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Colby College 2015-16 Sustainability Overview

Colby College

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2015-16 Sustainability Overview

Campus Engagement

EcoRep Program

The student EcoRep program is in its third year and in 2015-16 the team contributed over 1,500 hours to promote sustainability action on campus. Twenty-five EcoReps were hired throughout the academic year for two major functions: (1) promoting sustainable living habits in the residence halls; and (2) planning, managing, and executing student-focused sustainability projects in order to generate environmental discussion and action across campus.

EcoReps focused on educating the residence hall community on sustainable living practices, and continued two campaigns to conserve campus resources:

- Five-Minute Shower Challenge: Campus-wide participation grew to 25 percent in 2015-16. Every dorm on campus engaged in the program, which is estimated to have saved over 8,000 gallons of water during the week-long program.
- Dorm Electricity Challenge: Over the three-week competition, 23 of 25 residence halls had a reduction compared to their baseline period, for a savings of approximately 6,500 kWh or a reduction of 6 percent across all residence halls.

Key student-focused projects included the following:

- Food Recovery Network – EcoReps started a Food Recovery Network (FRN) on campus this year to donate pre-consumer food from the dining halls to a local food pantry. The program averaged donations between 40-100 pounds each week. Students organized the packaging and delivery of the food throughout the academic year.
- World Food Day – For the second year in a row, the EcoReps coordinated the College's World Food Day celebration, sponsoring a cooking competition among five teams, with ingredients sourced only from the Waterville Farmer's Market. Several faculty and staff judged the dishes, after which over a hundred students enjoyed a locally sourced dinner.

- iBike Mechanic Program – In fiscal 2016, EcoReps undertook the maintenance of the iBike fleet. The Sustainability Office, in partnership with Campus Life, sponsored bike mechanic training in the fall for eight students. Beyond the iBike fleet, the students offered open office hours to the Colby community to repair any student's bike throughout the spring.

Sustainability and Green Building Education

In January 2016, the Sustainability Office offered a three-credit course entitled Green Building Design to eighteen Colby students interested in a variety of disciplines. The course provided an introduction to building design and science, and provided students with methods to analyze and measure sustainability performance. Labs and homework focused on campus operations in order to promote the College as a living laboratory and help students better understand their indoor and outdoor environment. The course participants toured campus LEED buildings and a Passive House residential facility in Brewster, Maine.

After the course, twelve students were interested in sitting for the Leadership in Energy and Environmental Design Green Associate (LEED GA) accreditation exam. The LEED GA credential demonstrates a basic understanding of green building principles as well as the LEED rating system. The twelve students passed the exam and a number of them assisted the Sustainability Office with LEED documentation for campus building projects. In three years' time, the College has trained, supported, and accredited 25 student LEED Green Associates.

Operations Pilot Programs

Sustainable Turf Management

Beginning in 2015-16, the College began piloting a sustainable turf management program on the Dana and Roberts Row terrace lawns. The program seeks to improve soil health and grass quality, and reduce use of watering, synthetic fertilizer and pesticides. The program includes soil analysis followed by targeted addition of nutrients needed to increase root depth of the grass as well as restore soil microorganisms. Based on the outcome of the pilot, additional areas on campus will transition to these management practices.

Native Plantings

To reduce unnecessary irrigation and mowing, the grounds staff have identified three areas on campus to transition from traditional turf to alternative native plantings. The three pilot areas—adjacent to the Museum, Roberts Hall, and Eustis—were selected based on their inability to support turf grasses due to shallow soil, foot traffic, shading, or proximity to asphalt. Native plantings (e.g., low-bush blueberries) should have more success due to their ability to thrive on regional precipitation amounts and tolerance to salt; they also require less maintenance. The selected plantings provide groundcover, color, and support biodiversity. Other areas of campus are being considered for similar transitions. The addition of native plantings also provides educational opportunities for the academic program.

