New York by the Numbers

Economic snapshots of the five boroughs

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Here Comes the Sun: NYC Lags Other Parts of the State in Solar Installations, but is Catching Up

The number of solar panel installations in New York City has increased by an incredible 783 percent since 2008. But despite this considerable progress, none of the five boroughs rank among the state's top 10 counties for total solar installations completed, suggesting that New York still has a long way to go in transitioning to solar energy.

From 2003 to 2011, there were 8,900 solar systems installed statewide, but just 360 of them (4 percent) were in the city. Only two of the five boroughs were among the state's top 20 counties for total solar installations completed—Queens, with 120 systems installed, was 12th among the state's 62 counties at the end of 2011 while Brooklyn, with 108 installations, was 15th. The Bronx was 22nd among all counties in the state (with 52 installations), Manhattan was 25th (47 installations) and Staten Island was 36th (33 installations).

Long Island's Suffolk County was first among all counties in the state, with 3,416 solar installations between 2003 and 2011. Nassau County was second with 1,432 installations, followed by Ulster County with 349, Westchester with 305, and Duchess County with 303.

The good news is that New York City is beginning to catch up. Between 2008 and 2011, there was a 783 percent increase in the number of solar installations in the five boroughs, with the number of installations climbing from 18 to 159. This outpaces even the brisk rate (275 percent) of growth statewide.[1] Moreover, earlier this year, the NYC Solar America City Partnership announced that the city surpassed its solar energy target of 8.1 megawatts (MW) under the federally-funded Solar America City program three years early.[2]

Top 5 Counties in NY State vs NYC Boroughs (2003-2011)

Rank	County	Number of Installations
1	Suffolk	3,416
2	Nassau	1,432
3	Ulster	349
4	Westchester	305
5	Duchess	303
12	Queens	120
15	Brooklyn	108
22	Bronx	52
25	Manhattan	47
36	Staten Island	33

NYC Solar Installations (2008-2011)

	2008	2009	2010	2011
Bronx	2	15	10	16
Brooklyn	4	16	20	46
Manhattan	6	7	6	17
Queens	5	16	26	58
Staten Island	1	5	4	22
NYC	18	59	66	159

There are understandable reasons why the city has lagged other parts of the state. Solar panels are best suited for short buildings, but more than 65 percent of residential buildings in the city are between five and 15 stories high.[3] These taller buildings, which make up a much smaller share of all properties in other parts of the state, are difficult (and expensive) to do solar installations because they are so energy dense. Meanwhile, a large share of the rooftops across the five boroughs have too much shade to be ideal candidates for solar installations, a problem caused by tall buildings, trees and bulkheads that cast shadows. In addition, many buildings in the city that otherwise may be good candidates for solar installations present challenges because they were built early in the 20th Century and their roofs lack the structural support to mount solar collectors.[4]

But these are not the only barriers to the expansion of solar power in New York City. To better understand what has been inhibiting the growth of this alternative energy source in New York, we interviewed executives at five companies that specialize in installing solar panels. Though there are a number of things holding New York back, it was clear from our interviews that one of the critical challenges is the city's high installation costs.

All five of the installers we interviewed told us that New York City is the most expensive place to install a solar system. "Typically it costs $2 or $3 more per watt than anywhere else," says Mike Brennan, a field technician with Mercury Solar. "So the cost for the same roof could be $10,000 more [in New York City]."

"It is much easier to do a job in Nassau or Westchester," adds Mark Chandarpal, principal at Go Solar Green. "There is less paper work, less building permits, and fewer expenses. In New York City, we have to go through more agencies for approval and the overall time spent is longer. Just to get an engineer to do a drawing for an installation costs nothing less than $4,500. But in Nassau County, a homeowner can just file for a permit, and has to just pay a filing fee, which is about a couple hundred bucks. That is a big difference."

Indeed, state data reveals that the average installation costs[5] for a solar system in New York City in 2011 was $8.18 per watt, 20 percent higher than the statewide average of $6.83 per watt.[6] An extensive 2011 report commissioned by the City University of New York (CUNY) similarly found that New York City has the highest installed photovoltaic (PV) costs in the state.[7]

