New York City Solar Installer Interview Summary

May 11, 2010

The NYC Solar America Cities Initiative is a partnership between the City University of New York, the NYC Mayor's Office of Long-Term Planning and Sustainability, and the NYC Economic Development Corporation. The goal of the NYC Solar America City Initiative is to reduce barriers to solar throughout New York City, support the installation of 8.1MW of PV by 2015, and to create a long-term solar plan that will encourage widespread solar adoption throughout New York City. Recent studies have estimated that New York's existing buildings could host between 6,000 and 8,000 megawatts of solar power – enough to supply over 20% of the City's current electricity demand but technical and financial barriers remain. Large-scale development of solar energy in New York City would also reduce air pollution, decrease greenhouse gas emissions, create green collar jobs, and lower the risk of future blackouts by helping to reduce demand for electricity on New York City's grid.

Introduction

From March through April of 2010, Sustainable CUNY, on behalf of the City University of New York, interviewed NYC solar professionals to identify the barriers to solar in the City, and possible solutions to these barriers. The results of these surveys, summarized in this report, will help the New York City Solar America Cities Partnership target resources and make policy recommendations to most effectively address the barriers to realizing New York City's solar potential.

Interview Participants

Sustainable CUNY conducted thirty-six interviews with solar professionals at thirty-one different companies and organizations. The solar companies that participated in the survey completed 94.3% of the solar PV capacity installed in NYC by solar companies active since 2007[1].

Methodology

From January 2007 through February 2010, twenty-one solar companies completed PV installations in New York City using NYSERDA's PV incentives offered through PON 1050. Sustainable CUNY targeted each of these companies for participation in the survey, as well as companies based in NYC that are listed as eligible PV installers on NYSERDA's website, installers that completed solar projects in the City for NYPA, and a number of other installers that we were referred to by interviewees, Con Edison, and other relevant City agencies. While not the primary target of this survey, we also interviewed a few non-profit organizations that work on solar in NYC. We reached out to these organizations via email, and followed up with phone calls to schedule interviews.

The interview had three main sections:

- **Company Background**
- **Barriers to Solar in NYC**
- **Possible Solutions to Barriers to Solar in NYC**

The Barriers and Solutions sections covered each primary agency involved in the process (NYSERDA, Department of Buildings, Con Edison), as well as any other relevant agencies and policies that affect solar. Installers were also asked to provide a typical timeline for completing a solar PV installation in NYC, which can be found in **Appendix A**. Interviews were conducted over the phone, and lasted approximately 20-40 minutes each. Questions from the survey are listed in **Appendix B**.

NYC Solar Market Overview

While NYC's solar market continues to grow, currently there are fewer than thirty solar companies actively installing in the City, and a handful of these companies dominate the NYC market. Only two have installed more than one megawatt of PV capacity in the City to date (NYC total= 3.5 MW). Four companies have installed more than 300 kilowatts of PV capacity in NYC, and six companies have installed more than 100 kilowatts. The other companies active since 2007 are either based outside of the City, and focus on the surrounding markets in Long Island, New Jersey and Upstate, or they are young companies seeking to enter the NYC solar market. While installers interviewed have widely varying levels of experience, less experienced installers identified many of the same barriers as the more experienced solar installers.

[1] Active companies are defined as those that successfully applied for NYSERDA incentives to complete solar PV installations in the City since January 2007, as of February 2010.

Main Barriers: Time and Cost
According to installers, the two largest barriers to solar in the New York City are:

1) The long turn-around time and inconsistent incentive levels from NYSERDA

2) The cumbersome, variable administrative process at the Department of Buildings, which has become even more challenging since the Property Tax Abatement became available in 2009. They state that administrative barriers at the NYC Department of Buildings account for the majority of the cost premium for solar PV in New York City versus surrounding areas.

