



## **INSTALLING SOLAR PANELS: QUESTIONS AND ANSWERS**

*Note: This document is intended to be an initial guide on what to know and consider about installing solar panels. It is not exhaustive, and you should expect to learn even more if you go through the process to assess the feasibility of installing solar panels. The information was assembled from the November 6, 2019 Here Comes Solar NYC workshop we organized, a consultation with Brooklyn SolarWorks, interviews with people who have installed solar panels, and details from McGowan Southworth, solar consultant. This document will be updated periodically (Jan. 17, 2020).*

### **I'm interested in installing solar panels. What are the requirements?**

You must have a relatively shade-free area -- that means no towering trees or large buildings nearby. If you want to know if you're eligible, contact the non-profit Here Comes Solar (see website above). Any solar installer will also take a quick look at your address and determine if you're eligible. A fairly new roof is also useful. Solar panels last around 25 years, so it makes sense to replace the roof and solar panels at the same time.

### **What kinds of solar panels can I choose from?**

There are three kinds:

- 1) **BALLASTED ARRAYS:** These arrays are heavy and are not stacked upright. Advantages: No roof penetration. Disadvantages: They require a lot of space.
- 2) **PLANAR ARRAYS:** These arrays are slightly raised and fit more panels than ballasted. Advantages: Fits more panels than ballasted. Disadvantages: These involve roof penetrations; you must work with roofer to make sure warranty is preserved.
- 3) **CANOPY ARRAYS:** Panels are raised 9'; this type of array can fit the most panels in a tight space with space below. Advantages: Fits a lot of panels; you can replace roof even if canopy is there. Disadvantage: More expensive.

### **Sun exposure varies so much throughout the year. How do solar panels work?**

Up to very recently, NYC has had a net metering system. With this system, users are connected to the electrical grid through Con Edison. Any excess power generated (above what one needs for their own electricity use) flows back into the grid, and credits are given on one's energy bill. Summertime is generally when panels have peak power production, and in wintertime, a time of decreased production, people may draw upon their credits to meet their energy needs.

### **If there is a power outage, will I have access to electricity?**

Unfortunately, no. Solar arrays tied to the electrical grid can't be used during a power outage. Power lines must remain free of live electricity to protect utility workers who might be making repairs to those lines.

### **What are different options for solar?**

**Buy solar panels:** You buy them, you own them, and all savings are yours. If you can handle the initial up-front cost (much of it which returns to you in tax refunds/incentives), this method results in the highest savings.

**Power Purchase Agreement:** A developer installs solar panels on your property at little to no cost, then sells the power to the host customer at a fixed rate that is lower than the local utility's rate. There is a low up-front cost (as low as \$1,000). There are savings, but less than an outright purchase.

**Community Solar:** Community solar makes it possible for New Yorkers to join shared solar projects on large roofs. Solar electricity bill savings are available to anyone who pays a Con Edison electric bill, whether you're a renter, co-op shareholder or homeowner. By joining a community solar project as a Con Ed customer, you can lock in a lower rate than Con Ed's rate. To identify current community solar projects in New York City (and New York State), visit [NYSERDA's map of community solar projects](#). Specific companies to contact are PowerMarket, BlueWave, and Onforce. It often takes months for community solar sites to be permitted and allowed to sell credits - so be prepared for a wait. But when it comes through, you'll be getting around a 10% discount.

### **What are different options for distributing energy to units in a coop?**

**Community solar:** This option was introduced 2 years ago. With community solar, the coop is considered its own power generating plant; the coop is the "host" account and tenants are "satellite" accounts. They hold onto their separate Con Ed accounts and everyone gets credited according to their proportionate ownership share of the coop. If the credits returned surpass what a tenant can use, he/she may lose the credits, so it is important to take into account how much energy will be produced by your solar array and whether proportionate shares will correspond to a shareholder's usage. (One way of getting around this issue is that shareholders may have the option of "selling" credits to other tenants, but this can get complicated.)

**Submetering:** With this system, you install a master meter for the building (only one Con Ed account), and add submeters so shareholders pay exactly for what electricity they use. Everything is done automatically on the web, and shareholders can access data regarding how much energy they use. This system has up-front costs to install (it typically adds 10-20% in cost, which can then be applied to tax incentives), but ultimately allows for far greater savings; shareholders read the meter themselves and Con Ed's monthly meter-reading charges are avoided. It is not typically offered, but you can ask the solar installer about this option. Additional grants are also available for submetering.

Submetering often requires upgrading the electrical system, so it is a great option for buildings which already require an electrical upgrade. It is a smart option for large buildings with 70 units or more, as these stand to benefit most from the savings.

