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SCOTT M. STRINGER
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Testimony of Manhattan Borough President Scott M. Stringer

Before the New York City Council Committee on Environmental Protection
Regarding Council Resolution 1078, Calling Upon the New York State Legislature to
Pass, and Governor Cuomo to Sign into Law, the New York Solar Jobs Act of 2011

November 14, 2011

Good afternoon Chair Gennaro and members of the Committee on Environmental Protection. Thank you for holding this important hearing on Resolution 1078, which calls on the New York State Legislature to pass, and Governor Cuomo to sign into law, the New York Solar Jobs Act of 2011.

The Act is a bipartisan bill sponsored by Assembly Member Steve Englebright and Senator George Maizarz which, despite broad support, has failed to pass in the last two legislative sessions. In an era that finds New York in desperate need of jobs, clean energy, and economic development, there is no excuse for failing to pass this promising legislation. I strongly support Resolution 1078.

The Solar Jobs Act would require utilities in New York State to gradually increase their procurement of electricity from renewable sources and phase out electricity generated using fossil fuels. The most recent Solar Jobs Act would have required utilities to source 0.15 percent of their electricity from solar in the first year and would gradually ramp that amount up to 3 percent by 2025. In 2010, environmental organizations projected that the Solar Jobs Act would create over 22,000 jobs and generate \$20 billion in economic output statewide.

In order to achieve this goal, the Solar Jobs Act would enable the creation of solar renewable energy credits, which are tradable, non-tangible energy commodities that represent proof that 1 megawatt of electricity was generated by solar. Solar renewable energy credits stimulate solar development and help foster a stable investment climate through the introduction of long-term contracts such as power purchase agreements.

We are already witnessing a clean energy revolution that will have a transformational effect on the world's economy and environment. Today, consumers in New York can support 100% renewable energy (hydro-electric and wind power) for merely one cent per kilowatt hour more than standard energy. In order to continue to support this revolution—one that improves our health, economy, and national security—we need the Solar Jobs Act in New York.

In 2001, the State of New Jersey passed similar legislation and has since become the fastest growing market for solar energy in the United States, with some experts estimating that the State could have over 500 megawatts of new solar installed by the end of 2011. Industry reports have singled New Jersey out as one of the worlds leading growth markets for solar energy. More recently, Massachusetts Governor Deval Patrick signed legislation that aims to create 250 megawatts of solar electricity using solar renewable energy credits.

While New York City is not the first place one would think of when considering harnessing the power of the Sun, a recent study from the City University of New York suggests that even in our often inhospitable climate, the potential of the Sun is transformative. According to CUNY, two-thirds of New York City's rooftops are suitable for solar panels and could jointly generate enough energy to meet half the city's demand for electricity at peak periods—over 5800 megawatts of power.

New York can no longer afford to sit on the sidelines as our neighbors cash in on the benefits of new private sector investment, new solar installation jobs and improved environmental conditions from solar renewable energy credits. The Solar Jobs Act will boost New York's economy in the short-term and the long-term, increase the number of "green energy" jobs here in the Empire State, and ensure that future generations of New Yorkers have access to clean, affordable, renewable energy.

The Governor, the legislature, and the utilities should redouble their efforts to reach a compromise that will enable the passage of the Solar Jobs Act in the next legislative session.

Testimony of John Mucci, Vice President, Con Edison
at the New York City Council Environmental Protection Committee Oversight Hearing
November 14, 2011

Good afternoon Chairman Gennaro and members of the Environmental Protection Committee. My name is John Mucci and I am the vice president of Manhattan Electric Operations at Con Edison. I am joined today by Margaret Jolly, our engineering project manager and the company ombudsman for distributed generation. I appreciate the opportunity to share with you our efforts on solar initiatives.

At Con Edison, we consider sustainability and the protection of the environment essential to the quality of life for our customers and have been actively encouraging the movement to "go green."

We are proud of our record in this area. Recently *Newsweek* magazine's 2011 Green Rankings identified Con Edison as the "greenest" utility company in the United States. In addition, the Carbon Disclosure Project placed Con Edison first among utilities in the S&P 500 Carbon Disclosure Leadership Index and we were also named to the Dow Jones Sustainability Index for the third straight year.

Although our primary focus has been on energy efficiency and conservation programs, which provide the most immediate returns on investment for our customers, we have also been working on many initiatives that enable our customers to use solar-powered renewable sources of energy. We were actually the first utility in the country to connect a solar facility exporting energy into a network electric grid in Crown Heights Brooklyn in 2008.

Last year, working together with the City and CUNY Sustainable Works, we launched our "100 Days of Solar" program designed to help our customer move quickly through the complexities of the approval processes for the installation of their solar panels. Some of the achievements include:

- A significantly shortened approval process for projects under 25kW which comprise 75% of applications and all residential system applications.
- An online "project center" website where customers can submit their applications and track their projects. All of the necessary agency and Con Edison requirements are shown there in a process flow chart.
- For each of the past three years we have provided free training for the solar system installers on the technical and process issues.
- We developed software to prototype a "one-stop-shopping" site that will eventually enable customers to simultaneously apply to the Department of Buildings, NYSERDA and Con Edison for approvals. We are currently partnering with DOB, NYSERDA, and CUNY on the 2nd phase of this project.
- We helped CUNY develop their interactive Solar Map initiative, which was launched this year and is accessible to everyone. The map is a tool that helps our customers see the possibilities for solar power, both economically and practically.

We, along with NYC EDC, have also been advocating for more of the Renewable Portfolio Standard (RPS) funds (that our customers pay for), to be applied to solar projects downstate rather than upstate wind projects. As a result NYSERDA has recently allocated \$150 million for downstate projects, of which \$125 million is just for the Con Edison service territory. Con Edison also has supported the implementation of net metering, an additional incentive to solar customers.

(over)

As a result of these programs electric generation from solar has doubled each year for the past 3 years – and I would like to note to the Chairman that PV adoptions has been especially vigorous in Queens.

Finally, we believe it is important to comment on the resolution under consideration today regarding solar-related legislation pending in the State Senate and Assembly. As I have stated, Con Edison is strongly supportive of solar investment in our service territory. However, Assembly bill 5713-A will increase energy commodity costs for customers across the state by up to \$22 billion under the terms of the legislation. While we support the overall objectives of increasing solar investment in the state, this bill will discourage economic investment and guarantee New York as a high cost energy state far into the future.

Specifically, the bill creates additional costly subsidies for the solar industry in addition to the programs already in place that I mentioned above, including the state's RPS. Under this existing RPS program utility customers in New York are already committed to pay \$2.5 billion to purchase renewable energy between 2012 and 2024.

Assembly bill 5713-A will require an additional \$22 billion through 2039 from the State's consumers. Our customers just cannot afford these costs, which are not warranted and are on top of the many existing incentives already being funded.



For the Record

**Testimony of Ricardo Gotla
Legislative Director
New York League of Conservation Voters**

**Committee on Environmental Protection
New York City Council
November 14, 2011**

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Good afternoon, Chairman Gennaro and members of the Committee. I am Ricardo Gotla, the Legislative Director for the New York League of Conservation Voters (NYLCV), a statewide environmental advocacy organization with a New York City chapter. I would like to extend my thanks to the Committee, the Chairman, and the City Council for providing the opportunity for NYLCV to recommend that the New York City Council adopt Resolution 1098.

NYLCV strongly supports the New York Solar Industry Development and Jobs Act (Solar Jobs Act), under consideration in Albany, as it will create a strong mandate for solar energy production that will jumpstart the industry throughout the state, including right here in New York City.

Despite its potential, New York's solar industry lags behind its neighbors. Currently, the statewide installed solar capacity is less than 36 megawatts. In contrast, New Jersey's 5,500 PV systems equate to nearly 150 megawatts of installed solar capacity, almost 400% larger than New York's.

There is no reason for New York to lag behind New Jersey's installed solar capacity. In fact, studies show that New York receives more sun than New Jersey. The only difference between the two states is in solar energy policy. Whereas New Jersey has a strong solar energy program, New York does not. New York should be moving aggressively to promote solar energy, and this bill would be a big step forward.

New York City is well-positioned to benefit from the Solar Jobs Act. The bill is designed to encourage the installation of diverse sized systems, so that in areas where land is abundant, such as the Hudson Valley, one may find relatively large systems; and where roof space is plentiful, such as New York City, one will find many smaller systems.

New York City has significant solar potential. Sustainable CUNY conducted a survey called the New York City Solar Map that shows existing solar PV and solar thermal installations in New York City and

gives an estimate of solar PV potential for every rooftop in the five boroughs. The survey found that roughly 65 percent the city's buildings have roof space suitable for solar panels that could generate upwards of 5,800 megawatts. This is in contrast to the negligible 6.5 megawatts of city's installed solar capacity.

