Solar Landing Page Lowell

The City of Lowell encourages individuals, businesses, and institutions to install solar energy systems. Renewable energy, coupled with efforts to make our buildings more energy efficient, can save money and make our community more resilient to energy price spikes.

The City has pulled together information from many sources to help you learn about solar energy, decide if it’s right for you, and then move through the permitting and installation process. If there are pieces we’ve left out, please let us know at [email link].

Here’s what you will find:

Part 1: Residential and Commercial Solar Fundamentals

1. Solar Basics
2. The Solar Transaction
3. Free Web Tools Will Generate a Rough Estimate
4. Getting Bids, Selecting an Installer
5. Consumer Protections
6. The Contract
7. Uncertainty and the Price of Electricity

Part 2: Installing Solar Systems in Lowell: Zoning and Permits

1. Lowell’s zoning allows solar everywhere
2. Solar systems require an electrical permit (checklist)
3. Solar systems must be inspected and approved (checklist)
4. National Grid needs to make the final connection
5. Permitting and Inspections Checklist

**Part 1: Residential and Commercial Solar Fundamentals**

1. Solar Basics: Soup to nuts introduction to residential solar energy systems
	1. SEIA doc: *Residential Consumer Guide to Solar Power* (Feb 2016) in English (<http://www.seia.org/research-resources/residential-consumer-guide-solar-power>)
	2. and in Spanish: *Guía de energía solar para el consumidor residential* (<http://www.seia.org/sites/default/files/SEIA%20Consumer%20Guide%20to%20Solar%20Power%20-%20v2%20-%20Jan%202016_SPANISH.pdf>)
2. The Solar Transaction: Know what you’re buying!
	1. Owning or Leasing: *A Massachusetts Homeowner’s Guide to Solar Leases, Loans, and PPAs* (Mass DOER (CESA)) <http://www.mass.gov/eea/docs/doer/ma-homeowners-guide-to-solar-financing-final.pdf>
	2. Borrowing to pay for your system

The State of Massachusetts’ Clean Energy Center has created a solar loan program to reduce the costs of borrowing for solar energy systems. Mass Solar Loan is working with 17 financial institutions and more than 100 solar installers to provide straightforward low-interest, fixed-rate financing and quality installations. Qualified low-to-moderate income borrowers may qualify for special rates. Details are at [www.masssolarloan.com](http://www.masssolarloan.com).

Other financial institutions will finance solar systems independent of the Mass Solar Loan program so don’t hesitate to find the best arrangement for your needs.

* 1. The Federal Solar Investment Tax Credit

The Federal Government will cover almost one-third of the cost of your solar system. To encourage individuals and businesses to invest in solar energy, Congress created the Solar Investment Tax Credit. When you file your income taxes for the year in which you invested in a solar system, you will receive a tax credit equal to 30 percent of the installation cost. That offer is good through 2019. In 2020, the credit drops to 26 percent and in 2021 it drops to 22 percent. The residential credit will end in 2023 but the commercial credit will continue at 10 percent.

You get that credit only if you buy and own the system yourself. If you lease a system or sign a Power Purchase Agreement, the installer gets the tax credit (and should pass along some of the savings to you in your purchase price).

The Solar Energy Industry Association has a two-page fact sheet about the Investment Tax Credit: <http://www.seia.org/sites/default/files/ITC%20101%20Fact%20Sheet%20Feb17.pdf>

* 1. The Massachusetts Solar and Wind Tax Credit

Homeowners who install solar energy systems (or other renewable-energy systems) on their primary residence may receive a credit on their state income taxes of 15 percent of the cost of the system up to a maximum of $1,000. The tax form itself explains the details: <http://www.mass.gov/dor/docs/dor/forms/inctax16/addl/sch-ec.pdf>

* 1. Net Metering in Massachusetts

When your solar system generates more electricity than you use, the excess flows to the grid. “Net metering” accounts for your net consumption and reduces your electric bill accordingly. Over time, these savings should pay for your system and eventually make you a profit on the investment. The Massachusetts Department of Energy Resources has published a set of frequently asked questions about net metering here:

<http://www.mass.gov/eea/grants-and-tech-assistance/guidance-technical-assistance/agencies-and-divisions/dpu/net-metering-faqs.html>

