, 2014)

12. **Diversion:** BDS diverts pre- and post- consumer waste from the waste stream as follows: Pre-consumer waste refers to the organic matter generated in the production and preparation of meals. At BDS, this waste includes (but is not limited to) melon rinds, potato peels, onion skins, and broccoli stalks. BDS' post-consumer waste includes the food that is left on the tray or plate after consumers have finished their meal. BDS combines all pre- and post-consumer waste and donates it to a local pig farmer, who picks up what becomes hearty, nutritious fare for pigs. Additionally, BDS' butcher shop staff separate meat scraps and donate approximately 300 pounds per week to PF Trading. As a result, approximately 12,000 pounds of meat scraps per year are diverted from the waste stream and processed into compost. Finally, with the assistance of student interns, BDS has implemented a program in which students scrape their plates and separate trash. The interns assist in educating customers about the benefits of composting and diverting food waste from the general campus waste stream.

13. **Trayless Dining:** In October of 2008, Brown Dining committed to trayless dining in its Verney-Woolley (VW) dining hall by eliminating trays at that location entirely. VW customer counts range from 250 to over 1,000 per meal, depending on the course. Trayless dining conserves one third to a half gallon of heated water per person by eliminating the need to wash those trays. Trayless dining conserves half of a gallon of heated water per tray. A savings of over 4,800 gallons of water per week and 155,000 gallons per school year has been achieved. Trayless dining also reduces energy that would otherwise be used to heat the water and detergents used to wash trays. Studies suggest that the elimination of trays may also reduce food waste because people take fewer items without them.

14. **Beyond the Bottle, reducing bottled water on-campus:** Beyond the Bottle (BtB) is an initiative started by students in February of 2008 with the goal of reducing the supply and demand of bottled water at Brown.



As a result of a three-year campaign, **bottled water purchases by Dining Services have been reduced by 90 percent since the inception of the initiative**, exceeding the FY 2012 goal of 80 percent and meeting the aspirational goals for FY 2013 one year early. This effort continues and the reduction of bottled water purchases by 90 percent is maintained today. Facilities Management undertook a campus-wide inventory of drinking fountains and sources for filling re-useable water bottles and drafted a new standard and decision matrix for installing hydration stations in new and existing buildings. The inventory is complete and currently is being assessed by a contractor to determine cost of implementation of new and upgraded water fountains.

15. **Awards, Recognitions, Certifications**
    - Green Certification, Rhode Island Hospitality Association, 2009, 2010 and 2012
    - Recognized as 'Friend' of the Rhode Island Food Bank, 2009, 2010, and 2011 and 2012
    - The Green Report Card, food and recycling earned an 'A' in 2009, 2010 and 2011
    - Real Food Pioneer Award, 2011 – Real Food Challenge
    - Top 10 Vegan Friendly Colleges, 2007 and 2011 – Peta2
    - 52 Best Colleges for Food in America, 2012 - The Daily Meal
    - The Princeton Review's Guide to 286 Green Colleges, dining recognized for purchasing local and organic food
    - Named a "Cool School" by the Sierra Club, food being a major category of focus

B. Department of Transportation & Parking Services

Brown University's Transportation Office provides resources and information to the Brown Community promoting convenient, safe, and environmentally friendly ways to move around the campus, to travel to and from Brown, and to reduce traffic congestion on College Hill.

1. **Public Transportation**: Brown University is making great strides toward increasing the availability of public transportation. With the Rhode Island Public Transportation Authority (RIPTA) U-Pass program in its fifth year, all Brown University ID holders (faculty, staff and students) may ride any RIPTA bus or trolley free of charge anywhere in the state of Rhode Island.

2. **Zipcars**: The University has partnered with Zipcar to offer Brown community members an alternative to driving to campus. Brown University students, faculty and staff pay an annual $20 fee. Hourly rates range from $7.25 to $11.00 depending on the type of vehicle reserved. Eight of the 23 vehicles are hybrids and 2,500 Brown-related members use them to travel 30,000 miles a month.

3. **Bicycle Parking Racks:** Brown has bicycle racks in convenient places all around campus, offers bicycle registration to discourage theft, and is working with various civic groups to help promote cycling in the city. All new construction and major renovations are required to install racks as part of their projects.

4. **Bicycle Sharing**: Bikes at Brown, a student initiative, launched a bike-sharing program in March 2009 utilizing University funds to purchase three new Schwinn Cruisers and four Mongoose mountain bikes. They now have a fleet of thirty-two bicycles, which can be signed out for a week at a time at no charge and for no deposit. Additionally, in FY 2014, Brown University's Brown Student Agencies (BSA) and the City of Providence began discussion on a collaborative city-wide bike share system.

5. **Alternative Fuel Fleet**: In its fleet of 129 vehicles, Brown has three 100 percent electric vehicles, five hybrid vehicles, and eleven flex-fuel vehicles. The Grounds Division of Facilities Management has been using biodiesel in all of its on-road diesel vehicles since 2006.