Greenhouse Gas Emissions and Reporting

Greenhouse Gas Progress

As of June 2016, Colby remains the only member of the NESCAC to reach and maintain carbon neutrality. The following chart shows Colby’s greenhouse gas (GHG) reduction progress since 2000.

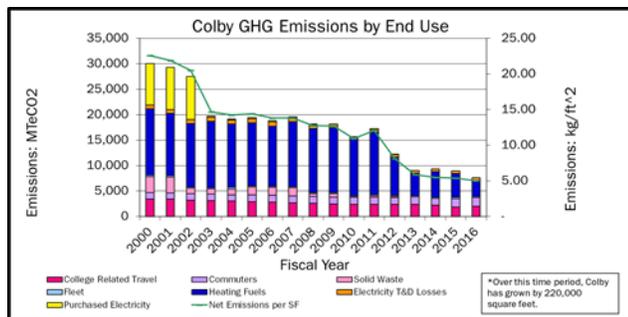


Figure 1: Colby College GHG Emissions progress since 2000

Renewable electricity purchases beginning in 2002 and the opening of the biomass plant in 2011 resulted in a significant reduction of GHG emissions. Other energy conservation projects further reduced emissions and the purchase of carbon offsets in 2013 allowed Colby to reach Carbon neutrality.

In 2014-15, Colby emitted 8,321 metric tons of carbon dioxide equivalent (MTCDE). In 2015-16, this total was reduced to 7,783 MTCDE, a 6 percent reduction, largely the result of the mild winter. Further GHG reductions are expected in 2016-17, as the College continues to implement additional energy conservation measures, renovate facilities, and identify additional means to improve composting volumes.

The 7,783 MTCDE from 2015-16 were balanced through the purchase of carbon offsets shown Figure 2.

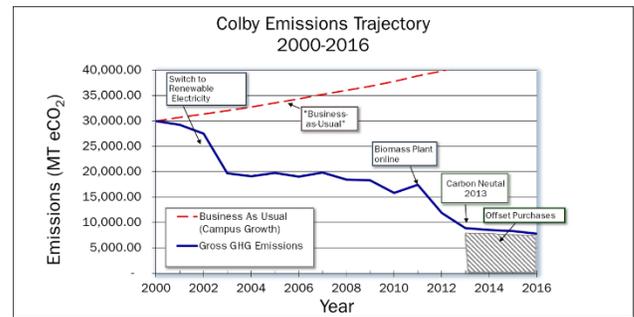


Figure 2: GHG Emissions trajectory

Carbon Offset Details

The College solicited proposals from eight carbon offset vendors for national and international offset projects that attained third party certification, met the College’s environmental and social goals, and were priced competitively. Based on these criteria, Colby purchased carbon offsets for 2015-16 from three locations.

The Farm Cove Community Forest—in North Washington, Maine—protects carbon stocks through improved forest management practices that curb timber harvesting and promote higher carbon sequestration rates through more effective tree growth. Supporting local initiatives is one of Colby’s priorities as it identifies offset projects.

The second, a project in Guatemala, distributes water filters that enable access to clean water and stoves that improve indoor air quality and fuel efficiency. Addition benefits include the employment of 800 temporary and permanent staff hired to manufacture and install the stoves, as well as train families in their proper use. The stoves are more efficient, reducing the amount of fuel required and the time needed to collect wood and cook. This frees up women—typically the primary cooks in Guatemala—to reallocate time to other activities.

The third project is a methane recapture facility located in Greater New Bedford, Massachusetts. The landfill captures methane from decomposing refuse and burns it to create heat and electricity. When burned, methane’s greenhouse gas impact is less than 5 percent of its impact if released into the atmosphere. Colby selected this project because of a favorable cost per ton of this offset.

While the College will invest in carbon offsets in order to maintain its carbon neutral distinction, Colby will also continue to implement energy conservation projects, enhance recycling and composting efforts, and explore other greenhouse gas reduction projects on campus.

