THE DATABASE OF STATE INCENTIVES FOR RENEWABLE ENERGY: LOCAL GOVERNMENT AND COMMUNITY PROGRAMS AND INCENTIVES

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ABSTRACT

This paper presents a review of local government and community programs and incentives for renewable energy as collected and catalogued by the Interstate Renewable Energy Council's (IREC) Database of State Incentives for Renewable Energy (DSIRE) project. More than 200 programs, incentives, policies, or projects have been implemented by over 100 local entities across the United States. Discussion focuses on the detailed examination of the renewable energy initiatives of 45 communities across the U.S. in the following categories: (1) community investment and awareness programs; (2) financial incentives; and (3) regulations and policies.

Established in 1995, DSIRE is an ongoing project to summarize incentives, programs, and policies for renewable energy. The project is funded by the U.S. Department of Energy's Office of Power Technologies and is managed by the North Carolina Solar Center. Through *DSIRE on Line*, the DSIRE database is accessible via the web at www.ncsc.ncsu.edu/dsire.htm.

1. INTRODUCTION

In surveys over the past two decades, Americans have consistently expressed support for renewable energy and sustainable technologies over other energy alternatives and want them institutionalized as a greater part of the nation's energy mix. Some local governments and community groups have responded to this interest by establishing innovative programs to educate, demonstrate, and promote the use of renewable energy.

In 2001, electric utility restructuring continues to dominate energy policy discussions around the United States. By the end of 2000, 25 states had passed utility restructuring legislation. With electric utility restructuring heating up to a fever pitch, the coming years will be filled with innumerable changes in laws and regulations that support renewable energy development. Local governments have critical roles to play in this transition—as educators, customers, aggregators, regulators, financiers, and partners with private enterprise. As local governments seek to utilize the most effective methods for promoting renewables, the DSIRE database can be an important tool for guiding such decisions.

The December 2000 report, entitled *Local Government and Community Programs and Incentives for Renewable Energy—National Report*, highlights incentives and programs for renewable energy that are currently being implemented in 45 communities in 23 states. Some state initiatives are also discussed because they apply locally and provide models for local governing authorities.

The project was conceived in an effort to meet the needs of (1) local government officials; (2) municipal utilities; (3) consumers and businesses; (4) renewable energy businesses; and (5) groups working to support the use of renewable energy and protect the interests of consumers. The communities showcased in this report were chosen based on the number of active programs and incentives, the level of renewable energy technology deployment, and the availability of information. It is important to note that there are many other communities across the country using renewable energy technologies and developing ways to promote these technologies.

The programs identified in the report are divided among three categories as follows:

Community Investment & Awareness Programs
- Renewable Energy Projects
- Education & Assistance
- Green Pricing Programs
- Green Power Purchasing

Financial Incentives
- Rebates, Grants, & Loans
- Tax Incentives
- Green Building Incentives
- Industrial Recruitment

Rules, Regulations, & Policies
- Solar & Wind Access
- Net Metering
- Construction & Design
- Contractor Licensing
- Equipment Certification

Table 1 provides an overview of the local and state initiatives presented in the report.

2. COMMUNITY INVESTMENT & AWARENESS

2.1 Education & Assistance

Most of the communities showcased provide some kind of education or outreach program. A major component of many community programs in the Million Solar Roofs Initiative are renewable energy awareness campaigns. These programs sponsor public events and media campaigns designed to increase awareness of locally accessible assistance programs and technical information resources. Other education and assistance programs sponsor renewable energy activities in schools, technical training workshops for contractors and other professionals, and consumer-oriented seminars. DSIRE has identified about 30 such programs.

2.2 Local Renewable Energy Projects

Local government and community-supported renewable demonstration projects designed to increase public awareness and appreciation for the various applications of the technology are very popular with local organizations, governments, and industry partners. And, some communities are going beyond demonstration projects by utilizing renewable energy for on-site or grid-connected applications such as:

- using solar water heating for community swimming pools and recreational facilities;
- employing PV-powered school crossing signals, emergency power systems, security lighting, and bus shelter lighting;
- adding renewables to the municipal utility's energy mix by constructing a wind turbine;
- installing solar energy systems on local schools;
- incorporating solar energy systems in affordable housing projects; and
- using methane gas generated at the local sewage treatment facility for electricity generation.

