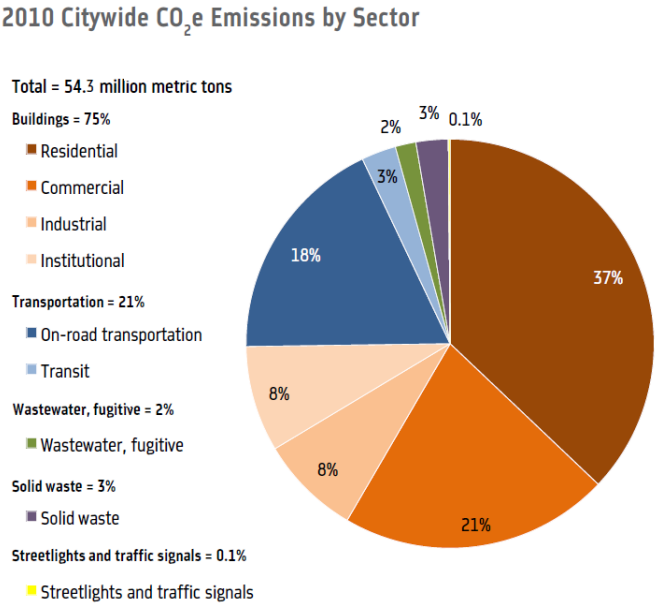
Overview of the Greener, Greater Buildings Plan

The Greener, Greater Buildings Plan (GGBP) is the most comprehensive set of energy efficiency laws in the U.S., targeting New York City's largest existing buildings which constitute half its built square footage and 45 percent of citywide energy use. For these buildings, the policies require an annual benchmarking of energy and water use with public disclosure; an audit and retro-commissioning every ten years; for non-residential spaces, upgrades for lighting to meet the energy code, and the installation of electrical meters or sub-meters for large tenant spaces.

Scope

GGBP is part of a larger, unprecedented effort called PlaNYC, New York City's plan for sustainable growth through 2030. PlaNYC lays out ten major goals, including cleaner air and water, and homes for almost a million New Yorkers. These goals culminate in a citywide greenhouse gas (GHG) emissions reduction target of 30 percent by 2030.



Source: City of New York, *Inventory of New York City Greenhouse Gas Emissions*, *September 2011*, by Jonathan Dickinson and Andrea Tenorio. Mayor's Office of Long-Term Planning and Sustainability, New York, 2011, p11.

Achieving this target will require increasing energy efficiency in buildings, because about 75 percent of New York City's GHG emissions come from energy used in buildings. Furthermore, energy efficiency strategies will need to focus on existing buildings because by 2030, at least 85 percent of New York City's buildings will be made up of those already present today.

Scale

This poses a complex problem because there are almost a million buildings in New York City. However, it turns out that a few large-scale properties – 15,000 properties (with 22,000 buildings) – consume roughly 45 percent of the energy citywide. These large buildings come in all types: commercial, industrial, institutional, multi-family residential, and of course, mixed-use.

GGBP is a comprehensive, mandatory policy that targets this problem by addressing energy efficiency in large, existing whole buildings throughout New York City. It is composed of four pieces of legislation and two supplementary components. First, it establishes a New York City energy code that requires all renovations that impact energy systems to meet the standards of the New York State energy code, thus accruing the energy benefits from the natural cycle of building upgrades. Second, it requires annual benchmarking data to be

submitted by building owners for public disclosure, which will bring transparency for energy and water usage. The third piece requires an energy audit and tuning, or retro-commissioning, of energy equipment in large buildings every ten years. The last regulatory piece mandates lighting upgrades and sub-metering of large, non-residential tenant spaces, giving tenants information about their energy usage.

These regulatory measures are joined by two supplementary components that will help provide the real estate industry with the tools needed to comply. The first focuses on creating a trained workforce that can reliably deliver improved energy performance. And the second utilizes New York City's federal stimulus funding to create an innovative energy efficiency financing cooperation to provide funds for energy upgrades.

In addition to the resources provided to all building owners for compliance, GGBP also includes extension and exemption provisions in its audit and retro-commissioning piece of legislation. A building considered to be subject to substantial financial hardship under specific provisions will be eligible for extensions in meeting its auditing and retro-commissioning requirements. Certain residential properties including one to three family homes, and condos and co-ops with no more than three dwelling units are exempt.

