



# How to Cut the Costs of Going Solar

*I want to install solar panels on my rooftop, but it's an expensive investment. Is there a way I can save money?*

Solar equipment used to be so expensive that buying solar panels wasn't an option for most homeowners, but solar leases made solar more affordable. In a solar lease agreement, the solar company that installs solar panels on a roof maintains ownership, and the homeowners pay a monthly "rent" in exchange for the benefits of clean energy. As equipment and installation costs have fallen in recent years, however, purchasing panels outright has become more feasible for the average homeowner. Even if you don't have the cash on hand to purchase a solar panel system, you can choose from a growing number of solar loan options that are available for homes and businesses. With many solar loans, your monthly payments would be low enough that you'd see net savings only a month after your installation. Here are a few of the most common types of solar loans available for homeowners:

**Home equity loans and lines of credit.** When the solar industry was new and relatively unproven, banks were hesitant to grant loans for homeowners who wanted to install solar. However, there are now more than a million solar installations in the country. Banks are starting to recognize that solar is a worthwhile home improvement project that offers steady returns. As a result, home equity loans and home equity lines of credit are a popular way to fund solar installations.

**Unsecured solar loans.** As solar costs have fallen, more companies are offering specialized solar loan products. These loans don't require your home as collateral, and you can often work directly with your solar installer to access them. Specialized solar loan products are typically easier to access but come with slightly higher interest rates.

**PACE financing.** Property Assessed Clean Energy (PACE) financing is available for homes and businesses in certain states. If you choose PACE financing, you'll pay back your loan on an annual basis as part of your property taxes. Your electricity bill savings throughout the year will usually be higher than your annual payment, so you'll be "cash-flow positive" from day one.

**Government-subsidized loan programs.** Some states have established subsidized loan programs to create more favorable loan options for solar. For example, Massachusetts launched the Mass Solar Loan program for homes and businesses in December 2015. These programs use a few different tools, such as reduced interest rates and grants for low-income families, to make solar financing even more accessible.



**Solar panels significantly reduce electricity costs and are a wise retirement investment.**

Over the past few years, the cost of installing solar has fallen dramatically.

Each of these options can help you get the most out of your investment by enabling you to buy a solar photovoltaic (PV) system. Use a comprehensive list of solar loan providers to find the best option in your state, such as the list at [www.EnergySage.com/solar/financing/loan-providers](http://www.EnergySage.com/solar/financing/loan-providers).

To encourage the expansion of solar across the country and to increase environmental benefits, many states, municipalities, and even utilities offer solar financial incentives and rebates that reduce the cost of going solar.

Most significantly, the federal government offers a tax credit equal to 30 percent of your total solar costs. Many states will offer additional state tax credits to cut your costs even further. Some states and utilities also have programs that enable you to make money from the electricity generated by your solar panels.

The incentives available to you depend on where you live. EnergySage's Solar Calculator ([www.EnergySage.com/Solar/Calculator](http://www.EnergySage.com/Solar/Calculator)) can give you an instant customized estimate of your net costs and savings based on your electricity bills and your location.

All solar shoppers can save money on their solar PV systems by doing one simple thing: comparing quotes from different solar installers. With the EnergySage Solar Marketplace, you'll receive offers from qualified, pre-vetted solar installers in your area. You can use the Marketplace's side-by-side comparison tables to review all of your options so you can ensure that you're getting the best deal on your solar energy system.

—Vikram Aggarwal, founder and CEO of EnergySage

## Home-Prepared Dog Food

*I'd like to feed my dog homemade meals. How can I design a meal plan that meets my dog's needs?*

Home-prepared diets that include a wide variety of foods fed at different meals rely on balance over time, not at every meal. As long as your dog gets everything it needs spread out over a week or two, its diet will be complete and balanced, unless your dog has a health problem that requires a very specific diet.

Following are guidelines for feeding a home-made diet to healthy adult dogs. No single type of food, such as chicken, should ever make up more than half the diet. Except where specified, foods can be fed either raw or cooked.

### MEAT AND OTHER ANIMAL PRODUCTS

These should always make up at least half of your dog's diet. Unless your dog gets regular, intense exercise, use lean meats (no more than 10 percent fat), remove skin from poultry, and cut off separable fat. It's better to feed dark meat poultry than breast, however, unless your



Offer your furry friend a morsel of melon from the garden.

dog requires a very low-fat diet.

**Raw meaty bones (optional).** If you choose to feed these to your dog, the bones should make up one-third to one-half of your dog's total diet. Stick to one-third if you feed bony parts, but feed more if you're using primarily meatier parts. Never feed cooked bones.

