TESTIMONY OF THE MAYOR'S OFFICE
BEFORE THE NEW YORK CITY COUNCIL
COMMITTEE ON
ENVIRONMENTAL PROTECTION

January 28, 2019

I. INTRODUCTION

Good afternoon. My name is Susanne DesRoches and I am the Deputy Director for Infrastructure and Energy at both the Mayor's Office of Resiliency and the Mayor's Office of Sustainability. I am joined here today by Melissa Enoch, Program Manager for Private Incentives at the Department of Environmental Protection's Bureau of Environmental Planning & Analysis and Alan Price, Director of the Office of Technical Certification and Research at the Department of Buildings. I want to thank Chairperson Constantinides and members of the committee for this opportunity to testify on behalf of the de Blasio Administration on a package of bills related to green roofs and other sustainable rooftop systems.

New York City rooftops are an underutilized resource in the effort to reduce carbon emissions, manage stormwater runoff and make our city the most sustainable big city in the world. Building rooftops have far more to contribute than great vantage points to an iconic skyline. With the right incentives for building owners, rooftops can play a role in generating renewable energy, improving the quality of New York City's surrounding waterways, and increasing the resiliency to stronger rain storms and heat while contributing and enhancing the quality of life within our neighborhoods.

II. SUSTAINABLE ROOFS

The Administration supports leveraging the city's abundant roof space to maximize sustainability and resiliency with easy and flexible compliance mechanisms for developers and building owners. At present, there are three primary City supported options for building owners to make roof improvements that offer environmental and economic benefits.

Green Roofs

Over the past decade, green or vegetated roofs have become more common in the city. In addition to the storm water benefits discussed below, green roofs reduce rooftop temperatures, and promote energy efficiency and comfort within buildings, and can be installed along with solar installations. As of 2016, The Nature Conservancy estimates there were over 1,200 vegetated roofs covering about 60 acres across the city, a small portion of the total 40,000 acres of citywide rooftops.

Green roofs are one example of "green infrastructure" which DEP builds to improve the quality of the city's waterways. The city's ultra-urban landscape is mostly impervious and can't absorb stormwater so rain must flow from streets and rooftops through the sewer system. The City has invested billions of dollars in large infrastructure projects and other programs to reduce combined sewer overflow (CSO)—a mix of stormwater and untreated wastewater—from entering our waterways. DEP's $1.5B Green Infrastructure Program supports projects such as

green roofs, rain gardens, and permeable pavements to reduce CSOs and to promote the health of the harbor. Today, our waterways are the cleanest in a century.

Part of DEP's nationally-recognized Green Infrastructure Program is the Grant Program for private properties. Since the program began in 2011, it has funded 32 projects around the city with green roofs comprising 60% of them. However, green roofs are expensive to install, are not suitable for all buildings and have less impact in areas without combined sewer systems or substantial heat vulnerability. To encourage uptake, DEP routinely works with the local green roof industry, holding forums and conducting surveys to fine tune DEP's program. As a result, DEP established new procedures to fast-track green roof applications which are now accepted on a rolling basis, year round. DEP has the highest green roof incentive in the nation at $30 per square foot.

Solar

Solar installations have increased nearly seven-fold since Mayor de Blasio took office, providing more than 170 megawatts (MW) of electrical capacity, cutting carbon emissions by 63,000 tons each year and supporting over 4,000 jobs across the five boroughs. The cost of solar has decreased over 25% since 2013. Lower costs paired with some of the highest electricity prices in the nation continue to make solar an attractive option, with property owners often recouping their investments within years. Solar can be paired with either green roofs or cool roofs, both of which can actually increase the amount of electricity produced by a solar installation and maximize the sustainability, resiliency and financial benefits.

The City is also using public buildings to rapidly expand solar deployment. Mayor de Blasio committed to installing 100 MW of solar at City-owned and -operated facilities by 2025. Today the City has nearly 11 MW of solar PV installed on public buildings—a ten-fold increase in just five years—and an additional 30 MW is currently being developed or planned. In addition, New York state introduced community shared solar, which enables renters and others who are unable to install their own systems to access the benefits of solar. NYCHA and EDC have 300 new community shared solar systems in the pipeline that will specifically serve thousands of low- and moderate-income households.

Cool Roofs

As part of *Cool Neighborhoods NYC*, the City's comprehensive resiliency program designed to help keep New Yorkers safe during extreme heat, the Administration has prioritized the *NYC °CoolRoofs* program in the heat-vulnerable areas of the South Bronx, Central Brooklyn, and Northern Manhattan to conduct strategic outreach to owners over the coming years. This successful program provides local jobseekers with training and work experience to install reflective rooftops. Cool roofs reduce roof temperature, helping cut carbon emissions by transferring less heat into buildings, which in turn help reduce energy consumption and wasted heat from air conditioning. In addition, cool roofs extend the lifespan of rooftops and HVAC equipment, contribute to the thermal comfort of building residents, and when clustered, can provide a cooling effect to surrounding areas. *NYC °CoolRoofs* offers cool roof installations at no cost or low cost to affordable housing, nonprofits, hospital and community centers. To date, almost 10 million square feet of rooftop have been painted.

In sum, requiring that new roof construction incorporate a combination of sustainable roofing solutions as described, would allow developers to install cool roofs and solar or green roofs where it makes most financial and logistical sense. Moreover, adding these features to a building before it is constructed can ensure that the structures are built into the design of the property.

II. PROPOSED LEGISLATION

Today's introductory bills align with Administration climate goals, and so we are pleased to testify in general support of them.

Introductions 141, 276 and 1032
The Administration supports efforts to expand green and blue roofs, cool roofs, solar systems, or a combination thereof on commercial and residential buildings. We support limiting these efforts to new construction since at this stage buildings can be designed more effectively to accommodate the heavy structural loads that accompany these systems. We recommend that all new buildings incorporate cool roofing surfaces regardless of roof type and green roof or solar photovoltaic generating systems or both. Property owners should have the flexibility to choose the climate-positive roofing solution most suited to the building, while including green and cool roofing elements. We look forward to working with the Council to structure these bills in a manner that is cost-effective for new development, including affordable housing.

Introduction 961
In principle, the Administration supports efforts to encourage green roof construction on existing multifamily buildings. However, the J-51 State enabling legislation allows local legislative bodies to adopt or amend J-51 laws until January 1, 2019, and we respectfully encourage the Council to defer passage of any local law that would involve the program until it is reauthorized as anticipated in this State legislative session.

Introduction 1031
The Administration supports efforts to educate community stakeholders about the benefits of green roofs. We look forward to working with the Council and the Department of Buildings to ensure that such resources are readily available.

Introduction 1317
This bill would codify design and construction standards for large wind turbines. We thank the Council for its partnership on Local Law 105 of 2018, which codified design and construction standards for small wind turbines. We look forward to working with the Council to make sure that the standards being proposed in this bill ensure the safe installation and acoustic performance of large wind turbines.

IV. CONCLUSION
In conclusion, I would like to thank this Committee for its partnership on combatting the impacts of climate change to New York City. We support bills that require green roofs and solar systems for new construction while providing strong incentives for existing building owners to retrofit their roofs where possible. Working together, we are confident that we can strengthen these bills to help us achieve our carbon reduction goals by better utilizing roof space across the city. Thank you for the opportunity to testify. I am happy to answer any questions that you may have at this time.

BROOKLYN GRANGE
63 Flushing Ave Box 116
Brooklyn, NY 11205

City Council Hearing Testimony
Gwen Schantz, Brooklyn Grange LLC
1/28/2019 10:00 AM
Re: Proposed Green Roof Legislation

My name is Gwen Schantz, and I am a Co-Founder and Managing Partner at Brooklyn Grange. I am speaking today as a member of the New York City Green Roofing community to issue strong support for the green roof bills and resolution being discussed today.

Brooklyn Grange is a rooftop farming business, and we have been using green roofs as the basis for urban agriculture since we opened in 2010. We currently operate three rooftop farms located in Brooklyn and Queens, where we grow nearly 100,000 lbs of organic vegetables each year on a total of about 3.5 acres of green roof. In addition to growing food on green roofs, our farms host thousands of annual visitors, including about 8,000 local public school children each year.

Beyond our work as rooftop farmers, Brooklyn Grange's design/build department also installs green roofs throughout New York City. We are strong proponents of green roofs, and we are eager for the leadership of New York City to take a more active role in incentivizing these installations in the name of improving our local environment and public health.

I can't imagine that there is a single person in this room who is opposed to green roofs – we can all agree that they are good for New York. However I anticipate that there will be opposition to the green roof mandates in this proposed legislation, because they might be seen as a burden on developers and the real estate industry, which is so important to our city's economy. But my colleagues and I can speak from experience: green roofs are good for business.

As a self-described progressive environmentalist, I have an atypically positive relationship with real estate developers. These businesses have a reputation for paving over mother nature. But as a green roofing Contractor, I see real estate developers as my partners in building a greener New York City. If a new building displaces a green space, we can restore it by covering the roof with soil and plants. The same goes for 100-year-old factory buildings, like the ones where my farms are located. It doesn't matter what a building is used for, how tall it is, or where it is. Green roofs can go anywhere and bring environmental benefits to any neighborhood. All it takes is an open roof, and a commitment from the people who own and operate the building.

I've had the privilege of designing and building green roofs on large industrial buildings, brownstones, apartment complexes and non-profits' rooftops, and we're currently consulting on a large green roof expansion for the Javits Center. Expansion onto a wide variety of roofs is good for the city and it's a driver of revenue growth for my small business.

As a green roofing contractor, I bring in money by making New York more environmentally sustainable. Last year, my team and I built over 75,000 square feet of green roofs in New York City. Our company received just under $2M in revenue in exchange for this work, and we paid out over $300,000 in salaries and wages to our green roofing team. These projects create green jobs that pay a living wage, and our team is incredibly proud of the work we do together.

The building owners that we serve typically buy green roofs for three reasons: 1) they're good for the environment, 2) they're beautiful, and 3) because they help their buildings meet existing department of buildings requirements. Green roofs help buildings comply with DOB code pertaining to stormwater and roof insulation. I'm even aware of one building owner in Brooklyn who has also used a green roof to insulate his concert hall to meet noise regulations.

Developers are always going to resist new additions to the building code. Luckily, for all of us who live and work in New York, our city has continued to adopt regulations that make this place safer, cleaner and more liveable. In the long run, these new rules are good for business. Legislation that mandates new buildings to include green roofs will pay off for everyone.

This city was once known for its airless tenements, for unbreathable brown air and for toxic rivers. Building code improvements made in the name of health and safety have changed all of that, and the real estate community has thrived as a result of - not in spite of - these improvements.

I consider myself incredibly lucky to work so closely with nature and also live in New York City. I don't have to choose between green space and business, and neither do you. Every building has a roof, and green roofs enable us to have both development and green space. Mandatory green roof legislation and stronger green roof incentives will make New York's air cleaner, and reduce summer heat waves. It will make our beaches and rivers more swimmable and fishable, and it will help us show the world that New York is not only the best city there is, but it's also the greenest.

Thank you for this opportunity to speak today.

ADDITIONAL INFORMATION AND TECHNICAL RECOMMENDATIONS

Int 0141-2018 : Requiring that the roofs of city-owned buildings be partially covered in source control measures.
RECOMMENDATION: Initially target large roofs that have recently received or are due for roof replacements (waterproofing membranes). Ideally installations will include 4-6" soil depths and mixed native perennial plantings to increase efficacy of systems and support a wider diversity of wildlife.

Int 0276-2018 Requiring that the roofs of certain new buildings be partially covered in plants or solar panels.
RECOMMENDATION: This measure should apply to all new buildings, and require coverage of at least 50% of net available roof area.

Int 0961-2018 Extending J-51 benefits to owners of multiple dwellings for green roofs.
RECOMMENDATION: Exemption should include costs of engineering assessments, architectural work, permit fees and all "soft costs" as well as material and installation costs.

Int 1031-2018 Posting information regarding green roofs on the website of the office of alternative energy.
RECOMMENDATION: Include links to DEP Green Infrastructure Grant Program, and information of different types of green roofs (intensive, extensive, agricultural, native plants, etc), and associated benefits, costs and weight loads for each type.

Int 1032-2018 Requiring that the roofs of certain buildings be covered in green roofs, solar panels or small wind turbines.
RECOMMENDATION: As regards green roofs, this measure should apply to all new buildings, and require coverage of at least 50% of net available roof area. Please note that certain green roof and solar installations are mutually-beneficial and can be co-installed.

Int 1317-2019 Large wind turbines. This proposed legislation would amends the Administrative Code of the City of New York Section 1.
NO COMMENT.

T2019-3715 Studying the feasibility of implementing solar-ready measures for commercial buildings.
NO COMMENT.

Res 0066-2018 Increase the real property tax abatement for the installation of a green roof to $15 per square foot.
RECOMMENDATION: Create support systems in the Department of Buildings (or whatever agency is charged with overseeing this program) to usher building owners through the process. This program was under-utilized in the past due to excessive red tape and would be more effective as an incentive if the process is more streamlined.

ADDITIONAL NOTE REGARDING WOODEN ROOFS

FDNY code and 2014 NYC Building Code Section 1507.16 (Green Roof Systems) require that green roof designs conform to ANSI/SPRI VF-1 section 3.1. and FM DS 1-35 Green Roof Systems. FM standards DS 1-35 Section 2.2.11 (Supporting Structure Item 4) Reads: "Do not install green roof systems on structural deck materials other than structural concrete or metal."
RECOMMENDATION: New York City should specify that green roofs are allowable on buildings with wooden roof decks, so long as they comply with other aspects of the FDNY code and are stamped by a licensed Structural Engineer to ensure that the building's roof deck can support any additional loads.

ADDITIONAL NOTE REGARDING ESTABLISHING GREEN ROOF MANDATES FOR PUBLIC, RESIDENTIAL AND COMMERCIAL BUILDINGS
Several other cities worldwide have tested similar legislation, and have learned lessons over the course of several years of application and enforcement of these laws.
RECOMMENDATION: Toronto is the best-tested and most successful model of these kinds of legislation, and it has a similar climate to New York's. It is recommended that New York's legislation be modeled after Toronto's most current green roof mandates.
Toronto Contact information:
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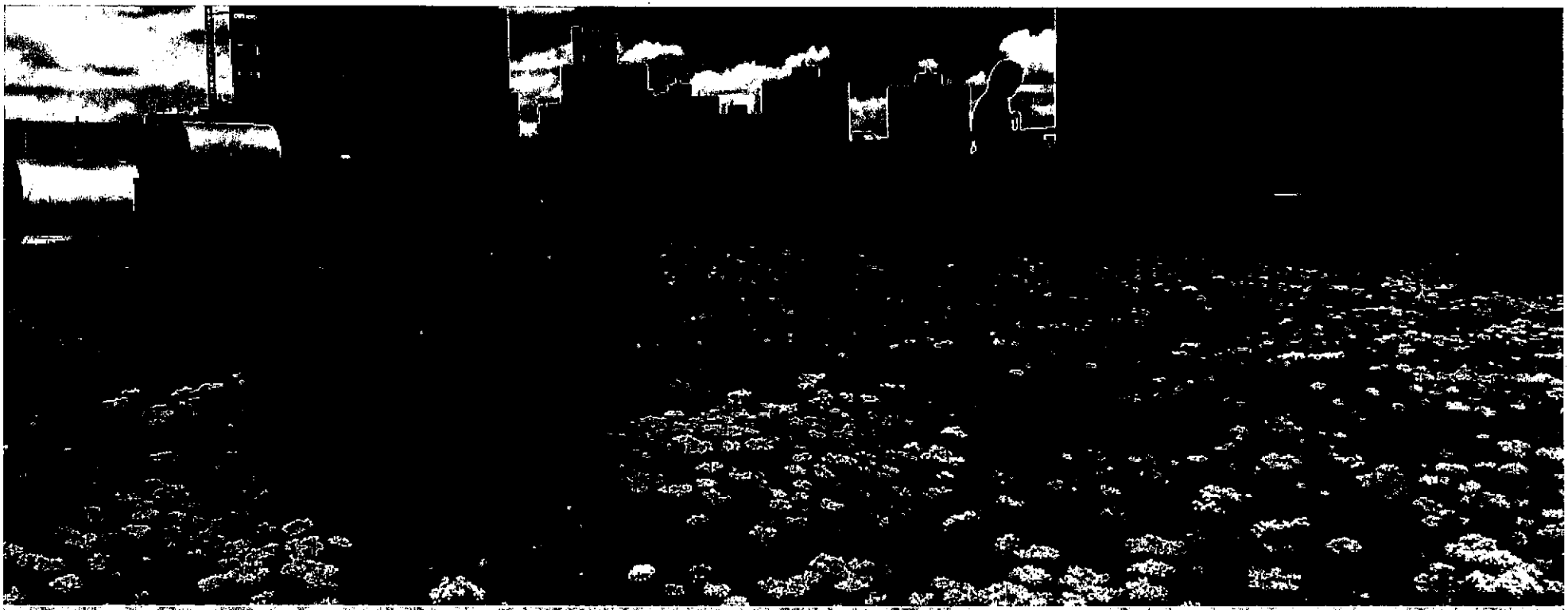
ADDITIONAL NOTE REGARDING REBATES FOR SEWER BILLS TO HELP OFFSET MAINTENANCE COSTS FOR GREEN ROOFS
Ongoing maintenance costs of green roofs could be considered onerous to building-owners, particularly for roofs that include deeper soil and more environmentally-beneficial plant mixes, such as native plants.
RECOMMENDATION: Buildings with green roofs could get a sewer bill rebate or discount corresponding to the size of the green roof. These savings, unlike the tax abatement or grant program, would be continual, and help to offset the ongoing costs of roof maintenance. This could help to incentivize building owners to install more environmentally-beneficial but higher-maintenance green roofs.

ADDITIONAL NOTE REGARDING THE USE OF CITY FUNDS TO ENCOURAGE GREEN ROOFS RETROFITS THROUGH ENGINEERING AND WATERPROOFING FUNDS
Common deterrents for building owners who hope to pursue the DEP Green Infrastructure Grant include costly structural investigations, which can be reimbursed by the grant program after 1-2 years, as well as waterproofing work for older roofs, which are not covered by the grant program.
RECOMMENDATION: The City of New York may set up a green roof fund, fueled by buy-out fees from developers that opt out of the green roof mandate. This fund could be used to pay structural engineers to investigate roofs for suitability for green roofs, as well as for matching grants for building owners who pursue the green roof grant.



more GREEN ROOFS for NYC

fact pack and policy suggestions

January 2019

BROOKLYN GRANGE
63 Flushing Ave, Unit 116
Brooklyn, NY 11205

Why green roofs?

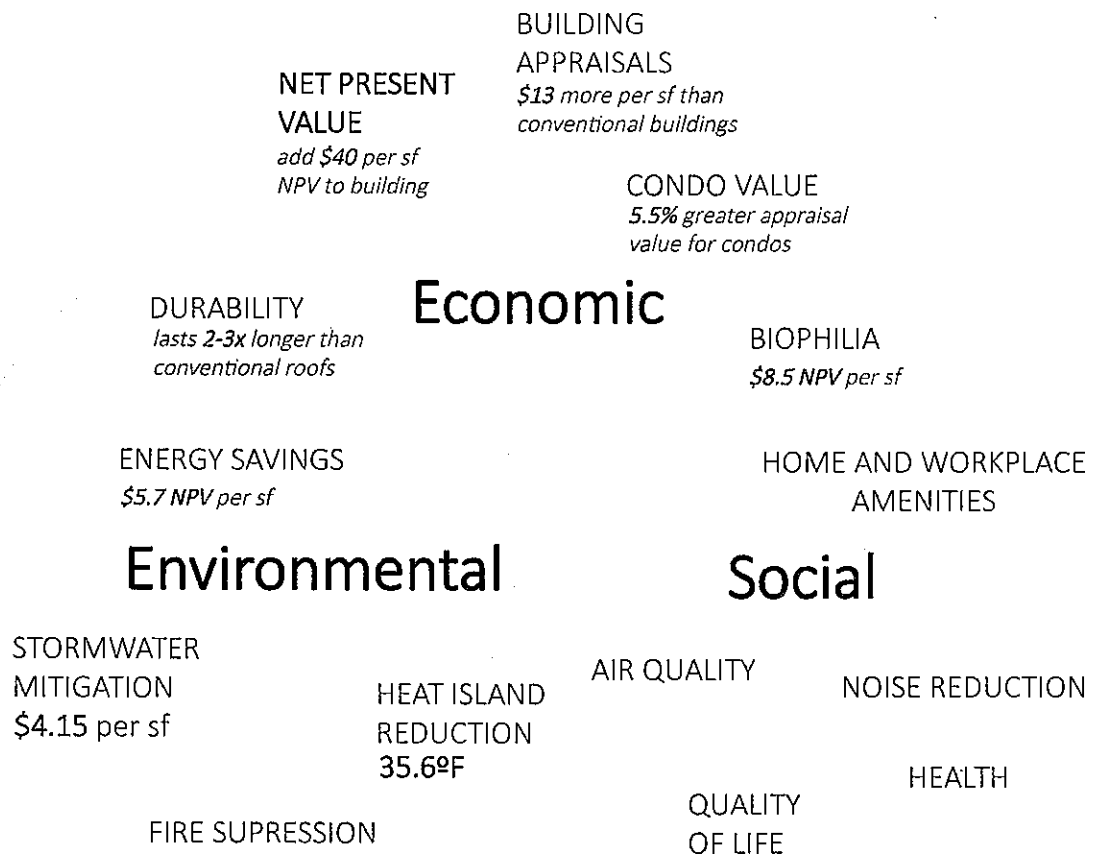
Cities account for more than 70% of global CO^2 emissions, and often contaminate local waterways through Combined Sewer Overflow. Urban dwellers also breathe polluted air and suffer health problems related to extreme summer temperatures.

Green roofs are an impactful, measurable way for cities to improve the quality of life for their inhabitants while combatting numerous environmental challenges. From improved energy efficiency, reduced urban heat island effect, storm water mitigation, improved air quality – the benefits of green roofs in cities are extensive.

NYC City Council Member Rafael Espinal is preparing a bill to mandate green roofs, leading the charge for NYC, potentially joining a host of pioneering cities in the world that are addressing health and environmental issues head-on through legislation that promotes green roofs.

This document summarizes some facts about green roofs, and insights from the green roofing community in New York City, as well as offering potential policies to include in the new Green Roof Bill.

the benefits of green roofs are clear.



