

# Solar Panels, Tax Incentives, and Your House

By Jeffrey D. Moss



During the summer of 2008, gas prices went through the roof, and the United States refocused on renewable energy. Americans say they desire energy independence from foreign nations and environmentally sound renewable energy sources. To that end, the federal and state governments have enacted a number of alternative energy laws, including the Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, div. B, 122 Stat. 3807 (codified in scattered sections of 26 U.S.C.), which provides incentives for alternative energy sources in homes and businesses, and the American Recovery and Reinvestment Act of 2009 (ARRA), Pub. L. No. 111-5, 123 Stat. 115, which promotes the development and use of renewable and alternative energy sources.

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This article discusses the federal and state income and other tax credits available for various types of energy-efficient improvements, with a primary focus on tax credits available to residential homeowners using power generated by solar energy. To demonstrate the various ways states are providing tax incentives that are in addition to the federal tax incentives, this article compares tax benefits available to families located in Canton, Michigan, Tallahassee, Florida, and Raleigh, North Carolina. For example, some states provide tax rebates, some provide property tax credits for improvements, and others promote the use of utility companies to provide the incentives for the generation of alternative energy.

## Advantages and Disadvantages of Residential Photovoltaic Solar Power

The use of a photovoltaic system to convert sunlight into electricity by the

attachment of solar panels on a residence or residential property has many advantages. First, sunlight is produced free of charge, although not on a predictable basis (particularly in northern climates, as in Michigan). Nonetheless, solar energy production occurs during the daylight hours—the time of peak energy demand. Solar power not used by a particular residence can be cheaply and quickly transferred into the power grid through local interconnection devices that limit the need for huge capital expenditures for energy transmission to end users. Localized solar power has an advantage over commercial wind power in ease of power transmission to the end user.

One of the less attractive aspects of residential solar power is the requirement with most residential systems that a homeowner remain on the utility's electricity grid. This makes stand-alone capability highly unlikely in many areas of the United States. In addition,

the installation of solar panels on a residence requires a personal capital expenditure rather than an expenditure funded by the government or a public utility. Finally, although the installation of solar panels may add to a home's value, it also adds to a home's maintenance and repair costs, complicates roof repairs, and increases insurance costs. When the benefits and burdens are weighed, however, residential use of solar panels to produce electricity provides a net benefit both to the home owner and to the utility. Encouraging solar panel use will reduce reliance on fossil fuels as an energy source.

### **The Federal Residential Energy Efficient Property Tax Credit**

In 2008, Congress enacted multiple legislative acts comprehensively called the Emergency Economic Stabilization—Energy Improvement and Extension—Tax Extenders and Alternative Minimum Tax Relief Acts of 2008 (2008 Economic Stabilization Act), Pub. L. No. 110-343, 122 Stat. 3765. An act called the Energy Improvement and Extension Act of 2008 (2008 Energy Act), enacted on October 3, 2008, forms division B of the 2008 Economic Stabilization Act.

The major component of the 2008 Energy Act, as it relates to solar power, is the long-term extension and beneficial modification of the Residential Energy Efficient Property Tax Credit (REEP). 2008 Energy Act § 106. The REEP was scheduled to expire at the end of 2008, but the 2008 Energy Act extended the REEP credit through the end of calendar year 2016. The 2008 Energy Act also removed the cap on the available credit and expanded the REEP. Before the 2008 Energy Act, an individual homeowner was allowed an annual credit for the purchase of "residential energy efficient property" equal to the sum of 30% of the amount paid for a "qualified solar energy property," with a maximum credit of only \$2,000. See Internal Revenue Code § 25D(b)(1). For tax years beginning after December 31, 2008, the 2008 Energy Act removes the \$2,000 limitation on the credit allowed in a tax year for "qualified solar electric property expenditures." Now the 30% credit is unlimited. *Id.* The elimination of the cap on the credit for "qualified

solar electric property" in the 2008 Energy Act provides one of the largest incentives for the addition of qualified solar energy property to a residence. In 2009, the ARRA also extended the 30% credit to all eligible technologies (except fuel cells) placed in service after 2008.

