# Yale University Greenhouse Gas Emissions Reduction Progress

In 2005, Yale pledged to reduce greenhouse gas emissions from its two on-site power plants<sup>1</sup> forty-three percent below 2005 levels by 2020. More recently, emissions from Yale's vehicle fleet were added to this reduction commitment. As a result of the University's tailored and effective carbon reduction plan, we have achieved a fourteen percent reduction, despite a fourteen percent increase in the campuses' physical footprint.

Our reduction strategy has been designed to be responsive to changes in circumstances, both planned and unplanned. We also recognize that our emission reduction path will likely not be linear over the course of the goal, but rather a combination of increases and decreases leading to an overall net reduction in 2020. Respectively, during fiscal year 2014, our emissions increased slightly from the previous year. This slight increase can be attributed to the colder than average winter experienced in New England. The cold weather necessitated an increase in the generation of steam to heat campus and a curtailment of natural gas as a fuel source. As an interruptible natural gas customer, Yale voluntarily switches from natural gas to oil, a more carbon intensive fuel source, in times of unusually high demand.

Unpredictable weather events, a growing campus, and increased energy demands require that we develop innovative and adaptive strategies to meet our 2020 goal.





Yale's gross square footage has increased 14% since 2005.

2014



## 2005 2014 39,260 WEST CAMPUS EMISSIONS 31,280

#### Main Campus Emissions (MTCO<sub>2</sub>e)

Main Campus | University Fleet

Yale has implemented a comprehensive energy conservation strategy that has significantly reduced emissions from its two power plants and vehicle fleet.

### West Campus Emissions

In 2007, Yale purchased the Bayer Pharmaceutical campus to expand the University's science and medical research. The 2005 baseline represents emissions when Bayer was operating at full capacity.Yale has not yet reached full occupany of the campus.

2005 263,119 MTCO<sub>2</sub>e BASELINE 2006 2007 2008 2009 2010 2011 2012 2013 ■14% FRO 2005 FROM 227,522 MTCO 2014 2020 GOAL 150,000 200,000 250,000

Yale University committed to reducing its primary greenhouse gas emissions 43% below 2005 levels. Beginning in 2013, emissions from the University fleet are included in the reduction target.



Yale Office of Sustainability

Main Campus | University Fleet

## Yale University Campus Greenhouse Gas Emissions

Some of the effective strategies implemented to date include: reducing the energy intensity of buildings through conservation and efficiency, deploying new technologies, utilizing cleaner fuels, adhering to sustainable construction and renovation standards, and promoting behavioral shifts and culture change with building occupants. Our successful use of these strategies was demonstrated this past year. If our steam consumption during the winter months was normalized for average weather it would have been approximately five percent lower than previous years.

Additional information regarding Yale's progress can be found at sustainability.yale.edu.

### **Remaining Emission Reductions**



Total 2020 Emissions Reductions Are Equivalent<sup>4</sup> To:



270,000,000

Car miles driven by an average vehicle



12,731,743

Gallons of gasoline

consumed

#### Footnotes

I Yale owns and operates two co-generation power plants; Central Power Plant and Sterling Power Plant.

2 Based on guidance from the World Resource Institute and the World Business Council on Sustainable Development, the Greenhouse Gas Protocol defines three scopes of emissions sources. Scope I is a direct emission and scope 2 and 3 are indirect emissions.

3 West Campus, the former Bayer Pharmceutical facility, is a 136-acre campus made up of 1.6 MM square feet of laboratories, offices and warehouse space.

4 Carbon equivalencies are sourced from the EPA Greenhouse Gas Equivalency Calculator

http://www.epa.gov/cleanenergy/energy-resources/calculator.html

## Yale's Full Scope of Emissions



Yale's 2005 greenhouse gas emissions baseline included energy consumed by all buildings connected to the University's two on-campus co-generation power plants and purchased electricity. <sup>1</sup> It did not include energy consumed by buildings not connected to the campus energy grid or the university fleet. Beginning in 2013, the 2005 baseline was adjusted to include emissions from the university fleet. Though it represents only a small percentage of Yale's total greenhouse gas emissions, the fleet was added to more accurately reflect the university's scope I emissions sources.<sup>2</sup> As a separate effort, Yale is currently focusing on emission reductions at West Campus which was purchased in 2007.<sup>3</sup>

Inventories for Yale's scope 3 emissions associated with commuting, air travel, waste, and paper purchase are analyzed on an annual basis, but are not currently included in Yale's emissions reduction target. As more accurate methodologies for accounting for scope 3 emissions are developed, Yale may consider expanding its emission reduction target to include this wider scope.

sustainability.yale.edu