The status quo is not without its own drawbacks. Already, on many summer days electricity demand exceeds energy supply. During these high demand periods the city relies on backup or "peaker" plants to power the city. Peaker plants often emit more pollution per unit of energy produced than base load plants and many are located in low-income communities. By emitting significant levels of greenhouse gases and particulate matter, these peaker plants undermine the city's efforts to thwart climate change and achieve federal clean air standards.

As New York City's population continues to grow and energy demand increases, these issues will be magnified further. Improving the city's aging energy network will require innovative policies and bold leadership. This bill is an important piece to that puzzle.

Increasing solar installations is a critical component to building a healthier and more sustainable city, particularly in the areas of air quality, greenhouse gas emissions, energy infrastructure and grid reliability.

For these reasons, we strongly encourage the New York City Council to adopt Resolution 1098.

Thank you,



**ENVIRONMENTAL
ADVOCATES OF NEW YORK**
YOUR GOVERNMENT WATCHDOG

New York City Council Testimony on Solar

**Ross Gould, Air & Energy Program Director,
Environmental Advocates of New York
November 14, 2011**

Good afternoon.

My name is Ross Gould and I serve as the Air & Energy Program Director at Environmental Advocates of New York. Environmental Advocates' mission is to protect New York's air, land, water and wildlife and the health of all New Yorkers. We monitor state government, evaluate proposed laws, and champion policies and practices that will ensure the responsible stewardship of the environment. We also work to support and strengthen the efforts of New York's environmental community and to make our state a national leader.

Thank you for the opportunity to address you. We commend you for holding this hearing on solar energy. As I will discuss today, New York needs a robust solar program to improve air quality, stave off the worst impacts of climate change, improve public health, protect water quality, create good paying jobs and help drive our economic recovery.

Minimizing air pollution and climate-altering greenhouse gas emissions caused by New York's power supply must guide our energy policy decisions. New York City's air quality fails to meet minimum federal standards. Rising sea levels, increased heat-related mortality and respiratory ailments, damage to ecosystems across the state, and increasingly frequent extreme weather events are just a few examples of the challenges we will face if bold action is not taken by policy makers. It is critical that lawmakers consider air pollution and the magnitude of the threat global warming poses to New York's economy, public health, infrastructure and natural resources, and ensure that these considerations drive energy policy.

The largest source of air and climate pollution is the combustion of fossil fuels. Combustion of fossil fuels creates harmful air pollutants that cause respiratory problems,

including asthma, bronchitis, emphysema, lung and heart disease. This leads to more frequent doctor visits and/or emergency room visits and increased reliance upon medications. These physical impacts also create medical expense for individuals, municipalities and state government, as well as leads to lost worker productivity and time from school.

Extraction of fossil fuels also wreaks havoc on our air, water, land, and wildlife. Examples of fossil fuels destruction includes the recent oil spill in the Gulf of Mexico, water pollution and land degradation from coal mining, and the air, water and public health impacts other states are experiencing from drilling for natural gas using hydraulic fracturing.

As a result of this environmental and public health threat the extraction and use of fossil fuels is also controversial. On the other hand tapping the sun for energy minimizes air, water, land and climate altering pollution and is far from controversial. In fact, in a recent poll when asked "how important do you think it is for the U.S. to develop and use solar power?" 9 out of 10 Americans responded that it is "extremely important" or "somewhat important." 80 percent of Republicans, 90 percent of Independents and 94 percent of Democrats agree with this statement.

Benefits of Solar

We must move from fossil fuels to clean renewable energy such as solar energy systems. A robust solar program will bring numerous benefits to New York residents, including: local grid congestion relief; long-term energy cost reduction and electricity price stabilization; improved air quality and improved energy security. Since the City's peak demand correlates well with solar output, an investment in increased solar generation will save all ratepayers money by reducing the most expensive wholesale electricity purchases. The New York metropolitan region, which has the most expensive peak electricity prices among all major U.S. cities,¹ stands to benefit greatly from more solar energy installations.

To these benefits, add two more: jobs and economic development. In addition to the environmental and grid benefits, an investment in a solar market development program for New York will also provide significant economic opportunities for the state. Investments in solar energy creates more jobs per megawatt than any other energy resource (*Source: UC Berkeley Energy Resources Group*). Currently, with over 100,000 Americans currently working in the U.S. solar industry – that's more than coal mining or steel & iron manufacturing and this sector is ready to expand.

Solar energy development is also a strategy for mitigating rising fuel prices, blackouts, and environmental justice concerns. Studies demonstrated that solar photovoltaics could

¹ Lazard (2009). Levelized Cost of Energy Analysis Version 3.0. Available for download at <http://www.solarelectricpower.org/docs/Levelized%20Cost%20of%20Energy%20-%20v3%200.pdf> .

have prevented both the 1999 power outage in Washington Heights and the 2003 blackout in the Northeast (Perez et al., 2004b; Perez et al., 1999).

Barriers to Widespread Installation of Solar

Despite the undeniable benefits of solar energy there are several barriers that interfering with our much-needed transition to this clean renewable energy. The major obstacles are: 1) current policies that favor fossil fuels; 2) upfront costs in installing solar energy systems; 3) market uncertainty; and 4) misinformation surrounding the costs and reliability of solar energy systems.

For over 100 years we have had a policy structure that has favored dirty highly polluting fuels. Federal incentives for the oil and gas industry have averaged \$4.86 billion annually for 100 years, and nuclear has averaged \$3.5 billion for 50 years. Meanwhile annual support for all renewables including solar has averaged only \$370 million for just the past 15 years. In addition, our current market is structured so that fuel producers do not fully account for the damage their product has caused to our air, land, water and public health. These regulations, subsidies and the failure to account for the true costs of fossil fuels have made renewable energy such as solar seem more expensive than its dirty highly polluting non-renewable counterparts.

Another barrier to deploying more solar energy is the need for upfront capital to install a solar energy system. To move to solar an individual or business faces upfront costs to break free of the polluting fuels. These upfront costs have become a barrier for solar installations.

Another barrier is misinformation, many overstate the costs of solar energy systems, make unsubstantiated claims that ramping up installation of solar will make the electric grid unreliable and lead to blackouts and other problems. Significantly, though the prices solar continues to decrease. Surging demand has dropped solar module prices approximately 75% in just the past three years, with another 50% expected over the next three. Over the past 18 months the average pre-incentive cost of residential and commercial solar PV systems decreased by 17 percent.

Solar Jobs Act

The Solar Jobs Act is a major step in overcoming these barriers. The Solar Jobs Act 1) sets an aggressive target; 2) annual interim targets chart an achievable goal, and 3) a framework for a diverse participation that supports a strong robust market with opportunities across utility, residential and commercial sectors. The bill's structure creates a commodity in the form of tradable solar renewable energy credit that can serve as the basis for obtaining upfront capital for installing a solar energy system.

In order to realize its full market potential, New York must pursue an aggressive solar strategy to achieve 5000 megawatts (MW) of solar photovoltaic (PV) by 2025. This

long-term target in the Solar Jobs Act creates market certainty that is required for companies to invest in the solar industry in New York.

The robust solar program that would result from the Solar Jobs Act would also create jobs. A recent study estimates that this program would create approximately 41,000 jobs and generate \$20 billion in economic output.

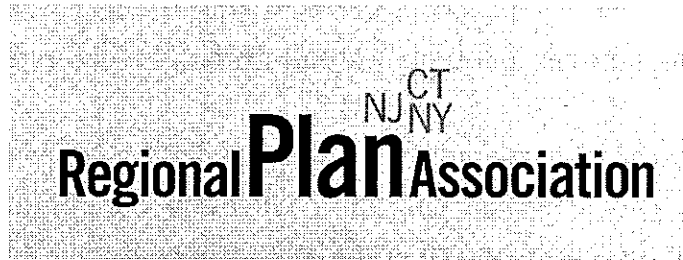
The Solar Jobs Act is a win-win proposition that will not only help reduce some of our environmental challenges but it also creates good paying jobs and will stimulate our slowed economy. We encourage the City Council to immediately pass Resolution 1098 in support of the Solar Jobs Act.

Thank you,

A handwritten signature in black ink that reads "Ross Gould". The signature is written in a cursive style with a large, prominent "R" and "G".

Ross Gould

Air & Energy Program Director



New York City Council

Resolution 1098 - Calling upon the New York State Legislature to pass, and Governor Cuomo to sign into law, the New York Solar Jobs Act of 2011.

November 14, 2011

Statement by

Jessie Feller

Senior Planner, Energy Policy Program
Regional Plan Association

Thank you for this opportunity to share our strong support of Resolution 1098 with the Council today.

My name is Jessie Feller. I am the manager of the energy policy program for Regional Plan Association, a non-profit planning, research and advocacy organization.