Sources:
San Francisco Living Roof Cost-Benefit Study Report ARUP Report SFLivingRoofCost-BenefitStudyReport_060816.pdf

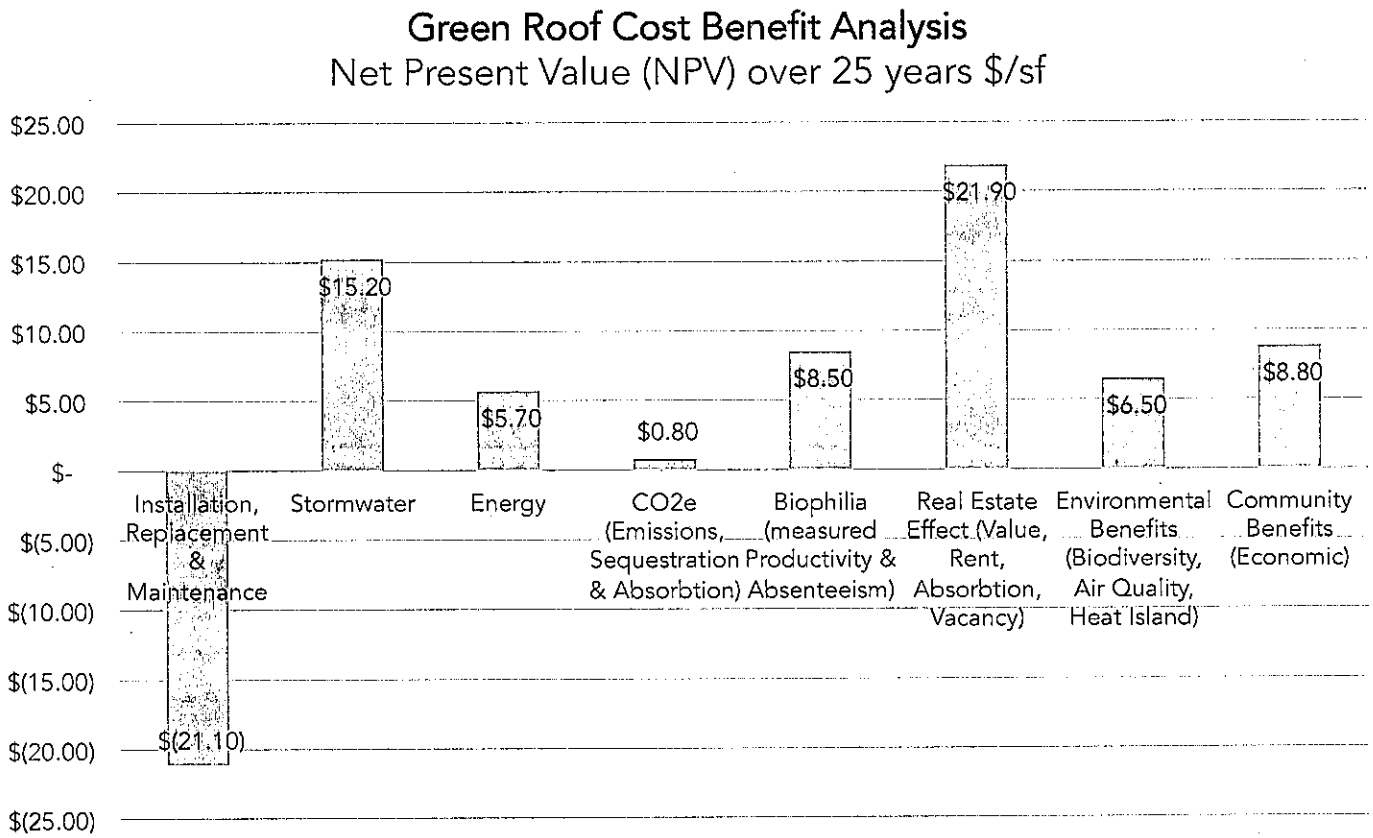
a 20,000sf

green roof

will generate over

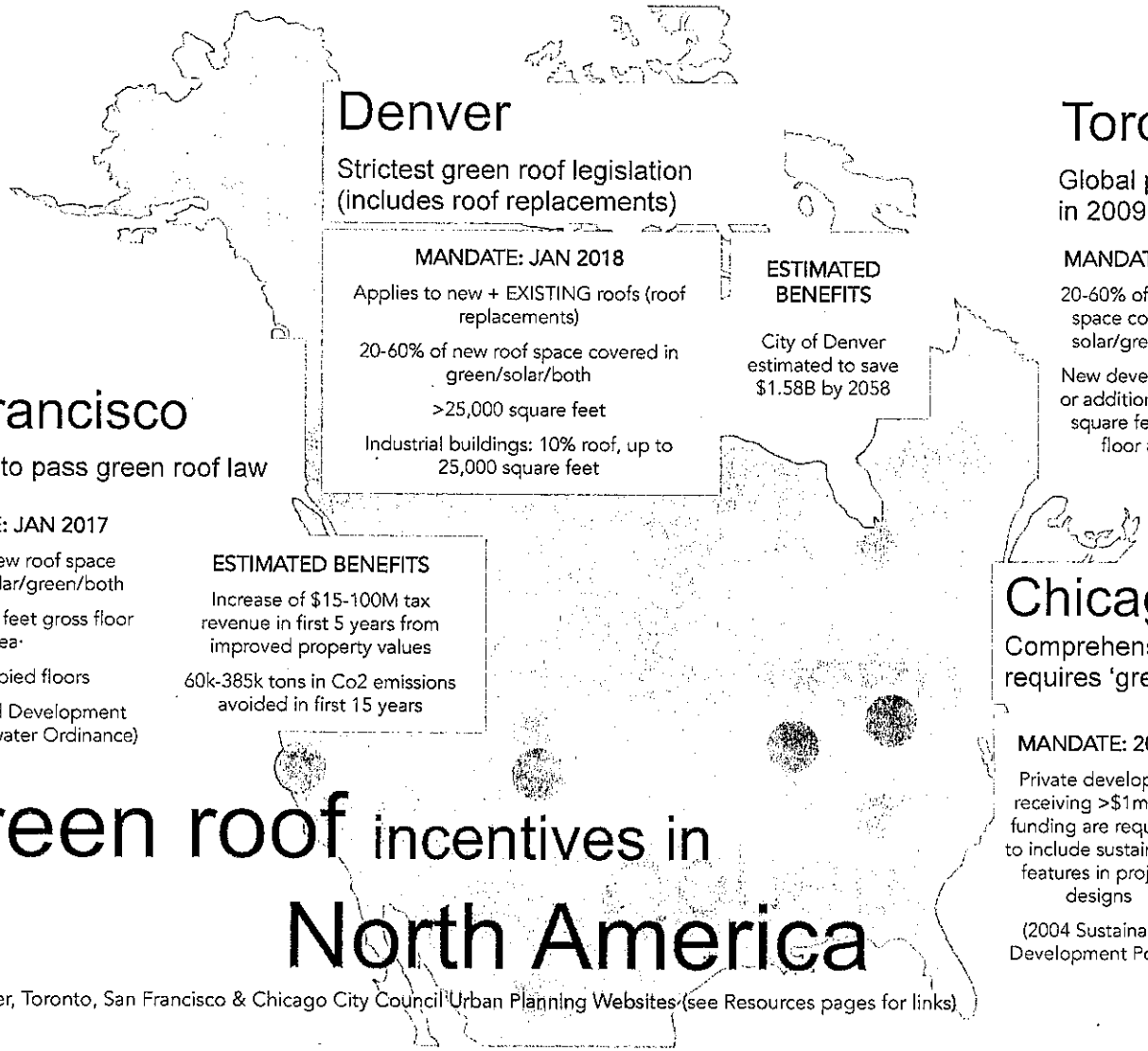
$500K

NPV over 25 years



Source: SFLivingRoofCost- BenefitStudyReport 2016

green roof incentives in North America



Denver

Strictest green roof legislation (includes roof replacements)

MANDATE: JAN 2018

Applies to new + EXISTING roofs (roof replacements)

20-60% of new roof space covered in green/solar/both

>25,000 square feet

Industrial buildings: 10% roof, up to 25,000 square feet

ESTIMATED BENEFITS

City of Denver estimated to save $1.58B by 2058

Toronto

Global pioneer, passed green roof legislation in 2009

MANDATE: 2009

20-60% of new roof space covered in solar/green/both

New developments or additions >2,000 square feet gross floor area·

ESTIMATED IMPACT

>10M litres of storm water diverted annually

>200K KW Hours of energy savings from reduced air conditioning annually

>40 tonnes of greenhouse gases avoided annually

>12 years new employment generated

San Francisco

1st city in US to pass green roof law

MANDATE: JAN 2017

15-30% of new roof space covered in solar/green/both

>2,000 square feet gross floor area·

<10 occupied floors

Large or Small Development Project (Stormwater Ordinance)

ESTIMATED BENEFITS

Increase of $15-100M tax revenue in first 5 years from improved property values

60k-385k tons in Co2 emissions avoided in first 15 years

Chicago

Comprehensive Sustainability Policy requires 'green design'

MANDATE: 2004

Private developers receiving >$1m city funding are required to include sustainable features in project designs

(2004 Sustainable Development Policy)

ESTIMATED IMPACT

509 vegetated roofs within the City of Chicago

5.5M square feet of green roof coverage

>500,000m^3 absorbed rainwater per year

Sources: Denver, Toronto, San Francisco & Chicago City Council Urban Planning Websites (see Resources pages for links)

Copenhagen

World leader in sustainable cities

MANDATE: 2010

Buildings with flat roofs (<30-degree slope) must have green roofs

ESTIMATED BENEFITS

~40% Reduction in Co2 emissions (along with other green city initiatives)

>20,000m² of green roofing and growing annually

Basel & Zurich

~30 years of green roofing, longest standing green roof policy

MANDATE: 1991

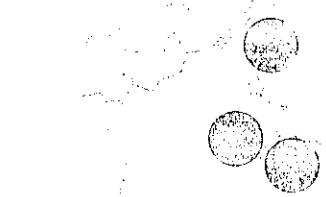
All flat roofs which are not used as roof terraces to be 'greened' when constructing new housing developments or renovating older ones

ESTIMATED BENEFITS

Price of green roof installations reduced from from $20/sq foot to $3/sq foot

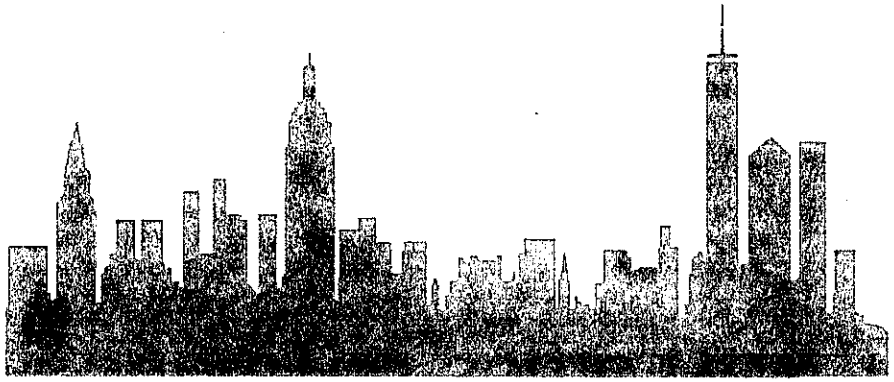
Basel: 4 million kWh of energy is saved each year

Copenhagen is on track to be the first carbon neutral city in the world by 2025



Sources: Copenhagen and Switzerland Urban Planning Websites (see Resources pages for links)

Existing green roof incentives in New York City



1 NYC DEP Grant program

Grant program for eligible private property owners for green infrastructure projects (e.g. blue roofs, rain gardens, green roofs, etc.) that manage at least 1" stormwater runoff from the contributing area.

Grant funding for roofs greater than 3,500 sf (for soil depth >4").

- $30/sf for roofs <20,000 sf,
- $20/sf for roofs I>20,000 sf.

2 NY State Tax abatement

One-year tax abatement, or tax relief, of $5.23 per square foot (up to $200,000 or the building's tax liability, whichever is less).

EXPIRED MARCH 2018

Expires in March 2018.

Note: Property owners can apply for the Grant OR the tax abatement but are not eligible for both

We surveyed some New York green roofers…

"A ratio of green roof square footage to vertical space in new developments. Regarding retrofits to existing buildings, if financial support was offered for engineering assessments, I could see many people being interested in adding green roof space to offset energy outputs."

"It's time for a public campaign to share all the data that's been collected on NYC green roofs, so that the public has a better understanding of why we all will benefit from this sort of legislation."

"I think increased incentives, such as expediting paperwork and permits will be more effective and cause less opposition. Also, property owners who currently receive a tax rebate for one year for installing a green roof, should get tax rebates EVERY year as long as they still have their green roof. Installing and maintaining a green roof is reducing air and water pollution for all New Yorkers not just the owners. This is a SERVICE they should be compensated for."

"I believe these would be the most effective ways to get green roofs installed in NYC:
1. Charging separate fees for the disposal of sewage and storm water offers a second opportunity for financial incentives.
2. Expedite all DOB permitting for developers/ retrofits if a significant sized green roof is included in the plans."

"The law should require a minimum but not be too narrowly programmatic or restrictive. DOB needs to be on board from the get-go so roadblocks aren't an issue because the more green roofs we have the better the benefits (scale is everything)."

"Green Roofs should be installed by a certified industry professional, such as a Green Roof Professional, on a roof that has been assessed by a structural engineer. To maximize the benefits of green roofing legislation, we need to make sure that the roofs are installed well and built to last."

Respondents: New York City Department of Environmental Protection; Brooklyn Grange LLC; Alive Structures, Highview Creations, NYGR, Brooklyn Green Roof LLC

We surveyed some New York green roofers…

Main barriers facing green roof development:

- *Delays in permitting and financing for projects*
- *Lack of funds and challenges for re-roofing / retrofits*
- *Lack of remedies for insufficient loading capacities*
- *Ancillary costs being too high*
- *Architect fees associated with DOB filing*
- *DEP GI Grant restrictive covenant*
- *(adds 2 years to planning & implementation)*
- *Engineering assessments*
- *Roofs <3,500sf are no longer Eligible for GI Grant*

Other organizations or types of organizations that could be advocates for this new law?

- *Stormwater and energy reduction stakeholders*
- *Clean Water Advocates, Nature Conservancies, Job Training Organizations, Environmental Educators.*
- *Solar industry, community environmental organizations*
- *Stormwater Engineers focused on Green Infrastructure as a compliment to Grey Infrastructure, Architects, Landscape Architects.*
- *The LEED green building rating system recognizes green roofs as beneficial, so organizations such as the AIA, the USGBC, the ASLA would all advocate in its favor.*
- *DOE and private schools, higher education institutions, Audubon societies*

Main area of concern for people who might oppose the law?

- *Developers will oppose it because it presents additional cost for the construction.*
- *If the law wasn't written to safeguard the building occupants from structural failure, it would be a concern.*

Respondents: New York City Department of Environmental Protection; Brooklyn Grange LLC; Alive Structures, Highview Creations, NYGR, Brooklyn Green Roof LLC

what we need in NYC

1: green roof mandate

+ Green roofs on all new developments and roof replacements (precedent: Denver)

+ Mandate threshold of >2000 sf gross building floor area; must cover >50% of available roof area in green/solar/both (precedent: San Francisco)

+ "Cash in lieu" payment of $100 per sq/foot to buyout mandate, funds are collected for other city Green Roof funding programs (precedent: Toronto)

2: special funds

+ Fund to pay for waterproofing/roof replacements for projects approved for DEP GI grant

+ Fund to pay for engineering investigations for potential green roof projects

+ Mini grant program for projects under 1,000 sf, plus city engineering and design support for homeowners and small businesses.

3: other incentives

+ Building permitting (DOB) process is expedited for buildings outside of the mandate that are incorporating green roofs (precedent: Chicago)

+ Sewer bill reduction for all building owners with green roofs (precedent: Washington DC)

4: remove barriers

+ Amend Fire Dept. requirement that green roofs must comply with FM DS 1-35 so green roofs can legally be built on wooden roof decks

5: educate & empower

+ NYC.gov website with green roof information about incentives, grants, regulations and technical advice

Sources: International benchmarks; Green Roofer Survey Results March 2018

resources

San Francisco:
ARUP Report SFLivingRoofCost-BenefitStudyReport_060816.pdf

Toronto:
Green Roof Grants and Incentives: https://www.toronto.ca/services-payments/water-environment/environmental-grants-incentives-2/green-your-roof/

Chicago:
https://www.cityofchicago.org/city/en/depts/dcd/supp_info/chicago_green_roofs.html
Sustainable City Pol.: https://www.cityofchicago.org/city/en/depts/dcd/supp_info/sustainable_development/chicago-sustainable-development-policy-update.html

Copenhagen:
https://www.kk.dk/files/green-roofs-copenhagenpdf/download

Zurich & Basel:
http://www.urbangreenbluegrids.com/projects/zurich-switzerland/

Denver:
http://www.denvergreenroof.org/the-basics/
Ordinance: http://www.denvergreenroof.org/wp-content/uploads/2017/12/Green-Roof-Ordinance.pdf

New York:
GI Grant Program: http://www.nyc.gov/html/dep/html/stormwater/nyc_green_infrastructure_grant_program.shtml

Phildelphia:
Green Roof Guidelines https://www.pwdplanreview.org/manual/appendices/f.-design-guidance-checklist/f.9-green-roofs
Green roof Tax Credit: http://phillywatersheds.org/doc/Green%20Roof%20Tax%20Credit_2016%20Fact%20Sheet.pdf

Washington, DC:
Stormwater bill discount: https://doee.dc.gov/riversmartrewards

Hello, my name is Patrick Weisel. I hold a Master's degree in Landscape Architecture from the City College of New York, and I'm employed as a Senior Project Manager with Being Here Landscape Architecture & Environmental Design. I'm here today to express my support, my employer's support, and our client, The Nicotra Group's, support for Resolution 0066-2018 and Introduction 1032-2018.

My client, the Nicotra Group, the largest commercial landlord on Staten Island, will soon install what I believe is the first urban rooftop farm planned for new construction in New York City. The 30,000 square foot green roof will sit atop Corporate Commons Three, the Nicotra's latest Class A office building now under construction on Staten Island's West Shore.

Richard and Lois Nicotra are no strangers to environmentally-friendly development — they won the Mayor's Zero Waste Challenge Award for reducing the most waste in the entire city, they founded the Bloomfield Conservancy to preserve woodlands & wetlands throughout the Corporate Park of Staten Island, and they're the only developers in New York City to win the Arbor Day Award. Yet, they are business people who need to turn a profit, so their initial interest in installing a green roof, was not to benefit the environment, but to locally grow fresh produce for their 1000 seat banquet hall at their Hilton Hotel. But as they began their quest for a freshly-picked salad tomato, they didn't know their green roof would engage so many others in their Staten Island community and New York City.

The city, itself, was their first green roof partner through DEP's Green Infrastructure Grant Program, in which, the Nicotras saw an opportunity for funding to solidify the project, while DEP saw an opportunity to sustainably manage storm water.

The Nicotras then connected with the city's leading expert in rooftop farming, Brooklyn Grange, who will install and manage the rooftop farm. Corporate Commons Three will become Brooklyn Grange's latest farm.

A charter school, Lavelle Preparatory, and a vocational food service school will occupy three of the new building's eight floors. Both see valuable opportunity in having a working farm upstairs to teach children and young adults where food comes from, and how to sustainable grow it in an urban environment.

Tenants and workers throughout Corporate Commons will have an opportunity to rent a green roof event space, or purchase fresh produce to take home for better nutrition.

So, an idea that began as a fresh tomato in a bride's salad, also became a city's storm water management tool, an urban farmer's field, a school's educational opportunity, an event space, a farmers market — and who knows what more as the green roof grows in the community's imagination.

You will surely hear today about the many important environmental benefits of green roofs. We also want to underscore their ability to grow and benefit communities. We can only hope this new legislation will create many more community-building green roofs throughout New York City, like Corporate Commons Three.

Thank you for your time.

SWIM Coalition

Stormwater Infrastructure Matters

Testimony of Stormwater Infrastructure Matters (SWIM) Coalition
Before the New York City Council,
January 28th, 2019

RE: Intro 276,1032,141,961,1031 and Resolution 0066-2018

My name is Julie Welch and I am the Program Manager for the Stormwater Infrastructure Matters (SWIM) Coalition. SWIM is a diverse group of more than 70 community-based, citywide, regional and national organizations, water recreation user groups, institutions of higher education, scientists, citizens and businesses who advocate for the health of New York City's vital waterways.

Thank you to the many forward thinking city council members for introducing the proposed legislative package and resolution for the renewal and revision of the green roof tax abatement. We appreciate the opportunity to offer the following comments.

Since our founding in 2007, SWIM has advocated for green infrastructure solutions in every borough to capture, filter and slow the stormwater runoff that can overload the NYC sewer system (even when it only rains as little as a tenth of an inch) causing the combined sewer system to discharge untreated sewage and polluted stormwater into our waterways. Green infrastructure, or vegetated systems that manage stormwater at the source, is a cost-effective and sustainable approach to reduce water pollution.

Stormwater runoff and sewer overflows are the largest ongoing source of water pollution in New York City.* Nearly 20 billion gallons of untreated sewage and polluted stormwater flow into our waterways every year. The waters in which many New Yorkers fish, wade, kayak and boat are often not safe to touch (due to pathogens from sewer overflows and the polluted stormwater from our streets) after heavy storm events. Green infrastructure solutions employed citywide can capture, filter, slow and ultimately reduce the amount of stormwater runoff that causes sewer system overflows.

Nearly 72 % of New York City's landmass is impervious. Under the CSO consent order between the City and the State, the NY State Dept. of Environmental Conservation has mandated that NYC green 8,000 of the city's 150,000 impervious acres by 2030. Nearly 50% of these 8,000 acres are privately owned property. To date, the city has greened 467 acres, mostly in the public right of way.

**From NRDC/NYU Stern Center for Sustainable Business Report, August 2017: Catalyzing Green Infrastructure on Private Property*

As noted in a recent Op Ed in Crains magazine, the city's 62 square miles of rooftops present a unique opportunity for installing multi - purpose vegetated green spaces. The flat and often barren rooftops of NYC are untapped spaces that are ripe for green infrastructure investments.

Green roofs provide many benefits beyond stormwater management. Vegetated rooftops can help property owners save on energy costs, as green roofs provide an extra layer of insulation. They are also proven to double the lifespan of the roof, saving money for property owners over time. Green roofs are beneficial to the their surrounding communities because they mitigate Urban Heat Island Effect and filter the air, and are beneficial to the enitre NYC ecosystem because they provide vital pollinator and wildlife habitat and sequester carbon dioxide, a greenhouse gas that contributes to climate change. Their benefits are numerous[1], and are particularly important in environmental justice communities that bear a disproportionate burden of noxious facilities, poor air quality, and lack access to environmental amenities, such as green spaces.

We commend the City Council Members for introducing legislation to require green roofs on certain buildings on both private and public properties citywide. This package of bills moves the city in the right direction towards making our city healthier and more sustainable by requiring private property owners and city owned buildings to install more green infrastructure.

Before fully supporting these bills (Intro 276,1032,141), we need more details, and suggest that the City Council review existing green roof legislation in other cities. There are several cities in North America that have green roof laws and incentives that could provide a framework to further develop NYC's green roof laws. Toronto had the first green roof law in 2009, and may have some lessons to share from their ten years of green roof policy experience. A table of green roof policies in San Francisco, Toronto, Denver and Chicago are included at the end of this testimony for your reference.

Specifically, in regards to the proposed legislation, we have the following questions:

- Under Intro 1032, will existing buildings be required to retrofit their rooftops? This will be a significant burden for existing buildings, and should not be required without financial assistance. Or will the buildings be required to install green roofs only when roof replacement or other significant renovations are planned?

[1] Visit https://greenroofs.org/about-green-roofs/ to see a comprehensive list of green roof benefits.

- Will or should there be a minimum size threshold for Intros 141, 276 and 1032? Smaller green roofs will cost more per square foot, thus requiring green roofs may be a significant burden for small private properties and an inefficient use of city funding for small city-owned buildings. Other cities have instituted similar bills with minimum size thresholds; San Francisco's Better Roofs bill requires a green roof or PV on new buildings greater than 2,000 square feet. Toronto's requirement is for green roofs on new buildings greater than 21,000 square feet, and in Denver greater than 25,000 square feet.
    - Under the NYC Department of Environmental Protection's (DEP) Green Infrastructure grant program, green roof projects must be larger than 3,500 square feet to be eligible to apply for funding. We encourage City Council to take this into consideration and establish a minimum threshold for green roof requirements, and/or pair this legislation with financial assistance for smaller buildings.

- Under Intro 141, will this regulation be triggered when a capital improvement project is slated for the building or will it require all city owned buildings to comply immediately regardless of any existing capital plan? If it is to align with a capital improvement project, will there be a minimum amount of investment that will trigger this requirement? We are uncertain if a $35,000 capital project should trigger a compliance project that could costs ten times more than that.

- Lastly, under Intro 141, which agency will be held responsible for the cost of compliance for retrofitting city-owned buildings? The requirement is directly related to stormwater management, which is under the purview of the Department of Environmental Protection (DEP). As you know, DEP is already making significant investments in green infrastructure and other water quality projects. We believe that other city agencies should be responsible for managing stormwater generated by their facilities, but expect that DEP expertise will be needed to fully implement this requirement (i.e., assistance with development of the plans). We would like to better understand the compliance costs so that we know the potential fiscal impact of this requirement on the City's budget.

We are concerned that without adequate incentives for green roof installation, the proposed City Council bills will only lead to solar panel and wind turbine installations. Renewable energy is a more mature market and offers well-proven incentives compared to green infrastructure. In addition to tax abatements at the city and state level, solar adopters receive incentives through contractors that install solar panels, and are also able to access financing through on-bill recovery loans and smart energy loans. This network of financing, incentives and contractors is not as well developed for the green roof industry in New York, and desperately needs more attention. With the existing renewable engergy incentives so well established, developers and private property owners are more likely to choose solar and wind.

While renewable energy installations on roofs is a highly worthy endeavor, the proposed bills offer an opportunity to further advance the green roof market with a potential for job development. We believe it is critical that we re-evaluate and strengthen existing incentives as well as create new incentives for green infrastructure. Posting all pertinent Green Roof information on the Office of Alternative Energy website as proposed in Intro 1031 will help develop the network of and connect people to the full set of resources they need.

Currently, green roof adopters in New York City have two avenues for financial assistance. The NYC DEP green infrastructure grant program, a well-intended program that reimburses property owners (in the combined sewer areas of the city) for the cost to install vegetated roofs, presents many challenges for most private property owners. DEP is developing another green infrastructure incentive program, it will only be available for buildings larger than 100,000 square feet, leaving smaller property owners with meager options. There is also a Green Roof Tax Abatement, which has hardly been utilized due to the burden of paperwork that comes with it for too little tax relief and a one-year abatement. Council Member Levin's resolution to increase the Green Roof Tax Abatement to $15 per square foot is absolutely necessary to incentivize green roof adoption. We suggest strengthening the incentive by allowing the abatement to be valid for multiple years, instead of a one-time tax abatement.

We would also like to work with the City Council to develop a green roof tax abatement credit transfer program so that non-profit organizations, particularly those who serve low income residents, can take advantage of the green roof tax abatement by transferring credits to an entity that finances green roof installations. Green roof incentives and subsidies that are specifically designed to assist low income communities of color, while preventing gentrification that can result from greening initiatives, are needed for equitable distribution of green infrastructure in New York City.

To achieve more green roofs in New York City, we need a combination of carrots and sticks to encourage green infrastructure investment by private property owners without creating a burden on small property owners. This package of green roof bills represents strong requirements but will need to be accompanied by a robust set of incentives for successful implementation of green infrastructure. Without it, these bills may only accomplish solar and wind adoption, and NYC's sewer system will continue to be over-burdened, and our waterways contaminated, near every time it rains as little as one tenth of inch. As sea levels rise and storm frequency and intensity increase, these polluted waterways will flood into our streets and buildings presenting severe health risks and property damage. Green roofs and a full array of green infrastructure solutions employed throughout the City now, can provide a layer of protection that has been stripped away by overdevelopment. The proposed legislation bills will help us get there so long as the incentive programs are in place to support them.

Attachment: Table of Green Roof Policies in Other North American Cities

Name of Program	Roof requirement	% of available rooftop	Building size	Activities triggering regulation	Type of property	Incentive type
San Francisco Better Roofs	Green roof or PV or combo	15-30%	>2,000 sf (and <10 occupied floors)	New construction	commercial, institutional, residential	Required
Toronto Green Roof Bylaw	Green roof	20-60%	>21,000 sf	New construction	residential, industrial, commercial and institutional	Required
Denver Green Buildings Ordinance	Green roof	-	>25,000 sf	New construction	All	Required
Chicago Zoning Ordinance	Green roof	>50%	-	New construction	All	FAR bonus

NYC WILD FLOWER WEEK

www.nycwildflowerweek.org

Testimony Regarding Hearing on Bills Related to Green Roofs Before the New York City Council Committee on Environmental Protection

Regarding Int. No. 141, Int. No. 276, Int. No. 961, Int. No. 1031, Int. No. 1032, Res. No. 66

January 28, 2019

Statement of Mariellé Anzelone
Urban Ecologist and Executive Director of NYC Wildflower Week

Committee Chair Constantinides, Distinguished Members of the Committee, and Guests: My name is Mariellé Anzelone, and I am an Urban Ecologist and the Executive Director of NYC Wildflower Week, a nonprofit advocacy organization that connects New Yorkers to the nature in their backyards through free cultural programming throughout the five boroughs. I thank the members of the Committee for this opportunity to testify.

I am here to speak in support of the proposed green roof legislation and underscore the immensity of the work that still needs to be done.

The United Nations is calling for a new global accord on biological diversity. In 2020, countries from around the world will convene in Beijing to establish new goals for the U.N. Convention on Biological Diversity. The result will be an international pact to fight the global extinction crisis, equivalent to the Paris climate accord.

