



Help for NYC Solar

New York City one of the most financially friendly places to install solar electric systems, thanks to a NYC property tax abatement and legislation that enables owners of solar systems to sell back excess energy. Financial incentives can cover some 75 percent of the costs of installation.

These incentives are expected to pave the way for tremendous growth in the use of solar in NYC. According to Con Edison, NYC currently has only about 85 net-metered PV (solar electric) systems totaling 1.3 megawatts (MW), but that number is expected to grow quickly. Building owners are increasingly interested in using the sun to meet their energy needs, reduce their costs, be part of the solution to our environmental crisis, and maximize the value of their property.

How PV Works

There are two ways to use solar power: 1) for electricity, called solar electric or photovoltaic (PV), and 2) to heat hot water, known as solar thermal.

PV systems are capable of offsetting ten percent or more of the energy use in multifamily and commercial buildings when ideal conditions are present. PV systems are also most effective when the building is energy efficient. Therefore, the first steps toward purchasing solar are: 1) to make the building as energy efficient as possible and 2) to conduct a site survey to make sure the site provides ample sun.

Every day, enough sunlight falls on New York City to provide more than twice our current usage of electricity. The sun's energy can be harnessed through solar panels consisting of many smaller photovoltaic cells that convert sunlight to electricity throughout the day as direct current (DC) power. Because all of our appliances use alternating current (AC) electricity, the electricity is converted from DC to AC through a critical piece of equipment called an inverter. Once converted, the electricity can be used



as needed, or, if more than enough electricity is produced, sold back to the grid using Net Metering. Solar panels are connected together to form an array that varies in size for every building. Your installer will help determine the appropriate size system. On average, solar panels produce ten watts per square foot.

Solar panels are generally installed on the roof. On a flat roof, as is typical in the city, panels may be installed at an angle of up to 30 degrees to increase efficiency. Innovations in technology are generating new ways of installing solar panels. Building-Integrated Photovoltaic arrays (BIPV) are solar collectors that are incorporated into building materials such as roofing, facades, windows and skylights. Thin-film technology uses much less silicon, is flexible, and can be mounted on just about any surface, allowing for a whole variety of solar collecting possibilities.

Financing a Solar Electric System

Buying a solar photovoltaic (PV) system can be equated to buying 25 or more years of electricity up front at a fixed rate. Today, solar modules equipment retail for around \$4.50/watt. Including the PV equipment costs, total installation costs are about \$8.50 per watt. A PV system for a one- to four-family house will be about 4 Kilowatts (kW) depending on size of the roof, home usage and the budget of the purchaser. Federal, state and city incentives and tax credits currently cover about 75 percent of that up-front cost in NYC.

Available incentives

- [New York State Energy and Research Development Authority \(NYSERDA\) Solar Electric Incentive Program](#) provides the most significant incentive to purchase solar. NYSERDA funding can reduce the initial retail cost of the installed system by 35 percent. The incentive is available on a first come first served basis to Con Ed customers who use NYSERDA-approved installers. Payments are made directly to the installer but the full amount of the savings must be passed on to the

customer. The first payment of 75 percent of the incentive is paid after all permits are received and the equipment is delivered to the worksite. The remainder is paid upon connection to the grid and upon completion of all inspections and paperwork. NYSERDA provides a list of qualified installers to choose from when beginning this lengthy process. Your installer will be knowledgeable about incentive programs and tax credits you may be eligible for. S/he will help get the necessary permits, agreements and inspections to get your system up and running. Detailed program information can be found at www.powernaturally.org (see PON 1050 Solar Electric Incentive Program, This article reflects revisions in effect beginning February 2nd. 2009).

