

CITY COUNCIL
CITY OF NEW YORK

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TRANSCRIPT OF THE MINUTES

Of the

COMMITTEE ON ENVIRONMENTAL PROTECTION

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B E F O R E: COSTA CONSTANTINIDES

COUNCIL MEMBERS: Stephen T. Levin
Rory I. Lancman
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A P P E A R A N C E S (CONTINUED)

John Lee, Deputy Director
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Mayor's Office of Sustainability,
NYC Registered Architect

Margot Walker, Managing Director
Green Infrastructure, Planning and Partnerships
NYC Department of Environmental Protection

Jane Winkel, Roofmeadow

Marni Majorelle, Owner/Operator
Alive Structures

Paul Miklowitz

2 [sound check, pause]

3 CHAIRPERSON CONSTANTINIDES: Good

4 morning. I am Costa Constantinides, Chair of the
5 Committee on Environmental Protection, and today the
6 committee will hear Intro 835, which will address
7 standards for green roofs in New York City. The
8 installation of a green roof system can offer
9 economic and environmental benefits. Green roofs can
10 benefit building owners financially by increasing
11 building installation thereby reducing heat-heating
12 and cooling costs, increasing the roof's systems'
13 protection against the elements, extending the roof's
14 life, reducing noise penetration into the building,
15 adding aesthetic value and marketability to the
16 building particularly in an urban setting and
17 increasing the building's value. Green roofs also
18 provide environmental benefits by reducing storm
19 water runoff, which mitigates combined sewer over-
20 sewage overflows to a limited degree, erosion and
21 flooding, reducing the urban heat island effect by
22 covering conventional dark roofing surfaces with
23 vegetation, which absorbs less heat, and reducing
24 greenhouse gas emissions by reducing cooling loads,
25 thereby requiring less combustion of fossil fuel

1 associated with the HVAC equipment. With few
2 exceptions, building products and materials must
3 comply with generally accepted industry-industry
4 standards. These standards establish thresholds for
5 safety and quality, demonstrate compliance with
6 specifications and create differentiation between
7 products. Over the past years, the ASTM
8 International convened a green roof task force, and
9 published standards relating to green roofs.
10 However, use of these standards depends on the type
11 of roof and the benefits sought. Use of these
12 standards for plan selection is not mandatory. We
13 want these green roofs that are installed in New York
14 City not only to survive, but to be a model for other
15 places that share our climate characteristics. Intro
16 835 would establish standards for the selection,
17 installation and maintenance of plants for green roof
18 systems. Section 1 of Intro 835 would amend the
19 Building Code of the City of New York by adding a new
20 section, 1507-16-5 entitled Selection, Installation
21 and Maintenance of plants for green roof systems.
22 New Section 1507.16.5 would require that the
23 selection, installation and maintenance of the plants
24 for green roof system comply with the ASTM in 2400
25

2 Standard. Section 2 of it's-of Intro 835 would add a
3 new reference standard for the ATME 2400 to the list
4 of referenced standards in Chapter 35 of the Building
5 Code. Section 3 of the bill would-contains the
6 enactment clause and provides the bill takes effect
7 180 days after an accident. This legislation will
8 provide environmental benefits to all New Yorkers.
9 I'm looking forward to hearing from all of you today,
10 and first I would like welcome the Administration
11 forward to be sworn. Thank you. [pause]

12 LEGAL COUNSEL: Can you please raise your
13 right hand? Do you swear or affirm to tell the
14 truth, the whole truth and nothing but the truth
15 today?

16 JOHN LEE Yes.

17 CHAIRPERSON CONSTANTINIDES: John, it's
18 good to see you.

19 JOHN LEE: Likewise.

20 CHAIRPERSON CONSTANTINIDES: And-and
21 thank you as always. We've had some great
22 partnerships and we're looking to partnering on this
23 bill as well so--

24 JOHN LEE: We are for housing. Thank you
25 so much for the compliment. Good morning Chair

2 Constantinides, and members of the committee. I'm

3 John Lee, Deputy Director for Green Buildings and

4 Energy Efficiency in the Mayor's Office of

5 Sustainability, and I'm a registered architect in the

6 City of New York. I'm joined here this morning by

7 Margot Walker, Managing Director for Green

8 Infrastructure, Planning and Partnerships at the New

9 York City Department of Environmental Protection.

10 Thank you for the opportunity to testify today on

11 Introduction 835 in relation to establishing

12 requirements for the selection, installation and

13 maintenance of plants for green roof systems.

14 Introduction 835 would amend the Building Code to add

15 a new reference Standard ASTM E2400, a Standard Guide

16 for Selection, Installation and Maintenance of Plants

17 for Green Roof Systems to the New York City Building

18 Code. The Mayor and the Office of Sustainability

19 applauds Speaker Mark Viverito, Council Member

20 Constantinides and the City Council for a continue

21 effort to ensure quality installations of green roofs

22 and the improved sustainability of buildings in New

23 York City. The Mayor's Office of Sustainability, the

24 Department of Buildings, the Department of

25 Environmental Protection and the Department of Parks

and Recreation have long supported the installation of green roofs. One NYC, for example, which outlines the city's comprehensive climate change adaptation and mitigation agenda recognizes the contributions that green roofs can make to improving energy efficiency and managing storm water runoff, reducing greenhouse gas emissions and providing green spaces. Green roofs provide insulation that helps keep buildings warm in the winter and cool in the summer, improving energy efficiency and reducing a building's carbon footprint. As roughly 73% of New York City greenhouse gas emissions come from buildings, reducing energy consumption is a critical component to achieving the city's goal of cutting greenhouse gas emissions 80% by 2060. Green roofs also benefit the environment by combining the urban heat island effect, which is caused by the thermal and radiated properties of our buildings and streets. The concrete, asphalt and metals in our built environment absorbs the sun's heat throughout the hottest portions of the day, and re-radiate it back into the atmosphere driving the localized temperatures even higher, and increasing demands on cooling systems. As we turn up our air conditioning on the hottest

1 days, the equipment itself pushes extra heat into the
2 air. Thereby contributing to a feedback loop that
3 increases localized ambient temperatures and impacts
4 the health of heat vulnerable New Yorkers. The US
5 Environmental Protection Agency has observed that in
6 the evening. In a city of one million or more can be
7 22 degrees Fahrenheit warmer than in surrounding
8 rural areas. Green roofs replace the normally dark
9 roof surfaces with plants, which shade the roof's
10 surface and absorb rather than release solar
11 radiation into the surrounding air, and they help
12 keep the air cool evaporative transpiration by
13 releasing moisture into the atmosphere. Green roofs
14 also serve as a means of reducing storm water runoff.
15 Much of the storm water in New York City flows over
16 impervious surfaces into roof drains or catch basins
17 in the street, and from there into the sewers rather
18 than being absorbed into the ground. Impervious
19 surfaces including building rooftops cover
20 approximately 72% of New York City's 305 square miles
21 of land area, and generate a significant amount of
22 storm water runoff. The excessive water can pose
23 challenges to the city by triggering and causing
24 sewer-sewer overflows, washing improvement to our
25