Planetary loss of biological diversity is one of the greatest challenges of our time and requires urgent local action. The success of the U.N. agreement will hinge on the involvement of cities to leverage their resources, innovation, and influence. New York City should lead the fight with an expansive and forward-thinking urban ecological agenda.

We need to ensure the resiliency of the City's natural systems by prioritizing native species, combating habitat loss, increasing access to nature in underserved neighborhoods, and expanding the ecological economy. In doing so, New York City would set a global benchmark as a leader in resilient, livable cities worldwide.

Somewhere in the evolution of cities, it was decided that nature should be beaten back to its edges. Banished to the margins, wildlife is largely peripheral to our urban lives.

In New York City nature is absent by design. Instead of bluebirds outside our windows, we have to seek them out in fields. Instead of violets outside our doors, we have to find them in forests. Why can't we have both? There are myriad ways to weave wildness back into the fabric of our neighborhoods, but such endeavors are not prioritized or funded. If we continue to define cities narrowly, as only hardscapes and humans, nature loses. So do we.

If urbanites can't easily get to parks and open space, then park-like environments and green spaces must be brought to them. In the process, urban infrastructure is recontextualized as a civic asset.

One avenue towards this goal is greenroofs. Rooftops can be transformed through the addition of wildflowers, grasses, and shrubs. Planting native species will provide food for a diverse array of wildlife — pollinators including native bees, butterflies, beetles, and flies, other insects such as ladybeetles and praying mantises, as well as birds that feed on berries and seeds. Research shows that native plants generally support many more insects and birds than nonnative species. Installed throughout the city, such greenroofs will provide connective "stopover" habitats for migrating songbirds and butterflies like the Monarch.

And while New York City has legislation supporting the aggressive invasive honeybee, there is no legislation that supports our wild pollinators. Native bees have lived here for thousands of years since the glaciers retreated and include plasterer bees, halictid bees, large leaf-cutting bees, miner bees, bumble bees, and carpenter bees.

Lack of sufficient habitat is an important threat. Although gardens may be plentiful and filled with flowering plants, these may not provide the right nectar or pollen for certain specialist bee species. Nesting habitat may not be sufficient or close enough to foraging sites. In addition, many of the relatively open habitats on which bees depend, such as old fields or abandoned lots, are being developed or replanted with trees, which do not support bee populations. Parks and garden areas that do exist are often highly groomed and thus lack the nesting resources or undisturbed areas necessary to support uncommon species. Other threats to native bees include pesticides, air pollution, and diseases.

New York City must take a more active role in recognizing and encouraging the retention of its native biodiversity. In other places around the world, across the country and in the region there are already initiatives that recognize and protect local biodiversity. In a time of global biodiversity awareness, New York City is being left behind.

At this time I would like to call your attention to the *New York Times* Magazine from last month. The article highlighted the so-called "insect Armageddon", the alarming collapse of insect populations around the world. This global devastation of wild insects is also happening here, in our city. Legislating the use of native plants on green roofs is a good first step, but there is still much more work that needs to be done.

Thank you for this opportunity to testify.

ALIVE
STRUCTURES

TESTIMONY: Marni Majorelle, Founder Alive Structures

Committee on Environmental Protection, January 28th
Re: Green Roof Legislation

Dear Councilmembers,

Good Morning and thank you for your attention to this important subject. With the many benefits of green roofs already emphasized, I will focus my testimony on the ways **mandatory legislation and incentives** should work together to be effective in promoting green roof construction in this city.

New development of over 3,500 SF, major gut renovations, and should be the focus of the green roof mandate. But there should also be significant incentives for smaller and already existent buildings:

- **Green Permitting** - expediting paper filing and permitting within the DOB if a project includes a green roof.
- **Property Tax Abatement** - Property owners who install and maintain green roofs are providing a service to the city, they are cleaning the air, water, providing natural habitat, reducing carbon emission, and more. Therefore every year the property owner should get a tex rebate as long as they are properly maintaining it. And the tax abatement should be more than it currently is, approximately $5 per SF of green roof, it should be closer to $15. It should also be easier to process this paperwork.
- **Access to Free Engineering Analysis** - the City should provide access to engineers that can give a basic structural assessment to building owners who are considering installing a green roof. This step defines the feasibility and design of the project.
- **Reduction in Water Bill** - Property owners should have reduced water bills if they have a green roof.

Thank you!

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718-902-5243

FOR THE RECORD

January 28, 2019 - M. Annenberg - 900 West 190th ST. Apt. 4B,New York City 10040

Hon Mr. Constantinides,

Two years ago I curated an exhibit called EARTH SOS at a gallery in Chelsea, NY. Dr. James Hansen, former Director of NASA, GISS, was a guest speaker. The show didn't generate any media buzz and I felt that the message of the exhibit was lost – that the time is short and the time is dire to remediate climate change.

In October, the UN's Intergovernmental Panel on Climate Change's Special Report on 1.5 degrees warned us that we have a decade to reduce greenhouse gas emissions drastically. The fourth National Climate Assessment in November, compiled by 13 Federal Agencies, warned of catastrophic economic and ecological consequences.

It is easy to despair when faced with these alarming reports. Your inspiring leadership, however, fills one with hope. I could not have imagined that my city council, led by you, would devise a trifecta of effective bills that aim directly at reducing excessive greenhouse emissions – namely, the bill aimed at buildings efficiency, the bill measuring the feasibility of taking numerous gas fired power plants off line to be replaced by clean energy and now the potential for putting solar panels and green plants on new and existing roofs.

Thank you for ~~our~~ your visionary leadership. I will personally pray that all of these initiatives come to pass as soon as possible. In an era when corruption and indifference reeks from our central government, you are truly a light in the darkness. Thanks again.

Testimony for NYC Council Committee on Environmental Protection
Emily Nobel Maxwell, NYC Program Director, The Nature Conservancy in New York
January 28, 2019

Good afternoon Chairperson Constantinides and members of the Committee on Environmental Protection. My name is Emily Nobel Maxwell and I am the director of The Nature Conservancy's New York City program. The Nature Conservancy is the world's largest conservation organization, and our more than 600 scientists, located in all 50 U.S. states and 70 countries have been working to conserve the lands and waters on which all life depends. The Nature Conservancy runs urban conservation programs in dozens of cities in North America and globally -- our New York City program was one of the first urban programs, and continues to be a leader in the Conservancy as we focus on the important role of nature in urban areas.

We have 90,000 members across New York State, 35,000 of whom reside in New York City. The Nature Conservancy's New York City Program promotes nature and environmental solutions to enhance the quality of life of all New Yorkers. We advance strategies that create a healthy, resilient and sustainable urban environment and are committed to improving New York City's air, land and water that sustain and support the people and nature of this great city. Statewide, we work with government and non-government partners to tackle climate change, protect land and water, sustainably provide food and water, and build healthy cities. We have offices on Long Island, in Western New York, in the Hudson Valley, the Adirondacks, in New York City and in Albany, including a policy team that works with our State Legislature and Congressional delegation to further our mission.

I am here today to express our strong support for the ongoing efforts to green and better utilize rooftops across New York City, to encourage the Committee to advance legislation that will expedite the expansion of green roofs across NYC, especially in the neighborhoods that need them most, and to offer our collaboration to advance such efforts at the City and State levels.

Nature and all things green play a crucial role in the life of NYC. Our rooftops are a largely untapped resource that offer a suite of compelling, multiple benefits to our communities. Green roofs play a role in climate change resiliency, and are essential for adapting to a world that is both hotter, and has more frequent extreme precipitation events. They increase energy efficiency, thus helping the city advance greenhouse gas emissions reduction targets. Green roofs also help to mitigate urban heat island impact by cooling our communities, and they absorb stormwater, thus helping our residents endure extreme weather events including heat waves and rain events, which are increasing in both number and intensity. In the coming decades, these benefits are even more significant. By 2080, the frequency of heat waves is expected to triple, and we expect 1.5 times more extreme precipitation events.[1] Green roof surfaces are projected to be up to 60 degrees cooler than peak temperatures of conventional roofs.[2]

Despite the myriad benefits that green roofs offer, The Nature Conservancy realized that there was no clear picture of how rooftops in NYC were being used. To gain a greater understanding of green roof locations and rooftop utilization, in collaboration with the Green Roof Researchers Alliance, we mapped all green roofs

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[1] New York City Panel on Climate Change 2015 Report

[2] Gaffin, S. R., Rosenzweig, C., Eichenbaum-Pikser, J., Khanbilvardi, R. and Susca, T., 2010. "A Temperature and Seasonal Energy Analysis of Green, White, and Black Roofs" Columbia University, Center for Climate Systems Research. New York. 19 pages.

in New York City. The results are telling and very significant: we are not even close to taking full advantage of rooftop space. The data demonstrates that there is a remarkable opportunity to help achieve climate, community health, and stormwater goals by taking advantage of underutilized rooftops in our City.

Our research found that as of 2016, of the approximately 1 million buildings in the City, less than 750 have green roofs.[3] That means that less than .1% of our buildings have green roofs. Green roof surfaces cover only about 60 acres, of nearly 40,000 acres covered by buildings in NYC. Not only is this a very low percentage of coverage, but our green roofs are not in the areas where they will have the most impact. The bulk of the greened rooftops are in Manhattan, particularly in midtown and downtown, whereas areas identified as the most heat vulnerable, including parts of Upper Manhattan, the South Bronx, and Central Brooklyn, have very few green roofs. We would be pleased to provide the results of our analysis to the Committee.

When looking at the potential options to expand green roofs across our city, it is critically important that the Council affirmatively ensure that these assets reach those areas that will benefit the most. For example, priority watersheds as designated by the Department of Environmental Protection stand to benefit from the stormwater capture that green roofs provide. And, heat vulnerable neighborhoods defined by the NYC Department of Health and Mental Hygiene's Heat Vulnerability Index will also benefit from the efficiency and cooling benefits that green roofs offer. Further, green roofs, particularly those associated with schools, can help provide additional educational and open space in neighborhoods where these resources are squeezed.

The use of green roofs to improve quality of life in urban areas is being implemented globally, and New York City has a clear opportunity to demonstrate leadership in tapping into the power of nature to achieve its climate goals as well as multiple community, environmental, and public health benefits. The Conservancy has developed science and policy expertise and experience with these types of programs at the global, national, and state levels, and we are eager to assist in the further development of policies and initiatives related to the promotion and expansion of green roofs in New York City.

Thank you for the opportunity to testify.

Contact:
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[3] https://zenodo.org/record/1469674

TESTIMONY OF THE REAL ESTATE BOARD OF NEW YORK BEFORE THE NEW YORK CITY COUNCIL COMMITTEE ON ENVIRONMENTAL PROTECTION ON GREEN ROOFS LEGISLATION

January 28, 2019

INTRODUCTION

The Real Estate Board of New York (REBNY) is the City's leading real estate trade association representing commercial, residential, and institutional property owners, builders, managers, investors, brokers, salespeople, and other organizations and individuals active in New York City real estate. REBNY appreciates the Environmental Protection Committee's commitment to fighting climate change.

As noted in testimony REBNY submitted to this committee last month, the challenges posed by climate change are profound and merit significant attention. Given that buildings make up two-thirds of the city's greenhouse gas emissions, REBNY and our members understand that we have an important role to play in addressing these challenges. Indeed, that is why we support the Council's efforts to find smart, targeted ways of reducing building energy consumption.[1] It is also why many of our members have already taken significant steps both on their own and through public programs like the NYC Carbon Challenge to improve energy efficiency, cut energy use, and reduce greenhouse gas emissions.[2]

With this context in mind, REBNY is pleased to provide comments on the package of roof-related legislation that is the subject of today's hearing. In general, REBNY supports the Council's efforts to expand financial incentives that encourage property owners to install solar panels, wind turbines, or green roof systems. In addition, REBNY appreciates the Council's desire to see more buildings make use of these systems. However, we are concerned that legislation that would mandate the installation of these systems on most or all available roof space of certain types of buildings is not practical to implement and should be amended to better consider the realities of New York City's built and natural environment. As an alternative, given the complexities raised by amending the building code in these ways, REBNY would encourage that these issues be more fully considered as part of the Department of Buildings' ongoing building code revision process.

REBNY offers the following comments on each of the proposed measures:

BILL: Intro No. 276
SUBJECT: A Local Law to amend the New York city building code, in relation to requiring that the roofs of certain new buildings be partially covered in plants or solar panels.
SPONSORS: Richards, Brannan, Rose, and Espinal

BILL: Intro No. 1032
SUBJECT: A Local Law to amend the administrative code of the city of New York, in relation to requiring that the roofs of certain buildings be covered in green roofs, solar panels or small wind turbines.
SPONSORS: Espinal, Levin, Constantinides, Levine, and Ampry-Samuel

Intro No. 276 and Intro No. 1032 are similarly drafted bills and the comments below generally apply to both measures. Intro No. 276 would require buildings in occupancy groups A-1, A-2, A-3, A-4, E, F-1, F-2, I-1, I-2, R-1, R-2, or R-3 to cover at least 50 percent of their available roof space with a green roof system or solar panels. Intro No. 1032 would require that 100 percent of the available roof space of buildings in occupancy groups B, I-4, M, or S-2 be covered with a green roof system, solar panels, or

small wind turbines. Both bills define available roof space as space that is not occupied by either mechanical equipment or required by the New York City Fire Code.

Ultimately, the shortcoming of these bills is their simplicity. As drafted, the measures fail to recognize that not all rooftops in New York City are appropriate for solar panels or green roofs and such a requirement would create a conflict with the zoning code in high density residential districts.

Indeed, many buildings in the city do not get adequate sunlight to make solar panels useful to generate energy.[3] And, without adequate sunlight, green roofs quickly turn into brown roofs as plants die off. The relative absence of rooftop wind energy systems from the city's skyline is an indication that small wind turbines are also not viable in all circumstances. In many cases, REBNY members have already carefully considered whether installing these types of systems on their roofs are worthwhile investments and found that they do not generate energy sufficient to make up for the investment, which explains why they are not already ubiquitous.

This concern is not just relevant to solar panels and wind turbines. The current and future Energy Code requirements for roof insulation are such that the energy-related benefits of a green roof are limited. While a green roof may have other value, stormwater detention requirements are already in place for new buildings, so green roofs add little value in that regard either.

Ensuring that resources are used most effectively to improve building energy use and reduce greenhouse gas emissions is particularly important considering proposed Intro No. 1253 that would require building owners to take steps to reduce building greenhouse gas emissions. As currently drafted, Intro No. 1253 provides building owners with the flexibility to meet the bill's emissions limits through whatever means the building owner determines is most appropriate. This legislation, however, would force building owners to use their resources to install specific systems on their rooftops, even if doing so is not economically prudent or other investments would do more to help reduce their building's greenhouse gas emissions or energy consumption.

The interaction of the various building-energy related legislation pending in the Council is of particular concern given that these bills do not provide sufficient guidance on whether these requirements apply to new construction only or if these measures would be required to be applied to all existing structures under certain circumstances (for instance a reroofing or a change in occupancy or use). It is vital that building owners who may in the future be required to significantly reduce building energy use and/or greenhouse gas emissions know that they would also need to adequately plan and budget for the cost of solar panels, wind turbines, or green roofs even if those investments are not the most effective way to improve building energy use.

Practical factors will also complicate the ability of building owners to comply with this legislation. Specifically, for both certain existing buildings and new structures, imposing the requirements of these bills has the potential to conflict with the zoning code. For instance, in high density residential districts the Zoning Resolution controls for the provision of open space. This requirement is often fulfilled with the provision of set aside rooftop space for tenant access and recreation. The bills as drafted would require an open space encroachment that would negate a requirement already adopted by this body. This rule also doesn't consider the interaction with special tower or tower top rules.

Additionally, building owners currently may reserve rooftop space to allow for the safe use of window washing rigs, antennas and broadcast communication equipment, or water tanks. Preventing these legitimate uses of rooftop space would be unwise. Further complicating the ability to comply with these measures is the fact that in some buildings, rooftop spaces are leased to tenants and therefore not in control of the building owner. Consequently, this legislation could force building owners to violate contracts with their tenants or risk being out of compliance.

Finally, beyond the complications outlined above, the key terms in these bills, including "rooftop" and "mechanical equipment," are not adequately defined. A roof is commonly thought of as the top of a building, but not all roofs look alike and many buildings in New York City include setbacks that create multiple roof-like structures. This legislation should clarify exactly what structures it considers to be the rooftop of any given building. Similarly, the term "mechanical equipment" is not defined, raising critical questions about whether the bill would consider space needed to access and service mechanical equipment or other rooftop amenities to be available for the purposes of calculating the area that would need to be covered by solar panels, green roofs, or small wind turbines.

Given these complicating factors, REBNY believes that the most effective way to move forward is to consider these issues in the context of the update to the City's building code. Doing so will provide a forum so that technical experts with a wide range of backgrounds can determine how roof space can best be used to reduce energy use and greenhouse gas emissions. If the Council does choose to move forward with these measures, we would welcome the chance to discuss ways of crafting legislation that achieves our shared goals of reducing building energy consumption, restricting greenhouse gas emissions, and ultimately limiting the harmful effects of climate change.

BILL: Intro No. 141
SUBJECT: A Local Law to amend the New York city administrative code, in relation to requiring that the roofs of city-owned buildings be partially covered in source control measures.
SPONSORS: Levin, Brannan, Espinal, Richards, and Levine

This bill would require the Commissioner of the Department of Citywide Administrative Services (DCAS) to cause to be installed on the roof of all real property owned by the City either a green roof system or a detention system that would cover at least half of available roof top space. REBNY supports the Council's efforts to improve the quality of roofs of City-owned buildings. REBNY encourages the Council to coordinate closely with DCAS and the Mayor's Office of Sustainability to ensure that this legislation does not conflict with the City's other energy-related policy objectives including installing solar capacity on the roofs of City-owned buildings or prevent the City from meeting whatever greenhouse gas or energy use limits are imposed in other proposed legislation that may be enacted by the Council.

BILL: Intro No. 961
SUBJECT: A Local Law to amend the administrative code of the city of New York, in relation to extending J-51 benefits to owners of multiple dwellings for green roofs.
SPONSORS: Constantinides, Brannan, Koslowitz, and Yeger (at the request of the Manhattan Borough President)

Intro No. 961 would extend J-51 tax benefits to building improvements relating to green roof, solar panel, or white roof installation or alteration. REBNY supports this legislation, which will promote the use of these systems.

BILL: Intro No. 1031
SUBJECT: A Local Law to amend the administrative code of the city of New York, in relation to posting information regarding green roofs on the website of the office of alternative energy.
SPONSORS: Espinal, Constantinides, Levine, Yeger, and Ampry-Samuel

This legislation would require the Office of Alternative Energy at the Department of Buildings to put information on its website relating to green roofs. REBNY supports this legislation, which will increase resources available to interested parties and the public generally about green roof systems.

BILL: Intro No. 1317
SUBJECT: A Local Law to amend the New York city noise control code, the administrative code of the city of New York and the New York city building code, in relation to large wind turbines.
SPONSORS: Constantinides

Intro No. 1317 would impose noise and safety regulations on large wind turbines that generate greater than 100 kW of electricity. REBNY is not aware that these devices are used widely in New York City. However, we encourage the Council to discuss the impact of this proposal with building owners who have installed large wind turbines to ensure that the bill is not so restrictive as to prevent the devices from being used at all if it makes economic sense to do so.

BILL: Res 66
SUBJECT: Resolution calling upon the State Legislature to pass, and the Governor to sign, legislation that would increase the real property tax abatement for the installation of a green roof to $15 per square foot
SPONSORS: Levin and Brannan

If adopted, Res 66 would encourage the State to increase the real property tax abatement for the installation of green roofs to $15 per square foot. REBNY appreciates the Council's effort to improve this particular abatement.

###

CONTACT:
Zachary Steinberg
Vice President-Policy
Real Estate Board of New York (REBNY)
(212) 616-5200
zsteinberg@rebny.com

[1] Joint Testimony of the Real Estate Board of New York, the Natural Resources Defense Council, and 32BJ SEIU Before the New York City Council Committee on Environmental Protection on Intro No. 1253, December 4, 2018: https://rebny.com/content/rebny/en/newsroom/testimony/2018_Testimony/Testimony_of_Carl_Hum_Real_Estate_Board_of_New_York_Before_the_New_York_City_Council_Committee_On_Environmental_Protection_On_Intro_No_1253.html.

[2] Mayor de Blasio Announces Major Expansion of NYC Carbon Challenge as 22 Commercial Owners and Tenants Commit to Dramatically Reduce Greenhouse Gas Emissions in Next 10 Years, January 26, 2017: https://www1.nyc.gov/office-of-the-mayor/news/044-17/mayor-de-blasio-major-expansion-nyc-carbon-challenge-22-commercial-owners-and. Heather Senison, "How NYC Real Estate Firm Rudin Is Using Big Data To Save The Planet," Forbes, January 7, 2019: https://www.forbes.com/sites/heathersenison/2019/01/07/how-nyc-real-estate-firm-rudin-is-using-big-data-to-save-the-planet/#42d622476e96.

[3] Estimates of available sunlight for New York City buildings can be found at: https://nysolarmap.com/.

NYC Green Infrastructure Grant Program

FOR THE RECORD

DEP's Green Infrastructure Grant Program provides funds for the design and construction of green infrastructure on private property in NYC

Program Background

The New York City Department of Environmental Protection (DEP) offers green infrastructure grant funding for private property owners in New York City. The goal of the Green Infrastructure Grant Program is to incentivize private property owners to retrofit their roofs, parking lots and other "hardscaped" areas with green infrastructure to manage stormwater runoff.

Green Roof Projects

Green roofs are vegetated systems built on roof tops, designed to capture and manage stormwater runoff before it enters the storm sewer system. Funding for green roof grants is determined based on green roof area and soil depth following the adjacent reimbursement schedule. A structural analysis is required with each application.

Reimbursement Schedule*

Soil Depth (inches)	3,500 - 20,000 (SF)**
1.5 - 1.99	$10
2.0 - 2.99	$15
3.0 - 3.99	$25
4.0 +	$30

*Includes hard and soft costs.
**Any additional square footage over 20,000 is funded at 50% of the listed rate.

Infiltration Projects

Green infrastructure projects that promote infiltration such as rain gardens, bioswales, pervious pavements, and subsurface retention are eligible for grant funding. A geotechnical analysis is required after conditional award.

All infiltration projects must:

- Manage 1" of rainfall from the contributing impervious surface
- Be cost-effective and greater than $35,000

Workshops:
DEP hosts quarterly public workshops to explain the eligibility requirements of the program and guide users through the online application. Visit DEP's website for more information.

