Energy Conservation and Management Policy

Updated 2021

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INTRODUCTION

In 2009, Brandeis University committed to reducing its carbon footprint across campus. Effective energy conservation and management is a major opportunity to reduce that footprint. In 2015, the University re-committed to this goal, which underscores our belief in the power, potential, and imperative of higher education's key role in shaping a sustainable society.

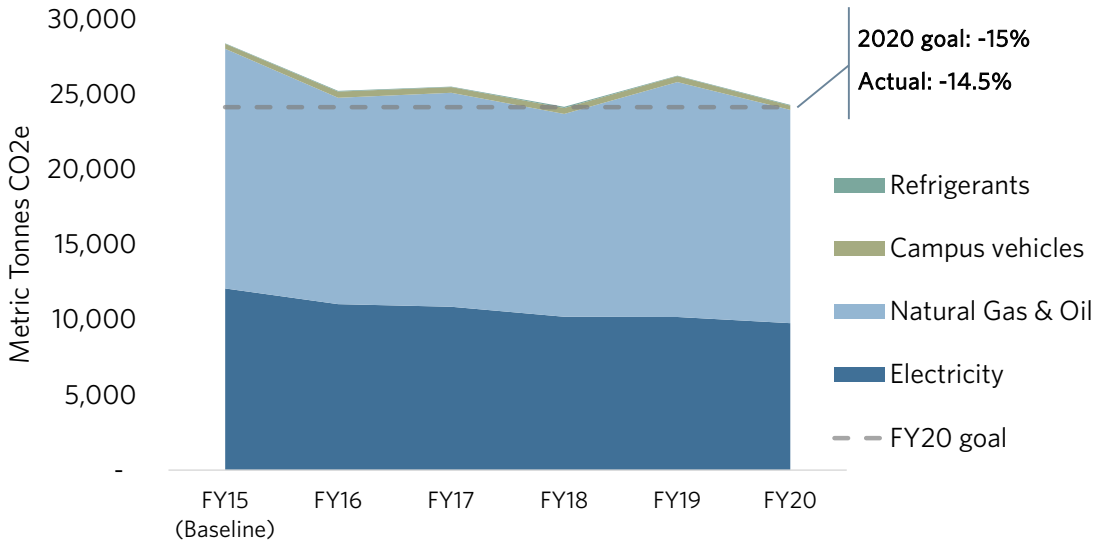
The University is deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts. Furthermore, we understand that our greatest, most immediate opportunity to reduce our own impact is in reducing our fossil energy usage in campus buildings (Fig. 1).

Extensive research shows that our campus uses 15-20% more energy per square foot than comparable campuses in our climate zone (Fig. 2), and the vast majority of Brandeis's emissions are caused by our building energy use. These facts, combined with the inextricable link between climate change and social justice, amount to a call to action for our community to greatly improve our approach to energy management.

We acknowledge and agree that campus as a place of work, and as a home to many of us, needs to meet reasonable standards of comfort to allow us to enjoy our time at Brandeis and to be productive. We seek to properly balance that essential goal with the critical goal of responding to the global climate emergency.

This document outlines several ways in which the Brandeis community must engage with our buildings in a way that is consistent with our commitment to climate justice.

Fig. 1. Brandeis carbon emissions (scope 1 and 2*), 2015 to 2020, metric tonnes of carbon dioxide-equivalent