1 waters through the separate storm sewer system and
2 causing flooding. Green roofs can act as a sponge
3 storing a portion of rainfall in their membranes and
4 decreasing their demand on the city's storm water
5 management systems. This becomes particularly
6 important during large storms where the ability of
7 the store and diverse storm water can provide a clear
8 resilience of benefit. Finally, if implemented
9 widely, green roofs can improve the quality of life
10 or neighborhoods. Improving local air quality by
11 reducing greenhouse gas emissions and airborne
12 particulates as dust particles are trapped on foliage
13 and within the soil matrix, and by providing
14 additional green space for a building's tenants. In
15 the country's most dense urban environment, green
16 roofs can provide a respite for our New Yorkers'
17 urban daily life. The New York City Department of
18 Environmental Protection or DEP, the Department of
19 Parks and Recreation or NYC Parks and the Department
20 of Buildings or DOB all have significant experience
21 working with and supporting green roofs. Since 2011,
22 DEP has funded a number of green roof projects as a
23 storm water management practice through the Green
24 Infrastructure Grant Program. To date, the Grant
25

2 Program has funded approximately \$14 million for 32
3 projects. Of those funded, 16 have included green
4 roofs. DEP's goal for the Grant Program are to
5 manage one inter storm water runoff from impervious
6 surfaces on private property within the combined
7 sewer areas. DEP utilizes green infrastructure to
8 retain and manage storm water where it falls and
9 divert it from the city's wastewater system. Green
10 roofs are one of several tools used to achieve this
11 as a many properties are site constrained and the
12 only feasible place to manage one inch of rain is on
13 the roof. In addition to the storm water benefits,
14 green roofs offer other environmental benefits to
15 building owners and are an attractive building
16 amenity. Since 2007, NYC Parks has installed and
17 maintained its 46 green roof systems citywide
18 including the citywide services five borough complex
19 green roof on Randall's Island, Winakwa, the Bronx
20 Boroughs Parks Headquarters and a partnership with
21 Columbia University to install 12 green roofs plots
22 at 10 recreation center citywide. NYC Parks and
23 Columbia University are currently trialing 45 New
24 York City new species under controlled greenhouse
25 conditions to test their suitability for green roofs

1 applications. Trials are in commercial green roof
2 soil medium under two watering regimens: Drought
3 tolerance, growth rate, and transpiration rate for
4 each species will be quantified. Transpiration rates
5 will indicate which species are best at taking up
6 water, an indication of their usefulness in
7 mitigation storm water runoff from city rooftops.
8 NYC Parks uses the information from its green roofs
9 to develop a model to project long-term impact and to
10 evaluate and design other green roofs. The 2014 New
11 York City Building Code provides standards for the
12 installation of green roof systems and requires
13 compliance with ANSI SPRI RP-14, which is a wind
14 design standard for vegetative roofing systems, and
15 ANSI SPRI VF-1, which is an external fire design
16 standard for vegetative roofs, or FM DS1-35, which is
17 the factual mutual data sheet for green roof systems.
18 These standards do include some guidelines for
19 vegetation and media selection, but they are in place
20 primarily to ensure that the green roof is safe in
21 terms of wind resistance, fire resistance and
22 structural considerations. While the Mayor's Office
23 and the City agencies are enthusiastic in supporting
24 green roofs, there are a number of concerns with
25

1 Introduction 835. First, ASTM E2400 provides
2 information and general guidance only for plantings
3 installed and maintained as part of the green roof
4 system. ASTM E2400 does not include any specific
5 performance standards, prescriptive requirements or
6 benchmarks that would be enforceable by the
7 Department of Buildings. Nor are the general
8 performance characteristics and criteria outlined in
9 ASTM E2400 specific to New York City. For example,
10 Section 6.2.3.2 of ASTM E2400 states that the micro
11 climate of the specific location must be considered,
12 but does not identify which plants are appropriate
13 for different conditions or the criteria for a green
14 roof to be an acceptable code compliant insulation in
15 New York City. Second, ASTM E2400 includes
16 maintenance and seasonal consideration for plantings
17 that vague, and beyond the scope of the Department of
18 Buildings purview. For example, the Installation,
19 Methods, Maintenance and Irrigation Guidelines
20 outlined in Section 7.1, 8.1 and 8.1.1 respectively
21 speak in wide ranging terms propagating and
22 insulating plant material. The frequency of water
23 during the first year of planting, the monitoring of
24 rainfall as well as options available for a passive
25

and active irrigation. Each of these terms are fairly ambiguous making impossible to enforce and, therefore, inappropriate to be written into the Building Code. Finally, currently Chapter 15 of the 2014 New York City Building Code requires—requires compliance with the aforementioned engineering standards that are in place to ensure that a green roof is installed safely. Whereas, ASTM E2400 is published as a guide for vegetation selection, and does not purport to establish enforceable standards. Notwithstanding how the DOB would enforce the proposed guidance, the benefits of adding this language to the code is not entirely justified. Through DEP's experiences, the City has learned that each green roof design is unique for the individual's building circumstances and project objectives. The Building Code should allow design considerations to meet the goals for each project while foremost ensuring public health and safety. Professional architects, engineers and green roof professionals are the best people that help guide these decisions rather than imposing restrictions through the Building Code. We wholly support simplifying the DOB and the Fire Department approvals requirements for

green roofs in order to enable more insulations on roof tops through throughout New York City. With respect to the existing reference standards in the Building Code, the agencies have identified specific provisions in the reference standards that hinder practical implementation of green roof systems and limit the use of certain construction materials. The Mayor's Office and the agencies would welcome the opportunity to work with the City Council to refine the requirements in the existing standards to allow for more installations while improving the quality of green roof systems and preserving the safety and welfare of building occupants. Based upon the collective experience with the many types of building owners and operators and green roof professionals, we believe that regulation of green roofs must be flexible and clear path to enforcement must be identified in order to be successful. The Mayor's Office and the agencies represented here today look forward to working with the Council to find ways to ensure quality in green roof insulation while pursuing flexibility for architects and designers to create solutions specific to each building owners' needs. We also see opportunity in learning more from

2 stakeholders and advocates. Ultimately, we hope that
3 by working with the Council and other partners we can
4 ensure that any regulation on green roofs is
5 efficient, clear and enforceable while providing the
6 flexibility necessary for innovation and design and
7 construction. Thank for the opportunity to testify
8 on this important legislation. We share your goal to
9 ensure that green roof systems installed in New York
10 City are high quality and deliver on our shared
11 resili-shared resiliency and sustainability goals.
12 I'm happy to answer any questions that you may have
13 at this time.

