NYC°CoolRoofs

ANNUAL REVIEW 2013

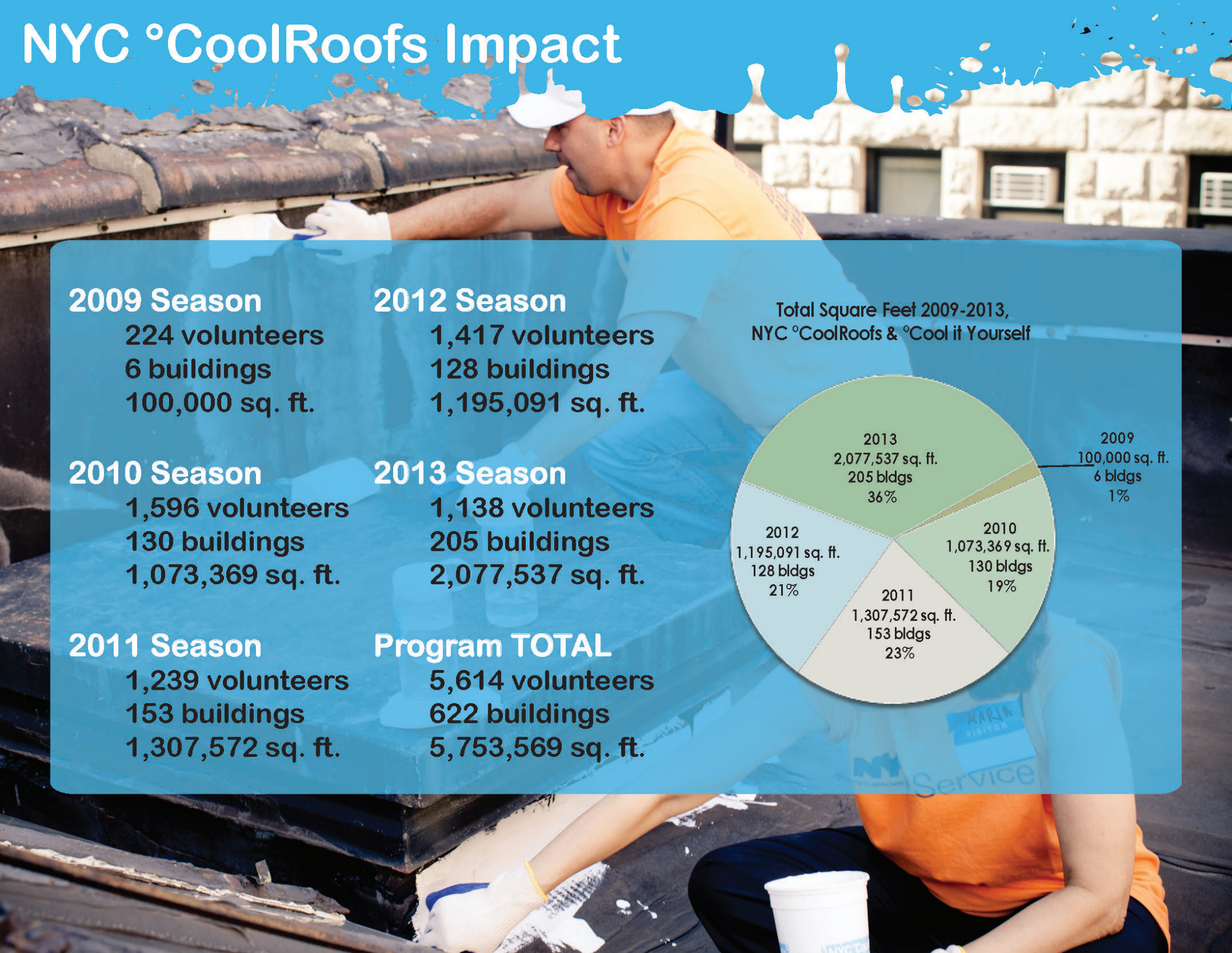
NYC °CoolRoofs - An Introduction

NYC °CoolRoofs is a collaboration between NYC Service and The Department of Buildings to encourage building owners to cool their rooftops with a white reflective coating to reduce energy consumption, cooling costs and carbon emissions. The program supports New York City's goal to reduce greenhouse gas emissions by 30 percent by 2030.

