

## ***Issues When Considering Solar Panels***

*Formatted, Printed and Distributed by the Environmental Task Force of Unitarian Universalists for Social Justice  
1448 E. 52<sup>nd</sup> St., Box 144, Chicago, IL 60615  
www.uusforsocialjustice.org*

✓ **Income tax deductions** — In several states individuals can receive deductions for installing solar systems and/or purchasing solar equipment.

✓ **Consumer rebates** — These rebates, which usually come from utilities, partially offset the cost of installing solar energy systems.

✓ **Net metering** — The Solar Energy Industries Association describes net metering as “a billing mechanism that credits solar energy system owners for the electricity they add to the grid.” Most states have a net-metering policy in place.

The specific provisions — and their impact on solar development — can vary considerably from one state to the next. According to the [Interstate Renewable Energy Council](#), Ohio’s net metering rules are among the strongest in the nation. In that state, Ohio solar users get full retail credit for their production and don’t get charged any fees by the utility. These consumers also can receive a refund for accumulated credits over a 12-month period. In other states, net metering laws are often more limited. For example, utilities sometimes do not have to credit the full value of the solar power produced; some states, too, place limits on the size of a PV system or do not require certain types of utilities (municipal or cooperatives) to credit customers.

✓ **Interconnection standards** — Standard, transparent interconnection standards help homes and businesses connect their small-scale systems to the utility grid. In some states the owners of smaller-scale solar energy systems qualify for a simplified review process in advance of connecting to the grid.

*Sources: Energy Sage, U.S. Dept. of Energy, Database of State Incentives for Renewables & Efficiency, and CSG Midwest research.*

### **CAN PEOPLE REALLY SAVE MONEY WITH SOLAR PANELS?**

Yes. Not only does a solar energy system add substantial value to your home the minute it’s up and running, it often pays for itself – and then some – through reduced electricity costs over the life of the system. Twenty-year electricity savings from solar can be significant, ranging from the low end of \$10k to almost \$30k (though the upper limit is more likely to be \$20k in the Midwest).

### **HOW MUCH DOES A SOLAR ENERGY SYSTEM COST?**

“In 2018, most US homeowners are paying between \$2.71 and \$3.57 per watt to install solar, and the average gross cost of solar panels before tax credits is \$18,840,” (Energy Sage estimates).

That may seem quite expensive, but it also doesn’t take into account the many incentives available to solar customers and the multiple new forms of solar financing that have emerged in recent years.

In addition, a 30 percent federal investment tax credit is available through 2019 (stepping down in the years beyond), and many states also offer their own tax breaks and incentives to encourage home solar panel installation.

### **HOW LONG WILL SOLAR PANELS LAST?**

Many home array solar panels are guaranteed for decades, thanks to warranties that typically cover 25-30 years. Because their parts do not wear out easily, solar arrays are well-known to continue producing clean electricity even beyond these lengthy timeframes, though they lose of their efficiency each year.

A June, 2012 National Renewable Energy Laboratory study investigating the “photovoltaic degradation” rates of about 2,000 solar installations over a period of 40 years found

the median solar system lost just 0.5 percent of its efficiency per year. So, by the end of a typical 25-year warranty, the solar panels on your roof could still be operating at about 88 percent of their original capacity.

### **WHAT SORT OF MAINTENANCE IS REQUIRED?**

Not too much, really. Your solar panels themselves can last for decades on end without much upkeep (maybe just remember to keep them free of debris, snow, etc.).

However, you will likely need to replace the inverter a few times throughout the life of your system. Like the solar panels themselves, inverters typically come with a warranty – these can range from 5 to 15 years. *Unlike* your panels, your inverter will not see its efficiency dwindle very slowly; instead, it may simply stop working and need to be replaced. However, technology developments on this front are afoot. New “micro-inverters,” which are installed or included with each solar panel, are quickly replacing the more-common central inverters that handle the output of all your panels at once. These micro-inverters can have a much longer lifespan (all the way up to 25 years) than a central inverter, and if one does fail, it won’t shut your entire system down cold.

### **DO SOLAR PANELS WORK ON CLOUDY, RAINY, OR COLD DAYS?**

Solar panels work when it’s cloudy, rainy, and/or cold. Clouds and rain are not ideal for solar panels. They are most effective in direct sunlight. But solar panels can still generate power when the sun is blocked by clouds – more than enough, in fact, to remain a viable source of electricity. Take Germany, for example. It’s not particularly warm or sunny, but is nevertheless a world leader in solar energy.

As for winter, solar panels are powered by light, not heat, and because of the way the technology works, they’re just as effective in cool or cold temperatures as in hot ones. The main adverse effect of winter on solar power generation is the shorter hours of light.

### **WHAT IS THE FEDERAL SOLAR TAX CREDIT?**

A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States that is owned and used as a residence by the taxpayer. Expenditures with respect to the equipment are treated as made when the installation is completed. If the installation is at a new home, the “placed in service” date is the date of occupancy by the homeowner. Expenditures include labor costs for on-site preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home. If the federal tax credit exceeds tax liability, the excess amount may be carried forward to the succeeding taxable year. The maximum allowable credit is 30% for systems placed in service by 12/31/2019, 26% for systems placed in service in 2020, 22% for systems placed in service in 2021. There is no maximum credit for systems placed in service after 2008. The home served by the system does not have to be the taxpayer’s principal residence.

### **STATE INCENTIVES AND POLICIES THAT ENCOURAGE SMALL-SCALE SOLAR PROJECTS**

The below list describes most of the types of incentives and policies that exist to encourage small-scale solar projects. They vary by state. Check the Database of State Incentives for Renewables & Efficiency, and sites focused on your state, to determine what incentive and policies apply to your state.

✓ **Property tax exemptions** — Many states have this type of incentive in place — for example, exempting solar energy systems from property taxes or exempting increases in property valuations due to the installation of solar energy systems.

✓ **Sales tax exemptions** — Many states waive the sales tax for purchases of equipment needed to install solar energy systems.