









ClimateActionPlan



WINTER 2009









NYUGREeN

measures taken on Sustainability



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Executive Summary

Sustainability is one of the underlying principles supporting the ability of New York University to achieve its mission and vision for the future. NYU developed this Climate Action Plan as a strategic planning tool to reduce greenhouse gas emissions as effectively and rapidly as possible and as a communications platform for conveying a long-term goal to become a climate-positive institution.

This Climate Action Plan accounts for NYU's measured greenhouse gas inventory and lays out specific and effective projects that the University is implementing to mitigate these emissions in a way that is technologically feasible, fiscally sound, and consistent with NYU's vital teaching, learning, and research missions.

NYU will fulfill two separate commitments to mitigate climate change:

(1) THE PLANYC MAYORAL CHALLENGE

NYU will reduce its greenhouse gas emissions per square foot by 30% from fiscal year (FY)¹ 2006 levels by FY 2017. This short-term commitment provides the University with a framework to reduce emissions in an ambitious and tangible way.

(2) THE AMERICAN COLLEGE AND UNIVERSITY PRESIDENTS' CLIMATE COMMITMENT (ACUPCC)

NYU plans to fulfill the ACUPCC net-zero emissions "climate neutrality" commitment by FY 2040. This will be achieved by reducing the energy intensity of University buildings through conservation and efficiency measures, supplying energy needs through cleaner on-site generation and renewable energy, promoting behavioral shifts and culture change, planning for green building, and credibly offsetting the emissions remaining.

NYU recognizes that meeting the challenge posed to society by climate change is not only about operational performance and emissions reductions. By 2040, the University will also have integrated its educational, research, and community-building missions to inform the next generation of leaders in the struggle to create a more sustainable and just world.

1.6%

Greenhouse Gas Inventory

As a first step in developing this Climate Action Plan, the University completed a greenhouse gas inventory to calculate the level and sources of its greenhouse gas emissions.

NYU's direct greenhouse gas emissions break down into three major categories: Energy to heat, cool, and power University buildings 96.5%

- · Purchase of grid electricity and commodity steam
- Combustion of fossil fuels in buildings or central plant

Contracted shuttle bus fleet and University-owned vehicles
 Waste
 1.9%

Municipal solid waste stream

Given this distribution of direct emissions, NYU's Climate Action Plan has focused on strategies to reduce greenhouse gases associated with its energy system. Though not factored into the goals of this Climate Action Plan, NYU has engaged in significant efforts to green its transportation and waste management systems as well.

Energy Use and Greenhouse Gas Emissions

NYU has taken great strides in reducing energy consumption since announcing a University-wide sustainability initiative three years ago.

From FY 2007 to FY 2009, NYU reduced its annual weather-adjusted energy consumption by 100 million kBTU from 1,500 million kBTU to 1,400 million kBTU. This represents a 15% reduction in energy use per square foot, from 126 kBTU/square foot to $106 \, \mathrm{kBTU/square}$ foot.

NYU's FY 2009 inventory of emissions totaled 136,000 MTCE, a 20% reduction in overall greenhouse gas emissions from FY 2006 levels of 171,000 MTCE.

This considerable decrease in global warming pollution represents a major step toward meeting NYU's Mayoral Challenge and ACUPCC commitments.

Strategies to Reduce Emissions

NYU's Climate Action Plan is structured around four major emissions reduction strategies:

- (1) Reduce Energy Intensity
- (2) Generate and Use Cleaner Energy
- (3) Generate Renewable Energy
- (4) Reduce or Offset Remaining Emissions

NYU'S EMISSIONS REDUCTION STRATEGIES IN FOCUS

(1) Reduce Energy Intensity

NYU will reduce the amount of energy used in buildings—decreasing energy consumption per occupant and per square foot—by striving to avoid energy waste (conservation), while also accomplishing the same work using less energy (efficiency).

This strategy will include the following:

- Green construction and renovation
- Conservation through behavioral changes from building occupants
- · Retrofits and upgrades to make buildings more efficient or to conserve energy
- Operational innovations to run buildings more effectively
 In the coming years, NYU will set Energy Use Index (EUI) targets, which will help prioritize buildings to retrofit in order to maximize emissions reductions.

This strategy will account for the largest share of NYU's emissions reductions (50% of its climate neutrality goal), while also accounting for the University's physical growth.

(2) Generate and Use Cleaner Energy

NYU will generate cleaner, more efficient energy on-site with an upgraded and expanded cogeneration power plant. The new plant will go online in 2010 and will annually mitigate 23% of NYU's baseline 2006 emissions.

The University will also minimize the use of fuel oil to heat buildings, replacing it where possible with natural gas. Over time, NYU will explore alternative fuel sources and new technologies.

This strategy will account for 30% of NYU's climate neutrality goal.

(3) Generate Renewable Energy

Clean, renewable energy projects at NYU will help to develop New York City's market for these technologies and will serve as a powerful and visible symbol of the University's commitment to sustainability.

NYU is exploring options to develop on-site distributed renewable energy generation projects on its buildings, including wind and solar technologies. Given current technologies and support through state and federal incentives, there is immediate potential for viable projects offering a positive return on investment.

With improving technologies and policy support, NYU expects that on-site renewable distributed generation may provide 10% of the University's energy needs in the future, accounting for 10% of its climate neutrality goal.

(4) Reduce or Offset Remaining Emissions

Given the constraints of a dense urban environment, it is likely that NYU will purchase high-quality, credible offsets to accomplish long-term climate goals. The University will seek out local-based offsetting programs that offer added social, environmental, and educational values. Offsets may account for 10% of the University's climate neutrality goal.

Beyond Climate Neutrality

In addition to these efforts to reduce climate change, NYU will foster a University-wide culture of sustainability through expanded environment-related course work at both NYU and the affiliated Polytechnic Institute of NYU, as well as through deepened community engagement efforts.

NYU Into the Future

Ultimately, this plan provides NYU with a solid point of departure. As both material conditions and the scale of the global climate crisis evolve, the University recognizes that its goals and mitigation strategies must be reoriented accordingly. NYU will in the future consider horizons beyond the current Mayoral Challenge and ACUPCC frameworks, driving innovation and priming its ability to respond to challenges not yet identified.

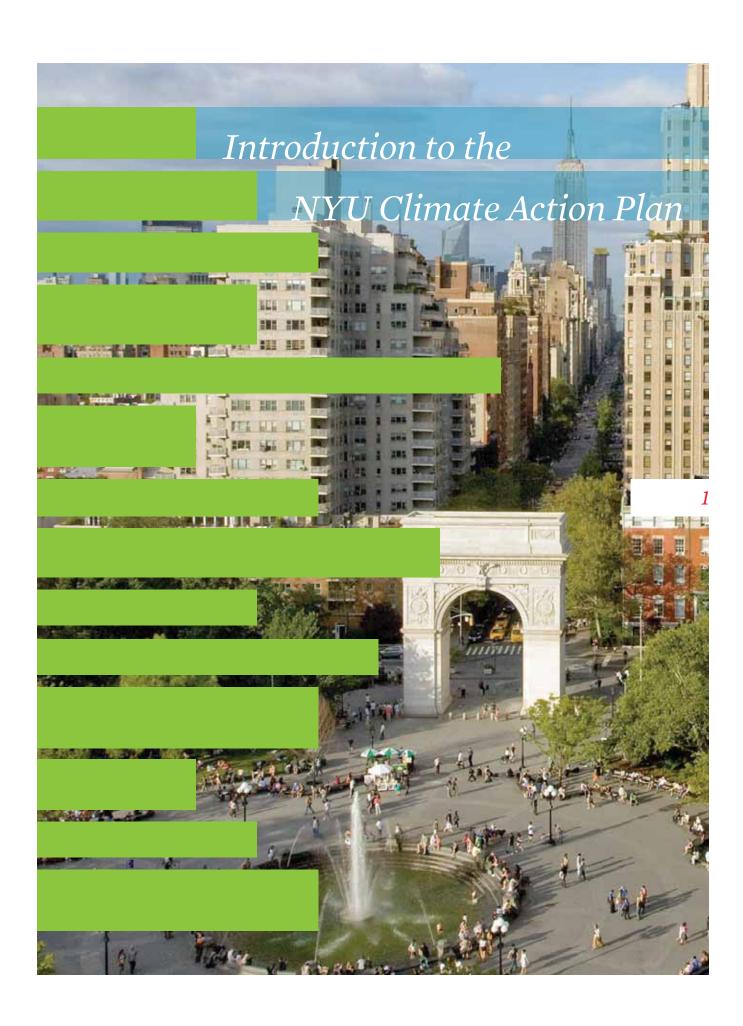
The vision of a sustainable NYU will not be one in which it discards the concept of growth; rather, it will be a future in which the University consciously chooses what it wants to grow. Without confronting the climate crisis, the NYU of 2040 may be subject to growing pollution, fiscal instability, and the disintegration of the close-knit communities of learning that are its lifeblood.

A number of exogenous factors beyond the University's boundary and control will have a bearing on NYU's success: economic conditions at home and around the globe; changes in legislative and regulatory regimes; investments (or lack thereof) by local, state, and federal governments; and the pace and outcome of technological advances. And NYU itself will undergo changes in response to academic imperatives. Accordingly, the University understands this plan to be a dynamic and evolving blueprint that will guide the community and intertwine decision makers and stakeholders in pursuit of climate goals.

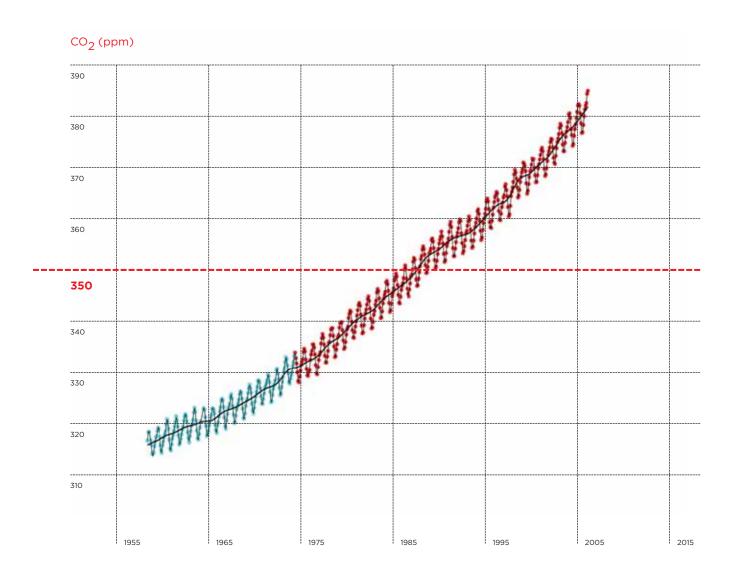
While the University cannot predict what other external variables will impact the NYU of 2040, it is now laying the groundwork for a university that successfully grows and develops sound physical infrastructure for teaching, learning, and research, in addition to financially sound policies, strengthened community relations, and a better quality of life.

Endnote

NYU's fiscal year (FY) coincides with the start and close of the academic schedule from September to August, whereby the year listed falls at the period's close (e.g., FY 2006 runs from September 2005 to August 2006).



Increase in Global Atmospheric Levels of Carbon Dioxide



NOAA ESRL GMD CARBON CYCLE

1958-1974 Scripps Institution of Oceanography 1974-2006 National Oceanic and Atmospheric Administration The current atmospheric concentrations of carbon dioxide (CO_2) have reached 387 parts per million (ppm). The emerging consensus among experts is that humanity must set a goal of 350 ppm in order to stabilize the climate and to have a planet "similar to that on which civilization developed and to which life on earth is adapted."

May 2006

1. Introduction to the NYU Climate Action Plan

Values

NYU is committed to reducing its greenhouse gas emissions and will draw on both its operational and academic communities to mitigate and adapt to the consequences of climate change as they impact New York City and the world.

SUSTAINABILITY AS AN UNDERLYING PRINCIPLE OF NYU

"Sustainability means investing in and improving NYU's operations and infrastructure, safeguarding the health and well-being of its community members, and conserving energy and the natural environment that supports and underpins them. Sustainability is about more than mitigating ecological impacts. Along with academic excellence and public service, it is an important principle for our University—another lens through which we see our values and mission." 3

-Dr. Michael Alfano, NYU Executive Vice President

SUSTAINABILITY AS A PATHWAY TO BUILDING COMMUNITY

"Sustainability means bringing together diverse segments of our community—students, faculty, staff, alumni, parents, and neighbors—to improve NYU's environmental performance and foster a 'green' campus culture."

-Jeremy Friedman, NYU Manager of Sustainability Initiatives

SUSTAINABILITY AS A WORLDVIEW

"Sustainability means exposing the hidden links between our actions today and ecological impacts later—between individual choices and global consequences. It recognizes that we are intimately connected with the fate of our grandchildren and remote ecosystems every time we turn up the thermostat, start the ignition, or order a meal."

-Cecil Scheib, NYU Director of Sustainability and Energy

The Science of Climate Change

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air temperature and ocean temperatures, widespread melting of snow and ice, and rising global average sea level....

"Greenhouse gas emissions from human activity are responsible for most of the increase in global average temperature with greater than 90 percent certainty."

—Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report, 2007 ⁴

For many years now, there has existed a strong, consistent, and vocal scientific consensus that the global climate crisis is real, that climate change is already under way, and that these changes are primarily anthropogenic (driven by human action).

According to the Pew Center on Global Climate Change, "This warming, along with the associated changes in precipitation, drought, heat waves, and sea-level rise, will have important consequences for the U.S. environment and economy. Globally, climate change presents many challenges, particularly in poorer countries far less able to cope with a changing climate and in low-lying countries where sea-level rise will cause severe damage to society and ecosystems." 5

Recent research indicates that feedback loops in the earth's climate system (e.g., melting Arctic ice, permafrost methane releases, collapsing Antarctic ice shelves, and ocean acidification) are accelerating the process of climate change. Effects are likely to include more rapidly rising sea levels, worsening natural disasters such as tornadoes and hurricanes, and expanding sociopolitical turmoil from drought, famine, political unrest, increased warfare over resources, and migration of environmental refugees.

Climate change will disproportionately harm and disenfranchise impoverished communities that lack the resources and political agency to respond to the crisis. Both within the United States and abroad, environmental justice presents a fundamental moral and political challenge that is as acute as the need to mitigate climate change itself.

Climate disruption will adversely impact the United States and will "hit home," directly transforming the northeastern United States and New York City. Without mitigation, local temperatures are projected to rise by up to 8°F in winter and 7°F in summer. This radical alteration will damage local agricultural and recreational economies. In New York City, higher temperatures will lead to increased concentrations of ground-level ozone pollution, elevating the rates of asthma and other respiratory illnesses. Sea-level rise will pose threats to Long Island's and lower Manhattan's infrastructure, and potential risks from periodic flooding will increase dramatically. Parts of NYU itself might even be under water before the end of the century.8

Scientists believe that it is not too late to alleviate many of these dire consequences by reducing greenhouse gas emissions worldwide. Actions taken now will have a direct impact on the environment and on human quality of life in New York City, New York State, and the world.

Sustainability at NYU: Many Levels of Opportunity

As the nation's largest private university, embedded in the heart of Manhattan, NYU carries a distinctive set of advantages and challenges for pursuing sustainability.

NYU is a university "in and of the city." New York
City's dense and multistory building stock, access to public
transportation, and history of student environmental activism
have all helped to support the rapid "greening" of NYU.
Lacking a traditional campus set apart from its neighborhood, and with limited access to space and other resources,
the University recognizes that its actions both depend on
and greatly influence its surroundings.

As "a private university in the public service," NYU is committed to becoming a leader and model for urban sustainability.

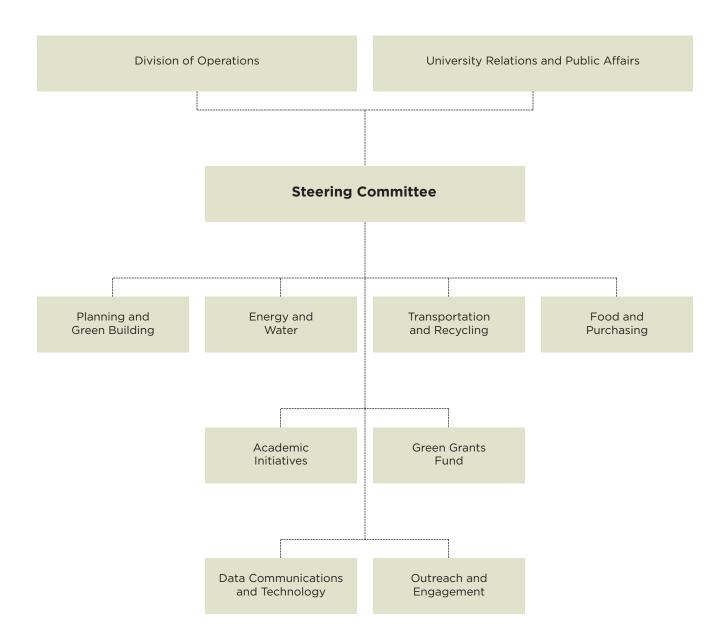
This commitment is manifested specifically in NYU's effort to mitigate climate change and more broadly in fostering public engagement about the complex and interdependent web of humanity's relationship with the environment.

Sustainability means planning for both long-term and immediate goals; blending ecological, social, and economic needs; and supporting NYU's academic and operational missions. The resources and energy available on earth are finite, but by engaging these constraints rather than ignoring them, the University can drive innovation.

NYU recognizes that sustainability invokes more than a concern for the environment; it is about the capacity for all to survive and thrive into the future. Thus, a sustainable NYU will be able to adapt to the needs of both a changing climate and a changing economy. Recognizing this, NYU will seek to utilize its sustainability initiatives to meet both its environmental and economic goals. The two are often aligned: NYU's green growth will help to bolster an economy of green jobs, and the University's conservation and efficiency measures will lower greenhouse gas emissions while simultaneously reducing energy costs.

It is with these responsibilities in mind that students, faculty, administrative leaders, and staff have worked intently to make NYU a champion for sustainability.

This Climate Action Plan is an expression of NYU's core principle of environmental sustainability.



NYU's Sustainability Task Force is a 60-member advisory body of students, faculty, staff, administrators, and alumni. The task force's issue-specific working groups represent key University constituencies including graduate and undergraduate students, faculty, administrators, staff, and alumni; representatives from nine NYU colleges and schools; and leaders from student clubs, administrative departments, and University governance bodies. These groups develop policy recommendations and coordinate projects to improve NYU's environmental footprint and to foster a University-wide culture of sustainability.



NYU Invests in Sustainability

In October 2006, New York University launched a broad institutional initiative that included the creation of a Sustainability Task Force and Sustainability Fund to develop and support new programs; plans to establish Environmental Studies and Bioethics programs; the announcement of a \$120 million high-efficiency cogeneration power plant project; and the largest purchase of renewable energy by a U.S. college or university.

With grassroots, volunteer-driven participation, the NYU Sustainability Task Force effectively harnesses the collective power of the University's decentralized constituencies and schools and colleges.

By bringing together a diverse group of people from every area of the University and drawing on their passion and knowledge, the task force gives the NYU community a strong voice in implementing new sustainability initiatives.

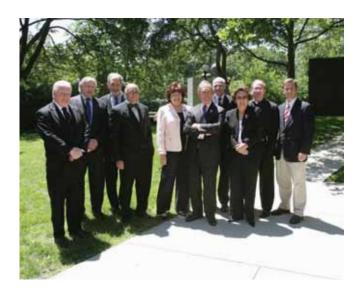
The task force proposed and supported much of the analysis that has led to this Climate Action Plan. This work was advanced by NYU's full-time sustainability staff in Operations and University Relations and Public Affairs, in collaboration with administrative staff throughout the University.