Before the 2008 Energy Act, a family that spent \$40,000 on qualified solar electric property improvements received only a \$2,000 credit against its federal income tax liability. Now, with the cap on the annual limit lifted,

**When the benefits and burdens are weighed, residential use of solar panels to produce electricity provides a net benefit both to the homeowner and to the utility.**

that same family can obtain a credit in the amount of \$12,000 against their tax bill, based on a \$40,000 expenditure. This is a tax credit and not a deduction. A deduction of \$12,000 would lower taxable income by \$12,000 and produce tax savings of only \$3,360 at the 28% bracket. In contrast, a \$12,000 credit is a dollar-for-dollar credit against the tax a homeowner would otherwise pay and is nearly four times more valuable.

What expenses qualify for the federal REEP credit? IRC § 25D(d)(2) defines the term "Qualified Solar Electric Property Expenditure" as "an expenditure for property which uses solar energy to generate electricity for use in a dwelling unit located in the United States and used as a residence by the taxpayer." IRC § 25. The term "Qualified Solar Electric Property Expenditures" also includes costs incurred for solar panels and other property installed as a roof or a portion of a roof. This includes the acquisition of solar panels used in photovoltaic systems. Further, IRC § 25D(e)(1) defines "Qualified Solar Electric Property" as labor costs

properly allocable to on-site preparation, assembly, or original installation of the panels on the property and for the piping or wiring used to connect the property to the home.

It is also noteworthy that for the purposes of this particular tax incentive, the residence does not have to be a primary residence. Qualifying improvements can be made to a vacation home and other dwelling units such as mobile homes, manufactured homes, and even certain houseboats. IRC § 25D(d)(2) (qualified solar electric property expenditures may be made on any dwelling unit used as a "residence"). In contrast, IRC § 25D(d)(3), related to "Qualified Fuel Cell Property Expenditures," contains more limited language allowing the fuel cell credit only for a dwelling unit used as a "principal residence." Clearly, Congress intended the Solar Energy Tax Credits for solar property expenses to apply more expansively than the credits for fuel cell expenditures. There are even specific IRC sections permitting the pro rata allocation of REEP credits to owners of cooperative housing corporations and condominium associations. See IRC § 25D(e)(5) (cooperatives) and IRC § 25D(e)(6) (condominiums). The 2008 Energy Act also eliminated the provision that previously denied the credit to owners of property purchased or financed by subsidized energy financing. See IRC § 48(a)(4)(C). Even if the government creates a financing program for residential solar panels, the REEP credit should be available.

If a taxpayer claims the REEP credit, the taxpayer is required to reduce the basis of the home by the amount of the tax credits allowed. This is presumably designed to subject a homeowner to potential tax in the future to offset the immediate tax benefits received. Reducing the basis of a primary residence does not have a negative effect, however, because currently the IRC does not provide for recapture if one sells a primary residence and fits within the exclusion of gain on the sale of a principal residence under IRC § 121. The sale of second homes and vacation properties could be negatively affected by the reduction in basis because IRC § 121 excludes recognition of gain only on the sale of qualified personal residences, not on the sale of second homes.

Residential energy tax credits should

be claimed on IRS Form 5695. On the tax form, a homeowner also can claim federal tax credits for other qualified energy-efficient improvements such as insulation, exterior windows (including certain storm windows and skylights), exterior doors (including certain storm doors), certain qualified metal roofs designed to reduce heat gain of a home, and certain efficient heat pumps, water heaters, air conditioners, furnaces, and fans. Also, if the taxpayer's solar powered system is designed to heat the water in the home in the permitted manner, the taxpayer can receive a qualified solar water heating property tax credit.