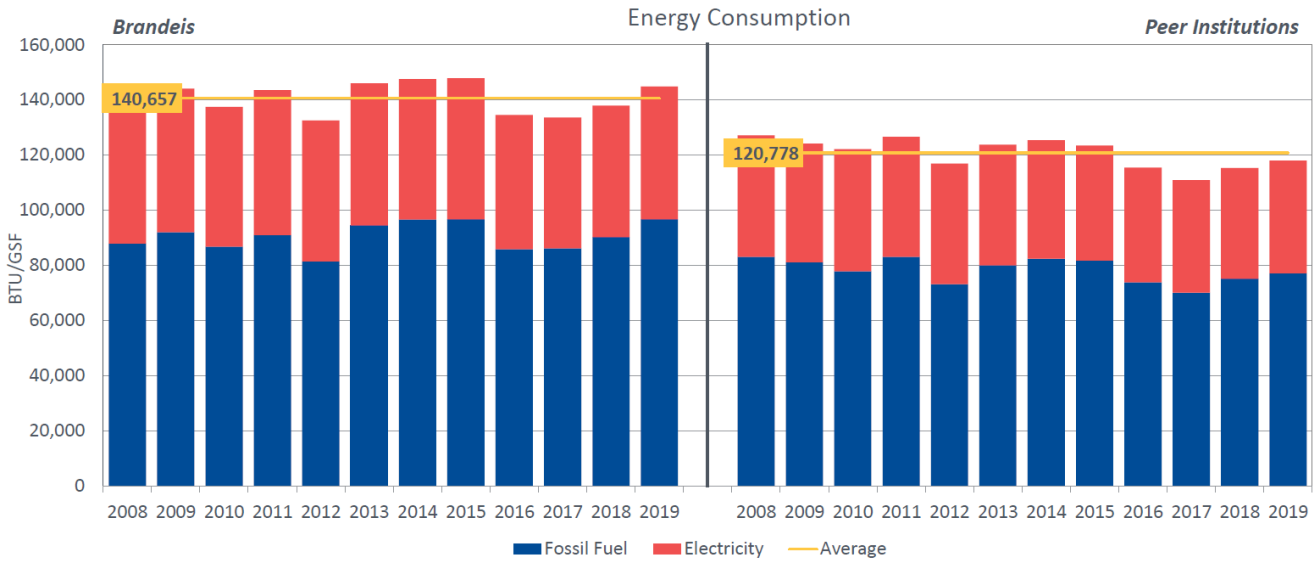
**Scope 1 and 2 includes emissions from electricity, natural gas, heating oil, fuel used in Brandeis-owned vehicles, and refrigerants used in campus equipment.*

Nearly 99% of our scope 1 and 2 emissions sources are gas and electricity use by our buildings. Scope 1 includes stationary combustion (use of natural gas and oil in onsite equipment such as the central heating plant, residential heating, boilers, water heaters, etc.); fuel used by university-owned vehicles; and refrigerants used in the operation of on-campus refrigeration equipment. Scope 2 includes purchased electricity.

Brandeis has historically struggled to reduce its carbon footprint, the majority of which results from our campus buildings' energy use. Our first goal, which was set in 2015, was to achieve a 15% reduction by the end of the 2020 academic year. We will approach this goal, unfortunately, only due to the steep decline in energy use as a result of the COVID-19-related reduction in campus population at the end of the 2020 academic year.

Fig. 2. Brandeis vs. Peer Groups Energy Usage Comparison

Annual consumption of natural gas + electricity in British thermal units (BTU) per gross square foot (GSF)



Peer institutions included in graph

Institution	Size Range	Student FTEs
Boston College Chestnut Hill, MA	>6M GSF	12K-14K
Boston University Boston, MA	>5M GSF	Over 20K
Brown University Providence, RI	>5M GSF	5K-10K
Fitchburg State University Fitchburg, MA	<2M GSF	2K-5K
Keene State College Keene, NH	<2M GSF	2K-5K
Northeastern University Boston, MA	>6M GSF	Over 20K
University of Connecticut Storrs, CT	>5M GSF	Over 20K
University of Massachusetts – Lowell Lowell, MA	2M-5M GSF	10K-20K
Wesleyan University Middletown, CT	2M-5M GSF	2K-5K

Comparative data shows that, compared to our peers, our campus is still vastly more energy consumptive per square foot than other universities in our climate zone with similar physical plants.[1] This is in part a result of the fact that many of our buildings were constructed in the 1960's and 1970's, when energy efficiency was not a design consideration, and also because the University has many smaller buildings, which tend to be more energy consumptive per square foot than larger buildings.

What is also clear from the data, however, is that our peer universities show the same pattern in consumption, with the same years being higher or lower in consumption. This is due to changes in weather.

[1] Source: Brandeis University FY19 ROPA+ Final Presentation, Sightlines, November 19, 2019.

1. INDOOR AIR TEMPERATURE

The University recognizes that exact temperature control is not always possible given the varying level of sophistication and condition of our campus buildings. The goals of these indoor air temperature targets are to improve overall satisfaction with campus heating and cooling from current low levels of 40-50% based on the 2015 Campus Operations Survey, provided occupants are dressed appropriately for the space; to keep temperatures consistent; and to save energy by avoiding over-heating and over-cooling.

