

Background and Overview

Bowdoin College committed to become “carbon neutral” by the year 2020 and released a detailed implementation plan to achieve that goal the fall of 2009.¹ The plan focused primarily on an ambitious goal of reducing “own-source” emissions by at least 28% over the 12 years between 2008 and 2020, with the understanding that the College would need to purchase carbon offsets in 2020 to achieve the ultimate goal of carbon neutrality.

This document serves as the Annual Greenhouse Gas Emissions Inventory Update for Fiscal Year (FY) 2016. Bowdoin’s greenhouse gas emissions (GHG) in FY 2016 were 14,461

Bowdoin categorizes emissions into three scopes. Scope 1 includes on-site combustion of fossil fuels, use, and fugitive refrigerant. Scope 2 encompasses purchased electricity for the campus. Bowdoin’s own-source emissions are comprised of both scope 1 and scope 2.

Scope 1

Onsite fuel combustion, College vehicle use, and fugitive refrigerants

Scope 1 emissions were 4% lower in FY 2016 than in FY 2008

cleaner in coming years as a result of renewable legislation. This year's increased eGrid numbers is mainly the result of the timing of biomass generation plant retirements.

Continuing to focus on energy efficiency projects and raising awareness about conservation measures among students, faculty, and staff will be paramount in decreasing overall electricity consumption. Notable accomplishments in FY 2016 included:

- The continued replacement of higher wattage lighting fixtures with LED fixtures and installation of occupancy controls resulted in considerable electrical savings. Several buildings dedicated to the arts received major campus lighting upgrades, including the Bowdoin College Museum of Art, Studzinski Recital Hall, and Pickard Theater Memorial Hall. Not only will the buildings operate more efficiently, but building occupants have also been very happy with the quality of light and other benefits the LEDs provide.
- Two month-long energy conservation competitions were held, one in the fall and one in the spring. The competitions provide an opportunity to raise awareness about what individuals can do to help Bowdoin

A breakdown of the estimated 4,461 metric tons of CO₂e emissions for FY2016 is shown by major category in the following chart.

Solar Update

In collaboration with SolarCity Corp., Bowdoin installed 1.2MW of Solar PV capacity at Farley Field House, Greason Pool, Watson Arena, 52 Harpswell Road the former Naval Air Station property. These panels collectively provided about 8% of the College's electricity in FY16, generating about 6,000 kWhs. Combined with the electricity produced by the cogeneration turbine at the heating plant, approximately 14% of the College's electricity is now generated on site from renewable or efficient sources.

While Bowdoin is responsible for creating the solar project, the College is not currently able to claim carbon reduction benefits from the solar generation. This is due to the fact that SolarCity owns the RECs associated with the generation

Conclusion

Bowdoin's GHG emissions were 24% lower in FY 2016 compared to the base year of Bowdoin's carbon reduction plan. Moreover, Bowdoin's own source emissions saw a 19% decrease in FY 2016 respect to the 2008 baseline and the College remains on track to meet its goal of a 28% reduction by 2020.

However, achieving carbon neutrality is not an easy task. While we can celebrate progress and evaluate setbacks each year, reducing campus greenhouse gas emissions will require ongoing action by everyone on campus.

In FY 2016, Bowdoin completed several previously mentioned major lighting projects and furthered its efforts to switch from No. 2 heating oil to lower carbon natural gas. Projects that are slated for FY 2017 include:

- Implementation of energy efficiency projects at Farley Field House, Burditt House, and Pickard Field House that focus on reducing fuel consumption and electricity usage at all three locations. The projects will include installing two new heat recovery ventilation systems, twenty destratification fans, and a CO2 monitoring system, as well as adding variable frequency drives (VFDs) to outside air handlers, and connecting building sensors to Bowdoin's central Energy Management System that will enable the College to increase setback periods. We anticipate a combined reduction of 388,259 pounds of CO2 per year from the three projects.
- Expansion of the College's Web-based Building Dashboard to provide individualized steam metering to over a dozen more buildings connected to the central heating plant. This data makes Bowdoin energy use visible, engaging, and easily understood by students, faculty, staff, and guests
- Replacement of metal halide light fixtures at the Farley and Watson parking lot with LED bulbs, which we estimate will result in a 38,000 kWh reduction

As we have seen since the early years of implementation, the collective efforts of Bowdoin's students, faculty, and staff will be critically important to achieving carbon neutrality by 2020.

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