

a guide to

Winning the Race Together

at Middlebury College



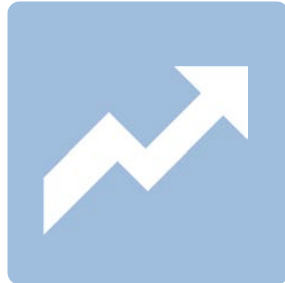
Carbon Neutrality by 2016

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CONSERVATION



EFFICIENCY



RENEWABLES



OFFSETS

“According to a new U.N. report, the global warming outlook is much worse than originally predicted, which is pretty bad when they originally predicted it would destroy the planet.”

-Jay Leno

what is this race and why are we competing?

Given the rising levels of carbon dioxide in the atmosphere, addressing climate change has become a major challenge of our time. Winning the Race Together is about doing this right here on campus, and the finish line is becoming carbon neutral by 2016. In order for us to win this race, everyone will have to work together.

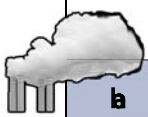




In 2007 students, faculty, and staff organized MiddShift, a movement for Middlebury College to commit to carbon neutrality. They were concerned, as is the scientific community, that human carbon emissions are causing disruptive climate change. In response to these concerns the Middlebury College Board of Trustees passed a resolution to achieve carbon neutrality by 2016.

Climate change poses a great threat to the sustainability of our planet. By reducing carbon dioxide emissions on campus, we will limit our own contributions to this problem and continue Middlebury's sustainability leadership.

what does the racecourse look like?

Middlebury's carbon footprint in 2008 amounted to 30,000 metric tonnes of carbon dioxide equivalents. We count emissions from five sources: heating and cooling, electricity, college owned vehicles, landfill waste, and college funded travel. The addition of the biomass gasification plant reduces our footprint by 40%, bringing it down to 17,500 tonnes. Over the next seven years we will need to make great strides in further reducing CO₂ emissions from all our sources.

Reducing CO₂ emissions also saves money. In 2008 the College spent \$8.4 million on energy resources to run the campus. While electricity and travel are small percentages of our carbon footprint, they represent a much higher percentage of the cost of our footprint. Small reductions in carbon can result in big monetary savings, freeing up money for other uses.

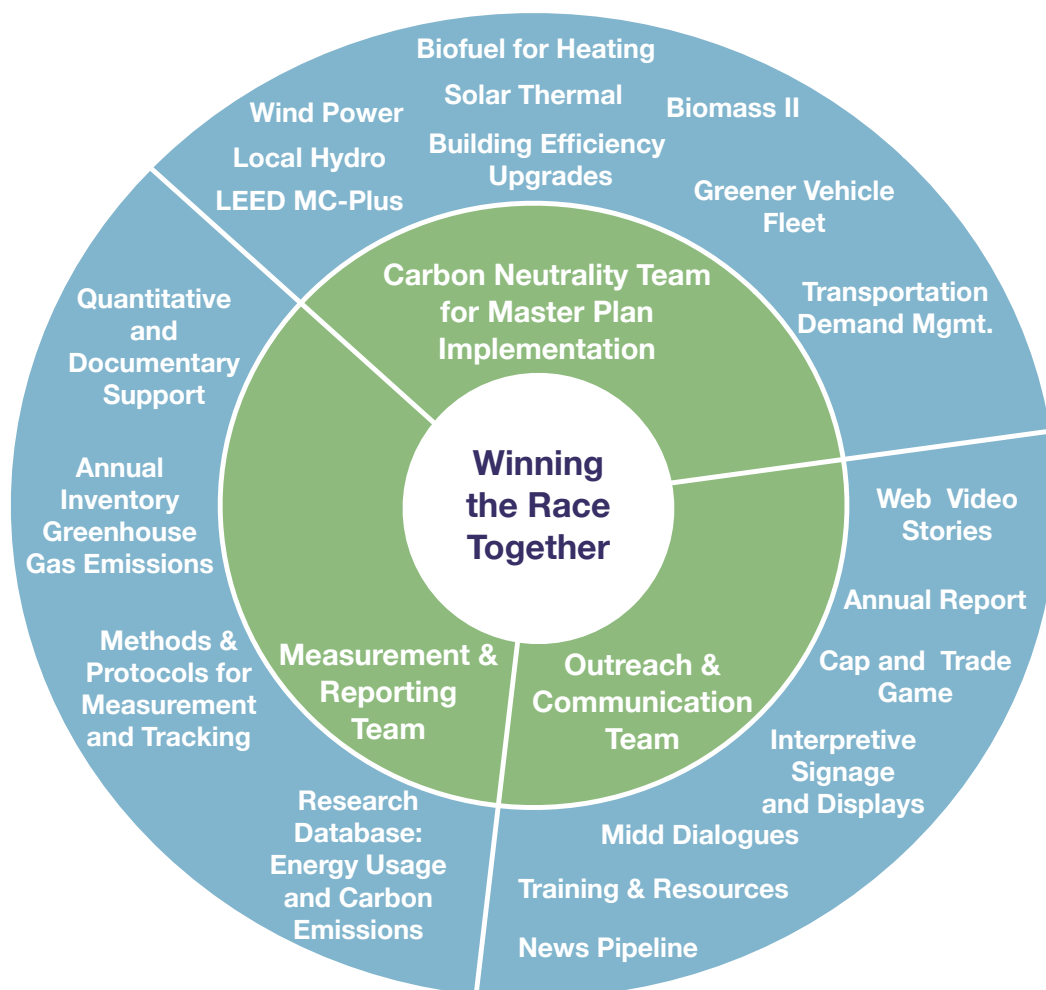
Source	Cost of Carbon (2008 dollars)	Carbon Emissions (tonnes)	Carbon Emissions Post-Biomass (tonnes)
 heating and cooling	\$4,362,000	26,700	14,200
 electricity	\$ 2,247,000	300	300
 college owned vehicles	\$226,000	600	600
 landfill waste	\$69,000	300	300
 college funded travel	\$1,500,000	2,100	2,100
TOTAL	\$8,404,000	30,000	17,500