2.3 Green Pricing Programs

Municipalities that own their electric utility are responding to their citizens' desire for cleaner energy by adding renewable energy to their utility's energy resource mix. Most of these municipal utilities offer their customers the opportunity to support green power through *Green Pricing*. Municipal utility green pricing programs typically support either the development or expansion of local renewable resources, or purchases from non-local, utility-scale renewable energy facilities. Regardless of the current source of green power, a number of the utilities have used or will use some of the program revenue to develop additional local or regional renewable energy projects.

A similar type of program is the *Green Investment* program where utility customers pay a monthly premium to support the development of new local renewable energy resources that may not be on-line presently or demonstration projects not necessarily intended to supply power to the grid in proportion to subscribers. Green investment programs often solicit billing contributions from rate payers to fund demonstration projects or public benefit programs such as solar applications on schools or community facilities.

To date, more than 80 utilities, including investor-owned utilities, electric cooperatives, municipal utilities, and public utilities have either implemented or announced plans to offer a green pricing or investment option. Nearly 30 are municipal utility green pricing or investment programs. Most programs are open to all customer classes (residential, commercial, and industrial). With regard to renewable energy technologies employed, programs that utilize wind as a renewable energy component are most prevalent. Some are dedicated entirely to photovoltaics.

In a recent study of utility green pricing programs conducted by the National Renewable Energy Laboratory (NREL)[1], municipal utilities were well-represented on each of the four "Top Ten" lists of program characteristics and results: Total Number of Customer Participants; Customer Participation Rates; Amount of New Renewables Development Fostered by the Program; and the Premium Charged to Support New Renewables development. Nine municipal utilities[2] were ranked among the top ten on at least one list, with five of them appearing on two or more lists.

2.4 Green Power Purchasing

Municipalities and local government agencies can play a critical role in promoting renewable energy technologies by buying electricity from renewable resources. Local governments can use their buying power to provide a market for renewables just as many have done for recycled materials through city green procurement

requirements. At the very least, this can mean buying green power for municipal buildings, streetlights, water pumping stations and the like. Many local governments in California have taken this approach. And, the City of Chicago joined with 47 other local government bodies to contract for electric power—20% of which must come from renewables by 2005.

Some local governments have the authority to aggregate the electricity loads of the entire community to purchase green power, or even to join with other communities or government agencies to form an even larger green power-purchasing block. This provision in electricity restructuring laws is known as "Community Choice." Two states, Massachusetts and Ohio, allow this type of "opt-out" aggregation. That is, citizens or businesses who wish not to participate can choose their own energy supplier. The Cape Light Compact is the first Community Choice effort in Massachusetts. Many communities in Ohio are considering this option.

3. FINANCIAL INCENTIVES

3.1 Grants, Loans & Rebates

Grant, loan, and rebate programs for renewable energy installations are available from state and local governments, utilities, nonprofits, and public/private partnerships. These incentives provide funding for public, nonprofit, institutional or privately owned projects. The DSIRE project has identified nearly 20 of these programs implemented at the local level; they are implemented almost exclusively by municipal utilities.

Rebates are the most common local financial incentive type, and are available primarily for solar water heating and photovoltaic systems. Although a handful of programs began in the early 1990s as part of the utility's demand-side management program, most programs have been initiated within the past few years. The level of participation varies depending on the type of technology, electricity costs, and level of publicity.

Rebates typically range from $150 to $1,500, although Los Angeles Department of Water and Power's *Residential and Commercial Photovoltaic Buydown Incentive Program* offers a maximum of $5/watt for photovoltaic systems manufactured inside the City of Los Angeles. The maximum payment per site is $50,000 for residential and $1 million for commercial customers. In some cases, rebate programs can be combined with low or no-interest loans.

3.2 Tax Incentives

At the local level, the majority of property tax incentives generally follow a simple model that provides that the added value of the renewable energy device is not included in the valuation of the property for taxation purposes. Fifteen states[3] automatically exempt certain renewable energy devices from local property taxes, while others give local authorities the option of providing property tax exemptions. The DSIRE project has identified six states with local option provisions: Connecticut, Iowa[4], Maryland, New Hampshire, Vermont, and Virginia.