### **The Interplay of State and Local Tax Credits Related to Solar Power and Renewable Energy Sources**

State legislatures have taken several different approaches to encourage investment in environmentally friendly improvements. The following discussion analyzes several of these approaches, focusing on the tax benefits to a hypothetical family of two adults and two children with a combined household income of \$120,000. The hypothetical assumes that the family's marginal federal income tax rate is 28% and they own a primary residence worth \$300,000, subject to a mortgage balance of \$180,000. The family desires to add solar panels or structures containing solar panels at a cost of \$40,000. The proposed solar panel system would contain a surface area of approximately 300 square feet of solar panels and would generate three kilowatts of power. A system of this size would likely supplement power generated from other sources and would still require connection to a power grid, but could produce 50% to 75% of a family's power needs.

#### **Florida Solar Energy Tax Incentives**

The state of Florida currently has a very successful solar energy system incentives program created in 2006 by the Florida Renewable Energy Technologies and Energy Efficiency Act, Fla. Stat. § 377.801 et seq. This initial program was structured as a four-year program and permits any household or business that installs a qualified "solar energy system" between July 1, 2006, and June 30, 2010, to obtain a rebate of a portion of the purchase price of the system. Fla. Stat. § 377.806. The maximum allowable rebate for a solar photovoltaic

system installed in a residential structure is \$20,000. A commercial structure can obtain a rebate of up to \$100,000.

Initially, a qualifying solar energy system must be one of the following types of systems:

- a "solar photovoltaic system" that produces at least two kilowatts, or
- a "solar thermal system" that provides at least 50% of a building's hot water consumption, or
- a "solar thermal pool heater."

A solar photovoltaic system qualifies for a rebate if

- the system is installed by a state-licensed master electrician, electrical contractor, or solar contractor;
- the system complies with the state interconnection standards as provided by the Florida Public Service Commission; and
- the system complies with all applicable building codes as defined by the local jurisdictional authority.

The rebate amount for a solar photovoltaic system is set at \$4 per watt based on the total wattage rating of the system, and the application for a rebate must be made within 120 days after the purchase of the solar energy equipment. The total wattage rating of the system is determined by the National Renewable Energy Laboratory Solar Calculator. Thus, assuming that the hypothetical family installed a solar photovoltaic three kilowatt system, that system would generate a \$12,000 rebate.

This rebate program has been so popular that the state of Florida has exhausted its budget on an annual basis through the 2008–09 year. Applications received and approved are placed on a waiting list for funding and future use. The state of Florida does not have a state income tax. As a result, this program is a rebate rather than a tax credit, making it even more valuable to Floridians.

In addition to the rebate, Florida passed a real estate property tax exemption, the "Renewable Energy Property Tax Exemption for Residential

Property," in June 2008 to provide property tax relief to those who install approved energy-efficient improvements. Fla. Stat. § 196.175 et seq. Normally, a municipality is permitted to tax real property located in its jurisdiction at its fair market value, including the value of improvements. This new exemption allows the property owner to exclude the value of the renewable energy improvements, including the cost of the device and the installation cost. The exemption does not include the cost of removing or improving other existing property in the course of the installation. This real property tax exemption means that a homeowner will not be taxed on the increase in property value caused by the installation of these qualified renewable energy improvements for a period of 10 years after the improvement has been placed in service.

The statute defines a "renewable energy source device" as any equipment that, "when installed in connection with a dwelling unit or other structure, collects, transmits, stores, or uses solar energy, wind energy, or energy derived from geothermal deposits." This list includes:

solar energy collectors; storage tanks and other storage systems, excluding swimming pools used as storage tanks; rockbeds; thermostats and other control devices; heat exchange devices; pumps and fans; roof ponds; freestanding thermal containers; pipes, ducts, refrigerant handling systems, and other equipment used to interconnect such systems [however, conventional backup systems of any type are not included in this definition]; windmills; wind-driven generators; power conditioning and storage devices that use wind energy to generate electricity or mechanical forms of energy; pipes and other equipment used to transmit hot geothermal water to a dwelling or structure from a geothermal deposit.

