



Residential Solar PV

Residential Solar PV is becoming more popular in Alaska. Here are some considerations to begin with if you are thinking about installing a solar array on your own property. These are based on the U.S. Department of Energy's checklist for planning a home solar electric system, available at www.energy.gov/energysaver/planning-home-solar-electric-system.

In addition to the resources listed below, CCHRC employees can provide information about residential solar PV systems in Alaska to help with your decision. Contact us at 907-457-3454.

Complete energy efficiency upgrades first.

The cheapest unit of energy is the one you don't have to buy. Efficiency upgrades tend to have the highest payback of any potential home upgrade, and it makes sense to complete them before considering renewable energy production. Not only will you save money immediately by purchasing less energy, completing efficiency projects first will allow you to purchase and install a smaller solar PV system to meet your needs, reducing capital costs. While solar PV produces electrical energy, it is worthwhile to reduce both your heating and electrical energy use, as Alaska's long winters mean the potential payoffs from reducing heat loss are large.

- A home energy audit will give you a comprehensive picture of your home's heating and electrical energy use and will provide a list of recommended upgrades. The Alaska Housing Finance Corporation maintains a list of certified energy raters: <https://www.ahfc.us/efficiency/home-energy-rebate-approved-raterlist/>
- For homeowners in the Golden Valley Electric Association (GVEA) service area, GVEA offers a HomeSense electric audit program: www.gvea.com/resources/energysense

Other resources with information and tips on reducing residential energy use in Alaska:

- The Matanuska Electric Association (MEA) Energy Efficiency webpage: www.mea.coop/energyefficiency
- Chugach Electric Energy Solutions webpage: www.chugachelectric.com/energy-solutions/save-energy
- GVEA's the Power to Use Less webpage: www.gvea.com/resources/save



Assess your solar potential and any limitations.

Before investing in solar PV, you need to consider the amount of solar energy that reaches the space where you are thinking of locating a solar array. While a solar energy contractor will provide the most accurate assessment, it's useful to first do a rough estimate yourself. Consider where the array would go - can your roof support the weight of solar panels or would they need to be located elsewhere? Is your roof in need of repair or replacement before installing the panels? Are there any trees growing nearby that might shade this system, either now, or as they grow taller in the future? Are you willing to remove those trees if necessary? Are there any restrictions on installing solar PV in your area - check your homeowner's association, neighborhood covenant, and electrical utility agreements? You can complete your initial assessment of solar potential with a free web-based tool for estimating solar production. The National Renewable Energy Laboratory has a popular calculator called PVWatts for estimating solar potential at pvwatts.nrel.gov. Other tools are listed on the Department of Energy website www.energy.gov/eere/solar/solar-mapping-resources.

Assess your options for going solar.

In some states, solar leasing programs are available that transfer the responsibilities of purchase, installation, warranty, and tax incentives to a third party while locking in fixed electric rate for the life of the panels to the homeowner; however programs like this are not currently available in Alaska. In this state, homeowners must hire a contractor for purchasing and/or installing PV systems and the homeowner ultimately owns and is responsible for the maintenance of their PV system.



For the most current outlook on solar options in Alaska, check with your local utility and installers to see if any new projects have come online. For instance, Chugach Electric is planning to sell shares in its Electron Village solar installation and the Airport Heights neighborhood in Anchorage is offering reduced costs through the Solarize Anchorage project. Find more information at www.chugachelectric.com/energy-solutions/community-solar-project-electron-village and <https://akcenter.org/climate-clean-energy/solarize-anchorage/>.

Consider your goals.

Why are you considering installing solar on your home? Are your reasons purely philosophical (reducing carbon emissions, increasing self-reliance, providing backup power), purely economical (maximizing return on an investment), or somewhere in between? For some the size of the system may be based entirely on offsetting all or most of their electrical use and replacing it with a renewable energy system. For others, the size may be based on the number of critical systems the system must support during a power outage, in which case you may need to install a battery bank along with the solar array. For most homeowners, the size of the system depends on their the upfront capital costs and the return on investment or payback period.

Estimate your solar electricity needs.

Before speaking to a contractor, get a sense of how much electricity you currently consume, as well as how much you might want to offset with solar PV. One method may be to evaluate your electrical bills from the past 3-5 years. Are they reflective of your current and future electrical needs? Be sure to consider any efficiency upgrades you have recently completed or plan to complete, or any additions you may be considering that would increase electrical use. You may use these bills when talking to a contractor about how much electricity you can offset with a solar array. If financial returns are your primary goal, it may be best to size your system to meet *up to or less than your lowest average monthly load*, as any additional electricity you produce above your monthly usage will typically be sold back to the utility at a lower rate than you purchase it.

Obtain bids and site assessments from contractors.

Talk to at least three contractors, if available in your area, before making a commitment on a solar installation. Ask them to if they are certified, have insurance, and if they can provide references. If someone in your neighborhood has installed solar PV, you might want to talk to them about their experience as well. When obtaining a bid from contractors, make sure that it includes the maximum generating capacity of the system, installation hardware and labor, any needed permits, and a local utility interconnection agreement. Also, be sure to ask about whether or not the installation price includes a warranty.

Understand available financing and incentives.

There is currently a 30% federal tax credit for residential solar energy systems. This tax credit is good through 2019, at which time it will begin to phase out. It will completely expire on December 31, 2021. There are other loan and financing programs in Alaska that may apply to your situation. For more information on the types of financing available in your area, visit the Database of State Incentives for Renewables and Efficiency and search for Alaska: www.dsireusa.org. Once you have an estimate on the capital cost of installing a solar PV system, and know what incentives you qualify for, you may want to calculate your return on investment, especially if you are installing the system for economic reasons. The National Renewable Energy Laboratory has a System Advisor Model that can provide financial information on solar PV projects: <https://sam.nrel.gov/>.

Install system and set up agreements.

Finally, you will need to work with your installer and utility to set up the system, connect it to the electric grid, complete permits, and applications to get it up and running. For homeowners in the Fairbanks and the Anchorage areas, all major utilities offer net-metering programs.

- GVEA offers a net metering program called SNAP. You will need to apply to GVEA to join the program. Find more information at www.gvea.com/resources/snap.
- The steps to join MEA's net metering program are found at www.mea.coop/member-services/net-metering/.
- Contact Chugach Electric at 907-563-7494 to learn more about their net metering policies.