- **[Federal Tax Credits](#)** allows up to 30 percent of the system costs for qualified solar water heating and photovoltaic systems for both commercial and residential properties. On October 3, 2008, the federal tax credit was extended for eight years under the Emergency Economic Stabilization Act of 2008. The legislation eliminated the \$2,000 cap for both residential and commercial property. The tax credit is applied to the portion of costs after the NYSERDA incentives are deducted. Visit www.seia.org for more information.
- **[The New York Solar and Fuel Cell Tax Credit](#)** offers a 25 percent credit for residential PV systems in New York State. This credit pays up to \$5,000 for 10kW residential systems or 50kW on condos and co-op installations. This money is deducted after the Federal Tax Credit is calculated; excess credit can be rolled forward for five years. Visit www.dsireusa.org for more information.
- **The NYC Property Tax Abatement Bill** further reduces the expense of buying and installing solar in New York City by up to 35 percent of the balance of the cost of the system to the owner after the prior listed incentives are deducted, thus defraying the otherwise high costs of solar installations in the NYC. The credit is applied to the owner's property tax over a four-year period (8.75% per year). Both residential and commercial systems are eligible for a credit of up to \$62,000. This



credit was passed in June 2008 and will remain in effect until January 2011, when it will be reduced to five percent per year over four years.

Solar incentives may be used in conjunction with [NYSERDA's incentive programs](#) to provide energy upgrades to existing buildings and in new construction projects. In addition, the owners' costs can be financed using the [New York Energy SmartSM Loan Fund program](#). For Residential projects, the interest rate is reduced by 4% (for Con Ed customers) off a participating lender's normal loan interest rate, not to fall below 3%; the loan term is up to 10 years and can cover up to \$30,000. There are also loan options for Multi-family and Commercial projects. To see how a photovoltaic system would affect your specific situation, NYSERDA provides a [Clean Power Estimator](#) that calculates savings and cost based on your energy use. (However, it doesn't subtract the new Property Tax Abatement which reduces the final cost by an additional 35 percent). [Learn more about these incentives here](#).

In addition to these direct financial incentives, New York State legislation passed in June 2008 expands consumers' ability to take part in net metering for renewable electric generating systems. Net metering allows a utility customer with an on-site electric generating system to send excess power back onto the grid. The change affects the maximum size requirements for photovoltaic systems attempting to sell power. The new measures allow for up to a 2 MW system to qualify for net metering (up from 10 kW previously), opening doors for larger commercial system which often produce a surplus on Sundays when offices are closed. This clean and renewable energy is bought by Con Edison at a wholesale rate and resold to other customers. Another option for consumers is to store the excess electricity in a battery to be used during cloudy days or at night. Learn more about [Con Ed's energy saving incentives](#).




Solar incentives at a glance

- **NYSERDA** -- Solar Electric Incentive Program Note: The NYSERDA Solar Incentives were reduced from 5 kW and 10kW residential rates to 4 kW and 8kW respectively, effective 2/2/09.

Covers 25–35%: www.powernaturally.org 🌞

- **Residential:**
 - Incentives per kW up to a maximum of 8 kW per site/meter
 - \$3,000 per kW for 1 to 4 kW
 - \$2,000 per kW for 4 to 8 kW
 - NY State Energy Star Labeled Homes®
 - Extra incentives for homes participating in the program
 - Additional \$500 per kW up to a maximum of 8 kW per site/meter
 - Building Integrated PV (BIPV) Systems
 - Extra Incentives for building–integrated qualified systems
 - Additional \$500 per kW up to a maximum of 8 kW per site/meter
- **Commercial:**
 - Incentives per kW up to a maximum of 80 kW per site/meter
 - \$3,000 per kW for 1 to 40 kW
 - \$2,000 per kW for 40 to 80 kW
 - Building Integrated PV (BIPV) Systems
 - Extra Incentives for building–integrated qualified systems
 - Additional \$500 per kW up to a maximum of 80 kW per site/meter
- **Schools, Not for Profit, Government:**
 - Incentives per kW up to a maximum of 25 kW per site/meter