Fla. Stat. § 196.012(14).

In addition to the Florida incentives to homeowners for the production of energy from solar power and the property tax exemption, the state also exempts the purchase of a "solar energy

system” from Florida’s 6% sales tax. *Id.* § 212.08. This sales tax exemption covers the equipment and hardware used for collecting, transferring, converting, storing, or using incidental solar energy for water heating, space heating and cooling, or other applications. On a \$40,000 purchase, this sales tax exemption would result in an additional \$2,400 saving.

The City of Tallahassee Utility System also offers loans direct to consumers to acquire energy-saving measures, including photovoltaic systems and solar water heating systems. Under the program, a homeowner can borrow up to \$20,000 directly from the city for a photovoltaic system at a 5% interest rate. Although these loans do not cover the entire cost of the photovoltaic system, both the rate and amount of these loans show that the city is serious about promoting the acquisition of solar energy systems for homeowners.

In summary, the state of Florida, likely because of its warmer weather and higher use of air-conditioning, has one of the most progressive state-funded incentives for the production and use of solar power in personal residences.

### **North Carolina Solar Energy Tax Credits**

The state of North Carolina has a personal tax credit called the “Renewable Energy Tax Credit,” which is a credit against the state income tax. Renewable Energy Tax Credit, N.C. Gen. Stat. § 105-129.16A et seq. The maximum permissible tax credit is 35% of the cost of eligible renewable energy property constructed, purchased, or leased by the taxpayer and placed in service in North Carolina during the year. The maximum permissible tax credit for a photovoltaic solar system (and wind energy system for residential use) is \$10,500 per installation. The allowable credit may not exceed 50% of the taxpayer’s tax liability in a year and the credit may be carried forward for five years if not fully absorbed in the initial years. Thus, if the sample homeowner family installed a \$40,000 photovoltaic solar system in their home, the potential tax credit initially would be

calculated at 35% of \$40,000, which results in a \$14,000 tax credit. Because of the \$10,500 limitation, the family would be permitted to claim \$10,500 as a state of North Carolina tax credit.

Because the North Carolina marginal state income tax rate is 7.75% for income over \$60,000, the North Carolina family in the example would owe up to \$9,300 in state income tax in a year. Because of the 50% limitation on a taxpayer’s liability on the annual allowable credit and the carryover provisions for the Renewable Energy Tax Credit, the family could receive a credit of \$4,650 for two years and \$1,200 for the third year, until they received the entire \$10,500 tax credit benefit. As previously noted, a credit against income taxes otherwise owed is particularly beneficial, more valuable than a deduction of an equal amount.

In August 2008, North Carolina enacted a real estate property tax exemption equal to 80% of the appraised value attributed to the addition of a photovoltaic solar energy system to a residence. N.C. Stat. § 105-275(45). Compared to Florida, a homeowner in North Carolina would see a slight increase in property tax because of the improvements to the residence made by the installation of a solar photovoltaic energy electric system, rather than a full increase. The definition in the North Carolina property tax abatement for a solar energy electric system is “all equipment used directly and exclusively for the conversion of solar energy to electricity.” *Id.*

### **Michigan Solar Energy Tax Credits**

The state of Michigan has taken a different approach to creating the financial incentives for generating renewable power. In October 2008, Michigan enacted a statewide net metering program for renewable energy systems. Clean, Renewable, and Efficient Energy Act, Mich. Comp. Laws §§ 460.1001–1195. On May 26, 2009, the Michigan Public Service Commission issued an order formally adopting revised net metering rules. Mich. Admin. Code r. 460.601–656. The net metering practice will be divided into two categories for residential customers. For customers

who generate 20 kilowatts or less, a “modified” net metering concept will occur when “net excess generation during a billing period may be carried to the next billing period at either the monthly average real time marginal price or the utilities retail rate.” Customers who generate more than 20 kilowatts will be eligible for true net metering in the sense that the power they generate and the power they use will offset each other in real time. In any given month, the customer will be charged only with net use. A customer who generates electricity in excess of use will receive a credit back from the utility company. Thus, Michigan’s current contemplated proposal provides incentives through the utility companies and not the tax system.

