THE DATABASE OF STATE INCENTIVES FOR RENEWABLE ENERGY: STATE PROGRAMS AND REGULATORY POLICIES REPORT

Henry H. Rogers II
Larry E. Shirley
E. Chris Larsen
North Carolina Solar Center
Box 7401, North Carolina State University
Raleigh, NC 27695-7401
E-mail: ncsun@ncsu.edu

ABSTRACT

The past three decades have seen the rapid development of renewable energy technologies and the concurrent evolution of financial and regulatory incentives to augment that development at the state and federal levels. In this paper, the North Carolina Solar Center reports on the current status of state regulatory incentives for renewable energy throughout the country. Discussion focuses on placing the status of state incentives into the context of the current restructuring movement, as well as how the Interstate Renewable Energy Council's *Database of State Incentives for Renewable Energy* can assist local, state, and national policy makers.

Loosely defined, regulatory incentives include system benefits charges, renewable portfolio standards, net metering rules, green pricing programs, disclosure and certification, solar access laws, integrated resource planning rules, contractor and equipment licensing rules, and line extension policies.

The Interstate Renewable Energy Council's (IREC) Database of State Incentives for Renewable Energy (DSIRE) is an ongoing project to catalogue and summarize state incentives for renewable energy. The project is funded by the U.S. Department of Energy's Office of Utility Technologies and is managed by the North Carolina Solar Center (NCSC) on behalf of IREC.

1. INTRODUCTION

Electric utility restructuring continues to dominate energy policy discussions around the United States. As 1997 came to a close, ten states had passed restructuring legislation: California, Illinois, Maine, Massachusetts, Montana, Nevada, New Hampshire, Oklahoma, Pennsylvania, and Rhode Island. Additionally, four states—Arizona, Michigan, New York, and Vermont—had passed final regulatory decisions or recommendations and sixteen others had developed pending legislation or regulatory rulings: Alabama, Colorado, Connecticut, Georgia, Idaho, Kansas, Louisiana, Maryland, Minnesota, Mississippi, Missouri, New Jersey, Oregon, Virginia, Washington, and Wisconsin. Meanwhile, nearly every other state had taken the first steps in debating the topic. Activity levels on restructuring in the states are on the rise, and Congressional action in the next two to three years threatens to mandate restructuring in all states.

For renewable energy, the stakes under restructuring are enormous. Literally, billions of dollars in support and investment in renewable energy technologies hinges upon the outcome of this debate in the states and in the national arena. In California alone, the allocation in support of renewable energy through a system benefits charge totaled $540 million over a four-year period, while energy efficiency programs will receive over $800 million. In Montana, the system benefits charge, an annual charge of 2.4% of 1995 utility revenues, could yield $50 million for renewable energy and efficiency efforts. And, in Arizona, a solar portfolio standard could result in hundreds of millions of dollars in investment in photovoltaic and solar thermal technologies as electricity generators strive to reach the required 1% of generation capacity that must be derived from new solar installations by 2002.

While investment in renewable energy will be greatly expanded in some states as a result of restructuring, other states may choose to ignore or disregard it. Already, in Pennsylvania and Oklahoma, newly passed restructuring legislation does not even mention renewable energy. With a strong push toward lower electric rates and no countervailing support for the development of renewable

energy technologies within restructuring legislation, the market for renewable energy may be very weak in these states and others who adopt this approach.

In states that are rapidly pursuing competition and in states that are not, perhaps the greatest boost to renewable energy may come from the rapid development of green power programs. In the last two years, utilities have begun to discover that there is a significant segment of their market that wants to buy its electricity from clean, renewable energy sources. Extensive polling and early pilot programs have reconfirmed this notion all across the country, from New England to Texas to California. Today, there are over 25 utility green pricing programs in place in the U.S. and many more on the drawing boards. To deliver this renewable electricity will require extensive investment in new renewable energy generating facilities, including photovoltaics, solar thermal electric, wind, geothermal, hydro and biomass technologies. Restructuring of the electricity industry opens up the market to green power suppliers and the public's appetite for such power could spur development of the technologies beyond even the level that might be attributed to system benefits charges or renewable portfolio standards.

The impact of electricity restructuring and the advent of green power are in the process of turning renewable energy policies, activity and prospects upside down and all around. The utility industry itself, the largest in the U.S. and perhaps the most stable during this century, has either completed or is engaged in over $200 billion of mergers during 1997–98. The period of guaranteed rates of return and monopoly sources of electricity is rapidly coming to a close. And, with this remarkable change will come a new era for renewable energy, complete with new sources of financing, new companies and emerging technologies, and bolstered by strong public support behind its development and deployment.