### **How much do solar panels typically cost?**

In general, according to Here Comes Solar NYC, installing solar panels will cost roughly \$25,000 for a small coop to over \$100,000 for a larger building. Prices vary according to the complexity of the job, how many panels can be installed, the quality of the panels, and other features promised by installers (ex: specific details of warranties.) Certain installers also pride themselves on being "premium", in that they

offer beautiful designs, excellent customer service, and a good production guarantee; these will result in higher prices.

Some questions you can ask your installer (in order to compare different estimates) are:

- 1) How long is the inverter warranty? Most inverters have a warranty of 10-12 years, but some installers may offer one that is longer.
- 2) How long is the workmanship warranty? Installers are required to have at least a 5-year workmanship warranty; some installers extend this warranty to 10 years.
- 3) Does the work come with a production guarantee? (Ex: If the installer quotes yearly energy production, is this guaranteed?)
- 4) What quality of panels are being used? (At the very least, they should be Tier 1, but it's worth asking the installer to elaborate about this.)
- 5) What level of customer service do you provide?

Given the variability of prices, it's important to get multiple estimates. However, it's also important to recognize that getting solar panels is a "relationship," not a brief commercial transaction; you will be relying on the installer for maintenance/support over the life of the panels, so you want to find an installer who you trust and is easy to work.

Here Comes Solar can provide a free initial estimate which outlines costs, savings, and offers answers to many commonly asked questions. This estimate is more extensive than that provided by most solar providers and will offer a neutral and accurate breakdown of costs and savings. It's very useful to get this estimate first before obtaining estimates from individual solar installers. Contact Patrick Owusu, ([patrick@solar1.org](mailto:patrick@solar1.org)), the Outreach Associate of Here Comes Solar, to get an estimate for your building. Keep in mind that they primarily work with multifamily buildings. If you want sample specifics on pricing, you can contact Victoria ([vadler4444@gmail.com](mailto:vadler4444@gmail.com)) who will share some of what she's learned.

### **What are financial incentives?**

NYSERDA Rebate: \$0.20/W for single residential homes, .50/watt for co-ops/condos and other small commercial buildings. This is subtracted from the initial cost; this amount is paid directly to the solar installers.

Federal Tax Credit: 26% post-rebate; this amount is going down gradually each year, and will ultimately be phased out.

State Tax Credit: Lesser of 25% post-rebate or \$5,000, which is capped per unit.

NYC Property Tax Abatement: 20% post-rebate distributed quarterly over 4 years.

Historic Restoration Tax Credit/Refund: 20% after rebate. This can be received as tax credit or as a check if you don't have tax liabilities to receive it as a credit. You must pay \$5,000 per unit to qualify for it, so only large-scale projects qualify for this tax credit.

These credits/incentives add up. For a \$90,000 project in the historic district, 91% will be incentivized; the total cost will be less than \$8,000.00. However, it should be noted that much of it will be received in tax credits.

I live in a coop. Will this money come back to the coop as a whole, or to individual coop members?

State and federal tax credits are distributed to individual shareholders. State tax credits can be rolled over 5 years, and federal tax credits can also be rolled over (please confirm with your tax attorney how many years.) However, if credits are substantial and a shareholder is on a fixed income and pays very little in taxes, he/she may lose these credits. For this reason, it is important to consult the coop's tax attorney to discuss how savings will roll back to your coop.

The New York State form is 1-255; you can google it to find a list of qualifying expenses. To access a draft of the Federal 5695 tax credit form with a list of qualifying expenses, click this link.

<https://www.irs.gov/pub/irs-dft/i5695--dft.pdf>

The Historic Restoration Tax Credit/Refund can be taken either as tax credits or a check. It can be considered a "guaranteed" money back. Each taxpayer is eligible for up to \$50,000 in credits.

Click here for more information:

[https://www.tax.ny.gov/pit/credits/solar\\_energy\\_system\\_equipment\\_credit.htm](https://www.tax.ny.gov/pit/credits/solar_energy_system_equipment_credit.htm) .

The tax abatement is distributed over 4 years, and is applied to your coop's property tax.

**If I do other projects at same time, can I receive a tax credit for these expenditures as well?**

Yes. If you live in the historic district, you can qualify for the Historic Restoration Tax Credit/Refund (see above.) This kicks in for jobs involving "substantial" expenditure of money (\$5,000 per shareholder). If your job costs enough to qualify, capital improvements such as replacing the windows, fixing the parapets, or replacing a boiler, can be submitted at the same time.

**How long do solar panels last?**

25+ years, and the warranty guarantees the production rate.

**My roof was replaced recently. How can I preserve my warranty?**

If you want to preserve your roof warranty, you need to get installer to contact the roofing membrane company. They will specify which materials needed to keep warranty valid and agree to come to inspect it later. Sometimes they will suggest reapplying roof membrane to preserve the warranty.