Guiding Principles

- **Utilize** NYC Service to tap New Yorkers' desire to volunteer on environmental initiatives
- **Encourage** private sector participation, including the development of a key partnership with Con Edison
- **Support** and engage NYC non-profit community
- **Develop** green job training for workforce groups
- **Facilitate** interagency collaboration to make a significant public commitment to cool roof coating, including a partnership with Million Trees NYC
- **Promote** NYC °CoolRoofs °Cool it Yourself Campaign
- **Engage** with the scientific and the global community to measure the effectiveness of cool roof coatings and share best practices

NYC °CoolRoofs Impact



2009 Season
224 volunteers
6 buildings
100,000 sq. ft.

2010 Season
1,596 volunteers
130 buildings
1,073,369 sq. ft.

2011 Season
1,239 volunteers
153 buildings
1,307,572 sq. ft.

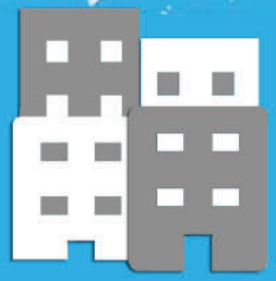
2012 Season
1,417 volunteers
128 buildings
1,195,091 sq. ft.

2013 Season
1,138 volunteers
205 buildings
2,077,537 sq. ft.

Program TOTAL
5,614 volunteers
622 buildings
5,753,569 sq. ft.

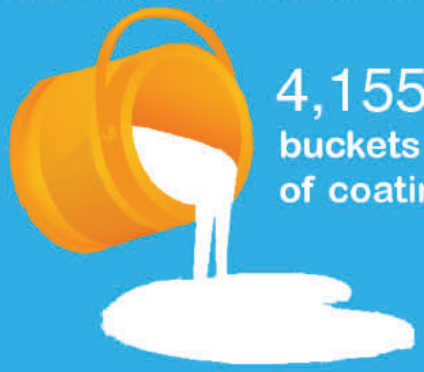
Total Square Feet 2009-2013,
NYC °CoolRoofs & °Cool it Yourself

2013 NYC °CoolRoofs By the Numbers



2,077,537
square feet
of rooftop
cooled

580
paint rollers



4,155
buckets
of coating

831
tons of
CO_2e
reduced

668
paintbrushes

1,301,294 square feet
of rooftop coated in the
°Cool It Yourself program

125,675 square feet
largest rooftop coated

205
buildings coated

488
buckets of
coating donated

1,138
volunteers

Volunteers Overview

2009-2013 Volunteer Total	5,614
2013 Volunteer Total	1,138
2012 Volunteer Total	1,417
2011 Volunteer Total	1,239
2010 Volunteer Total	1,596
2009 Volunteer Total	224