Through all of this activity, the DSIRE program is tracking policies, statutes and programs that are actually implemented in each state. Updated on a monthly basis, the DSIRE database is very current and serves as a gateway to more detailed information on policies, statutes and programs initiated as part of the restructuring tidal wave that is now rolling through our nation's countryside.

The recently printed *National Summary Report on State Policies and Regulatory Programs for Renewable Energy*, second in DSIRE's series of reports on state mechanisms used to support renewable energy, focuses on those state programs that might broadly be classified as regulatory programs. Because the report is written in the context of electric utility restructuring, it's structure reflects the degree of impact that the restructuring process will have on each incentive type. The body of the report is divided into three sections:
(1) programs that are *driven* by electric utility restructuring;
(2) programs that are *directly* impacted by restructuring;
(3) programs that are only *indirectly* impacted by restructuring.

These three sections are then broken down into eleven subsections based on incentive type. These include: (1) system benefits charges; (2) renewable portfolio standards and set asides; (3) green pricing; (4) disclosure and certification; (5) net metering; (6) line extension policies; (7) integrated resource planning (IRP) mandates that incorporate renewables; (8) state research and outreach programs; (9) contractor licensing and equipment certification rules; (10) state renewable construction projects; and (11) solar and wind access laws.

The focus of the subsections are the summaries of all current state programs with these incentives. The specific criteria used in selecting the programs is identified and care was taken to include only those programs that are currently in place. In total, 126 individual programs are identified in the report. A summary of the survey results is given in Table 1. Excluding green pricing programs, there are 100 programs in thirty-six states. These programs are evenly spread among the states with the majority of states having four or fewer programs.

2. PROGRAMS DRIVEN BY RESTRUCTURING

The programs driven by restructuring are grouped under system benefits charges (SBC), renewable portfolio standards (RPS), set asides, green pricing programs, and disclosure and certification rules. Each of these incentive types will proliferate as a direct result of electric utility restructuring. With the exception of green pricing programs and a handful of renewables portfolio standards and set asides, we probably would not see the use of many of these mechanisms except for the coming of restructuring.

System benefits charges and renewable portfolio standards are seen as the two primary legislated mechanisms for promoting renewables in the restructured electric model. Of the ten states that have passed restructuring legislation with a RPS or SBC, three have established renewable portfolio standards and five have created system benefits charges to support renewables. It is not clear which of these two mechanisms will win out in the remaining states that want to support renewables in their restructuring legislation, but it is clear that the RPS and SBC will be central in all debates over how to best support renewables in the transition to a restructured electric market.

2.1 Renewable Portfolio Standard and Set Asides

Renewable energy portfolio standards (RPS) and set asides are similar types of regulations. RPS's are public utility commission requirements that a certain percentage of a utilities generating capacity be from renewable energy sources. Set asides, on the other hand, typically require that either a

percentage or a fixed amount of a utility's or state's *newly* installed capacity must be from renewable energy sources. There are only four RPS's—Arizona, Maine, Massachusetts and Nevada—and two set asides programs—Minnesota and Iowa—identified in the DSIRE report because only a handful of states have moved ahead with restructuring legislation.

2.2 System Benefits Charges

System Benefits Charges (SBC) generally refer to charges levied on generation or distribution companies or their customers for use of the transmission or distribution system. These charges are considered the most equitable way to fund public interest programs and goals that might be "stranded" in a restructured electric industry. Only five SBC programs for renewables are cataloged in DSIRE because, as with RPS, only a handful of states have moved ahead with restructuring legislation. These states are California, Illinois, Massachusetts, Montana, and Rhode Island. This number is expected to grow quickly as more states restructure their electric utility industries.

2.3 Green Pricing Programs

Green pricing programs allow consumers to pay a premium above the utility's standard rates for electricity generated in part or in whole from renewable energy resources. By definition, green pricing programs are not regulatory programs since they are usually voluntarily established by the utilities. We have included them the *National Summary Report on State Programs and Regulatory Policies* report because of the considerable public interest they have sparked in light of their expected proliferation in a competitive market. Though there are numerous green pricing programs in place in states that have shown little action in restructuring, we have grouped them under programs driven by restructuring because, as was demonstrated in retail pilot programs in Massachusetts and New Hampshire, green pricing will command a large audience in the residential and small commercial sectors when competition is introduced. Other utility-initiated programs will be surveyed and reported on in the third report in this series, entitled *National Summary Report on Utility Programs and Incentives for Renewable Energy*, scheduled for publication in late 1998.

Among all of the programs discussed in this report, green pricing programs have shown the most growth in numbers over the last two years and are expected to continue growing at a rapid rate in the future. Survey after survey, as well as the retail competition pilot programs have demonstrated the enormous consumer demand for green power in the competitive market. While most of the twenty-six green pricing programs identified target residential customers, a handful of utilities have begun marketing their green power sources to commercial customers.