14 CHAIRPERSON CONSTANTINIDES: Thank you
15 for your testimony. So how many buildings in New York
16 City have rooftops that might be suitable for a green
17 roof system?

18 JOHN LEE: That's difficult to quantify
19 because the viability of green roofs or any
20 sustainable or roof application is unique to the
21 circumstances of the buildings. We have had supplied
22 before to the Council on a number of bills in the
23 past, and expressing the need for flexibility to both
24 on public and private circuit buildings the
25 flexibility to consider all of the options that are

2 on the table. A particular building may be suitable
3 for solar PV may end up excluding the viability of
4 doing a green roof for the decision point at-or an
5 individual building owner. We can attest that the-
6 the opportunities are vast, and we ideally like to
7 see more and more, but it is ultimately up to the
8 unique circumstances of each building.

9 CHAIRPERSON CONSTANTINIDES: And can you
10 talk about the building and rooftop conditions that
11 would be best for the solar, the solar PV system
12 versus a green roof and vice versa? What-what do we
13 look for? What are the optima conditions on either
14 side?

15 JOHN LEE: Well, in those circumstances
16 we would look for, you know, a healthy dose of sun
17 exposure either for the-the-the next generation for
18 Sola PV or for the-the healthy viability of any
19 plantings on the green roofs. After the physical or
20 technical viability of that site for either of those
21 alternatives, it becomes ultimately the objectives of
22 the building owner and-and the business objectives of
23 the building owner. Green roofs provide more
24 statements in the talk of this hearing, and also in
25 our testimony here. Benefits beyond just the

2 insulation and the greenhouse gas emission for
3 control, and if it is a building amenity, that can be
4 saleable and marketable to a building owner. Solar
5 PV provides a potential revenue source or at least
6 the opportunity to offset operating costs, and these
7 are the business decisions that are subject to the
8 whim of the building owner.

9 CHAIRPERSON CONSTANTINIDES: I think we
10 share that goal of wanting to give that flexibility
11 and making sure that we're encouraging both, right?
12 Just kind of going back to green roofs for a second.
13 How many buildings—I mean how many buildings are
14 operated currently in—in the city where they have
15 green roof systems?

16 JOHN LEE: That is also difficult to
17 quantify because there is in many respects a gray
18 line for what we define as a green roof per se, and
19 many [coughs] roof gardens and it's—it's offered
20 colloquially called among the real estate community
21 that's provided purely for recreational purposes for
22 the—the occupants of the building. While it
23 functions as a green roof, it may not necessarily be
24 declared as a green roof. The—the number of
25 buildings that have currently come through the city,

2 either through the Green Infrastructure Grant program
3 or through the Green Roof Tax Abatement Program is
4 quantifiable. I do not have the numbers on hand
5 today, and I will have to get back to you with that
6 information.

7 CHAIRPERSON CONSTANTINIDES: And what are
8 the—what are the risks and hazards of having a green
9 roof installed that doesn't abide by the industry
10 standards?

11 JOHN LEE: So that didn't abide by the--

12 CHAIRPERSON CONSTANTINIDES:
13 [interposing] That doesn't abide by the industry
14 standards?

15 JOHN LEE: Well, so our current industry
16 standards that we have in place in the Building Code
17 are addressing the wind resistance and the structural
18 consideration and the fires resistance. And so those
19 all are, you know, in place to ensure the safety of
20 the occupants, and those—those standards must be
21 abided by in all—in all circumstances for lawfully
22 permitted green roof insulations in New York City.
23 There is a—another I suppose you could characterize
24 as operational risks that come with integrating the
25 system and that I'm surprised that they have to be

2 maintained. These are living systems, and they have
3 to have adequate access to water and that healthy
4 soil needed.

5 CHAIRPERSON CONSTANTINIDES: And—and we
6 know after installation have there been a number of
7 green roofs that have failed or if they have failed
8 for what reasons or, you know, where—where—how are we
9 doing as far as sustaining.

10 JOHN LEE: Those buildings that we have
11 observed on an anecdotal level have been kind of due
12 to lack of meetings. Again, the—the soil medium, you
13 know, watering has to be maintained, and then—and—and
14 I guess you could say an irresponsibly specified
15 planting within a shaded area that was not adopted
16 for that kind of environment it made the plantings a
17 failure. That being said, the plantings can be
18 changed, and at a later date. However, within the
19 city run programs particularly around a green roof
20 top statement for them there is a requirement for
21 maintenance and inspection during the tax abatement
22 period.

23 CHAIRPERSON CONSTANTINIDES: And as—and
24 as far as impediments what—what—what do you think is
25 keeping us from seeing more green roofs installed in

2 New York City and how do we get past that? How do we
3 overcome those—those barriers?

4 JOHN LEE: First is site viability. We
5 are a very dense I'm going to say built up city.
6 The—the many of our rooftops are in shade, and are
7 not ideal candidates for either green roofs or solar
8 PV. Aside from the site viability, there's a matter
9 of cost, and there—there isn't necessarily a tangible
10 return on investment always for the building owner
11 for providing a green roof as opposed to a solar PV
12 where there's a—an identifiable revenue stream there.
13 The—the—the-while we do have places, programs in
14 place to encourage the—the uptake of green roof
15 systems such as the Green Grant program and Tax
16 Abatement Program. Again, these are always have to
17 be measured against the competing interests of the
18 building owner and the—the operating costs that they—
19 they—they incur.

20 CHAIRPERSON CONSTANTINIDES: Do you think
21 anything to do with the standards or—or the selection
22 or how do we make it easier for them to sort of cut
23 through some of the—is there any red tape that we can
24 make easier?

2 JOHN LEE: No, we can certainly always
3 make permitting in general in New York City easier
4 and yet the—the one of the—the issues that come up
5 with being in a very dense city is that we also have
6 a very high degree of seniors in place for our
7 safety, and the—the sort of residual impacts of any
8 universal system. I have not observed any
9 impediments that have been imposed by the code in
10 terms of plant selection per se. Again, these—the
11 standards that we do have in place are primarily for
12 fire and structural concerns, and as a result they
13 are subject to the fire department and the Department
14 of Buildings approvals. I stated in my testimony I
15 think there—I believe there are opportunities for
16 improvement to the system and this a—a continuously
17 evolving and ongoing effort between the agencies and
18 the Mayor's Office.

