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State Incentives for Renewable Energy

Many states have enacted incentives to help private residents, businesses, state agencies and schools deal with efficient energy use. Broadly, these incentives fall into three categories: tax incentives, grants and loans and bonding (Rewey 2001). Some methods to increase energy efficiency include using alternative energy, such as wind, solar, hydroelectric, biomass, hydrogen and fuel cell, and geothermal power.

Tax Incentives

Energy-saving technologies are often expensive; consequently several states have established tax incentives to encourage certain types of purchasing (see Figure 1). A tax incentive can be a deduction against the income tax a person owes, or deductions from property value assessments that are used to calculate property tax, or an exemption from paying sales tax on a certain item. There are many different variations on this system from state to state, but typically the tax incentive would apply to energy saving appliances and heating systems, fuel conservation, new construction or home improvements that would negate heat loss, and the use of environmentally sound products in construction. Hawaii has a program that provides a tax credit for the purchase of ice storage systems in order to shift energy consumption to off-peak periods. Currently, states offering tax incentives include: Hawaii, Indiana, Maryland, Montana, New York, Oregon, Vermont, New Hampshire, New Mexico, Kansas, Minnesota, North and South Dakota, and South Carolina.

Grants and Loans

Several states have established funds that can be used only for purchasing approved energy-efficient products and services (see Figure 1). These funds are awarded in the form of a grant and/or loan. Grants are one-time funding packages, while loans must be repaid, with interest, over a certain time. Typical applications of this program include the purchase, construction and installation of energy conserving improvements in new or existing residential or commercial buildings and rebates on energy conserving appliances. California has a number of such programs, one of which establishes a grant program for purchasers of solar water heating systems, storage for grid-connected solar-electric systems, and distributed electrical generated systems. Currently, states offering grants and loans include: Alaska, California, Connecticut, Indiana, Iowa, Maine, Minnesota, Mississippi, Missouri, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Arizona, West Virginia, and Texas.

Bonds

Some states have offered bonds to state agencies, schools, or private businesses as incentives to cover the cost of efficiency upgrades (see Figure 1). A bond is issued by a government or corporation and guarantees the repayment of the original investment, plus interest, by a specified future date. By issuing the bonds, funds can be obtained to support energy-efficient purchasing, reducing energy consumption through retrofitting or the purchasing of new energy efficient equipment, or making use of renewable energy resources. The bond is repayed by the energy savings realized. Projects may be carried out in residential, commercial, industrial, and agricultural applications. Currently, states offering bonds include Arkansas, Missouri, and Oregon.