* 1. “SRECS” and the new “SMART” program

Because Massachusetts puts a high value on reducing greenhouse gas emissions, it requires that utilities buy a portion of their electricity from renewable sources and solar generators in particular. To facilitate these transactions, the State created the “Solar Renewable Energy Certificates” (SREC) system which meant that even small residential systems could generate significant annual cash payments for their owners for 10 years. The new SMART (Solar Massachusetts Renewable Target) program, which is still awaiting approval from the Department of Public Utilities, is likely to affect systems installed after January 1, 2018, and will mean somewhat lower payments. The DOER proposal is here: [*www.mass.gov/eea/docs/doer/rps-aps/225-cmr-20-00-draft.pdf*](http://www.mass.gov/eea/docs/doer/rps-aps/225-cmr-20-00-draft.pdf)

1. Free Web Tools Will Generate a Rough Estimate

Once you’ve got a sense of how solar systems work and how people pay for them, you may want to get an estimate of what kind of system might fit on your roof and how much it might cost. Installers will be happy to come to your home to give you precise estimates, but you may want to start the process on your own and on line with no pressure. The U.S. Department of Energy’s National Renewable Energy Laboratory (NREL in Golden, Colorado) has developed a free system called PV Watts that is simple, safe, and reliable.

Just go to [www.pvwatts.nrel.gov/](http://www.pvwatts.nrel.gov/) and type in your address and a few other pieces of information (not your name). The system will estimate the size of system your roof can support, how much electricity it will produce each month, and how much the electricity will be worth in dollars.

Google has created Project Sunroof (<https://www.google.com/get/sunroof#p=0>) to help homeowners and businesses see the solar potential in their roofs. Project Sunroof colors its satellite images to show which parts of a roof get good sun and which are shaded by trees or other roofs. It’s illuminating! Google uses these images and information you may provide to generate another estimate of the financial value of a system that fits your roof.

Another popular place to start is [www.energysage.com](http://www.energysage.com). Here, you type in your name, address, and email address and EnergySage will send you information about your home’s potential and let its network of installers know you’re interested in PV. The installers will send you estimates from the data you submit and you can start comparing potential installers’ prices and promises. Only provide your name and email address if you want these sales calls.

1. Getting bids, selecting an installer

Once you have a basic understanding of your options for owning or leasing a system and a rough sense of how large a system you might install, you should be ready to contact installers for estimates. They will come to your building, inspect the structure, take direct measurements on your roof to determine how much sunlight it receives. If the roof isn’t well suited for panels, the installers will consider whether ground-mounted systems might be a better fit for your lot.

CAUTION: The solar business has become highly competitive and some installers may be aggressive. DO NOT sign any documents until you are ready to sign a final contract that you fully understand. DO NOT authorize the installer to start applying for permits on your behalf until you have signed a final contract. DO read through the Consumer Protections section below.

Installers: The Mass Solar Loan program web page lists more than 100 installers who work in the state ( [www.masssolarloan.com](http://www.masssolarloan.com)). This is a good place to look for a company that may be right for you, particularly if you intend to buy your system outright. Several communities in the region have sponsored “solarize” campaigns which set up group-purchasing mechanisms to get discounts on installations. The installers who participated in those programs will be well known in the region. Some excellent solar installers specialize in leased installations or Power Purchase Agreements, however, and they may not show up on the Mass Solar Loan list.

5. Consumer protections:

The solar industry doesn’t want any dissatisfied customers. The Solar Energy Industry Association ([www.seia.org](http://www.seia.org)) has published a code of ethics that its members must sign (<http://www.seia.org/policy/consumer-protection/code-ethics>) and developed a comprehensive consumer protection section on its website (<http://www.seia.org/consumer-protection-customer-resources>). People considering a solar project should scan those documents and pay particular attention to the model contract disclosure forms that SEIA encourages installers to prepare and sign for every job. The forms require installers to be explicit about all the assumptions they are making about solar production and electricity costs and to spell out exactly how and when they would increase their charges in the case of a lease or PPA. The forms cut through some of the confusing detail that may be buried in a contract. When asking for an estimate, also ask the installers to complete the appropriate disclosure form.