Supply Chain / Cross-Sector Impacts

In general, this package of policies is expected to have numerous, direct, financial, and environmental benefits, which are described in later sections. In addition, these policies are expected to transform the way the real estate and financial industries value energy efficiency in buildings. Particularly, the energy disclosure required from the metering and sub-metering piece of GGBP will have a transformative impact on the industry by providing transparency in energy consumption and valuable market information for buyers and sellers. The policy has already impacted New York City by making it a center of knowledge, innovation, and job creation concerning energy efficiency in buildings.

Projected Lifetime Costs and Savings of Policy

Much of GGBP is about energy transparency; however, retro-commissioning and lighting upgrades have also been broadly mandated in the policy because they are extremely cost-effective measures that will quickly start accrue savings for building owners. When these small benefits are aggregated at the city scale, they add up to tremendous savings. GGBP is estimated to cost $5.2 billion while saving $12.2 billion, for a net savings of $7 billion.

Note that these savings are direct savings that result from reduced energy expenditures. They do not include the health savings resulting from cleaner air, nor do they include avoided costs of energy infrastructure that can be quite substantial.

Projected Emissions Reduction from Policy

By 2030, GGBP is estimated to reduce citywide GHG emissions by at least 5.3 percent from the 2009 baseline of 50.8 million metric tons. This equals approximately 2.72 million metric tons of emissions reduced by 2030. Assuming a business as usual increase of one percent per year, GGBP will achieve approximately ten percent of the reductions necessary for the City achieve its goal toward 30 percent reduction by 2030.

Contextual Information

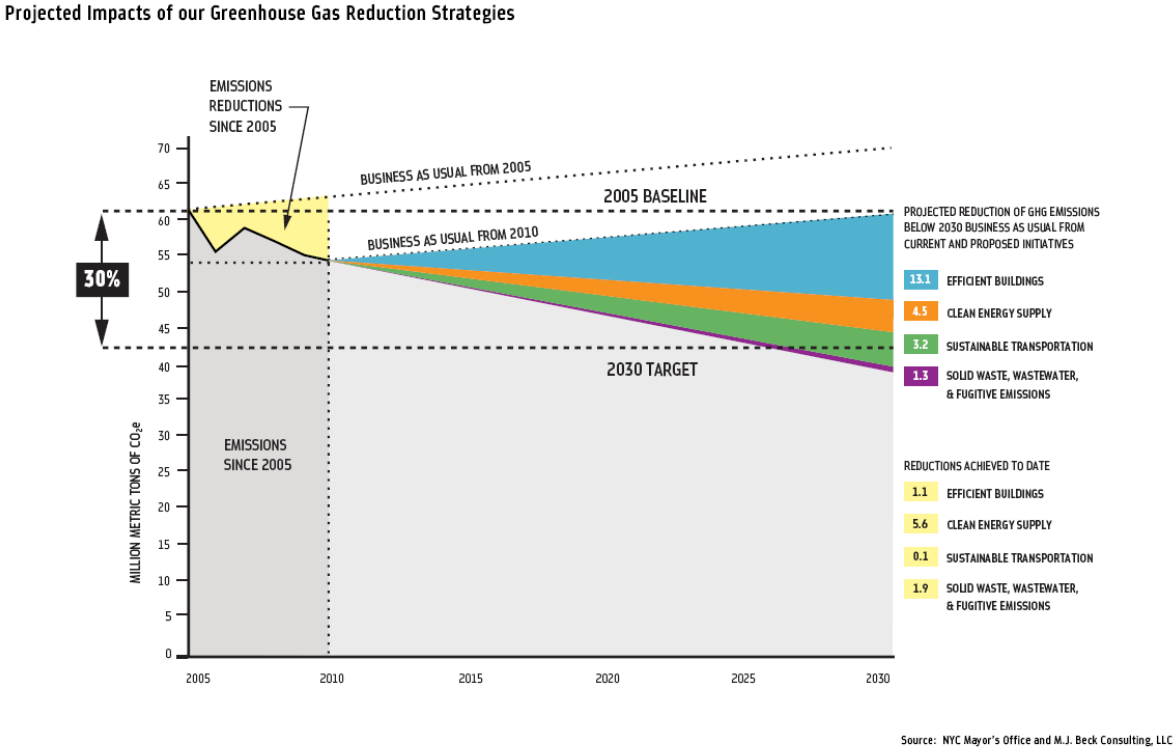
According to the *Inventory of New York City Greenhouse Gas Emissions, September 2011*, citywide GHG emissions decreased by 11.7 percent from 2005 to 2010, with adjustment for various factors affecting energy consumption.[1] This is equivalent to 54.3 $MgCO_2e$ in 2010, compared to 61.6 $mgCO_2e$ in 2005.[2] New York City has put in place numerous measures that will continue to reduce the city's GHG emissions from its power supply, building energy

[1] City of New York, *Inventory of New York City Greenhouse Gas Emissions, September 2011*, by Jonathan Dickinson and Andrea Tenorio. Mayor's Office of Long-Term Planning and Sustainability, New York, 2011.