6. **Electronic Vehicle Charging Station:** Brown University now has two plug-in electric vehicle charging stations available for public use. One is located in Visitor Parking, Lot #44 on Brook Street, behind Minden Hall. The other is in the Richmond Street parking garage, entrance on Eddy Street.

7. **Website**: Thanks to collaboration between the E&E Office and Anthropology Professor Catherine Lutz's class, the Department of Transportation & Parking Services website was updated with new alternative transportation resources for the Brown community.

8. **ISES Nitrogen Footprint Research Project**: Based on the preliminary data collections for the Nitrogen Footprint project, the average annual commuter carbon footprint for Brown staff and faculty was calculated for FY 2014, accounting for approximately 7,800 metric tons of carbon, adding 15% to our current emissions. Employees on average travel 25 miles per day. This means our automobile commuter population as a whole pays an estimated $3 million towards gasoline annually.

C. Purchasing Services

Faculty, staff, and students are strongly encouraged to take a proactive position in identifying and examining opportunities to procure "environmental friendly" materials/equipment. This effort focuses along the complete "supply chain" management process including assessment of alternative materials, vendor sourcing and selection, and ultimate disposal of waste/surplus. A related opportunity to reduce waste on campus includes a requirement for reduced packaging and negotiating a "take back" program for the materials in which the purchases are delivered, such as cardboard boxes and wooden pallets.

The materials considered for green purchasing include appliances, cleaning products, computers/electronics, lighting, office supplies, and paper products such as envelopes, notepads, paper towels, napkins, and office paper.

While Brown does not require products to be ENERGY STAR® qualified, it is strongly recommended that appliances, building products, computers, electronics, heating and cooling, lighting, fans, and plumbing equipment meet or exceed the ENERGY STAR® rating.

Beginning FY 2006, the Purchasing Department required that all Dell, HP, and Lenovo electronics be Electronic Product Environmental Assessment Tool (EPEAT) certified.

D. Custodial Office

Brown University began using green cleaning products in 2004, when they reached out to local vendors to replace current cleaning agents to more environmentally friendly alternatives.
Research and testing led to the purchasing of "green seal approved" chemicals, microfiber applications, non-acid bathroom products, and products containing hydrogen peroxide.

Brown is committed to keeping abreast of green, sustainable products that do a superior job of cleaning surfaces and removing or neutralizing infectious bacteria. Each product considered for use must meet the dual challenge of being an effective agent with no additional labor required and no damage to cherished historic surfaces. Products are rigorously tested prior to deploying them across campus. If the product passes the testing phase, it becomes a part of our green cleaning arsenal.

Custodians assist in sustainability efforts in their recycling knowledge and dedication to helping student initiatives, including but not limited to Green Event and Clean Break. Additionally, Custodial partnered with the EcoReps program to expand awareness about proper residence hall trash disposal, encouraging students to place all room trash in the designated trash rooms, rather than bathrooms or community spaces, as each trash room is outfitted with proper sorting information.

E. Grounds Division

Brown University received in spring 2013 the Rhode Island Higher Education Sports Greens and Landscaping Sustainability Certification from the Rhode Island Department of Environmental Management in partnership with the Association of Physical Plant Managers (APPA). This award was achieved by demonstrating through Best Management Practices its reduction of environmental impact and improvement of environmental quality to on-campus and off-campus properties.

In FY 2014, the Grounds Office launched the Keep Brown Clean initiative, aimed at educating students and staff about cleaning up and taking ownership of communcal campus spaces.

F. Residential Life

In FY 2014, Residential Life invited EcoReps to present at the Residential Peer Leader (RPL) trainings, encouraging those student leaders to invite EcoReps to speak to residents directly in residence halls. The Residential Life Office also supported various sustainability initiatives, including DEEP, the Brown Unplugged competition and Clean Break.

Additionally, laundry rooms are equipped with High-Efficiency front-load washers, which save approximately 2.5 gallons per cycle compared to previous washers. This equipment saves Brown over 300,000 gallons of water each year.