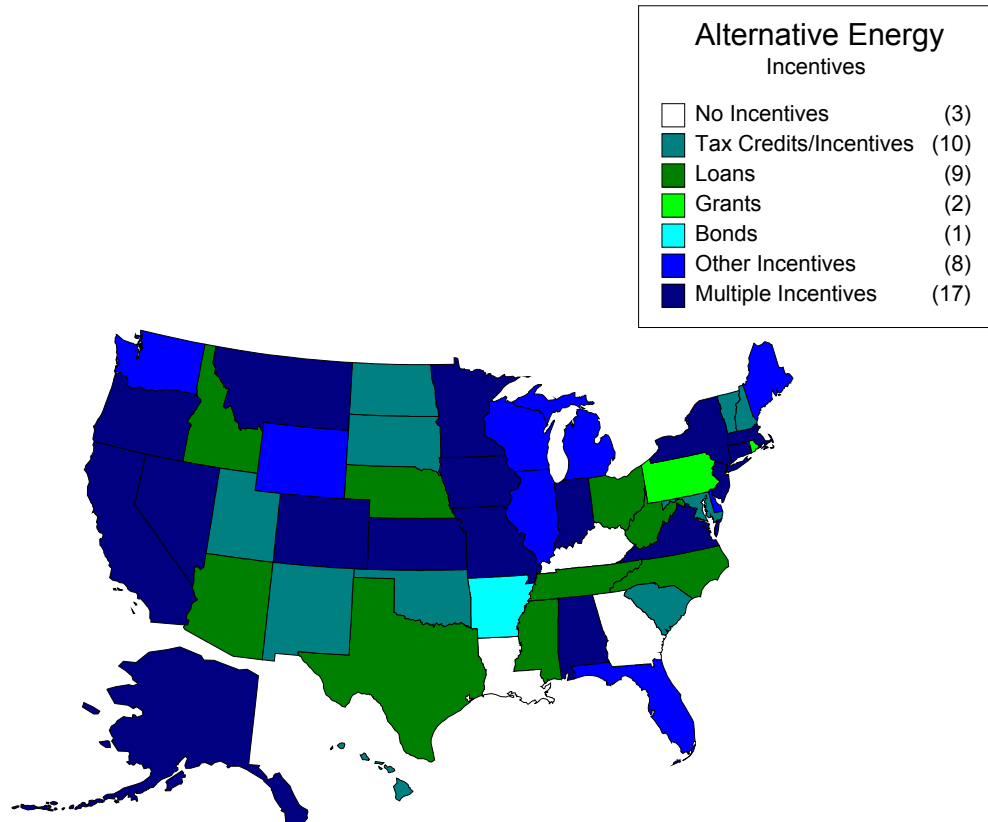


Figure 1: Alternative Energy Source Incentives

Net Metering

Net metering requires utilities companies to permit customers to reduce their electricity bills by generating their own power using small-scale renewable energy systems. The excess power generated can be fed back to their utilities actually running their meters backwards (Department of Public Service nd). Some benefits of net metering include:

- the use of a single meter;
- the absence of constant regulatory interaction or supervision after the program is in place;
- allows customers to make renewable energy technology choices while only impacting the customer's meter;
- provides economic incentives to encourage renewable energy technologies without public funding;
- increases the economic value of small renewable energy technologies for customers. It allows the customers to use the utility grid to "bank" their energy, producing electricity at one time and consuming it at another time.

Minnesota was the first state to enact a net metering statute in 1983. Since then, 33 additional states have enacted net metering laws or regulations (Yih-huei 1996).

Net metering programs for small renewable energy generating systems have been available in some states for more than 15 years, but their impact on the market for renewable energy technologies has been limited. Exact numbers are not available because utilities and state energy offices do not keep accurate records of net metering participants. Although no hard statistics exist about the number of customers and total installed capacities under these programs, a report by the National Renewable Energy Laboratory, which was sponsored by the U. S. Dept. of Energy, suggests that very few customers participate in net metering programs (Yih-huei 1996).

Other Incentives

Shared Savings Financing: These types of programs focus primarily on state agencies and establish incentives by offering various uses for the money saved as a result of installation of energy efficiency measures. The funds may be applied to an agency's budget or be used to finance future efficiency upgrades. As an example, the state of Connecticut offers shared savings incentives to agencies that achieve savings through energy conservation. Any state agency can request from the state a statement of the agency's energy cost savings achieved through conservation measures during the preceding fiscal year. A portion of the energy savings (as least 50 percent) is to be retained and used for future energy costs or conservation-related activities.

Training: Arizona provides a program that allows school districts to make expenditures for employee training, energy consultants, and other contractual arrangements with energy specialists who advise the district and its employees on energy savings, conservation measures or efforts to improve energy efficiency.

Construction: Hawaii has a law that requires all state agencies to retrofit buildings to save energy and provides that all cost savings from retrofits shall be returned to the retrofitting agency.

Tradable Renewable Energy Certificate: A tradable renewable energy certificate (REC) represents one megawatt-hour of electricity produced by a renewable energy source. RECs can be traded between

companies who need and over produce renewable energy sources. Buying RECs is similar to buying green power in that it is not actually delivered to the purchaser's meter. Instead, it goes directly into the local or regional electricity grid. Although we may not receive the renewable energy purchased we get the benefits of having clean renewable energy present on the lines. In other words we buy the electricity “bundled” containing both generic and renewable energy (American Wind Energy Association 2002).

Companies, municipal utilities and non-governmental organizations as diverse as PG&E's National Energy Group, PacifiCorp, Sterling Planet, Waverly Power & Light, and the Bonneville Environmental Foundation have already begun to sell and promote RECs (Holt 2001). The premium value of RECs compensates for the extra costs associated with generating green electricity, making it easier for green energy to compete with generic electricity. RECs also create revenue for renewable energy producers (Holt 2001).