Website:
http://nyc.gov/dep/gigrantprogram

Email:
gigrantprogram@dep.nyc.gov

NYC Environmental Protection

May 2018

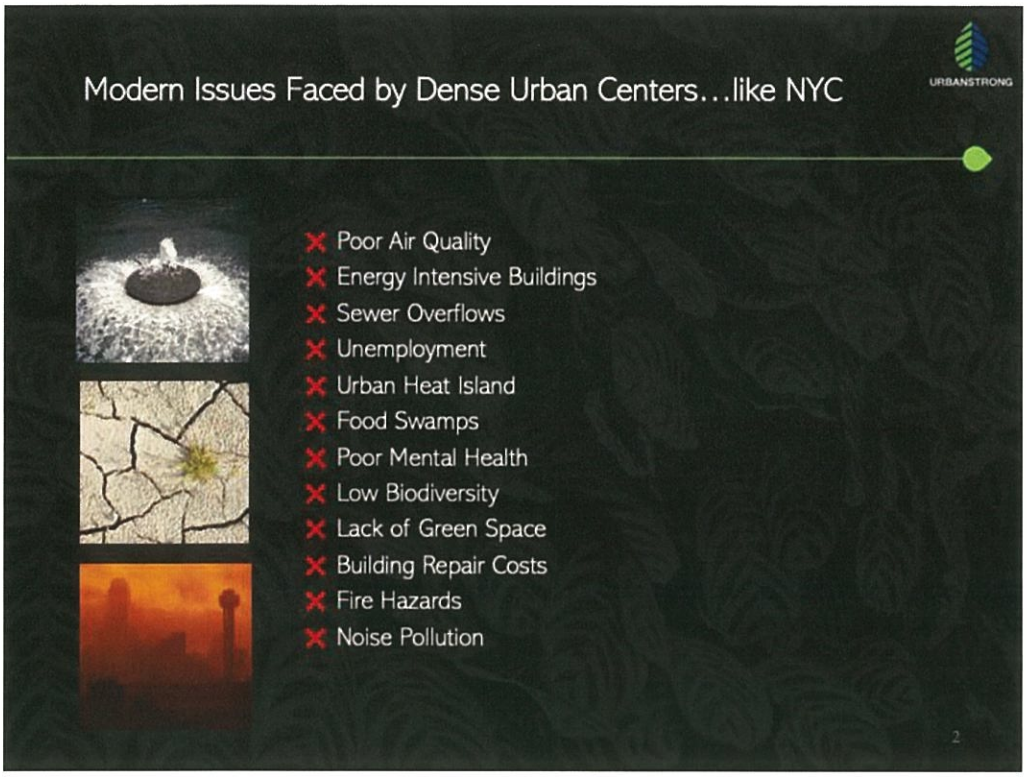
January 28 2019

URBANSTRONG

NYC Hearing on Proposed Green Roof Legislation

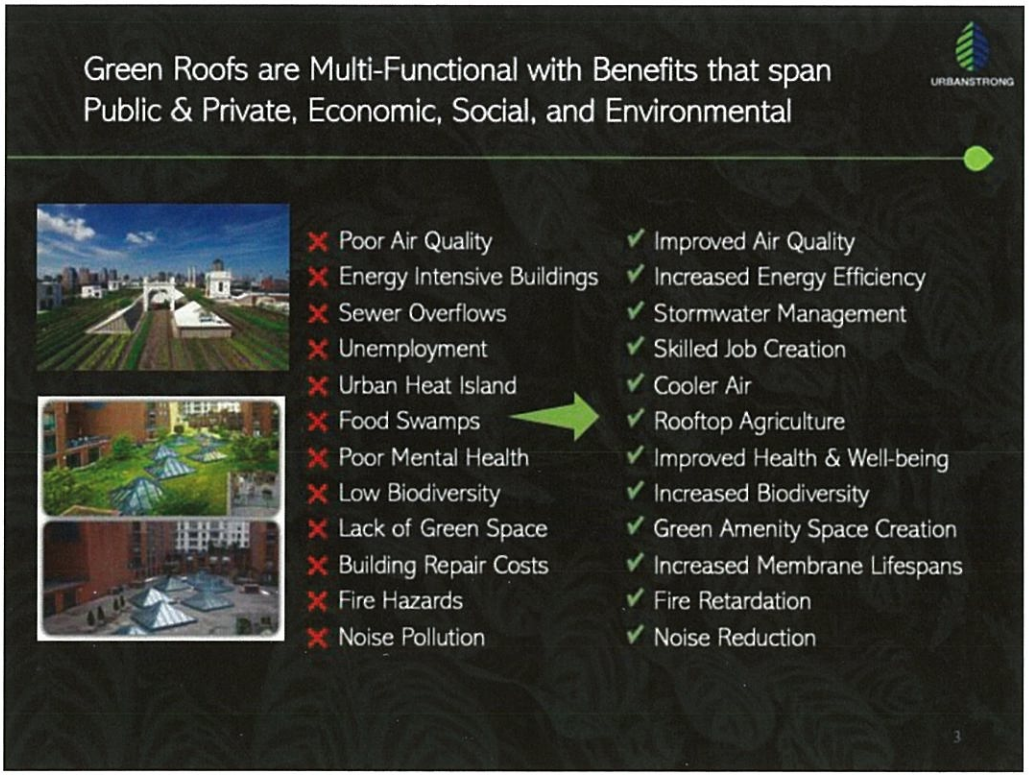
Testimony of Alan Burchell,
Founder/Principal, Urbanstrong

aburchell@urbanstrong.com



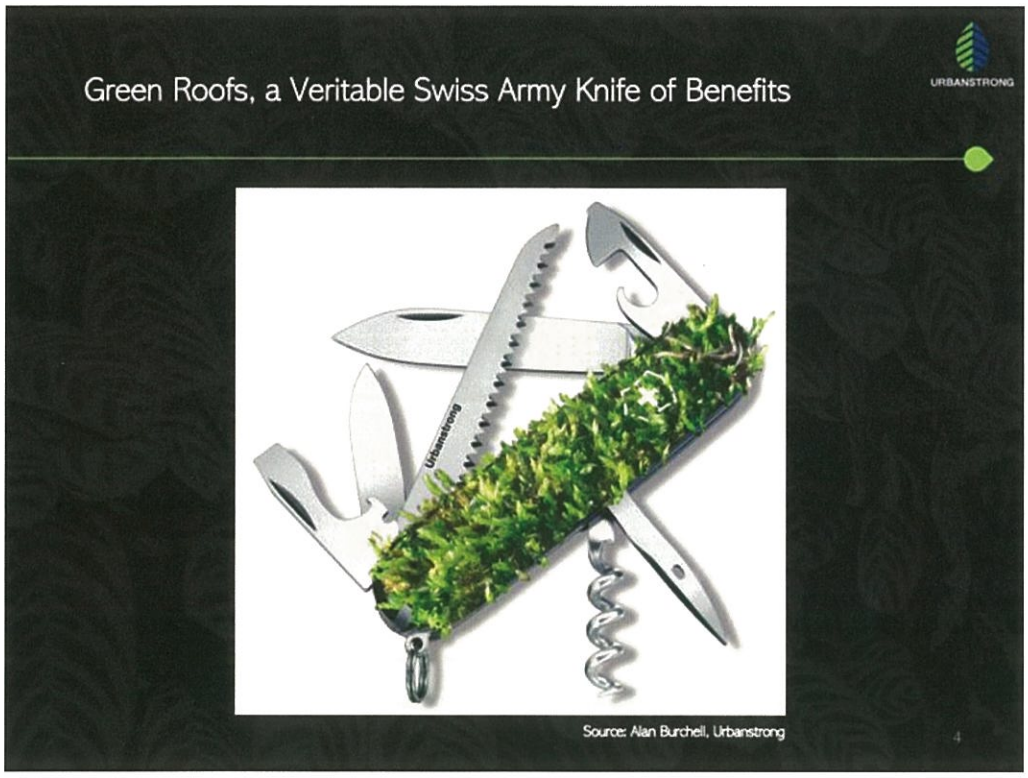
list of issues facing many dense urban centers, including NYC:

the cumulative effects of these issues build up. like death by a thousand paper cuts. there is no one single fix. you need many fixes to address each of these issues.



Notice how these various features and uses of green roofs benefit both the Public at large, as well as the private building owners and occupants. And these benefits can be categorized as economic, social, and environmental.

And know that once they are installed, they more or less perform all these benefits passively. There no fancy moving parts or expensive fuels. Other than a bit of landscaping maintenance (whose cost is a drop in the bucket compared to the value of the benefit reaped). In this way, green roofs are like a hat but for buildings: once you buy it, it doesn't take anything to run. It provides protection from the sun, and protection from the cold. And if you pull it down over your ears, you can muffle the outside noise.



they're like a swiss army knife for battling urban issues. are there better individual tools for each one of those individual benefits available on the market? Yes but I imagine you're going to a desert island and you can only bring one tool do you want to bring the ultimate Phillips screwdriver or do you want to bring a Swiss Army knife with a pretty damn good decent version of all of those tools?

For example, are there better ways to:

Reflect solar rays? Cool Roof program

Grow produce – indoor vertical farming more efficient

Reduce building energy consumption – lighting retrofits have faster paybacks

But all in one?

For those who build green roofs, like different people buying the

same SAK for different tools, they all get each other's tools as well.

If you're building a green roof to have a cool rooftop garden oasis to watch fireworks and drink rose, you're still helping clean and cool the air, manage stormwater, create jobs, tax revenue, etc...

I'm on the front lines of this industry, fielding calls from co-op and condo boards asking about green roofs.

Most of them cite their reason for wanting a green roof is their community wants to do their part to minimize their environmental footprint. They ask about the DEP grant and then we get stuck at the point where they need to front the funds for the structural survey with no guarantee they'll get the money back.

Which brings me to my first suggestion, which is to somehow subsidize structural engineering surveys of NYC building stock.

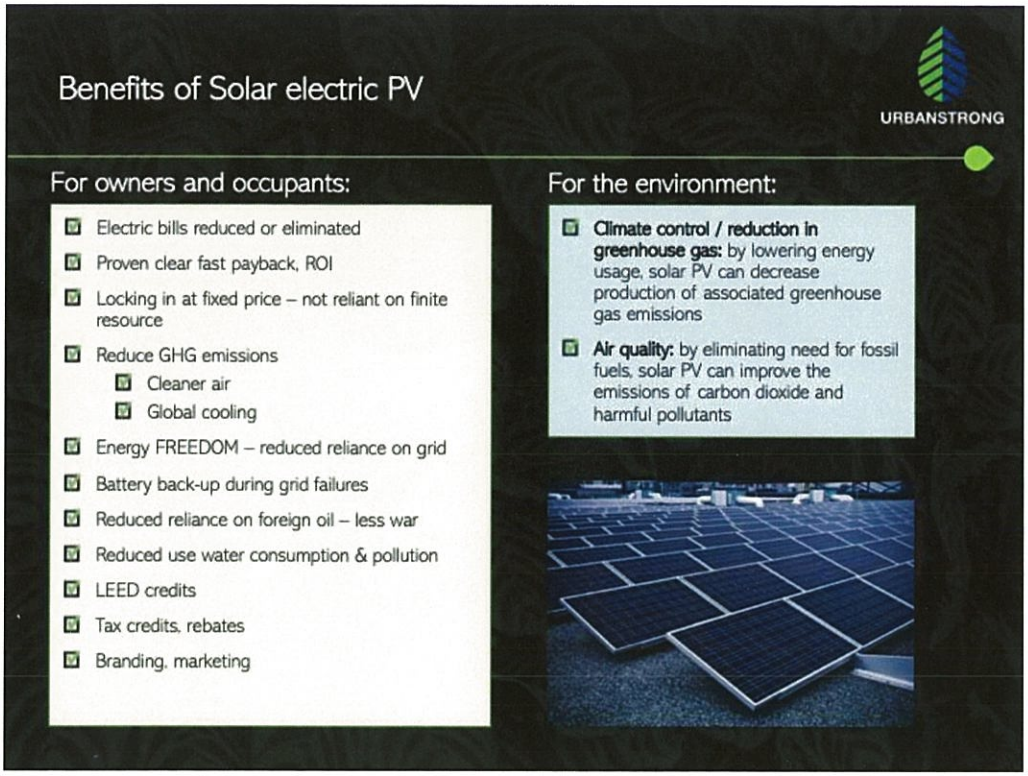
NYC Green Roof Property Tax Abatement is a Good Idea but was set Much too Low and Alienates Small Roofs

URBANSTRONG

Up-front requirement in the form of paperwork, application fees and time to complete, structural analysis, retain and keep architect of record…	$5,000 - $,8000 at the low end
Previous Property Tax Abatement Amount	$5.23 per square-foot of green area
Cut-off roof size:	956 – 1,530 square feet**

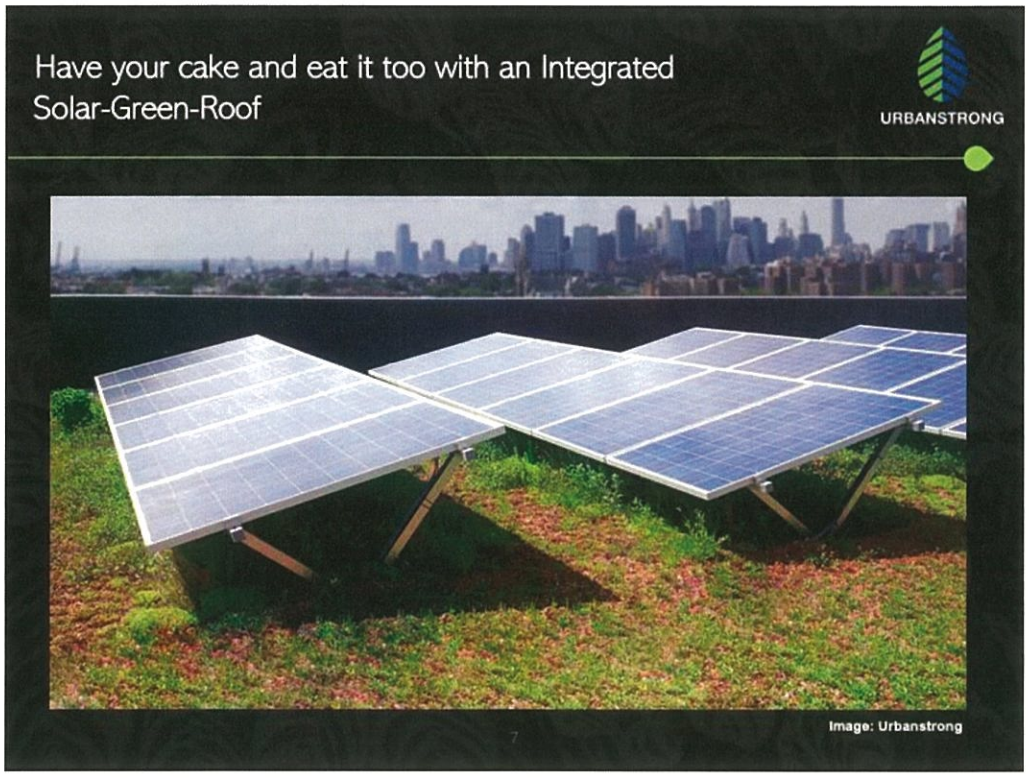
** A typical brownstone has an 800sf roof with ~500sf of area to be greened

Conclusion: At $15/sf you almost cover the cost as $15-$30 is the low end of the going rate in NYC. But economies of scale drive this cost significantly. Brownstones can still be $65 / $95 / $105 per square foot.

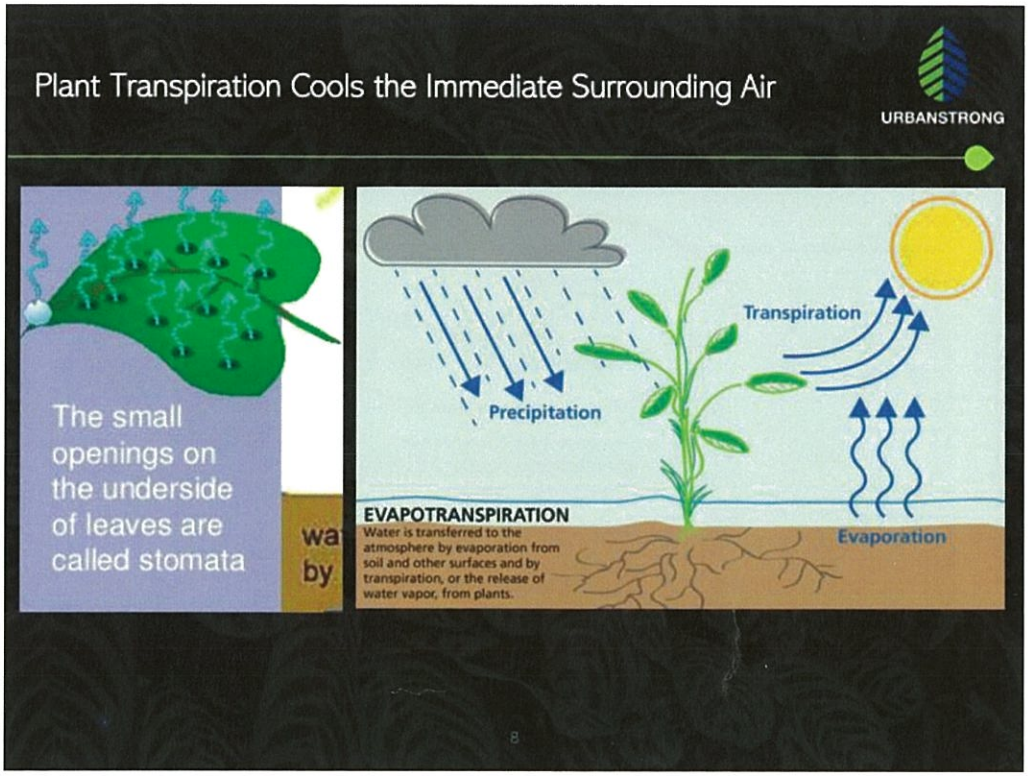


Here is a summary of benefits for solar electric PV.

Here in NYC solar electric PV and green rooftops have been competing for rooftop space. I get a lot of calls from people asking which one they should go for. The proven, clear path to ROI of solar, or the multi-functional benefits of green roofs.



- Green roofs and photovoltaic (PV) panels are complementary technologies
- PV panels exhibit reduced efficiency at elevated temperatures, so research has suggested that green roofs can improve the efficiency of PV of by reducing temperatures near the panels
- PV arrays can provide an environment conducive to a wider variety of vegetation by providing shade
- On retrofit projects, an integrated green roof system can also provide the necessary ballast for a PV installation.

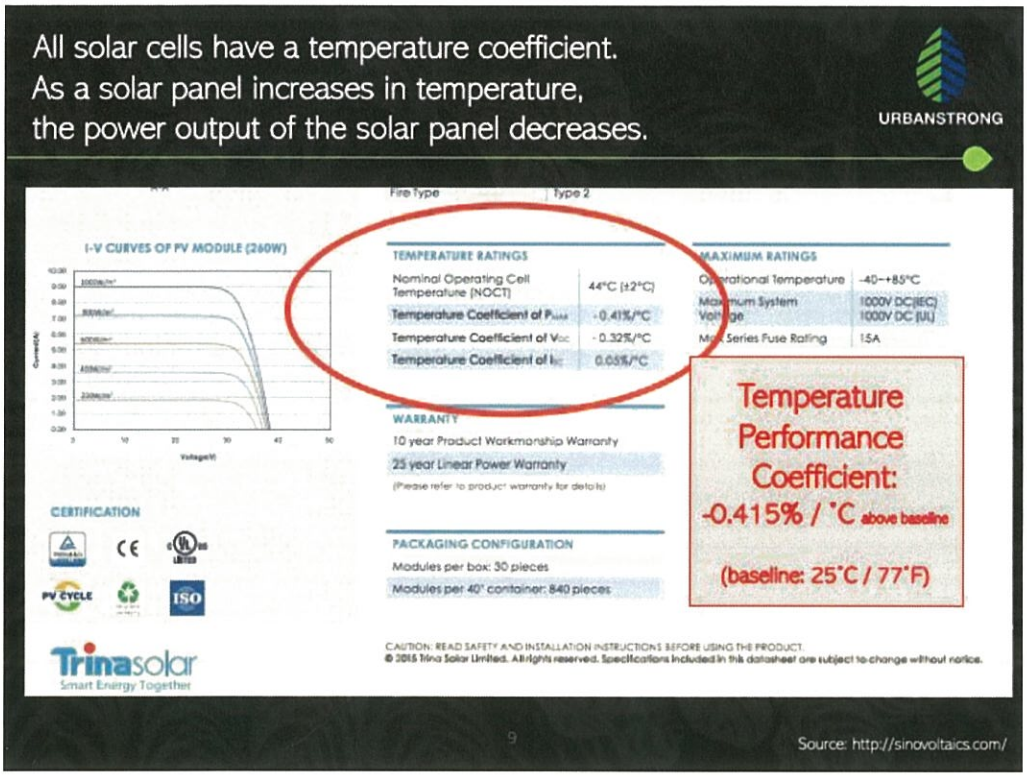


Transpiration – plant sweating, phase change

evaporation and transpiration (which involves evaporation within plant stomata) are collectively termed evapotranspiration.

plant transpiration cools the air around the plant,

It's a **type of evaporative cooling...**

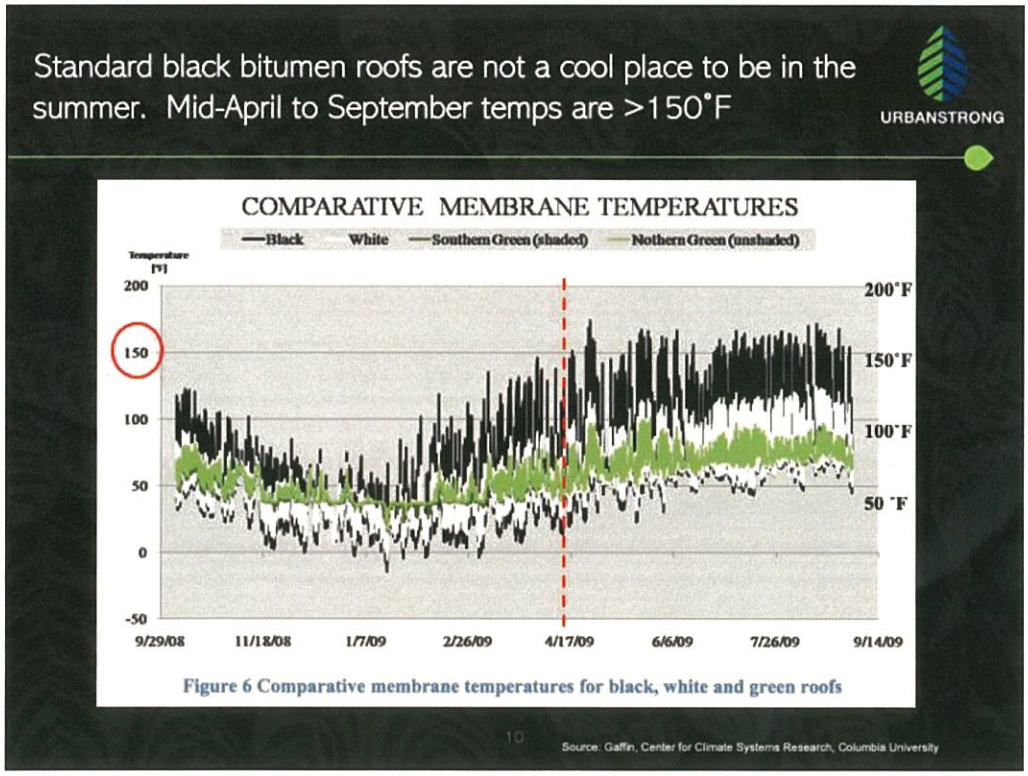


(this slide is the clutch point of the entire presentation, so be sure to understand this):

This is a standard spec sheet (cut sheet, product data sheet) for a generic solar panel. The brand doesn't matter. Along with basic properties of the panel (e.g. dimensions, wattage, etc..) every PV panel spec sheet lists that panel's TEMPERATURE PERFORMANCE COEFFICIENT. This is a negative, decimal percentage number which represents the loss of production efficiency that panel will suffer for every degree of temperature the surrounding air rises above the base case of 77°F/25°C. (this is the clutch point of the entire slide deck, so be sure to understand this)

solar PV panels are heat sensitive because they contain semi-conductors. they operate most efficiently in COOL, SUNNY conditions.

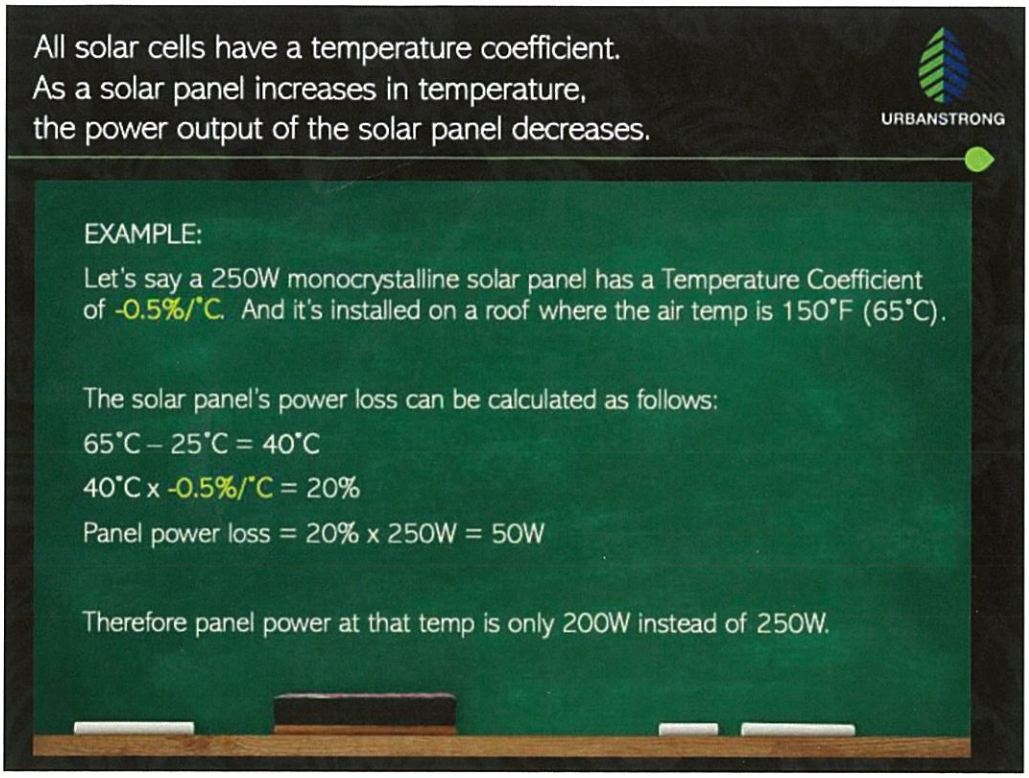
Generally, monocrystalline solar cells have a temperature coefficient of -0.5%/°C. This means a mono solar panel will lose half of once percent of its power for every degree the temperature rises. Solar panels are all rated at 77°F/25°C, however, when solar panels are installed on a roof, they generally reach much higher temperatures (like 170°F, as can be seen in the next slide).



This data is the result of a study conducted on a NYC roof over the course of a year. It compared the roof surface temperatures of a standard black roof (onto which most PV panels are installed in this country), a white roof (painted this color to reflect some solar gain) and vegetated green roof.

The peak noontime membrane temperature reductions on the white and green roofs compared to the black roof are dramatic. The black membrane reached a peak temperature of 176oF (80oC). During the summer season, the peak white membrane temperature was on average 30oF (17oC) cooler than the black. The peak green membrane temperature was on average **60oF (33oC**) cooler than the black.

mid april to mid sept it starts regularly breaking the 150F barrier



Generally, monocrystalline solar cells have a temperature coefficient of -0.5%/degC. This means a mono solar panel will lose half of once percent of its power for every degree the temperature rises. Solar panels are all rated at 77°F/25°C, however, when solar panels are installed on a roof, they generally reach much higher temperatures (like the peak of 170F from the previous slide).

EXAMPLE :Lets say a 250W monocrystalline solar panel installed on a roof is at 65°C(150°F). The solar panel's power loss can be calculated as follows:

(65°C – 25°C = 40°C)

(150°F - 77°F = 73°F)

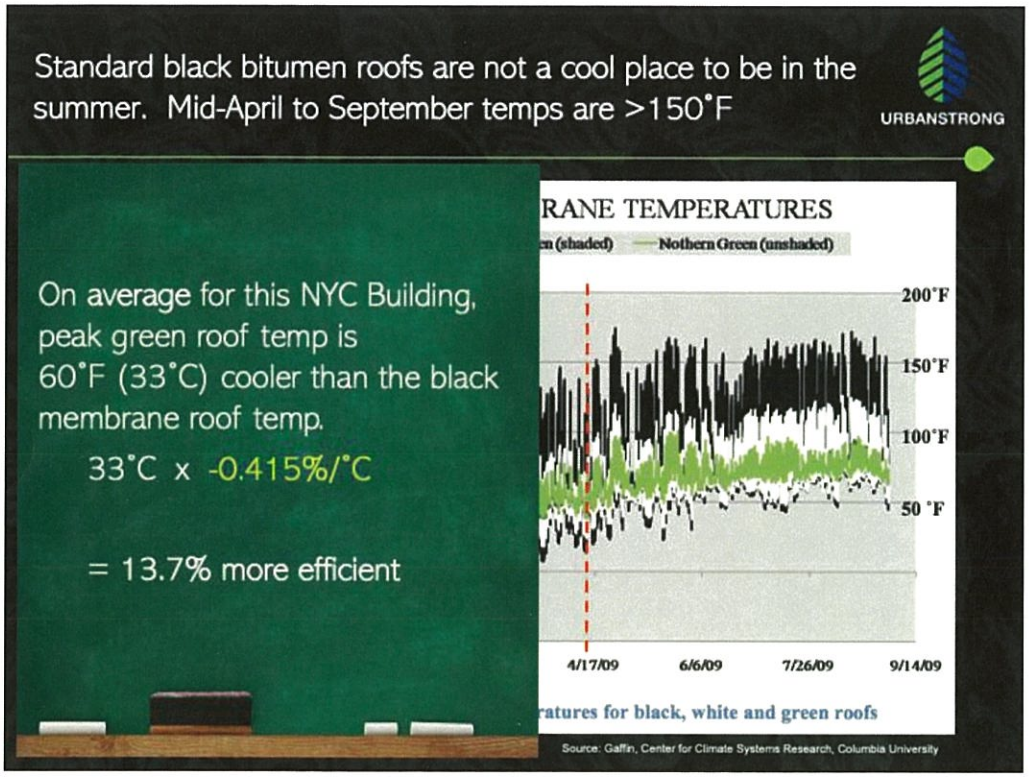
40°C x -0.5% = 20%

Therefore panel power loss = 20% x 250W = 50W

Therefore this 250W-rated panel's power is now only = 200W

Imagine what this does to the ROI of your system.