Reports of temperatures outside these ranges should be directed to Facilities Services via an online work order request.

TEMPERATURE SUMMARY[2]

Below is a summary of the target air temperatures and set points that the University will follow. Details on residence halls and academic/ office buildings follow in sections A and B.

If the air temperature of an occupied space does not match the temperature of the associated thermostat, occupants have the right to request the set point to be changed so that the indoor temperature meets the guidelines below.

	Winter	Summer
	mid-October to mid-May	Mid-May to mid-October
Target air temperature when occupied	68-71° F (20-22° C)	74-76° F (23-24° C)
Thermostat set point when unoccupied *	50° – 55°[3] (10-13° C)	80° (27° C)

*Depending on the requirements of the individual space

ADDRESSING SUMMER OVER-COOLING

Several comments on the Campus Operations Survey indicated that freezing office temperatures during summer lead many occupants to use space heaters.

Space heaters work against central air conditioning systems and can contribute to making the space colder. Warming your space to temperatures above the set point triggers the system to respond by cooling more.

Thus, space heaters and air conditioning work against each other, and together cause even more energy use and carbon emissions.

By controlling air conditioning temperatures better, we can achieve the combined benefits of using less carbon-intensive electricity; reducing our peak demand for electricity and the associated cost savings; reducing space heater usage during the summer; and improving occupant comfort.

[2] These temperatures are within recommended ranges of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 55.
[3] Depending on the requirements of the individual space.

A. ADMINISTRATIVE/ACADEMIC BUILDINGS

OCCUPIED

During the winter heating season (mid-October to mid-May), temperatures in administrative and academic facilities will be set to achieve an air temperature of 68-71° F (20° C) during occupied hours. Occupied hours are defined as those hours during which the facility is scheduled for occupancy, whether for classes or administrative functions. Typically, occupied hours for those facilities without scheduled evening classes will be 7 a.m. until 6 p.m. while those facilities with scheduled classes, operations, or activities are usually occupied until I 0 p.m.

During the summer cooling season (mid-May to mid-October), occupied spaces will be cooled to achieve an air temperature of 74–76° F (23–24° C) where air conditioning equipment currently exists.

UNOCCUPIED

During unoccupied hours (Monday–Friday after 6 p.m. in selected facilities, after 10 p.m. in others, and throughout the weekend), temperatures will be set at 50–55° during the winter heating season, depending on the requirements of the individual space[4].

During the summer cooling season, unoccupied spaces will be set no higher than 80°, depending on the requirements of the individual space.

CAMPUS HEATING AND COOLING SYSTEM

Brandeis operates its central steam plant and cooling systems on a seasonal basis. Heating is not available once the central chillers are put in service for the cooling season, and cooling is not available after the central chillers are turned off for the season.*

The decision to start central heating and/or air conditioning equipment will be made by Facilities Services based upon long-term weather predictions during the fall and spring. Historically, switches happen during mid- May and mid-October.

Building temperatures may vary to a greater extent in the time period closely preceding and following this biannual switch between heating and cooling as the result of 1) unusually warm days once the chillers have been turned off, and 2) unusually cold days once the chillers have been turned on.

[4] Due to heat retention of buildings, this low limit will not be reached for several hours, if at all, after setback. For example, a building setback at 6 p.m. will most likely still be very comfortable at 7 - 8 p.m.

* There is significant energy loss and wear on equipment when the University must turn the chillers back on after turning them off, and vice versa, for the season.

B. RESIDENCE HALLS

Residence halls, including common areas, are considered occupied at all times except during holiday/summer breaks, unless a residence hall is designated for summer occupancy. Exceptions may be requested for residential staff living on campus during breaks.

During the heating season, temperatures for steam and circulating hot water systems will be set to achieve an air temperature of 68-71° F (20-22° C). During the cooling season, residence halls with air conditioning served by centrally-provided chilled water (Village, Ridgewood, Ziv and Castle) will be cooled to achieve an air temperature of 74–76° F (23–24° C).

The campus steam distribution system requires a two- to three-week period to start up. As a result, there may be a few uncomfortable days when the outside temperature suddenly rises or falls.

During holiday breaks when residence halls will be unoccupied, heating will be lowered to 50–55 degrees, or cooling will be raised to 80 degrees, as appropriate for the season.