As a result, many companies are no longer pursuing residential solar projects in the City due to the high administrative cost, which typically exceeds $5,000-6,000 per installation. The high overhead has a major impact on the economic viability of all solar projects in NYC, but especially small residential systems, where this represents a greater portion of the total project cost.

Nearly every installer interviewed uses an expeditor to navigate the Department of Buildings permitting and paperwork process, at an average cost of $2,500-3,000 per job. In a few cases where the owner claimed the Property Tax Abatement, installers spent $7,000-8,000 on expeditor and architect fees. According to installers, commercial PV systems in NYC typically cost $0.50-$2.00 more per watt than in surrounding areas. Residential systems cost $2.00-$4.00 more per watt than in surrounding areas[2]. See **Appendix C** for average PV costs ($/Watt), by year and by borough, compared to the State-wide average.

Survey Results
The following pages summarize the challenges identified by interviewees, and their suggested solutions to these challenges. The following format was used to summarize the results:

Agency

Challenge: name of the challenge
Description: detailed description of the challenge, synthesized from one or more installer interviews.
Proposed Solutions: list of solutions proposed by one or more installers during interviews.

One star* by a challenge indicates that 3 or more interviewees identified this as a major barrier.

Two stars** indicates that this challenge was identified by 3 or more interviewees, including an installer from a company that has completed more than 300 kW of PV in the City.

[2] These values, provided by installers, can be confirmed on NYSERDA's Powerclerks website (provided in Appendix C).

Installer Interviews: Challenges and Proposed Solutions

The challenges, descriptions, and proposed solutions listed below are taken directly from the solar installer interviews.

Interagency Challenges

Challenge: **Redundant and Cumbersome Paperwork****
Description: Installers must submit similar documents to NYSERDA, the DOB, and Con Edison. Many of these documents must be hard-copy and the amount of administrative work to file all of the paperwork is cumbersome. Once paperwork is submitted, installers do not know the status of their projects, and need to continually follow up with agencies.
Proposed Solutions: Create a single online application portal that allows installers to submit all required documentation at once, and track the status of their applications within each agency. Encourage greater communication between agencies, and eliminate redundant requirements.

New York State Energy Research and Development Authority

Challenge: NYSERDA Application Turn-around Time**
Description: NYSERDA's turn-around time for reviewing solar incentive applications (PON 1050) is slow, often taking more than 6 months. Many installers note that the incentive application challenges are exacerbated because NYSERDA does not have an official who is dedicated to solar in NYC or who is thoroughly familiar with the complicated NYC permitting processes. Some note that NYSERDA's design review process is redundant with the NYC DOB's review process.
Proposed Solutions: Encourage NYSERDA to create a staff position located in NYC; additionally, encourage NYSERDA to seek out ways to turn applications around faster, such as hiring additional staff, putting the entire incentive application process online, and reducing design reviews that are redundant with DOB reviews.

Challenge: Lack of Long-term Certainty with Incentives**
Description: NYSERDA's frequent changes to incentive levels without advanced warning create uncertainty and reduce the attractiveness of New York as a place for a company to expand.
Proposed Solutions: NYSERDA should lock in to incentive levels for set periods of time, and inform installers if incentive levels may change with sufficient time for them to adjust their pricing. (Most installers acknowledged that this is a PSC issue as much as it is NYSERDA, as NYSERDA is forced to make a set amount of funds last for a long time).

Challenge: Low kW Incentive Caps**
Description: Many installers noted that the 50 kW cap on NYSERDA incentives makes it difficult to finance larger projects, and virtually excludes the PPA model from making sense in NY State.
Proposed Solutions: N/A. Unless the PSC approves an increase in total funding for PV, NYSERDA's low incentive caps are necessary to make the funds last. Several installers note that performance-based incentives such as SRECs or an FIT could allow for larger systems, allowing solar to reach economies of scale.