Each of the many greenhouse gas reduction measures enumerated in this Climate Action Plan was included after evaluating technical, financial, and political feasibility considerations. NYU will update and revise this plan as external conditions change and new information is obtained, and the task force will continue to suggest new ideas and review future updates.

NYU's Climate Change Mitigation Commitments

In 2007, NYU's Sustainability Task Force recommended that the University sign on to two distinct commitments.

The first commitment addresses specific shortterm emissions reductions, while the second envisions a climate-neutral future for NYU. New York City Mayor Michael Bloomberg (sixth from the left) with NYU President John Sexton (third from the left, back) and other New York City college and university leaders after launching the Mayoral Challenge.



This Climate Action Plan fuses the short-term climate change mitigation strategies of the Mayoral Challenge commitment with the broader goals of the ACUPCC; each complements the other and anchors NYU's overarching commitment to sustainability.

THE NEW YORK CITY MAYORAL CHALLENGE TO COLLEGES AND UNIVERSITIES

In June 2007, when New York City Mayor Michael Bloomberg released PlaNYC—a sustainability plan for the city—and announced the city's goal of reducing greenhouse gas emissions by 30% by the year 2030, he called on New York City colleges and universities to meet that goal in less than half the time.¹¹

NYU had already begun working to mitigate climate change, and when the formal opportunity to collaborate with the city and its higher education community presented itself, the University became one of the first institutions to join the Mayoral Challenge.

As part of a group organized by the Mayor's Office of Long-Term Planning and Sustainability that includes 13 other colleges and universities in New York City, NYU will reduce its greenhouse gas emissions per square foot by 30% from fiscal year (FY) 2006 levels by FY 2017. (The University's fiscal year runs from September 1 to August 31, in accordance with the academic calendar.)

NYU will reduce greenhouse gas emissions per square foot by 30% from FY 2006 levels by FY 2017.

This goal offers NYU a framework to reduce emissions immediately. The goal's "per-square-foot" qualifier ensures compatability with the city's interest in reducing emissions from buildings and energy use specifically. The expansion of the University's square footage as outlined in its long-term growth strategy, NYU 2031: NYU in NYC, 12 has been factored into both commitments in this Climate Action Plan.



THE AMERICAN COLLEGE AND UNIVERSITY PRESIDENTS' CLIMATE COMMITMENT (ACUPCC)

NYU became a Charter signatory and Leadership Circle member of the ACUPCC¹³ in 2007. The University then fulfilled the 2008 ACUPCC requirement to develop a greenhouse gas inventory and implement several elements of a list of credible first-step emissions reduction measures. Along with more than 660 other colleges and universities nationwide, NYU will next submit a Climate Action Plan that seeks to achieve net-zero greenhouse gas emissions by a justifiable target date.

NYU has established a climateneutral target date of 2040, when the University will produce net-zero emissions.

This ambitious climate neutrality target represents the point at which NYU will be able to operate without emitting greenhouse gases—by reducing emissions, supplying energy through clean and renewable generation, and credibly offsetting the remainder.

Meeting the Commitment

The ACUPCC reduction model for the Climate Action Plan is a longer-term extrapolation of the set of measures that make up the Mayoral Challenge strategy and their expected energy savings. In contrast to the Mayoral Challenge (which focuses on concrete reductions by a specific target date of 2017), the ACUPCC reduction model is broader and more aspirational in nature. This reflects the uncertain pace of technological advancement and anticipates changing policy circumstances and financing opportunities over the coming decades.

Beyond exploring the strategies that will mitigate NYU's operational environmental impact, the ACUPCC portion of this Climate Action Plan also describes how the University will incorporate climate neutrality and sustainability into its overall educational experience, research agenda, and community outreach efforts.

NYU is committed to achieving the greatest and most rapid reductions possible in greenhouse gas emissions, whenever this can be accomplished in a way that is technologically feasible, fiscally sound, and consistent with the University's vital teaching, learning, and research missions.



A Climate-Positive NYU

"How is it possible for industry and nature to fruitfully co-exist? Well, consider the cherry tree. Each spring it produces thousands of blossoms, only a few of which germinate, take root and grow. Who would see cherry blossoms piling up on the ground and think, 'How inefficient and wasteful'? The tree's abundance is useful and safe. After falling to the ground, the blossoms return to the soil and become nutrients for the surrounding environment. Every last particle contributes in some way to the health of a thriving ecosystem. Waste that stays waste does not exist. Instead, waste nourishes; waste equals food."

-William McDonough and Michael Braungart¹⁴

NYU's long-term climate change mitigation aspiration is not simply to be climate neutral but to have a positive impact on the earth's people and natural systems. This entails going beyond net-zero emissions and a narrow conception of the University's operational and academic role in solving global problems.

NYU aspires to be a climate-positive institution.

This clarion call to become climate positive sends a potent message: Do not regard sustainability as a process of sacrifice and deprivation—because it offers far greater rewards. As the cherry tree enriches the soil, allowing the next generation of plants to bloom and grow, NYU has the chance to ensure a future in which "waste equals food," contributing to the health and robustness of the biosphere that sustains human life.

The University's climate-positive vision strives to capture the spirit of NYU's overarching sustainability agenda by aspiring not merely to be "less bad" but to leave the planet in a better condition for future generations.

These efforts will occur both within and beyond the University's walls. By modeling best practices, educating thousands of students who will become the next generation of change leaders, and researching new ideas and technologies, NYU's community will realize its ability to substantively benefit the world within and beyond its borders.

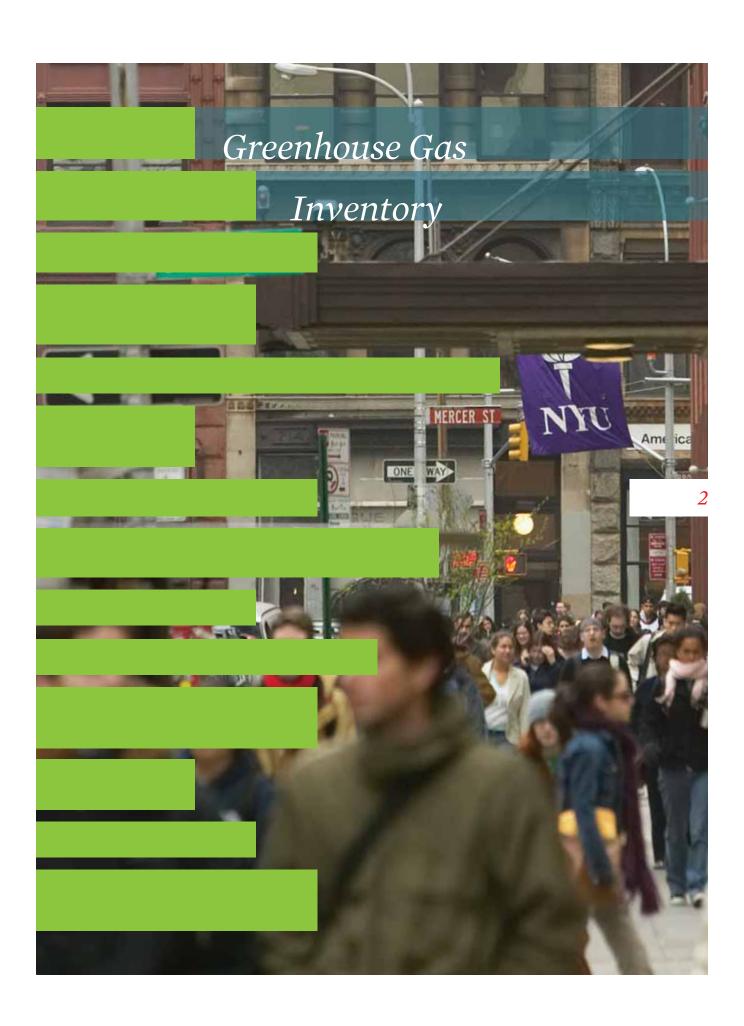
Endnotes

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- http://www.nyu.edu/global.network/think.globally
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- http://www.nyu.edu/nyu.plans.2031
- 13 http://www.presidentsclimatecommitment.org
- "The Extravagant Gesture," http://mcdonough.com/writings/extravagant_gesture.htm



NYU's Greenhouse Gas Emissions— Sources, by Operational Area

Energy use in NYU buildings is a much more substantial source of emissions than the University's waste and transportation systems.

Relative to inventories from other colleges and universities, NYU's measured transportation emissions are smaller and likely represent an undercount, because accurate data on commuting and air travel are not yet available.

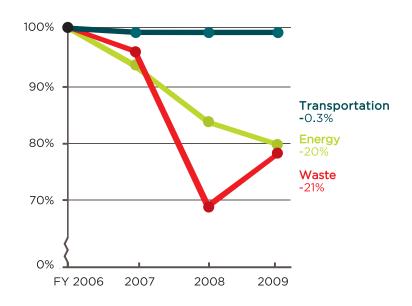


NYU's Greenhouse Gas Emissions— Percent Change, by Operational Area

table 2.2

Reduction rates have varied by operational area. Energy emissions have decreased steadily and substantially since FY 2006, while transportation emissions remained approximately flat during that period. Waste emissions decreased until FY 2008 and then rebounded in FY 2009, in spite of a major composting initiative that presumably prevented an even larger emissions increase.

At the same time, NYU's location and density within Manhattan limit emissions from transportation. Less than 1% of the University community currently commutes to work via private car or taxi. NYU students, faculty, and staff already walk, bike, or access public transit options more consistently than their peers at nearly any other institution in the United States.



2. Greenhouse Gas Inventory

New York University emits substantial greenhouse gas pollution as part of its everyday operation. The University has measured and tracked its metric tons of carbon equivalent (MTCE) emissions for the operational areas of energy, waste, and transportation from FY 2006 to the present, and its greenhouse gas inventory includes comprehensive data within these areas.¹

For an overview of NYU's emissions categorized according to scopes (1, 2, and 3—a format commonly used by the IPCC and other organizations), see "Appendix E: Greenhouse Gas Emission by Scope, FY 2007," page 69.

Methodology and Boundaries

This inventory is intended to include all greenhouse gas emissions that fall within the operational and financial boundaries of the University's owned and leased buildings and vehicles, as well as its waste stream in New York City. The inventory accounts for the majority of emissions from NYU's core location at Washington Square, since nearly all of the University's building stock in New York is occupied and paid for by the University. This Climate Action Plan accounts for 12 million square feet of building space, with roughly 41,000 full-time students and 16,000 faculty and staff.

The inventory does not include emissions from the NYU Langone Medical Center, the affiliated Polytechnic Institute of NYU, or NYU sites or campuses abroad such as NYU Abu Dhabi. Both the NYU Langone Medical Center and Polytechnic Institute of NYU have their own institutional greening programs, have signed on to the Mayoral Challenge, and are developing separate plans for climate action.

NYU plans to measure and include additional sources of greenhouse gas emissions—including those associated with dining, commuting, and air travel—in the next edition of this Climate Action Plan (see chapter 5, "Plans to Track and Report Emissions" section, pages 53-54; and chapter 6, "Conclusion and Future Considerations," page 56). If better information becomes available or data sets are refined, FY 2006-2009 inventory figures will be updated retroactively in future editions.

See also "Appendix D: Methodology," pages 66-68, for a more detailed description of the methodology utilized to compile NYU's greenhouse gas inventory, including data limitations and assumptions, excluded de minimis emissions, and the structure of NYU's custom Climate Action Planning tool.

The greenhouse gas inventory process is necessarily an imperfect measure of true global warming impact—data sources are not always complete, and many indirect effects are difficult to quantify. The key to an effective inventory is the application of consistent standards and practices to ensure that progress over time can be measured meaningfully. In other words, it matters less where NYU starts than where it ends.

Major Emissions Sources

The majority of NYU's direct greenhouse gas emissions—96.5%—are generated in the process of heating, cooling, and powering its buildings, either through the purchase of grid electricity and commodity steam from utilities or through the combustion of fossil fuels in buildings or the central plant cogeneration facility. The landfilling and incineration of NYU's municipal solid waste (1.9%), as well as the operation of the University's owned vehicles and contracted shuttle bus fleet (1.6%), make up the small remainder of these direct emissions.

Given this distribution, NYU's Climate Action Plan has focused on strategies to reduce emissions associated with energy, without detailed analysis of reduction opportunities in the areas of transportation and waste. However, although not included in these pages in depth, NYU has engaged in significant efforts to "green" its transportation and waste management systems, both in terms of overall environmental performance and impact on climate change.

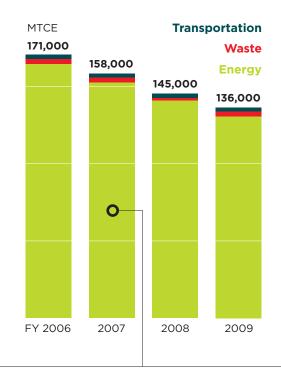
Transportation measures have included new bicycle recycling and donation programs, development of a pilot community bicycle-sharing system, creating new bicycle storage, developing anti-theft and education programs, and plans to reduce the fuel usage of the University's shuttle bus fleet by half in FY 2010.

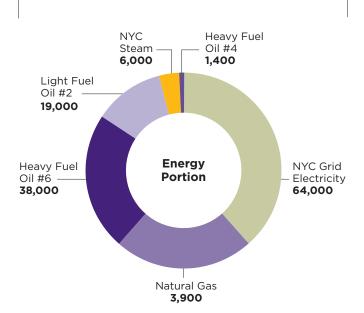
NYU's 2006-2009 Greenhouse Gas Emissions, with Energy Emissions by Fuel Source

NYU's total emissions, the majority of which come from energy use in buildings, have steadily decreased at an average annual rate of roughly 7% for each of the past three years—an ambitious and accelerated pace.

In 2007, purchased commodities, grid electricity, and steam respectively accounted for 61%, 35%, and 4% of emissions from energy use.

Among purchased commodities, natural gas accounted for approximately the same percentage of total emissions as heavy fuel oil, even though more total MMBTUs of gas were purchased. This highlights the fact that natural gas is a lower-carbon fuel source than oil.





Waste measures have included an institutional food waste composting program in dining facilities, trayless dining, removal of bottled water from student meal plans, increase in recycling bin coverage, greater emphasis on reuse, single-stream recycling, and potential development of a zero-waste strategy in FY 2010.

Progress: Reductions in Energy Use and Emissions

NYU has already made significant progress in reducing its greenhouse gas emissions from peak levels (see table 2.3, "NYU's 2006-2009 Greenhouse Gas Emissions, with Energy Emissions by Fuel Source," page 18).

In FY 2006 (the baseline year for the Mayoral Challenge), NYU's inventory included 171,000 MTCE emissions.

In just three years, NYU has successfully reduced its total emissions by 20%, to 136,000 MTCE in FY 2009.

This considerable decrease in global warming pollution represents a major step toward meeting NYU's Mayoral Challenge and ACUPCC commitments. In fact, if the University is able to reduce its emissions at current rates, it will achieve both targets in advance of formal implementation deadlines.

Renewable Energy Credits (RECs) and Carbon Offsetting

NYU bought renewable energy credits (RECs) equal to 100% of total projected purchased electricity consumption for both FY 2006 (118 million kWh) and FY 2007 (136 million kWh), helping to support a burgeoning wind power industry at a critical moment in its growth. This was recognized by the Environmental Protection Agency's Green Power Partnership as the largest purchase by a U.S. college or university at that time.

NYU's total inventory would be 27% smaller in FY 2006 and 24% smaller in FY 2007 were wind RECs counted toward a reduction in fossil-fuel-generated purchased electricity. Though many greenhouse gas emissions calculators apply a default emissions offset for the use of "green electricity," NYU does not assume that RECs necessarily or dependably reduce carbon and has not factored them into this inventory. The ACUPCC Voluntary Carbon Offset Protocol² describes this issue in greater depth and similarly does not recommend the application of RECs as carbon offsets.

Additionally, because the Mayoral Challenge commitment is designed to reduce New York City's total direct emissions, carbon offsets and RECs can only be applied to a small portion of the "30% by 2017" goal, rendering other measures necessary even if RECs were found to meet all standards as credible offsets.

Energy Reduction Measures Producing Ongoing Savings

| Energy | Approximate | |
|----------------------------------|----------------|--|
| Conservation | Ongoing Annual | |
| Measures | Savings | Description |
| Relamping | \$500,000 | Retrofitting existing buildings with new lighting |
| Building schedules | \$400,000 | Reducing lighting, HVAC during unoccupied periods |
| HVAC dorm occupancy control | \$400,000 | Occupancy sensors on HVAC in student rooms |
| Compact fluorescent lightbulbs | \$250,000 | 25,000 CFLs installed or distributed |
| Personal computer | \$150,000 | Shutdown of personal computers when not in use |
| Occupancy sensors | \$150,000 | Automatic lighting controls; 2,500 installed |
| Bulb specification and rebulbing | \$100,000 | NYU-wide policy on efficient lighting |
| Recommissioning | \$100,000 | "Tuning" large building HVAC systems |

TOTAL

\$2,050,000

From FY 2007 to FY 2009, measures to save energy have helped NYU reduce its annual weather-adjusted energy consumption from 1,500 million kBTU to 1,400 million kBTU. This represents a 15% reduction in EUI, or energy use per square foot, from 126 kBTU/square foot to 106 kBTU/square foot.



Monthly Energy Consumption

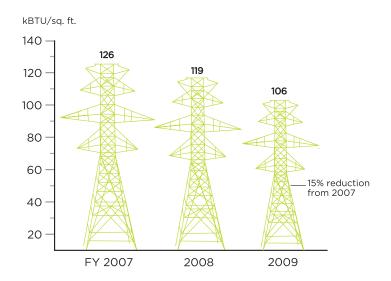
NYU's 2007-2009 Annual Energy Use

NYU's efficiency and conservation efforts have resulted in significant energy savings and emissions cuts since 2007. Energy Use Index (EUI) in kBTU per square foot per year.

The University's impact on climate change is substantial. NYU's emissions amount to .2% of New York City's total greenhouse gas inventory. Given that New York City is responsible for .9% of total U.S. emissions, and that the United States represents 18.9% of global greenhouse gas pollution, it is not hard to draw direct parallels between the actions of one single institution and their effects on the planet.

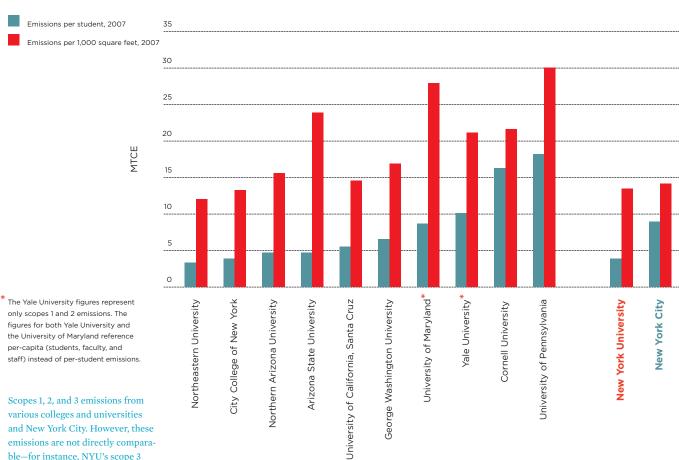
NYU has the capacity to directly engage the problem of global warming in a way that "scales upward" to the planetary level.