Now...imagine if there was some way to limit this overheating and thereby reduce the efficiency loss (or BOOST the panel's output).



The black membrane reached a peak temperature of 176°F (80°C).

@ 80°C = (80°C-25°C=55°C) X -0.415%/˚C = **22.8% efficiency loss at peak**

During the summer season, the peak white membrane temperature was on average 30°F (17°C) cooler than the black.

The peak green membrane temperature was on average **60°F (33°C)** cooler than the black.

Mid-april to mid-sept it starts regularly breaking the 150°F barrier.

-0.415%/˚C @ 33°C cooler on average = **13.7% more efficient on average**...what about the peaks?

-0.415%/˚C @ 80°C = (80°C-25°C=55°C) = **22.8% efficiency loss at peak**

between july - sept black vs green is 140°F(60°C) (= -14.5%) vs 90°F(32°C) (= - 2.9%) = -24.9 vs -13.28 = **11.6% difference**

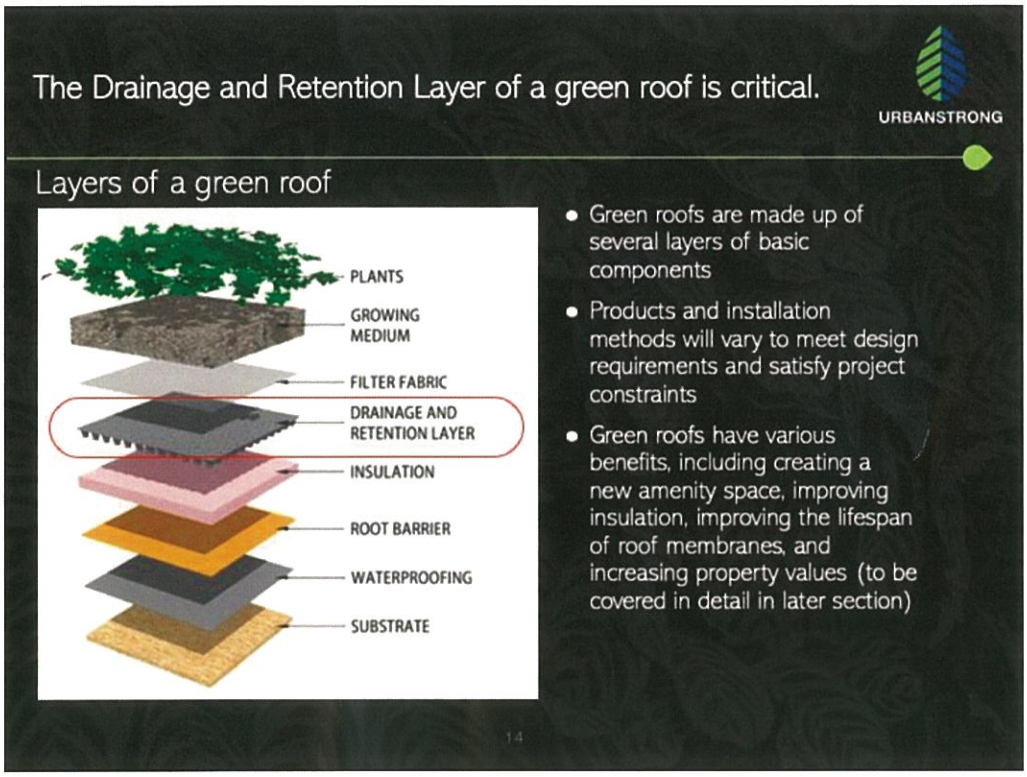
Imagine what this does to the ROI of your system.

Now...imagine if there was some way to limit this overheating and thereby reduce the efficiency loss (or BOOST the panel's output).

We've shown how plants of a green roof keep a rooftop's ambient air relatively cool.

We've shown how solar electric panels produce more electricity when the ambient air around them is kept cooler.

Now, how can we merge these two systems together in the same physical space in a harmonious way???

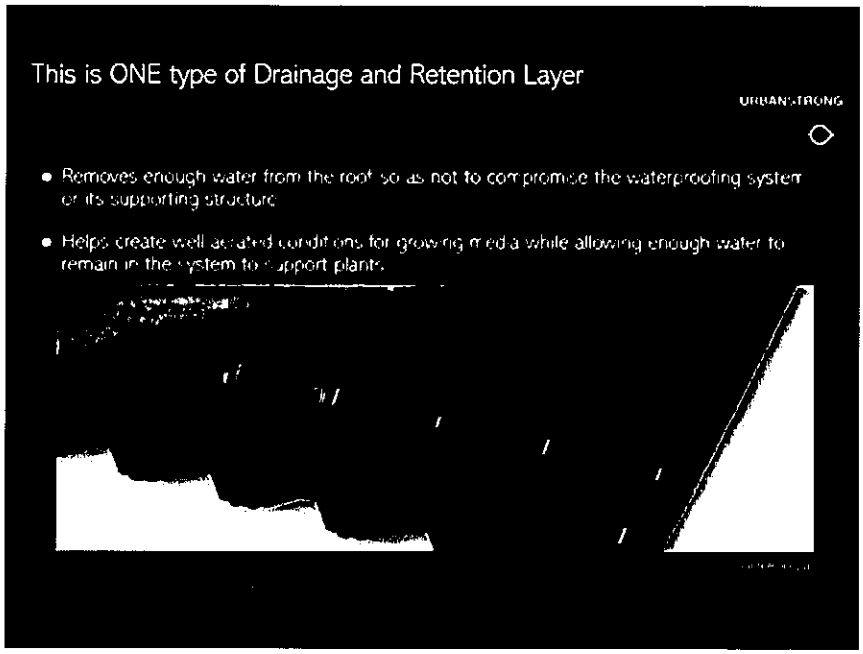


All green roof systems contain seven basic components and can include any number of optional components which, depending on design, can be instrumental to a project's ability to meet its goals and requirements.

- The layers depicted in this slide are considered common/essential components.
- Other elements will depend upon the project; e.g. for many building types, building codes will require insulation
- Products and installation methods will vary to meet design requirements and satisfy project constraints.
- There are many ways in which these layers can be used and they can be complemented by optional components such as protective layers, borders, and/or railings.
- Green roofs may be installed using a turnkey system or separate components may be purchased and assembled on site

The drainage layer allows excess water to drain down to the bottom of the green roof and then flow across to drain.

stops bottom of growing media from becoming water-logged and drowning the plant roots. also keeps the saturation/weight of the green roof to a maximum level, as per the engineered design. example of how these are highly engineered system.



A drainage layer is a layer of aggregate or geocomposite materials whose function, in concert with filter fabrics, drains, and/or pipes, is to remove enough water from the roof so as not to compromise the waterproofing system or its supporting structure.

also creates AIR CHANNELS to support aerobic bacteria in the soil to perform their functions.

you need both these things.

The drainage layer also promotes aerated conditions in the overlying growth media layer, while allowing sufficient water to remain in the system to sustain plant life.

They may take the form of:

- Porous mats made from plastic or polystyrene mats

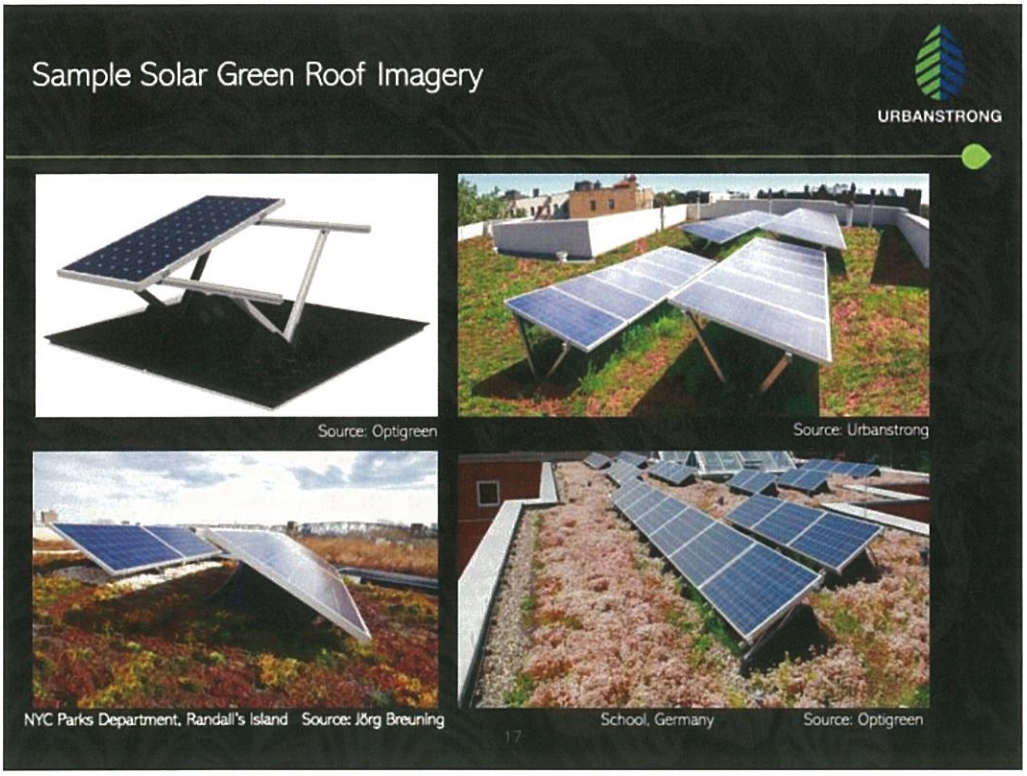
- Granular media or aggregate: mineral mixture, such as clay, lava, expanded slate, slag, brick, or foamed glass
- Composite drainage
- Rigid drain board: e.g., egg-like or peg-like contours (often used as built-in drainage for modular systems)
- Closed-cell plastic foam materials
- Gravel

racking, ballasting, penetrations

There are a few products on the marketplace that allow for the merging of green roofs and solar PV panels.

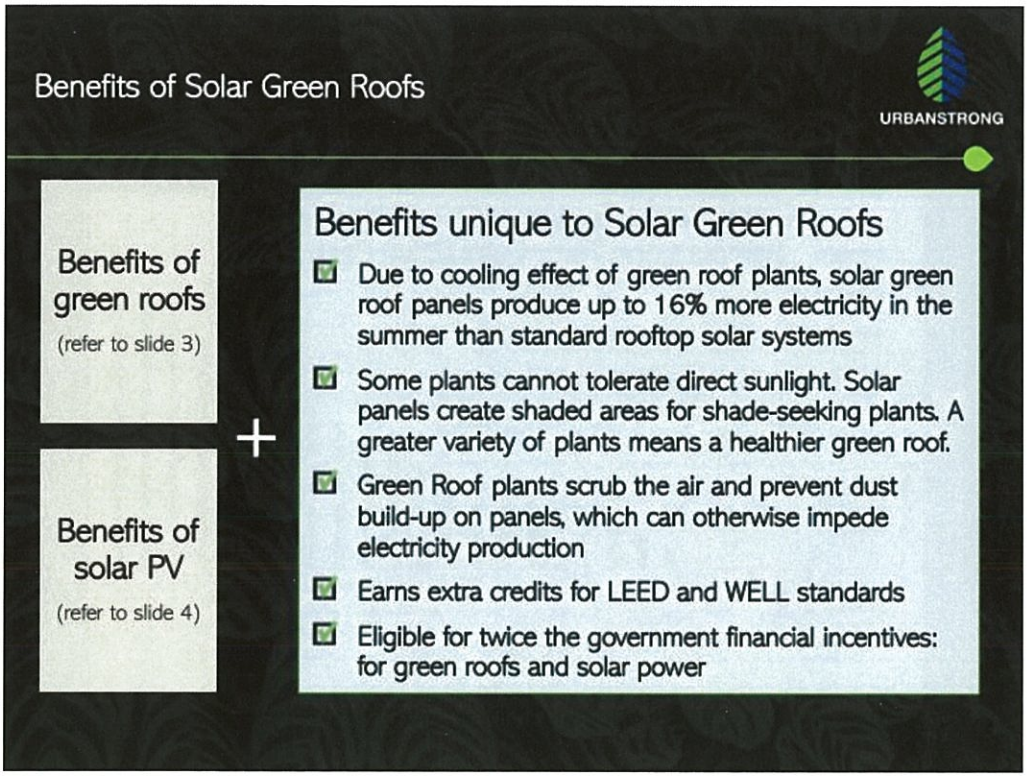
Urbanstrong prefers this particular product: Optigreen's SunRoot.

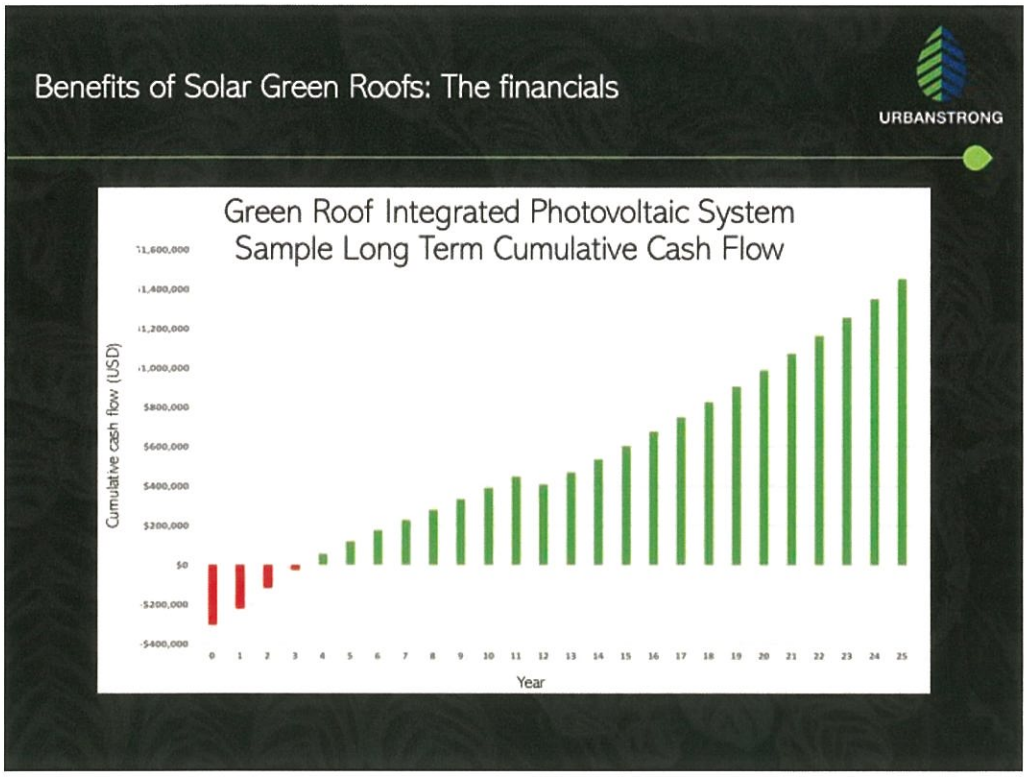
The aluminum support arms for the panels are connected to a rigid base which doubles as the drainage layer for the green roof. Once all upper layers of the green roof are piled ontop of this drainage layer base, it now acts as the BALLAST of the PV system, holding the panels in place. This ballasting job is normally performed by 'dumb' cinder blocks. I say 'dumb' because their only function is weight. Whereas the green roof weight not only replaces the ballasting job of the cinderblocks, but also performs all the other functions of the green roof. Further, this ballasting technique (cinderblocks, or green roof) prevent the need to mechanically fasten (bolt, screw) the base to the roof which would create penetrations in the roof membrane.



Optigreen's SunRoot has not only been tested in wind tunnels in Germany….but survived hurricane Sandy in NYC by not moving an inch during the superstorm's wind.

Note the SunRoot 30 (older model) (bottom left photo) installed on the NYC Parks Department's roof where demonstration units of dozens of other green roofing technologies are installed as a showcase/experiments. While any other experimental technologies were devastated by the storm (furled up or blew away) but the sunRoot did not move an inch.


Benefits of Solar Green Roofs
URBANSTRONG
Benefits of green roofs
(refer to slide 3)
+
Benefits of solar PV
(refer to slide 4)
Benefits unique to Solar Green Roofs
Due to cooling effect of green roof plants, solar green roof panels produce up to 16% more electricity in the summer than standard rooftop solar systems
Some plants cannot tolerate direct sunlight. Solar panels create shaded areas for shade-seeking plants. A greater variety of plants means a healthier green roof.
Green Roof plants scrub the air and prevent dust build-up on panels, which can otherwise impede electricity production
Earns extra credits for LEED and WELL standards
Eligible for twice the government financial incentives: for green roofs and solar power



This is the forecasted cumulative cash flow graph for a typical NYC-area solar green roof.

Optigreen SunRoot Installations Worldwide

URBANSTRONG

- 119 projects installed since 2007
- Mainly in Europe
  - Austria, Belgium, UK, Italy, Luxemburg, the Netherlands and Sweden; most are in Germany
  - NYC Parks Dept on Randall's island

Photo: Urbanstrong

20

January 26, 2019

To: The New York City's Council on Environmental Protection

From: Chris Brunner & Amy Falder
New York Green Roofs LLC
Brooklyn, NY

Please accept this letter on behalf of New York Green Roofs LLC in support of the green roof and green infrastructure focused legislation that you are currently reviewing.

New York Green Roofs has been operating in NYC since 2008 as green roof specialty firm. For more than 10 years we have been designing, installing and maintaining some of the most iconic green roof projects in the city. Our clients at the Javits Center, the Empire State Building, The City of New York (DCAS), the Brooklyn Botanic Garden, the Brooklyn Academy of Music and numerous other private, residential and commercial clients throughout the boroughs, have all taken the initiative to embrace green roof technology and the benefits, both public and private, that green roofs provide.

We started this company out of a desire to help bring green infrastructure and specifically green roofs to this city. To that end we, as well as other companies like ours, have been successful. As a company we've been involved in more than two hundred green roof projects and the numbers continue to grow. But we have only scratched the surface of what is possible and what it will take to make permanent and lasting change on our city's environment. Passing this legislation is the next step in creating real and lasting impact.

During the field season, New York Green Roofs has 13 full time employees with an annual average payroll of over $550,000 per year. These are wages paid to tax-paying citizens of New York City. Additional sales tax revenue from materials, as well as sales tax generation from clients, present another reason for the economic viability of this legislation.

Many traditional industries have left the city and yet, we have a potential work force that is ready, able and willing. This legislation presents an opportunity to create a work force that can design, install and maintain green infrastructure so that the environmental impacts that are driving this legislation are attained and sustained for the long term. But In order to hire them, train them and employ them in this sector we need more projects.

A $15 / SF property tax abatement would cover the installation cost of many green roof projects. This would be an incentive for owners of private buildings to contribute to the public benefits

New York Green Roofs LLC
442 Lorimer Street, Suite D #157,
Brooklyn, NY 11206
p. 917.680.6881 f. 917.210.2944
www.newyorkgreenroofs.com

that green roofs have proven to provide. Many of our existing clients elected to install green roofs at their own expense because they felt it was the right thing to do. These are stakeholders and citizens of this city who see the value in building green infrastructure, not just for their own private benefit, but for the benefit of the entire city. This legislature would make it easier for other owners who want to invest in the technology but need assistance to make it economically possible.

The property tax abatement and green roof mandate are also an opportunity for this committee to support the New York State DEC and the NYC DEP in their efforts to meet the CSO Consent Order levied upon New York City. Point-source technologies, such as green roofs, cost a fraction of traditional end-of-pipe solutions such as large municipal storm water retention tanks. Point-source technologies are proven to be cost effective, but only with appropriate mandates and incentives will we be able to unlock their potential. Again, we are talking in a large part about using privately owned space to provide for the good of the whole city.

We urge you to refine and pass this legislature. Green infrastructure is a solution that can help solve a number of key environmental and economic problems that face our city. New York is one of the great cities of the world and it is poised to be not just a financial leader and a cultural leader but also a leader in the implementation of progressive environmental change and solutions. As our elected committee on environmental protection we thank you for your time and commend your efforts to make this great city more livable now and for generations to come.

Respectfully Submitted,

Chris Brunner, Partner
chris@newyorkgreenroofs.com
347.276.5597

Amy Falder, Partner
amy@newyorkgreenroofs.com
917.710.2649

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STAND
DEVELOPMENT & CONSULTING

January 25, 2019

Attn.: New York City Council

Re: # 1032

Dear Council Members:

Although I am a currently a principal of Stand Development & Consulting, I am writing you today as the managing partner of Melrose Associates for a LEED Gold mixed-income residential building with a green roof, El Jardin de Selene, located in Melrose Commons in the South Bronx. El Jardin was developed and is being managed through a joint venture composed of We Stay/ Nos Quedamos, Melrose Associates, and MJM Construction.

This letter is to demonstrate our support for # 1032 introduced by Council Members Rafael Espinal (D37), Stephen Levin (D33), and Donovan Richards (D31) proposing all new buildings be required to have a vegetated green roof system, solar panels, or wind turbines. As practitioners, educators, and advocates for workers seeking green employment, we firmly believe individuals in New York City will stand to gain significantly beyond the environmental benefits provided by the legislation. We see a clear benefit for city residents to seek meaningful and gainful employment in the renewable and sustainability industry as the need for these installations increases. We are excited our programs will be able to help the city work to remain resilient as we face environmental challenges and work together towards solutions.

A list of such benefits for New Yorkers is outlined below:

Employment Maintenance: Ongoing maintenance will be required for all roofs. Regular attention to the installations will provide sustained employment for those who have been trained in the field.

Innovation and Resilient roofs: These measures will work to ensure that New York maintains its reputation for resiliency. This measure will provide individuals with the ability to participate in the sustainable economy while also benefitting from its more widely felt environmental benefits including reduced dependence on fossil fuels and better insulated buildings. The city will emerge as a leader in urban real estate resilience.

Storm water management: Certain roofs work to reduce storm water runoff and help to prevent pollutants from entering nearby waterways and oceans. Flooding is also diminished which benefits New Yorkers in neighborhoods vulnerable to floods.

Cleaner Air: The public health benefits of reduced reliance of fossil fuels and the benefits green roofs have on air quality are clear. Green roofs have been proven to clean the air where they are located. Solar reduces building dependence on traditional energy sources and could reduce utilities for residents living with solar roofs.

We actively support this bill and the opportunity it creates for New Yorkers. We urge you to support this bill and share its importance with your colleagues. We look forward to working with your constituents to endeavor further into their sustainable careers.

Sincerely,

Petr Stand
Melrose Associates LLC
Stand Development & Consulting

(Presentation to New York City Council 2019) – Tim Barrett, Barrett Roofs

You have heard and will continue to hear the many environmental contributions green vegetated roofs offer urban environments so I will avoid spending time repeating what the other speakers are going to share with you except to repeat the USGBC statement that "Green Buildings" Boost environmental, economic, health and productivity performance and we say "Green roofs should be a consideration for all Green Buildings!"

My name is Timothy Barrett. I am the President of the Barrett Company and the fourth generation of my immediate family to lead the company.

My great grandfather, Noah Barrett's great uncle, Col. Samuel Barrett, was the first roofing material manufacturer to patent hot tar built-up roofing back in 1854. In 1886 he also started the Gravel Roofer's Protective Association with a Chicago roofer, Moses Powell. The GRPA later changed their name to the National Roofing Contractors Association. Colonel Sam was also the first person to publish written roofing "specifications" in 1906 which the company called the "Bible of Good Roofing".

In 1916 Colonel Sam introduced the first roofing material manufacturer's 10 year Guaranties. For the next 48 years these guarantees were backed with insurance bonds.

Colonel Samuel Barrett sold his business to Allied Chemical in 1927. They modified the name slightly to Barrett Div., Allied Chemical. For many decades the Barrett division had its headquarters close by here at 40 Rector Street.

I think it is fair to say my family has some history in the roofing industry, and we have been deeply involved in green vegetated roofs for more than 20 years now. Why? Because we believe in them.

Every single generic type of roofing today, from raw material extraction, manufacturing, installation replacement and disposal is an environmental polluter. With green vegetative roofs we become a net contributor to the environment.

I would like to mention, 4 of our projects have won the prestigious GRHC Awards of Excellence and two of our projects have won the N-R-C-A Golden Circle Award which in our industry is akin to winning a Tony and an Oscar. We have placed green vegetated roofs with NYC Parks, with the School Construction Authority and the Federal Government.

Besides history and more importantly than history, I want to share some positive thoughts and dispel some erroneous assertions that seem to pop up from anti-green folks specifically relating to roofing/waterproofing under green vegetated roofs.

Point #

1. Is waterproofing different from roofing and water-shedding moisture protection.
2. What if a Green Roof leaks?
3. What QC safeguards are available?
4. What about root damage?
5. What about the extra weight on structures?
6. Do Green Roofs shorten the life of the roof?
7. What environmental impact does reroofing create?
8. Why are some roofing contractors opposed to Green Roofs?
9. Do Green Roofs protect or hurt roofs?
10. What maintenance considerations exist?
11. What fire issues need to be considered?

12. What about manufacturer and contractor warranties?

The science and art of successful vegetative roofs is a combination of what I call the Green Arts and the Black Arts. Success depends upon proper design, proper specification, competent installation, and adequate maintenance from both art groups.