RPA has been advocating for the livability and continued competitiveness of the Tri-State Region for ninety years, and we are deeply involved in the promotion of smart and sustainable policies in New York and our neighboring states.

New York is increasingly falling behind New Jersey and missing a prime opportunity to harness the solar job and clean energy opportunities here in the State. New Jersey's solar incentive program has propelled the state to now rank second to California in installed solar capacity with over 406 MW – enough to power approximately 41,000 homes.

A report to be released this month by RPA, NRDC and the Vote Solar Initiative discusses the benefits of solar, including the job and economic development opportunities here in the Tri-State Region. Solar power generates

more jobs than any other energy industry category per megawatt installed. It has already employed over 2,800 people full-time in New Jersey.

New Jersey's success in accelerating its solar installation capacity can be attributed to its strong incentive program. The New York Solar Jobs Act of 2011 will provide the same kind of supportive and enabling policy environment for the solar industry to grow and prosper here in New York as our neighboring state of New Jersey has provided.

Solar power also provides multiple benefits to the citizens of New York including better air quality, reduced asthma, insulation from volatile fossil fuel prices, improved reliability of our electrical grid, and the reduction of oil imports. Solar can also provide one part of the replacement solution for Indian Point, which is up for relicensing in 2013 and 2015.

It is now time for New York to catch up and begin to create a strong solar economy just as New Jersey has done. This Council has the ability and responsibility to create jobs and reliable clean energy opportunities for all New Yorkers through the scaling up of solar power. RPA gives its strong support in passing Resolution 1098 as soon as possible.

Thank you for your time and for your continued commitment to the City and the State.

Jessie Feller
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**Testimony of Sergej Mahnovski
Before the New York City Council
Committee on Environmental Protection
(November 14, 2011)**

Good morning Chairperson Gennaro and members of the City Council Committee on Environmental Protection. I'm Sergej Mahnovski, Senior Energy Advisor to the Deputy Mayor for Operations and Director of the Office of Energy Policy and Infrastructure at the Department of Environmental Protection, and I'm joined here today by Ariella Maron, Deputy Commissioner for Energy Management from the Department of Citywide Administrative Services, Steve Caputo, Policy Advisor from the Mayor's Office Of Long Term Planning and Sustainability, John Lee, Senior Architect from the Department of Buildings, and Alison Kling, New York City Solar Coordinator from CUNY.

Thank you for the opportunity to testify today about the role solar energy plays in the City's efforts to cultivate sources of renewable energy and reduce greenhouse gas emissions. Solar energy is a key component of our energy strategy, which is based on three key pillars: to improve the long-term reliability, environmental emissions, and costs of our energy system. Solar energy can help reduce peak power demand, thereby improving system reliability on hot summer days such as the historic peak load day we experienced on July 22nd of this year, as well as reducing emissions from the least efficient and most polluting peaker plants. In the long run, managing peak load through greater market penetration of renewables like solar, as well as aggressive energy efficiency and demand response measures can defer the need for capital spending in load-constrained networks, which ultimately helps electricity ratepayers and taxpayers in New York City.

Beginning with New York City's designation as a Solar America City in 2007 and through the April 2011 update of the City's sustainability roadmap *PlaNYC*, this Administration has been actively working on policies and programs geared at growing the market for solar energy. The goal, laid out in 2007, has been to reach an installed capacity of 8.1 MW of photovoltaics (PVs) by 2015. However, we are well on our way to exceeding that total. By the end of this past summer, nearly 7 megawatts had been installed. Through a comprehensive strategy that incentivizes investment in solar in the private market and leverages the City footprint, we are on track to generate a cumulative 45 megawatts (MW) by 2015 which is enough energy to power roughly 9,000 New York City homes.

While the solar industry has demonstrated impressive advances in technology and cost-effectiveness, solar projects still require significant policy support and are not yet competitive on a market basis. As a result, the most appropriate role for the City is to help unlock private innovation. We can achieve this by continuing to work with the State to enhance incentives for developers in our dense urban environment where the value of a marginal megawatt is higher than more remote renewable resources outside of the City. We are also working to achieve this by playing a key role in enabling state of the art mapping capabilities, greater information resources, and streamlined permitting processes to help developers and building owners identify and finance high quality projects.

The City is also directly involved in several key solar projects by working with developers to build projects on the most favorable and underutilized municipal assets. These are assets like large rooftops at wastewater treatment plants, and brownfield sites such as capped landfills, where solar PV projects can benefit from the larger scale of municipal government sites and our ability to procure energy or lease land.

I will now discuss the city's strategy in more detail as well as update the Council on what the City has done to remedy previously identified barriers to solar development.

I. Growing Private Investment in Solar

As stressed in the PlaNYC update, the City's programmatic blueprint to encourage private investment revolves around financial incentives, administrative reforms, information-sharing, and marketing aimed at unlocking the City's solar industry and potential. I will discuss the full range of these activities now.

Solar Property Tax Abatement

The Solar Property Tax Abatement was one of the early recommendations of the NYC Solar America City partnership and part of the original PlaNYC. It established a tax abatement program for solar photovoltaic panels (PV) in order to reduce the cost premium for installations in New York City.

- a. The tax abatement was approved by the State legislature in 2008. For the first years of the program, the incentive was up to 35% of an installed PV system. Now it is at 20%, spread over four years at 5% per year.
- b. After an initial two years of limited take-up, the amount of successful solar tax abatements tripled in 2010, to over one hundred, with seventy-five being for residential projects. This past year, abatements totaled almost \$1 million in property tax abatements with an average annual abatement of \$9,000 (commercial and residential) for the four years.
- c. Over the past three years, a total of 138 abatements have been granted. These projects will generate a total of 2.7 MW of power and are located across the five boroughs on residential, industrial and commercial properties.

Solar Thermal

In 2009, the City, led by the Economic Development Corporation, launched the Solar Thermal Grant Pilot Program. The \$1 million grant program provides small grants to organizations to help defray the costs of installing rooftop-mounted solar hot water heating systems. The program's objectives are to demonstrate the value of this clean energy option, rigorously test and monitor equipment, identify technical and financial barriers, and educate the public and potential customers.

The grants are equal to 30% of installation costs, capped at \$50,000. Grants were distributed in two rounds, with the most recent application round completed earlier this year. To date, EDC has

funded 5 projects on residential, commercial, and mixed-use buildings in the Bronx, Manhattan, Queens and Staten Island.

NYCEDC is currently monitoring data to assess the financial and energy benefits of these systems. After gathering data from all pilot programs over a 12 month period, NYCEDC will evaluate the performance and develop further recommendations.

Permitting Improvements

In line with this Administration's overall desire to lower the cost of doing business here, the City has taken an aggressive approach to working with industry partners in identifying burdensome, duplicative, and prohibitive codes and regulations. Additionally, we have taken a number of steps to expedite permit processing and further enhance interagency communication. I will fully discuss these changes later in the testimony.

Solar Empowerment Zones

In June 2010, the NYC Solar America City Partnership led a group of several stakeholders, consisting of CUNY, OLTPS, EDC, DOB, DCAS, OEM, NYS Public Service Commission, NYPA, and Con Edison to create NYC "Solar Empowerment Zones." These are areas of New York City where solar can have the most benefit to our electrical grid because they have ample rooftop capacity for solar that can provide additional service to a localized day-peaking electric network that is in need of additional capacity.

- The three Solar Empowerment Zones – Downtown Brooklyn, Greenpoint-Gateway, and Staten Island East – are eligible for special benefits such as free data monitoring systems.

Renewable Portfolio Standard

The Public Service Commission (PSC) and NYSERDA have designed a new five-year \$125 million program for large-scale renewable energy projects (defined as 50 kilowatts and up) in the New York City area that will add more than 60 MWs of solar PV to Con Edison's service territory (which includes New York City and Westchester County) by 2015. The City advocated forcefully for this funding and as additional benefit to the City, NYSERDA has created an additional 15% incentive for any project in a Solar Empowerment Zone.

Solar Map

In June 2011, the City, under CUNY's leadership, launched the NYC Solar Map, a Light Imaging Detection And Ranging (LIDAR)-based map, which offers all New Yorkers the most granular view on the potential for generating solar energy on their rooftops. The City used planes to collect 15 Billion data points and create a 3-D surface model of the City that is accurate to within 10 cm. The map aggregates, in real-time, data on the nearly 1 million properties in the city and calculates costs and paybacks periods. This unique tool was funded by the US Department of Energy and the City. The map has had 125,000 hits to date. Additionally, to help further stimulate interest in solar thermal in the New York, CUNY has begun an effort to create a solar thermal calculator for inclusion on the solar map. Development of the calculator is part of

CUNY's broader effort to design a roadmap and implementation framework for cultivating a solar thermal market.