Average Annual Energy Intensity

NYU's Greenhouse Gas Emissions— **Comparison to New York City** and Peer Colleges and Universities

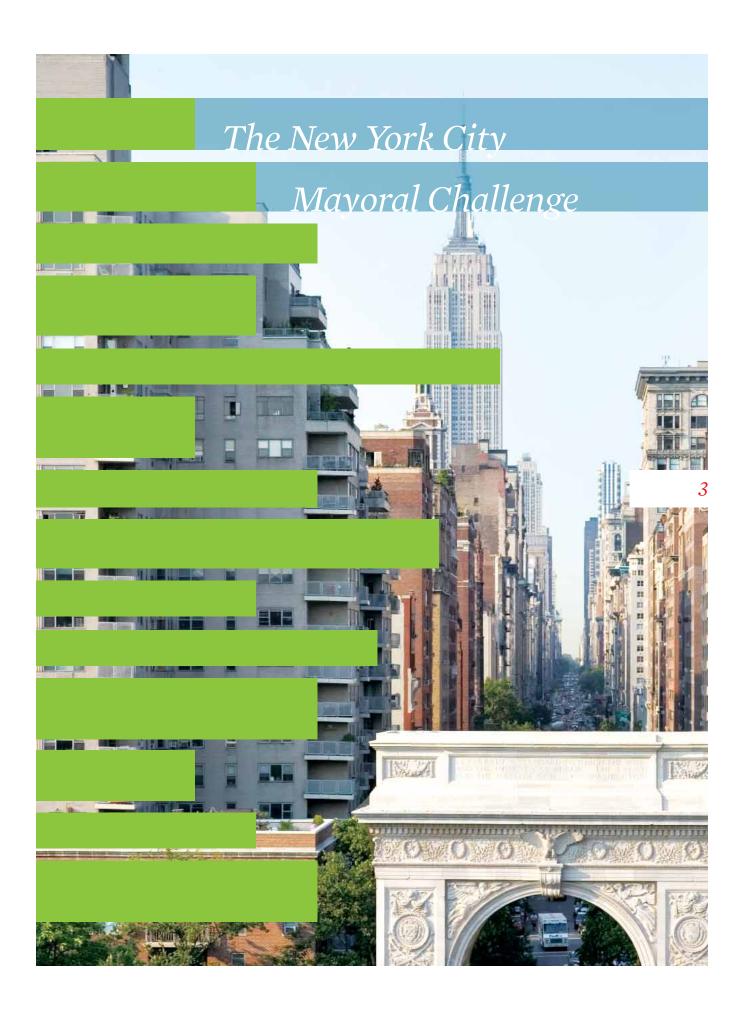


emissions are not directly comparable—for instance, NYU's scope 3 emissions factor in waste but not air travel or commuting.

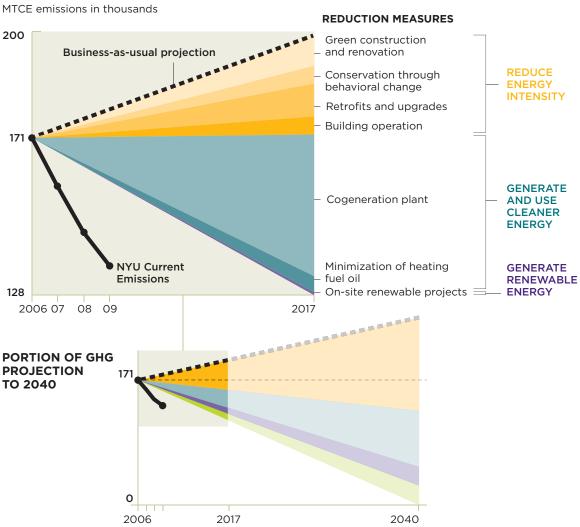
It is likely that a truly comparable inventory would show as much as a 10%-20% increase in applicable total NYU emissions from transportation.

Endnotes

- NYU's fiscal year (FY) runs from September 1 to August 31 of each year, in accordance with its academic calendar.
- ${\color{red}^2} \quad http://www.presidentsclimatecommitment.org/offsetprotocol.php$
- PlaNYC Inventory of New York City Greenhouse Gas Emissions, September 2009, http://www.nyc.gov/html/planyc2030/downloads/pdf/greenhousegas_2009.pdf, page 19
- New York State Greenhouse Gas Emissions Inventory and Forecasts for the 2009 State Energy Plan, NYSERDA, August 6, 2009, http://www.nysenergyplan.com/Supporting_Documents/ Greenhouse%20Gas%20Emissions%20Inventory%20&%20Forecasts.pdf, page 4



GHG EMISSIONS PROJECTION TO 2017



MAYORAL CHALLENGE 2017 GOAL

MTCE emissions in thousands



Three of NYU's broad strategies house seven individual emissions reduction wedges. In the ACUPCC chapter of this plan (see chapter 4, "The American College and University Presidents' Climate Commitment," pages 40-48), these wedges are extended, expanded, or deepened beyond 2017 to serve as the building blocks for NYU's approach to achieving climate neutrality by 2040.

3. The New York City Mayoral Challenge

As a participant in the New York City Mayoral Challenge,

NYU has committed to reducing its greenhouse gas emissions against the FY 2006 baseline by 30% per square foot by 2017.

Emissions Reduction Measures

NYU's Climate Action Plan utilizes four broad strategies:

- (1) Reduce Energy Intensity
- (2) Generate and Use Cleaner Energy
- (3) Generate Renewable Energy
- (4) Reduce or Offset Remaining Emissions

To achieve the Mayoral Challenge target, NYU will implement seven emissions reduction measures, or "wedges," that fall within the first three of these four strategies (see table 3.1, "NYU's Climate Action—Strategies for the Mayoral Challenge Commitment," page 24).

Carbon offsets cannot be counted toward most of the Mayoral Challenge goal, and it is feasible to achieve the goal directly without them. As a result, the fourth Climate Action Plan strategy will not immediately apply, and NYU plans to refrain from purchasing offsets until the University approaches the ACUPCC climate neutrality goal, when minimal carbon offsetting may become necessary.

Projections of avoided emissions are based on the anticipated energy savings from each wedge.

The seven wedges will avoid 71,000 metric tons of carbon equivalent (MTCE) emissions annually by the year 2017, counteracting additional emissions that result from NYU's growth.

The reduction wedges will represent a 35% cut from the FY 2006 baseline of NYU's emissions per square foot.

As required, FY 2006 is used as the baseline year for benchmarking actual progress toward the Mayoral Challenge goal. But the calculations projecting reductions from each Mayoral Challenge measure are nevertheless based on a more recent set of weather-normalized energy data from FY 2007, factoring in projections of NYU's future growth based on the NYU 2031: NYU in NYC planning strategy (as much as six million square feet by 2031).

Greenhouse Gas Reduction Measures for the Mayoral Challenge Commitment

| | | MTCE | PERCENTAGE OF 2017 REDUCTION | PERCENTAGE OF TOTAL NYU EMISSIONS |
|---|---|---------------------------|---|--|
| | TOTAL EMISSIONS FY 2006 EMISSIONS FROM CAMPUS GROWTH BY 2017 | 171,000 +28,900 | | |
| 38% | 1. Green Construction and Renovation | -8,600 | 12% | 5% |
| OF 2017 | 2. Conservation Through Behavioral Change | -4,700 | 7% | 3% |
| REDUCTION | 3. Retrofits and Upgrades | -9,500 | 13% | 6% |
| | 4. Building Operation | -4,700 | 7% | 3% |
| | GENERATE AND USE CLEANER ENERGY | | | |
| 61% | 5. Larger, Cleaner, More Efficient Cogeneration Plant | -40,000 | 55% | 23% |
| | 6. Minimization of Heating Fuel Oil | -3,800 | 5% | 2% |
| | GENERATE RENEWABLE ENERGY | | | |
| 1% | 7. On-site Renewable Projects | -600 | 1% | 0.5% |
| J will meet the M llenge goal by im t of seven greenhoustion measures t | plementing 2017 reduction represents a per- ouse gas square-foot emissions cut of 35%. | 71,900 MTCE reduced | 35% reduction in 2017 emissions per sq. ft. | reduction of 2006 emissions 25% reduction in 2017 total emissions |

NYU will meet the Mayoral Challenge goal by implementing a set of seven greenhouse gas reduction measures that range from efficiency upgrades and conservation programs to green building and renewable energy generation. Taken together, these measures will set NYU firmly on the path toward a climate-positive future.

The University's projected 2017 reduction represents a persquare-foot emissions cut of 35%. Note: this reduction in emissions is equivalent to 43% of total FY 2006 baseline emissions but only a 25% cut in projected total 2017 emissions, once emissions from NYU's future growth have been factored in.

Commitment to a 30% Emissions Reduction by 2017

STRATEGY 1:

REDUCE ENERGY INTENSITY

Energy intensity describes a building's energy consumption per user or per square foot. "Intensity" is a more useful term than "reduction" or "efficiency," because it inherently accounts for growth of a university's population or physical footprint. Specifically, a building's Energy Use Index (EUI) measures its annual energy usage per square foot, normalized for variations in weather.

Reducing energy intensity is best accomplished by simultaneously striving to use less total energy (conservation), while also using less energy to do the same things more effectively (efficiency).

Summary of Wedges Within the Reduce Energy Intensity Strategy

NYU will reduce the energy intensity of its buildings through four overlapping and complementary approaches, represented by four wedges:



Wedge 1-Green Construction and Renovation

Use building standards and certifications to ensure that new construction and substantial renovation projects are designed and executed to achieve high-performance EUI targets.



Wedge 2—Conservation Through Behavioral Change

Engage building occupants and motivate them to use less energy through changes in personal or organizational behavior, such that the combined effects of many individual actions add up to significant overall savings.



Wedge 3-Retrofits and Upgrades

Install improvements to existing buildings to make them more efficient or to conserve energy, in a fashion that does not materially affect building occupants.



Wedge 4—Building Operation

Run buildings more effectively by utilizing building management systems, advanced controls, active monitoring, and operator training. Wedge 1
Green Construction
and Renovation



8,600 MTCE

The University's growth will add to its total emissions; however, constructing and renovating high-performance buildings will prevent an additional growth-driven increase of 8,600 MTCE, equivalent to 5% of the FY 2006 baseline.

The University's strategy for smart growth is outlined in NYU 2031: NYU in NYC, a strategic vision that accounts for as much as six million anticipated square feet by 2031. This growth presents an important opportunity to reduce energy intensity, as new buildings can be planned and built to be more efficient than NYU's current building portfolio average.

NYU is committed to meeting the U.S. Green Building Council's LEED standards for all new construction and renovation, with the LEED Silver standard as its baseline goal.

LEED (Leadership in Energy and Environmental Design) establishes minimum thresholds and a point-based certification system for evaluating sustainability in building design. Embracing the LEED Silver standard will help to reduce the energy intensity of the University's building stock.



The NYU Gallatin School of Individualized Study, which received LEED Gold certification for green building in June 2009.



A formal set of NYU Design Standards and Guidelines will continue to improve the environmental performance of new buildings and renovations.

UNIVERSITY GROWTH AND

EMISSIONS REDUCTION WEDGES

This Climate Action Plan accounts for two million square feet of growth at a 20% improvement in energy efficiency, relative to the baseline performance of NYU's current building stock. The University's projected emissions from its expansion without this 20% efficiency upgrade would be 28,900 MTCE. But even with greener buildings, NYU's physical growth will still result in the addition of approximately 23,000 MTCE to NYU's FY 2006 greenhouse gas inventory.

LEED Green Buildings at NYU

NYU has recently taken important steps toward greener construction and renovation of its buildings. The NYU Gallatin School of Individualized Study building at 715 Broadway received LEED Gold certification in June 2009. Three other projects currently under way—the Center for Academic and Spiritual Life, Wilf Hall, and the Institutes for Law—will be built to LEED Silver or higher standard. These projects set precedents for new and renovated buildings to improve energy performance and reduce associated environmental and economic impacts.

Wedge 2 Conservation Through Behavioral Change



4,700 MTCE

NYU will continue to sustain a 3% reduction in annual green-house gas emissions through 2017 against the FY 2006 baseline. This will save 4,700 MTCE annually.

The University is working to engage students, faculty, and staff in campaigns to use less energy in NYU buildings through changes in personal or organizational behavior. Projects include efforts to improve building scheduling, implement computer hibernation and manual shutoff of lights and equipment, and thoughtful selection of heating and cooling thermostat set points.

The projection of a sustained 3% reduction through participatory behavioral change is supported by the recent success of 10,000 undergraduate students in University housing. In 2008 and 2009, the University sponsored NYUnplugged, a competition among residence halls to reduce energy usage. Students responded by reducing their electricity usage by an average of 8%.

Anecdotal evidence indicates similar success achieved with NYU's sustainability advocates—University employee volunteers trained to lead their offices' sustainability efforts and educate their colleagues—in energy-saving activities. Through outreach in academic, administrative, and research buildings, NYU anticipates a similar response throughout the University.

NYUnplugged

In April 2008 and 2009, NYU's monthlong electricity conservation challenge called on students in University housing to take simple steps to reduce electricity consumption: for example, turning off lights, unplugging appliances, hibernating computers, and taking the stairs. An outreach program led by the Residential Education staff and resident assistants included events, pledge cards, and building-vs.-building competition.

The students' efforts were tracked using building "smart meters" that allowed participants and others to see energy usage in real time. Students responded with an average overall energy savings of 8%—saving 150,000 kWh of electricity and \$30,000.

Wedge 3 Retrofits and Upgrades



9,500 MTCE

By 2017, NYU expects to achieve a 6% or greater emissions reduction below baseline levels by retrofitting and upgrading its buildings.

NYU's retrofits and upgrades are changes to its buildings that make them more efficient or conserve energy, but that are not perceived by building occupants or do not affect the actions of building users. Changes include renovations of building systems on roofs, in walls, and in basements; routine efficiency measures such as efficient lighting and installing occupancy sensors on lighting and on vending machines; and innovative measures such as installing networked "smart" occupancy sensors on in-room heating and air conditioning units. NYU has been performing these measures on an ongoing basis.

A 6% energy use reduction in all buildings will account for approximately nine million kWh in electricity savings and 100,000 MMBTU savings from heating fuels annually, equivalent to reducing 9,500 MTCE emissions.

Examples of Conservation and Efficiency Measures at NYU

| Conservation Measures: avoiding energy waste | Payback Period (in years) |
|---|------------------------------|
| Installing occupancy sensors for in-room heating and air conditioning units | 2-3 |
| Installing 2,500 lighting occupancy sensors in offices/classrooms | 1 |
| Improving building envelope with shades and reducing infiltration | 0-5 |
| Installing Vending Misers on beverage machines | 1-2 |
| Implementing staff and student computer hibernation settings | Varies |
| | |
| Efficiency Measures: doing the same thing with less energy | Payback Period (in years) |
| | • |
| doing the same thing with less energy Installing domestic hot water heaters for more efficient summer production | (in years) |
| doing the same thing with less energy Installing domestic hot water heaters for more efficient summer production of hot water Implementing heat distribution system improvements, boiler controls, stream | (in years) |
| doing the same thing with less energy Installing domestic hot water heaters for more efficient summer production of hot water Implementing heat distribution system improvements, boiler controls, stream trap survey and repair Installing Energy Star appliances | (in years) 3 |

Case Study: Lighting Retrofits at NYU

Lighting accounts for half of a building's electricity consumption.

Examples of performed retrofits at NYU have included the following:

- 40,000 compact fluorescent lightbulbs (CFLs) installed or distributed University-wide. Each bulb saves over \$100 during its lifetime with no sacrifice to light quality or output (1-month payback).
- Changed bulbs on four-foot linear fixtures from 32 watts to 25 watts and installed low-power factor ballasts in 17 buildings.

Overall, lighting retrofits in 17 NYU buildings from 2006 to 2008 have saved over one million kWh of electricity. Each project offered an average payback period of roughly three years and reduced total electricity consumption by an average of 15% (ranging from 2%-65%).

Wedge 4 Building Operation



4,700 MTCE

By 2017, NYU expects to achieve a 3% or greater emissions reduction below baseline levels through intelligent building operation and management, avoiding 4,700 MTCE emissions.

The University will run buildings more efficiently through expanded use of building management systems and building operator training. A technically complex building requires a significant degree of sophistication to operate at a high-performance level. By investing in controls and employee education, NYU can reduce building energy use through constant monitoring and systems modification.

This measure shows large savings potential, but ongoing attention is needed in order to maintain high-performance standards.

Examples of Measures to Optimize Building Operation at NYU

| Building Operation Measures | Payback Period |
|---|----------------|
| Modifying building schedules to broaden thermal comfort, especially at night | Immediate |
| Implementing "summer mode" shutdowns of nonessential lights and elevators in low-trafficked buildings | Immediate |
| Instituting "Lights Off" policy—working with the custodial staff to ensure lights are turned off after cleaning | Varies |
| Enforcing preventive maintenance schedules | Immediate |
| Commissioning, recommissioning, and retrocommissioning building systems for efficiency | 1-2 years |

STRATEGY 2: GENERATE AND USE CLEANER ENERGY

Summary of Wedges Within the Generate and Use Cleaner Energy Strategy

Before 2017, NYU will reduce its emissions by 23% by producing energy locally on-site in an upgraded and expanded high-efficiency cogeneration power plant. NYU will also minimize the use of fuel oil and instead use natural gas to heat its buildings.



Wedge 5—Larger, Cleaner, More Efficient Cogeneration Plant and

Wedge 6-Minimization of Heating Fuel Oil.





40,000 MTCF

Wedge 5 Larger, Cleaner, More Efficient Cogeneration Plant

NYU is replacing its 5.2 MW output central plant with an expanded, more efficient 13.8 MW combined heat and power (CHP, also known as cogeneration) facility. This technology will offer on-site generation of electricity and thermal energy (heating and cooling) from burning natural gas and backup fuel oil, with significant wasteheat recovery.

When put into service in 2010, CHP will greatly improve NYU's operational efficiency, decrease energy costs, and substantially reduce greenhouse gas emissions.²

The new plant will account for the single largest reduction wedge in NYU's Climate Action Plan, avoiding 40,000 MTCE, a 23% decrease below University-wide FY 2006 emissions.

Cogeneration will deliver substantial emissions reductions in multiple ways:

(1) Fuel switching

NYU's new plant will reduce the use of #6 (residual) oil by 80% and virtually eliminate the use of #2 (diesel fuel) oil, while nearly doubling combustion of cleaner-burning, less carbon-intensive natural gas. The project will significantly expand local production of power for NYU even as fuel switching reduces carbon emissions by approximately 15,000 MTCE (8% of FY 2006 University-wide emissions).

The new plant will also decrease NYU's emissions of criteria pollutants³ associated with adverse human health effects, such as asthma and lung disease. Switching to a cleaner fuel in the new plant will reduce criteria pollutants such as NO_{X} , SO_{X} , and particulate matter by 68%, from 530 tons to 170 tons.

(2) Increase in cleaner electricity

The new plant will generate almost 85 million kWh of electricity annually, up from 27 million kWh. The current plant provides electricity for five large buildings (one million square feet), but this will increase to 21 buildings (almost five million square feet) in 2010. This will decrease the amount of electricity purchased from the dirtier New York City grid, eliminating almost 18,000 MTCE (10% of University-wide emissions).

(3) Increase in centrally supplied heating and hot water

The new plant will supply more buildings with heating and high-temperature hot water. This will avoid the annual use of 500,000 gallons of carbon-intensive fuel oil and 280,000 therms of natural gas currently combusted in buildings, reducing 7,500 MTCE (5% of University-wide emissions).

(4) Increased efficiency

The new plant will better utilize cutting-edge new equipment to increase heat and electricity production efficiency, as well as harness cogeneration efficiency loops for waste-heat recovery. The emissions reductions from this increased efficiency are already factored into the other sections.

