

## Engineered solutions + a behavior change program = reduced dormitory energy loss by more than 50%

The dorm energy-efficiency project (DEEP) at Brown University took a look at ways to discourage students from opening their windows during the wintertime when the heat was on.



Brown University's sustainability goal:  
**42% lower greenhouse gas emissions**  
against a 2007 baseline by 2020

### WHAT WE DID

Installed energy-efficiency measures:

- Thermostatic radiator valves
- Window sealing
- Redesigned LED lighting
- Lower-pressure shower heads
- New hot-water heater and other heating system upgrades

Engaged occupants:

- RA and student trainings
- Eco-Rep programming
- Educational visual cues
- Energy showcase events
- Energy pledges
- Email campaigns
- Peer-to-peer education events

## DEEP BY THE NUMBERS

**58%**

Annual thermal energy use reduction in Diman House

**50%**

Overall dorm energy loss through engineered plus behavior change solutions

**75%**

Reduction in window-opening after behavior-change strategies

**34**

Dormitories at Brown University that have undergone DEEP

**2 million**

Total square feet of dormitory space GreenerU has improved across New England

**75¢**

Average annual energy savings per square foot at dorms across New England

Historic buildings aren't generally known for their smooth heating and cooling functionality. Old radiators and other equipment tend to have an "on/off" functionality: it can be boiling in a room in January, and occupants may feel like they have no other option than to open a window, even when the heat is on.

## Piloting greener dorms: Phase I

In the spring of 2011, Brown University partnered with GreenerU to pilot a study that investigated an integrated approach to improve energy and water efficiency in Diman House, a residence hall on campus.

Using a number of engineered energy-efficiency improvements—installing thermostatic radiator valves, control systems, energy-efficient shower heads, a new hot-water heater, and redesigned LED lighting—this project simultaneously engaged and educated dorm residents about energy conservation behaviors.

Compared to energy use at Olney House as a control, with no efficiency or behavioral changes, Diman House saw a 58% reduction in thermal energy use.

## Piloting greeneru dorms: Phase II

The following year, Brown underwent a second phase of this experiment: to determine the extent to which behavior change efforts influence energy reduction efforts, as compared to engineered solutions alone.

Four 1950s-vintage residential buildings were selected: Emory and Woolley Houses were controls with energy-efficiency improvements alone, and Champlin and Morriss had the same improvements plus a set of behavior-change engagement strategies.

## The results: dramatic

Window opening in Champlin and Morriss with engagement strategies was 50% lower compared to Emory and Woolley. Compared to buildings with no changes, window opening was 75% lower. Since its initial work with Brown University, GreenerU has applied the same approach to additional 34 dorms there, plus at 30 more dorms across New England representing 2 million square feet of space.

## ABOUT GREENERU

Founded in 2009, GreenerU believes colleges and universities are uniquely positioned to lead the world in mitigating climate change and accelerating sustainability. **Our mission is to help them.**

GreenerU, Inc. collaborates with educational institutions to engineer sustainable solutions to energy and engagement challenges. We leverage strategic planning and project management of energy efficiency projects to realize cost savings, achieve energy reduction goals, and address deferred maintenance. Our unique approach integrates building system improvements with behavioral programs, leverages a team of leading professionals, and customizes services for each campus. This model enables our clients to maximize the value of infrastructure improvements while meeting their campus-wide sustainability goals. More information can be found at [www.greeneru.com](http://www.greeneru.com).