how do we win the race together?


Winning the race together requires a shift in how we use energy and resources on campus. In 2008 the MiddShift Implementation Working Group, a team of sixteen people from all major departments, developed the plan “Winning the Race Together: Achieving Carbon Neutrality by 2016”. This plan emphasizes the need for institutional commitments coupled with participation from individuals and departments.

At Middlebury we can reduce carbon emissions through conservation, efficiency, renewables, and offsets. There is no one-size-fits-all solution to climate change. We need to be creative and flexible in finding and applying solutions described in the report. We also need to look for new opportunities in order to move toward our goal.

To coordinate Winning the Race Together we are relying on three implementation teams, each chaired by a member of the President’s staff. The teams are the *Carbon Neutrality Team for Master Plan Implementation*, *Community Engagement and Leadership* and *Measurement and Reporting*. The diagram below shows the focus areas of each team.



what is the college doing?

 **Biomass**-The College's new biomass gasification system reduces our fuel oil consumption by 50% and our carbon emissions by 40%. However, we still have to displace the remaining million gallons of #6 fuel oil. A study done by Environmental Economics students recommends that the college increase its use of biomass as an alternative to liquid biofuels for economic, environmental, and social benefits. A feasibility analysis will be conducted to identify options for the future.



New biomass facility at Middlebury College



Solar thermal panels being installed at the Shannon St. house.




Solar thermal-


This technology is a very efficient and cost effective method for heating water, even in a northern climate. The College recently installed two pilot solar thermal systems at a student residence to test their potential for reducing fuel and electricity use in these buildings. We will also assess the potential of this technology to heat water for the swimming pool.




Wind at Worth Mountain - Six months of wind data at Worth Mt. was gathered and analyzed for a senior

thesis project. Although there were data limitations, the analysis indicates there may be sufficient wind for a large system. College staff recently met with NRG, a wind monitoring company, to discuss the possibility of putting up an NRG wind measuring system to gather more data to inform decisions about installing a wind tower.

 **Geothermal** heating and cooling - The report recommends that we conduct an assessment using a consultant to determine the geothermal potential of the campus and the cost effectiveness of this source of energy.

 **Efficiency** - As part of the new master plan, the college created a rigorous set of design standards for new construction and major renovations so that energy efficiency improvements are integrated into all projects. A recent example is renovation of the McCullough Student Center, which included substantial improvements in the building's energy performance.

 **Offsets** - In our pursuit of carbon neutrality, we will significantly reduce the amount of carbon we produce; however, we will still emit some carbon which we will need to offset. Our strategy is to directly invest in local projects (cow power at local farms, increasing carbon sequestration on College lands, etc.) and buy commercial offsets.



Renovation of McCullough included much needed insulation.

how can I keep up the pace?

If each person on campus replaced one incandescent bulb with a compact fluorescent, we would save nearly \$30,000 over nine months and eliminate 10 tons of CO₂ emissions. Below are additional actions you can take to join the Middlebury community in the race to reach carbon neutrality. Check out the back page for how to get involved in a campus wide challenge to save money and electricity in your dorm or office.

electricity

1. Turn it off

It might seem obvious, but turning things off when you are not using them saves money and reduces CO₂. Many electronics continue to draw electricity even when they are turned off, so use a power strip and don't forget to hit the off switch. Turn off the lights in your own room/office and in low traffic areas everyone uses, such as kitchens, bathrooms, and classrooms.