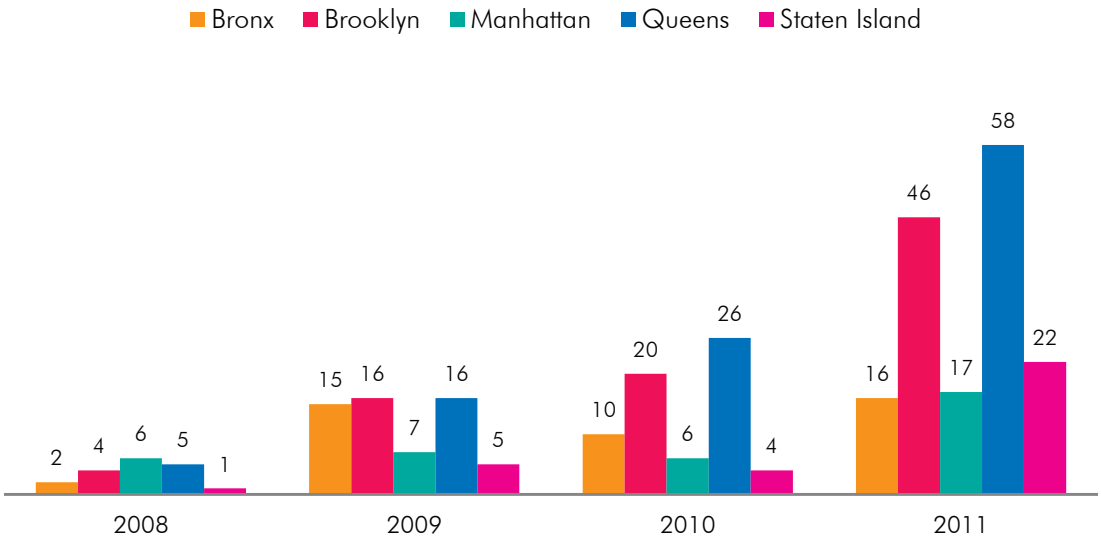
The solar panel installers we interviewed say that there are several factors that lead to higher installation costs in the five boroughs. One of the key problems is a tricky and unpredictable certification process.

According to the company officials we interviewed, more than half a dozen different agencies might have to inspect and certify a solar installation, depending on the project. Moreover, they say that because this is a new area of oversight, many of these agencies are still figuring out how to interpret existing regulations for solar panels. The result is a certification process with requirements that are inconsistent and often in conflict. "It's really a jumbled process, there are not a lot of precedents," says Matt Leblanc, a principal with Archlight Capital, an energy investment firm, who recently had solar panels installed on his Brooklyn property.

All of the installers we interviewed cited a lack of up-front input from the agencies, which causes projects to be significantly delayed and leads to mounting costs. "There are times where after a system is built, agencies will issue a violation that I would have liked to have known upfront before it was built," says Chandarpal from Go Solar Green. "After it's built, I have to make changes and there are a lot of added costs."

Every installer we interviewed mentioned similar examples of projects that were completed and expected to pass inspection, only to find out that a city agency cited an unknown

Solar Installations by Borough, 2008-2011



violation, or issued a conflicting violation with a previous inspection, without consideration for modification costs.

The installation companies also expressed frustration with a process that does not provide greater flexibility for small-scale projects. "Whether you are doing a $20,000 system or a $200,000 system, you have to jump through a similar set of hoops with the DOBE [Department of Buildings Electric] and other entities," said one installer. "So particularly for the residential installers, the smaller jobs almost become impractical."

The Bloomberg administration has acknowledged many of these challenges. When it launched its ambitious PlaNYC initiative in 2007, the administration noted: "New York City is uniquely expensive: our taller buildings require more wires and cranes to carry equipment to rooftops, while extensive interconnection requirements and inspections delay implementation. For these reasons, installed costs for solar are approximately 30 percent higher than in New Jersey and 50 percent higher than in Long Island."[8] Four years later, while boasting that solar power in the city doubled between 2010 and 2011 from three megawatts to six megawatts, the administration also elaborated on the challenges of further expansion: "Solar projects are currently subject to a complex permitting and interconnection process involving numerous entities."[9]

To its credit, the administration has been aggressively tackling the problem and trying to streamline the process. It is examining the potential for a central website for permit applications and tracking, while also "modifying City codes and regulations to remove barriers to solar investments while maintaining necessary safety standards." City officials have been taking other important steps, as well. In August 2008, New York City began to offer a property tax abatement for solar panel systems. Panels installed from August 5, 2008 to December 31, 2010 received 8.75 percent of system expenditures per year for 4 years (total of 35 percent); while panels installed from January 1, 2011 to December 31, 2012 receive 5 percent of system expenditures per year for 4 years (total of 20 percent).