Not unlike Col. Samuel Barrett bringing a semblance of order to a chaotic roofing industry over 100 years ago, today N.Y.C. needs a "Bible of Good Vegetated Roofing" which GRHC is making available for your consideration.

Available Guidelines

Various city codes enacted in Chicago, San Francisco, Washington DC, Portland, Philadelphia, Minneapolis, Toronto, CAN., among others.

NRCA

GRHC

RCI

UL

FM

ASTM

IBC

SPRI

USGBC

The Green Infrastructure Foundation
433 S. 7th Street, Suite 2025
Minneapolis, MN 55415
416.971.4494 x231
greeninfrastructurefoundation.org

Mr. Costa Constantinides (Chair),
Committee on Environmental Protection,
New York City Council

Dear Mr. Constantinides,

On behalf of the Green Infrastructure Foundation (GIF), I am writing in support of the recently introduced legislation, focusing on expanding green roofs in New York City as a concerted effort to combat climate change. The legislation includes Int 0141-2018, Int 0276-2018, Int 0961-2018, Int 1031-2018, Int 1032-2018, Int 1317-2019, and Res 0066-2018.

Green Roofs are unparalleled as a technology in the breadth and depth of public benefits they can offer, and therefore deserve public support and financial assistance for their contributions to cleaner water, improved air quality, a reduction in the urban heat island, improved biodiversity, and much more.

GIF has analyzed the potential impacts of green roof policy in many locations. In Denver, we found that if initiative I-300 (which aimed to make green roofs or solar mandatory on new and existing buildings) passed, 57.5 million square feet of green roofs would be built by 2033. By 2058, those green roofs would have a net present value of $1.58 billion, including hundreds of millions in public benefits like a reduced urban heat island, improved air quality, and stormwater retention.

GIF has recently completed a new rating system and guideline to help maximize the long-term performance benefits of green roofs and ensure that public investments in these practices are spent responsibly and effectively. The Living Architecture Performance Tool (LAPT) was developed to certify that green roof and wall projects are designed, installed, and maintained to achieve certain measurable and replicable performance benefits, so that they can be funded/supported/codified with a much higher degree of confidence. We suggest that New York City consider the use of the LAPT as a resource as you enact and implement this critical legislation. The LAPT could serve as a guideline and/or a method of measurement and certification for a pilot project or projects in NYC to help ensure that green roofs achieve the desired (and potential) performance benefits.

For more information about GIF's analysis or the LAPT, visit greeninfrastructurefoundation.org and/or contact Rohan Lilauwala, Program Manager, at rlilauwala@greenroofs.org or 416-971-4494.

Thank-you for your support of ecologically and economically responsible practices for the benefit of the people of New York and the example you are setting for all the cities that look up to you.

Sincerely,

David Yocca,
Chair, Green Infrastructure Foundation
Senior Landscape Architect/Ecological Planner, Biohabitats

January 28, 2019

Dear Council Members,

Green Roofs for Healthy Cities is a non-profit member-based association whose mission is to develop the green roof and wall industry throughout North America. We support the rapid transformation of the roofs and walls of our cities with living architecture that will make life much better for the citizens of New York City in the decades to come.

Since green roofs provide a wide variety of public and private benefits, we work with policy makers in cities across North America to help them craft effective policies to grow the green roof market. Our members are constantly innovating with new products and services in this rapidly growing industry. Design professionals are also looking for flexibility in how regulations can be met, in accordance with the overall pro forma of new buildings. We offer the following information to stimulate a discussion on how to best implement the mandatory green roof requirement for new buildings in a manner that maximizes public and private benefits, fosters industry innovation, and provides flexibility to designers and building owners.

Broad Considerations

Green Roofs/Solar Panels/Reflective Roofs/ and Small Wind Turbines

Several of the proposed regulations provide these various options for compliance. It has been our experience that a segment of the development community will immediately seize on the lowest cost approach to meeting the regulatory requirement, despite the fact that the lowest cost approach may also come with the lowest social benefits. Hence, undertaking an analysis to determine an approximate cost, cost-benefit, or social benefit equivalency may be helpful in establishing a basis for balanced regulatory compliance pathway for the respective options.

Green Roofs and Solar Panels

Research has demonstrated that there are positive synergies between solar panels and green roofs. These include using the growing media and plants as ballast to hold the panels in place. There are several manufactures of these systems. The green roofs provide a zone of cooler air beneath the PV panels that can help to improve the production of electricity by 5 to 10 percent, while at the same time encouraging plant growth. Research by the EPA in Denver and in Europe has demonstrated this benefit, which is significant over the life span of solar PV panels. The green roof also protects the underlying waterproofing membranes from environmental damage (ex. UV exposure, hail, rain, etc) which greatly helps extend the life expectancy of these waterproofing membranes. When the roof is designed to last much longer, this can eliminate the expense of removing panels for re-roofing. There are prospective additional benefits if green roofs and solar were both allowed. A developer/building owner required to

install a green roof that is 4,000 square feet could meet some proportion of solar requirement over the same roof area, thus freeing up rooftop space for other uses. This would encourage system integration, which benefits everyone. Using current state-of-the-shelf products and practices, such as solar or green roofing, isn't an either/or proposition.

Green Roof Opportunities

Not all green roof systems convey the same benefits. There are basically two types of green roofs: extensive and intensive.

Extensive Green Roofs

Extensive green roofs are typically comprised of six inches of engineered growing media or less, making them very lightweight, with hardy shallow-rooted plants, lowest capital cost, and lowest maintenance requirements. They can be accessible to building occupants but are often only accessible for maintenance. Extensive green roofs have been used across the US and Canada as very efficient storm water management tools; their inherent ability to hold onto large amounts of water make them ideal, first-line-of-defense stormwater facilities that every rooftop should have.

Intensive Green Roofs

Intensive green roofs generally have more than six inches of growing media; have the highest structural loading requirements, the greatest range of plants, including full sized trees, and the highest capital and maintenance cost. Intensive green roofs provide much needed green space in densely populated areas. Intensive green roofs are almost always accessible to building occupants and can have up to half of the roof as hardscape for people to enjoy access to the space still achieve the benefits of a living roof.

Intensive green roofs can offer the most diversity and creativity to a designer and have been used throughout the New York areas in unique ways.

The Lincoln Center sloped lawn (pictured below) constructed over the restaurant is essentially an intensive green roof with special features designed to accommodate a lawn with foot traffic. It has subsequently become a popular summertime relaxation area.

The Statue of Liberty Museum green roof (pictured below) was constructed in 2018 and will have a naturalized meadow planting when fully established. This Intensive green roof had assembly components and growing media designed to promote a vibrant landscape all while protecting the waterproofing membrane that protects the building.

The Brooklyn Grange project (pictured below) incorporates intensive components in a unique way to create an urban agriculture commercial food growing operation within the Brooklyn Navy Yard development.

The Brooklyn Grange farming operation (again, pictured below) works in and among the various rooftop elements to grow a very wide array of vegetables for commercial sale.

In order to allow for flexibility, it is important to distinguish between the different types of green roofs, as they can vary significantly in terms of cost per square foot and long-term maintenance requirements, as well as benefits- as such, it is important to distinguish between them to allow for flexibility of compliance. The ability to utilize different variations of systems along the compliance path would allow building owners and the design community to implement the requirement in a manner that provides the greatest quantity of benefits to the building owner/developer. Green roofs have been determined to be important amenities that add value to the residents of a building, the workers within it, and add real estate value to the specific building as well as those nearby whose views are enhanced by such facilities**.**

Applicability by Building Type and Area

It may also be worth considering varying the base-level green roof/solar requirements for different types of buildings and building sizes. Building use/intent has an impact on both constructed layout and opportunities for additional systems integration, from which follows an opportunity for a customization of intended benefit. Where multi-unit residential buildings in less CSO-prone watersheds may seek to optimize for amenity space, industrial construction in a high-priority CSO watershed may not share that intent, instead opting for an optimization of stormwater detention. The types of new buildings and locations anticipated for NYC, and their green roof capacity, should be considered as the requirements further evolve. There may be districts where the urban heat island effect is more intense, or there are

more issues with stormwater flooding and combined sewers. In combined sewer areas for example, you may want to promote the capture, storage, and re-use of roof run-off for irrigation water during dry periods. Other areas may be lacking in accessible quality green space so emphasis is given to accessibility. There are opportunities to fine tune the requirements to meet the varying needs of different districts.

Buy Out Provisions

Buy out provisions may also be worthy of consideration. Several cities that have mandatory green roof requirements allow building owners/developers to pay a fee in lieu of the requirements. The rates are set above the average cost per square foot, so as not to provide an incentive to buy out. The money can be used to incentivize green roofs on new and existing New York school buildings for example. In this way there is no net loss of green roof coverage from new development. Toronto has a buy out provision that very few developers have opted to use over the past nine years since it has been in place. The funds that are collected are used for green roofs on buildings like schools and single family homes.

Private Sector Market for Stormwater Credits

Another methodology for consideration is the market that Washington DC has created where green roof incentives have created a private sector market for green roof stormwater credits. Owners who optimize their assemblies – and have the structural capacity in their roof construction – can sell the excess credits on the open market (currently moderated by the Department of Energy and Environment)

Other Technical Considerations

Wind Uplift

New York has had many green roofs installed over the years and given the technologies and techniques created by the green roof suppliers and their partners, the issue of wind hasn't been a factor in New York. We encourage the use of those ASTM and ANSI standards in the continued implementation of green roofs in New York.

Growing Media

There are established standards for reliable and effective green roof design that can be incorporated in a future ordinance as a baseline to establish and maintain quality green roofs. Such standards are highly recommended in order to avoid potential negative impacts of value engineering.

Irrigation

There is a need for water on any green roof at certain times of year, and this water could come from strategically placed hose bibs or from an irrigation system, depending upon the type of roof and its specific water needs. Capturing excess stormwater from the site and using it to irrigate green roofs is considered a best practice, which not only saves municipal water but can also generate a return on investment from water savings.

Plant Diversity

Encouraging plant diversity and the use of appropriate native/adapted species will provide additional biodiversity benefits and improve the resilience of green roof systems. Several municipalities have developed Biodiversity Guidelines for green roof design that are likely very adaptable to New York.

Design Capability

Consider requiring a Green Roof Professional (GRP, an accredited design professional who has studied green roof design, installation and maintenance and passed an exam) to be on every design team or alternatively, someone who can demonstrate at least five years of experience in the field, designing and building and maintaining green roofs. This will help to prevent firms that do not posses the required skills and knowledge from implementing bad practices on New York's green roofs.

Maintenance

We recommend that you require that all green roof systems provide a detailed five year maintenance plan to help ensure that the systems are properly established and maintained. Green Roofs for Healthy Cities has several metrics, such as those in our Living Architecture Performance Tool, that could be useful in developing an appropriate set of maintenance standards. The Living Architecture Performance Tool was launched this year by Green Roofs for Healthy Cities and The Green Infrastructure Foundation. It is modelled after the USGBC's LEED and Sustainable Sites Initiative (SITES) programs. The LAPT provides a detailed framework that contains the possibility of 110 credits over eight subject areas and is designed to optimize investment in green roofs and walls through best design, installation and maintenance practices for green roofs all over North America. The tool is in its pilot phase with projects undergoing certification in 2019- a process designed to be low cost, and to dovetail into the voluntary LEED and SITES standards.

Additional Standards to Consider Referencing in the New York Building Code

ASTM – E2396-15	Standard Test Method for Saturated Water Permeability of Granular Drainage Media [Falling-Head Method] for Vegetative (Green) Roof Systems
ASTM – E2397-05	Determination of Dead loads and Live loads Associated with Green Roofs
ASTM – E2398-05	Standard Test Method for Water Capture and Media Retention of Geocomposite Drain Layers for Green Roof Systems
ASTM – E2399-15	Standard Test Method for Maximum Media Density for Dead Load Analysis of Vegetative (Green) Roof Systems
ASTM – E2400	Standard Guide for Selection, Installation, and Maintenance of Plants for Green Roof Systems
ASTM – C29	Test for bulk density and voids in aggregate
ASTM – C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ANSI/GRHC/SPRI VR-1 2011	Procedure for Investigating Resistance to Root Penetration on Vegetative Roofs
ANSI/SPRI VF-1	External Fire Design Standard for Vegetative Roofs

Conclusion

There are very few opportunities for public policy makers to enact codes that deliver a wide range of public benefits simultaneously, while also providing tangible, bankable private benefits, and making use of wasted space in urban areas. This is such an opportunity.

We welcome the opportunity to discuss any of the issues or recommendations we have made.

Matt Barmore, GRP
Board Chair, Green Roofs for Healthy Cities

Richard Hayden, RLA ASLA CLARB A.M. ASCE GRP
Chair, Green Roofs for Healthy Cities Technical Committee

Jeff Joslin
Chair, Green Roofs for Healthy Cities Policy Committee

Steven W. Peck, GRP, HASLA
Founder and President, Green Roofs for Healthy Cities

January 28, 2019

New York City Council - Committee on Environmental Protection Members

- Costa Constantinides, District 22;
- Donovan Richards, District 31;
- Eric Ulrich, District 32;
- Stephen Levin, District 33;
- Rafael Espinal, District 37;
- Carlos Menchaca, District 38;
- Kalman Yeger, District 44

Testimony by Melissa Daniels, Board Member, Green Roofs for Healthy Cities
Vice-President & Horticultural Specialist, Plant Connection Inc.

I am here representing Green Roofs for Healthy Cities, a non-profit member-based association whose mission is to develop the green roof and wall industry throughout North America. My firm, Plant Connection Inc has grown plants, blends growing media and has overseen the construction of green roof and wall projects throughout New York City for the past 12 years; most notably the green roofs at Solaire & Verdesian in Battery Park and the Living Wall on Liberty Street across from the World Trade Center Memorial.

Thank you for allowing me to speak. As the impacts of climate change worsen in cities, we need policies like those you have proposed to utilize our roofs and walls for both a reduction in greenhouse gases and to adapt to climate change impacts. The rapid transformation of the roofs and walls of our cities will make life much better for the citizens of New York City in the decades to come.

Since green roofs provide a wide variety of public and private benefits, we work with policy makers in cities across North America to craft effective policies to grow the green roof market. In the past three years for example, we have worked with the City of San Francisco, with its Better Roofs Ordinance which requires green roofs and/or solar panels on new buildings. In Portland Oregon, we worked to implement a mandatory green roof requirement on new buildings. In Denver, Colorado, the majority of people voted in a ballot initiative in favor of mandatory green roof requirements for both new and existing buildings last year. Unfortunately, New York is not out in front with these proposed policies, as conversely the City of Toronto is celebrating 10 years of mandatory green roof requirements and the addition of more than 6 million square feet of green space. The Cities of Chicago and Washington DC, both have regulations on new development that essentially require green roofs on new buildings and both cities have implemented millions of square feet over the past decade. While New York City regularly sits among the top 10 North American municipalities for installed green roof square footage,

further investigation of these values find that compared to other cities in that ranking, New York falls quite low. According to our annual reporting of green roof installation, while ranking 6th in overall installed square footage, green roofs in New York City green roof square footage per capita and per metropolitan area (in square feet) sits well below other cities in the top 10. Across the last three years of reporting, New York City's installed square footage of green roofing represents about 77.42 square feet of green roof per square mile of city area and 0.12 square feet per capita. For comparison, Chicago, ranked only one place higher, saw green roof installations at 125.76 square feet per square mile and 0.51 square feet per capita over the same period. New York City has an unprecedented opportunity to seize on the myriad benefits of these technologies, both for the public and private bottom lines, as well as for the environment and has unique potential to become a leader in the United States and North America overall with policies like this to support it.

Green Roof Systems

We are very supportive of the policy initiatives before us today! It's not our first trip to the rodeo in New York, where we held our first green roof training and policy discussion in 2007. I'd like to provide you with a bit of background on green roof technology which may help you in the further refinement of these policies. Green roofs are made up of the following basic layers: typically, a high quality waterproofing system, a root repellant layer to protect the membrane, a drainage layer that allows water to flow off the roof, a filter cloth that protects the drainage layer, engineered light-weight growing medium, an irrigation system and carefully selected plants. There are variations in this make-up, but these are the essential elements. For it to be a green roof though, it has to be on a structure, either at, below or above grade.

There are basically two types of green roofs: extensive and intensive. Extensive green roofs are comprised of six inches of growing media or less, making them very lightweight, with hardy shallow rooted plants, and low maintenance requirements. Extensive green roofs are ideal for buildings with limited structural loading capacity and large areas, like New York's Javits Center.

Intensive green roofs use more than six inches of growing media, sometimes as much as 4 feet, and have the highest structural loading requirements, as well as the greatest range of plants, including small trees, and the highest capital and maintenance costs. Intensive green roofs, also known as roof gardens, also provide much need usable green space in densely populated areas. Well know intensive green roofs include the Millennium Park in Chicago, the Rockefeller Center, and the Highline in New York. Intensive green roofs are almost always accessible to building occupants, and typically have between 40 to 50% of the roof as hardscape for people to enjoy access to them.

New York's policy should recognize the different types of roof in order to incorporate the need for hardscape on intensive green roof projects.

Private Building Owner/Developer Benefits

One of the amazing things about green roof technology is that it provides wide variety of both public and private benefits (those accruing to the building owners/developers) and makes use of largely

wasted roof space. These private building owner benefits are well established, and their exact nature is function of the type of building and the type of green roof system. In many cities that have implemented mandatory requirements, these private benefits have meant that resistance to the policies by developers and building owners has been minimal. The table below is comprehensive list of the types of private building owner/developer benefits that have been achieved with green roofs. In some cities, like Toronto, many developers deliberately exceed the minimum requirements because of the additional benefit green roofs added to the bottom line!

List of private/building owner developer from green roof projects

Energy savings due to reduced demand for heating and cooling from evapotranspiration, thermal mass transfer, shading and insulation.
Energy savings from shading and blocking the wind
Energy savings from pre-cooling air conditioning unit intake air
Advertising and branding opportunities, particularly with commercial buildings
Savings associated with longevity increases to waterproofing reducing the cost and frequency of waterproofing replacement by 40 years or more
Revenue generation from short term rental space for functions and/or long term leasing of roof space for agriculture production
Improved property values related to better visual amenity, accessible amenities and noise attenuation, particularly on multi-unit dwellings
Improved patient recovery in hospitals and reduction in staff turnover which reduces HR costs
Improved academic performance in schools
Marketing and promotional opportunities – green building branding
Integration with the site for better overall stormwater management and reuse which reduces the cost of irrigation, particularly for intensive green roofs
Improved public relations/community relations and potentially faster project approval times – giving back to community helps win project approvals
Improved rentability, saleability of properties and units at higher value which include rooftop amenity space
Contributes to reaching USGBC and CAGBC LEED credits
Contributes to meeting the Living Building Challenge 2.0 and Sustainable Sites ™
Access to public incentives and/or enhanced ability to meet regulations such as stormwater management, floor area bonus, green space
Integration with other building systems, such as mechanical systems and solar photo voltaic panels for better energy efficiency and generation from solar panels
Potential to generate direct revenue for sale or lease of roof spaces, and from new uses such as urban agriculture production.
Biophilic related benefits resulting in reduced absenteeism, improved staff retention, and better job performance which can be very significant in commercial and industrial building applications.
Opportunity to develop greater social cohesion within a building, resulting in better maintenance of rental/low income properties and reduced vandalism.

Employment Opportunities

Other organizations can testify to the many public green roof benefits, such as reduction in the urban heat island and superior stormwater management. However, one of the important benefits of green roof policy is its ability to generate new employment opportunities, in New York City proper, and within the region. In essence, green roofs are not imported from China or Mexico, and create truly sustainable, local job opportunities. Employment opportunities range from design professionals, nurseries, growing media suppliers, manufacturers of drainage and irrigation systems, contractors who install and maintain green roof systems and long-term jobs for maintenance technicians. Some of these employment opportunities are well suited to marginalized populations within urban areas and can contribute to greater social justice. One year of employment in the green roof industry is generated from between $45,000 and $65,000 in investment, because green roofs are very labor intensive, compared to other types of infrastructure. Our analysis of the Denver Green Roof Initiative I-300, indicated that over a 15-year period of time, mandatory green roofs on new and existing buildings, would have generated 25,000 job years of employment. This analysis includes an assumption that 125 acres of roof space is developed for food production. The use of green roofs for food production, as exemplified by Brooklyn Grange and as amenity spaces and event spaces generates additional employment opportunities. Moreover, green roof projects, on a significant scale, like Millennium Park in Chicago or the High Line generate increased tourism trade and facilitate additional real estate development. Fortunately, there is already a green roof industry established in New York, based on the projects completed thus far, which is poised to grow significantly with the passage of supportive legislation.

At Green Roofs for Healthy Cities we have developed a professional accreditation program called the Green Roof Professional (GRP) which requires three days of intensive training and the successful completion of an exam. This program promotes best practices in the design installation and maintenance of green roofs. This accreditation program is recognized by policy makers, like Denver, which requires GRPs or someone with five years' experience work on their projects. A similar requirement in New York would help to ensure the performance of green roof systems.

Javits Center Example

One of the most notable green roof examples in New York City is the one installed on the roof of the Jacob K. Javits Convention Center, the second largest green roof installation in the United States. This roof is illustrative of a number of the described benefits of green roof technologies.

- The roof is capable of retaining 7 million gallons of stormwater annually, 81% of overall rainfall
- The roof has provided more efficient insulation benefits, lowering ambient air temperatures compared to non-green roof sections of the Center, as well as at street level.
- The roof has contributed to an overall reduction in energy use by the Center of 6,631,524 kWh, offsetting 4,660 metric tons of CO2 and helping save the Center almost 2 million dollars.
- The roof has bolstered lower Manhattan's increasingly limited biodiversity, providing habitat and respite for 57 different bird species, 5 different bat species, and 300,000 bees through the installation of bee hives.
- The roof has provided a wealth of research opportunities for higher learning institutions on topics of stormwater management, ecology, and microbiology.

Conclusion

There are very few opportunities for public policy makers to pass policies that provide a wide range of public benefits simultaneously, while also providing tangible, bankable private benefits, and make use of wasted space in urban areas. We are presented here today with such an opportunity. Green roofs and walls are not a radical idea or policy direction. It's time that New York joins other world class cities and utilizes these wasted spaces to fight climate change and prepare for its impacts. With the continued urbanization of New York, these policies will contribute to a much higher quality of life for and future New York residents and support greater social justice. We are supportive of these initiatives and look forward to working with you to ensure their passage at City Council and in Albany.

SAN FRANCISCO
PLANNING DEPARTMENT

MEMO

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DATE: January 20, 2019
TO: Councilman Costa Constantinides,
Chair, Environmental Protections Committee
FROM: Jeff Joslin, Director of Current Planning
RE: Consideration of Green Roof and Associated Regulations for New York City

Councilman Constantinides , other Committee Members;

As a Member of the Board of Directors of Green Roofs for Healthy Cities, and as one focused on urban solutions to global environmental challenges, I write you regarding your consideration of changes to your regulation to require green roofs, solar, and/or wind generation facilities for new development.

I also write as one with direct experience in the forwarding of such legislation. I helped advance the *San Francisco Better Roofs Ordinance*, which requires between fifteen and thirty percent of roof space on most new construction to incorporate solar, green roofs, or a combination of both. With its passage on January 1st, 2017, San Francisco became the first US city to require solar or green (living) roofs on most new construction.

Specifically, San Francisco's 2017 ordinance requires either fifteen percent of the roof be solar or thirty percent be living roof, or a blend of each. The ordinance applies to non-residential projects 2,000 square feet or more, or residential of any size. In both cases, the requirement does not apply to buildings greater than ten stories. More recently, the City's first area plan developed since Better Roofs - the 230-acre Central SoMa Plan District - has been approved with a mandated green roof requirement of fifty percent of all new roofs in addition to a requirement that fifteen percent of roof area be dedicated to solar.

One question expectedly asked over the course of our legislative efforts has been: why a mandate? The answer for San Francisco was simple: it made economic sense, both at the project scale (simple life-cycle costing) and at the city scale (with multiple quantifiable benefits). We know this because we did the math (San Francisco's Living Roof Cost-Benefit Study). We followed up that analysis with additional study to calibrate the cost and benefits of solar with that of green roofs. It was this work that established the proportional relationship between our solar and green roof requirements. Should New York's effort result in these two technologies and/or wind generation, that methodology could easily be applied across the various approaches to balance resulting requirements appropriately.

We also assisted in developing a like-study for Denver's recent green roof initiative, and the results are similarly favorable (Denver Green Roof Cost Benefit Study). This study is quite relevant to New York's effort, as the climate profiles for New York and Denver are quite similar for these purposes.

These studies and their implications are further discussed in the attached article from *Living Architecture Monitor,* should you be so-inclined.

Prior to my work in San Francisco, I was with the City of Portland for fifteen years, and helped evolved green roof policies and regulation there. At that time, these were new ideas for the U.S.. Enough pilot projects were undertaken to warrant establishing incentive programs. But the environment was not yet ripe for a mandate: there were few off-the-shelf approaches and fewer installers, codes were not fully developed, there were no standard practices, and the economics were uncertain.

In that case, incentives did exactly what they were supposed to do: they incited a market, technologies ripened, costs dropped dramatically, incentives were fortified, and green roofs have since proliferated

to such a degree that they've become intrinsic to most markets. In the process, a number of Portland-based suppliers evolved that are now global exporters. As of last July, Portland established a new mandate yet more assertive than either San Francisco or Denver; a sixty percent requirement for all new development. Other cities, throughout the country are following suit.

Additionally, there are now established codes and practices, a fully evolved industry, and the economic case, for nearly any city, is entirely supportable. This parable is not unlike that for solar or - better still – conservation. We incent to influence or help evolve new best practices, we mandate to require them once their efficacy is established.

A threshold issue that was raised here and elsewhere was whether such requirements would further burden housing affordability. Not only were the economic arguments supportable for affordable housing, it's arguable that such projects, along with public facilities, are those for which these requirements would be most meaningfully beneficial. These are the projects that will be most challenged in terms of long-term operations and maintenance. Discussions in other cities have considered affordable housing exemptions. San Francisco came to the conclusion, as did our affordable housing developers and advocates, that to not consider living roofs and/or solar would be less responsible than mandating such time-tested and fiscally sound approaches. As an environmental justice matter, projects serving challenged communities should be the first to have such cost and health positive measures incorporated.