2. Use compact fluorescent light bulbs

A simple practice of replacing burnt out incandescent bulbs with compact fluorescents (CFLs) will save money and tons of CO₂.

3. Share a fridge

Refrigerators use lots of electricity, especially when they are empty. Empty fridges take more energy to stay cool, so help keep it full by sharing with a roommate or someone from your office. If possible, unplug it when it's not in use.

Enable your computer's energy saving options

Screen savers keep your computer running at full power. Save electricity by setting your computer to turn off displays and to sleep automatically. Don't forget to turn off your computer at the end of the day.

Watch out for energy hogs

Find ways to limit use of electronics and appliances that produce heat and draw large amounts of energy, such as hair-dryers and space heaters.

Buy Energy Star

When you need to buy new appliances or electronics look for an Energy Star rating. In the long run this purchase will save you money and reduce CO₂.

Air-dry clothes

If you live on campus, drying even half of your laundry on a rack helps reduce our carbon footprint. Pick up a rack at the bookstore, and you can get a partial refund if you return it at the end of school year.

heating/cooling

1. Adjust the thermostat

Turn it down in the winter. If you have control of the thermostat in your office, lower it a few degrees in the winter. If your building is centrally controlled, coordinate as a group and request a reduction from facilities.

Turn it up in the summer. Air-conditioning in the summer draws large amounts of electricity both on campus and in Vermont. This summer demand for electricity exceeds local production so the amount of "dirty" electricity from coal plants increases, disproportionately contributing to the carbon footprint of electricity on campus.

2. Close your window

If you live in a dorm you'll know that some rooms get way too hot. But opening the window only perpetuates the problem. Please contact facilities if your room /office is consistently too hot.

3. Use less hot water

Take shorter showers and wash clothes with cold water instead of hot. Clothes get just as clean and colors stay brighter longer when you wash with cold water.

Help facilities with heating issues

Facilities aims to make each building run as efficiently as possible, but they can't fix the problem if they don't know about it.

Use the blinds/curtains

Opening and closing the blinds can help regulate temperature by letting in or keeping out sunlight and by insulating against the outside cold.

travel

1. Communicate by other means

In some cases a teleconference or webcast can eliminate the need to be physically present.

2. Reduce air travel

For shorter distances consider taking a train or carpooling.

3. Book direct flights

Most fuel is used during take-off and landing, so eliminating layovers can significantly reduce the carbon emissions for your whole trip.

Rent a fuel-efficient vehicle

Reduce your carbon emissions and save gas during your trip by renting a fuel-efficient vehicle.

waste

1. Reduce

Use less paper. Only print what you will use. Be patient and wait for your copy to print rather than clicking print again.

Reduce waste. Buy less. New items make lots of garbage, both in packaging and disposal. Find alternatives such as sharing, or borrowing instead of buying new.

2. Recycle

Understand what can be recycled and know where to take special items such as batteries and CFLs. For more information visit www.middlebury.edu/administration/recycle/

3. Reuse

Bring a mug (or water bottle). Instead of using a disposable container for coffee bring your own reusable mug. Use a water bottle/reusable beverage container and limit bottled drinks.

Pack a lunch. If you bring a lunch in reusable containers you avoid waste associated with take-out.

Stop by the reuse trailer. Don't contribute to the mountain of garbage at the end of the school year. Take reusable items to the reuse trailer at the recycling center.

vehicles

1. Walk, bike, and use mass transit

You'll save one pound of CO₂ for every mile you don't drive.

2. Drive smart

Save gas by driving under 65 MPH and not accelerating too fast. Also, turn off the car if it is sitting still for more than 10 seconds, since the car emits twice the emissions idling as driving.

3. Buy fuel-efficient vehicles

When older vehicles wear out, replace them with a new fuel-efficient vehicle.



Winning the Race Together

blogs.middlebury.edu/winningtogether

Stay Informed.

Keep an eye out for guides that will explain how energy and resource use relates to carbon emissions on campus. Compete as a team in *PowerStrip: how much can you take off?* to reduce electricity use in your dorm or office. More info at blogs.middlebury.edu/winningtogether/powerstrip.

Share Your Story.

Anyone can be a carbon neutrality leader. Help spread the word about carbon neutrality and show others creative ways you found to reduce Middlebury's carbon footprint. Submit story ideas, photos, videos, and comments to Jack Byrne, Director, Sustainability Integration Office, jmbyrne@middlebury.edu, 802.443.5043.

Get involved.

Let the implementation teams know what actions you think are important.

Carbon Neutrality Team for Master Plan Implementation

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