While unoccupied during breaks, residents of Foster Mods and Charles River Apartments are required to turn their heat to 60 degrees during winter, and to turn off their air conditioning when the buildings are unoccupied in summer.

MEDICAL CONDITIONS

If a resident has a medical condition that requires specific heating, cooling, air filtration, or dehumidification, they must contact the Department of Community Living (DCL) prior to housing selection.

TYPES OF HEATING SYSTEMS IN RESIDENCE HALLS

Three types of heating systems serve the residence halls: Steam heat from our central steam plant (East, Massell, North and Rosenthal); circulating hot water (Castle, Village, Ridgewood, Ziv and 567 South Street), and electric heat (Foster Mods and Charles River Apartments).

Each system allows individual adjustments controlled by a knob, lever or set of buttons. For steam heat and circulating hot water systems, the individual controls can incrementally decrease or augment the level of heat in a room, but since these heating systems are controlled centrally, individual control is limited.

For electric heat systems, the individual controls adjust to the level of heat desired. They are active all year.

C. HOLIDAYS AND BREAKS

Most buildings are set to unoccupied temperature levels during holidays and breaks. However, the activities of various areas on campus may require buildings to be set at occupied levels when the rest of campus is shut down. The following buildings are exempt from being set to unoccupied levels during breaks:

- Abelson-Bass-Yalem
- Bassine
- Edison-Lecks
- Foster Bio-Medical Research Center
- Graybiel Lab in Rabb
- Kosow-Wolfson-Rosensweig
- Landsman Nuclear Magnetic Resonance Facility
- Psychology Labs in Brown
- Rosenstiel
- Shapiro Science Center
- Volen
- Athletic Center during practice/event times
- Goldman-Schwartz & Epstein art studios (will be set for limited occupancy hours during breaks to allow for some work in studios)

Other buildings will be considered for occupied-level temperatures during holiday breaks upon special request to Facilities Services via an online work order request. Facilities Services reserves the right to reject special requests if expected occupancy rates over holiday periods is minimal or not guaranteed.

SYSTEM SHUTDOWNS

Occasionally, the central chiller systems may require a brief shutdown during cooling season for maintenance. In the event that a shutdown is necessary, the following areas are exempt and will not be impacted:

- Rose Art Museum (due to collections)
- Faculty Center (due to events)
- Science Center (due to lab and equipment cooling requirements)
- Goldfarb library (due to archives and computer labs)
- Slosberg (AC on during concerts in Recital Hall)
- Shapiro Campus Center (AC on during shows in theater)
- Spingold Theater (AC on during shows in any theater)
- Landsman Nuclear Magnetic Resonance Facility

2. MEASURES TO INCREASE THERMAL COMFORT DURING PERIODS OF SUSTAINED HEAT

The University expects supervisors to exercise flexibility in assisting employees in finding adequate working conditions during periods of extreme heat and Turn It Off days. During such periods:

- Temperature-appropriate attire is strongly encouraged. All staff, as well as faculty and students, are encouraged to wear light, well-ventilated, appropriate attire.

- Wherever possible, flexible work schedules should be encouraged, allowing employees to report to work 1–2 hours early and to leave earlier to avoid the maximum heat period during the middle and late afternoon. In addition, during intense heat and/or demanding physical exertion, supervisors will encourage their staff to take as many breaks as necessary to maintain personal health and safety. Individual staff members are also expected to exercise personal self-care by remaining hydrated, using good judgment and monitoring the effects of the heat and exertion, and notifying their supervisors of any concerns.

- Where it is not imperative that office staff remain at their desks at all times, supervisors should permit them to take their work and move to a "cool area" — a naturally cooled or air conditioned space either in the same building or in a proximate one.

3. SUPPLEMENTAL HEATING AND COOLING DEVICES

Space heaters pose serious fire and electrical hazards and are not energy efficient. They can trip electrical circuits in buildings, disabling power to building areas.

The use of space heaters at the University is strongly discouraged.

The University reserves the right to inspect and declare "unapproved" any space heater that creates a safety hazard or is inappropriate to a particular location, based on specific circumstances or legal requirements. If warranted, space heaters may be removed by Facilities Services and the owner must remove them from the University.

SPACE HEATER REQUIREMENTS

Design Requirements

1. All heaters must be Underwriters Listed (UL) or ETL Listed for their intended use.
2. Heaters must have a tip-over automatic-shutdown feature.
3. No open-coil space heaters are permitted in any University buildings.

