

FREQUENTLY ASKED QUESTIONS – FROM 2024 EASTHAM SOLAR CLINIC

Q: What should be my first investment: solar, heat pump or Electric Vehicle (EV)?

A: There's no simple answer. It depends on the fuels you use and the resulting emissions footprint. First, arrange for a free energy audit through [Cape Light Compact](https://www.capelightcompact.org/home-energy-assessments/) before investing in any home energy improvements. Based on the audit results regarding your heating system efficiency, age and type of fuel (including annual cost of operation and maintenance) you should then be able to figure out your investment priority. If you want to be scientific, you can [assess your greenhouse gas footprint](https://www.epa.gov/ghgemissions/household-carbon-footprint-calculator) by quantifying all of your energy usage and resulting emissions (what you drive and how many miles, heating system, electric energy used from the grid, etc.). Generally speaking, what you drive, depending on how many miles per year, may be your largest emissions contributor. Heating your home using fossil fuels is the second largest emissions contributor. Third largest is the percentage of power generation the electric utility produces using fossil fuels. Adding solar energy to your residence via owning, leasing and/or Community Solar, can help reduce fossil fuel emissions for all of these. So again, your investment priority depends on your specific fossil fuel use.

<https://www.capelightcompact.org/home-energy-assessments/>, <https://www.epa.gov/ghgemissions/household-carbon-footprint-calculator>

Q: What specifications should I look for in a rooftop solar system?

A: This [home solar energy worksheet](#) can help you determine what size system you should get, based on an estimate of your demand for electrical power. The specifications should include annual solar production in kWh as based on your specific residence accounting for any shading, etc. Your installer will provide this when they present you with a proposal. It should also include warranty information on the installation itself, e.g. roof leaks/workmanship, manufacturers' equipment specifications/warranties, power output of the solar panels, wind/hail ratings, etc.

Q: How does a vendor determine the number of panels my home needs?

A: The number of panels recommended for your home is estimated from: (1) your historical yearly electrical usage that you wish to offset with solar, which may include an allowance for future growth in electrical usage such as addition of heat pumps or an EV charger; (2) the exposure to the sun available on the roof(s) where you wish to mount panels, which will include factors for the direction and inclination of your roof and an estimate of shading from surrounding trees or structures. All of this is negotiable with the vendor. Although the best return on investment is to cover all your electric needs for the future, you can choose to cap the size of your system based on your budget and based on the roof space you're willing to use for mounting the panels.

<https://www.energysage.com/solar/solar-panel-performance-orientation-angle/#how-solar-panel-systems-are-designed>

Q: How important is the angle of the sun on my roof?

A: The sweet spot for best solar exposure is facing roughly south, but East-West is often still worth the investment. The direction of your roof as well as the lower angle of the sun during the winter are considered when a vendor gives you an estimate. Although southern states with better winter sun exposure enjoy a quicker return on investment for their solar system, the residential solar panels commonly used today are higher efficiency than in the past and will provide a better return on investment (typically 6-7 years) than what was available 10+ years ago.

<https://www.energysage.com/solar/solar-panel-performance-orientation-angle/>

Q: Will I need to add 200-amp service?

A: In most cases your main breaker will need to be rated for at least 200 amps. In most jurisdictions, a 100-amp panel box will typically allow you to have a max solar system size of around 4.25kW (approximately 12 panels). A 200-amp panel box can support a system size up to around 12 kW, which would cover most residential installations.

Source: [SolarBook](#), a clearinghouse of solar information for consumers. <https://solarbook.pickmysolar.com>

Q: DC? How do converters work?

A: Solar panels contain photovoltaic cells (“PV cells”) that convert the sun’s energy to direct current (DC) electricity. Residential solar systems have electronic modules known as “micro-inverters” at each panel to change that to the normal alternating current (AC) that we can use in our homes and send back to the grid. This is both safer for collecting and moving electricity on our roofs and keeps the panels operating more efficiently and reliably.

<https://www.energysage.com/solar/microinverters-overview/>

Q: After installation, how do I navigate roof replacement when required?

A: If you own your system, you need to contract separately with a solar system service to remove and re-install the system. Ideally, you would identify a roofing contractor who has some experience working with solar arrays. If you are leasing the system, contact the provider and work with them to manage the roof work.

Q: Are there installers available right here on the Cape? How can I get recommendations?

A: Yes, there are. The Massachusetts Clean Energy Center ([CEC](#)) provides an excellent tool for finding installers. [EnergySage](#) is another useful source of information on installers.

Q: How long will my system last before replacement is needed?

A: The typical warranty for solar panels is 25 years, the effective life of a solar panel is at least 25 years. The typical warranty range for residential batteries is 10-15 years, the effective life may be longer depending on how many charge/discharge cycles are required over the 10-15 years.

Q: Do solar panels affect the cost of my homeowners' insurance?