2.4 Disclosure and Certification

Disclosure of fuel mixes to retail consumers and certification of green energy resources and providers is growing as a consumer information and protection issue in the retail competition debate between generation providers. So far, eight of the ten states that have passed restructuring legislation have included language supporting disclosure of information that will help consumers choose power generators: California, Illinois, Maine, Massachusetts, Montana, Nevada, New Hampshire and Pennsylvania; however, only Illinois and Massachusetts have specified that power generators must reveal their fuel mix or emissions information. In most of these states, specific rules will be established by the public utility commissions although, as of this date, none have been completed. Some utilities are voluntarily disclosing their "green" fuel mix.

Certification refers to the labeling of those providers whose "green" resources have been verified by an oversight board or committee. Just as the Massachusetts and New Hampshire retail competition pilot programs showed the strong consumer demand for electricity from renewable resources, these pilots showed the need to safeguard against fraudulent claims of "green" power. Restructuring is not necessarily a prerequisite to certification rules; however, there is little discussion of certification rules in states that are not considering restructuring in the near term. To date, California is the only state that has established a green labeling program. This voluntary program was established in anticipation of a spring 1998 start date for retail competition in California.

3. PROGRAMS DIRECTLY IMPACTED BY RESTRUCTURING

Programs in this category include net metering, line extension policies, and integrated resource planning mandates. Unlike those programs in the first grouping, these programs have been established and used under the regulated model and will likely see changes as a result of the shift to restructuring.

3.1 Net Metering

Net metering allows for the installation of a single meter that monitors electricity flowing to and from the utility. The advantage to the customer-generator is that at times when the customer's generation exceeds their use, flows from the customer to the utility offset any consumption of electricity from the utility. Twenty-one states have net metering rules or laws in place. Six of these states have legislative mandates, while the remaining fifteen initiated net metering through public utility commission rulings.

Since net metering is inherently a regulatory incentive, it remains unclear how it will be handled by those states that are making the shift to competition. It appears that net metering rules in states with legislative mandates stand the greatest chance of remaining largely unchanged. It is also worth noting that one of the suggested criteria for states to fully participate in the Million Solar Roofs Initiative is that net metering rules be in place. This stands to be a potential driving force for the establishment of net metering rules in those states that do not already have them.

Because generation and distribution services will most likely be unbundled, it is clear that net metering rules will have to be updated in most states that pursue restructuring. Since the majority of net metering discussion centers around interconnection with the utility grid, distribution companies will be the primary players in these issues.

3.2 Line Extension Policies

Four states require that when an electric power line extension is requested, information on renewable energy alternatives be provided. Line extension policies listed in the report consist of those that support the use of off-grid renewables when cost-effective (usually photovoltaics or wind) to avoid line extension. In those states that have such policies—Arizona, Colorado, New Mexico and Texas—they are mandated by regulatory utility commissions. Two states—Arizona and Texas—require utilities to perform a full cost-benefit analysis.

There are no state programs, however, specifically designed to help finance renewable energy alternatives to line extension. Such financing programs are offered by a handful of utilities. States with line extension rules report that these rules have not had a large impact on the use of renewables. In the restructured model, regulated distribution companies may still be required to provide their remote customers with information on alternatives to line extension.

3.3 Integrated Resource Planning: Externalities and DSM Mandates

Integrated Resource Planning (IRP) is a public planning process and framework within which the costs and benefits of both demand and supply side resources are evaluated to develop the least cost mix of utility resource options. At least thirty-eight states require their investor-owned utilities to submit Integrated Resource Plans (IRPs) on a regular basis and, of these, at least twenty-eight states require that environmental externalities be quantified and included as part of IRP submissions. In this arena, DSIRE identified: (1) demand side management (DSM) programs that incorporate renewables, and (2) rules that require the incorporation of externality calculations in resource planning decisions. Three DSM programs are identified in the DSIRE report: Florida, Indiana and Wisconsin.

Because public utility commissions will no longer have oversight authority over resource decisions of power generators following restructuring, IRP will become a less common means of promoting renewables. How states will go about maintaining DSM programs and recognizing externalities in generator decision making is uncertain.

4. PROGRAMS INDIRECTLY IMPACTED BY RESTRUCTURING

Programs in this category include state funded renewable energy research and outreach programs, solar contractor licensing and equipment certification, state construction projects incorporating renewable energy, and solar and wind access laws. These programs will probably not be as directly impacted by restructuring primarily because these programs tend to be legislative in nature. However, they will likely see an increase in utilization due to an overall increase in demand for renewable energy.