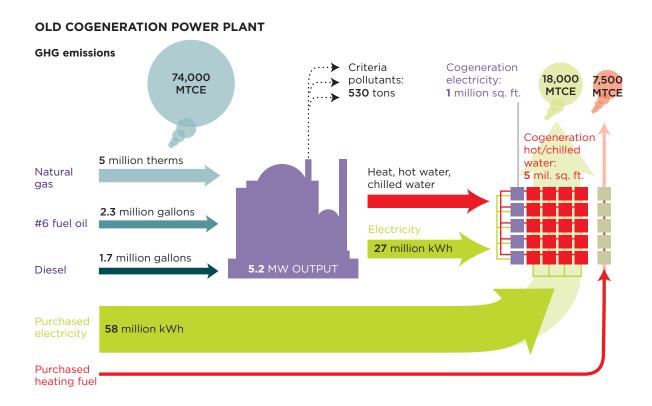
32

NYU's Central Plant— High-Efficiency Cogeneration for Electricity, Heat, and Hot Water

FUEL SWITCHING 2 INCREASE IN CENTRALLY SUPPLIED CLEANER ELECTRICITY

INCREASE IN CENTRALLY SUPPLIED HEATING AND HOT WATER

INCREASE IN EFFICIENCY



Pages 32 and 33 show the commodity inputs to and energy outputs from both NYU's old and new cogeneration plants. The total combined emissions from the old plant and the associated buildings that are joining the new system amount to nearly 100,000 MTCE; this will plummet to 59,000 MTCE even though the new plant is actually much larger in absolute terms (supplying all buildings shown centrally by 2010) and might intuitively be expected to increase, rather than decrease, emissions.

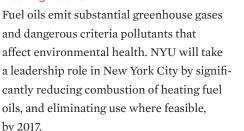
NYU's Central Plant— High-Efficiency Cogeneration for Electricity, Heat, and Hot Water

NEW COGENERATION POWER PLANT GHG emissions Criteria 59,000 pollutants: **MTCE 170** tons 10 million therms Heat, hot water, Cogeneration chilled water electricity: 5 million sq. ft. Natural gas Electricity 0.5 million gallons #6 fuel oil 85 million kWh 13.8 MW OUTPUT Cogeneration hot/chilled water: 23% REDUCTION IN TOTAL CAMPUS EMISSIONS ATTRIBUTED TO COGENERATION MEASURES

The new plant will provide electricity and hot and chilled water to six million square feet of building space—approximately half of NYU's current campus. Electricity supply will expand from one million square feet up to five million square feet, and hot water supply will extend from five million square feet to six million square feet. Chilled water coverage will remain the same. Half of NYU's buildings that are not connected to the plant (not depicted here) will continue to receive purchased electricity and commodity fuels individually.

3,800 MTCE

Wedge 6 Minimization of Heating Fuel Oil



Burning natural gas in place of oil emits less ${\rm CO_2}$ and ${\rm NOx.^4}$ Twenty NYU buildings that represent 2.5 million square feet of space (about 20% of current applicable University area) currently burn #2, #4, or #6 oil for heating.

By 2017, these fuel oils will be minimized or eliminated in favor of natural gas, leading to a reduction of 3,800 MTCE.

In keeping with New York City Mayor Michael Bloomberg's PlaNYC air quality initiatives, the city is promoting the use of cleaner-burning heating fuels and will reduce emissions from boilers in 100 city public schools where the asthma rates are more than three times higher than the national average. New York City does not currently meet federal air quality standards for particulate matter pollution; and legislation in the coming years may require the phase out of some or all heating oils. NYU will take a leadership role and has already begun to minimize its use of these polluting fuels.

The University acknowledges that natural gas cannot serve as a long-term energy solution, given that global natural gas supplies will likely peak and decline within several decades 7 and that as a fossil fuel, gas still emits CO_2 in combustion. Nevertheless, natural gas represents the cleanest-burning fossil fuel option that is currently readily available. Into the future, NYU will continue to explore other alternatives, such as sustainably produced biofuels.



As a university "in and of the city," NYU's performance is tied to its surrounding context, including existing city and state infrastructure. Therefore, some emissions reductions are necessarily contingent on policy decisions and market factors beyond the University's control.

NYU consumes 145 million kWh of electricity annually, over 90% of which is purchased grid electricity. The University will continue to purchase millions of kWh of grid electricity even after the expanded cogeneration plant and ongoing efficiency measures substantially reduce current demand.

NYU has developed the following rough projections for emissions reductions based on anticipated clean, renewable energy development in the regional electricity grid, using data from the Regional Greenhouse Gas Initiative (RGGI) and the New York State Energy Research and Development Authority (NYSERDA).

Regional Greenhouse Gas Initiative (RGGI)

Through RGGI, New York State is one of 10 Northeastern and Mid-Atlantic states committed to reducing carbon emissions from the electricity sector using a cap-and-trade agreement to encourage industry innovation. RGGI imposes carbon caps followed by a 10% reduction of ${\rm CO_2}$ emissions from the power sector in the region by 2018.

RGGI is likely to significantly reduce the climate impact of NYU's electricity consumption in the future. Accounting for New York State's electricity demand growth projections ¹⁰ and RGGI's program requirements, NYU has calculated a potential 13% reduction in carbon intensity for the New York State grid electricity coefficient. This cleaner electricity could potentially reduce the University's inventory by over 6,000 MTCE by 2017.

New York State has also adopted a "15 by 15" goal of cutting "business-as-usual" forecasted electricity demand by 15% by 2015. If successful, this will lead to decreases in ${\rm CO_2}$ from electricity generation in New York State and from electricity imports.

New York State Energy Research and Development Authority's (NYSERDA) Energy Plan

Supporting documents for NYSERDA's draft of the 2009 State Energy Plan indicate that the state's greenhouse gas emissions from the electricity sector are expected to drop from over 60 million MTCE in 2005 to approximately 46 million MTCE in 2020.

The University's need for grid electricity highlights how interdependent all institutions are with their surrounding city, state, national, and international communities. To successfully reach its climate neutrality goal, NYU will be dependent in part on simultaneous leadership from both the New York State and U.S. government to advance clean energy development.

The effects of RGGI and NYSERDA's Energy Plan have not been counted toward NYU's Climate Action Plan strategy for achieving the Mayoral Challenge. This is because they are dependent on decision making beyond the operational and financial boundaries of NYU; because of the uncertainty involved in predicting the timetable and ultimate emissions-reduction effectiveness of RGGI; and because cleaner grid improvements may occur in regions of New York State far from NYU and may not alter the New York City fuel source mix directly.

But given the likelihood that New York State's electricity grid will become less carbon-intensive over time, there is reason to anticipate that grid electricity emissions will decrease in the future because of the availability of a cleaner supply.

STRATEGY 3: GENERATE RENEWABLE ENERGY

By 2017, NYU will develop and install one or more distributed renewable energy generation projects on its buildings. While reducing greenhouse gas emissions by a small amount, this strategy will help to develop New York City's renewable energy market and serve as a powerful symbol of the University's other substantial but less-visible energy and climate efforts.

Wedge 7 On-site Renewable Projects

In April 2009, NYU's Sustainability Task Force released a Request for Expressions of Interest (RFEI) to companies that design and install renewable energy projects. Using the information obtained from these responses, NYU is exploring the potential for on-site renewable generation in the near future. The Sustainability staff will develop a scope of work and timeline for one or more renewable energy installations, including development of a feasibility study and/or a formal Request for Proposals (RFPs) process to implement a project.

Technologies under consideration include solar photovoltaic (PV) electricity, solar thermal, solar concentrators, building-integrated photovoltaic (BIPV), solar film, and building-mounted wind micro-turbines. The options most likely to be pursued currently include the following:

(1) Solar thermal

Solar thermal generally offers the best payback for a renewable energy system. Additionally, it could provide a valuable demonstration in New York City of a neglected renewable energy technology that is rich in potential.

The New York City Economic Development Corporation (EDC) aims to develop the city's market for solar thermal technology and recently announced a Solar Thermal Pilot Program, which offers 30% funding for solar thermal installations in New York City (up to \$50,000).

(2) Solar concentrator

This technology could provide the maximal energy production on limited rooftop space, appropriate for NYU's vertical development profile. Additionally, it could supply both electrical and thermal energy.



600 MTCE



This technology is underutilized in urban settings, and new funding opportunities will be examined as they emerge.

Preliminary Evaluation of NYU's Renewable Generation Potential

There have been few large-scale renewable energy installations in New York City to date. As a result, preliminary calculations have yielded wide-ranging estimates on both energy generation potential and project costs. Conservative estimates suggest that NYU could readily generate 300,000 kWh annually from solar projects on one or more target roofs. More optimistic evaluations suggest potential for as much as 1.5 million kWh of annual generation before 2017. A full feasibility study of NYU's roofs will be a necessary step toward developing accurate estimates of generation potential.

For the purposes of accounting for possible emissions reductions from renewable sources, this Climate Action Plan utilizes the low estimate for solar PV installations on the rooftops of four NYU buildings generating 300,000 kWh of electricity annually—equivalent to a <1% reduction in electricity consumption and avoiding 600 MTCE.

A Powerful Symbol

Despite a limited impact on operational greenhouse gas reduction goals, renewable generation projects offer added benefits as tangible, compelling, and aesthetic representations of a broader commitment to sustainability and mitigating climate change. Renewable projects align with the educational and research missions of the University and serve to engage the NYU and larger New York City community.

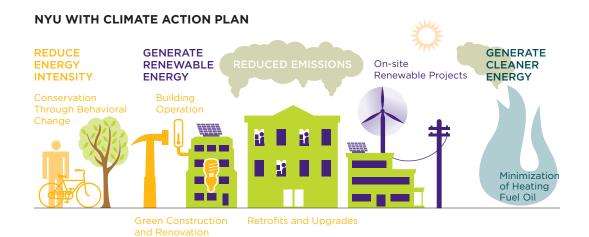
Furthermore, by leading the way with deployment of new technologies or development of new best practices for renewable energy in New York City, renewable projects can serve to foster market development, demonstrating viability and encouraging greater use by other institutions in dense urban environments.

Before and After Implementation of Reduction Measures for the Mayoral Challenge

BUSINESS AS USUAL

EMISSIONS

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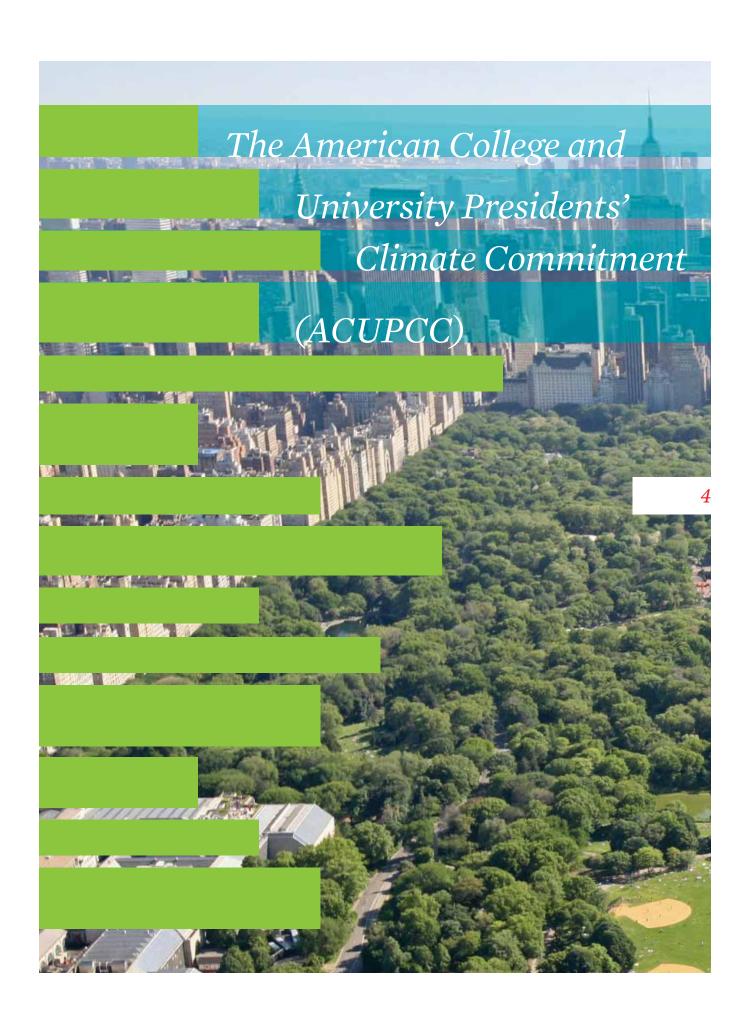


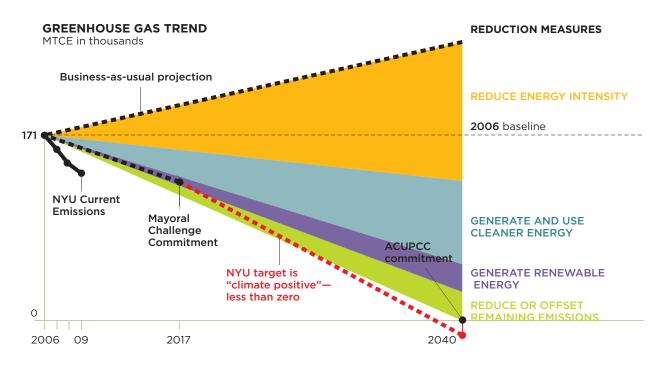
The above illustrates the Climate Action Plan measures (or "wedges") that NYU will implement to reduce FY 2006 baseline emissions by 30% by 2017.

Measures related to the renovation and expansion of NYU's cogeneration plant are shown separately (see table 3.3, "NYU's Central Plant— High-Efficiency Cogeneration for Electricity, Heat, and Hot Water," pages 32-33).

Endnotes

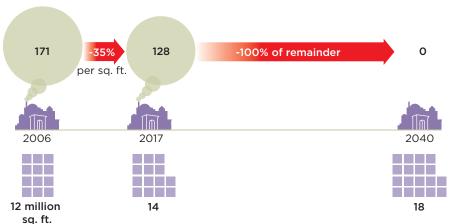
- 1 http://www.nyu.edu/sustainability/campus.projects/green.grants.php?id=2&type=&area=8year=#hi, page 24
- ² http://www.epa.gov/chp/basic/index.html
- Six criteria pollutants: ground-level ozone, particulate matter, carbon monoxide, sulfur oxides, nitrogen oxides, and lead, http://www.epa.gov/air/urbanair
- 4 http://www.epa.gov/RDEE/energy-and-you/affect/natural-gas.html
- 5 http://www.nyc.gov/html/planyc2030/html/plan/air_clean-heat.shtml
- 6 http://www.nyc.gov/html/planyc2030/downloads/pdf/report_air_quality.pdf, page 128
- 7 http://www.oilcrisis.com/bentley/depletionOverview.pdf
 - http://www.eia.doe.gov/oiaf/ieo/pdf/table5.pdf
- 8 http://www.nyu.edu/global.network/think.globally
- http://www.rggi.org/home
- ${\color{blue} {\rm http://www.nysenergyplan.com/Supporting_Documents/Electricity\%20 Modeling\%20 Assumptions.pdf} \\$
- 11 http://www.dps.state.ny.us/Phase2_Case_07-M-0548.htm
- http://www.nysenergyplan.com/Supporting_Documents/Greenhouse%20Gas%20Emissions% 20Inventory%20&%20Forecasts.pdf





OVERALL GREENHOUSE GAS REDUCTION PLAN

MTCe emissions in thousands



These four wedges represent NYU's broad strategies for emissions reductions in pursuit of the 2040 climate neutrality goal.

The business-as-usual (BAU) trend line assumes 50% University growth (six million square feet) with no reduction in per-square-foot emissions. However, NYU will construct and renovate buildings that will reduce overall emissions at a faster

rate than the increase in emissions from its expansion and new buildings. Increases in emissions associated with BAU are avoided in this projection through the Green Construction and Renovation reduction wedge, part of the Reduce Energy Intensity strategy.

(The 10% offset figure is a projection only, based on the rough estimated emissions remaining after pursuing maximum feasible emissions

reductions from other measures by 2040. See table 4.3, "Carbon Offset Scenarios and Costs for NYU in 2040," page 47, for modeled projections ranging from 10%-30% offsets, depending on the extent of emissions reductions from other measures.)

4. The American College and University Presidents' Climate Commitment (ACUPCC)

As a Charter signatory and Leadership Circle member of the ACUPCC,

New York University has committed to reaching the zero-emission climate neutrality goal by 2040.

In the midst of a worsening climate crisis, and possessing the knowledge and will needed to confront it, NYU is committed to bold and decisive action. Leadership requires more than establishing a climate neutrality target date—it demands an ongoing commitment to achieving the greatest and most rapid reductions possible in greenhouse gas emissions, whenever this can be accomplished in a way that is technologically feasible, fiscally sound, and consistent with the University's vital teaching, learning, and research missions.

Beyond outlining strategies that will reduce or offset institutions' greenhouse gas inventories, the ACUPCC calls on signatories to commit to new measures that incorporate climate neutrality and sustainability into their wider teaching, learning, and research agendas, as well as fostering eco-literacy throughout their community and the public.

NYU will venture beyond simply avoiding global warming pollution. It will aspire to pursue a climate-positive leadership role that invokes the aspirational character of sustainability, by accelerating ongoing efforts to foster innovative educational programs, enhanced research opportunities, and extensive community engagement.

Commitment to Climate Neutrality: Reducing, Then Credibly Offsetting, NYU's Emissions by 100% by 2040

"We're going to have to change our attitudes so that, for the next generation, burning coal [is] seen as behavior that is every bit as unrespectable as lighting up a cigar in a public place. Are we willing to sacrifice—are we willing to change the way we live—in order to benefit our descendants and people who live in remote parts of the world?"

-Professor Dale Jamieson, Director of NYU's Environmental Studies Program

The 2040 target date for climate neutrality is derived by extending and deepening each of the strategies used to pursue the 2017 Mayoral Challenge goal. In contrast to the Mayoral Challenge, NYU's approach to the ACUPCC is necessarily less tangible and specific, given greater uncertainty in terms of technological advancement, financing structures, legislative changes, and other shifting factors over the coming decades.

NYU will pursue emissions reductions within this Climate Action Plan's four overarching strategies:

- (1) Reduce Energy Intensity (50%)
- (2) Generate and Use Cleaner Energy (30%)
- (3) Generate Renewable Energy (10%)
- (4) Reduce or Offset Remaining Emissions (10%)

STRATEGY 1: REDUCE ENERGY INTENSITY



of Climate Neutrality Goal

By 2040, NYU will accomplish 50% emissions cuts through construction and renovation of green buildings while continuing to implement efficiency and conservation measures and improve building operation throughout the University.

Green Building

The University's strategy for smart growth is outlined in NYU 2031: NYU in NYC, which accounts for potential growth of up to six million square feet by 2031. This growth presents a strong opportunity to reduce energy intensity, as new buildings can be designed and built to be more efficient than the current building portfolio average.

NYU's long-term plan to build green does not focus on specific methods or technologies to reduce emissions, but rather on establishing effective policies to guide the University's development.

NYU will continue to build according to LEED standards and strive for new and renovated buildings to emit 20% less MTCE emissions per square foot over the next decade. NYU aims to strengthen efficiency targets over time, as it gains more hands-on experience with green building. The University will pursue several ongoing projects to advance this goal.

Energy Use Index (EUI) Benchmarking (Including Laboratory Design Standards)

NYU will analyze building energy consumption patterns, enabling the University to mandate Energy Use Index (EUI) standards according to building type.

These targets align with the New York City Greener, Greater Buildings legislation, which establishes requirements for ongoing benchmarking, efficiency improvements, lighting upgrades, and energy auditing for New York City buildings over 50,000 square feet.¹

NYU will specifically investigate opportunities for savings in high-energy use scientific laboratories. By considering laboratory ventilation codes, fume hood exhaust systems, and other measures, NYU can maintain high standards of both safety and energy efficiency. The University may develop design guidelines that establish performance requirements for specific laboratory operations and activities.

Space Utilization Improvements

There is a need to utilize existing space more effectively, which will not only help to limit the need for future growth but also to reduce capital construction costs. NYU's new Design Standards and Guidelines document includes several measures intended to standardize and regulate the utilization and occupancy of available space.