Challenge: RFPs are not a good way to build a market
Description: Some installers note that the recently approved downstate solar program will not effectively build a market for solar in NYC, and the RFP-based procurement method proposed is prohibitive to smaller developers who do not have the resources to respond to these RFPs.
Proposed Solutions: Performance-based incentives (e.g. SRECs, FIT)

Challenge: Lack of Incentives for Non-Profit Organizations or Public Buildings
Description: The federal tax credit and the NYC PTA are not available to non-profit organizations or public entities. This makes it extremely costly for them to install solar. NYSERDA recently reduced the incentive level for non-profits to the same level as residential and commercial.
Proposed Solutions: Create an incentive for non-profit organizations and public agencies that allows them to install solar. Restore higher incentive levels for non-profit organizations (NYSERDA PON 1050)

New York City Department of Buildings

Challenge: Property Tax Abatement (PTA)**
Description: Every installer who has completed a PTA application expressed frustration with both the DOB's extensive requirements for the PTA, and the process. In several instances the DOB has rejected PTA applications because the application did not include a full property survey that identified the location of all trees on the property, and has even requested first floor/basement site plans (seemingly unrelated to a rooftop PV installation). DOB objections require installers to reapply for permits, and therefore incur costs of several thousand dollars that they can't recoup. Poor communication and the lack of a clear process were also identified as major issues. The PTA application requires both the DOB and the Dept of Finance to sign off, and in several instances installers have been bounced back and forth between the two agencies, and unable to get answers from either.
Proposed Solutions: Remove unnecessary and redundant PTA requirements from the DOB's Administrative Code, such as subsection B of § 105-02: *Plot plan showing site bounds and location of the building on the site, showing the location of the solar electric generating system elements on the building and/or site, showing the location of and describing any trees that, were they to fall, could come into contact with any part of the solar electric generating system, and showing the location of and identifying any city infrastructure services, utility lines or other potential hazards on the building and/or site.* While some of the DOB/DOF concerns regarding tax fraud are legitimate, they could potentially confirm system cost and the suitability of the system's location with NYSERDA, who collects this info before approving incentives. Also, DOB could assign an individual to the solar/green roof PTA, so installers have a point of contact that understands the technology and the process, and can answer questions. Create a process guide for installers to follow, and hold occasional workshops that explain the PTA process to installers.

Challenge: Permits Retroactively Revoked after Job Completion due to PTA Audit**
Description: If applying for the PTA, the DOB requires installers to get their plans stamped by a professional certified engineer, avoiding the initial DOB design review and reducing the upfront wait period for permits. The problem this presents is that when the DOB audits systems and/or completes design review for the PTA, they sometimes retroactively revoke permits for completed projects. Their objections are often PTA requirements such as detailed site surveys of the entire property, forcing the installer to incur cost and time delay while they obtain/create the requested documents, and reapply for a "no work permit" (which requires hiring an expeditor again).
Proposed Solutions: Allow companies to choose whether they want to self-certify and avoid upfront delays (at the cost of increased exposure to risk if PTA application is rejected despite the fact that the system was built to the plans submitted to DOB). Alternatively, allow them to submit non-professionally certified drawings to the DOB for design review upfront, which would take longer but reduce upfront cost and the risk of being required to resubmit paperwork for the PTA or permits after job is complete. More preferable, eliminate unnecessary PTA requirements, and make clear requirements so there is not a major risk of getting permits retroactively revoked, regardless of when the DOB design review/inspection occurs.

Challenge: Property Tax Abatement Audits**
Description: The DOB is auditing the building of every PTA applicant. These audits are leading to the issuance of building and tax code violations that are unrelated to solar PV system. While these unrelated penalties are not the solar installers' fault, customers get upset at the solar companies, and discourage others from installing solar PV.
Proposed Solutions: Do not audit every solar PV installation. If auditing, the inspector should only confirm that the solar PV system is actually installed as depicted in the DOB permit application.