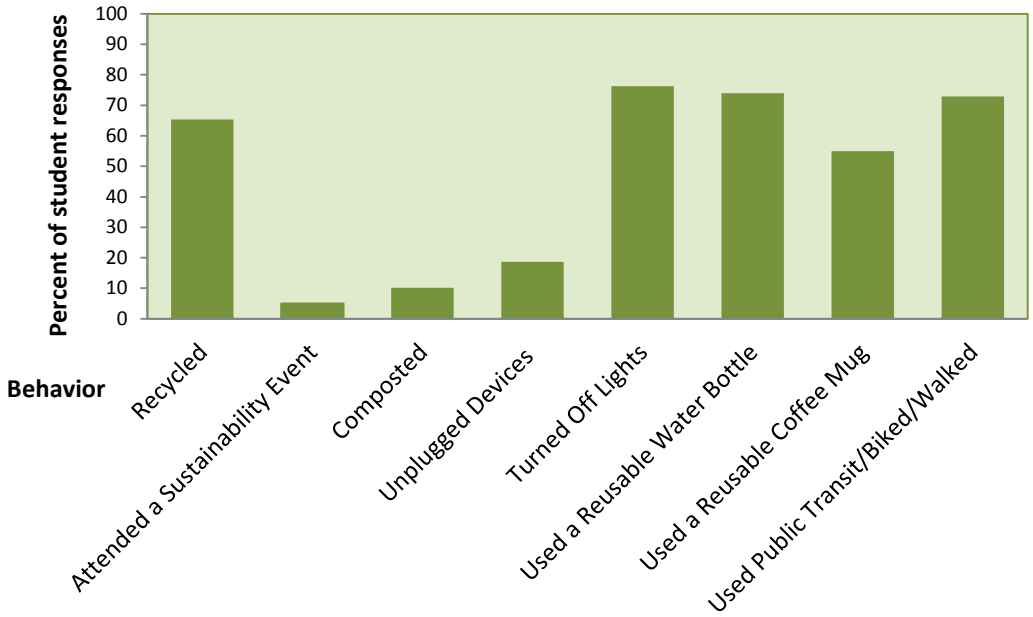
IX. Student Attitudes and Awareness Survey

The survey was presented to all students via Morning Mail from Facilities Management in May 2014. Receiving 1356 responses[25], the survey asked questions regarding pro-environmental attitudes, and awareness of sustainable behaviors and programming. The survey used closed-ended questions: multiple choice, categorical, and Likert scale. Demographic information such as gender and class year was also collected. Students were incentivized to take the survey by the chance to win a $100 Amazon.com gift card.

The **recommendations** developed from the comparison of academic year 2013/2014 to 2012/2013 are to:
a. **target** residence hall population for specific waste and recycling trainings.
b. better **publicize** our high-level efforts to *students* to bolster Brown's image as a leader among its peers.
c. continue to **expand** importance of individual behavior in messaging
d. **market** events to students in courses with a direct focus on the environment and sustainability as well as engage the faculty in an effort to transform the campus into a 'Living Lab.'
e. **counteract** challenging publicity with highly visible, positive media around university efforts.

Key Findings FY 2014 Survey
a. 81.39% of students have heard of, or were involved with, the EcoReps program (a 7.89% increase from 2013). Of the twelve environmental groups listed, EcoReps reported the second largest event attendance, falling just slightly behind Divest Coal.
b. Climate Change increased in its importance to students from 2013-2014 (from 76% to 79.8%). In fact, 46.9% **strongly agree** that Climate Change will be a defining issue of their lifetime (a 5 % increase from the previous year).
c. 22.2% of students agree that 'Being involved with sustainability programing in college will make [them] more marketable when [they] start looking for a job.' This is up 4%.
d. Only 25% of students feel that Brown University is a leader in sustainability.

In the past year, I have… whenever I could



[25] Results based on a relatively equal distribution of responses from classes with a wide array of academic concentrations.

X. Community Partners

A. Ivy+ Sustainability Working Group
The Ivy+ Working Group is faced with the opportunity and responsibility to develop cutting edge model operations, engage top scholars, and educate the future leaders on issues of sustainable development and climate change. Brown University hosted the annual meeting of the group in early May 2014.
B. Emerald Cities Collaborative
Brown is sharing its expertise with the Emerald Cities Collaborative (ECC) and a consortium of Providence businesses, community groups and government officials to create a future in which American cities such as ours are the greenest and most equitable in the world.
C. Energy Efficiency and Resource Management Council (EERMC)
Brown's AVP of Sustainable Energy & Environmental Initiatives is a council member representing all large commerical and industrial energy consumers.
D. International Sustainable Campus Network (ISCN)
On January 28, 2010, Brown University signed the Sustainable Campus Charter. Signatories of the Sustainable Campus Charter become partners of the ISCN.

XI. Awards

A. **Princeton Review**
The Princeton Review's scoring is a quantitative and qualitative look at a school's sustainability efforts in areas identified as most important to students.
B. Sierra Club "Coolest Schools"
This survey rates American colleges and universities according to their environmental practices, green initiatives, and caliber of sustainability-oriented education.
C. Good Will Industries
Brown University received a Certificate of Appreciation in 2014 from Good Will Industries. Brown students donated over 5 tons of clothing to Good Will during Clean Break 2014.
D. International Sustainability Campus Network
Brown received international recognition in 2011 for its ambitious carbon reduction goals and the plans and projects that are making those goals achievable.
E. Bear Day Winners
The Facilities Management Greenhouse Gas Team
F. **Peta2 Vegan Report Card**
Brown University received an A for its vegan-conscious dining options.

XII. Acknowledgments

The authors of Brown's annual Sustainability Progress Report would like to acknowledge the contributions and efforts of the E&E interns and EcoReps, emPOWER students, Brown Dining Services team members, the Residential Life staff, the Office of Transportation and Parking Services, Environmental Health & Safety staff, Facilities Management, the Biomedical facilities team, the SSPAC team and all campus members who served as advocates for sustainability.