Efficient use of space results in less need for new construction, and better scheduling leads to less heating, cooling, and lighting of empty spaces. Over time, improved space planning and management will result in greater efficiency within NYU's buildings. By consolidating building occupants in certain spaces and vacating others during low-activity periods (nighttime, summer, etc.), empty areas can be powered down.

Efficiency and Conservation Measures

NYU will draw on a growing portfolio of energy efficiency and conservation measures, extending existing efforts (see chapter 3, "Examples of Conservation and Efficiency Measures at NYU" section, page 30) and eventually incorporating longer-payback measures such as replacing windows and tightening of building envelopes.

These measures will reduce the University's carbon emissions by tens of thousands of MTCE while saving energy and money over time. Reduction targets will be deepened as feasible, depending on technological advancements, legislative support, and market shifts that render new efficiency and conservation measures cost-effective.

STRATEGY 2: GENERATE AND USE CLEANER ENERGY

NYU aims to reduce energy consumption dramatically through various efficiency and conservation measures and to supply the remaining energy needed through cleaner on-site generation from its expanded cogeneration power plant.

NYU's emissions reduction efforts will be partially dependent on how the fuel source composition of the regional electricity grid changes over time.

This Climate Action Plan considers several possible approaches to generating and using cleaner energy by 2040. The measures listed are not intended to be comprehensive, since NYU will draw on new technologies and energy sources as they become viable. Over time, the University will aim to transition toward alternative fuels and completely renewable electricity generation.

Alternative Fuels

NYU will minimize use of heating fuel oil in favor of cleaner, less carbon-intensive natural gas for heating. As a nonrenewable fossil fuel resource, however, natural gas still contributes substantially to climate change—and as with oil, supplies will ultimately be exhausted.

The University's Sustainability Task Force has previously recommended implementation of an alternative fuel vehicle pilot project and will continue to evaluate fuel sources and technologies for both vehicles and stationary combustion as they emerge.²

BIODIESEL BUS FLEET

Using biodiesel fuel to power NYU's contracted shuttle buses would save 560 MTCE—equivalent to a 73% reduction in FY 2007 bus fleet emissions.



of Climate Neutrality

BIOFUEL COGENERATION PLANT

The expected life span of NYU's new cogeneration plant is approximately 40 years, which suggests that it will be in operation well past the 2040 ACUPCC goal. For the University to reach climate neutrality, it may be desirable, if technologically feasible, to retrofit the plant to use a low-carbon or carbon-neutral fuel source such as biogas or biodiesel; or to replace current equipment with a next-generation technology such as a renewable-energy-driven hydrogen fuel cell. The viability of specific carbon-neutral energy options will depend strongly on shifting legislative and technological landscapes over the next several decades.

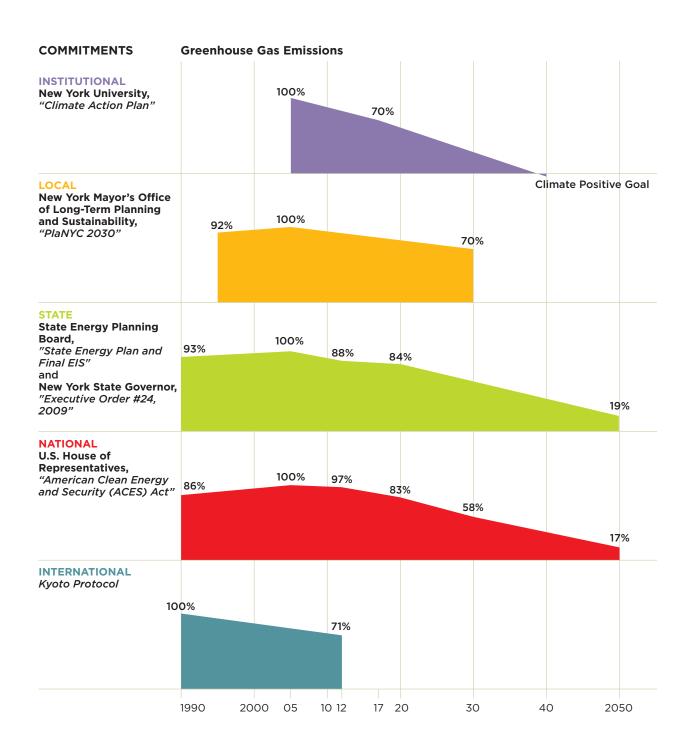
As an example, using biodiesel to fuel NYU's entire cogeneration plant would avoid nearly 40,000 MTCE, equivalent to 64% of the new plant's overall emissions, and reduce NYU's total baseline FY 2006 emissions by nearly 35%.

Potential Impact of Federal Climate Change Legislation

International experts and leaders have identified 2050 as a date by which substantial emissions reductions must be achieved in order to curb the worst effects of climate change.

In December 2007, nations gathered at the United Nations Climate Change Conference in Bali and proposed that the emissions reduction target for industrialized nations be established at 25%-40% below 1990 levels by 2020 and 80% by 2050.³

In June 2009, the U.S. House of Representatives passed the American Clean Energy and Security (ACES) Act. This bill mandates a 17% cut in greenhouse gas emissions from 2005 levels by 2020 and an 83% cut by 2050, accomplished through a cap-and-trade system. If passed by the U.S. Senate, it is likely that this legislation would further accelerate the greening of New York's electricity grid, boost research and development funding for new technologies, incentivize renewable energy, and generally facilitate large institutions' pursuit of climate neutrality.



A variety of regulatory and legislative frameworks to reduce greenhouse gas emissions have been implemented at the local, regional, national, and international scales. The length of each bar shows the time frame for each plan's reduction, while the gradient of each slope shows how aggressive each is in reducing emissions. Some frameworks use 1990 as a base year to set ambitious reduction targets, while others begin with the baseline year of 2005.

STRATEGY 3: GENERATE RENEWABLE ENERGY



NYU's roofs receive enough energy in the form of sunlight and wind to serve a significant percentage of the University's energy needs. However, because of existing mechanical systems, insufficient structural support for new equipment, community concerns, or aesthetic issues, only a portion of NYU's existing rooftop area can be retrofitted with renewable generation. Additionally, generation and storage of renewable electricity from sun and wind entail conversion inefficiencies.

Thus, with present technology, only 5%-20% of NYU's projected electrical use could be provided on-site through renewable energy.

However, in the long term, increased generation efficiency and improved energy storage methods will bolster the energy capacity and economic rewards of on-site renewable energy. This can be done without counting on presently unknown or exotic technologies. Cheaper energy storage (e.g., fuel cells, super batteries), increased solar cell efficiency, and better planning for renewable energy infrastructure during the initial design phases of new construction projects will improve the effectiveness of renewable energy. Under reasonably foreseeable circumstances, NYU could feasibly provide 10% of its energy needs through on-site renewable energy generation by 2040.

The University will continue to explore avenues for renewable energy other than electric power generation. Solar thermal technology could supply a substantial portion of a building's heating and cooling (through the use of absorption chillers) needs. Geothermal energy sources, while challenging to utilize in lower Manhattan, may become feasible in the long term if technical issues are resolved.

Lastly, more exotic technologies currently in development may eventually bear fruit. These include standardization of building-integrated photovoltaics (BIPV) in roofing and solar windows, tidal power, and reclaiming energy from step-down water pressure converters.

STRATEGY 4: REDUCE OR OFFSET REMAINING EMISSIONS



of Climate Neutrality Goal

To reach climate neutrality, NYU will continue to draw down remaining emissions, especially those from transportation and waste (for existing efforts, see appendix F, "Recycling and Waste Reduction" section, page 71). The University will also generate additional on-site clean, renewable energy, further reducing emissions. However, since on-site renewable sources are unable to produce sufficient energy within the small "roofprint" of space available, it is likely that NYU will continue to purchase electricity from the New York City grid for the foreseeable future.

As a result, the purchase of carbon offsets may become a component of the University's ACUPCC carbon neutrality target. Currently there are limited options and low economic incentives for offsets, but it is impossible to predict exactly what types of offsets will be available and at what cost in the future. While NYU hopes that in 40 years renewable generation technologies and its own significant energy reductions will enable it to avoid purchasing offsets, the uncertainties involved raise the possibility that some offsets may be purchased in 2040.

Definition of Carbon Offsets

Carbon offsets are mechanisms that measure and certify the greenhouse gas emissions reduction or removal generated by a project, compensating ("offsetting") for emissions from other activities. Generally, offsets fall into two categories: (1) emissions reduction or avoidance (e.g., replacing a diesel generator with solar panels) or (2) sequestration (removing greenhouse gases from the atmosphere—e.g., planting trees that will absorb ${\rm CO}_2$ as they grow).

Offsets are potentially very effective as a complement to direct emissions reductions, but they are not a substitute for an aggressive program to first draw down an institution's greenhouse gas inventory where feasible.⁵

NYU will implement programs that avoid emissions, reduce emissions through energy efficiency, and replace high-carbon energy sources with low- or zero-carbon alternatives. Nonetheless, supplemental investment in offsets may still be an element of the University's efforts to achieve carbon neutrality.

It is important to distinguish between carbon offsets purchased for compliance (e.g., for a hypothetical federal carbon cap or tax) and for voluntary neutrality.

> NYU has a strong interest in local-based offset projects with educational, social, and environmental co-benefits,

which help to create a healthy, just, and sustainable society. The University will explore possible partnerships with government agencies, community organizations, and peer schools to capture emerging opportunities in energy efficiency and renewable energy, and it will utilize the ACUPCC Carbon Offset Protocol to guide its decision making.⁷

The ACUPCC Protocol recommends that high-quality offsets produce emissions reductions that are

- · Real and tangible
- Measurable
- Permanent
- Additional (e.g., resulting in emissions reductions that would not have otherwise occurred under a reasonable and realistic business-as-usual scenario)
- Synchronous (e.g., resulting in emissions reduction projects that take place during a reasonably close period of time to that in which the emissions being offset were released)

- Transparent (e.g., project details are known by the purchaser and communicated to stakeholders)
- Registered (e.g., with a well-regarded registry)
- Verified (e.g., by a third-party auditor or regulatory entity)
- Accountable for leakage (e.g., factoring in direct or indirect emissions resulting from project activities)
- Not double-counted
- · Retired once counted
- Offering co-benefits (e.g., adding value to an institution's education, research, and service missions)

NYU will use offsets that represent absolute reductions of existing emissions and will not count projects that result only in the avoidance of future emissions from new activities. For instance, a fuel-switching project that replaces NYU's diesel-run bus fleet with biofuels would be acceptable, but the installation of solar panels to avoid building a new coal power plant (in order to meet projected energy demand) would not be considered a valid source of offsets under the ACUPCC.

High-quality offsets can accelerate reductions at a substantially lower cost than mitigation strategies applied only within the bounds of an institution's inventory. At the same time, the expectation of offsetting can make future internal reductions more likely by fixing an external price on emissions.⁸

Varied Offset Options and Costs

Offset projects and associated costs vary widely, and price volatility is also affected by the Wild West-like state of the industry, given the lack of government leadership and regulation. Carbon offsetting programs may be intended to finance renewable energy, energy efficiency, industrial pollutant or agricultural by-product repurposing, destruction of landfill methane, and forestry projects.

%

TABLE 4.3

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Carbon Offset Scenarios and Costs for NYU in 2040

| SCENARIOS FOR 2040 | DESCRIPTION | EMISSIONS TO OFFSET | EMISSIONS TO OFFSET (MTCE) |
|------------------------|--|------------------------|----------------------------------|
| SCENARIO 1 BEST CASE | Maximum feasible emissions reductions Utilize alternative fuels Purchase minimal offsets (10%) Offset rates and costs are affordable | 10% | 18,375 |
| scenario 2 | Significant emissions reductions Does not utilize alternative fuels Purchase substantial offsets (30%) Offset rates and costs are moderate | 30% | 55,124 |
| SCENARIO WORST CASE | Significant emissions reductions Does not utilize alternative fuels Purchase substantial offsets (30%) Offset rates and costs are expensive | 30% | 55,124 |

Credible carbon offsets may be purchased to meet NYU's climate neutrality commitment, but this will depend on a variety of exogenous factors, including technological development, legislative and financial incentives or requirements, academic and institutional imperatives, and the extent of emissions reductions achieved before the 2040 target year.

Costs vary widely across the range of possible offset projects, depending on the type of activity, wholesale versus retail price, provider, and verification/certification standards that are applied. For instance, ocean sequestration and wind energy projects are expensive, while industrial gas destruction and some energy-efficiency projects are more affordable. Current costs can range from \$10/metric ton (MT) for efficiency and carbon credits through CarbonFund to \$36/MT for international projects with Sustainable Travel International. The carbon-offset market is growing rapidly, and as demand has sometimes exceeded supply, prices have increased in recent years.

NYU has presented three scenarios under which the University would annually purchase 18,000 to 55,000 MTCE of credible, certified, highly transparent (and potentially local-based) carbon offsets in order to achieve climate neutrality. The extent of the offsets needed will depend on how successful NYU is in drawing down emissions in the first place and also the type of offset projects the University decides to support, since cost is one of the many considerations for NYU when choosing offset projects.

Beyond Climate Neutrality: Incorporating Sustainability Into Teaching, Research, and Community Engagement

In addition to the ACUPCC requirement to set a target date for reaching climate neutrality, the commitment also calls on signatories to offer new actions that will foster a culture of sustainability on campus. This means integrating sustainability into the academic infrastructure of teaching, learning, and research, as well as expanding public engagement efforts.

It is through these core functions of the higher education sector that NYU can help to shape a collective response to the challenge of climate change, supporting a culture of sustainability across every sector of society.

PLANS TO EXPAND SUSTAINABILITY IN EDUCATION

(See appendix F, "Curriculum and Other Educational Experiences" section, page 72, for steps already taken to expand sustainability in education at NYU.)

Expansion of Environment-Related Course Work

In FY 2010, NYU's Environmental Studies Program will offer four new senior capstone seminars. Capstones are problem-based, project-oriented required courses for graduating senior students, and recent offerings have had a direct bearing on climate change. These courses allow students to work collaboratively on a current environmental problem, while analyzing possible solutions and publicly presenting the results to the NYU community. Given that the theme of each capstone is focused, this expansion will provide seniors with a greater number of topics to choose from and study in depth.

New interdisciplinary course offerings currently proposed for 2010 include topics in environmental psychology, food and climate change, green construction and real estate, and more.

The Polytechnic Institute of New York University

In 2008, NYU and Polytechnic University announced an affiliation agreement to result in a full merger over the next three to five years. A school of engineering technology, applied sciences, and research, the newly named Polytechnic Institute of New York University provides a critical spark to drive technological innovation, entrepreneurship, and research at NYU. The Institute offers degrees in sustainable urban environments, environment-behavior studies, environmental engineering, and environmental science. It recently launched the Accelerator for a Clean and Renewable Economy (ACRE), a "cleantech" incubator and center funded by a \$1.5 million NYSERDA grant.¹³

Online learning classes at e-poly offered new programs in fall 2009, including Enterprise Learning in Sustainability and Clean Energy. ¹⁴ Online classes enable students worldwide to access environmentally focused technological and engineering programs.

PLANS TO EXPAND SUSTAINABILITY IN RESEARCH

(See appendix F, "Sustainability and Climate Change Research" section, page 73, for steps already taken to expand sustainability-related research at NYU.)

As a major research university, NYU will continue to engage with individuals and faculty within and beyond its Environmental Studies Program, affiliated institutions, and academic support infrastructure to ensure that faculty pursuing research in areas related to sustainability and climate change will have access to the resources they need. The University will continue to offer Green Grants to fund student-, faculty-, and staff-led research and potentially target and fund climate-related research in the upcoming years.

PLANS TO EXPAND SUSTAINABILITY IN COMMUNITY OUTREACH

(See appendix F, "Sustainability in Community Outreach and Engagement" section, pages 73-74, for steps already taken to expand community engagement efforts at NYU.)

Development of a Communication Plan

In 2009, the Outreach and Engagement Working Group of the Sustainability Task Force began to develop a comprehensive communication plan for the University's sustainability and climate neutrality efforts. This included identifying overall objectives, target audiences, and initial strategy. In the coming year, the University will further develop, finalize, and begin to implement this communication plan. NYU will set guidelines and create templates for environment-related signage, increase the number of sustainability-related contests, expand the Sustainability Advocate Program and Welcome Week efforts, and integrate sustainability into new employee training, resident assistant (RA) training, and admissions.

Proposed Resident Assistant (RA) Training

A program has been proposed to train RAs to incorporate sustainability topics into their social and educational programs within NYU's residence halls. As peer counselors, advocates, resource persons, and group leaders, RAs are in a unique position to encourage students to use the New Student's Guide to Sustainability at NYU Web site, 15 provide compact fluorescent lightbulbs (CFLs), inform students about recycling practices, and more.

Sustainability in Admissions

Admissions will highlight sustainability as a foundational principle at NYU, alerting potential new students of the University's commitments to mitigating its climate impact and setting the stage for new students to engage in improving NYU's environmental performance.

New Employee Orientation

NYU's Sustainability and Human Resources staff will develop an online training platform for new (and current) employees, equipping them with a working knowledge of key sustainability concepts and environmental practices.

Web Site

The University will continue to expand and improve its sustainability Web site, http://www.nyu.edu/sustainability, to provide news, resources, and information for the NYU community and the public.

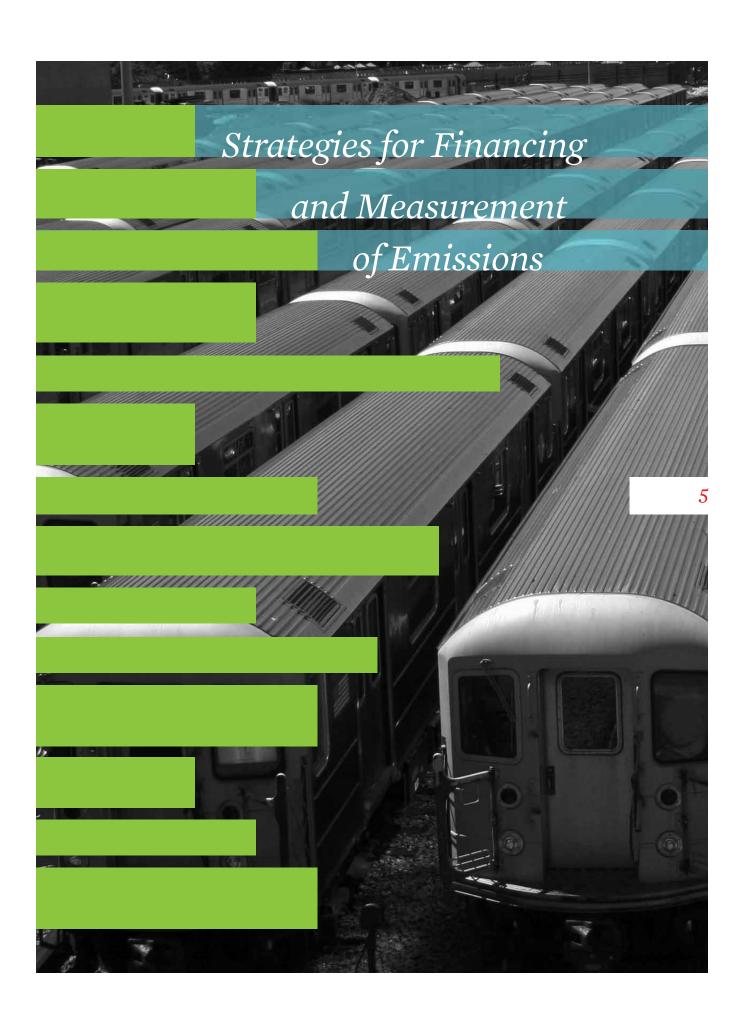
Commitment to Public Service

NYU will continue to expand its collaboration with Manhattan Community Boards 2 and 3, as well as with the New York City government, including the Mayor's Office of Long-Term Planning and Sustainability. The University will also further partnerships with local community organizations such as the Lower East Side Ecology Center, Solar One, and Bike New York.