Obviously the impact of such programs will depend on the number of cities/counties that participate. In many cases, the availability of the tax incentive is not promoted. Some states do not systematically track the local governments adopting property tax exemptions, while others maintain detailed statistics. For example, the New Hampshire Department of Revenue Administration reports that there are more than 800 homeowners in nearly 60 cities and towns receiving a total property tax exemption of more than $3.3 million as a result of their property tax exemption law. On the other hand, only one Maryland county, Hartford County, offers this tax incentive.

3.3 Green Building Incentives

In recent years, a number of cities have developed Green Building programs to encourage the design and construction of buildings that are resource efficient, more durable, and healthier for their occupants. All such programs identified by the DSIRE project include an education and awareness component. The building guidelines of some programs are voluntary, while others are required under certain conditions. Renewables appear on a list of optional techniques, but are not a required component of most Green Building programs. Three such programs that offer direct financial incentives have been identified by DSIRE. Policies that may translate into increased profit for green builders, such as "top of the stack" permit reviews, are discussed in the "Rules, Regulations & Policies" section.

3.4 Industrial Recruitment

This category focuses on special efforts and programs designed to attract renewable energy manufacturers as opposed to distributors or installers. Industrial recruitment incentives may be in the form of a tax break, grant, or, in the case of Chicago's efforts to attract a photovoltaics factory, in the form of a commitment to purchase a specific amount of the product for use by local government.

4.0 RULES, REGULATIONS & POLICIES

4.1 Solar & Wind Access

Access to solar and wind resources is a critical concern for the renewable energy industry; without a guarantee of continued access to an existing resource, investment in a renewable technology is unlikely. As the Million Solar Roofs Initiative boosts personal use of solar devices, states and local partnerships are working to ensure that their codes or covenants do not restrict access to or the use of solar energy. Communities around the country use many different mechanisms to protect solar access, including explicit solar access ordinances, development guidelines, zoning ordinances, solar permits, and covenant restrictions. Fourteen of the 45 communities showcased in the DSIRE report have either a solar access ordinance, development guideline, or zoning guideline to protect solar access.

4.1.1 Easements

Easements allow for the rights to existing access to a renewable resource on the part of one property owner to be secured from an owner whose property could be developed in such a way as to restrict that resource. Solar easements are the most common type of state solar access rule. Thirty states currently have solar easement provisions.

4.1.2 Development/Zoning Guidelines

Guidelines and regulations favorable to solar access for city, neighborhood, or subdivision planning and design are being implemented at the local level. One such regulation is a requirement for proper orientation in street layout and building placement that prevents shading.

In some municipalities, a property owner may apply for a solar access permit to protect solar access to a new or existing solar energy system located on the owner's property. The permit is used to restrict the shade cast by certain types of vegetation on neighboring properties.

4.1.3 Covenant Restrictions

Unfortunately, residential developers occasionally write restrictions into neighborhood covenants that preclude the use of renewables. Twelve states have addressed the problem of private restrictions on solar system siting by enacting legislation limiting the scope of such restrictions.[5] In states without this type of statute, local governments may be able to adopt an ordinance that offers similar protection.

4.2 Net Metering & Interconnection

Most net metering and interconnection rules are set at the state level or by the utility—not at the local level. Currently, thirty states and the District of Columbia have net metering provisions. Only a handful of the municipal utilities have developed their own interconnection or net metering rules.

4.3 Contractor Licensing & Equipment Certification

Many states have rules regarding the licensing of renewable energy contractors and the certification of renewable energy equipment. In those that do not, some local governments have stepped in and created their own rules. These rules are generally seen as a tool for ensuring that equipment is installed properly and that consumers are not being sold inferior equipment. Beyond being a consumer protection measure, equipment certification benefits renewables by reducing the number of problem systems and the resulting bad publicity. Madison, Wisconsin is an example of a local government that has issued contractor licensing requirements and detailed equipment standards in the absence of state laws.

4.4 Construction & Design

Policies in this category cover the deployment of renewable energy systems. These programs play a critical role in removing the barriers of information access and technology acceptance. Though some states have policies in this category, it is the local government that plays the greatest role in establishment and implementation. Eighteen of the 45 communities in the DSIRE report have regulations, policies, or guidelines promoting renewables that are applicable to the construction or design of residential, commercial, and/or municipal buildings.