19 CHAIRPERSON CONSTANTINIDES: And—and I
20 guess the last think I'll ask is, I mean it's germane
21 to this bill, but as—as far as applications and so
22 on, they're able to be done electronically or how—how
23 does one—one apply today a green roof?

24 JOHN LEE: The current permanent regime
25 that is in place is and it—it still remains on a

2 Legacy system. The Department of Buildings is in the
3 process of implementing an electronic filing system
4 that will ultimately be deployed for all permanent
5 activity in the department. Currently, they're—
6 they're deploying it in stages beginning with the so-
7 called—the more easily amenable permit pipes except
8 that they're on plumbing, but we expect to see the
9 rollout, you know, within the next 18 months or 24
10 months for that work. It was actually Captor
11 cleaning their systems.

12 CHAIRPERSON CONSTANTINIDES: I appreciate
13 that and definitely I think we—we—I share that goal
14 with you of making it as easy as possible to be—to be
15 more green and be more sustainable. If—if we can
16 make it as easy to be green as it is to be
17 traditional I think we can level the playing field.
18 It's not only costs, it's time. So I—I—I applaud the
19 efforts of DOB for making these changes, and I'm
20 looking forward to partnering with you not on those
21 but on—on green roofs as well. So thank you for your
22 testimony today, and I appreciate your good efforts.

23 JOHN LEE: Thank you, Council Member.
24 Thank you.

2 CHAIRPERSON CONSTANTINIDES: I'd like to
3 invite up Jane Winkel from Roofmeadow in
4 Philadelphia. [pause] Okay, I'll have our—have the
5 attorney swear you in.

6 LEGAL COUNSEL: Would you please raise
7 your right hand? Do you swear or affirm to tell the
8 truth, the whole truth and nothing but the truth
9 today?

10 JANE WINKLE: [off mic] I do.

11 CHAIRPERSON CONSTANTINIDES: Just turn on
12 the mic when you. Okay. There you go.

13 JANE WINKEL: Thank you. I'd like to
14 thank the Committee on Environmental Protection for
15 inviting Roofmeadow to testify at this hearing today.
16 Roofmeadow is a landscape architecture and civil
17 engineering firm specializing in the design of green
18 roofs, and has been designing roofs for almost two
19 decades making Roofmeadow one of the first, if not
20 the first North American design firm to bring German
21 style green roofs to the United States. Charlie
22 Miller, Roofmeadow President was a contributor to
23 sections of the Guidelines for the design and
24 construction of storm water management systems that
25 pertain to green roofs. And I am Roofmeadows

2 Director of Stewardship and I've been with the
3 company since 2002. Our comments today are as
4 follows: Introduction No. 835 refers to a bill ASTM
5 E2600 and that guide is titled Standard Guide Vapor
6 Encroachment Screening on the Property Involved in
7 Real Estate Transitions, which is not relevant to the
8 design, construction and maintenance of green roofs.
9 The ASTM Standards are intended as guidance only.
10 Section 511 of E2400 states: This guide provides
11 general guidance only. It is important to consult
12 with a professional horticulturalist, green roof
13 consultant or work with similar professionals that
14 are knowledgeable, experience and acquaintance-
15 acquainted with green roof technology and plants.
16 Standards and guides are subject to continue review
17 and updating. And the ASTM E2400 standard is no
18 exception. We find E2400 to be deficient in some of
19 its recommendations based on more recent information
20 and experience with green roof horticulture. In
21 particular Section 612 states extensive green roofs
22 generally require less maintenance than intensive
23 green roofs. It's my experience that extensive green
24 roofs perform best when they are cultivated and
25 subject to a regular maintenance program. Section

2 622 contains guidance on perennials and ornamental
3 grasses under the heading Aesthetic. Many
4 horticulturalist would disagree with some of the
5 guidance in that head-under that heading including
6 the appearance of summer perennials and the timing of
7 grass pruning. Section 822 advises against the use
8 of fertilizers stating these chemicals could
9 potentially hasten degradation of the root membrane.
10 In almost two decades of green roof work we have
11 never seen a waterproofing membrane suffer damage
12 because of amendments added to promote the
13 horticultural performance of greenery. Furthermore,
14 waterproofing systems selected for using green roots
15 should be resistant to common horticultural
16 preparations, and also damage to microbial action and
17 root action. This section also includes a passage
18 suggestion weeds can be controlled by utilizing
19 shadow-shallow medium layers and foregoing (sic)
20 irrigation. Many reefs cannot survive in shallow
21 medium depth, but anyone who has seen weed growing
22 through the cracks in their concrete sidewalk can
23 understand that this section of the guide is not
24 supported by general observation. Building owners
25 with green roofs relying on the thickness of the

2 profile to limit weed pressure may be disappointed
3 with the botanical invaders that take their green
4 roof. The success of a green roof depends on a wide
5 variety of factors including the vitality of plant
6 cover. If the committee wishes to include ASTM
7 standard in the Building Code, then ASTM Standard
8 Guide E2777 Standard Guide for Green Roofs offers a
9 much broader set of guidelines and best-best
10 practices and also incorporates ASTM Standard Guide
11 E2400 by reference. It provides greater detail and
12 tech-technical depth, which can be used by
13 architects, landscape architects and green roof
14 professionals to develop significant green roof
15 projects. ASTM E2777 offers general information to
16 practitioners in the field of green roof design and
17 construction. The guide encourages innovative but
18 responsible green roof design with the focus on
19 performance and quality assurance. E2777 will not
20 restrict adventurous designers, but will provide
21 parameters for design standards that will lead to
22 safe and long lasting rooftop environments. Please
23 keep in mind that guides are not standards and they
24 are subject to interpretation by developers,
25 designers, and reviewers. Therefore, we recommend

2 including a statement of how the information in the
3 guide is to be used in the context of the code.

4 While ASTM E2777 is an acceptable guide, I'd like to
5 recommend that the committee consider
6 amending the Building Code to include guidelines for
7 the design and construction of storm water management
8 systems developed by the New York City Department of
9 Environmental Protection in consultation with the New
10 York City Building Department. The Guide was
11 developed specifically for New York City to encourage
12 public and private implementation of green
13 infrastructure citywide. The guide contains much of
14 the same information contained in ASTM Standard
15 Guides E2400 and E2777. Like these other guides, it
16 should also undergo regular review and should be
17 updated to reflect our understanding factors
18 influencing green roofs performance.