NYU has served as a pilot for the Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment, and Rating System (STARS) and is participating in the Clean Air-Cool Planet's Charting Emissions from Food Services (CHEFS) Program to create a carbon calculator that measures food impact from dining services in schools. The University will continue to be a catalyst and incubator of pilot projects that become nationwide sustainability initiatives and will also share best practices with other schools and organizations at the state, national, and international levels.

Endnotes

- 1 http://www.nyc.gov/html/planyc2030/downloads/pdf/greener_greater_buildings.pdf
- http://www.nyu.edu/sustainability/pdf/annualreport08.pdf, page 8
- 3 http://www.ourclimate.eu/ourclimate/int.aspx
- 4 http://www.govtrack.us/congress/bill.xpd?bill=h111-2454&tab=summary
 - http://www.opencongress.org/bill/111-h2454/actions_votes
- 5 http://www2.presidentsclimatecommitment.org/documents/CarbonOffsetsGuidelines_v1.0_ExecSummary.pdf
- 6 http://cleanair-coolplanet.org/documents/zero.pdf, page 7
- 7 http://www2.presidentsclimatecommitment.org/documents/ACUPCCVoluntaryCarbonOffsetProtocol_Nov08.pdf
- 8 http://cleanair-coolplanet.org/documents/zero.pdf, page 23
- 9 http://cdmpipeline.org/cdm-projects-type.htm
- 10 http://www.presidentsclimatecommitment.org/resources/guidance-documents/offset-protocol
- http://www.carbonfund.org/site/projects/profile/truck_stop_electrification_project
- http://www.sustainabletravelinternational.org/documents/op_carbonoffsets.html
- http://www.poly.edu/about/polytechnic
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- http://www.nyu.edu/sustainability/newstudentsguide



5. Strategies for Financing and Measurement of Emissions

Current and Future Financing Strategies

CURRENT FUNDING STREAMS

NYU's Climate Action Plan includes many measures requiring some capital and operational funding. Some of these measures will generate an immediate return on investment; some will require substantial time and capital outlays prior to achieving cost savings; and some may not provide direct financial return but will generate valuable short- and long-term social and environmental benefits.

A portfolio of potential financing strategies and funding streams has been identified to support the Climate Action Plan and fulfill NYU's Mayoral Challenge and ACUPCC commitments.

(1) Sustainability Fund

Since 2007, NYU has committed \$250,000 annually to the Sustainability Fund, which supports seed and pilot project funding for Green Grants (see appendix F, "Sustainability Fund" section, page 70) and facilitates the implementation of recommendations from NYU's Sustainability Task Force. Projects include, but are not limited to, capital and infrastructure improvements, innovations in University systems, outreach programming, and public engagement. The Sustainability Fund is not seen as a primary source of funding for the large projects and programs described in this Climate Action Plan, but it may serve to support or extend their reach.

(2) Client-funded Projects

Current University policies and practices already require high-performance standards for administration-led construction projects and also expect individual NYU colleges and schools to bear costs for relevant "client projects." NYU colleges and schools ("clients") are expected to fund proprietary capital projects to support energy-efficiency and environmental performance standards.

(3) Capital Maintenance Fund

The University funds, on an ongoing basis, both capital maintenance and energy-saving projects that are prioritized in part by evaluating life-cycle costs and projected return on investment. This Capital Maintenance Fund provides almost \$35 million toward large capital projects annually.

This funding source supports more than repairs and replacement of aged infrastructure; measures required for code compliance or that achieve operational cost savings are also funded through the capital maintenance program. The fund primarily addresses those life-safety, legal and code requirements, energy conservation projects, and critical infrastructure needs that are shared across the University and are not funded by an individual college or school.¹

(4) Reallocating Cost Savings from Energy Projects

This report identifies a series of initiatives that, as they are adopted, can provide substantial ongoing return on investment. Operating cost savings (already more than \$2 million annually just from energy-saving progress to date) can generate another key funding stream for the Climate Action Plan (see chapter 2, "Energy Reduction Measures Producing Ongoing Savings" section, page 19).

A portion of these savings can fund sustainability projects and be reinvested in the University's infrastructure. This strategy can also serve as a technique to engage individual NYU colleges and schools in funding proprietary projects. NYU may in the future alter existing budgeting cost allocation practices such that its colleges and schools will bear the direct costs of maintenance and operation for expenses such as utility bills. This will establish a direct link between costs that the University's colleges and schools bear for capital investments and the savings realized, incentivizing efficiency.



FUTURE PLANS TO DEVELOP AND EXPAND FINANCIAL ANALYSIS OF THE CLIMATE ACTION PLAN

NYU plans to engage in further analysis to account for and evaluate the long-term costs and benefits of projects that span multiple administrative units, colleges and schools, and budgets. Future editions of this Climate Action Plan will evaluate additional financial strategies and mechanisms to support NYU's carbon reduction goals.

Efforts may include the following:

- Performing cost-benefit analyses of emissions reduction projects, infrastructure improvements, and new technologies
- Further evaluating life-cycle and operational costs associated with emissions reduction strategies
- Developing models for cash flows, capital available for each project, debt service on that capital, energy savings or costs, changes in maintenance costs, and the projected value of the carbon abated by each option
- Researching and pursuing external grants and funding opportunities

Plans to Track and Report Emissions

NYU will strive to implement the following efforts to refine future editions of its greenhouse gas inventory and to better account for and mitigate these pollution sources in its Climate Action Plan.

EXPANSION AND REFINEMENT OF GREENHOUSE GAS INVENTORY

Future editions of the Climate Action Plan will track additional emissions types and sources at NYU, evaluating newly available information to determine whether these emissions should be understood to fall within the University's operational or financial boundary of responsibility.

If a newly tracked emissions source is found to increase NYU's applicable greenhouse gas inventory, the University will explore additional reduction measures and continue to pursue the 2040 climate neutrality goal. Additional emissions found not to apply to NYU's inventory may still be shared for informational or research purposes, without an accompanying reduction plan or commitment.

DINING

NYU is participating in a pilot project to develop a carbon calculator tool in order to evaluate indirect emissions resulting from the University's food system. This "foodprint" project (led by Clean Air-Cool Planet, in partnership with Johns Hopkins University's Center for a Livable Future) will ultimately provide life-cycle analysis data on NYU's emissions from food ingredients purchased to serve in dining halls throughout the University. The tool will be able to factor in NYU Dining sustainability measures such as waste composting, organic and locally sourced food options, and trayless dining, representing these projects' climate reduction benefits.

COMMUTING

NYU conducted an extensive transportation and commuting survey in 2009, gathering data from more than 12,000 students, faculty, and staff about their modes, distances, and frequency of travel to and from NYU's core location at Washington Square. Data from this survey will enable the University to estimate emissions from commuting in its next greenhouse gas inventory, as required by the ACUPCC.

Even without detailed analysis, the survey data shows that NYU's location and density within Manhattan have already helped the University to dramatically limit emissions. Less than 1% of the University community currently commutes to Washington Square via private car or taxi. NYU students, faculty, and staff already walk, bike, or access public transit options more consistently than their peers at nearly any other institution in the United States.

NYU will continue to bolster an environmentally friendly transportation infrastructure. It is working to enhance indoor and outdoor bicycle access and storage, launch a pilot bike-sharing program, improve bicycle safety and anti-theft measures, advance walkability for pedestrians, and collaborate with local government to strengthen public transit.

AIR TRAVEL

NYU will aspire to track emissions from funded air travel for University business or for teaching and research purposes. The University will strive to develop a centralized framework that tracks distances traveled by faculty and staff.

If NYU is unable to develop a centralized means of tracking air travel emissions, the University will work to sample or otherwise estimate total emissions from air travel, in order to account for this component of its operational impact on climate change in future greenhouse gas inventories.

OTHER EMISSIONS SOURCES

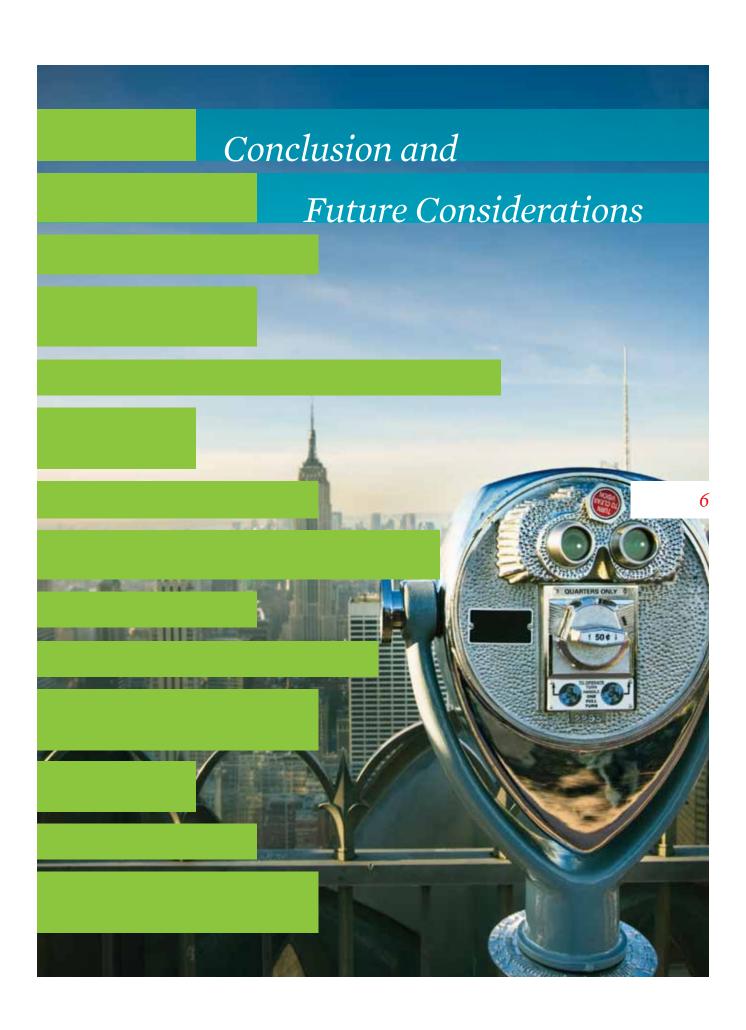
Additional sources of emissions will be tracked when feasible. NYU will evaluate whether a given emissions source falls within the operational or financial boundary established for the greenhouse gas inventory, and whether the University can and should pursue additional reduction measures. These sources may include emissions from procurement, land use, construction, sites abroad, and more.

TRACKING PROGRESS

NYU will release and publish an updated edition of this Climate Action Plan either in 2012, halfway to the Mayoral Challenge goal year, or when NYU achieves the 30% reduction goal itself, whichever comes first. After completing the Mayoral Challenge, NYU will update its plan with a progress report or new edition at least every five years until the climate neutrality goal is achieved.

Endnote

http://www.nyu.edu/task.forces/pdf/construction.append.iif.pdf



6. Conclusion and Future Considerations

An effective, strong Climate Action Plan may be used as an emissions reduction model, a planning tool, a communications platform, and a reference guide all at once. This plan accounts for NYU's greenhouse gas inventory and operational environmental impacts; it also articulates a set of specific and effective measures that NYU will implement to reach a near-term climate change mitigation goal as well as a set of broader, more long-term aspirational goals that will attempt to lead NYU toward a climate-positive future.

By 2040, NYU will not only have eliminated or offset its full portfolio of emissions, but it will also have integrated its educational, research, and community-building missions to create the next generation of leaders in the struggle to mitigate climate change.

Sustainability is becoming an important principle underlying the University's mission. This plan provides NYU with a solid point of departure, but as material conditions evolve and the scale of the global climate crisis grows, NYU recognizes that it must reorient its goals and mitigation strategies accordingly. It will consider horizons beyond the current Mayoral Challenge and ACUPCC frameworks, driving innovation and priming the University's ability to respond to challenges not yet identified.

To that end, the University will seek to explore over the coming years the following programs and policy changes.

Development of an NYU Sustainability Revolving Fund

Such a mechanism would allow capital to be "loaned" to projects that decrease energy consumption and emissions or that promote sustainability. The resulting cost savings through efficiency or conservation could then be returned to replenish and expand the fund.

Adoption of Processes That Clarify Cost-Benefit Analyses

The goal here would be to develop and apply analytical and budgetary tools that allow decision makers to better understand and incorporate into planning for capital projects the ultimate benefits and savings that result from greater energy efficiency or other improvements.

Centrally Track Faculty and Staff Air Travel

Air travel is a very high-carbon transportation method and is an area that calls for pursuing innovative and credible approaches to voluntary carbon offsetting. But in the absence of mechanisms for centralized tracking of air travel, the University must rely on requesting air travel information from staff individually or sampling to estimate travel.

Such a centralized system (perhaps Web-based and tied to current methods of processing employee travel requests and reimbursements) could also be used to track transportation emissions from car and bus rentals or train travel.

Development of a Credible Carbon-Offsetting Resource Portfolio

To better inform individual or institutional efforts to engage in voluntary carbon offsetting, NYU could undertake to research and develop a portfolio of third-party offset opportunities (local, regional, national, and international) that would meet certain standards.

The language of sustainability should not be that of deprivation. The climate crisis does indeed present a brutal and fundamental challenge to our way of life and our world, but where some might see only a discouraging challenge that requires personal sacrifice, others can spot the opportunity for positive transformation. Though fostering systemic changes within NYU's operational structure and culture will not be easy, these shifts will yield benefits to the entire University community.

The vision of a sustainable NYU will not be one in which it discards notions of progress or growth; rather, it will be a future in which the University consciously chooses what it wants to grow. Without confronting this challenge, the NYU of 2040 may be subject to increasing pollution, fiscal uncertainty, and the disintegration of close-knit campus communities. The University now has the ability to plan for an institution that will grow successfully and develop not only a physical infrastructure to enhance teaching, learning, and research¹ but also financially sound policies, strengthened community relations, and a better quality of life.



The scope of the task before us is immense—consider the lights of New York City at night—but this challenge may be confronted by an equally immense capacity for committed institutional leadership and innovation.

Endnote

 $^{1} \quad http://www.nyu.edu/about/framework.2031/NYU.Framework2031.Final.pdf$

Acknowledgments

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of this Climate Action Plan.

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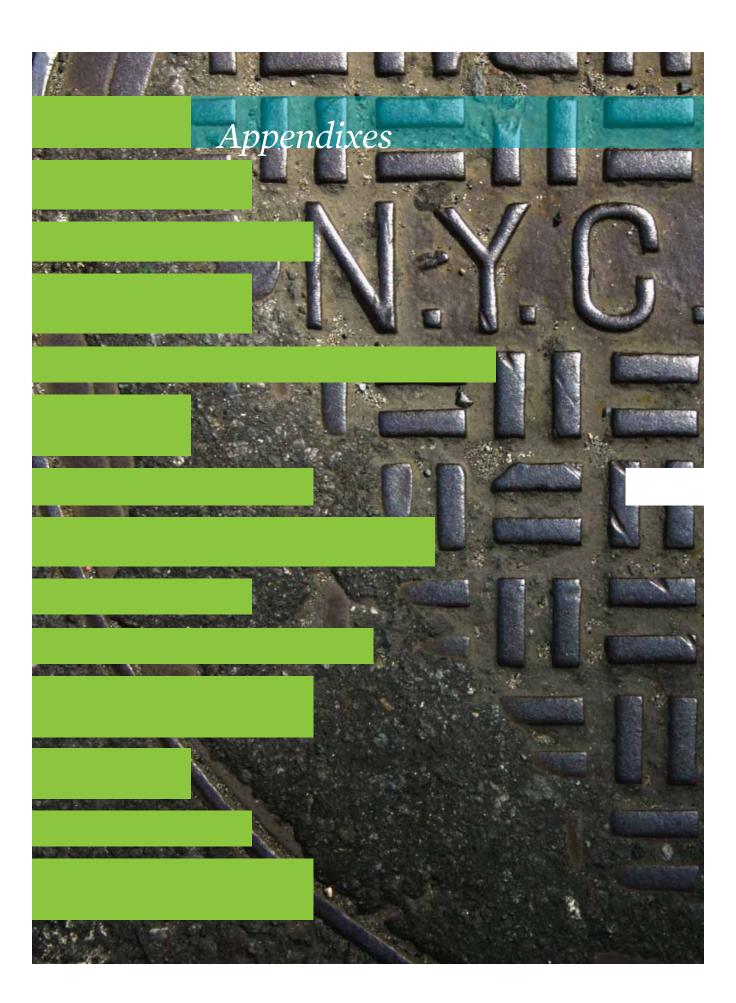
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American College and University Presidents' Climate Commitment (ACUPCC): An agreement among U.S. university and college presidents that commits their institutions to specific actions and a long-term plan for climate neutrality. NYU President John Sexton signed the commitment in March 2007.

Association for the Advancement of Sustainability in Higher Education (AASHE): An association of colleges and universities committed to sustainability principles. It is the de facto professional organization for higher education sustainability professionals and serves as an important network for the dissemination of programs and ideas.

Biodiesel: Any diesel fuels derived from organic matter such as vegetable oils. Biodiesel can be blended with conventional petroleum diesel fuels in various proportions. For example, B50 is 50% biodiesel and 50% petro-diesel.

British Thermal Unit (BTU):

A standard unit of measurement for energy, equal to 1,055.06 joules or 0.00029308 kilowatt-hours. A BTU is the amount of energy needed to heat one pound of water by 1°F. It is used to describe the energy content of fuels and the power of heating and cooling systems.

Carbon Dioxide Equivalent (CO₂e):

A measure of greenhouse gas emissions that weighs gases according to their capacity to warm the earth's atmosphere. For example, methane has 21 times more global warming potential than CO_2 ; therefore one ton of methane has a CO_2 e of 21 tons.

Carbon Offsets: A reduction or removal of carbon dioxide equivalent (CO₂e) greenhouse gas (GHG) emissions that is used to counterbalance or compensate ("offset") for emissions from other activities; offset projects reducing GHG emissions outside of an entity's boundary generate credits that can be purchased by that entity to meet its own targets for reducing GHG emissions within its boundary.

Climate: The composite or generally prevailing weather conditions of a region, such as temperature, air pressure, humidity, precipitation, sunshine, cloudiness, and winds, throughout the year, averaged over a series of years. Climate occurs over a much longer timescale than weather.

Climate Action Plan: Within the context of the ACUPCC, these are detailed plans that illustrate the specific steps schools are taking to reach climate neutrality by drastically reducing greenhouse gas emissions and long-term operational costs. Many schools are also outlining innovative ways of reorienting their educational offerings to prepare students to meet the massive challenge of climate change after graduation.

Climate Neutral: Reducing net on-site greenhouse gas emissions to zero. Synonyms include terms such as "carbon neutral" and "footprint neutral."

Climate Positive: Reducing net on-site greenhouse gas emissions to below zero. The measures to attain climate positivity may include implementing economically viable innovations in buildings, generating clean and renewable energy, improving waste and water management, purchasing offsets, and replanting biodiverse forests. The term may also be more symbolically applied to nonoperational contributions to confronting the climate crisis or creating a just and sustainable future, such as commitments to education or public engagement.

Cogeneration (or Combined Heat and Power, CHP): Describes a facility with technology that enables the use of a single fuel source to generate both heat and electricity simultaneously, avoiding the loss of heat wasted by conventional electricity generation.

Commissioning: Entails the examination of actual building equipment systems operation and maintenance procedures for comparison to intended or design operation and maintenance procedures.

Compost: A waste management system wherein organic materials are separated from inorganic waste and are processed and broken down for eventual reuse as fertile soil.

Conservation, Energy: Avoiding unnecessary or wasteful energy use (as contrasted with Efficiency, Energy—*See* below).