Challenge: DOB Permitting Costs are Prohibitive for Small Projects**
Description: Many installers have expressed that they are not pursuing residential solar jobs in NYC due to the huge overhead associated with completing DOB permitting, inspection, and PTA paperwork. Another major concern is the lack of certainty regarding the permitting costs. Nearly every installer uses an expeditor to pull permits, at an average cost of $2,500-3,000 per installation.
Proposed Solution: Set a fixed price (or percentage of total job cost) for permitting of small solar energy systems, similar to the $350 fixed cost for interconnecting residential systems (as dictated by the NY SIR). Reducing cost and administrative barriers to residential PV could allow NYC to leverage a greater amount of NY State RPS funds for the Customer-Sited Tier.

Challenge: Nationally Recognized Testing Laboratory (NRTL) Field Inspection Requirement**
Description: NRTL inspection requirement is costly and redundant. In 2006, the DOB adopted the requirement that solar installations be field tested as a complete system by a NRTL. This is redundant because every component of the system is already certified by a NRTL, and the DOB inspects the electrical and mechanical aspects of the completed system. NOTE: this issue was recognized, and the DOB is in the process of removing this requirement. This change will go into effect once the City Council adopts the updated Building Code.
Proposed Solutions: Remove this requirement ASAP

Challenge: PTA Incentive Level Dropping too Soon*
Description: Due to the overhead associated with permitting, as well as the added logistical and labor costs of working in the City, solar is simply more expensive in NYC. The PTA is an attractive incentive that helps overcome the cost barrier in NYC. Installers are still becoming familiar with the process of applying for the PTA, and the incentive level is dropping too soon.
Proposed Solutions: Extend the 35% Property Tax Abatement to encourage building owners to go solar. Extending the PTA (instead of reducing the level to 20% next year) will help build the NYC solar market, and will attract developers.

Challenge: Inconsistent Requirements Between Boroughs
Description: DOB inspectors and design reviewers follow different protocol and enforce different requirements depending upon the borough.
Proposed Solution: Educate inspectors about solar in all five boroughs, and standardize procedures as much as possible.

Challenge: Asbestos Inspection is Required for All Solar Projects
Description: An asbestos inspection is required for all solar projects, even new construction. This represents an added cost, and an additional inspection requirement. While asbestos abatement is important, this inspection should not be required for solar installations on newer buildings.
Proposed Solution: Remove the asbestos inspection requirement for solar installations on new construction and newer buildings.

Challenge: Customized BIPV Deployment is Limited due to UL Listing Requirement (DOB)
Description: The DOB requires that solar components (panels, inverters, etc) be listed by UL to be used in NYC. This makes it difficult for architects and installers that work on BIPV projects that use customized products instead of modular components. Getting a custom solar panel UL listed costs tens of thousands of dollars.
Proposed Solutions: Adopt UL standards for product quality, but do not require that custom panels be UL listed.

New York City Fire Department

Challenge: FDNY Requirements for Roof Access Are Unclear and Inflexible**
Description: FC 504 requires a six foot unobstructed path from the front to back of buildings under 100 feet, as well as access perimeters at the front of buildings and around hatches and doors. This greatly reduces the amount of space available for solar panels, especially on brownstones and small residential buildings. Additional challenges are that the rules lack clarity, and there isn't a standard way to propose an alternate access route.
Proposed Solutions: Increase the clarity of FC 504 by including drawings in the code (a best practice from California/LA County). Create a standard process for proposing an access route that may not meet FC 504's specifications but will provide a similar level of access. Investigate the feasibility/safety implications of reducing the width of the required access pathway width for small building roofs. For adjacent row houses do not require neighbors to sign an easement for their roof to be considered a means of access for FDNY (installer noted that in the event of an emergency, the FDNY will not ask for proof of an easement before walking across the neighbors roof anyhow).