A: Generally speaking, the purchase and installation of rooftop solar panels do not necessarily result in an increase to your homeowner's insurance premium. That said, solar panels typically increase home values. You should let your insurance agent know you are installing solar panels and ask if there are any special considerations to account for based on your existing policy. Some specific considerations to explore:

- Some people may choose to purchase additional insurance to cover the cost of *replacement* due to damage, especially here on Cape Cod where deductibles for hurricane coverage tend to be high, or to increase the full replacement cost value for the home if it is destroyed
- Ground mounted and solar mounted panels on any external structure (carport or shed) may require an add-on rider to your existing policy
- Confirm that panels that are leased should be covered by the leasing agency

Q: Should I buy or lease? What are my financing options?

A: Options for managing the costs of a rooftop system are: **buy** the panels and associated equipment, **finance** the costs with a multi-year loan, or **lease** the panels and equipment.

BUYING may be the right choice for you if...

- you feel comfortable spending \$18,000-\$26,000 AND
- you plan to be in your home for at least 7 years AND
- you pay federal taxes
- you want the quickest return on your investment, typically 6-10 yrs.

FINANCING may be the right choice for you if...

- you cannot come up with the full cost of a system at one time AND
- you are comfortable making interest payments every month AND
- you have good credit AND
- you are willing to wait for a longer return on your investment vs. buying

LEASING may be the right choice for you if...

- you cannot fund all or most of the system cost at one time OR
- you have the funds but prefer to invest them AND
- you don't mind missing out on the federal and state tax credits AND
- you recognize the contractual implications should you decide to sell your home prior to the lease ending

New loan programs in Massachusetts may allow homeowners to essentially pay off their solar system with the money they save each year in electric bills. One such program is offered by Cape Light Compact <https://www.capelightcompact.org/cape-and-vineyard-solar-loan/>

Q: What are Metering Credits and how do they work?

A: Net Metering is the process of measuring the difference between electricity delivered by the electric company and electricity generated by you, the customer. Once you have a means whereby you use electricity generated by your own solar panels or via membership in a solar farm, the amount you purchase from the electric company will be reduced and you will receive net metering credits. The net metering credit is currently \$0.30/kWh (applied to the electric supply service fee, minus a \$10 delivery fee). If you produce either 33 kWh or more than you use in a given month, the \$10 delivery fee is covered by your net metering credit.

<https://www.mass.gov/net-metering>

<https://www.eversource.com/content/residential/about/doing-business-with-us/interconnections/massachusetts/net-metering>

<https://www.energysage.com/local-data/net-metering/eversource/>

Q: How do federal credits work? What if my credits are larger than the amount of taxes I owe at year's end? If I don't owe any money to the IRS on April 15, do I lose the credit?

A: First and most important, be sure to check the status of federal tax credit provisions. As of January 2025, you are entitled to a federal tax credit of 30% of the installation cost of your solar panel system.

Assuming that tax credits are still available, it is easy to confuse "taxes owed" (which is the balance due when filing the 1040) with "tax burden" or "liability" as these terms are often used interchangeably. Your tax liability amount is determined using your taxable income; usually the liability is paid during the year, through a combination of withholdings and credits. When you file at year's end you may still have some taxes due, or your total withholdings and credits may be greater than your liability—resulting in a refund. For example, if your total computed tax liability is \$10,000, but you only paid \$8,000 during the year in withholdings, you would owe \$2,000 at filing.

However, suppose in that same tax year you spent \$30,000 on a solar system. You are eligible to claim 30% of that cost as a credit which, in this case, would be \$9,000 applied to the liability. Instead of owing \$2,000, you would be due a refund of \$7,000.

Ex. 1: Without solar system credit

Tax liability	\$10,000
minus withholdings	(\$8,000)
less solar credits	(\$ 0)
Taxes owed	\$2,000

Ex. 2: With solar system credit

Tax liability	(\$10,000)
minus withholdings	(\$8,000)
net tax liability	\$2,000
less solar credits	(\$9,000)
Taxes owed	(\$7,000) - Refund

Note that Clean Energy Credits (such as the solar system credit) are considered a “Nonrefundable Credit,” which means you can only use the credit to offset your total tax liability. Suppose in example 2 above that your total tax liability was determined to be \$8,000—rather than \$10,000. In that situation, you could apply no more than \$8,000 of the solar system tax credit in that year. The remaining \$1,000 would roll over and be counted against your liability in the following year.

<https://www.nerdwallet.com/article/taxes/solar-tax-credit>

Q: *Is there a state tax credit?*

A: Yes, but only if your Cape home is your primary residence. Qualified homes are eligible for a \$1,000 Massachusetts state tax credit.

Q: *Is the payback the same for all panels?*

A: There are a variety of solar panels from different manufacturers, with different efficiencies and visual appearances. The higher efficiency panels will cost more upfront but will save you more money in the long run. Your choice of panels typically depends on your budget, your desired aesthetics for your roof, and the type of panel offered by the contractor that you choose. The higher efficiency panels can compensate for shading in your yard and may even give you an opportunity to reduce the number of panels needed to meet the electrical production you desire.

<https://www.energysage.com/solar/what-are-the-most-efficient-solar-panels-on-the-market/>