- \$5,000 per kW for 1 to 25 kW
- Building Integrated PV (BIPV) Systems
 - Extra Incentives for building-integrated qualified systems
 - Additional \$500 per kW up to a maximum of 80 kW per site/meter
- **Federal Tax Incentives–Emergency Economic Stabilization Act of 2008**
Form: <http://www.irs.gov/pub/irs-pdf/f5695.pdf>
 - **Residential**
 - 30% of cost, put into operation after 1/1/2009
 - **Commercial**
 - 30% of cost, put into operation after 1/1/2009
 - 10% after 12/31/2008 (permanent)Source: www.seia.org 
- **State Tax Incentives**
Form: http://www.tax.state.ny.us/pdf/2008/fillin/inc/it255_2008_fill_in.pdf
 - **Residential only**
 - 25% of cost up to \$5,000
 - 10kW Residential maximum
 - 50kW Condos and Co-Op maximum
- **NYC – Property Tax Abatement**
 - **Residential and commercial**
 - 35% of cost of Solar Electric hardware and installation (reduced in 2011 to 20%)
 - 8.75% per year for 4yrs (reduced in 2011 to 5%)
 - \$62,500 max or amount of real property taxes owed during a year
 - This abatement applies to the following properties:
 - Class 1 Residential
 - Class 2 Condos and Co-Ops
 - Class 4 Commercial



Examples of financial incentives to use solar PV in NYC

Following are two examples of how these incentives work. Market rate averages for PV Home Systems range from \$6.60 to \$12.60 per watt—a large system is more economical than a small system.

Residential Solar PV System	4 kW	8 kW
System Cost	\$34,000	\$68,000
Cost per watt	\$8.50	\$8.50
NYSERDA Solar Incentive	-\$12,000	-\$20,000
	\$22,000	\$48,000
Federal 30% Tax credit	-\$6,600	-\$14,400
	\$15,400	\$33,600
NY State 25% Tax credit	-\$3,850	-\$5,000
	\$11,550	\$28,600
NYC Property Tax Abatement	-\$4,043	-\$10,010
Adjusted System Cost	\$7,508	\$18,590
Adjusted Cost per watt	\$1.88	\$2.32

If a 4 kW system for a one- to four-family house at \$8.50 per watt costs \$34,000, federal, state and city incentives and tax credits can reduce owners' net investment to \$7,508. If an 8 kW system (suitable for a larger property) at \$8.50 per watt costs \$68,000, incentives and credits can reduce owners' net investment to \$18,590. Both of these systems would pay for themselves well before their 25 year warranties expire.



Challenges and opportunities for PV in NYC

Even though costs have been reduced considerably, installing a PV system in the city presents its challenges. Taller buildings add to overall installation costs, and older buildings may have asbestos or other materials that make installing wiring difficult. Multiple inspections and permits add significantly to the cost and time of NYC projects. New York City's network grid is unique and complicated and obtaining Con Edison approvals adds significant time for new installations. Interconnection and "Sale and Purchase" agreements are required before any net metering can take place. Therefore, while the actual installation work may be completed in less than two weeks time, the process from the point of conducting the initial shading study until installation may be three to four months; after installation it may take another three months to get the required inspections and approvals before the installation is connected to the grid and operational.

New York City is particularly well suited to benefit from a solar future. PV systems reach maximum production when New York is at its peak usage, in the middle of the day, when grid rates are highest and the city needs it most. As more solar systems come online, our power system becomes less vulnerable to power failures or attacks, and simultaneously reduces air pollution. While fossil fuels are dwindling, silicon (the material used to make solar panels) is the second most abundant element on earth. Manufacture of solar panels is similar to that of glass making and in some areas recycling for obsolete panels already exists. The young and growing solar industry has the potential to provide more than enough energy, cheaply and sustainably to everyone.

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For additional information, please visit <http://prattcenter.net/energy-matters>, or contact Wendy Fleischer at 718-636-3486 x.6450 or wfleisch@pratt.edu.