Residential Purchase Disclosure Form is here

<http://www.seia.org/sites/default/files/SEIA%20Solar%20Purchase%20Disclosure%20Form-2.2.17-FINAL.pdf>

Along with an addendum regarding the cost per kilowatt-hour:

<http://www.seia.org/sites/default/files/SEIA%20Solar%20Cost%20per%20kWh%20Form%20-%203.22.2017.pdf>

Residential Lease Disclosure form is here: <http://www.seia.org/sites/default/files/SEIA%20Solar%20Lease%20Disclosure%20Form%20%28fillable%29%20-%201.13.2016.pdf>

Residential PPA (Power Purchase Agreement) form is here:

<http://www.seia.org/sites/default/files/SEIA%20Solar%20PPA%20Disclosure%20-%203.22.2017.pdf>

6. The Contract

Your installer will develop a contract for you to sign. Read it and ask questions until you completely understand it. Ask your installer to fill in the appropriate disclosure form (see the previous section) and be sure the contract terms match those in the form and are agreeable to you. Some sections may surprise you. For example, to know how well the systems are performing, most installers add wifi devices to the system to report data over the internet. If you’re leading the system, your contract may specify that you have to provide that internet service.

7. Uncertainty and the Price of Electricity

Solar energy systems should last 15 or 20 years and a lot can happen in the energy sector during that time. Most people invest in solar to save money on electricity. How much you save over the life of the panels or how quickly the system “pays for itself” depends largely on changes in the price utilities charge for the electricity they provide. Changes in state or federal energy and tax policies may affect the value of the investment. Most solar advocates assume that the growing demand to reduce greenhouse gases will protect the underlying value of solar power but things change.

Companies that lease solar systems to homeowners or institutions manage this uncertainty by building price escalators into their contracts requiring the customer to pay more over time. The SEIA disclosure forms help show exactly how and when these escalators kick in and what assumptions the company is making about changes in market electricity prices. If you don’t find those assumptions plausible, you may want a different deal.

**Part 2: Installing Solar Systems in Lowell: Zoning and Permits**

1. The City of Lowell allows rooftop and ground-mounted solar systems in all areas of the city, consistent with state law.

The City of Lowell permits rooftop solar energy systems and ground-mounted solar energy systems in every district of the City without special permits, conditions, or variances. The Commonwealth of Massachusetts effectively set this policy for Lowell in MGL 40A Section 3:

“No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare.”

The City interprets this statute as establishing a land-owner’s right to install photovoltaic energy systems (PV) on his or her roof or property, provided the installation is safe and secure, and does not degrade Lowell’s investment in restoring its historic character. Staff will recommend zoning amendments to the newly inaugurated City Council in 2018 to codify this interpretation and to fulfill one of the goals of the City’s Master Plan:

“Identify the impediments to implementation of renewable energy systems on private homes and commercial properties, and seek to address them through education, permit streamlining, and ordinances which properly balance incentives with regulation of potentially harmful impacts.”

-- Goal 7: Produce Energy from Renewable Sources

City employees do not have the discretion to prohibit a building owner from installing solar PV, though they do have a responsibility to ensure that installations are safe and secure. To protect public health, safety, and welfare, Lowell requires that installers of PV systems receive an electrical permit. Lowell [has established a streamlined permitting process for all residential installations and for rooftop commercial systems that do not raise historic preservation issues.. The streamlined process is designed to deliver decisions on permits applications within three business days of their receipt. Permits for historic properties and for commercial ground-mounted systems are not streamlined but are handled within 10 days of their receipt.]

1. Solar energy systems require electrical permits

Before installing a solar energy system, your installer will need to apply for and receive the appropriate permit from the City. Lowell combines its building and electrical permits in a single application form for solar projects. The permitting and inspection checklist explains each step of the process and the fees involved [link to **Lowell Solar Permitting Checklist**]. For typical residential and commercial systems, the Lowell Development Services Division issues most permits within three days of receiving a completed application. Large ground-mounted systems require a more thorough permit review and take up to 10 days.

3. Solar energy systems must be inspected and approved

Your solar installer will work with Development Services to schedule the necessary inspection(s) to ensure that the system has been installed properly and will operate safely. The details of the process are described in the permitting checklist [link **Lowell Solar Permitting Checklist**].

4. National Grid needs to make the final connection

Before your installer can energize your solar system, National Grid will have to complete the “interconnection” process. Making this happen is your installer’s responsibility. Interconnection is not a trivial matter and is best dealt with early in the process. Well before you purchase panels or put anything on your roof, your installer should ensure that National Grid will accept the location and size of your planned system without requiring you to pay for costly upgrades to the local circuit.

5. Solar Permitting and Inspection Checklist

[link **Lowell Solar Permitting Checklist**]