19 Roofmeadow worked on the development of the guide,
20 and would be please to work with the city to update
21 the document to reflect current thinking and best
22 practices in the field of green roof design,
23 construction and maintenance. The committee may also
24 want to consider amending the code to include
25 performance requirements for green roofs that are

2 important to the New York City Department of
3 Environment Protection. For example, the Code might
4 establish seasonally adjusted minimum plant cover
5 requirements.

6 CHAIRPERSON CONSTANTINIDES: Thank you.

7 JANE WINKEL: Thank you.

8 CHAIRPERSON CONSTANTINIDES: I have a few
9 questions.

10 JANE WINKEL: Okay.

11 CHAIRPERSON CONSTANTINIDES: Just sort
12 of speaking to what do--what do you feel--I asked the
13 Administration the same question What do you feel
14 main impediments to--that are preventing building
15 owners from implementing green roofs in New York
16 City?

17 JANE WINKEL: I guess probably it depends
18 on the building owner's goals for the building, but I
19 think many of the--the things that would prevent them
20 from doing it would be financial. There has to be
21 some sort of benefit for them if they are installing
22 a green roof for storm water management purposes to
23 become part of the green infrastructure system of the
24 city.

2 CHAIRPERSON CONSTANTINIDES: Okay, and as
3 far as does it--it require any credentialing to
4 install a green roofs in--in the city?

5 JANE WINKEL: I'm sorry.

6 CHAIRPERSON CONSTANTINIDES: Even get to--
7 the installation of a green roof system does it
8 require any credentialing? [pause] Do you need to
9 have some sort of credentials on it to be able to do
10 it or--?

11 JANE WINKEL: I--I mean to design a--

12 CHAIRPERSON CONSTANTINIDES: Uh-huh. [

13 JANE WINKEL: -green roof--

14 CHAIRPERSON CONSTANTINIDES: Uh-huh.

15 JANE WINKEL: --you should--I'm not
16 familiar with the New York City requirements. I--my
17 firm is a landscape architectural firm, a civil
18 engineering firm. So if you're submitting documents
19 to city, you do need to have credentials to--to submit
20 permit documents.

21 CHAIRPERSON CONSTANTINIDES: Oh, okay.

22 I--I understand what you're saying Okay, as far as
23 how do you feel our regulatory environment is here in
24 New York City to help foster--to help foster green
25 roofs?

2 JANE WINKEL: I can't say for sure. I
3 mean I know that in Philadelphia there have been many
4 regulations that have been established to incentivize
5 green roofs, but I'm not familiar--

6 CHAIRPERSON CONSTANTINIDES:

7 [interposing] Okay.

8 JANE WINKEL: --as familiar with New
9 York's regulations.

10 CHAIRPERSON CONSTANTINIDES: Okay, well
11 I-I def-I definitely appreciate all of your technical
12 expertise on-on the-on the code and-and I definitely
13 would love to continue our conversation how we move
14 forward and-and figure out a best way to-to move
15 forward on these big results. So thank you for your
16 time.

17 JANE WINKEL: Thank you.

18 CHAIRPERSON CONSTANTINIDES: And thank
19 you for your trip today. [laughs] [background
20 comments, pause] Alright, so we have Marni
21 Majorelle. I apologize if I pronounced your name
22 wrong and-and Maria Wynn-Wynn.

23 MARNI MAJORELLE: We go together.

24 CHAIRPERSON CONSTANTINIDES: Yes, yes,
25 just please come up. You have a yes. Yes.

2 MARNI MAJORELLE: Good. [background
3 comments, pause] Hi.

4 CHAIRPERSON CONSTANTINIDES: Marion.

5 MARNI MAJORELLE: Okay.

6 LEGAL COUNSEL: Would you please raise
7 your right hands. Do you swear or affirm to tell the
8 truth, the whole truth and nothing but the truth
9 today?

10 MARNI MAJORELLE: I do.

11 CHAIRPERSON CONSTANTINIDES: Thank you.

12 MARNI MAJORELLE: Okay, so thank, Marian.
13 Thank you everybody for your interest in this really
14 important topic. So my name is Marni Majorelle. I'm
15 the owner of the Alive Structures, a landscape design
16 and installation company that I founded in 2007. I
17 have a background in biology, conservation and
18 landscape design, and my partner's expertise is in
19 construction and on districts. And so together with
20 these two fields we are able to effectively and
21 practically install-file diverse areas on rooftops,
22 terraces and in gardens. But we have a specialty in
23 green roof installation. I am a native New Yorker,
24 and I love the city, and I love nature, and I believe
25 that we do not have to choose between these two

things. If more areas in our city were converted to open green spaces, natural habitat and used green infrastructure the city would be a healthier, more beautiful and less polluted city. Rooftops are an underutilized space, and with real estate on the ground being so valuable it is space that property owners can consider greening without losing the economic value of the land. Since 2007, my company has installed somewhere between 20 and 30 green roofs using a range three roof systems, plants, installation techniques and working with a divers clientele. I have witnessed interest in green roofs and green infrastructure grow in New York City through various studies conducted by Columbia University, BET, CET and many other universities and city industry all over this country. Knowledge and understanding of green roofs has also grown. We know that green roofs produce air and water pollution, reduce island effect and reduce energy consumption. A green roof can create habitats that is essential for bird and migrating birds, butterflies as well as other species who live in this city. Green roofs can also provide badly needed open green space for building tenants, office workers, school kids, and

2 community residents. Psychologically and physically
3 city dwellers face a great deal of stress on a daily
4 basis. Many young people in New York City suffer
5 from Asthma and other pollution related illnesses.
6 Attention Deficit Disorder, low self-esteem, and
7 aggressive behavior in children and adult living in
8 cities have been attributed to decreasing amounts of
9 time in time in several studies. Access to natural
10 areas has proven to be therapy making us healthier,
11 less violent and smarter. With all of this knowledge
12 and excitement about green roofs, it is surprising
13 that New York City has not taken greater initiative
14 to make green roofs more abundant in New York City
15 and easier to install. In several countries in
16 Europe and in states in this country, New York City-
17 sorry-green roofs have been made mandatory for new
18 construction. So, as we can see there are plenty of
19 examples all over the world where green roofs have
20 become part of mainstream construction, and have been
21 made affordable. Some of the larger impediments to
22 installing green roofs I think most of us who have
23 experience doing construction--there are several of
24 us here-know that the biggest impediment is
25 financial. The second biggest impediment would be