Criteria Pollutants: The U.S. Environmental Protection Agency uses six "criteria pollutants" as indicators of air quality and has established for each a maximum concentration above which adverse effects on human health may occur. These pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

Diversion Rate: Percentage of an overall waste stream that is not ultimately landfilled or incinerated, but is instead diverted through recycling, reuse, composting, etc.

Efficiency, Energy: The degree to which a process can achieve the same output using less energy (as contrasted with Conservation, Energy—See above).

Energy Intensity: Measures of energy usage per square foot, normalizing for natural variation in the weather. This metric helps explain "density" of energy use. Energy Star: Developed by the U.S. Environmental Protection Agency, this program certifies the energy efficiency of consumer appliances and other products.

Fossil Fuels: Energy sources such as coal, natural gas, and oil, which are composed of hydrocarbons found in the earth's crust. Fossil fuels are non-renewable, and the earth's finite supply will eventually run out. The burning of fossil fuels is the primary source of anthropogenic (human-caused) global climate change and is responsible for a range of other environmental impacts, from air pollution to land degradation.

Fuel Oils #2, #4, and #6: Oils that are distilled from petroleum and burned for power and heat. Oil #2 is diesel, #4 is distillate, and #6 is heavy residual fuel.

Green Grants: Program administered through the NYU Sustainability Task Force, which funds projects led by students, faculty, and staff that improve NYU's environmental performance and foster a University-wide culture of sustainability.

Greenhouse Gases: Gases (including, but not limited to, CO₂, CH₄, CFCs, and H₂O) released through combustion, respiration, and other processes, which absorb and reflect infrared radiation and blanket the earth's atmosphere, trapping heat on the surface.

Greenhouse Gas Inventory:

A detailed analysis of greenhouse gas emissions by a group, organization, or individual. Inventories are generally divided by both source of emissions (commodities burned) and operational activity (energy, waste, transportation, etc.).

Green Roof: A roof that is partially or completely covered by vegetation in order to improve a building's environmental performance by raising the roof's albedo (reflectivity) to save energy, absorbing stormwater to avoid combined sewage overflows, and other benefits.

kBTU: One thousand BTUs. Refers to a measurement for energy consumption. See British Thermal Units.

Kilowatt Hour (kWh): A unit of energy equivalent to one watt of work per second for one hour.

Kyoto Protocol: An international binding agreement that falls under the more general United Nations Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol sets greenhouse gas targets for countries that sign and ratify the agreement. The United States and Australia are among the few countries that ratified the UNFCCC but not the Kyoto Protocol and thus are not subject to its greenhouse gas reduction targets.

Leadership in Energy and Environmental Design (LEED):

A program of the U.S. Green Building Council, LEED is an internationally recognized green building certification system providing third-party verification that a building is designed and built using strategies aimed at improving performance across energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Mayoral Challenge Commitment:

An agreement among New York City colleges and universities that commits their institutions to reducing persquare-foot greenhouse gas emissions by 30% by the year 2017 with minimal use of offsets. The Mayoral Challenge was established by Mayor Michael Bloomberg to encourage the higher education sector in New York City to lead the way toward the citywide goal of a 30% reduction in emissions by 2030. NYU joined the Mayoral Challenge Commitment when it launched in 2007.

(MTCE): A unit of measurement used for comparison of greenhouse gases with diverse individual global warming

Metric Tons of Carbon Equivalent

with diverse individual global warming potentials, equal to the warming potential of one metric ton of carbon dioxide.

See Carbon Dioxide Equivalent.

MMBTU: One million BTUs. Refers to a measurement for energy consumption. See British Thermal Unit. New York State Energy Research and Development Authority (NYSERDA): A public benefit corporation created under state law in 1975. NYSERDA's stated aim is to "help New York meet its energy goals: reducing energy consumption, promoting the use of renewable energy sources, and protecting the environment." See http://www.nyserda.org.

Nonrenewable: Describes resources such as petroleum and other fossil fuels, which are finite and cannot be regenerated through natural processes on a human timescale.

Particulates/Particulate Matter (PM):

A mixture of solid particles and liquid droplets found in the air. Particulates are often released by combustion and have been implicated in the formation of smog and various health problems.

PlaNYC: On Earth Day 2007, New York City Mayor Michael Bloomberg released PlaNYC, a comprehensive long-term strategic and sustainability plan for the city. PlaNYC includes a strategy to reduce New York's greenhouse gas inventory, while also accommodating a population growth of nearly one million and improving infrastructure and environmental performance. NYU agreed to be a "Mayoral Challenge Partner" and reduce climate emissions in half the time designated within PlaNYC.

Recommissioning: When standardized maintenance and energy management procedures fail to fix chronic building problems, recommissioning provides a systematic approach for discovering and solving these problems.

See Commissioning.

Recycling: Reprocessing of used or discarded materials to create useful new goods.

Regional Greenhouse Gas Initiative

(RGGI): A cooperative effort by 10 Northeastern and Mid-Atlantic states (including New York) to limit greenhouse gas emissions. RGGI is the first mandatory, market-based CO_2 emissions reduction program in the United States. These 10 states have capped CO_2 emissions from the power sector and will require a 10% reduction in these emissions by 2018.

Renewable: Describes resources that can or do regenerate on a human timescale. Solar energy is renewable, while timber from forests and fish from oceans are potentially renewable resources, with proper management.

Renewable Energy Credits (RECs):

Also known as Renewable Energy
Certificates. RECs represent an increased
buildup of renewable generation capacity
in the United States. They are sold in
a market as an offset to greenhouse gasintensive power purchases. A certificate
can be sold separately from the MWh
of generic electricity with which it is
associated. This flexibility enables
buyers to offset portions of their annual
electricity use with certificates generated elsewhere. In 2007 and 2008,
NYU made the largest purchases of
renewable wind power by any U.S.
college or university.

Sustainability: In NYU's usage, this contested term acknowledges and adheres to three unifying principles: that meeting present needs should not compromise the ability of future generations to meet their own needs; that there are limitations to nature's capacity, and these limitations must be respected; and that nothing is isolated, and the world is interconnected across social, economic, and environmental boundaries.

Therm: A unit of heat equal to 100,000British thermal units $(1.054 \times 108 \text{ joules})$. Natural gas is often measured in therms.

Ultra-Low Sulfur Diesel (ULSD) Fuel:

Diesel fuel with substantially lower sulfur content, which results in reduced emissions of airborne sulfur compounds that contribute to air pollution and acid rain. Though use of ULSD is now required by the U.S. Environmental Protection Agency, the environmental performance benefits of ULSD are only achievable in conjunction with installation of particulate filters in vehicles burning the fuel. NYU's contracted shuttle bus fleet does not yet use these filters.

Appendix B: Index of Data Sources

| TITLE | DESCRIPTION | YEAR | SOURCE | DETAIL/DEPARTMENT |
|--|---|-----------------|--|--|
| Greenhouse Gas Emissions Coefficients | Updated coefficients | 2006-2008 | New York City Mayor's Office of Long-Term Planning and Sustainability | PlaNYC 2009 Greenhouse Gas Inventory, pages 17 and 19 http://www.nyc.gov/html/planyc2030/ downloads/pdf/greenhousegas_2009.pdf |
| New York City Greenhouse Emissions | Updated scopes 1, 2, 3 emissions | 2005-2008 | | |
| Energy Consumption (Fuel Oil, Natural Gas, Steam, and Electricity) | Complete NYU consumption data, by building and meter | FY 2006-2009 | NYU Operations | Sustainability, Energy, and Technical Services |
| NYU Greenhouse Gas Inventory | Baseline greenhouse gas inventory data | FY 2007 | NYU Sustainability Task Force | Environmental Assessment http://www.nyu.edu/sustainability/ assessmentreport09 |
| Renewable Generation Projections | Request for Expression of Interest | 2009 | National Photovoltaic Construction Partnership (NPCP) | |
| Cogeneration Plant | Energy produced and projected emissions | 2009 | SourceOne | |
| Lighting Retrofits | Analysis of audits and projected retrofits | 2009 | Operations | Sustainability, Energy, and Technical Services |
| NYU Energy Use Trend (kBTU) | Changes in annual energy consumption | FY 2007-2009 | Operations | Sustainability, Energy, and Technical Services |
| New York State Electricity Grid Projections | Energy demand forecast by zone (2007-2020) | 2009 | IFC International for NYSERDA | General Assumptions for NYSERDA State Energy Plan IPM® Analysis |
| Regional Greenhouse Gas Emissions | Mandatory market- based 10-state cap-and-trade program | Ongoing | Regional Greenhouse Gas Initiative | |

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Appendix D: Methodology

Process and Approach to NYU's Greenhouse Gas Inventory

ENVIRONMENTAL ASSESSMENT

NYU's FY 2007 greenhouse gas inventory is available in the University's Environmental Assessment Report¹ and through the ACUPCC Reporting System.² However, the inventory data presented in this Climate Action Plan are different from these previous reports—because of small methodological improvements, better access to data, and most notably a retroactive revision of emissions coefficients provided by the New York City Mayor's Office of Long-Term Planning and Sustainability.

NYU has updated its inventory based on these cleaner coefficients, which more accurately reflect New York City's energy sources. The University has chosen to retroactively update its coefficients to enable an apples-to-apples comparison with inventories from the city and from other colleges and universities participating in the Mayoral Challenge.

The mayor's office did not provide customized waste coefficients. NYU's waste emissions were generated using the ICLEI Clean Air and Climate Protection software, ³ utilizing data about waste and composting tonnage and the waste stream's estimated composition (from NYU's 2008 Waste Characterization Study Report⁴).

DATA LIMITATIONS AND CAVEATS

- A variety of indirect greenhouse gas emissions resulting from NYU's operations are discussed qualitatively (but not quantitatively) in NYU's Environmental Assessment Report. These include University-sponsored air travel, employee commuting, food procurement in dining facilities, and the procurement of many other goods and services.
- Emissions from these sources have not yet been evaluated and may substantially expand the scope and volume of NYU's measured inventory. These emissions will not alter the FY 2006 baseline set by the Mayoral Challenge, but air travel and employee-commuting emissions are required by the ACUPCC and NYU will strive to include them in future assessments.

Process and Approach to NYU's Climate Action Plan

TIMELINE

November 2008-April 2009

- Research (analysis of feasible and cost-effective emissions reduction measures)
- Development of spreadsheet to calculate projected emissions savings over time

May 2009

- Comprehensive list of strategies presented to the Sustainability Task Force
- Opportunity for University leadership to consider projects, decision-making processes, and strategies

Summer 2009

- Further development of spreadsheet (calculation of emissions reductions from various measures that had been approved)
- Drafting of Climate Action Plan report document

Winter 2009

- Full review and feedback from University leadership (Office of the Executive Vice President, Operations, University Relations and Public Affairs, Environmental Studies Program, and others)
- Collaboration with the NYU Office of Advertising and Publications to develop style and layout of report
- Collaboration with graphic designers to create visuals to accompany document
- Postproduction and finalization of report form and content

RESEARCH

- During the 2008-2009 academic year, the Energy and Water Working Group of NYU's Sustainability
 Task Force brainstormed an effective Climate Action
 Plan methodology, produced basic structural outlines, and designed an initial data spreadsheet that calculated
 NYU's estimated greenhouse gas inventory for energy.
- An eight-member student Climate Action Plan internship team analyzed broad areas of potential emissions reductions, including efficiency in buildings, renewable generation, offsets, and emerging technology.
- Collaboration between Operations, the Sustainability
 Task Force, and the student Climate Action Plan team
 to develop a comprehensive spreadsheet to serve as
 an NYU inventory calculator and emissions reduction
 modeling tool, listing all University buildings and their
 commodity use of grid electricity, natural gas, heating
 oils, and steam. The spreadsheet was designed to
 calculate emissions for individual buildings or fuel
 sources and to aggregate and report this information.
- This tool enabled NYU to dynamically explore diverse emissions reduction projects and strategies targeting specific commodities or buildings that would lead to the largest environmental benefits.

STRUCTURE DEVELOPED

- NYU's Climate Action Plan designed specific emissions reduction projections that would meet the 2017 goal and created much broader, ambitious projections to meet the 2040 neutrality goal.
- For the 2017 goal, three phases were used to forecast specific emissions reductions:
- Ongoing initiatives at NYU, such as lighting retrofits and building upgrades, and projects that would go into effect before 2017, such as the expansion of the cogeneration plant
- (2) Initiatives clearly attainable with minimal policy changes or effort
- (3) New measures, such as minimizing heating fuel oil

- NYU outlined a variety of measures, which enabled University leadership to analyze the range and feasibility of projects considered. Conservative estimates were applied to projected reductions from any given measure to ensure that NYU did not commit beyond what it could achieve.
- For the long-term climate neutrality goal, data was analyzed in a much more qualitative fashion and included the following:
- Research on projected legislation, national and international goals, the forecasted prices of offsets, and the life cycle of certain NYU infrastructure
- (2) Specific emissions calculations based on what NYU thought would be possible in 2040, such as the emissions reductions from transitioning to a biodiesel bus fleet
- (3) Analysis of the potential impact each of NYU's strategies might have over the coming decades, based on what the University knows and projects to be feasible. For instance, NYU has already cut 20% of its FY 2006 baseline emissions; most of this is a result of efficiency and conservation measures through retrofits and upgrades. More of such measures, and other expected new measures, such as better building operation and green construction and renovation, will help to substantially reduce energy intensity even further. Hence, NYU has predicted that measures within the category of Reduce Energy Intensity will be able to cut 50% of emissions by 2040.

SETTING GOALS/TARGET DATES

- For the Mayoral Challenge, NYU analyzed and projected feasible emissions reductions and expects to meet the reduction target of 30% per square foot before the 2017 target date.
- For the ACUPCC, NYU had to set a feasible target date by projecting the University's existing trend of emissions reductions over time and taking into account reductions from specific projects the University might undertake to supplement these efforts.

SPREADSHEET

- The spreadsheet houses (1) NYU's comprehensive building list, with details such as associated commodity consumption per building, square footage, or building type and (2) the emissions coefficients provided by the New York City mayor's office. These serve as tracking tools from which all other calculations in the spreadsheet draw (for instance, the greenhouse gas inventory is also tracked on the spreadsheet, generated from commodity consumption data and emissions coefficients).
- Each measure on the spreadsheet is on a separate tab and draws directly from the comprehensive building list. For instance, if NYU were to calculate emissions reductions from conservation outreach campaigns in student residence halls, the spreadsheet automatically draws buildings listed as "student residence halls" and their associated commodity use and emissions, and creates a new tab. NYU experimented with different percentage reductions in electricity, or in all energy sources, to gauge how much of a difference in emissions reductions the University could potentially achieve. Since existing data showed that NYU students reduced an average of 8% of electricity from residence halls during a monthly energy competition, it was projected that the NYU community could also reduce all energy use (not just electricity) through behavioral changes in all buildings, at a lower reduction rate of 3%.
- By experimenting with reasonable thresholds of what the University knew to be possible, NYU was able to generate projections of feasible emissions reductions into the future.

REVIEWS AND EDITS

- Ongoing reviews and edits for the Climate Action
 Plan were conducted by various units in NYU,
 including Operations, University Relations and
 Public Affairs, Office of the Executive Vice
 President, Sustainability, and the Environmental
 Studies Program. The New York City Mayor's
 Office of Long-Term Planning and Sustainability
 also performed additional review.
- Real data on annual energy consumption and cost savings will be used to update the spreadsheet, enabling NYU to track progress and the impacts of projects in this Climate Action Plan.

Endnotes

- http://www.nyu.edu/sustainability/assessmentreport09
- http://acupcc.aashe.org/ghg-report.php?id=457
- 3 http://www.icleiusa.org/action-center/tools/cacp-software
- 4 http://www.nyu.edu/fcm/waste_study_report.pdf

Appendix E: Greenhouse Gas Emissions by Scope, FY 2007

| | Total (MTCE) | Per Full-Tim Enrolled Student | e Per 1,000 Square Feet |
|---------------------------------------|-----------------|-------------------------------------|-------------------------------|
| Gross emissions (Scopes 1 + 2) | 155,234 | 3.79 | 13.04 |
| Gross emissions (Scopes 1 + 2 + 3) | 158,497 | 3.87 | 13.31 |

Scope 1 Emissions— Direct, Resulting from Sources Owned or Controlled by NYU

Stationary Combustion 96,697 MTCE
Mobile Combustion 2,774 MTCE
Total Scope 1 Emissions 99,471 MTCE

The vast majority of NYU's direct greenhouse gas emissions are generated in the process of heating, cooling, and powering its buildings—through on-site combustion of fossil fuels and production of electricity, heat, hot water, and chilled water in the University's cogeneration power plant.

Emissions from mobile combustion of fossil fuels in NYU's owned vehicles and contracted shuttle bus fleets are also classified under scope 1.

Scope 2 Emissions— Indirect, Resulting from Production of Energy to Be Used by NYU

Purchased Electricity 49,754 MTCE
Purchased Steam 6,009 MTCE
Total Scope 2 Emissions 55,763 MTCE

Emissions from purchased electricity and steam from energy providers that supply these commodities via New York State's deregulated electricity grid and New York City's district steam distribution network.

Scope 3 Emissions—Indirect, Resulting from Operational Activities Under Circumstances Partially Controlled by NYU

Commuting Pending
Air Travel Pending
Municipal Solid Waste 3,263 MTCE
Dining Hall Food Pending
Refrigerants Unknown
Total Scope 3 Emissions 3,263 MTCE

Emissions of carbon dioxide and methane emissions associated with the landfilling and incineration of NYU's municipal solid waste stream, including paper, wood, textile, and food waste.

NYU recently completed a comprehensive transportation survey of its students, faculty, and staff, which will soon enable estimates to be generated for emissions associated with these groups' choices (mass transit, car, bicycle, walking, etc.) in commuting to NYU's core location at Washington Square.

The University is also advising on and participating in a pilot project to develop the CHEFS tool, a "foodprint" calculator that will enable schools throughout the United States to measure indirect emissions and perform life-cycle analysis of food items served in dining facilities. The regional nonprofit organization Clean Air-Cool Planet is developing this tool based on research performed by Johns Hopkins University's Center for a Livable Future.

Indirect greenhouse gas emissions from University-sponsored air travel, outsourced activities, and procurement of goods and services have not yet been evaluated and may substantially expand the scope and volume of NYU's measured inventory. These emissions will not alter the FY 2006 baseline set by the Mayoral Challenge, but air travel emissions are required by the ACUPCC. To address this requirement, NYU has recommended the centralized tracking of faculty and staff air travel in this Climate Action Plan (see chapter 6, "Centrally Track Faculty and Staff Air Travel" section, page 56) and has shared plans to estimate these emissions through sampling or other means if better data does not become available (see chapter 5, "Air Travel" section, page 54).

Appendix F: NYU's Sustainability Progress, FY 2006-2009

For more detailed information, refer to NYU's Annual Report and Recommendations 2007-08, section 5, "Progress Throughout the University": http://www.nyu.edu/sustainability/pdf/annualreport08.pdf.

(1) Efforts to Improve NYU's Environmental Performance

ENVIRONMENTAL ASSESSMENT

In 2009, NYU released its first Environmental Assessment Report, which analyzed FY 2007 data in order to baseline the University's environmental impacts and create benchmarks for future progress toward sustainability. The Sustainability staff and the Task Force Data Subcommittee tracked and analyzed data on a broad range of operational environmental impacts, including energy use, water consumption, recycling habits, greenhouse gas emissions, and bus and vehicle fuel efficiency.

The primary objective of the Environmental Assessment Report is to develop an effective means of sharing environmental data and key statistics with task force members, the NYU community, and the public. Another aim is to establish lines of communication and institutionalize research procedures so that the assessment can be updated biannually in an efficient and effective manner.