Furthermore, as a matter of policy pertaining to green roofs on public facilities, this is as much an environmental matter as a fiscal one. The savings in minimizing future infrastructure needs couples with minimizing construction debris through the extension of roof life. The number of benefits and fundamental policy objectives met by this simple technology are unique.

Lastly, I do want to offer any help San Francisco might be able to provide. We've developed our implementation tools with an eye towards them being readily modifiable and transferable to other cities. Our tools, coupled with the vast research that's occurred pertaining to your own green roof capacity, could be readily edited and re-calibrated to create an accessible addition to any resulting ordinance, benefiting all stakeholders.

I hope this perspective and information is helpful. I'd be happy to discuss this any aspect of this matter with you or your staff directly if you so-desire.

Thank you for your time and attention;

Jeff Joslin

CC: Additional Environmental Protections Committee Members:
Councilman Donovan Richards
Councilman Eric Ulrich
Councilman Stephen Levin
Councilman Rafael Espinal
Councilman Carlos Menchaca
Councilman Kalman Yeger

Attachment:
Living Architecture Monitor, volume 20, Issue 4, Winter 2018,; pp. 9-11

Links Provided:

San Francisco's Cost Benefit Study:
http://default.sfplanning.org/Citywide/livingroof/SFLivingRoofCost-BenefitStudyReport_060816.pdf

Denver's Green Roof Cost Benefit Study
https://static1.squarespace.com/static/588221e420099e47b8fe06d8/t/59e0e8d0017db2106c37d7b5/1507911889792/Denver_Cost_Benefit_Report_Final.pdf

National Wildlife Federation
Northeast Regional Center
149 State Street, Suite 1 • Montpelier, VT 05602 • 802-229-0650

New York City Council
Committee on Environmental Protection
Attn: Caitlin Kelmar
250 Broadway
New York, NY 10007

January 21, 2019

Re: Support for NYC Green Roof Bills

Dear Members of the New York City Council,

The National Wildlife Federation (NWF), a national non-profit wildlife conservation organization and environmental education leader, with 6 million members and a field office in New York City (NYC), **enthusiastically supports the suite of "NYC Green Roof" bills introduced by Council members Rafael Espinal, Jr., Donovan Richards, Stephen Levin, and Costa Constantinides.** The legislative package would require green roof systems, solar panels, and small wind turbines on certain types of buildings, thereby helping NYC combat climate change and achieve its ambitious sustainability, equity, and resiliency goals. NWF is committed to natural infrastructure projects like green roofs that provide ecosystem services and other benefits for flora, fauna, and people.

NYC Lags Behind Other Cities

At least 25 U.S. cities, including San Francisco, CA, Portland, OR, Denver, CO, Chicago, IL and Washington, DC, have enacted legislation that either mandates green roofs on buildings or provides incentives to create them.[i]

The State of Virginia passed a law in 2009 authorizing cities and counties to offer incentive programs for green roofs. NWF's 95,000 square-foot LEED certified Headquarters building in Reston, Virginia – with its 40-foot high green façade of native plants including Virginia creeper, trumpet honeysuckle, and crossvine – is a showcase for living architecture that not only provides habitat for birds, butterflies and other wildlife, but also important energy conservation benefits.[ii] NYC must catch up with other cities and become a leader in green roof construction.

In addition to increasing energy efficiency and providing habitats for wildlife, green roofs reduce the heat island effect in cities, purify the air, help capture storm water that overwhelms our sewers during heavy rain events, increase green space and property values, and extend the life of roofs (see **https://www.greenroofsnyc.com/green-roof-benefits**).

Untapped Potential
According to The Nature Conservancy, which has mapped NYC's green roofs, our City is home to about 730 buildings with green roofs of varying size, representing about 60 acres out of a potential 40,000 acres of rooftop space available. That represents less than 0.1% of NYC's one million buildings![iii] Surely we can do better.

Educational Green Roofs
NYC public school buildings represent an untapped potential for municipal green roof development that would offer numerous educational and health benefits for students. Teachers and administrators are increasingly interested in installing green roofs on their school buildings as they learn about the many environmental and educational benefits[iv] they provide.
However, the current process for installing educational green roofs in NYC is fraught with challenges including excessive bureaucracy, regulatory barriers, and costs. The City Council must help to eliminate these obstacles.
As the sole U.S. host of the international Eco-Schools program, with a roster of 650 registered Eco-Schools in NYC, and membership in the NYC-based Green Roof Researchers Alliance,[v] NWF could help the City Council advance educational green roof projects.
In 2018, NWF co-hosted an educational green roofs conference in partnership with PS 41 in Manhattan for hundreds of teachers. (PS 41 has a 15,000 square foot green roof that is used as an outdoor classroom all year round). NWF and PS 41 green roof pioneer Vicki Sando are collaborating on a green roof How-To Guide for NYC schools, designed to demystify the process and explain the steps, benefits, and challenges. Our goal is to increase the number of educational green roofs in NYC and, through them, provide students with real-world examples of the ways that cities can combat climate change and address other environmental challenges.

Energy Reduction and Storm Water Capture
NYC emits about 52 million metric tons of global warming carbon dioxide (CO_2) annually. Nearly three-quarters of those emissions - 68% or over 35 million metric tons - come from energy used to heat, cool, and power NYC's one million buildings.[vi]
Green roofs insulate buildings against heat loss in the winter and mitigate heat absorption in the summer. A study published by the National Research Council of Canada found that an extensive green roof reduced daily energy demand for air conditioning in summer months by over 75 percent.[vii] This is critical information given the increasing demand for air conditioning triggered by a warming world, and the vicious cycle of added warming that will cause.[viii]
Despite Mayor De Blasio's best intentions to provide a more comfortable learning environment for NYC students by placing air conditioners in all schools by 2022,[ix] an investment in green roof installations would offer a more sustainable solution.

The NYC Department of Education operates 1,850 public schools in some 1,350 buildings – representing 130 million square feet of space[x], 40% of the City's municipal real estate[xi] as well as 27% of its greenhouse gas emissions.[xii]
According to a 2012 report, *Rooftop Revolution*,[xiii] by then Manhattan Borough President Scott Stringer, there are over 20 million square feet of usable rooftop space on public school buildings. **If all the usable roof space on NYC's public schools were retrofitted with greenery, public schools alone could sequester hundreds of thousands of pounds of global warming carbon while reducing the need for air conditioning in summer and heat in the winter.**

They could also capture hundreds of thousands of gallons of storm water. The latter assertion is supported by recent studies by Franco Montalto of Drexel University, et al., who have demonstrated that extensive green roofs have the ability to capture 77% of the storm water that falls on them during rainfall events.[xiv]
Educational green roofs would also offer excellent outdoor spaces for nature-based learning and real-world experiments on storm water management, climate, weather, biology, wildlife ecology, landscape design, urban planning, and more.

Wildlife Habitat
Recent research is suggesting that cities could play an important role in preserving and restoring biodiversity and habitat for pollinators and other wildlife.[xv]
NYC's five boroughs host an extraordinary number of plant and animal species, as well as habitats, including deciduous forests and tidal marshes. According to the Natural Areas Conservancy, our City is home to 230 native bee species, 750 species of plants, 350 species of birds, 180 species of rare animals, and some state endangered species like the peregrine falcon.[xvi]
One of the greatest threats to biodiversity is habitat loss and fragmentation. An increase in green roofs – connected to a mosaic of parks, community gardens, small private gardens, window boxes, and bioswales – could play an incredibly important role in creating new wildlife habitat and enhancing native biodiversity in NYC.

For several years, NYC Audubon biologist Dustin Partridge has been conducting studies to investigate the biodiversity on green roofs in NYC to see how significant a habitat they are for birds, bats, bees and other insects and how wildlife use the roofs, particularly when compared to traditional non-green roofs.
Partridge has identified more than 35 bird species using NYC green roofs– including barn swallows, palm warblers, Northern mockinbirds, Canada geese, ospreys, and peregrine falcons - and also found that arthropods [spiders, centipedes, grasshoppers and other insects] are six times more abundant on green roofs than non-green roofs. Pollinators including butterflies, moths, bees and wasps are also frequent visitors to NYC green roofs. Biologist Kaitlyn Parkins has found that five different bat species use the Javits roof, including the Eastern Red Bat.

The variety of plants on green roofs – including both sedums and also succulents, mosses, grasses and wildflowers - provide important ecological benefits for many species. Plants support a variety of insects that then become food sources for birds and bats; and smaller birds often become food sources for birds of prey. Fruit-bearing trees and shrubs can provide food, shade, perches, and camouflage for many different species of wildlife.

Conclusion
As increasing human populations and development pressures continue to decrease habitat for plant and animal species, green roofs in cities can become critical refuges for wildlife, particularly in heavily urbanized environments like NYC. Green roofs also provide numerous benefits to people; these include opportunities to combat climate change and increase resiliency by improving building efficiency, reducing urban heat island, capturing storm water, improving air quality and access to green space, increasing property values and providing jobs. With more than one million buildings in NYC and less than 0.1% of green roofs built to date, the potential to expand green roofs in our City is immeasurable.

NWF looks forward to supporting the expansion of green roofs in NYC and places great hope in the environmental benefits, educational, and economic opportunities they will create. We urge the New York City Council to pass the proposed suite of NYC Green Roof bills without hesitation and to seek mechanisms to increase incentives and eliminate barriers for their creation.

Sincerely.

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www.facebook.com/NYCEcoSchools
Uniting all Americans to ensure wildlife thrive in a rapidly changing world

c.c.
Steven Peck, Green Roofs for Healthy Cities
Dustin Partridge, NYC Audubon/Green Roof Researchers Alliance
Vicki Sando, PS 41

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[i] https://science.howstuffworks.com/environmental/green-tech/sustainable/why-dont-more-cities-require-green-roofs.htm
[ii] http://www.greenroofs.com/2018/11/26/national-wildlife-federation-hq-green-facade/
[iii] https://www.nature.org/en-us/about-us/where-we-work/united-states/new-york/stories-in-new-york/green-roofs-new-york-city/
[iv] https://www.asla.org/greenroofeducation/teacher-resources.html
[v] http://www.greenroofs.com/2018/06/04/june-7-what-green-roofs-can-do-for-nycs-environment-and-people/
[vi] https://www.dec.ny.gov/docs/administration_pdf/nycghg.pdf
[vii] https://www.epa.gov/green-infrastructure/lower-building-energy-demands
[viii] https://www.nytimes.com/2018/05/15/climate/air-conditioning.html
[ix] https://www1.nyc.gov/office-of-the-mayor/news/261-17/mayor-de-blasio-chancellor-fari-a-city-council-every-classroom-will-have-air
[x] https://commercialobserver.com/2018/06/why-the-school-construction-authority-is-getting-cozy-with-developers/
[xi] http://edfclimatecorps.org/engagement/new-york-city-department-education-ajay-ranjith-vempati-2016
[xii] https://www.opt-osfns.org/nycdsf/referenceDoc/news/DOE_2017AnnualReport_LoRes_030918.pdf, p.12
[xiii] https://www.yumpu.com/en/document/read/49449121/rooftop-revolution-manhattan-borough-president
[xiv] https://www.mdpi.com/2073-4441/10/11/1494
[xv] https://bit.ly/2h7F1uP
[xvi] http://www.naturalareasnyc.org/goals

Testimony of Bhavya Reddy,
The HOPE Program and Sustainable South Bronx
before the
New York City Committee on Environmental Protection
Concerning the
Green Roof Legislative Bill

Monday, January 28, 2019
City Hall, 10 am

Good morning, Chairman Constantinides and Members of the Committee. I am Bhavya Reddy, and I help deliver job training for New Yorkers seeking careers in the green construction field. Thank you for the opportunity to testify on the legislative package to make New York City roofs more sustainable.

Sustainable South Bronx, a division of the HOPE Program, is a workforce development non-profit that equips New Yorkers facing deep barriers to employment with the tools to achieve economic self-sufficiency. We train community members for careers in the sustainable construction sectors, with a special focus on making rooftops more sustainable through green infrastructure, solar panels, and reflective coatings.

We support building an equitable New York City through climate change mitigation strategies that are decentralized and community-based, making it more feasible to rapidly implement green projects and ensuring that community members who have traditionally been excluded from the positive economic impact of sustainable initiatives can benefit.

Solar and green infrastructure both fit this model well, particularly in a densely built urban environment. In addition to their environmental benefits, such as renewable energy generation, habitat creation, and storm resiliency, there are significant potential economic benefits, especially for the low-income New Yorkers we serve.

According to a report by MIT CoLab, NYC's existing annual investment in green infrastructure on public and private property has been estimated to generate "between 262 and 608 job years of entry level construction employment,"[1] jobs that create the opportunity to maximize triple bottom line returns of environmental sustainability, social justice, and economic activity.

Between 60% and 80% of NYC's new GI positions will be entry level jobs, which could support job creation and long-term employment in the communities where green infrastructure is being

[1] MIT CoLab, "Green Infrastructure & Economic Development Strategies to Foster Opportunity for Marginalized Communities," March 28, 2013.
http://web.mit.edu/colab/pdf/tools/gedi-green-infrastructure-economic-development.pdf

built. These are quality jobs, with average annual salaries for landscape and construction contracts generated by green infrastructure work between $33,040 and $63,960.[2]

In addition to creating jobs, green roofs mitigate the urban heat island effect, which disproportionately affects low- and moderate-income New Yorkers. They provide much needed green space and reduce energy bills in the summer and winter through evapotranspiration and insulation. By concealing roof membranes from UV exposure, the lifecycle of the roof is extended, reducing replacement costs along with the carbon footprint.

Green roofs and solar installation generate employment opportunities for community members and local wealth-building for small businesses and social enterprises. Unfortunately, market demand for these services doesn't reflect the urgency of global warming, requiring regulatory interventions like this legislation. For instance, sustainable design elements like green roofs and solar panels are frequently included in conceptual designs only to be value-engineered out of projects during the construction process. This requirement would ensure that the vision presented to communities for approval wouldn't be watered down along the way.

However, long after installation, successful implementation of green roofs involves occasional inspections and maintenance; in addition, not all GI is created equal, and roofs that provide the greatest ecological and aesthetic benefits may require more care.[3] While maintenance is sometimes considered to be a burden, for our graduates and communities, the long-term employment opportunities generated by GI work can be life-changing.

In order to see the greatest benefits for and reception within communities, we would be interested in seeing a focus on not just the installation of these roofs, but also on ongoing support for building owners when it comes to maintenance over the lifetime of the project, ensuring a healthier lifespan for installations and an even better outcome for the City's initial investment.

On behalf of the HOPE Program and Sustainable South Bronx, thank you for the opportunity to testify. We appreciate the support of City Council through the Greener NYC Initiative, and we look forward to working further with you on long-term solutions that are both economically and environmentally sustainable for all New Yorkers.

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[2] *Ibid.*

[3] Adrien Higgins, "Green roofs are no easy feat, but the list of viable plants is growing," *The Washington Post,* September 2, 2015. https://www.washingtonpost.com/lifestyle/home/green-roofs-popular-but-finicky/2015/09/01/bfc89db0-4d04-11e5-84df-923b3ef1a64b_story.html?noredirect=on&utm_term=.be830891c576

BOMA New York

THE BUILDING OWNERS AND MANAGERS OF GREATER NEW YORK'S TESTIMONY ON INT. NO. 1032, A LOCAL LAW TO AMEND THE ADMINISTRATIVE CODE OF HE CITY OF NEW YORK, IN RELATION TO REQUIRING THAT THE ROOFS OF CERTAIN BUILDINGS BE COVERED IN GREEN ROOFS, SOLAR PANELS OR SMALL WIND TURBINES

The Building Owners and Managers Association of Greater New York (BOMA/NY) appreciates this opportunity to submit the below comments for the record. BOMA/NY represents more than 750 property owners, managers, and building professionals who own or manage 400 million square feet of commercial space in New York City. We are an association within BOMA International, a federation of 90 US associations and 19 international affiliates that own and operate approximately 10.5 billion square feet of office space in the United States.

We appreciate this opportunity to comment on Int. No. 1032. This bill would require 100% of rooftop that is not occupied by mechanical equipment or required by the Fire Code to house a green roof, solar panels, and/or small wind turbines. BOMA/NY members have a long history of pursuing "green" projects, energy efficiency measures, and other sustainability goals. BOMA/NY has also worked with the City and the Council on a broad range of plans and legislation related to reducing emissions. Nonetheless, we object to this legislation, as written, for the reasons given below.

1. It is not clear from the way the bill is written if roof space needed to access and repair mechanical systems, amenities, and other equipment would be excluded from the requirements.
2. It is not clear why mechanical systems, and not other equipment, amenities or other uses are not also exempt from the bill's requirements.
3. The way the bill is written, even very small spaces would require one of the treatments, which could lead to ineffective but very expensive actions in order to comply.
4. Most large commercial buildings are largely shaded, especially in Manhattan, taking one of the three options away from many buildings.
5. The City is seeking legislation that would require building over 25,000 square feet to drastically reduce greenhouse gas emissions, eventually by 80% by 2050. It largely leaves the means of achieving this goal up to building owners. This bill could easily require buildings to take measures that are less effective than other potential actions, added undue costs and poorer results.
6. Many commercial roof spaces are leased to third parties for other uses. Therefore, leased space should be exempt.

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7. Under the energy codes, roof insulation requirements will provide all the benefits that green roofs would provide in terms of heat management.
8. The bill would prevent buildings landlords from creating amenities for the tenants. Outdoor spaces on rooftops can include landscaping, seating, lounge areas, shade structures, etc., for tenant employees and their guests to relax and socialize. Such amenities also improve tenant retention. There is a growing demand for these amenities, and this bill would preclude adding them.
9. Connecting solar or wind from the roof of a tall office tower into the electrical system that may be below ground is very expensive and disruptive.
10. The roof space may be set aside for future uses that this bill would preempt. For example, a building manager may be planning to move basement mechanical equipment such as a to the roof the next time there is an equipment update in order to improve resiliency from flooding.
11. It is not clear if the bill would only apply to new buildings. Existing buildings that did not plan for such uses should be exempt.
12. Mechanical equipment on the roof will need to be replaced, and new versions might be larger than existing equipment.
13. The bill as written does not take cost/benefit into account and could lead to costly and ineffective requirements.
14. The City is currently updating its building codes. These updates are worked out via a consensus process of experts, mediated and lead by DOB's code staff. These updates occur every three years and are part of large, complex, and effective international, national, state, and city process. It's much preferred to amend the codes using this process instead of spot amending them as this bill would do.

NEW YORK STATE ASSOCIATION FOR AFFORDABLE HOUSING

Testimony Submitted to the New York City Council Committee on Environmental Protection
Int. 276
January 28, 2019

We at the New York State Association for Affordable Housing (NYSAFAH) would like to thank Chair Constantinides, Councilmember Richards, and the members of the Committee on Environmental Protection for the opportunity to submit comments on one of the bills being heard today. NYSAFAH members pride themselves as being leaders in the space of sustainable building and are behind a number of innovative and award-winning projects, including those built to passive house standards.

Int. 276
On Int. 276, while we support the spirit of the legislation, we feel a mandate this broad is infeasible and presents too many cost and logistical challenges to the unique world of affordable housing. Much of the information that informed this testimony came from members who themselves have experience designing and building green roofs or installing solar panels on their projects.

First, the utility and practicality of both green roofing and solar paneling will vary on a project-by-project basis. In some cases, elevator or mechanical space bulkheads block sun to a portion of the roof. In other cases, neighboring buildings or other natural factors may mean a roof does not get the level of sun necessary to make these requirements efficient or possible. A requirement to force the installation of a system that won't generate energy-saving benefits will have the opposite of its intended impact; it will be a waste of resources.

Green roofs are costly to install and to maintain and irrigate properly. It is a myth that they can survive on their own once planted. For projects with the budget, staffing and plan to maintain them, green roofs are a great benefit to a project. However, affordable housing survives on thinner profit margins and necessarily has to be cost-conscious in its construction and ongoing operational expenses. Not all projects will easily be able to find room for this mandate in their budgets.

This becomes especially true when considering the other community concerns and obligations that affordable housing projects are often asked to fulfill. For example, many NYSAFAH builders utilize rooftop space for roof terraces as a tenant amenity. Design guidelines require a recreation space accessible to tenants and these rooftop areas often fulfill that requirement.

For these reasons, we feel solar and green roofs should remain one of several options available to projects to use where practical and applicable. We must continue to work together to incentivize smart and sustainable building for all projects, without the implementation of mandates that work only for some. We thank the Committee again for the opportunity to submit the above testimony.

NYSAFAH is the trade association for New York's affordable housing industry, with nearly 400 members, including developers, lenders, investors, attorneys, contractors, architects and others active in the financing, construction, and operation of affordable housing. Together, NYSAFAH's members are responsible for most of the housing built in New York State with federal, state, or local subsidies.

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NEW YORK CITY AUDUBON

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January 28, 2019

New York City Council
Committee on Environmental Protection
Attn: Caitlin Kelmar
250 Broadway
New York, NY 10007

Re: Support for NYC Green Roof Bills

Dear Members of the New York City Council,

New York City Audubon Society (NYC Audubon) mission is to protect and conserve wild birds and habitat in all five boroughs of New York City, improving the quality of life for all New Yorkers. Our scientific inquiry-based work broadly falls within three major areas: safeguarding migrating birds as they pass through the city; protecting nesting birds; and connecting people with birds and nature through trips, classes, lectures, educational programs, and community outreach. Green roofs are a novel habitat that allow us to work in all three of these areas at the same time.

NYC Audubon currently leads the NYC Green Roof Researchers Alliance, a consortium of over 60 scientists, educators, and policy makers from 17 institutions collaborating to make New York City a more sustainable place. NYC Audubon also leads ecological research at the Jacob K. Javits Convention Center green roof and the Kingsland Wildflowers at Broadway Stages green roof in Green Point, Brooklyn. NYC Audubon will continue to study the benefits of green roofs and encourage green roof installation in support of wildlife conservation.

Green roofs are ecologically diverse wildlife habitat and are a conservation tool. Green roofs can have diverse and abundant insect communities that can be similar to ground level habitats, and green roofs in New York are used far more often by insects than non-green roofs. Insects play a vital role in New York City's ecosystem through pollination, soil cycling, pest control, and by providing a food source for bats and birds [(1)].

The insect diversity on green roofs allows for green roofs to be an important conservation tool for migratory birds. New York City is located along the Atlantic Flyway, a route that tens of millions of birds follow each spring and fall. As these birds pass through the city they need stopover habitat to "re-fuel" on their long flight. The lack of stopover habitat for migrating birds is one of the greatest risks to the

future of migratory birds, yet these risks can be offset by introducing green roofs to New York City's skyline. Green roof are stopover habitat for migrating birds, with over 40 species using green roofs in New York through the spring and summer. Green roofs also provide foraging habitat for breeding birds, allowing birds that avoid urban environments to survive in a city which is otherwise inhospitable[(1)].

In addition to insects and birds, bats thrive on urban green roofs. Bat species in northeastern North America are currently beleaguered by white-nose syndrome, a fungus that is killing decimating bat populations. Bats also migrate through New York City and, like birds, need habitat with food resources so that they can survive migration. Green roofs help bat populations by providing foraging habitat during migration and the summer, with far more bats foraging over green roofs than conventional roofs[(2)] in New York City.

With all of the benefits to wildlife that green roofs offer, NYC Audubon supports the suite of "NYC Green Roof" bills, and enthusiastically supports the sentiment of the bills introduced by Council members Rafael Espinal, Jr., Donovan Richards, Stephen Levin, and Costa Constantinides. The legislative package would require green roof systems, solar panels, and small wind turbines on certain types of buildings, thereby helping NYC combat climate change and achieve its ambitious sustainability, equity, and resiliency goals.

NYC Audubon strongly recommends amendment to make the bills more wildlife friendly. Primarily, since green roofs are wildlife habitat, NYC Audubon does not recommend including wind turbines, which could injure bats and birds, on green roofs. NYC Audubon's position is that green roofs provide more overall ecosystem benefits to New York City than rooftop wind and solar. Green roofs are generally more expensive to install than solar or wind power and NYC Audubon would prefer to see green roofs prioritized in this legislation to ensure their installation over the less expensive rooftop energy initiatives, which should be addressed separately.

New York City Audubon looks forward to supporting the expansion of green roofs and wildlife in NYC. We applaud the New York City Council in its efforts to advance Green Roof legislation to make New York City a more sustainable and wildlife friendly environment.

Sincerely.

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Dustin R. Partridge
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References:

(1) Partridge DR, Clark JA (2018) Urban green roofs provide habitat for migrating and breeding birds and their arthropod prey. PLoS ONE 13(8): e0202298. https://doi.org/10.1371/journal.pone.0202298

(2) Parkins K, Clark J. Green roofs provide habitat for urban bats. Global Ecology and Conservation. 2015;4:349-57.

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Memorandum in Support

Int. 276-2018

A Local Law requiring that the roofs of certain new buildings be partially covered in plants or solar panels.

Int. 0961-2018

A Local Law to amend the administrative code of the city of New York, in relation to extending J-51 benefits to owners of multiple dwellings for green roofs.

Int. 1031-2018

A Local Law in relation to posting information regarding green roofs on the website of the office of alternative energy.

Int. 1032-2018

A Local Law requiring that the roofs of certain buildings be covered in green roofs, solar panels or small wind turbines.

Res. 0066-2018

Calling upon the State Legislature to pass, and the Governor to sign, legislation to increase the real property tax abatement for green roofs to $15 per square foot.

The New York League of Conservation Voters (NYLCV) supports Introductions 276, 961, 1031, 1032, and Resolution 66 which promote the use of green infrastructure and renewable energy on certain rooftops in New York City.

Given the dense built environment, it is imperative that the City maximize the use of the nearly 40,000 acres of roof space in New York City for uses that promote clean energy, air and water, resiliency from urban heat island effect, a reduction in cooling costs during summer months, and in the case of intensive green roofs, provide much needed green space for New Yorkers to recreate.

NYLCV encourages the bills' sponsors and the Committee on Environmental Protection to consider including blue roofs as well. Blue roofs are are non-vegetated source controls that retain stormwater and allow for its gradual release. Blue roofs are much more affordable than green roofs while still maintaining the benefits of stormwater retention. When combined with a reflective roof coloring they can also provide energy efficiency benefits through rooftop cooling.