Installers have recognized the map as an outreach and marketing tool and the underlying data of the map provides usefulness not just for the industry (e.g., where are my best potential clients) but for Con Edison, as the utility can (and will) use the map as a planning tool in its reliability and resource plans.

Solar Decathlon

The City recently submitted an application to host the 2013 Solar Decathlon at Flushing Meadows Corona Park. The Decathlon, which is normally held in the National Mall in Washington D.C., is a bi-annual event where universities compete to build solar-powered energy efficient homes. This would be the first time the event is held outside Washington and the City is among a number of other municipal candidates. The City believes that this showcase will further solar market growth through exposure and attention to the renewable and solar industry in New York.

II. Leveraging City Assets in Solar Development

As I indicated earlier, the comprehensive strategy to solar also rests on the City using its own assets to encourage solar investment. I will now provide an overview of the efforts we are pursuing.

Solar Landfills

Earlier this year, the City announced an innovative public-private partnership to install solar panels on 250 acres of capped municipal landfills. This could produce up to 50 MWs of solar power, enough for roughly 10,000 homes, and well beyond our targets for solar overall. The City wouldn't operate, or pay, for the panels. Instead a private developer would lease the land and build their own plant. The Department of Environmental Protection, along with the Department of Sanitation and the Department of Parks and Recreation, are evaluating the feasibility and determining the best strategy using solar energy and possibly up to 8 MW of wind. To be clear, this project is not a part of reaching the City's goal to reduce municipal government GHGs because the electricity would not be purchased by the City. This is, however, a major effort to better use City-owned land in the promotion of greater sustainability. Our analysis shows a favorable peak load coincidence of this solar project with most inefficient fossil fueled plants in the city, which means that megawatt hours generated by this project would displace an equivalent amount of megawatts hours of the most polluting plants on hot summer days.

For City buildings, we pursue a variety of strategies to invest in solar: leveraging existing grants, partnering with the private sector, and targeting projects identified through our comprehensive audit and retrofit process.

ARRA Solar Projects

In mid-October of this year, the City started construction on eight solar projects on city assets using American Renewal & Recovery Act funds (ARRA). The ARRA funds were allocated by the US Department of Energy to support clean energy and energy efficiency projects as well as climate action programs. DCAS, who is administering the ARRA funds, estimates the retrofits will generate approximately 340,000 kilowatts-hours. The panels will be placed on NYPD precincts and Sanitation, Fire and Transportation garages.

City Buildings – Solar RFP

In December 2011, the City expects to award a contract for the City's renewable energy power purchase agreement, under which the City will buy the output of more than 3 MW of electricity over a 20 year period. A solar developer will install, own, and operate the PV systems. This is another example of a private-public partnership initiative.

Audits & Retrofits

The City's comprehensive audit and retrofit process is the vehicle for identifying cost-effective opportunities for solar installation projects, thus most effectively utilizing City capital. To date, the City has completed 78 energy audits with another 58 currently underway. We plan to launch between 100-200 energy audits a year in the next ten years as part of compliance with LL 87.

City Buildings – Solar Thermal

The City is funding six new solar thermal installations on City buildings. One is an installation on a recreational center in the Bronx. It was identified through the City's audit and retrofit program, and, when combined with other energy conservation measures in the building, resulted in a comprehensive retrofit project with under a 15 year payback. The other five buildings were identified through a partnership with the Fire Department. Early estimates show that these small installations will not be cost-effective, but the City is moving forward on these pilots to gain a better understanding of the true costs and to find opportunities to bring those costs down, if possible. If the pilot is successful, the City hopes to install solar thermal on additional firehouses.

IV. Improvements Made to Reduce Impediments to Solar

Although the City's dual commitment to incentivize private investment and leverage city assets has set in place a wide range of programs with the potential for large gains in solar energy development, it is clear that additional work remains. Of particular interest to this Committee and the primary focus of this hearing are barriers to investment that were identified in the May 2010 "Installer Survey" conducted by CUNY.

The survey highlighted prohibitive business costs and administrative barriers faced by installers and owners, including cumbersome paperwork, costs of \$5,000 – \$6,000 per installation, and a processing time of, in some cases, more than a year. In response, I would like to update the Council on a number of changes the City has taken since the report's release:

On Communication with the Public and Industry

1. The Solar America City Initiative is in itself the nexus for all administrative changes. It is an interagency partnership led by Sustainable CUNY, and includes EDC and the Mayor's Office of Long-term Planning and Sustainability. The partnership has been working collectively with the Department of Buildings, the Department of Environmental Protection, the Department of Citywide Administrative Services, Con Edison, the New York Power Authority, and NYSEERDA
2. To provide installers and owners with a single point of contact and internal advocate, the City has appointed two Solar Ombudsmen to support streamlining of solar permitting (the Solar Ombudsmen has been stationed part-time at DOB) and outreach and education to the solar industry through the Installer Roundtable. In addition, the DOB Commissioner has held several forums with industry and agencies to make new market entrants familiar with permitting, requirements, and identifying resources.

On Business Cost Reduction

1. To help reduce entry costs, we appreciate what the City Council did this year in passing the new national electrical code, which removed costly requirements for third-party inspections for solar installations. DOB has agreed to fast track all electrical inspections for solar.

On the permitting front, the City has taken a number of actions that we expect will dramatically cut processing time, create uniform standards across the city, and enable installers and owners the ability to know where there applications stand at all times:

On Process Improvements

1. The City is piloting an online tracking system for solar permits, with funding from DOB, Con Edison, NYSEERDA, and EDC, to start at the end of this year. This solution will allow agencies and applicants the ability to track the progress of each installation application through the whole permitting process, creating transparency, real-time identification of bottlenecks, and better management. The goal is to reduce permitting/interconnection/approval time to 100 Days. When Con Edison implemented a similar online system for its solar installation process the internal time needed to review applications was cut in half.
2. Most recently, the City will now accept applications for solar projects through the new NYC Development Hub, allowing faster turnaround and easier review for installers.
 - a. The Hub is DOB's new state-of-the-art plan review center where all forms and plans are required to be submitted electronically. The Hub has a dedicated Sustainability Unit which only handles job applications for abatements. An installation team can then virtually collaborate with the Plan Examiners to discuss any comments the Plan Examiners may have and make adjustments in real-time. The Hub also allows examiners to virtually coordinate with other agencies and address document and approval issues in real-time.

3. The City recently applied for additional funding from the U.S. Department of Energy's "SunShot" Initiative. The goal of this program is to further reduce soft costs for solar projects. The City applied for almost \$1M in funding for Phase 1 of SunShot.

On Regulatory Improvements

1. The City recently amended its rules to include solar panels as allowable rooftop mechanical structure. Landmarks Preservation Commission is now authorized to fast-track approval of non-visible and minimally visible PVs, further reducing processing time.
2. The City is working on a proposal that would allow for solar panels to be installed above a maximum building height within parameters that limit visibility from the street. DCP is currently conducting preliminary outreach to borough boards and expects to begin the public review process to modify the Zoning Resolution shortly.

These are initial actions we have taken that seek to address industry and community concerns and make New York City a thriving market for solar development and investment. Thank you for the opportunity to testify and I'll be happy to take any questions.



*Read
Into
Records*

RENT STABILIZATION ASSOCIATION • 123 William Street • New York, NY 10038

Comments of the Rent Stabilization Association

Jack Freund, Exec. V.P.,

Oversight Hearing of the New York City Council

Committee on Environmental Protection

Impediments to the Installation of Solar Energy Systems in New York City

Monday, November 14, 2011

On behalf of its 25,000 members who own or manage the majority of the one million rent regulated apartments in New York City, the Rent Stabilization Association commends Chairman Gennaro and the members of the Committee on Environmental Protection for holding an Oversight Hearing on the potentially significant matter of solar energy system installations in New York City.

Given adequate financial incentives (and perhaps a little more sunlight) the thousands of acres of rooftops on New York's multi-family properties offer an opportunity to greatly reduce the City's carbon footprint and perhaps offset the rapidly rising costs of operating New York's rental properties.

Right now, however, the necessary financial incentives are either not in place or not properly structured. It is commonly acknowledged that solar installations are not economically viable without subsidies and incentives. As a result, New York City adopted a program of property tax abatements in 2009 for the installation of green roofs and solar electric generation systems. Together with other State and Federal incentives, the elements of financial incentive package to encourage the installation of rooftop solar systems seemed to be in place.

However, as we commented at the time of rule adoption (please see attached) the City's property tax abatement needs to be restructured to directly benefit third party providers who might install and maintain solar systems on behalf of property owners.

The RSA's suggestions were not implemented in the final rule-making and, as we would have predicted, the tax abatement program has been little used and even then, only by owners of one- and two-family properties.