Michigan does have a limited renewable energy rebate for photovoltaic systems that are rack mounted or building integrated and rated at 20 kilowatts or less. The \$3 per kilowatt rebate, however, is currently available only to those customers who receive utility service through Wisconsin Public Power in the Upper Peninsula.

It is somewhat ironic that a state with less sunlight would have lower rebates and incentives for solar energy improvements. If Michigan intends to increase its solar use, it would likely have to provide greater incentives than Florida because the likelihood of economic recapture in Michigan is less than in Florida.

Perhaps Michigan will, in the near future, become a leader in promoting residential solar energy tax credits. At present, Michigan has not enacted any particular incentive to encourage homeowners to purchase solar panels for their homes.

### **Other Potential Financing Sources and Alternatives to Tax Credits**

#### **Home Equity**

Because many qualified solar energy improvements are actually improvements to homes or to real property, the likelihood is high that homeowners will be able to obtain home equity financing or other qualified financing secured by the value of the improvements. The separate structure proposed in this article is similar to a garage, shed, or other home improvement that adds value to a home and would qualify the taxpayer for deductible interest as qualified home equity indebtedness, under IRC § 163(h)(3)(A)(ii).

## Financing by Utilities

It is possible that states such as Michigan have not yet integrated their tax rebate and incentive programs to fund solar energy because they are relying on the utility systems to provide financing for residential solar systems. As the date for the renewable portfolio standards (RPS) gets closer, utilities will be required to purchase power from third parties and homeowners to meet the state-mandated standards. To produce a sufficient amount of solar power for a utility to purchase, the utility also will be required to subsidize the acquisition of residential photovoltaic systems so as to solidify the source of energy it must produce or acquire.

The expansion of utility subsidies for improvements will definitely enhance the development of qualified solar power for residential use in Michigan. In September 2009 DTE Energy announced that first phase of a program called "SolarCurrents" for residential and commercial uses, which combines an element of partial reimbursement for the acquisition and installation of solar energy systems in the amount of \$2.40 per direct current watt with a production rebate in the amount of \$0.11 per kilowatt. Press Release, DTE Energy Company, *New Detroit Edison Program Will Enable Customers to Cut the Cost of Installing Solar Energy* (Sept. 1, 2009), available at <http://dteenergy.mediaroom.com/index.php?s=43&item=433>. The acquisition of the three-kilowatt system proposed for the family in this article would create a payment of \$7,200 from DTE Energy plus production credits in the future.

DTE Energy is treating the up-front rebate as a prepayment for renewal energy credits (RECs) and the production incentive as payment for marginal increases in renewable source energy. In other words, DTE Energy is paying customers to produce renewable energy and purchasing the RECs to satisfy its RPS requirement.

## Leasing and Power Purchaser Agreements

In addition to utility-funded financing, new third-party players are entering various markets and offering residential homeowners the opportunity to lease solar panels and solar energy systems, with the resulting RECs belonging to the leasing company rather than the homeowner. These

companies are also offering alternative arrangements in which the homeowner owns the system and enters into a power purchasing agreement for a fixed period of time. A long-term power purchase agreement helps to ensure a market for the energy produced.

## Conclusion

The use of residential solar power appears to be a "win-win" for homeowners, utility companies, and the environment. As improvements continue to be

made to photovoltaic panels, heating systems, transmission systems, and storage systems, the use of solar power by homeowners should increase even in areas without optimal sunshine. The tax incentive programs should result in greater sales of equipment relating to the production of solar energy and, in turn, result in more improvements and less cost per unit, not unlike that experienced for computers and other electronic equipment. ■