Greenhouse Gas Emissions Breakdown

Total emissions for 2015-16 were 7,783 MTCDE were generated by a range of College activities, as depicted in Figure 3. Heating fuels comprise the largest amount of emissions, at approximately 43 percent. College travel represents 28 percent of emissions, with air travel being the largest contributor. Commuting forms the third largest share of the College’s emissions and comprises 23 percent of the total. A commuter survey conducted in the fall of 2014 helped quantify commuting emissions and evaluate commuter greenhouse gas reduction projects moving forward.

Colby is seeking to further reduce emissions by implementing efficiency measures in new and existing facilities, evaluating renewable energy installations and exploring methods to reduce Scope 3 emissions.

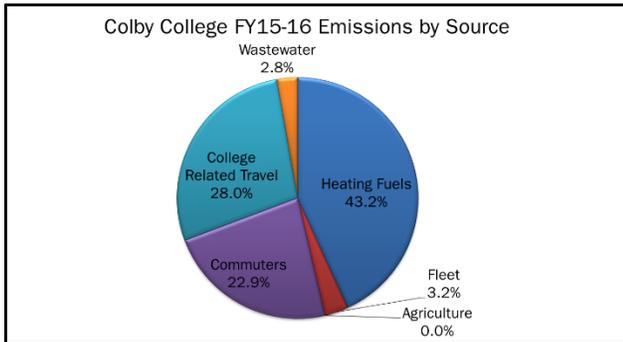


Figure 3: Colby College GHG emissions breakdown for fiscal 2016

Fiscal 2016 Key Sustainability Indicators

Energy:

- Since 2000, Colby has realized a substantial reduction in its energy consumption. Figure 4 shows the weather normalized energy use per square foot from 2000 through 2016. The energy data have been corrected for heating degree days in order to better compare data from one year to the next and more accurately display trends.
- Since 2000, the College has realized a 21.8 percent reduction in its energy consumption per square foot. In reviewing the data, there is a small anomaly from 2004 to 2006, when the Colby Green

was created, adding significant exterior lighting without any corresponding increase in campus square footage. Since then, consumption has decreased with the construction of more efficient buildings, renovations, and upgrades to individual building systems.

- Further efficiency gains stem from the Colby’s Energy Management program, which aims to reduce energy consumption by 20 percent per square foot over the next six years, using 2013-14 as a baseline. In terms of total energy consumption, without weather normalization, the goal is to maintain campus energy consumption, inclusive of campus growth over the same time period. As of 2015-16, the College has reduced its energy consumption by 5.6 percent using 2013-14 as the baseline year.

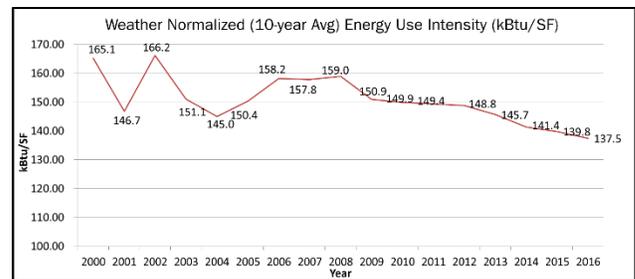


Figure 4: Weather-normalized campus energy consumption per square foot since 2000

Figure 5 displays the total energy consumption per square foot by utility type. Consumption of #6 oil has been removed from campus entirely with the introduction of natural gas to the steam plant in 2014-15. Fiscal 2015-16 marked the first time in recent years that electricity consumption has decreased.