It is not surprising that owners of multi-family properties have not subscribed to the existing incentives. These owners do not have the expertise to install, own and maintain

solar installations nor do they have the time and energy to do so given the ever increasing regulatory constraints and burdens they confront.

As we said two years ago, tax abatement incentives for solar installations will never be effective in the multi-family area unless those benefits are assignable by the property owner or otherwise easily accessible directly by a third-party owner/installer.

Certainly, there are other impediments to solar installations, including Fire and Building Department concerns about rooftop installations, but until there is a workable financial model, solar energy systems will remain a niche market in New York City.

The RSA appreciates the opportunity to provide you with these comments.



RENT STABILIZATION ASSOCIATION • 123 William Street • New York, NY 10038

Jack Freund
Executive Vice President

Tel.: (212) 214-9233
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March 3, 2009

Phyllis Arnold
Deputy Commissioner
NYC Department of Buildings
280 Broadway
New York, NY 10007

Dear Commissioner Arnold:

It is unlikely that the proposed regulations implementing a new tax abatement incentive will stimulate significant investment in solar installations without at least one significant amendment.

It is commonly acknowledged in the solar and energy efficiency industries that current incentives and subsidies, including the incentives which are the subject of this rule-making, are insufficient to make solar installations a wise economic choice. This is particularly true for the world of multi-family housing, which the RSA represents, where cash and financing are in short supply, especially in these times.

The only possibility for success in encouraging solar roof installations in multi-family buildings resides in encouraging third-party installers who would own and maintain the solar array providing a direct financial incentive to the owner. Any such third-party installer, however, would require assurance that tax benefits newly available through the City could be relied on to help finance the project.

The proposed rules imply that for any tax incentive benefit to be available to a third party provider, there would need to be a financial arrangement and transfer of the benefit from the City, through the owner, to the third-party provider. The fact that a third party provider would have to depend on the owner to pass through a significant tax benefit, which could make or break the project, would be a significant deterrent to any such arrangement.

It is our understanding that the City's Department of Finance does not permit applications for a real estate tax refunds from any party other than the current owner of the property.

The proposed regulations should contain provisions that specifically allow property owners to assign the tax incentive under this program to a third party installer/owner, who would then be eligible to apply to DOF for a refund of the tax abatement.

We believe that, without this one significant change, the program as now proposed will find only limited application. While there is no assurance that third-parties will participate in this program, it is almost certain that none will without the independent assurance of the delivery of the incentives contemplated.

Respectfully,

A handwritten signature in black ink, appearing to read "Jack Freund", with a long horizontal flourish extending to the right.

Jack Freund

Good Afternoon Ladies and Gentlemen,

It is a pleasure to be here today. My name is Tim Smalls and I am a Partner with R&S Capital Partners, a financial advisory firm that specializes in renewable energy. My testimony today will address the current climate for financing solar projects and how New York City may best be able to incent future development of solar energy within its confines.

Capital is King

The best way to describe financial markets today is constrained and conservative. Lenders are highly risk averse while institutional equity investors seek safe, stable returns of above 10%. Solar projects need to compete for financing against other renewable projects—biomass, wind, etc. as well as against a broader base of energy projects that involve natural gas and/or coal. Currently, solar is significantly more expensive to build than a comparably-sized natural gas or wind power plant and does not provide the return on equity that these technologies offer to investors. This is why government incentives are key to fostering solar development.

Incentive Landscape Changing

At the end of this year the 1603 30% grant from the federal government will go away and 2012 solar investing will see the return of the Investment Tax Credit as the major federal incentive. Tax equity sales of depreciation will remain but at a lower rate than this year (down to 50% from 100%) and therefore project equity will have to bear a larger share of the capital burden. Add to this the caveat that power prices nationally have declined in recent years due to the recession and remain historically low and in many states too low to permit renewable investment. This all translates into lower Returns on Equity for solar project investors.

Good News: Project Costs Declining

On the bright side, solar project costs are rapidly declining. Polysilicon has plunged 93 percent to \$33 a kilogram from \$475 three years ago as the top five producers more than doubled output, data compiled by Bloomberg shows. The steady drop in panel prices has allowed the solar industry overall to grow at a 65 percent annual rate in the past five years. In 2010, some 17 gigawatts of solar power were manufactured, shipped and installed globally — the equivalent of 17 large nuclear power plants. And in addition to lower panel prices construction costs for solar in the United States are estimated to be down 17% this year compared to last as construction companies become more proficient with solar projects.

Challenge for Government

Amidst this rapidly changing environment the challenge for government is to develop a series of incentives that are sufficient to meet current market demands

but that can also be scaled back as prices decline further (as is expected). The key issue for government officials to focus on is project Return on Capital—both in terms of debt and equity. Low double-digit returns traditionally have been high enough to incent private sector money into any area of infrastructure—and solar is in truth just another spoke in the U.S. energy infrastructure wheel.

To address this issue, regulators must remember the overarching reality that “Capital Chases Return”. So for example, right now solar investing is a “moveable feast” where money flows away from states where incentives are decreasing (e.g. New Jersey with its recent sharp decline in SREC prices) to move favorable markets (such as Massachusetts with its high tariffs). To incent development, New York State and/or New York City will need to have sufficient, stable, long-term (10+ years) project returns comparable to other leading solar states.

Set Realistic Goals

Renewable Portfolio Standards are all well and good but they can often take on a Shakespearean quality “full of sound and fury, signifying nothing.” What is more useful is very clear, detailed and concise rules that streamline the solar development process coupled with a combination of incentives that together enable a typical solar project to earn a total return of 10-12% per annum for 10-20 years. This duration is critical as the initial capital intensity of solar projects requires longer amortization schedules to accommodate the higher debt burden relative to megawatts produced.

Thank you for your time and I welcome any questions you may have.



TESTIMONY OF TERENCE O'BRIEN BEFORE THE
ENVIRONMENTAL PROTECTION COMMITTEE OF THE
NEW YORK CITY COUNCIL ON NOVEMBER 14, 2011 ON
RESOLUTION NO. 1098

Good Afternoon: My name is Terence O'Brien; Deputy Director of the Plumbing Foundation of the City of New York, Inc. which is a clearinghouse and educational forum for the plumbing industry. The Plumbing Foundation is a nonprofit association of licensed contracting firms, engineering associations, manufacturers, and suppliers whose mission is to ensure the public health through the enactment and enforcement of safe plumbing codes. I am here today to testify in support of Resolution No. 1098, urging State Legislature and Governor Cuomo to pass the "New York Solar Act of 2011".

Since its establishment in 1986 the Plumbing Foundation has worked diligently to ensure that the plumbing industry has as little a "carbon footprint" on New York City as possible. The plumbing industry has

historically utilized environmentally friendly materials and technologies. Solar technology for heating and hot water is the next wave of innovation that will help the plumbing industry lessen the City's "carbon footprint".

The Foundation urges the State Legislature to pass the "NYS Solar Jobs Act of 2011" which will create jobs, as well strengthening the public health by ensuring a sustainable and healthy City landscape for future generations of New Yorkers.



Municipal Art Society Testimony
Oversight: Impediments to the Installation of Solar Energy Systems in New York City.
Committee on Environmental Protection
Monday, November 14, 2011

My name is Aileen Gorsuch. I am an Associate Planner in Advocacy at the Municipal Art Society of New York. MAS is pleased to comment on the very important issue regarding the installation of solar energy systems in New York City.

The Municipal Art Society fights for a more livable New York City and advocates for intelligent urban planning, design and preservation. MAS launched the Preservation and Climate Change Campaign in 2010 to promote the positive environmental benefits of retaining and improving the efficiency of New York's old and historic buildings. The campaign recognizes that any strategy to fight climate change – especially in New York City – must address how to better manage and operate the city's existing buildings, especially older buildings.

As part of the campaign, MAS has been exploring how preservation can be integrated into New York City's climate change, green building and sustainability agendas. One of the key areas of work is identifying and working to alleviate any impediments between preservation regulations and measures to improve efficiency and sustainability. MAS has two major projects that in modest ways address the use of solar panels.

MAS has partnered with the Henry Street Settlement, and with the Pratt Center as our consultant, is working to improve the efficiency of the Settlement's headquarters, located in three landmarked Federal style rowhouses built in the 1830s. The goal of this project is to develop an affordable, measurable and replicable model for improving efficiency and achieving sustainability in historic structures. We held an eco-charrette in June 2011 to develop a scope of work. Solar panels were a key point of interest. The Henry Street buildings, like many historic buildings in the city have flat roofs. Our eco-charrette committee was confident that we could develop a plan in which the solar panels would not be visible from the street, would not negatively impact the historic architecture and would likely be approved by the Landmarks Preservation Commission. Despite our confidence, upon further discussion the committee felt that the use of solar panels could be cost prohibitive, with a payback too long for this particular project; however we welcome advice and feedback from the experts speaking today.