COGENERATION PLANT

In 2007, the University announced a \$120 million renovation of its cogeneration plant. NYU is upgrading and replacing the boilers and electrical generating equipment to increase CHP plant output, efficiency, and environmental performance. When the new plant goes online in 2010, it will generate nearly twice as much energy while substantially reducing NYU's greenhouse gas emissions (see chapter 3, "Larger, Cleaner, More Efficient Cogeneration Plant" section, pages 31-33).

GREEN GRANTS1

The Green Grants Program engages the NYU community in a way that is different from the standard top-down centralized model. Each year, Green Grants are awarded to fund innovative projects led by students, faculty, or staff that improve the University's operational environmental performance, foster eco-literacy and community engagement, advance applied research goals, and/or demonstrate the viability of environmental best practices and technologies.

More than \$250,000 has been awarded to 35 projects during the last two years. Projects include an outdoor environmental leadership excursion program, a bike-sharing system, a sink-to-toilet greywater reuse pilot project, a series of public engagement events, and a research study to improve the safety and feasibility of accessible green roof projects. These projects spark the imagination of the University community and are often fully incorporated into its operations. A third funding cycle is now under way.

SUSTAINABILITY FUND

Since FY 2007, NYU has committed \$250,000 annually to the Sustainability Fund. The fund finances the Green Grants Program and supports the work of the Sustainability Task Force and a variety of other programs led by full-time staff. Projects include, but are not limited to, innovations in NYU's operational systems, outreach programming, and public engagement.

GREEN PURCHASING STANDARDS AND GUIDELINES

With new purchasing guidelines established in FY 2008, NYU now purchases recycled paper with a minimum of 30% post-consumer content; buys Energy Star-labeled electronics, appliances, and office equipment; utilizes recycled furniture from the Asset Management Office or purchases green-certified office furniture when available; and prints and copies double-sided whenever possible. For more information on NYU's Environmental Purchasing Policy, see the "Energy Star Procurement Policy" section of this appendix, page 75.

BUILDING POLICY FOR NEW CONSTRUCTION AND RENOVATIONS

NYU's Office of Strategic Assessment, Planning, and Design (SAPD) has released Design Standards and Guidelines for all new construction and renovation, whereby the LEED Silver standard serves as the baseline goal. For more information on NYU's building policy, see the "Green Building Policy" section of this appendix, page 75.

THE ASSOCIATION FOR THE ADVANCEMENT OF SUSTAINABILITY IN HIGHER EDUCATION (AASHE) SUSTAINABILITY TRACKING, ASSESSMENT, AND RATING SYSTEM (STARS) PROGRAM

NYU piloted the STARS campus sustainability rating and assessment tool while it was being developed. The goal of STARS is to facilitate information sharing about higher education sustainability practices and to build stronger, more diverse, and more sustainable campus communities.

RECYCLING AND WASTE REDUCTION

The University has undertaken significant efforts to reduce waste, including the following projects:

- In spring 2008, NYU Recycling Services conducted its first waste characterization study of the University, which provided important data on the composition of NYU's waste and potential areas to target for waste minimization.³
- Between May 2007 and April 2008, the NYU community totaled 3,622 tons of solid waste to landfills, averaging 302 tons per month. Recycling programs diverted a third of the University's waste stream from landfills. This 32% diversion rate was higher than that for Manhattan (24.2%) or New York City as a whole (16.5%). The study results indicate that 28% of the landfilled waste stream can be recovered under existing recycling programs, and an additional 59% of material can be diverted from landfills through a compostable (organic) collection program.
- In fall 2008, NYU established an organic waste collection and composting program in all of it dining halls. Its composting initiative—the largest in Manhattan—processes both preparation scraps and plate waste, collecting 34 tons in September 2008 alone. NYU's trayless dining initiative has also reduced plate waste per meal by 44%.⁵
- In FY 2007, NYU's Asset Management Office coordinated the reuse of over 1,900 University hardware and office furniture items and donated 623 surplus items of electronic hardware and office furniture to 24 local charitable organizations.
- NYU secured a new hauling contract with innovative collection processes of waste, which practices include single-stream recycling, composting, and post-trash-collection sorting of some recyclables.⁶ For more information on NYU's waste minimization efforts, see the "Waste Minimization," section of this appendix, page 75.

NYU GARDEN SHOP

The NYU Garden Shop uses organic landscaping management techniques in all areas of its operation, in keeping with its commitment to provide innovative, sustainable landscape care. The Garden Shop strives to use NYU's open space and planted areas to serve a variety of functions, including teaching, research, and public service. It is always looking for new ways to integrate native species and edibles into existing spaces. One example is the placement of edible planters near Washington Square Park.

(2) Curriculum and Other Educational Experiences

ENVIRONMENTAL STUDIES

At the academic center of NYU's broader intellectual agenda for sustainability issues is the Environmental Studies Program. This program offers both an undergraduate major and a minor, equipping students with the knowledge and skills necessary for resolving environmental problems and working to create a sustainable future both locally and globally. It utilizes problem-oriented study and draws on a broad range of courses from various disciplines and NYU colleges and schools, including environmental science, environmental policy and law, public health, and environmental justice.

Student enrollment in the program has soared from 30 to 130 students since its inception in 2007. In that time, six new full-time faculty positions⁷ have been created, many as joint hires with other NYU departments, colleges, and schools (including the Department of Social and Cultural Analysis, the Stern School of Business, the Gallatin School of Individualized Study, and the Robert F. Wagner Graduate School of Public Service), each serving to further weave sustainability into the fabric of the University. Environment-focused course offerings for undergraduate students (both in and beyond the Environmental Studies Program) have more than tripled since 2007.

Central to the program is the senior capstone research seminar, where students collaboratively develop solutions to real-life problems in the community. In spring 2009, the capstone examined The Greening of NYU, with students drawing on disciplines ranging from engineering to cultural analysis to evaluate the effectiveness of the University's sustainability initiatives to date and to strengthen future green efforts. This partnership between the Environmental Studies Program and the Sustainability Task Force is one of many

ways that operational greening and environmental education are intertwined at NYU.

ENVIRONMENTAL CONSERVATION EDUCATION

NYU's Steinhardt School of Culture, Education, and Human Development offers an interdisciplinary master's program in environmental studies (http://steinhardt.nyu.edu/teachlearn/environmental) that engages social, philosophical, political, and educational perspectives on the environment. Environmental Conservation Education is the oldest graduate program in environmental studies in the United States, with a foundation in history, philosophy, and the social sciences.

ENVIRONMENTAL COURSE WORK ACROSS THE UNIVERSITY

Environmental course work and research are also integrated throughout the University. From the Bioethics Program and the Department of Nutrition, Food Studies, and Public Health, to the world-renowned Center on Environmental and Land Use Law and the Wallerstein Collaborative (the first environmental education program in the United States), environment-focused courses exist throughout NYU across more than a dozen different programs. More than 50 NYU faculty actively teach courses directly relevant to sustainability. Students are thus equipped to incorporate sustainability into their academic lives in the most meaningful ways possible.

EDUCATING FOR SUSTAINABILITY LECTURE SERIES

In 2007-2008, NYU launched a lecture series featuring prominent visiting environmental leaders and scholars. The lectures are held several times a semester and are free and open to the public.

Past speakers and topics have included Naomi Oreskes: "The Denial of Global Warming"; Robert Gottlieb: "Rediscovering Los Angeles: Nature and Community in the Global City"; and Cameron Hepburn: "A New Global Deal on Climate Change."

(3) Sustainability and Climate Change Research

ONGOING FACULTY RESEARCH

In the Environmental Studies Program, Professor Tyler Volk¹⁴ has advanced the public's understanding of the role of biological evolution in shaping the earth's thermal and chemical regimes, as well as developing new approaches to the Gaia theory, and Professor Dale Jamieson has published a number of widely cited books and papers on ethics and the environment.

NYU School of Law Dean Richard Revesz is a leading authority on environmental law and regulation, ¹⁵ having published over 50 articles and books on environmental law and policy. In the Center for Atmosphere Ocean Science, part of the Courant Institute of Mathematical Sciences, David Holland has published key findings on melting Greenland glaciers. ¹⁶

Aside from these examples, many other NYU faculty members have engaged in important and diverse environmental research—from a report that transformed public awareness of the childhood asthma epidemic in the South Bronx¹⁷ to an experimental design project that utilizes urban agriculture to enhance quality of life in cities.¹⁸

INDEPENDENT STUDENT RESEARCH

The echoing refrain of "thinking globally while acting locally" has led to substantial independent student research, with NYU itself the subject. Projects have included a comprehensive report on the University's bicycling infrastructure with recommendations for the expansion of bicycling at NYU and policy solutions, ¹⁹ an analysis of the University's buildings using the LEED-EB rating system, ²⁰ an evaluation of the potential of urban agriculture at NYU, ²¹ an early NYU environmental impact study, ²² and a psychological research study on what prevents people from "thinking green" or changing behavior to address climate change.

(4) Sustainability in Community Outreach and Engagement

NYU'S SUSTAINABILITY ADVOCATE PROGRAM

This program provides resources and training to NYU staff to become sustainability advocates and grassroots environmental leaders throughout the University. More than 110 advocates volunteer a few hours per month to encourage colleagues to make environmentally preferable choices and lead departmental efforts to conserve energy and improve recycling.

NYUNPLUGGED

Since 2007-2008, NYUnplugged, an annual energy reduction challenge, has taken place among NYU residence halls. The competition awards a trophy and a "party in the dark" to the residence hall that lowers its electricity use by the greatest percentage against a baseline of historical usage. Over the one-month challenge, residence halls achieved a reduction in energy consumption that ranged from 2%-18%, compared to the same month in previous years. In April 2008, students saved approximately 150,000 kWh and \$30,000.

EARTH WEEK AND EARTH APRIL

Earth Week features a bevy of student club programs, volunteer opportunities, and community outreach initiatives to raise awareness of environmental issues and encourage environmental activism in the NYU community. It is part of Earth April, a monthlong celebration of NYU's commitment to sustainability, during which a variety of programs take place. Past Earth April programs have included Eat and Greet Minus the Meat, a free vegan dinner accompanied by a panel discussion; Swap-o-rama, a clothing swap; a Green Boroughs Walking Tour of environmental sites around the city; an e-waste recycling drive; various speaker panels; and an Earth Day concert and street fair.

GREEN GRANTS FOCUSING ON COMMUNITY OUTREACH

A number of different Green Grants have focused on community outreach, from the Step Change Video project, ²⁴ which makes video clips about different sustainability projects available online, to the New Student's Guide to Sustainability at NYU Web site (see "The New Student's Guide to Sustainability at NYU" section on this page). Other notable outreach-related Green Grants Projects have included the Green Map project, ²⁵ Painting the Campus Green: Public Art, ²⁶ and Radishes and Rubbish. ²⁷

THE NYU GREEN ARCH INITIATIVE

An e-mail list²⁸ and user group connect NYU students, faculty, staff, and community members to information about environmental events; job, internship, and volunteer opportunities; and campaigns and initiatives. It also serves as a place for members to share ideas and thoughts about environmentalism and environmental projects at NYU.

WELCOME WEEK AND STUDENT ORIENTATION

Each year for Welcome Week (NYU's new student orientation), the University carries out centralized sustainability programming, serves as a resource to student groups wanting to implement their own programs, and works closely with different colleges, schools, and departments to distribute sustainability materials. In 2009, programming consisted of eight University-wide events, ranging from a city-biking safety workshop to a general "Going Green at NYU" session. The University provides student groups with a PowerPoint template and materials to distribute, such as flyers, bike maps, and compost maps.

THE NEW STUDENT'S GUIDE TO SUSTAINABILITY AT NYU

This guide, which began as a Green Grants project, was launched during Welcome Week 2009 as an online resource for NYU students to not only improve their environmental footprints, but also get involved with sustainability projects at the University and integrate environmentalism into their academic lives. Although it specifically targets incoming students, it is available to all members of the student body. For more information, visit http://www.nyu.edu/sustainability/newstudentsguide.

RESOURCES ON THE SUSTAINABILITY WEB SITE

The NYU Sustainability Web site, http://www.nyu.edu/sustainability, also provides the community with a diverse set of resources, including a calendar of events, information on different programs and how to get involved, a Green Suggestion form, and "Green Tips and Facts."

(5) ACUPCC "Tangible Actions"

To fulfill the ACUPCC commitment, NYU agreed to meet two or more of seven specified tangible actions to reduce greenhouse gases while developing its Climate Action Plan. The ACUPCC recognizes that many other emissions reduction opportunities exist, but selected these as concrete, meaningful actions that a school could take in the short term.

By 2008, NYU had met five of the seven tangible actions as follows:

GREEN BUILDING POLICY

The University strives to achieve the U.S. Green Building Council's LEED Silver standard for all new major construction and renovation.²⁹

In June 2009, the renovation of NYU's Gallatin building achieved LEED Gold certification.³⁰ Three more building projects are currently pursuing high-level LEED certification.

Additionally, NYU 2031: NYU in NYC is a long-term strategic planning initiative that will enable the University to plan for space and other needs well into the future and ensure that future growth and construction is carried out in a way that improves NYU's environmental performance and aligns with other sustainability commitments.

ENERGY STAR PROCUREMENT POLICY

The University's Environmental Purchasing Policy, which was developed in FY 2008 for NYU's central administration, now includes standards for the procurement of goods and services in 13 categories, including the purchase of Energy Star-labeled electronics, appliances, and office equipment. The policy emphasizes life-cycle analysis and minimal ecological impact. It is accompanied by an Environmental Purchasing Guide³¹ to help the NYU community purchase environmentally friendly products.

PROVISION OF PUBLIC TRANSPORTATION

NYU's Campus Transportation Services provides a safe, free shuttle bus service for all students, faculty, and staff. The bus system operates scheduled routes that connect NYU residence halls to the University's main Washington Square location.

Because of the University's urban setting, nearly all of its students and most faculty and staff use mass transit or walk to work at NYU's core Washington Square location. According to the findings from NYU's Transportation Survey conducted in spring 2009, the primary mode of transportation for those who reside in NYU housing is walking (66%), followed by taking the NYU shuttle bus (26%). For those who reside in non-NYU housing, the subway (65%) is the main mode of transportation. Less than 1% of NYU's population drives a car, and 1% takes taxis.

GREEN POWER PURCHASING

As part of the Green Action Plan, NYU purchased 118,000,000 kWh of wind power renewable energy credits (RECs) for FY 2007 and 132,000,000 kWh for FY 2008. These were the largest purchases of wind power by any U.S. college or university, according to the U.S. Environmental Protection Agency's (U.S. E.P.A.) Green Power Partnership Program, and the largest purchases of wind power by any institution in New York City.

Per the U.S. EPA, the REC purchases are equivalent to avoiding the carbon emissions of nearly 19,000 passenger vehicles per year or the equivalent amount of electricity needed to power more than 13,000 average American homes annually.³²

WASTE MINIMIZATION

NYU participated in the national RecycleMania competition and finished 26th out of 148 schools in the Waste Minimization component and 124th out of 206 schools in the Grand Champion component.³³

Endnotes

- http://www.nyu.edu/sustainability/campus.projects/green.grants.php
- http://www.nyu.edu/sapd/pdf/design_standards.pdf, page 46
- 3 http://www.nyu.edu/fcm/waste_study_report.pdf
- ⁴ Ibid.
- http://www.usatoday.com/money/industries/food/2008-07-22-trays-college-cafeterias_N.htm
- 6 http://www.nyu.edu/fcm/recycling
- http://environment.as.nyu.edu/page/people
- 8 http://environment.as.nyu.edu/object/environment.courses
- 9 http://www.nyu.edu/sustainability/academics.research/academic.programs.html
- http://bioethics.as.nyu.edu/page/home
- http://steinhardt.nyu.edu/nutrition/food/ma
- http://www.law.nyu.edu/centers/elc/index.htm
- http://steinhardt.nyu.edu/wallerstein
- http://biology.as.nyu.edu/object/TylerVolk.html
- https://its.law.nyu.edu/facultyprofiles/profile.cfm?section=pubs&personID=20228
- http://www.nyu.edu/public.affairs/releases/detail/2271
- 17 http://www.med.nyu.edu/research/gdt1.html
- 18 http://www.environmentalhealthclinic.net/projects/uss
- http://www.nyu.edu/sustainability/pdf/bicyclingreport.pdf

- 20 http://www.nyu.edu/sustainability/pdf/NYUGreenBuildingsCapstoneFinalReport.pdf
- http://wildgreenyonder.files.wordpress.com/2008/09/room_to_grow.pdf
- http://www.nyu.edu/sustainability/pdf/gallatinassessment.pdf
- http://www.nyu.edu/sustainability/get.involved/advocate.program.html
- 24 http://stepchangeproject.blogspot.com
- http://www.nyu.edu/sustainability/campus.projects/green.grants.php?id=21&type=&area=&year=#hi
- http://www.nyu.edu/sustainability/campus.projects/green.grants.php?id=26&type=&area=&year=#hi
- 27 http://radishesandrubbish.wordpress.com
- http://groups.google.com/group/nyugreenarch
- http://www.nyu.edu/sapd/pdf/design_standards.pdf, page 46
- http://www.nyu.edu/gallatin/leed/index.html
- 31 http://nyuenvironmentalpurchasingguide.wordpress.com
- http://www.nyu.edu/public.affairs/releases/detail/1982
- http://www.nyu.edu/sustainability/pdf/Recyclemania%20Scorecard%20final%20results.pdf

Appendix G: Links and Resources

NYU Resources

NYU Environmental Assessment FY 2009

http://www.nyu.edu/sustainability/pdf/assessmentreport09.pdf

NYU Annual Report and

Recommendations FY 2008

http://www.nyu.edu/sustainability/pdf/annualreport08.pdf

NYU Sustainability Task Force

http://www.nyu.edu/sustainability

NYU Plans 2031

http://www.nyu.edu/nyu.plans.2031

NYU Facilities and Construction Management

http://www.nyu.edu/fcm

NYU Environmental Studies Program

http://environment.as.nyu.edu

Climate Change Science

Intergovernmental Panel on Climate Change

http://www.ipcc.ch

Pew Center on Global Climate Change

http://www.pewclimate.org

350.org

http://www.350.org

Organizations

New York City Mayor's Office of Long-Term Planning and Sustainability

http://www.nyc.gov/html/ops/html/long_term/long_term.shtml

American College and University Presidents' Climate Commitment (ACUPCC)

http://www.presidentsclimatecommitment.org

Association for the Advancement of Sustainability in Higher Education (AASHE)

http://www.aashe.org

Clean Air-Cool Planet

http://www.cleanair-coolplanet.org

PlaNYC

http://www.nyc.gov/html/planyc2030/html/home/home.shtml

Selected Referenced Climate Action Plans

City of Chicago

http://www.chicagoclimateaction.org/filebin/pdf/finalreport/

CCAPREPORTFINAL.pdf

Cornell University

http://www.sustainablecampus.cornell.edu/climate/index.cfm

University of California-Berkeley

http://www.berkeleyclimateaction.org/Content/10058/ClimateActionPlan.html

Selected Referenced Carbon Offset Resources

The Role of Offsets in Meeting Duke

University's Commitment to 'Climate Neutrality':

A Feasibility Study

http://www.nicholas.duke.edu/institute/dukeoffsets.pdf

The ACUPCC Voluntary Carbon Offset Protocol

 $http://www.responsible purchasing.org/purchasing_guides/carbon_offsets/$

policies/ACUPCCVoluntaryCarbonOffsetProtocol_Nov08.pdf

The ACUPCC Guidelines for

Carbon Offset Investments

http://www2.presidentsclimatecommitment.org/documents/

 $CarbonOffsetsGuidelines_v1.0.pdf$

Clean Air-Cool Planet

Defining Corporate Carbon Neutrality

http://www.cleanair-coolplanet.org/documents/zero.pdf

Clean Air-Cool Planet

A Consumer's Guide to Retail Carbon Offset Providers

http://www.cleanair-coolplanet.org/ConsumersGuidetoCarbonOffsets.pdf