The College opened the Davis Science Center in 2014, increasing electricity consumption by 800,000 kWh. This past year, due to the College’s successful energy management programs, the College reduced its electric consumption by 550,000 kWh, nearly 75 percent of the increase from Davis. The mild winter was the primary driver of the reduction, but as shown in Figure 4, after accounting for weather, the College still experienced a 1.6 percent reduction from fiscal 2015,

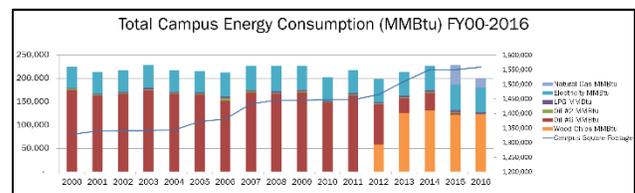


Figure 5: Total campus energy consumption by utility type since 2000

Water Consumption:

- Figure 6 displays total potable water consumption since 2005. From 2014-15, the College reduced its consumption by approximately 1,000 CCF of water, or 790,000 gallons. This represents a 2.2 percent reduction.
- The largest portion of these savings stems from showerhead replacements across campus to a 1.5 gallon per minute (gpm) fixture, and the replacement of roughly half of the sink aerators in residence halls to a 0.5 gpm fixture. These water savings projects will continue in the next fiscal year to reduce the College's potable water consumption and reduce operational expenses.

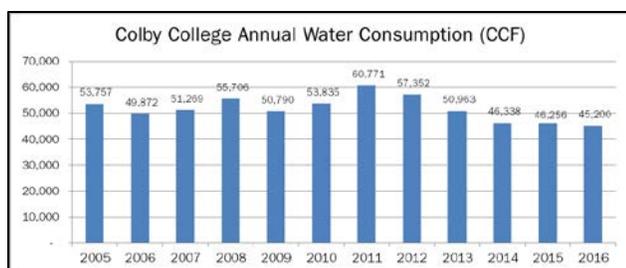


Figure 6: Total campus water consumption since 2005

Sustainability Program Recognition**Sierra Club Cool Schools:**

- Ranked 4th nationally
- Ranked 80th in fiscal 2014, and 20th in fiscal 2015

Princeton Review Green College Honor Roll:

- Among 21 schools nationally to receive a score of 99 (highest possible score)
- Not ranked in past years

Colby achieved carbon neutrality in 2013, and these recognitions affirm and reflect continued progress in the College's commitment and efforts to institutionalize sustainability in education and operations.

Looking Forward

In 2016-17, the Sustainability Office will focus on a number of key initiatives including a draft of Sustainability Action Plan, an update to the College's STARS certification, new EcoRep initiatives, collaboration with the Environmental Studies program, and further progress on the College's aggressive energy management goals.

The Sustainability Action Plan is an enhancement to Colby's 2010 Climate Action Plan (CAP). The primary goal of the CAP was to achieve carbon neutrality. The goal of the Sustainability Action Plan is to set short and long term goals beyond greenhouse gases and include objectives for an academic focus on sustainability, administrative policies, environmental stewardship in landscape and stormwater management, and operational practices like cleaning and waste reduction.

In 2013, Colby received a Gold STARS rating from the Association for the Advancement of Sustainability in Higher Education (AASHE). Since that time, the College has created and expanded upon a number of sustainability programs, which should further improve the College's ranking. The Sustainability Office will begin work this fiscal year to update the College's certification materials.

This year, the EcoReps will work on a new program as well as expand the scope of existing programs to further community-wide engagement. The first is a program focused for students living off campus. The hope is to provide resources to these students to help reduce their utility bills, learn about the recycling practices in the area, and possibly create a carpooling network. Further, EcoReps are working to expand bike mechanic opportunities on campus and food recovery network practices. The two programs started last year and were welcomed with encouraging feedback.

Efforts continue to integrate sustainability more into facilities operations and into the College's academic mission through visible sustainability projects and using College facilities and grounds as a living laboratory. Managing the grounds as a natural Maine landscape, along with installation of rain gardens and bioswales on campus, will further support biodiversity, as well as water management to reduce the College's burden on the local sewer system and streams. Other concepts include continued student assistance on campus LEED projects, particularly those students who have earned their LEED GA accreditation.

For the latest green news at Colby, visit: www.colby.edu/green.