[2] City of New York, *Inventory of New York City Greenhouse Gas Emissions, September 2011*, by Jonathan Dickinson and Andrea Tenorio. Mayor's Office of Long-Term Planning and Sustainability, New York, 2011.

demand, and other sectors. Without such measures, anticipated GHG emissions would rise to almost 75 million metric tons by 2030.

As a part of PlaNYC, GGBP falls within an overall strategy for citywide GHG emissions reductions, which includes four major parts: increasing energy efficiency, de-carbonizing the energy supply, improving transportation efficiency, and reducing waste. Of these, energy efficiency is the largest piece (contributing a reduction of 12.7 million metric tons, as shown in the chart below), with GGBP being the largest, single policy with the greatest carbon impact. For more information on the role of GGBP and other measures to reduce New York City's emissions, see *PlaNYC Progress Report 2011 (p73)*.



Source: City of New York, *PlaNYC Progress Report 2012*, New York City Mayor's Office of Long-Term Planning and Sustainability, New York, 2012, p.24.

Environmental Benefits Expected from Policy

The benefits of GGBP go beyond carbon and energy reduction. For example, the negative environmental impacts from extraction of nonrenewable energy resources such as oil and gas will be lowered through reduced energy consumption. Additionally, because benchmarking requirements include measuring water consumption, this policy will encourage reduced use of water. These and more benefits will be quantified through further analysis as GGBP is implemented.

Community Benefits through Job Creation, Improved Public Health and Occupant Comfort

GGBP promotes cost-effective steps to create significant economic and social benefits for New York City. It will create thousands construction-related jobs in energy auditing, retro-commissioning, upgrading lighting, and maintaining equipment. Building owners will benefit from the energy savings; those that comply in advance will reap benefits earlier. The policy will also improve air quality and public health by reducing air pollution from energy consumption. Efficient energy technology and upgrades will better regulate indoor temperature and lighting, improving the comfort of the indoor environment. Lower demand for electricity will also make citywide electrical systems more reliable.

Innovative Financing

The policy also involves innovative financing. In 2011, the City launched the New York City Energy Efficiency Corporation (NYCEEC), which is providing financing for energy efficiency projects and comprehensive information about funding and tax benefits. NYCEEC will use $37 million in federal American Recovery and Reinvestment Act (ARRA) funding as a backstop for its loan products. By absorbing the risk that is associated with energy loans, NYCEEC expects to attract financing from banks and philanthropies that will leverage ARRA funding by a factor of four or five.

First of its Kind

GGBP is part of PlaNYC, the most extensive plan to strengthen New York City's urban environment ever undertaken by an American city. Unveiled by Mayor Michael R. Bloomberg in April, 2007, the 127-point plan is designed to create the first environmentally sustainable 21st century city. PlaNYC focuses on every facet of New York's physical environment-its transportation network, housing stock, land and park system, energy network, water supply and air quality-and sets a course to achieve 10 aggressive goals to create a more sustainable New York by the year 2030.

As a part of New York City's unprecedented efforts in sustainability, GGBP is the first policy of its kind to aggressively target energy efficiency in large, existing buildings. While many cities have passed energy efficiency measures in the U.S. and abroad, New York City is the first to achieve a comprehensive "solution for achieving the deep reductions in energy consumption that are possible in its large and relatively older building stock, a goal which would be more difficult or impossible to achieve with only a handful of independent programs."[3]

Implementation in Other Locations

GGBP provides a comprehensive model for energy reductions in large, existing buildings applicable for other locations. In the U.S., cities are the right place to start because they control building regulations; this may differ in other parts of the world. Several other reasons include: most large buildings are located in cities; cities contain most of the expertise in real estate, design, and engineering; and cities are likely better poised to be the early adopters of such programs. Starting with cities will also have an impact on a large percentage of the global population; since 2008, more than half of the world's human population, 3.3 billion, resides in cities.[4] National and international networks are speeding the adoption of policies such as GGBP in many cities, including the C40 and the U.S. Urban Sustainability Directors Network. Both provide forums for knowledge sharing on best practices.

The impact of broadly replicating GGBP could be substantial. In the U.S., for example, an estimated 5 percent of buildings are responsible for half of the GHG emissions from buildings nationally. By targeting these largest buildings, GGBP simplifies the logistical problem of rapid GHG emissions reduction considerably – from addressing approximately 100 million buildings to addressing 5 million buildings.