Con Edison

Challenge: Inconsistent Inspections and Design Reviews
Description: Sometimes it takes more than a month to schedule a Con Edison inspection for a PV system. Also, inspectors are inconsistent in terms of their knowledge of solar, and often need to be educated in the field by installers. In several instances, inspectors have demanded to inspect the DC side of the PV system, which is beyond their jurisdiction. One installer notes that a 3-line diagram they submitted was rejected because the engineer reviewing it did not like the font.
Proposed Solutions: Educate Con Edison inspectors and engineers about solar PV (all five boroughs).

Zoning

Challenge: Solar PV and Solar Thermal are not Permitted Obstructions**
Description: Permitted obstructions, such as bulkheads, antennas, and parapet walls are allowed to go higher than the height limit in non-landmark areas. Solar is not currently considered a permitted obstruction, so arrays often have to be installed lower than would be ideal to optimize system performance. This also makes it more difficult to install reasonably large solar arrays on small or crowded roofs.
Proposed Solution: Make solar a permitted obstruction.

Appendix A: Solar PV Installation Timeline

The time tables below reflect the results of the NYC installer interviews. The long timeline for completing projects in NYC was identified as a major barrier to solar in New York City. As can be seen below, the actual installation is the shortest part of the process. Because the DOB is auditing every installation for compliance with rules regarding the Property Tax Abatement, building permits often stay open for several months after solar installations are complete. While there is a wide range of possible total project times, installers note that projects typically take at least a year in NYC.

Typical Residential NYC Solar Installation (with PTA)

Step	Time
NYSERDA Incentive Application	3-6 months
Applications for DOB permits, Con Ed interconnection, landmarks approval (if applicable)	2-8 weeks
System installation	1 week
Inspections (UL, DOB Electrical, DOB Building, Con Edison) and net-meter installation	1-2 months
Property Tax Abatement Application and Closing Permits with DOB	1-12 months

Typical Commercial NYC Solar Installation (with PTA)

Step	Time
Applications for DOB permits, Con Ed interconnection (CESR), landmarks approval (if applicable)	4-10 weeks
NYSERDA Incentive Application	3-6 months
System installation	1-3 weeks
Inspections (UL, DOB Electrical, DOB Building, Con Edison) and net-meter installation	1-2 months
Property Tax Abatement Application and Closing Permits with DOB	1-12 months

Appendix B: Solar Installer Interview Survey

Company Overview

- Office location
- Number of employees
- Target market (residential, commercial, power purchase agreements, solar thermal, all of the above)
- Trainings and certifications
- Total PV installations completed to date (number of installations, kilowatt capacity)
- NYC PV installations completed to date (number of installations, kilowatt capacity)
- NYC solar hot water installations completed to date (number of installations, collector type)
- NYC solar projects in progress (number, capacity)
- Inventory
- Average cost of solar outside of NYC (dollars per Watt)
- Average cost of solar in NYC (dollars per Watt)
- Source of NYC cost premium (labor, equipment, administrative costs)

Barriers to Solar in NYC

- NYSERDA
- DOB
- Con Edison
- Other Administrative Barriers
- Financial Barriers
- How Barriers Impact Business
- Expeditor costs
- Outside NYC typical PV installation timeline from sales through commissioning
- NYC typical PV installation timeline from sales through commissioning

Possible Solution to the Barriers to Solar in NYC

- NYSERDA
- DOB
- Con Edison
- Other Administrative Barriers
- Financial Barriers
- Other Barriers

Appendix C: Solar PV Costs in New York City

Average Cost in Dollars per Watt, By Year, By Borough

Borough	2008	2009	2010
Bronx	9.14	9.63	9.52
Brooklyn	9.01	9.39	9.82
Manhattan	10.19	15.62	8.57
Queens	11.56	9.66	8.99
Staten Island	8.4	10.53	11.5
CITY WIDE	**11.41**	**11.81**	**9.25**
STATE WIDE	**8.65**	**8.72**	**8.26**

Source: NYSERDA. 30 April 2010.
< http://nyserda.powerclerkreports.com/Default.aspx?ReportId=7>