1 the structural support of the building. There are
2 several property owners in New York City who would
3 like to install a green roof, but their brownstone in
4 Park Slope, for example, can't support the weight.
5 Where the large industrial building that's one story
6 in Long Island City would be a perfect candidate.
7 However, that property owner might not be interested
8 in new environments or spending what could be
9 considered a large amount of money just to help the
10 environment. But his impact would be greater than
11 the Park Slope brownstone retrofit. Currently, so I
12 said these are the major challenges to installing
13 green roofs. The general--by our estimates--expense
14 for a green roof run between \$25.00 to \$35.00 per
15 square foot. This is just for an expensive green
16 roof like a basic green roof, your average green roof
17 planted with seedling (sic) species, low growing and
18 about three to four inches of soil dust. For
19 intensive green roof, that has deeper soil median and
20 it's planted with larger flowering perennials and
21 grasses, the cost can be upwards of \$40 per square
22 foot. The logistics of installing a green roof many
23 components in New York City can be difficult often
24 requiring expensive trans limits and/or many laborers
25

2 to bring soil, live plants and rolls of geo textile
3 and bring this manually to a roof. It is not an easy
4 job to coordinate all these different trades and
5 materials. So even though \$35 per square foot sounds
6 like a lot, when you think about all the different
7 materials, the soil, the layers and actual live
8 plants being planted, the labor and the materials
9 together, it's really that not that expensive, and
10 this come at a cost to the contractor who is usually
11 not making a lot of money on these jobs. And this is
12 unfortunate because we could be a source of growing
13 economic, you know, a burgeoning field where we could
14 be hiring more and more people. My company has just
15 hired two people that we've worked with through the
16 Fortune Society where formerly incarcerated people
17 find help in new green professions, and this is a way
18 that we are helping people find work that they can-
19 they can learn, and we are teaching them actively
20 every season in bringing home more people. But the
21 more jobs we have, the more people we can bring. If
22 we don't have the jobs, we can't train people. We
23 can't help people. We can't provide stable jobs. We
24 just can only provide seasonal and temporary work if
25 we don't have enough consistent green roofs.

2 Currently the—the two programs that are on offer in
3 New York City through the Department of Buildings,
4 there is a property, a tax rebate and then through
5 the DEP there's the Green Infrastructure Grant
6 Program. I applaud both of these program, and both of
7 them my company has worked with in the past. But
8 those have been—have serious challenges that fell
9 short of their goal of creating more green roofs and
10 making it easier to get more green roofs. So, the
11 largest problem with the tax rebate is that it does
12 not offer enough money in a rebate, and it's only for
13 one year. It also requires a fair amount of paper
14 work that must go through the Department of
15 Buildings. You have to get an expeditor. This would
16 not be necessarily—necessary to do if you were just
17 getting a green roof and you didn't want to get the
18 tax rebate. You wouldn't have to go through all that
19 paperwork. So this type of property rebate only
20 proves effective when it's a very large project or
21 it's a project that incorporates many different
22 aspects of construction and it's a gut renovation. So
23 this has been for the most part an ineffective way to
24 promote green roofs. It's—I have not had any clients
25 who want to this today since 2007. So, it hasn't

1 been very popular. The other program is the Green
2 Infrastructure Grant Program offered by the PEP,
3 which is I think it's a great program because it
4 offers a 100% rebate for the cost of the design and
5 the installation of the green roof. There are still,
6 however, impediments to this program really being an
7 effective way of installing green infrastructure in
8 New York City, the main problem being that:

10 (1) Property owners don't know about the
11 program because there has been so much commotion of
12 it.

13 (2) The application is complex, and often
14 requires professional help.

15 (3) The Funding Agreement requires the
16 property owner to pay all of the upfront costs; and

17 (4) The Restrictive Covenant requires
18 property owners to maintain and warranty the green
19 roofs for the next 20 years.

20 My suggestions are as follows: If there
21 is a larger repaid and expedited paperwork offered by
22 the Department of Buildings, then this would be an
23 effective way to promote green roofs. If the
24 Department of Environmental Protection offered more
25 assistance with the Green Infrastructure Grant

2 Application and producing the structural analysis
3 report, assisted in obtaining interest free loans for
4 successful applicants, expedited the reimbursement
5 process, and promoted the program through largescale
6 info advertisement, and the relaxed the restrictive
7 covenant, then this green infrastructure program
8 would be more effective. And I want to say that the
9 restrictive covenants wouldn't be an issue if green
10 roofs were mandatory or had a significant financial
11 incentive. Then the restrictive covenant would not
12 be seen as an obstacle for property owners. In fact,
13 it would be looked at as an asset. And if more
14 property owners were to—were made to pay to taxes on
15 the impermeable surface area of their property, this
16 would motivate people to install rain gardens,
17 bioswales, permeable concrete and green roofs. As it
18 currently stands, there's not enough financial
19 incentive for either of these programs to be
20 effective on a larger scale. Thank you.

21 CHAIRPERSON CONSTANTINIDES: Thank you.
22 Next.

23 MARIA WYNN: Good morning everybody. Mr.
24 Chairman, I want to thank you for introducing this
25 bill and its overall progressive direction. We've

2 heard quite a bit this morning already on the various
3 guidelines out there, and I want to share a few
4 thoughts about how these guidelines would impact
5 reality. First, how can we adopt greater use of
6 living architecture, which includes—includes green
7 roofs and green walls to address climate change, and
8 how can we ensure that the living architecture
9 projects actually contribute as much positive
10 environment or impact as possible. Now, City
11 government can take the lead on this with a portfolio
12 of city-owned properties. However, the Department of
13 Design and Construction does not procure services for
14 green or in-vegetative roofs directly. I was told
15 this by the Commissioner's office in August. In the
16 construction of a public building in Brooklyn, the
17 awarded contracts left it up to the discretion of the
18 construction manager to find a green roof supplier.
19 So unless I'm going to think something, how can the
20 DBC track the performance of installed green roofs
21 and green walls? But my second point is without
22 directly working with a talented and experienced
23 professional in New York's living architecture
24 industry, how can the city influence the elevation of
25 performance norms? Climate change is on everyone's

2 mind. Living architecture projects, green roofs,
3 green walls, are important adaptation tools as the
4 climate changes faster and faster. My first point is
5 the opportunity really exists for New York City to
6 become—to become a leading center of living
7 architecture not unlike the city's successes we're
8 seeing in the film and TV production industry and
9 Sil-Silicon Alley. As the world plays catch-up in our
10 response to climate change, this city can pace at
11 (sic) Toronto, Paris, Chicago, Philadelphia,
12 Washington, San Francisco and now Cordova, Argentina.
13 The green roof and green wall professionals in the
14 city stand ready to work with you—you all in this
15 committee to craft legislation that works for the
16 particular conditions of our city. Thank you.