MAS wants to be part of the solution for encouraging the use of renewable energy and developing solutions for appropriate installation on historic buildings. To that end, MAS and the Landmarks Preservation Commission are soliciting proposals from consultants to prepare "Greening New York City's Landmarks: A Guide for Property Owners." The manual will serve as an educational tool for property owners, providing straightforward action steps describing how to improve the energy efficiency and sustainability of the city's landmark buildings while meeting Landmarks Preservation Commission (LPC) requirements. One chapter in the manual will focus on renewable energy and will include the use of solar panels.

The historic preservation movement has proven itself to be flexible and accommodating to new technologies and regulatory issues, like ADA requirements. We are confident that if the solar panel industry works with the preservation community to identify any potential barriers, we can develop solutions that will both protect historic resources and promote the broader use of renewable energy sources. In fact the Municipal Art Society is happy to help convene cross-discipline discussions on this critically important subject. Please feel free to contact us.

IMPEDIMENTS TO THE INSTALLATION OF SOLAR ENERGY IN NYC

The impediments are twofold. There are the large upfront costs to the homeowner and the expensive, time consuming and highly restrictive regulations for the installers.

Solar PV systems offer double digit ROI and simple payback in 5-7 years with an expected life span of decades. There is hardly any investment that can match these returns. From our research, we have found that the obstacles to consumer acceptance are the initial cash outlay, a lack of trust in the technology (despite 25 year warranties) and a general suspicion of contractors/installers.

PACE (property assessed clean energy) loans look to be a promising solution to reducing the upfront costs. The private banking industry has not seemed interested in filling this role by offering loans for solar projects unless they are a million dollars and above. There's lots of money out there, but cash is still tight. Solar leasing has now made its way to the city, but this gives the profits of solar to the financing company not the home or business owner.

The suspicion of the technology is baffling to those of us in the industry. The original solar panels developed more than 50 years ago are still producing energy today. A citywide information campaign would be helpful and perhaps the mainstream media could produce segments showing solar's merits instead of high profile bankruptcies. We have also seen that consumers believe the technology will change the way computers have: if you wait a year it will be better and the old stuff will be obsolete. Historically there is no indication that this will happen. The equipment keeps getting better and easier to install, but the increases are small and incremental. Although a full explanation is beyond the scope of this paper, today's solar panels are only twice the efficiency of the original ones of 50 years ago (8% to 16%).

The lack of trust in contractors is pervasive in NYC and from what I've seen this is often justified. In the last few years, as more installers enter the market, there has been a race to the bottom. The price per watt of installed PV has dropped dramatically. Thus the margins are very small and many installers just break even on projects. Consumers are used to comparison-shopping and the cheapest dollar/watt wins the contract. As a result the quality of installation is often poor. The average consumer doesn't have the tools or information necessary to make informed comparisons. All the equipment and installations appear the same to untrained eyes, so why not go with the lowest price? Perhaps as the industry matures there will be processes and consumer reviews to differentiate one company from another.

From start to finish a small residential solar array can take about one year. Con Ed, NYSERDA and the Department of Buildings have proposed that solar should take 100 days. While we have seen the process become easier and more forms are filed online, it is still an arduous process that tries homeowners' patience and stresses installer's cash flow. A typical installation on one of the million row houses in NYC will cost \$25-35,000. 20-25% (\$5-7,000) of the installed cost is consumed in the paperwork necessary for all approvals. While we all want solar installations to be safe and operate effectively, perhaps there are ways to reduce this lengthy and expensive process.

Testimony of Peter Olmsted

Solar Policy Advocate

The Vote Solar Initiative

Before the New York City Council

Committee on Environmental Protection

Monday, November 14, 2011

Res. No. 1098 – Resolution calling upon the New York State Legislature to pass, and Governor Cuomo to sign into law, the New York Solar Jobs Act of 2011

Good afternoon Chairman Gennaro and members of the Committee on Environmental Protection. I thank you for the opportunity to testify in strong support of Resolution 1098. My name is Peter Olmsted. I am a policy advocate for the Vote Solar Initiative (Vote Solar).

Vote Solar is a non-profit, grassroots organization working to address environmental issues and foster economic development by bringing solar energy into the mainstream. Since 2002, Vote Solar has been active at the state, local and federal levels to remove barriers and implement key policies that will bring solar to scale.

With over 50,000 members across the country, including many in New York City, we are extremely enthusiastic about the potential of the New York Solar Jobs Act. We encourage the immediate passage of Resolution 1098 in support of this important legislation. I would like to take this opportunity to speak about a few of the more compelling aspects of the Solar Jobs Act.

First, the provisions being proposed in the Solar Jobs Act will propel New York State into a leadership position in the solar energy economy. With many of New York's neighbors having embraced the environmental and economic benefits of solar through market-based programs, these states are surpassing New York in fostering cost-effective clean energy opportunities. Therefore, the Solar Jobs Act has been designed to not only stimulate local and competitive solar development, but to establish diverse opportunities for a wide range of market participants. Importantly,

this legislation will establish a long-term market for both local installers and large-scale developers.

Secondly, the Solar Jobs Act will create a critical economic and job creation engine. Whether considering jobs per Mega-Watt of installed capacity or jobs per amount of investment, research shows that the development of solar facilities employs a far greater number of individuals than nearly every other type of energy technology (see attachment). These are real and well-paying jobs that draw upon various skills. The Solar Jobs Act will therefore provide impressive opportunity and thousands of jobs in an industry that is surging around the country.

As the cost of solar energy continues its dramatic decline, the appetite for solar could not be greater. Recent polling shows that Americans love solar. In fact, an impressive 9 out of 10 Americans think it is important for the U.S. to develop and use solar energy (see attachment). Moreover, this support remains strong regardless of party affiliation; Republicans, Democrats and Independents all agree that we need more solar, a resource that currently comprises much less than 1% of all U.S. energy generation. At a time when unemployment numbers remain high and New York's aging and congested electricity infrastructure is in need of relief, the Solar Jobs Act will foster the development of reliable and environmentally sensitive energy resources.

We are grateful for the leadership that City Council has demonstrated around solar issues in the past, and are greatly encouraged by Council's consideration of

Resolution 1098. We urge its immediate adoption, and thank you for your time and support.

Respectfully submitted this 14th day of November 2011.

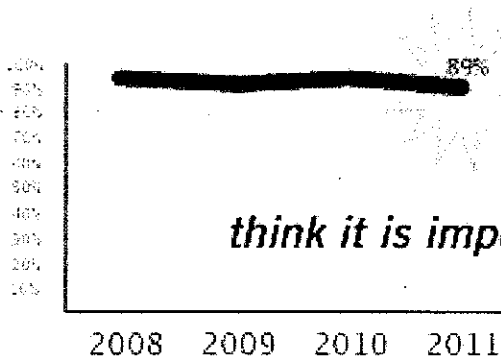
Fondly,

Peter Olmsted
Solar Policy Advocate
The Vote Solar Initiative
104 West Chestnut Street, 4th floor
Lancaster, PA 17603
Email: peter@votesolar.org
Phone: (717) 305-0045

Table 2
Comparison of obs/MWp, jobs/MWp and job-years/GWh across technologies.