Green Power: The term "green power" generally refers to electricity supplied in whole or in part from renewable energy sources. As of August 2000, more than one-third of all U.S. consumers had the option to purchase some type of green power product, from either their regulated utility provider or in competitive markets. Green power marketing has the potential to expand domestic markets for renewable energy technologies by making renewable electric service available directly to retail consumers (Swezey 2001). As of July 2000, green power was being competitively marketed to retail customers in five states: California, Connecticut, Maine, New Jersey, and Pennsylvania.

Green Pricing: Green pricing allows customers to support a greater level of renewable technologies by paying a premium on their electric bill to cover the extra cost of the renewable energy (Center for Resource Solutions 2001). A report completed by the National Renewable Energy Laboratory found that the experience with green pricing programs varies. Although electric companies were found to provide customers with new renewable energy sources and the opportunity to contribute to the environmental improvement through electricity purchases, customer participation rates were less than 1% for more than half of the utility programs in place (Swezey 2001). As of February 2002, 31 states have utilities that have green pricing programs. A list of these states and the participated utilities and programs can be found on the U.S. Department of Energy website at: <http://www.eren.doe.gov/greenpower/summary.shtml> (U.S. Department of Energy 2002).

References

- Broyles, Joseph. 2002. “Local Option Property Tax Exemption for Renewable Energy” Database of State Incentives for Renewable Energy www.dsireusa.org Visited March 25, 2002.
- Center for Resource Solutions 2001. “Green Pricing Accreditation Program” <http://www.resourcesolutions.org/CRSprograms/greenpricing.html> Visited April 10, 2002.
- De La Rose, Sylvia. 2001. “Business Energy Tax Credit ‘Betsy’” Database of State Incentives for Renewable Energy www.dsireusa.org Visited March 25, 2002.
- Green Power Network 2002. “Net Metering” <http://www.eren.doe.gov/greenpower/netmetering/index.shtml#state> Visited March 2002.
- Guernier, Kevin. 2002. “Alternative Fueled Vehicle Charging Station Credit” Database of State Incentives for Renewable Energy www.dsireusa.org Visited March 25, 2002.

- Kerstetter, Jim. 2000. "High Technology Product Manufacturers Exercise Tax Exemption" Database of State Incentives for Renewable Energy www.dsireusa.org Visited March 25, 2002.
- Murphy, Joe. 2001. "Geothermal, Solar, and Wind Credit" Database of State Incentives for Renewable Energy www.state.nd.us/dcs/Energy/ndwind.html Visited March 27, 2002.
- Murphy, Joe. 2001. "Large Wind Property Tax Incentive" Database of State Incentives for Renewable Energy www.state.nd.us/dcs/Energy/ndwind.html Visited March 27, 2002.
- Rewey, Christie. 2001. "State Incentives for Energy Efficiency" National Conference of State Legislators V 26, No 3 <http://www.ncsl.org/legis/SLRs/slrenergy.pdf> Visited March 28, 2002.
- Swezey, Blair and Lori Bird. 2001. "Green Power Marketing in the United States: A Status Report" National Renewable Energy Laboratory http://www.nrel.gov/analysis/ema/brief_5.html Visited April 8, 2002.
- The United States Department of Energy. 2002. "Summary of Green Pricing Programs" National Renewable Energy Laboratory <http://www.eren.doe.gov/greenpower/summary.shtml> Visited April 8, 2002.
- The United States Department of Energy. 2002. "Top Ten Utility Green Pricing Programs" Green Power Network, Energy Efficiency and Renewable Energy Network <http://www.eren.doe.gov/greenpower/topten.shtml> Visited April 8, 2002.
- Vermont Department of Public Service "Net Metering in Vermont" <http://www.state.vt.us/psd/ee/ee20.htm> Visited April 1, 2002.
- Yih-huei, Wan. 1996. "Net Metering Programs" National Renewable Energy Laboratory <http://www.eren.doe.gov/greenpower/netmetering.html>, Visited March 2002.

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