17 CHAIRPERSON CONSTANTINIDES: Thank you.

18 I want to recognize Council Member Eric Ulrich from
19 Queens that's here today, and Council Member Steve
20 Levin from Brooklyn. Now I'll turn it over to
21 Council Member Levin for some questions before I come
22 back.

23 COUNCIL MEMBER LEVIN: I just want to
24 thank this panel very much for your advocacy and for
25 the work that you do to advance the living—the living

2 infrastructure and living architecture and green
3 roof—the green roof movement in New York City. I
4 want to say for the record, I think that the job that
5 the City of New York does when it comes to green
6 roofs is woefully inadequate, frustratingly in-
7 adequate, and every month that goes by that we don't
8 have a mandate of new buildings or a mandate or city-
9 owned buildings to have green roofs, is missed
10 opportunities, and we're not going to pay for it.
11 It's our children's children that are going to pay
12 for it because we have an opportunity in New York
13 City to have a real impact on our carbon footprint of
14 the entire country, and the main offender when it
15 comes to heat island effect and carbon emissions in
16 New York City are our buildings. And this is the
17 technology that is needed to have a long-term impact
18 on that, and—but you look out—the window right
19 now, you look at Downton Brooklyn, and you see
20 hundreds of thousands of—of square feet of new space
21 that has just been built in the last five years, and
22 that jut—all that is a missed opportunity. It's just
23 one big missed opportunity because we did not create
24 mandates like they do in Toronto or programs like
25 they have in Washington, D.C. or in Philadelphia.

2 There are best practices out there. This isn't
3 rocket science, but we have—we have every—every
4 building cycle that we don't have a large percentage
5 of green roofs, it's a missed opportunity in my book.
6 So I want to thank you very much for doing what
7 you're doing. We're going to keep up the pressure,
8 but it's really, it's frustrating and I think that we
9 have done—we have not done a good job, and we should
10 be looking to what other cities are doing and finding
11 out how they made it happen and doing it ourselves.
12 But I want to thank you because you are the ones are
13 the cutting edge of this and leading the charge here
14 in New York City. Thank you.

15 CHAIRPERSON CONSTANTINIDES: Thank you,
16 Council Member Levin, and I want to thank both of you
17 for your efforts and definitely I appreciate your
18 testimony and answering my questions before I can
19 answer them—or ask them. [laughter] So thank you for
20 that. We definitely want to make sure that we're—
21 we're—we're—we're continuing this conversation and
22 finding, as Steve said, a way to move forward that we
23 can get more green roofs installed in New York City.

24 MARNI MAJORELLE: I'm sorry, but I did
25 just want to say there was something that came up

2 earlier about solar panels that I feel that we didn't
3 discuss how green roofs assist PV panels in optimal
4 performance earlier. I hope that maybe somebody else
5 can address that in further detail later.

6 CHAIRPERSON CONSTANTINIDES: Well, look,
7 we're going to have, you know, someone else testi-
8 testify after that. [laughs] Thank you. [banging
9 door, pause] [background comments]

10 COUNCIL MEMBER ULRICH: Okay. I am
11 Council Member Ulrich, and probably DEP's worse
12 nightmare that I would be chairing this committee,
13 but [laughter] notwithstanding, now we have one more
14 person who came to testify and that is Paul [banging
15 door]--

16 PAUL MIKLOWITZ: [interposing] Miklowitz.

17 COUNCIL MEMBER ULRICH: Miklowitz. I
18 apologize. Miklowitz. Thank you, sir, please take a
19 seat. From the Bronx.

20 LEGAL COUNSEL: Do you swear or affirm to
21 tell the truth, the whole truth and nothing but the
22 truth today?

23 PAUL MIKLOWITZ: I do.

24 COUNCIL MEMBER ULRICH: Please proceed.

2 PAUL MIKLOWITZ: [off mic] And apologies.
3 I got it at small room and got trapped up on there.
4 The—this is a great thinking forward. I'm going to
5 hand—I have to say that New York City has got a
6 Building Code built for Rolls Royces, and I think we
7 need something like a Tesla here. Let me say this
8 another way, basically this is a great move forward,
9 but it's small. Another way to put it is that we
10 have resources here that are enormous. By that I
11 mean when you look at the roof spaces, it's 34 square
12 miles. When you look at something like the gray
13 water in New York City, one-half of the wastewater of
14 1.2 billion gallons, the gray water is six times the
15 peak load in New York City. I have built buildings
16 in New York where they pay 40% less of their air
17 conditioning and 24% less of their heating. That's
18 real money for every building in the city, and it
19 will drop the bottom temperature of the city, and you
20 can do it with water, the 600 million gallons that
21 the city produces as gray water goes into the sewer
22 system. We pay \$2.4 million a day to treat that.
23 That—that same water is worth about \$320 million a
24 day in cooling capacity. It will drop the body
25 temperature of the city. As I say, it is six times

2 the peak load of the city. So we can go for very
3 small scale incremental steps forward to mitigate the
4 damage or given the technology that we basically have
5 bottle (sic) the rest. Or, you can take something
6 that is a magnificent resource. We have one of the
7 best water infrastructure systems on the planet
8 because John Bloomfield Jarvis recognized that if he
9 put nature around our watersheds it would protect the
10 water quality forever. And DEP is actually still
11 working on that find. Olmstead (sp?) realized if you
12 put a park in the center of the city it would protect
13 nature. It would actually create environmental
14 quality that was good for each and every citizen of
15 the city. We know now and we have in—we have
16 basically investment plans by which we can put
17 photovoltaics on rooftops. Photovoltaics have a
18 thermal optima around 80 degrees just as plants do.
19 If you put wetland plants or shade tolerant plants
20 below them, you would basically optimize the
21 performance of the photovoltaics as well as treat
22 again up to 600 million gallons a day, and up to one-
23 half of the waste water of the City of New York, warm
24 season. During the cold season it goes down to a
25 tenth of that, but I'm saying is that the same

2 investment opportunities that you get in the mail as
3 I do to basically put solar panels on your buildings
4 and get a pay back from the photo-photovoltaic
5 companies, we could do the same thing with our water
6 that's now going down the sewer that the city treats
7 quite well really. But that water is of immense
8 value because literally we are in the richest
9 biodiversity zone on earth in terms of vegetation.
10 The Southern Appalachian Province. You can grown
11 plants. I can show you them, and you can see them
12 yourselves on the five borough maintenance facility,
13 the Parks Department and many things of that the city
14 has built in terms of swales systems in all different
15 borough. So the choice is we can either flush it
16 down the sewer or we can literally change the climate
17 of New York City. Increase the biodiversity and
18 increase the habitat for the 200 or so migrating
19 pass-through birds that pass through here--this season
20 every year, and the choice is ours. [pause]

21 CHAIRPERSON CONSTANTINIDES: I want to
22 thank you for your testimony. Now, I want to thank
23 you for your testimony. Now, this will be a little
24 effort. You know, I was just discussing this now.
25 You're really just pointing out that it's a false

2 choice that we have to make between solar PV and—and
3 green roofs, and that we really need to just kind of
4 take a deeper dive into how they can be complementary
5 of one another. So I appreciate that good testimony,
6 and looking for ways in how we can better work with
7 you to make that a reality.