Use Requirements

4. Heaters must be kept at least 3 feet (36 inches) from all combustible materials e.g., desks, trash cans, papers, boxes, fabric, plastics, office furniture, etc.
5. Heaters must be monitored when in operation.
6. Heaters must be plugged directly into a wall receptacle. Never plug a space heater into an extension cord.
7. Space heaters of any type are prohibited in laboratories.
8. Always turn off a heater and unplug it when you leave the office. Never leave an operating heater unattended.
9. Before use, ensure that the heater is clean and not covered with dust. The cord must be in good condition and not frayed.
10. Never run a power cord under a carpet or floor mat.
11. Never use a heater where flammable materials or vapors may be present.
12. Do not place a heater in or near wet areas or in high traffic areas such as exit ways.
13. Inspect space heaters at least annually and have them repaired, as needed, by a qualified electrician. Heaters that cannot be repaired must be discarded with the plug cut off to prevent use by others.
14. Do not place space heaters near room thermostats.

Supplemental air conditioning units are prohibited in all University spaces unless medically necessary. Portable air conditioning units will be confiscated if found.

All requests for exemptions to this policy in academic or office areas should be directed to Facilities Services via an online work order request or by calling x6-8500. Exceptions in residence halls should be directed to the Department of Community Living.

4. OCCUPANT AND SUPERVISOR RESPONSIBILITIES

Lighting

- **Individuals are expected to turn off lights upon exiting rooms and to turn off lights in unoccupied rooms and common areas, whether used by that individual or not.** There is no place on campus where leaving lights on is more efficient than turning them off.
- The University maintains central control over lighting in only a select few buildings. The majority of lighting across campus is user-controlled.
- Building emergency and safety lighting will always remain on, pursuant to safety codes. Occupants do not have control over safety lighting.

Windows

- Windows should not be opened during the winter to cool spaces, nor in the summer to warm spaces. Windows and outside doors should not be propped open if a space is air conditioned.
- Occupants should ensure that windows, storm windows, shades and blinds are positioned for the season. Shades and blinds should be positioned to assist in providing thermal comfort.
- Windows should be closed when leaving spaces for multiple days, such as weekends and holidays.

- Window shades should be put down/closed during summer when leaving spaces for multiple days, such as weekends and holidays.

LIGHTING

In commercial buildings, lighting can account for up to 30% of the electricity usage.

Because the University does not have direct control over most lighting systems on campus via "smart" lighting controls, the community must act together to tackle the frequent problem of lights left on in unoccupied spaces.

Individuals are expected to not only turn off lights upon exiting rooms, but to turn off lights in unoccupied rooms and common areas, whether used by that individual or not.

Occupants do not have control over safety lighting. That means when you turn off the lights in an unoccupied space, building emergency and safety lighting will always remain on.

Office and classroom equipment

- Individuals are expected to turn off office equipment (including monitors, task lights, projection equipment and other, where possible) when leaving their workspace for more than 20 minutes and at the end of the day.
- Occupants should enable power management features on computers, laser printers and copiers and power them down whenever possible, particularly on evenings and weekends.
- Information Technology Services (ITS) provides information on computer power management settings and how to optimize energy management on your computer equipment. Please contact the Information Technology Help Desk if you have questions or need assistance, online or at 781-736-HELP (4357).

Thermostats

- Occupants should not block thermostats with wall furniture or equipment.
- Individuals are expected to move any heat-generating equipment away from thermostats (lamps, computers, monitors, coffee makers, etc.). This equipment can cause false readings at the thermostat, resulting in inappropriate temperatures in building spaces.

- Occupants should not place cold or warm items on thermostats in an effort to trigger additional heating or cooling of rooms.

Seasonally appropriate clothing

- Building occupants are responsible for their own comfort, within reason. Occupants are expected to contribute to their own comfort by wearing appropriate clothing for their workplace.

5. TURN IT OFF DAYS

During the hottest days of the year, the University will continue to implement Turn It Off days, as appropriate, to manage electrical demand and associated costs and to limit our use of the most carbon-intensive electricity of the year.