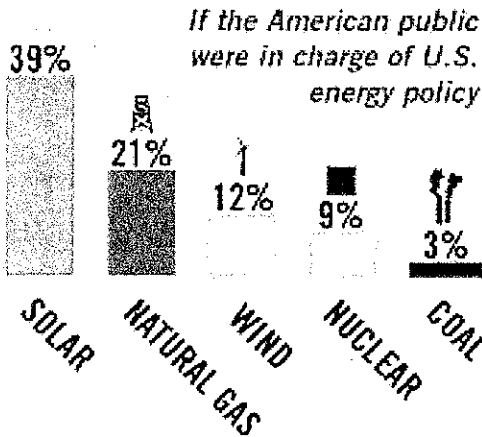
Energy technology	Source of numbers	Capacity factor (%)	Equipment lifetime (years)	Employment components			Average employment over life off acility							
				CIM (job-years/MWp)	O&M (jobs/MWp)	Fuel extraction and processing (job-years/GWh)	Total jobs/MWp		Total jobs/MWp		Total job-years/GWh		Total Avg	
							CIM	O&M and fuel processing	CIM	O&M and fuel processing	CIM	O&M and fuel processing		
Biomass 1	EPRI 2001	85	40	4.29	1.53	0.00	0.11	1.53	0.13	1.80	0.01	0.21	0.22	0.21
Biomass 2	REPP 2001	85	40	8.50	0.24	0.13	0.21	1.21	0.25	1.42	0.03	0.16	0.19	0.25
Geothermal 1	WGA 2005	90	40	6.43	1.79	0.00	0.16	1.79	0.18	1.98	0.02	0.23	0.25	0.25
Geothermal 2	CALPIRG 2002	90	40	17.50	1.70	0.00	0.44	1.70	0.49	1.89	0.06	0.22	0.27	0.27
Geothermal 3	EPRI 2001	90	40	4.00	1.67	0.00	0.10	1.67	0.11	1.86	0.01	0.21	0.22	0.22
Landfill Gas 1	CALPIRG 2002	85	40	21.30	7.80	0.00	0.53	7.80	0.63	9.18	0.07	1.05	1.12	0.72
Landfill Gas 2	EPRI 2001	85	40	3.71	2.28	0.00	0.09	2.28	0.11	2.68	0.01	0.31	0.32	0.32
Small Hydro	EPRI 2001	55	40	5.71	1.14	0.00	0.14	1.14	0.26	2.07	0.03	0.24	0.27	0.27
Solar PV 1	EPIA/Greenpeace 2006	20	25	37.00	1.00	0.00	1.48	1.00	7.40	5.00	0.84	0.57	1.42	0.87
Solar PV 2	REPP 2006	20	25	32.34	0.37	0.00	1.29	0.37	6.47	1.85	0.74	0.21	0.95	0.95
Solar PV 3	EPRI 2001	20	25	7.14	0.12	0.00	0.29	0.12	1.43	0.60	0.16	0.07	0.23	0.23
Solar Thermal 1	Skytulis/NREL 2009	40	25	10.31	1.00	0.00	0.41	1.00	1.03	2.50	0.12	0.29	0.40	0.23
Solar Thermal 2	NREL 2006	40	25	4.50	0.38	0.00	0.18	0.38	0.45	0.95	0.05	0.11	0.16	0.16
Solar Thermal 3	EPRI 2001	40	25	5.71	0.22	0.00	0.23	0.22	0.57	0.55	0.07	0.06	0.13	0.13
Wind 1	EWEA 2008	35	25	10.10	0.40	0.00	0.40	0.40	1.15	1.14	0.13	0.13	0.26	0.17
Wind 2	REPP 2006	35	25	3.80	0.14	0.00	0.15	0.14	0.43	0.41	0.05	0.05	0.10	0.10
Wind 3	McKinsey 2006	35	25	10.96	0.18	0.00	0.44	0.18	1.25	0.50	0.14	0.06	0.20	0.20
Wind 4	CALPIRG 2002	35	25	7.40	0.20	0.00	0.30	0.20	0.85	0.57	0.10	0.07	0.16	0.16
Wind 5	EPRI 2001	35	25	2.57	0.29	0.00	0.10	0.29	0.29	0.83	0.03	0.09	0.13	0.13
Carbon Capture & Storage	Friedmann, 2009	80	40	20.48	0.31	0.06	0.51	0.73	0.64	0.91	0.07	0.10	0.18	0.18
Nuclear	INEEL 2004	90	40	15.20	0.70	0.00	0.38	0.70	0.42	0.78	0.05	0.09	0.14	0.14
Coal	REPP 2001	80	40	8.50	0.18	0.06	0.21	0.59	0.27	0.74	0.03	0.08	0.11	0.11
Natural Gas	CALPIRG 2002	85	40	1.02	0.10	0.09	0.03	0.77	0.03	0.91	0.00	0.10	0.11	0.11
Energy Efficiency 1	ACEEE 2008	100	20										0.17	0.38
Energy Efficiency 2	Goldemberg, 2009	100	20										0.11	0.11

2011 SOLAR BAROMETER



9 OUT OF 10
AMERICANS
think it is important to develop and use
SOLAR POWER

SOLAR: TOP ENERGY CHOICE



82% SUPPORT FEDERAL SOLAR INCENTIVES

82% of INDEPENDENTS
 87% of DEMOCRATS
 71% of REPUBLICANS

82% SUPPORT U.S. SOLAR MANUFACTURING

51% of INDEPENDENTS
 43% of DEMOCRATS
 31% of REPUBLICANS

**THINK IT IS
EXTREMELY
IMPORTANT**



The Solar Barometer is a nationally representative survey conducted annually by independent polling firm Kelton Research.

Statement of
Samantha Wilt
Energy Policy Analyst
Natural Resources Defense Council



Before the
New York City Council

November 14, 2011

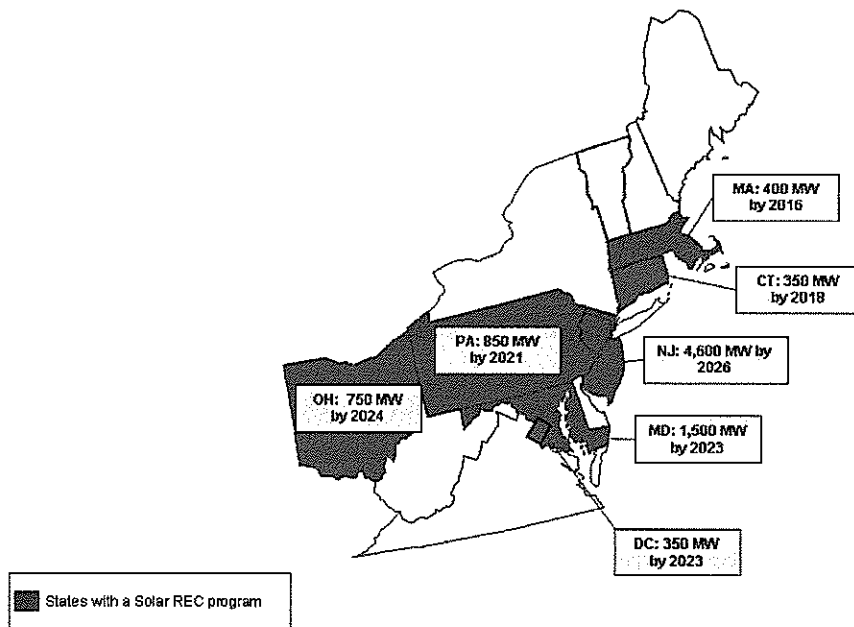
RE: Resolution calling upon the New York State Legislature to pass, and Governor Cuomo to sign into law, the New York Solar Jobs Act of 2011.

Good afternoon Chairman Gennaro and members of the Committee on Environmental Protection. Thank you for the opportunity to testify in strong support of Resolution 1098: calling upon the New York State Legislature to pass, and Governor Cuomo to sign into law, the New York Solar Jobs Act of 2011. My name is Samantha Wilt. I'm an energy policy analyst for the Natural Resources Defense Council (NRDC).

The New York State Solar Industry Development and Jobs Act is smart legislation that will greatly enhance and diversify successful State and City clean energy and economic development programs. The legislation would send a strong signal to the marketplace that New York is serious about solar, with a market-based program that would scale up solar over time, support a diversity of solar business models, and result in maximum benefits in the most cost-effective way.

New York is currently at a competitive disadvantage for clean energy enterprise and "green" jobs opportunities among neighboring states that have moved ahead in adopting solar deployment programs. Figure 1 illustrates this point quite clearly that New York is falling severely behind its neighbors.

Figure 1: New York State is falling behind neighboring states on solar development policy



The U.S. solar energy market is taking off and New York finds itself playing catch up. In 2010, New York State fell out of the top-ten list of states for most installed solar capacity (with only 54 MW) since tracking these numbers began a few decades ago. At present, solar power represents less than .1% of New York’s electricity generation. But New York can come back. The New York Solar Jobs Act will get thousands of people back to work with well-paid and meaningful jobs in an industry with increasing local and global growth potential. It is estimated that the legislation will provide tens of thousands of new jobs and subsequent tens of billions of dollars in new economic activity for the state.

The New York Solar Jobs Act will add over three percent solar energy supply to the total New York electricity supply at less than one percent of the expected total cost of electricity by 2025. Combined with the expected utility ‘system-wide’ transmission and delivery benefits of

customer-sited and distributed solar resources, the Act will be a net positive economic gain on the order of hundreds of millions of dollars, which translates into savings for all New York electricity consumers. This bill will help retain New York businesses by giving them more opportunity to opt out of ever-increasing and more volatile energy costs that are out of their control.

The environmental and human health benefits of this legislation would also be enormous because solar power produces zero emissions, including no particulate matter, which contributes to the state's high asthma rates, and no carbon emissions, which are the primary cause of human induced global warming. From the study we did on the environmental impacts of the legislation, over 110 million metric tons of greenhouse gases will be eliminated, equivalent to taking 2.6 million cars off the road.

Because of these benefits for New York's economy and environment, the NRDC gives its strong support in passing Resolution 1098 as soon as possible. Thank you for your leadership on this important issue.