8 PAUL MIKLOWITZ: Well, let me know. I
9 wasn't trying that much as 2014 and 2015, but I know
10 you'll laugh at this, but I think it's simpler to do
11 things here. It's just that that definitely creates
12 rates, but we are, too, and we have great deal of
13 space and we have a great of interest and we have
14 great deal of expertise. We have one of the oldest
15 and best water utilities on earth, and we need to
16 basically incorporate that into our Building Code,
17 into our infrastructure, into our green
18 infrastructure, into our building walls. There's 34
19 square miles of good space in New York City. I can
20 ask you exactly how much wall space here. I don't
21 know. It's 3,000. It's a huge amount of wall space,
22 but those walls could be habitat, and basically what—
23 If you had going up 50 or 30 feet on a block, it
24 would drop the temperature of that street degrees
25 below it is—what it is now, and be probably below

2 ambient. So a 95-degree day is may 89% relative
3 humidity. The temperature below the plants will
4 always be because of physics, 92 degrees, not 95. We
5 see them as nice. The swale plants that you see on
6 green roofs are okay, but those can't behave like a
7 plant that's about two feet tall that will drop the
8 body temperature always guaranteed to be below
9 ambient. Think of those brutal days this summer.
10 Think of the 37 people who died in New York City
11 because of—basically, the temperature was up too
12 high. That just—it's so high and you can't live like
13 that if you're a 98 degree mammal as we are. So it's
14 just this is an opportunity, but it's way, way larger
15 than what's in front of you right here. It's a great
16 thing to move these incremental steps forward, but
17 the other side of it is that water is a resource.
18 Every water that evaporates takes with it 580
19 calories. Okay, just to put that in context. A gram
20 of oil has got nine calories, 9,000 calories. It's
21 28 times more energy but, of course, it could—if you
22 ever get oil here and the water is flowing through
23 here at huge quantities, again 20— it's just—it's
24 just 20 times more powerful, but just one gram of
25 water when it evaporates, it drops the body

2 temperature of a pound of stuff by more than a degree
3 Celsius. So it's a magnificent building matrix.
4 We're just not yet using it and we could.

5 CHAIRPERSON CONSTANTINIDES: I-I
6 appreciate—I appreciate your testimony. I
7 definitely—based on the—all the testimony I've heard
8 today it sounds like cost seems to be our biggest
9 impediment, and I think we have a—a-a Green
10 Infrastructure Grant Program from DEP that's working
11 very well, and definitely look-- I think we just
12 need to see how we can build on that success and—and
13 provide additional incentives and ways that we can
14 get green roofs built New York City and, you know, it
15 can't provide more carrots and find more ways to—to
16 incentivize it. I think we can definitely have that
17 shared goal.

18 PAUL MIKLOWITZ: Absolutely critical.
19 I've learned something on this and actually with DEP.
20 It's a very fine program, that Green Infrastructure
21 Program. I built a 22,000 square foot green roof on
22 Einstein Medical College for about \$25 per square
23 foot. Once you start getting much below 20 then the
24 investment will come back something like 10 years or
25 less, and as I'm saying it will—basically for a

2 building owner it comes back quite quickly, and you
3 can visit any time you want. Red Hook Green Material
4 Corporation. He saves 40% of air conditioning and
5 24% of his heating, and there's--the--the five borough
6 does the same kind of thing, but the cost is it. If
7 you can basically make it attractive, people will--
8 people will buy this.

9 CHAIRPERSON CONSTANTINIDES: I

10 wholeheartedly--I represent a district with a lot of
11 one, two, three-family homes and larger homes as
12 well, apartment buildings, and I think that finding,
13 as I said before, of making it cost-effective and
14 time effective for--for residents to be just as green
15 as it is to traditional. They'll make those green
16 choices. I think that they--people just don't know or
17 they--they want--they need to--to--to understand how we--
18 how to utilize their--their roofs in a better way,
19 and--

20 PAUL MIKLOWITZ: [interposing] Yes.

21 CHAIRPERSON CONSTANTINIDES: --most--most
22 residents just don't know how to do that, or it's
23 just too cost--too cost intensive or too time
24 intensive as was brought up before that it's just you
25 end up just saying I--I'm--I'm--they throw their hands

2 up and say I'm—I'm done. I'm just going to do it the
3 old fashioned way, and that's not the way we need
4 them to go.

5 PAUL MIKLOWITZ: No, you're right, but I
6 think people don't know, and I think all you would
7 need to do—I don't know if you've ever lived in a top
8 floor apartment. I have. It's just brutal on those
9 hot days. It never will go to those high
10 temperatures again with the green roofs. So if you
11 build a few and people can actually tell their
12 neighbors, I think they'll start to invest, but the
13 cost is—right now it's-- The other thing to do is if
14 we could possibly get multiple homeowners to do it at
15 the same time, staging costs then go way down and it
16 drops enormously. So that would be another way to
17 look at opportunities moving forward.

18 CHAIRPERSON CONSTANTINIDES: I appreciate
19 that. I appreciate that. Thank you so much. Thank
20 you. It sounds like we have a lot to—to work
21 together on, and rely—I will definitely thank the
22 administration. I thank all the industry and—and all
23 of—everyone who sort of testified today, and with
24 that I will gavel this hearing. I want to thank
25 first our—our staff attorney who is great as always,

1 COMMITTEE ON ENVIRONMENTAL PROTECTION

52

2 Samara Swanston, our Policy Analyst Bill Murray,

3 Jonathan Seltzer, our Financial Analyst, my own staff

4 Nick Wazowski and John Benjamin, and with that I will

5 gave this hearing of the—the Committee on

6 Environmental Protection closed. [gavel]

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C E R T I F I C A T E

World Wide Dictation certifies that the foregoing transcript is a true and accurate record of the proceedings. We further certify that there is no relation to any of the parties to this action by blood or marriage, and that there is interest in the outcome of this matter.



Date November 22, 2016