Volunteers by Borough, 2009-2013

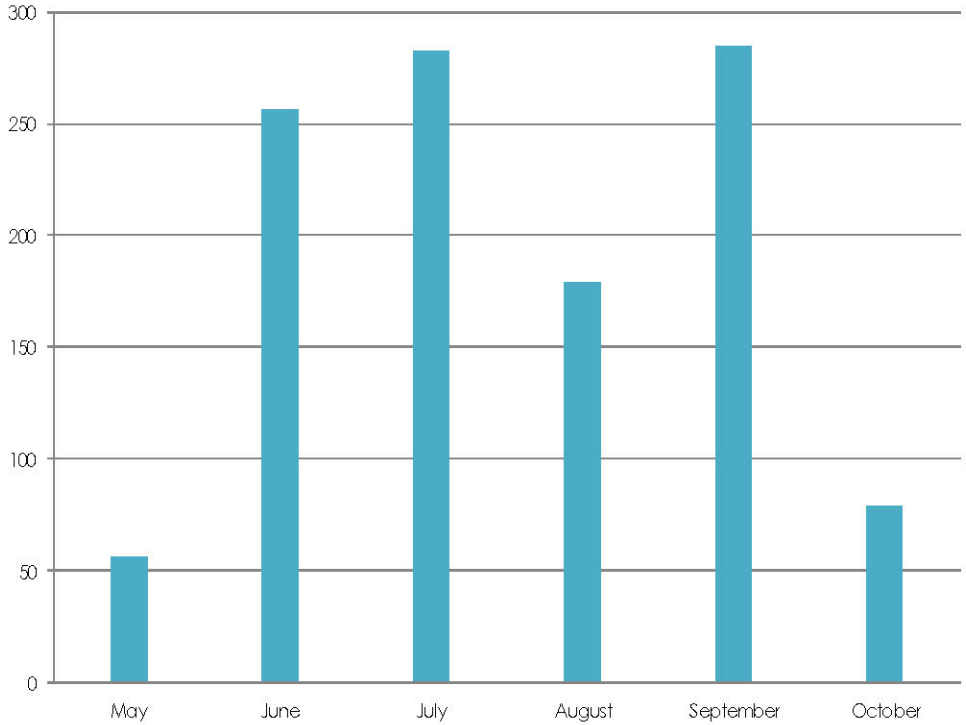
Bronx: 1,353

Brooklyn: 1,040

Manhattan: 2,422

Queens: 799

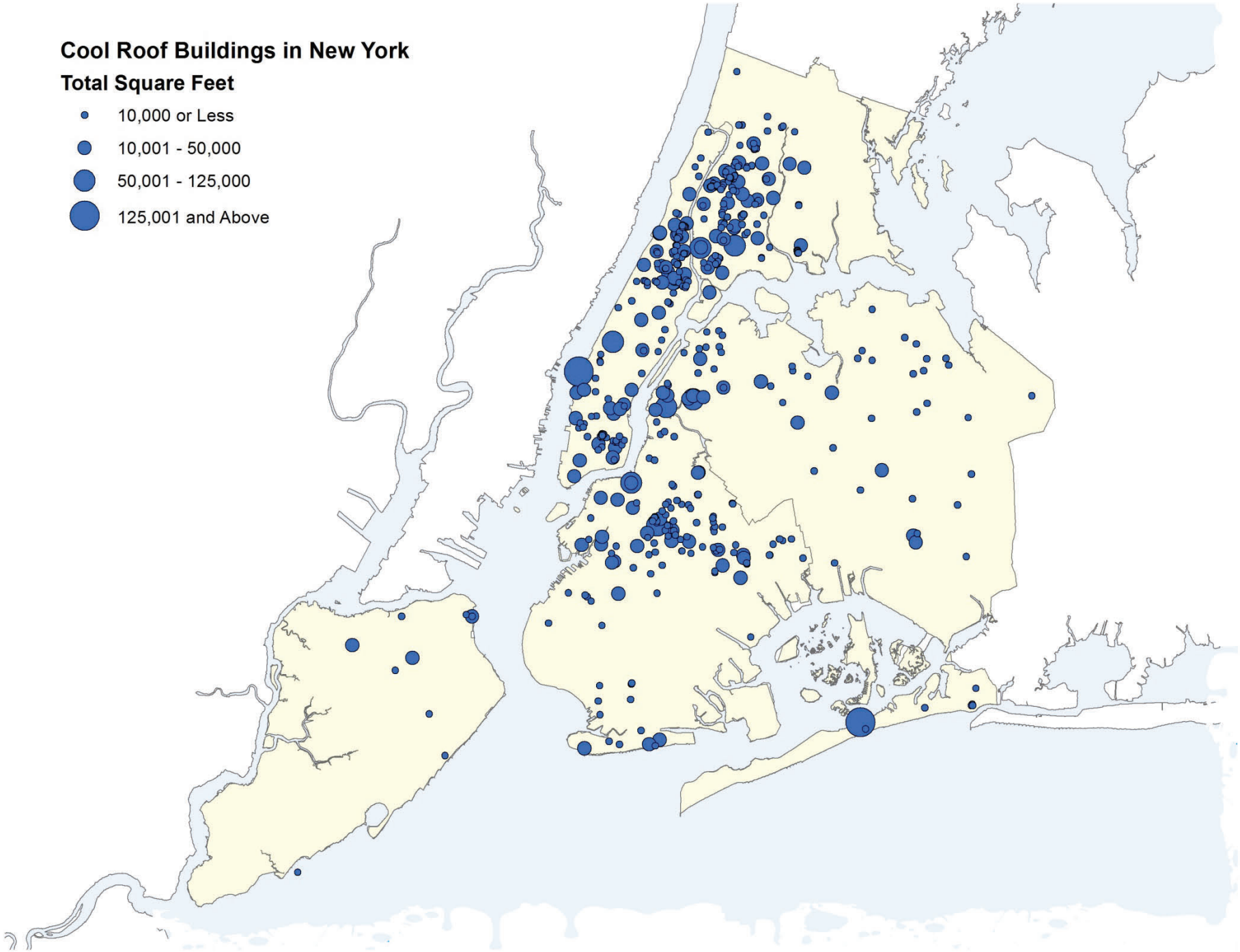
Volunteers by Month, 2013



Volunteers by Month, 2013

Month	Volunteers Attended
May	56
June	256
July	283
August	179
September	285
October	79
Total	**1,138**

NYC °CoolRoofs Buildings in New York



Spotlight: Sustainable South Bronx

The Bronx Environmental Stewardship Training (BEST Academy) of Sustainable South Bronx is an intensive development program dedicated to preparing unemployed and underemployed residents of the South Bronx and other NYC neighborhoods for jobs in the green economy sector. Graduates of the BEST Academy coated and cleaned 934,191 square feet of rooftops during the 2013 CoolRoofs season.

"The impact of NYC °CoolRoofs goes beyond the environmental benefits -- it's also an opportunity for individuals to gain extremely valuable experience as they become members of the city's green workforce." -- Michael Brotchner, Executive Director, Sustainable South Bronx

For the BEST Academy graduates who coated and cleaned roofs from April through October, NYC °CoolRoofs is not only an opportunity to promote NYC's environmental sustainability – it is also a chance to bolster their work experience on their paths to full-time employment.

"NYC °CoolRoofs helped me learn how to work in a team and I now understand how different buildings present different challenges. I also saw that if we put in a little effort, a lot of energy can be saved." -- Jeremy Bair, 2013 NYC °CoolRoofs crew member whose work on the initiative helped lead to full-time employment

SUSTAINABLE SOUTH BRONX

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Stern School of Business
University of Virginia Alumni
Wildcat High School
Yale Alumni
Yale Day of Service
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Non-profits
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INROADS
Net Impact
North Manhattan Improvement Corporation
Cross Cultural Solutions*
White Roof Project*
Youth Build*