TESTIMONY OF THE SOLAR ALLIANCE AND NEW YORK SOLAR ENERGY
INDUSTRIES ASSOCIATION BEFORE THE ENVIRONMENTAL
PROTECTION COMMITTEE OF THE NEW YORK CITY COUNCIL
PRESENTED BY CARRIE CULLEN HITT

November 14, 2011

I. Intro

Good Afternoon Chairs and Members of the Environmental Protection Committee. Thank you for providing the opportunity to address you today. My name is Carrie Cullen Hitt and I am here today on behalf of the Solar Alliance and the New York Solar Energy Industries Association (NYSEIA).

The Solar Alliance is a national trade association representing 35 companies engaged in all aspects of solar, from financing to manufacturing to installation. Our members serve all customer groups, and some have customers right here in the city.

NYSEIA, created in 1994, is a NY State association representing solar companies based here in New York. NYSEIA's hundreds of members consist of companies of all shapes and sizes, from family owned businesses to larger corporations.

I plan to speak briefly about three topics today:

1. NY Solar Industry,
2. What Needs to Happen Next to Expand Investment, Jobs and Installations, and
3. Introduce four of our member companies who will highlight their NY experience.

II. We are encouraged by the City's leadership in renewable energy development. As you are already aware, a committed focus to rationale, sustainable policies bring investments and jobs as well as new, clean energy resources.

According to the Solar Energy Industries Association, New York is home to:

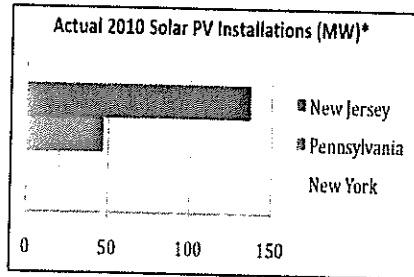
- 293 total companies (SEIA database)
 - 47 Manufacturers
 - 10 Project developers
 - 108 Contractor/installers
 - 18 Distributors
 - 39 Financial firms
 - 71 Other (law firms, utilities, solar system users, etc.)

In addition, New York hosts

- Over 4,279 solar jobs (ranked 5th overall among states, according to the Solar Foundation's *National Solar Jobs Census*)
- Total solar electric capacity is 100.7 MW (Q2 2011 *SMI* data plus the 37 MW Long Island Solar Farm) and there have been a total of 6,143 installations (as of Q2 2011 *SMI* report).
- A recent study and map put together by CUNY shows that 2/3s of New York's 1 million roof tops are suitable for solar. Installations at these sites could provide half of the city's electricity on sunny days.
(<http://green.blogs.nytimes.com/2011/06/16/celebrating-a-citys-solar-muscle/>)
- In December 2010, New York launched an incentive program for solar thermal hot water systems. The 5-year \$25 million program covers up to \$4,000 of the cost of solar thermal systems for residential customers and \$25,000 for commercial customers. According to NYSERDA, the incentive program is expected to displace more than 45 MWs of existing electrical use by 2015.
(<http://www.nyserda.org/funding/2149pon.asp>)

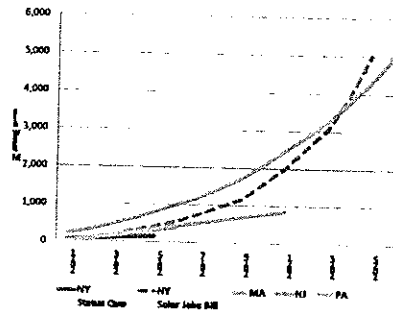
III. Next Steps

Although NY has historically been a leader in the renewable and energy efficiency space, it has recently fallen behind its neighboring states. States such as New Jersey, Massachusetts and Connecticut have moved forward.



* Source: SEIA/GTM Research U.S. Solar Market Insight Year ii

The solar industry's growth in surrounding states is going to continue to exceed New York's, as the impact of their solar-friendly policies build the industry. Here is the current trajectory of NY compared to other states – with the solid blue line showing the current (poor) NY trajectory, while the dotted blue line identifies how the proposed NY Solar Jobs bill would put NY back into a leadership position:



The economic development impacts of the bill are as dramatic, with the National Renewable Energy Lab's "Jedi" model showing that the policy would create more than 41,000 jobs:

Figure 1: Jobs Opportunity in a 5,000 MW solar PV program for New York State

Residential	5106	276	5382
Small Commercial	4716	276	4992
Large Commercial	12372	884	13256
Utility	16543	1531	18074
Program Totals	38738	2967	41705

There are many impediments to NY achieving its full potential. The primary impediment is a comprehensive, sustainable, long term solar energy policy for the state. With a basic framework, such as those described in the NY Solar Jobs Act, NY can put in place the necessary components to attract investment and move towards a cleaner future.

In order to expand on the benefits outline above, NY needs to implement progressive, permanent solutions to encourage investment in solar in NY. We encourage the Committee to immediately pass Resolution 1098.

I'd like to introduce four companies who have businesses in NY:

Tess Barton, Community Energy

Shaun Chapmen, SolarCity

Evan Dube, SunRun

Jonathon Lee, Tioga Energy

Shaun, Evan and Jonathon will offer brief remarks.

Thank you.

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Name: RICHARD GETLA

Address: _____

I represent: New York League of Conservation Voters

Address: _____

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Name: Shawn Chapman

Address: 256 17th St Brooklyn NY 11215

I represent: Solar City

Address: 155 Water St Brooklyn

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Name: Peter Olmsted

Address: 1315 Clayton Rd Lancaster PA 17603

I represent: Re Vote Solar Initiative

Address: _____

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Name: Alison Kling

Address: _____

I represent: City University of NY

Address: 75 Park Place

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Name: Assembly member Englebright

Address: F. Suffolk NY

I represent: NY State Assembly

Address: Albany NY

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Name: Aileen Gorsuch

Address: 111 W 57th St

I represent: The Municipal Art Society of New York

Address: 289 W 147th St Apt 4C

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Name: Samantha Wilt

Address: 19 Croton Ave, Hastings on Hudson NY 10706

I represent: Natural Resources Defense Council (NRDC)

Address: 40 W. 20th St NYC 10011

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Name: Jessie Feller

Address: 10 Hillside Ave #2B, New York, NY 10070

I represent: Regional Plan Association

Address: 4 Irving Place, NY, NY

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Date: 11/14/11

(PLEASE PRINT)

Name: EVAN DUBE

Address: 101 Federal Street, Suite 1902, Boston, MA 02110

I represent: Solar Alliance

Address: _____

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Go Together

Appearance Card



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Date: _____

(PLEASE PRINT)

Name:

John Mucci

Address:

4 Irving Place NY NY 10003

I represent:

Con Edison

Address:

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THE CITY OF NEW YORK**

Go Together

Appearance Card



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

in favor in opposition

Date: _____

(PLEASE PRINT)

Name:

Margaret Jolly

Address:

4 Irving place

I represent:

Con Edison

Address:

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THE CITY OF NEW YORK**

Appearance Card



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Date: *11-14-11*

(PLEASE PRINT)

Name:

Sergej Mahrovski

Address:

I represent:

DEP / City Hall

Address:

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Date: _____

(PLEASE PRINT)

Name: Jonathan Lee

Address: 95 Franklin St, NY, NY

I represent: Tioga Energy, Inc.

Address: 123 Mission St San Francisco CA

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Date: _____

(PLEASE PRINT)

Name: Michael Leone

Address: NY LCV

I represent: NY LCV

Address: _____

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Name: Ross Gould

Address: 353 Hamilton St Albany NY 12210

I represent: Environmental Advocates of NY

Address: _____

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(PLEASE PRINT)

Name: John Lee

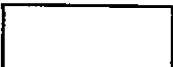
Address: 280 Broadway

I represent: Dept. of Buildings

Address: _____

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(PLEASE PRINT)

Name: TEAGNICE O'BRIEN

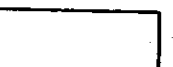
Address: 44 West 28th St Fl. 12

I represent: Plumbing Foundation

Address: _____

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Date: _____

(PLEASE PRINT)

Name: MCGOWAN SOUTHWORTH

Address: 705 41st St. #16

I represent: SUNSET PARK SOLAR ADVOCATES

Address: _____

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Name: Matthew Mignola

Address: 518 47th St. Brooklyn NY

I represent: Solar Installation

Address: NYC

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(PLEASE PRINT)

Name: TIMOTHY SMALLS

Address: 10 Hedgerow LA Greenwich CT

I represent: R&S CAPITAL PARTNERS, LLC

Address: 10 Hedgerow LA Greenwich CT

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(PLEASE PRINT)

Name: Carrie Hill

Address: 48 Borden Hill Schenectady 12306

I represent: Solar Alliance + NYSEA

Address: _____

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Date: 11/14/11

(PLEASE PRINT)

Name: Den Willis

Address: 270 Court St Brooklyn

I represent: Solar Bright Solar

Address: _____

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