For these reasons, the New York League of Conservation Voters supports Intros. 276, 961, 1031, 1032 and Res. 66. We urge the City Council pass this important legislation.

Testimony submitted by
Marion Yuen, GRP, LEED Green Associate
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1/28/2019

Good day, Mr. Constantinides and Members of the Committee on Environmental Protection.

My name is Marion Yuen. I am a small business owner, a certified Green Roof Professional, and a licensed real estate broker.

I want to thank you for today's hearing and the 12/4/2018 hearing on greenhouse gas emission reduction in buildings.

My focus today is to urge you to cross pollinate the two sets of bills, the green roof bills being heard today with Int. 1252 and 1253 – to bring the essence and the best features of one into the other.

I will share my views in three parts below:

1. Int. 1253 and 1252
2. Int. 0141, 0276, 0961, and 1032, and Res. 0066
3. Location, Location, Location

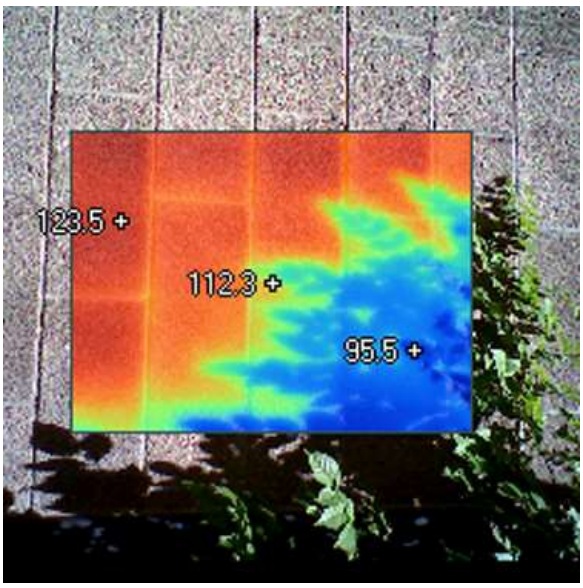
1) Int. 1253 and 1252:

Int. 1253 is a well-crafted bill with metrics and timelines for achieving environmental performance. At the same time, Int. 1252 offers a path for financing and accountability. With minor adjustments, the essence of the green roof bills heard today could be brought into Int. 1253 and implementation could be financed through the PACE proposal in Int. 1252. In this way, you could bring the regenerative powers of nature into play to help NYC achieve GHG emission reduction.

Global climate change is coming upon us fast and furious because of our human disconnect with nature. Partnering with nature would help us tap into her **regenerative** systems and benefit from the ecosystem services she provides.

Green roofs are living systems, our efforts to bring a bit of nature back to the concrete and tarmac of this large city. Similarly, green walls (while not covered in the proposed bills today) are living systems where plants are supported to grow upwards as fences and alongside building walls. When properly designed and installed, green roofs could extend roof life and green walls could serve to protect building facades. Both green roofs and green walls are "containers" for us to harvest and utilize ecosystem services.

How are ecosystem services delivered? Let's focus on the energy aspects and our need to sequester atmospheric carbon. When the sun shines on plant leaves, photosynthesis allows vegetation to capture carbon dioxide (releasing oxygen to keep us alive) and store the carbon in plant stems and roots as well as in the soil (if there is enough soil or growing media). In the parallel process of evapo-transpiration, a plant transports water from the roots up to the leaves where the water evaporates – producing cooling at the rate of 1 ton of air conditioning per 33 gallons of water evaporated.



Infrared photo, superimposed on a masonry surface with green wall, shows difference in temperatures.
Source: greenscreen

Appropriately designed green roofs and green walls would allow vegetation to lower temperatures of intake air into building AC systems to significantly below the level of temperatures on bare roofs. This temperature drop would result in lower energy consumption and associated GHG emission reductions.

Besides offering energy benefits, plants help clean air by trapping some pollutant particles on their leaves.

We cannot fight climate change since the climate is part of nature – just like we are. What we CAN do is to mitigate the effects (in GHG emission reductions, as Int. 1253 proposes) and to take measures to adapt to the multitudinous and increasingly large effects. At the same time, the silver lining in the cloud is that we can manage micro climates on a very local level rather than simply suffer from Urban Heat Island effects and even begin to reverse some of the local effects.

Therefore, I urge you to explicitly include and highlight green roofs (and green walls) in Int. 1253 and 1252 as **regenerative systems** that provide multiple benefits including energy efficiency and GHG emission reduction as well as storm-water management. Look at the Javits Center – its roof no longer leaks and plays host to a plethora of insects, birds, and bees – at the courtesy of nature.

2) Int. 0141, 0276, 0961, and 1032, and Res. 0066:

However this set of bills end up, I urge you to address the critical issues of a) environmental impact and b) orderly implementation.

As you must must know, there are many kinds of green roof, spanning the spectrum from thin sedum trays (likely to be manufactured offsite) to roofs for urban agriculture to ecological roofs (like the one above the Lefrak Skating Rink in Prospect Park). Environmental benefits delivered depend on the type of vegetation, type and depth of soil or growing media, and design.

Green roofs could be designed to enhance the performance of solar panels, and some green roofs are already a combination of green and blue roofs. Acting as storm-water retention and/or detention containers, such structures help to reduce energy use not only in the buildings where they are located and very importantly, lighten the load of waste water treatment plants which are some of NYC's biggest energy consumers.

a) Environmental Impact – These bills offer contribute regenerative solutions to Int. No. 1253, helping both your intentions and implementation. I strongly suggest that some provisions in Int. 1253 be reframed and inserted into these bills for:

- Specifying and assessing the multiple environmental benefits for design goals, ongoing performance tracking, and targets;
- Defining a minimum acceptable level of environmental benefit delivered;
- Schedule for increasing expected levels of environmental benefit deemed acceptable.

Clarity in the above suggested provisions would make it possible for green roof projects to satisfy the requirements of PACE financing as proposed in Int. 1252. Further, such clarity would encourage and could reward innovation and creative design to achieve greater environmental benefit per sq. ft. of green roof.

While I understand that the bills cover only green roofs, it is important to note that green walls provide more than beautiful facades. Practically, they may be more easily adaptable to existing building structures in renovations and can deliver many of the environmental benefits as green roofs, including food production.

As a start, there is enough information in the literature and plenty of NYC talent to help you determine a rough estimate of potential collective environmental benefits due to these bills and achievable targets over time.

b) Orderly Implementation – Growing living things is not like ordering mechanical gadgets. Without the provisions on environmental benefit suggested above, there could be an increase in the number of green roof projects which may earn LEED credits and have minimal or uncertain environmental impact.

Critically important is to have a schedule for increasing number of green roof projects and increasing levels of environmental performance. Not only would this spur innovation, it is actually necessary for building up the bank of local human resources in design, installation, and maintenance. As a city, we need a collective growth curve!

At the 12/4/2018 hearing, Matt Chambers of the Mayor's Office of Sustainability anticipated that around 11,000 more properties (50,000 sq. ft. and larger, as best I could read the transcript) would come under Int. 1253 purview. If even half of these 11,000 properties were to install green roofs (and/or green walls), we would have a significant increase in vegetated areas.

In city-owned buildings, NYC should take the lead, walk the talk, and demonstrate how we could work with nature to regenerate our living environment, ameliorate and even reverse the effects of global climate change at the local level.

3) Location, Location, Location:

As written, Int. 0141, 0276, 0961, and 1032, and Res. 0066 refer to green roofs in general or their eligibility for J-51 status or by building class. Given this, it is important to note that a green roof on a building stands on a block and in a neighborhood – it is not an isolated project nor an insulated project.

Location matters! I urge you to note the need to pay attention to a) environmental justice, and b) hospitals and schools as centers of communities.

a) Environmental Justice – In studying several Brooklyn neighborhoods, Tammy Lewis and Kenneth Gould of Brooklyn College have written about the Environmental Justice of Green Gentrification. As more green spaces and features were introduced (some supported by public funds), these areas saw large increases in property values over time and gentrification that led to the displacement of residents that have long lived there.

How would this set of green roof bills be written to ensure environmental justice and equity?

b) Hospitals and Schools as Centers of Communities – Even if green roofs were looked at as standalone projects, hospitals should embrace green roofs & green walls in a big way. Scientific studies have shown that exposure to green vegetation helps to reduce stress levels of patients, visitors, and staff; leads to patients' reduced need for pain killers; and enhances patient healing. So, hospitals should see that green roofs not only could help with their energy management but also bring multiple benefits.

Other scientific studies have shown that exposure to green vegetation could – within minutes – lower blood pressure, pulse rate and cortisol levels as well as produce positive brain activity changes. Such exposure facilitates quick shifts in attention and positively impacts children's learning.

As you will must agree, hospitals and schools are often anchors in our neighborhoods as well as centers of business and employment. I argue that they could also be centers of greenery for GHG emission reduction and other environmental benefits. There should be policies to scale up green roofs (and green walls) at these institutions and in their vicinity – this scaling up would allow aggregation of environmental benefits, helping to reduce Urban Heat Island effects which act at the block and neighborhood levels.

Conclusion

Green roofs and walls are living systems that allow NYC to deploy our knowledge and talent in ecology, architecture, engineering, urban planning, and information technology to help us take steps towards relationship with nature and to benefit from the ecosystem benefits she provides.

With ecosystem services, we can manage micro climates on the block and neighborhood levels. Instead of "fighting" climate change, we will be talking about ameliorating and reversing the effects of global climate change on the local level – with the help of nature's regenerative powers.

First, the various green roof bills heard in the Committee on Environmental Protection today and the bills heard on 12/24/2018 need to be be reconciled to acknowledge that we live in one City in one common reality with nature.

RAND

January 29, 2019

Rafael L. Espinal, Jr.
Chair, Consumer Affairs
New York City Council Member, 37th District
250 Broadway, Suite 1754
New York, NY 10007
Att: Caitlin Kelmar, Policy Director

Re: Committee on Environmental Protection
Green Roof Local Laws
Expert Testimony

Dear Ms. Kelmar:

Congratulations to your office on the impressive support it received for the proposed bills during yesterday's council hearing. The impassioned speeches from council members and panelists were an encouraging sign that the legislation is close to acceptance. Thank you for this opportunity to provide input. As discussed, below is my expert testimony pursuant to Green Roof Local Laws under consideration:

At the hearing, it was mentioned that the great majority of buildings that will exist in NYC already exist, and it seemed clear that, to make impactful change in the form of green roof/solar/wind installations, these buildings must be addressed.

It was also noted that installations of this type atop existing privately owned buildings are sparse and available grants and promotions have not been successful to date. As a professional structural engineer, I have evaluated numerous New York City roofs, installed green roofs/solar panels and roof decks for various uses, and lectured on these topics. In my experience, I have found existing building owners/residents are repeatedly running into the following major setbacks when considering these installations:

Legal Use Of The Green Roof as an Amenity Space

Why go through the expensive and tedious application/design/build/maintenance if you can't enjoy it?

RAND ENGINEERING & ARCHITECTURE, DPC
159 WEST 25TH STREET, NEW YORK, NY 10001 ■ P: 212.675.8844 ■ F: 212.691.7972 ■ randpc.com

NYC can facilitate legal use and thereby encourage private existing building owners to install these additions (without major expenses) in the following ways:

1. Accessibility:

Rigid accessibility requirements that require existing buildings to extend access to their roofs (even non-accessible walkup buildings) while understandably and correctly interpreting ADA, effectively eliminate the opportunity for an accessible green roof for a majority of NYC buildings. Adding or extending an elevator costs several hundred thousand dollars or more, and an alternate ADA acceptable lift, where possible, is still usually impractical and/or prohibitively expensive. Currently, an exemption for the requirement can be requested from the Mayor's office, and if equal accessible amenities can be provided elsewhere on the property, permission may conceivably be granted, but it's very uncommon, and many otherwise viable green roof projects stop here.

The City could include additional options/flexibility toward win-win results, such as:

1. Allowing building owners to collectively buy in to create a new shared accessible amenity space offsite, or
2. Simply contributing reasonable amounts to maintenance/upgrades of nearby accessible parks, easing city budgets.
3. Providing assistance to those building owners who are willing/able to open rooftops up for public use. An exterior elevator would be useful in some cases, and to share costs across additional stakeholders.
4. Creating shared rooftops where multiple adjoining buildings can partner with the city to create a larger rooftop park.
5. Fast-track filing of green roof/solar/wind as green initiative and/or public amenity would facilitate adoption. This was a common suggestion during the meeting.
6. Creating a guide (ex. flowchart) to inform designers/owners of their options for these cases. I would be available to assist with this once the rules are established.

2. Structural Evaluations:

The existing roof capacity is the second limitation. As a licensed structural engineer, I agree with the general sentiments stated during the meeting that A) it's possible to install some kind of green roof and/or solar array on most buildings (through various approaches, such as layout optimization) and B) that the cost of the evaluations provides a fairly high cost of entry. The numbers stated, $3,000-$5,000 for a small building, were not inaccurate, although this is a very basic/limiting analysis and excludes contractor costs for investigative probes. We work with our clients to bring this cost down to the degree possible, but the investigative work required is usually significant (drawings for older buildings almost never available) and almost always requires probes and/or other testing. A total cost of over $15,000 for an in-depth roof capacity analysis is not uncommon for a larger or more complex roof structure.

Suggestions:

1. Offer some reimbursement of structural evaluation costs (a common suggestion during the meeting) in exchange for submission of roof load analysis reports clearly stating roof carrying capacity to the city. A GIS map layer of these results can be used to plan future shared public/private infrastructure, green roofs/solar/wind and beyond. Importantly, an existing roof can have multiple areas of varying capacity, and taking this into account significantly expands the availability of options for rooftops.
2. Create an option/incentive/mandate for green roof/solar/wind as part of the filing process for any roof replacement project. An attractive option to perform a roof structural analysis as part of any roof replacement would create a city-wide mechanism to encourage mapping of the entire NYC building stock.

As a note, my firm and architectural/engineering companies in general would also benefit from such incentives offered in the form of increased business. To contribute from our end, we would work with your team and the Department of Buildings to create reporting/execution standards that would best serve the shared goal of maximizing use of rooftop space for sustainable initiatives. We would be available and enthusiastic to meet with your team to discuss these suggestions and approaches to meet and exceed NYC sustainability goals, to provide our expertise, and to potentially delegate resources to assist in this endeavor. RAND Engineering & Architecture, DPC is a 90-person New York City firm that evaluates building systems and designs, specifies, and administers programs for repair, upgrade, and restoration.

Consideration of the above testimony as part of your review is very appreciated. My curriculum vitae is attached for your reference. Thank you for your attention.

Sincerely,
RAND Engineering & Architecture, DPC

EG:jw

Eugene Gurevich, PE
Senior Structural Engineer

RAND

COVER SHEET

Date: January, 29 2018

To: Rafael L. Espinal, Jr.
Chair, Consumer Affairs
New York City Council Member, 37th District
250 Broadway, Suite 1754
New York, NY 10007
Att: Caitlin Kelmar, Policy Director
E-mail: ckelmar@council.nyc.gov

From: Eugene Gurevich, PE

Re: Committee on Environmental Protection
Green Roof Local Laws
Expert Testimony

Number of Pages (including cover): 4

COMMENTS:

Expert testimony pursuant to Green Roof Local Laws under consideration, as discussed. Please do not hesitate to call me with any questions.

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RAND

Eugene Gurevich, PE, LEED AP

Team Manager, Structural Team

PROFESSIONAL EXPERIENCE

RAND Engineering & Architecture, DPC (2008 to present)

As Team Manager of RAND's Structural Team, Senior Structural Engineer Eugene Gurevich, PE specializes in the improvement and rehabilitation of steel, concrete, masonry, and wood-framed buildings. He works on a wide range of structural, civil, exterior repair, and historic preservation projects for residential, commercial, and institutional properties, including structural rehabilitation, gut-renovation, vertical/horizontal/subgrade additions, site improvement, exterior restoration/waterproofing, and Facade Inspection Safety Program (formerly Local Law 11/98) facade repair. Eugene is also the Technical Director of RAND's NYC Licensed Special Inspection Agency for structural projects.

Eugene's primary responsibilities include managing an 11-member team of Professional Structural Engineers and Engineers-in-Training; serving as Engineer-of-Record/Inspection Applicant for structural, civil, and exterior projects; preparation of design documents; project management and construction, contract, and bid administration; construction observation; forensic investigation of buildings and sites; expert witness testimony and litigation support; structural evaluation and emergency response; feasibility studies for additions and conversions; and preparation of engineering reports.

EDUCATION & PROFESSIONAL CREDENTIALS

Educational Degrees

Bachelor of Science in Civil Engineering, May 2008, Rutgers School of Engineering, Piscataway, NJ
Master of Science in Civil Engineering, Summa Cum Laude, August 2010, Norwich University, Northfield, VT

Licensures

New York State Licensed Professional Engineer (License #089484)

Certifications

LEED Accredited Professional (AP) Building Design + Construction
Certified American Concrete Institute Field Testing Technician, Grade 1
International Code Council Special Inspector Certifications:
Structural - High Strength Bolting, Structural Steel - Welding, Masonry

Organizations

New York State Society of Professional Engineers
American Society of Civil Engineering
American Institute of Steel Construction

Guest Lectures

Building the Rooftop Farm: Advice From a Structural Engineer - AgTechX

RAND

Eugene Gurevich, PE, LEED AP

Team Manager, Structural Team

Sky is the Limit: Rooftop Amenities - Council of New York City Coopertives & Condominiums (CNYC)
Structural Engineering & Site Planning - The City College of New York
Maintenance & Restoration of Brick Buildings - NYC Brickwork Design Center

PROJECTS

Eugene has worked on a large number of projects, featuring a wide range of scope items.

HISTORIC PRESERVATION
901 Broadway, New York, NY
$1,782,000 construction cost
Design engineer on award-winning rehabilitation of a New York City Landmark in the Ladies Mile Historic District with ornate cast iron facade constructed in 1877. Major structural defects were discovered within the roof and tower support during the course of the work, including sinking of the mansard tower into the building and failed/shifting cast-iron structure at the building exterior. RAND's structural design challenges included stabilizing the tower within the intricate roof structure, repair and support of failed members, concealing the repair without losing interior floor area, and repairing the exterior cast iron structure without sacrificing the architectural integrity of the facade.

GUT RENOVATION/ VERTICAL ADDITION
6 Sutton Square, New York, NY
$4,000,000 construction cost
Engineer-of-Record/Inspection Applicant and Lead Structural Engineer for a complete townhouse renovation. Work included significant structural rehabilitation, reconstruction/extension of elevator shaft and main stair to pavilion level including a new ornate penthouse bulkhead enclosure and recreational roof deck, reinforcement of existing penthouse structure and rooftop for converted use, reinforcement of interior floors, lowering of basement and reinforcement of existing foundations.

HORIZONTAL/SUBGRADE ADDITION AND SITE IMPROVEMENT
Franklin Plaza, New York, NY
$40,000,000 construction cost
Engineer-of-Record for new boiler plant installation for a 691-unit, 12-building cooperative in East Harlem, including expansion of the existing boiler room, full-height chimney breeching and enclosure, ADA-compliant ramp, platforms, stairs, and walkways. Work included site excavation and support, site dewatering, installation of deep, shallow, and composite foundations, foundation/retaining walls and floor/roof structures, steel framing, and brick facade construction.

RAND

Eugene Gurevich, PE, LEED AP

Team Manager, Structural Team

STRUCTURAL REHABILITATION/ VERTICAL ADDITION
187 7th Avenue, Brooklyn, NY
$3,500,000 construction cost
Engineer-of-Record/Inspection applicant/Project Manager and Lead Structural Engineer for complete renovation of a mixed-use building in Park Slope including replacement of all wood floor structures with new framing, lowering of basement, new elevator shaft, new stairwells, new turret and bay window curtain walls, new balconies, new storefront, and new rooftop pavilion/access. Work included temporary bracing of the building walls and staging/detailing of construction to ensure structural stability and structural modification of the exterior walls to expand openings.

STRUCTURAL REHABILITATION & NEW GREEN ROOF/RECREATIONAL DECK
Rutgers Presbyterian Church, New York, NY
$1,500,000 construction cost
Engineer-of-Record and Lead Structural Engineer for repair of Upper West Side church. Work included structural evaluation, repair, and reinforcement of the existing roof as part of installation of a new promenade, green roof, and roof replacement program; repair of the existing water tower steel framing and enclosure; and reinforcement/support of rooftop mechanical structures.

EXTERIOR REPAIR
London Hotel, New York, NY
$1,250,000 construction cost [estimated]
Project Manager for exterior repair of a 56-story Midtown Manhattan hotel. Complete hands-on building facade survey via suspended scaffold, coordination and observation of repairs and contract/construction administration.

FORENSIC SURVEY EXPERIENCE

Eugene has conducted comprehensive physical condition surveys and offering plan reviews for condominium owners and tenant associations for the following NYC properties:

7 East 85th Street, New York, NY

7 Hubert Street (Hubert Street Condominium), New York, NY

14 Hope Street, Brooklyn, NY

100 West 58th Street (Windsor Park), New York, NY

138-140 West 124th Street (LOFT 124), New York, NY

RAND

Eugene Gurevich, PE, LEED AP

Team Manager, Structural Team

150 North 5th Street (The Rialto), Brooklyn, NY

154 Attorney Street, New York, NY

301 West 118th Street (SoHa Condominium), New York, NY

532-540 West 22nd Street, New York, NY

Follow-up services included but not limited to:

- Litigation support and expert witness testimony
- Settlement/ shareholder/case coordination meetings
- Destructive/non-destructive investigation and testing
- Code analysis
- Structural evaluation/analysis
- Design and construction observation of corrective work

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1032, 961, 0276 Res. No. 0066

☒ in favor ☐ in opposition

Date: 1/28/2019

(PLEASE PRINT)

Name: Inger Yancey

Address: 42A Monroe Pl Brooklyn NY 11201

I represent: Brooklyn, NYC Brooklyn Greenroof LLC

Address: 42A Monroe Place Brooklyn NY 11201

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: EMILY MAXWELL

Address: ~~322 8 Ave~~ 1113 8 Ave, B K

I represent: The Nature Conservancy

Address: 322 8 Ave, NY

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961, 1031 0276 1032 Res. No. _____

☒ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: Marielle Angelone

Address: Brooklyn NY

I represent: NYC Wild Flower Week

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. ________ Res. No. ________
☐ in favor ☐ in opposition

Date: ________

(PLEASE PRINT)

Name: AZIZ DEHKAN

Address: 379 1st AVE 10010

I represent: NYC COMMUNITY GARDEN COALITION

Address: 232 E 11th ST NY 10003

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 276, 141, 961 1031, 1032, Res. No. 0066
☐ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: Michelle Luebke

Address: ________

I represent: Bronx River Alliance

Address: ________

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. ________ Res. No. ________
☐ in favor ☐ in opposition

Date: ________

(PLEASE PRINT)

Name: Melissa Enoch, Program Manager NYC DEP

Address: ________

I represent: ________

Address: ________

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: ALAN PRICE, DIRECTOR OFFICE OF TECHNICAL CERT. & RESEARCH

Address: _____

I represent: DOB

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: Susanna DeRoche

Address: Mayors office

I represent: ↓ Administ.

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1141, 0276 Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Mary Nell Hawk

Address: 52 Barrow St. NYC 10014

I represent: Self + Alstyne Solar LLC

Address: 52 Barrow

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: KRISTI GONZALEZ

Address: 1001 JF KENNEDY BLVD E, NJ 07

I represent: NORTHS ENVIRONMENTAL / ROBERT SCHWARZ & ASSOCIATES

Address: 333 W 39TH, NY, NY 10018

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☒ in favor ☐ in opposition

Date: 1.28.19

(PLEASE PRINT)

Name: WILLIS - ELKINS

Address: 62 greenpoint ave

I represent: Newtown Creek Alliance

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Alan Burchell

Address: 145 4th Ave, Apt 113 NY, NY 10003

I represent: Urbanstrong, LLC

Address: 195 Plymouth st, Brooklyn 11201

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☒ in favor ☐ in opposition

Date: 1-28-19

(PLEASE PRINT)

Name: Tim Barrett

Address: Box 412, Millington, NJ

I represent: GRHC

Address: Toronto, CAN

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☒ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Chris Rice

Address: Staten Island NY

I represent: American Hydrotech

Address: Chicago IL

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☐ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: Melissa Daniels

Address: _____

I represent: Green Roofs for Healthy Cities

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1032 - 2018 Res. No. 0066 - 2018

☒ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: GWEN SCHANTZ

Address: 1843 NORMAN ST 11385

I represent: Brooklyn Grange LLC

Address: 63 FLUSHING AVE 11205

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1032-2018 Res. No. 0066-2018

☒ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: PATRICK WEISEL

Address: 290 RSD #1C NYC

I represent: BEING HERE LA, NICOTRA GROUP

Address: ~~1010 44~~ 1110 SOUTH AVE, STATEN ISLAND

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1032-2018 Res. No. 0666-2018

☒ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: MARNI MAJOCELLE

Address: 130 DIAMOND ST. #4B BKLYN, NY 11222

I represent: ALIVE STRUCTURES

Address: SAME ?

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: MARCIA ANNENBERG

Address: 900 West 190th ST NY 10040

I represent: Womens Caucus for Art NYC

Address: nationalwca.org

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Zach Steinberg

Address: _____

I represent: Real Estate Board of New York

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: BHAVYA REDDY

Address: 1360 GARRISON AVE, BRONX, NY

I represent: HOPE PROGRAM | SUSTAINABLE SOUTH BRONX

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 276/1032 141 (90) Res. No. 066 (1031)

☑ in favor ☐ in opposition

Date: 1-28-2019

(PLEASE PRINT)

Name: J Welch

Address:

I represent: SWIM Coalition

Address:

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: 28 January 2019

(PLEASE PRINT)

Name: Paul Mankiewicz

Address: 99 Bay Street, Bx 10464

I represent: The Nature Institute, NYC Soil + Water

Address:

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 0961 Res. No. _____

☑ in favor ☐ in opposition

Date: 1/28/19

(PLEASE PRINT)

Name: Lucia Pohlman

Address: 336 HIMROD ST BROOKLYN NY 11237

I represent: Myself

Address:

Please complete this card and return to the Sergeant-at-Arms