**Boneless meat.** Include both poultry and red meat. Heart is a good choice, as it's lean and often less expensive than other muscle meats.

**Fish.** This type of meat provides vitamin D, which otherwise should be supplemented. Choose canned fish with bones—such as sar-

dines (packed in water, not oil), jack mackerel, and pink salmon. Remove bones from fish you cook yourself, and never feed raw Pacific salmon, trout, or related species. You can feed small amounts of fish daily, or larger amounts once or twice a week. The total amount should be about one ounce of fish per pound of other meats (including raw meaty bones).

**Organs.** Liver should make up roughly 5 percent of this category, or about 1 ounce of liver per pound of other animal products. Beef liver is especially nutritious, but you should include chicken or other types of liver, at least occasionally. Feeding small amounts of liver daily or every other day is preferable to feeding larger amounts less often.

**Eggs.** Eggs are a highly nutritious addition to any diet. Dogs weighing at least 20 pounds can have a whole egg every day, but give less to smaller dogs.

**Dairy.** Plain yogurt and kefir are well-tolerated by most dogs (try goat's milk products if you see problems). Cottage and ricotta cheeses are also good options. Limit other forms of cheese, as most are high in fat.

## The Bison Deep Well Hand Pump

*I have an old bored well on my property, but the windmill and pump are long gone. How can I pull water from the well without grid power?*

Bison deep well hand pumps, made in a rural Maine shop ([www.BisonPumps.com](http://www.BisonPumps.com)), are electricity-free options for drawing water that's more than 25 feet and less than 300 feet below the Earth's surface. I just installed one at my place, and I'm impressed with the pump itself, the completeness of the kit, and the overall workmanship—the welds are beautiful! I've never seen nicer welds or a more impressive choice of fittings and hardware than those on the pump body and the handle unit that sits on top of the well. The pipes and cylinder that let the pump draw water from such depths are carefully engineered and packaged. Even the fittings come with Teflon tape already applied to the threads for leak-proof connections.

Every deep well hand pump has three main parts: the hand-operated mechanism at the top of the well, the pumping cylinder that pushes water up from below, and a run of rigid pipe and rod that connect the two. While it could've been tricky to assemble the rigid pipe and pump cylinder while lowering them both into the well, the special tools that came with the Bison pump made it easy. The \$1,800 price tag for a typical Bison deep well hand pump may be high, but it does deliver the peace of mind that only reliable, electricity-free access to drinking water can provide.

—Steve Maxwell



## FRUITS AND VEGETABLES

While not a significant part of dogs' evolutionary diet, fruits and vegetables provide fiber that supports digestive health, as well as antioxidants and other beneficial nutrients that contribute to health and longevity.

**Starchy vegetables.** Vegetables such as potatoes, sweet potatoes, and winter squash, as well as legumes, provide carbohydrates that can help reduce food costs and keep weight on skinny and very active dogs. Limit quantities for overweight dogs. Starchy foods must be cooked in order to be digestible by dogs.

**Leafy greens and other nonstarchy vegetables.** These are low in calories and can be fed in any quantity desired. Too much can cause gas, and raw, cruciferous vegetables, such as broccoli and cauliflower, can suppress thyroid function. Cook them if you feed large amounts. Raw vegetables must be puréed to be digested properly by dogs, though whole raw vegetables aren't harmful and can be used as treats.

**Fruits.** Bananas, apples, berries, melons, and papaya are good choices. Avoid grapes and raisins, which can cause kidney failure in dogs.

## GRAINS

Feeding dogs grains is controversial, as grains may contribute to inflammation, and some grains contain gluten or pesticide residues that may cause digestive problems. Many dogs do fine with grains, however, and grains can be used to reduce the cost of a homemade diet.

Grains and starchy veggies should make up no more than half the diet. Good choices include oatmeal, brown rice, quinoa, barley, and pasta. White rice can settle an upset stomach, particularly if overcooked with extra water, but it's low in nutrition. All grains must be well-cooked.

## AVOID

There are some foods you should not feed to your dog. Avoid avocado, cooked bones, chocolate, onions, large amounts of garlic, grapes, raisins, and macadamia nuts.

## SUPPLEMENTS

Additional supplements, such as calcium, fish oil, vitamin E, and iodine, may be needed if you aren't able to feed a variety of foods, or if you leave out one or more of the food groups above. Learn more about canine supplement choices at <http://goo.gl/4yKtwg>.

—*Mary Straus*, *The Whole Dog Journal*