Workforce Groups
Green City Force*
NEW*
NEW Alumnae*

Government Partners
NYC Law Department
New York City Interns

*Participated Multiple Times

Awareness Campaign

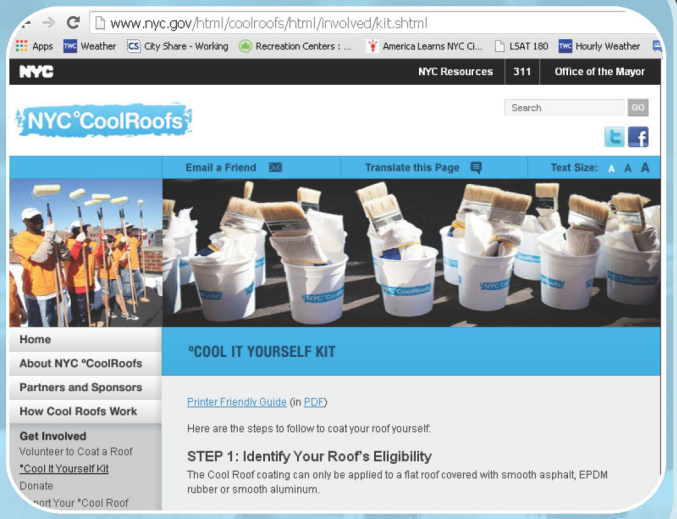
LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2011

No. 21

Introduced by Council Member Garodnick, Brewer, Chin, Comrie, Fidler, Gentile, Gonzalez, James, Koppell, Lander, Mark-Viverito, Nelson, Palma, Sanders Jr., Vann, Williams, Rodriguez, Gennaro, Van Bramer, Levin, Lappin, Recchia, Vallone, Crowley, Jackson, Koo, Wills, Barron and Greenfield

A LOCAL LAW

To amend the administrative code of the city of New York and the New York city building code, in relation to roof coating standards.



Building Legislation

Local Law 21

NYC & Co. Bus Shelter Ads

°Cool it Yourself

NYC °CoolRoofs Website

www.nyc.gov/coolroofs

Research Opportunities – The Princeton Plasma Physics Laboratory

The Princeton Plasma Physics Laboratory (PPPL), Princeton University, and NYC °CoolRoofs are partnering in an initiative to capture the science of the benefits of white roofs including, but not limited to, urban cooling, carbon reduction, and health. They also intend to analyze the effectiveness of cool roof coating projects by determining the percentage of roofs in the City that are black versus white and with asphalt, concrete and vegetation. This mix of materials determines to a large extent building energy efficiency and the microclimatic conditions in urban areas.

"The NYC °CoolRoofs program has been one of the key instruments in a larger symphony of the efforts in the Mayor's office to effect urban climate change in NYC. We feel extremely fortunate, that Wendy and Geraldine reached out to us at the Princeton Plasma Physics Lab and Princeton University to learn more about our unprecedented roofing research experiments.

There is clear proof that white, well-insulated roofs (Cool Roofs) conserve energy while also providing for improved micro-climates. We look forward to continuing our collaborative work with the NYC Office of Long Term Planning and the other climate experts at CUNY, Columbia U., NYC DOH, and NYC Parks Department." Keith Rule, Senior Project Engineer – Environmental at Princeton Plasma Physics Laboratory

PRINCETON UNIVERSITY

PPPL PRINCETON PLASMA PHYSICS LABORATORY

Research Opportunities - Columbia University

"The NYC °CoolRoofs program is very important for urban climate and urban climate science research. The program is the first significant attempt to brighten the City's landscape to decrease extreme heat events. In a sense it is reversing at least 100 years of landscape darkening as a result of asphalt and building development.

I have been fortunate to have the opportunity to study the pilot projects to understand and quantify the temperature, reflective and heat retention performance of the projects. In particular we want to quantify how much cooler these roofs will be compared to asphaltic membranes and in different seasons. It's clear so far that peak sunlight temperatures are dramatically cooler – perhaps 50° F or more. But there is also darkening over time due to weathering and other effects. We want to study these factors in greater depth going forward.

The work so far has been done using narrow field view temperature sensors stationed in one location.

In the next phase we want to deploy mobile sensors that can be easily moved to many sites and can take larger scenic temperature images that will provide a broader picture of the rooftop and other urban environments. We plan to study projects of different ages, in different boroughs and also in different urban environments such as dense, vehicular areas as compared to lower density greener locations. From this data we will undertake an analysis of what factors are leading to darkening and how they can be minimized going forward." Stuart Gaffin, Research Scientist, Columbia University

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

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Art of Men

NYC Service | Department of Buildings