Early Indicators of Replicability

Several components of GGBP have been implemented or are being considered elsewhere. For example, San Francisco enacted its Existing Commercial Buildings Energy Performance Ordinance in February 2011, which includes benchmarking and audits, thus incorporating much of GGBP's requirements. The cities of Philadelphia and Chicago are interested in New York City's progress with GGBP and are looking at possibilities for developing their own energy efficiency legislation.

Several influential not-for-profits see the benefit of replicating GGBP elsewhere, and have started to devote resources toward achieving this goal. Analysis of GGBP and its success has been recently featured in a case study developed by Local Government for Sustainability USA (ICLEI) and the Institute for Market Transformation (IMT).

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[3] Local Governments for Sustainability (ICLEI), *Case Study: New York City's Greener, Greater Buildings Plan*, by Kim Brokhof, Brian Holland, and Ryan Foshee. ICLEI, Institute for Market Transformation, Washington D.C., November 2011.

[4] United Nations Population Fund, *State of the World Population 2007: Unleashing the Potential of Urban Growth*, by Thoraya Ahmed Obaid. United Nations Population Fund, New York, 2007.

The case study is part of a Commercial Energy Policy Toolkit designed to "advance innovative program and policy tools in local jurisdictions that have the greatest potential to reduce energy consumption in commercial buildings."[5]

Collaborative Efforts

New York City has been fortunate in forging numerous private-public partnerships for the implementation of PlaNYC and GGBP. Detailed information of the partners involved in the development of GGBP is explained in the case study mentioned above.

A growing list of partners involved in the implementation of GGBP is provided below:

- **Outreach:**
  - The City has partnered with the New York Chapter of the Green Building Council (Urban Green) to offer free presentations to building industry organizations, building owners, managers, tenants and any group impacted by the requirements under GGBP. The presentations review all four laws, focusing on benchmarking, audits and retro-commissioning, and lighting upgrades and sub-metering. Funding is provided by Con Edison and the New York State Energy Research and Development Authority (NYSERDA).
  - Detailed, up-to-date information on GGBP is available on the Greener, Greater Buildings Plan web page within the PlaNYC Website (http://www.nyc.gov/ggbp).
- **Training:**
  - Launched "Amalgamated Green," a working group consisting of over 30 partners, to assess training needs and capacity.
- **Financing:**
  - Launched the New York City Energy Efficiency Corporation (NYCEEC), which will provide financing for energy efficiency projects and comprehensive information about funding and tax benefits. Funding for NYCEEC is primarily from federal stimulus funds from the 2009 American Recovery and Reinvestment Act (ARRA).
- **Energy Code Resources:**
  - Urban Green and the American Institute of Architects New York Chapter have joined together to provide half-day trainings funded by NYSERDA.
  - The New York City Department of Buildings provides two-day trainings in person and online.
- **Benchmarking Resources:**
  - The Association for Energy Affordability gives weekly three-hour classes on benchmarking, also funded by NYSERDA.
  - The U.S. Environmental Protection Agency (EPA) provides an online tool, Portfolio Manager, required for inputting benchmarking data. EPA also provides online training for Portfolio Manager.
  - Through a partnership between OLTPS, NYC Department of Buildings, City University of New York (CUNY), and NYSERDA, technical benchmarking assistance is available through a Benchmarking Help Center. The Benchmarking Help Center is a hotline run by CUNY graduate students who assists callers with creating an online benchmarking account and other benchmarking related topics.
  - Urban Green and the Related Companies have created a detailed checklist of step-by-step instructions for benchmarking compliance.
  - Consolidated Edison (ConEd) has provided building owners with whole building electricity data in addition to step-by-step instructions and FAQ information on benchmarking.

[5] Local Governments for Sustainability (ICLEI), *Case Study: New York City's Greener, Greater Buildings Plan*, by Kim Brokhof, Brian Holland, and Ryan Foshee. ICLEI, Institute for Market Transformation, Washington D.C., November 2011.

- **Auditing and Retro-Commissioning:**
    - The Association of Energy Engineers have partnered with NYSERDA to provide Certified Energy Manager (CEM) trainings.
    - The Building Commissioning Association (BCA), supplemented by NYSERDA funding, will provide a number of three-day trainings on existing building commissioning.
- **Lighting and Sub-Metering:**
    - Green Light New York – a nonprofit lighting resource center for training, design assistance, and educational resources – offers lighting code training with NYSERDA funding.