In 2008, the main state agency overseeing solar installations, the New York State Energy Research and Development Authority (NYSERDA), began to offer its own grant, which offsets costs at $1.75 per watt (DC). Total incentives can't exceed 40 percent of the installed project cost after any available tax credits, and systems can't exceed 7 kilowatts (kW) for residential systems; 50 kW for non-residential systems; and 25 kW for non-profits, schools and municipalities.

Both the NYC property tax abatement and the NYSERDA grant began in 2008. Coupled with an already existing federal renewable energy tax credit and a NY state residential solar tax credit, potential installers have multiple incentives to assist with the high upfront costs. Beginning in 2008, across the state and including NYC, there was a salient increase of installations completed, a reduction in the average installation cost per watt, and an increase in average panel size per kW. Judging from this trend and the importance highlighted by the installers we interviewed, it is clear that these two programs are important catalysts for the expansion of solar panels in the city.

Projects by Type of Building

Three-quarters (75 percent) of all the solar installations in the state have been in residential buildings, while commercial projects account for 19 percent of installations statewide, nonprofits make up 5 percent and government projects comprise 1 percent.[10]

New York City is more evenly split between residential and commercial installations. Residential buildings comprise 50 percent of solar installations in the city, while commercial represents 46 percent and non-profits 3 percent. Government and industrial projects each account for less than 1 percent each of the city total.[11]

Four of the five installers we interviewed specifically highlighted the property tax abatement as a vital instrument for reducing costs for consumers. The other felt that it was the combination of federal, state, and city incentives that really made the difference. "The New York City property tax abatement can make or break the economics of a project," says David Sandbank of OnForce Solar. "If you compare a project inside the boroughs to outside the boroughs, the abatement shortens the payback for the customer, including the extra expenses you have to incur in New York City."

The Bloomberg administration has also completed ten solar PV installations using federal stimulus grant funds, and has six solar thermal projects under design.

While the progress is impressive, the city still has a long way to go to tap its full solar potential.

Footnotes

[1] NYSERDA. The statewide figure does not include the Long Island counties of Suffolk and Nassau. Annual data for 2008 was not available for these two counties.

[2] NYC Solar America City Partnership, "NYC Reaches DOE Solar America City Goal 3 Years Early as Solar Energy Generation Grows Exponentially" (Press Release), April 4, 2012.

[3] Richard Klein and Mariela Vasquez, "Solar Thermal: A New Sustainable Solution for Urban Multi-Family Buildings," Northeast Sun, Spring 2010.

[4] Ibid.

[5] Installation cost = total cost/system size (kW)

[6] NYSERDA. The statewide figure for average installation cost does not include the Long Island counties of Suffolk and Nassau. Annual data was not available for those two counties.

[7] Neil Veilleux, Wilson Rickerson, Tria Case & Alison Kling, "New York City's Solar Energy Future: 2011 Update," Prepared by Meister Consultants Group Inc.for CUNY, NYC Solar America City Partnership and DOE Solar America Cities Initiative, March 2011.

[8] City of New York, PlaNYC, 2007 Full Report.

[9] PlaNYC 2011 update

[10] NYSERDA

[11] NYSERDA

Solar Panel Installations in NY State, By County (2003 to 2011)

County	Totals
Suffolk	3,416
Nassau	1,432
Ulster	349
Westchester	305
Dutchess	303
Erie	240
Albany	208
Columbia	208
Tompkins	176
Orange	156
Rensselaer	139
Queens	120
Saratoga	114
Monroe	109
Kings	108
Rockland	97
Onondaga	91
Broome	83
Schenectady	79
Sullivan	60
Washington	60
Bronx	52
Greene	55
Essex	49
New York	47
Niagara	44
St. Lawrence	42
Clinton	43
Chautauqua	42
Oneida	39
Ontario	41
Delaware	37
Warren	36
Tioga	35
Putnam	34
Richmond	33
Otsego	29
Schoharie	29
Livingston	27
Madison	25
Cayuga	24

County	Totals
Jefferson	21
Montgomery	24
Chemung	22
Wayne	20
Oswego	20
Cortland	18
Chenango	16
Franklin,	16
Cattaraugus	15
Steuben	13
Orleans	13
Wyoming	12
Allegany	11
Genesee	12
Fulton	11
Schuyler	11
Herkimer	8
Seneca	9
Yates	6
Hamilton	3
Lewis	3

Source: All data (excluding Nassau and Suffolk counties) provided by NYSERDA. Nassau and Suffolk data provided by LIPA: only cumulative data was available for 2003-2011.