This issue can be an obstacle, as the repair job can be costly. (For a \$90,000 solar array, I was quoted \$24,000 for the repair job.) This cost is also eligible for tax credits/refunds, so it should be significantly reduced, but it still increases the up-front cost. It is important to get more than one estimate. You may also work around this by finding a solar installer who is a certified roofer, or you can ask your installer to get certified. (It is a fairly quick and easy process.)

**What are savings over time?**

If the tax credits/incentives are taken into account, solar panels usually pay for themselves in between 3-8 years. Example: for a \$90,933 project for a 10-building unit, 25 year projected savings would be approximately \$99,000. Savings are greatest if you do sub-metering and therefore save money on the meter-reading costs.

### **How do I finance my project?**

There are multiple ways to do this. Remember, you'll get most of the refunds/taxes immediately upon submitting taxes, so you're looking for short-term loans.

- 1) If a coop has a mortgage already, it should be easy to get a small loan ("small" means \$100,000 or lower.)
- 2) If your coop does not have a mortgage, finding a loaning source is trickier. Certain banks, such as Emigrant, will provide \$100,000 loans to coops.
- 3) Here Comes Solar recommends NYCEEC, which funds clean energy projects; you can use 80% of tax credits to prepay system costs. Unfortunately, NYCEEC currently only offers loans of \$200,000 or higher, but they may be able to recommend other lenders. Contact them at <https://www.nyceec.com/contact-us/>. PACE loans, not currently available, should also be a funding option for energy efficiency projects in the near future.
- 4) If you have a small coop (ex: just 10 units), it may be possible for each unit to take out a home improvement loan and finance it this way. Some homeowners have also chosen to max out their credit cards, making sure there is a very small turnaround between payment and tax season, when the bulk of the credits/refunds come back!
- 5) There is also the exciting new option of raising bonds through community funding. One such crowdfunding platform is Raise Green; refer to its website <https://www.raisegreen.com/> for more information about how it works. It has recently launched with a few pilot projects, and should be expanding in the next year.

### **OK, I'm ready to look into solar! Where do I begin?**

Here Comes Solar NYC, a project of the environmental education nonprofit Solar One, offers a free initial assessment. As mentioned above, solar installers will also provide a free assessment, but Here Comes Solar's report is comprehensive and offers an honest and transparent breakdown of costs and savings. It's a great place to start.

It's also useful to hire a solar consultant who will interpret your needs, provide guidance regarding the design, and offer assistance with the bidding process. Here Comes Solar provides this service free for residents of affordable housing; for all others, the cost is \$4,000 for a typical 20-50 unit coop (with an adjusted price for smaller ones). You can go to their website: <https://herecomessolar.nyc> and submit a form.

### **Who are recommended solar installers?**

Here Comes Solar NYC recommends the following solar installers on their website:

Accord Power	American Solar Partners	Best Energy Power	Bright Power
Brooklyn SolarWorks	Grid City Energy	Harvest Power	Solar Energy Systems
Solar Liberty	UGE		

Solar Energy Systems and UGE generally do larger solar installations.

McGowan Southworth, a solar consultant in Brooklyn, also gave us his own personal recommendations:

- Alt Power (McGowan's favorite; "hands down best in the business"; contact is Anthony Pereira; probably only available for large projects, but good to consider)
- Sunkeeper Solar (very experienced; can do submetering; has a roofer they work with)
- Bright Power (serves more as a developer/consultant; hires others to install)
- Sunpower by Kamtech Solar (also a roofing company, so if you use them, you may avoid the extra repair cost of preserving roofing warranty; excellent reputation)
- Venture Solar
- Sunpower by Quixotic Systems Inc. (contact name: Jerry)
- EmPower Solar (located in Long Island; starting to do jobs in NYC)
- Steven Winters Group, Sparhawk (good but sub out their contracting work; more expensive).
- Anthony Wolpert: an electrician who is also "one of the most experienced solar installers in the city"; experienced and affordable.

McGowan also recommends the following architects:

- Chris Benedict
- Sam Bargetz
- David White

Also, another note to JH people: Jon Wickers, who often does roofing work in Jackson Heights, is very interested in solar and is developing his own solar array prototype.

#### **How can I help build the solar movement?**

- 1) Talk about solar to your friends. Share what you've learned.
- 2) Share this document with anyone who is interested!
- 3) Let me know if you want to be added to a google group of Queens residents interested in solar.
- 4) If you find other relevant information or have some suggested information to add, please contact Victoria Adler ([vadler4444@gmail.com](mailto:vadler4444@gmail.com)) or Anthony Ng ([anthony.m.ng@gmail.com](mailto:anthony.m.ng@gmail.com)). Please also feel free to contact us to share success stories, where you've ended up installing solar!

**GOOD LUCK!**