Reducing electricity use during these peak times will result in environmental gains as well as financial savings. In New England, electricity demand during heat waves necessitates the operation of old, inefficient power plants, leading to an increase in harmful air pollution. And since the University's year-round electricity rates are partially based on our demand during summer's hottest days, if we reduce our usage during those days we will lower the electricity rates we pay all year long.

6. ROOM RESERVATIONS FOR MEETINGS, CONFERENCES AND EVENTS

The University's heating and cooling system is automatically connected to the University's room reservation system (25Live). When spaces are reserved for events, those rooms are automatically heated or cooled prior to the event to prepare for the event, and are subsequently controlled for the duration of the event as reserved in 25Live.

All individuals with access to 25Live for room reservations may not reserve space for periods when the space will not be in use. For example, spaces may not be reserved "just in case." Doing so causes the HVAC system to heat or cool the space accordingly, and the resulting energy loss is significant. **This policy applies to summer program activities, along with others.**

Event setup staff should set lighting at minimal levels, preferably off, after room setup and before the start of an event. Individuals and groups that reserve spaces are expected to turn lights on fully when they begin to occupy the space, and turn them off when they leave. Event takedown staff should turn lights off after they leave. **Full lighting may not be left on in unoccupied spaces after room setup, unless absolutely necessary.**

7. ENERGY EFFICIENT EQUIPMENT

In all areas for which ENERGY STAR ratings exist, the products that Brandeis University purchases will be ENERGY STAR certified or exceed the performance requirements for ENERGY STAR certification. In areas for which guidelines are not available, Brandeis will seek the most energy-efficient products, except where alternatives are not available.

Procurement will take into consideration the life-cycle cost of equipment's energy use in purchasing decisions.

8. VEHICLE IDLING

Idling vehicles pollute the air and present several health and environmental hazards. With thousands of residents on campus, it is central to the mission of the University to keep our campus population safe and healthy. Pollution from idling vehicles poses a direct risk to our population.

No vehicle on campus vehicles shall sit idling for longer than 5 minutes except in the case of snow removal, emergency operations, or the exemptions indicated below. This applies to faculty-, staff-, student-, contractor-, and University-owned vehicles and to shuttles. This is an extension of the policy the University first implemented in 2008 for all Facilities Services vehicles on campus.

Massachusetts General Law (MGL Chapter 90, Section 16A) and the Massachusetts Department of Environmental Protection (DEP) idling reduction regulation (310 CMR 7.11(1)(b)) both prohibit unnecessary vehicle idling by stating that the engine must be shut down if the vehicle will be stopped for more than five minutes.

Exemptions include: 1) the vehicle is being serviced and the idling is required to repair the vehicle; or 2) the vehicle is making deliveries and needs to keep its engine running (to power refrigerators, for example); and, 3) the vehicle's accessory equipment needs to be powered, such as a fork lift or a truck's rear dump bed, or a wheelchair lift in a bus or van. To provide additional protections for children, MGL Chapter 90, Section 16B further restricts unnecessary idling in school zones.

IMPACTS OF VEHICLE IDLING

Gasoline and diesel vehicle tailpipes produce carbon monoxide, carbon dioxide, volatile organic compounds (VOCs) and oxides of nitrogen (NOx). Carbon monoxide causes respiratory distress and in high concentrations can be lethal; carbon dioxide is a primary contributor to global warming; and VOCs and NOx form ozone and ground-level smog and impair lung function.

In addition, diesel exhaust contains fine particulate matter, which the U.S. Environmental Protection Agency has designated as a likely carcinogen. The elderly, chronically ill and children are all particularly vulnerable to these health effects, because their lung function is respectively decreased, impaired or still in development.

APPENDIX A: Temperature policy review (2015)

	Winter		*Summer*	
School	Occupied	Unoccupied	Occupied	Unoccupied
Range, other schools	*68-74°*	*45°–71°*	*69°–78°*	*69°–85°*
Harvard University	68°–71°	68°–71°	74°–76°	74°–76°
Tufts University	68°	55°	78°	No AC
Bentley University	68-74°	58°	68-74°	83°
Brown University	70°	70°	76°	76°
Dartmouth College	69°	45° – 55°	69°–75°	69°–75°
Columbia University	68°	55°	76°	NA
Rochester Institute of Technology	68°	55°	78°	85°
Wesleyan University	68°	65°	75°	77°
Western Michigan University	69°	60°	74°	85°
Hudson Valley Community College	68°	55°	76°	80°