4.4.1 Building Codes & Inspections

State building codes have tended to adopt standardized building codes over the past few years. Local governments are generally responsible for enforcement of state-level codes and adoption of specific building code requirements pertaining to renewables. Adequate training of inspectors by local entities is a key measure in making renewables more accessible. An energy code is an example of a local building code provision that applies specifically to renewables. As another example, some community organizations are proposing ordinances to require new homes or homes undergoing major renovation to be pre-plumbed/pre-wired for solar energy systems.

4.4.2 Green Building Guidelines & Policies

These guidelines and policies require or encourage consideration or implementation of renewable energy for the purchase of equipment and design and construction of facilities. Many Green Building programs include renewables on a menu of sustainable options from which builders can choose. A certain number of points is required for the building to be considered "green." Incentives in some Green Building programs involve expedited permit reviews and green marketing assistance (e.g., in Santa Barbara County). These policies create an initial market, show the benefits of the technology, and increase the general acceptance of the technologies.

Some guidelines are voluntary measures for all building types, while others are requirements for municipal building projects. Boulder, Colorado is unique in that it has a mandatory Green Building requirement for residential construction.

4.4.3 Energy Management Policies

Similar to design and construction guidelines, policies mandating energy management programs at local government facilities can be a fertile market for the renewable industry. Energy management has historically been focused on efficiency, but some local governments see renewable energy generation as a tool for reducing peak demand charges as well as overall energy consumption. Cities that are developing sustainable city policies and greenhouse gas emission reduction plans often include recommendations for using renewables. Chapel Hill, North Carolina has an energy conservation ordinance requiring that renewables be considered for new town buildings and major renovations of existing buildings.

5. ACKNOWLEDGMENTS

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6. REFERENCES

(1) NREL, *Top Ten Utility Green Pricing Programs*, at http://www.eren.doe.gov/greenpower/topten.shtml
(2) Sacramento Municipal Utility District*, Los Angeles Department of Water and Power*, Eugene Water and Electric Board*, Fort Collins Utilities*, Moorhead Public Service*, Cedar Falls Utilities, City of Bowling Green Utilities, Traverse City Power & Light, Austin Energy; [* = appeared on more than one top 10 list]
(3) Illinois, Indiana, Iowa, Kansas, Minnesota, Montana, Nevada, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Texas, Wisconsin
(4) Iowa allows any city or county to assess wind energy conversion equipment at a special valuation but has an automatic property tax exemption for solar systems and methane gas conversion equipment.
(5) Zalcman, Fred, *et al.* "Overcoming Private Land Use Restrictions On Solar Energy Systems." 1999.

TABLE 1: LOCAL AND STATE PROGRAMS AND INCENTIVES FOR RENEWABLE ENERGY

				INVESTMENT & AWARENESS				FINANCIAL INCENTIVES				RULES, REGULATIONS & POLICIES				
State	**City/Community**	**MSRI Partner**	**Municipal Utility**	**Green Pricing**	**Education & Assist.**	**Green Power Purch.**	**Local Projects**	**Grant, Rebate, Loan**	**Tax Incentive**	**Green Building**	**Industrial Recruit.**	**Solar & Wind Access**	**Contractor Licensing**	**Equip. Certification**	**Net Metering**	**Construct. & Design**
AZ	Scottsdale			IOU												
AZ	Tucson			IOU												
CA	Los Angeles															
CA	Palo Alto															
CA	Sacramento															
CA	San Diego			IOU												
CA	San Jose			IOU												
CA	Santa Barbara			IOU												
CA	Santa Clara			IOU												
CA	Santa Monica			IOU												
CO	Aspen			IOU												
CO	Boulder			IOU												
CO	Denver			IOU												
CO	Fort Collins															
DC	Washington															
FL	Gainesville															
FL	Jacksonville															
FL	New Smyrna Beach															
IL	Chicago															
IA	Cedar Falls															
IA	Waverly															
MA	Cape & Vineyard															
MI	Traverse City															
MN	Moorhead															
NE	Lincoln															
NM	Albuquerque															
NY	Long Island															
NC	Chapel Hill															
NC	Greensboro															
OH	Bowling Green															
OH	Westerville															
OR	Ashland															
OR	Eugene															
OR	Portland			IOU												
PA	Philadelphia			IOU												
RI	Block Island															
TX	Austin															
TX	San Antonio															
VT	Burlington															
VA	Cape Charles															
VA	Loundon County															
WA	Olympia															
WA	Seattle															
WA	Tacoma															
WI	Madison			IOU												

Local Program State program Local and State programs Investor-owned utility IOU