4.1 State Research and Outreach Programs

DSIRE identified seven state funded research and outreach programs that support renewable energy: California, Florida, Iowa, Kansas, New York, North Carolina and Washington. The common denominator is that these organizations have a strong focus on renewable energy development and are directly funded either by the state or by electric and gas utilities.

4.2 Solar Contractor Licensing and Equipment Certification

Thirteen states have solar-specific rules in place for solar contractor licenses while fifteen other states require that solar contractors have a plumbing, electrical or other relevant license. Five states have some form of solar contractor training programs and, in all cases, these are voluntary. Twelve states have solar equipment certification requirements. In many cases, solar equipment certification requirements are linked to other state incentives such as tax credits or loan programs. Solar contractor licensing and equipment certification rules will only change as a result of restructuring if it should spur a strong demand for renewables and, hence, expanded quality control rules.

4.3 State Construction Policies

State construction mandates for the use of renewable energy typically require that state agencies assess the costs and benefits of incorporating passive solar design or renewable energy systems when planning state buildings and facilities. Seven states have some form of policy: Arizona, Colorado, Florida, Hawaii, Maryland, Minnesota and Texas. While three states mandate life-cycle costing—Arizona, Florida and Maryland—such requirements have not led to large increases

in the use of renewable energy systems; however, many agencies are not aware of the state requirements. Only one state—Hawaii—actually requires the use of solar water heaters in its public housing projects.

4.4 Solar and Wind Access Laws

The most common forms of solar access laws used throughout the U.S. are solar easements, covenant restrictions, local zoning authority rules, and the granting of solar permits by a governing board. Of the fifty states, thirty-three have either explicit solar access provisions or allow the creation of solar easements, the most common provision identified. Fourteen states have gone beyond simple solar easements and developed provisions for the preservation of solar or wind access. Five states allow for the creation of easements for wind energy devices. Solar and wind access laws are either legislated at the state level or are created by localities.

5. DSIRE PROJECT OVERVIEW

The National Database of State Incentives for Renewable Energy (DSIRE) is an ongoing project of the Interstate Renewable Energy Council (IREC), and is managed by the North Carolina Solar Center with funding from the U.S. Department of Energy's Office of Utility Technologies. In late 1995, the U.S. Department of Energy initiated a program through IREC to survey each of the states for available information on financial and regulatory incentives designed to promote the application of renewable energy technologies. This program developed into the DSIRE project.

This database serves as the nation's most complete source of information on the status of financial incentives and regulatory policies for renewable energy that are provided by state governments. Information in DSIRE reports is organized to meet the needs of renewable energy industries, government agencies, state legislatures, energy and environmental public interest groups, consumer advocacy groups, regulatory agencies, and utility companies. The first two phases of the DSIRE project—surveys of state financial incentives and state programs and regulatory policies—are complete. The third phase of the project, utility programs and incentives that promote renewable energy, is now underway.

The primary method for identifying both financial and regulatory programs were surveys of state agencies, regulatory agencies and others who are familiar with renewable energy programs and policies in their respective states. Once an incentive was identified through the survey, the N.C. Solar Center collected relevant documents including statutes, rulings and decisions, legislation, fact sheets, reports and other information describing the incentive program.

Extensive follow-up telephone contact was necessary with many of the key audiences, including state energy offices and utility commissions. The DSIRE project also performed electronic searches of several on-line sources and internet web sites operated by trade, industry, nonprofit organizations, federal government and many others. Any program that was identified through these sources was verified with the help of a state contact or through a state's on-line statutes via the world wide web. Searches were also made of appropriate literature sources.

The collected information from the state regulatory survey is compiled in reports that summarize the incentives on a state-by-state basis. All of the incentives are indexed by incentive type, state, and applicable renewable energy technology. Agencies and contact persons responsible for overseeing the incentive are identified. In addition, the mechanics of each financing tool are described. Only those incentives that are currently on the books are catalogued, as opposed to pending legislation or regulations.

The first DSIRE report, the *National Summary Report on State Financial Incentives for Renewable Energy*, addressed state level financial incentives including: industrial recruitment programs; technology and demonstration project grants; special loan programs; corporate franchise and income tax credits, exemptions and deductions; personal income tax credits and deductions; property tax exemptions; and sales tax exemptions and rebates.

The second DSIRE report, the *National Summary Report on State Programs and Regulatory Policies for Renewable Energy*, is described in the sections above and is summarized in Table 1.

The third DSIRE report, the *National Summary Report on Utility Programs and Incentives for Renewable Energy*, will look at utility programs and incentives that promote renewable energy (e.g. special rate structures, leasing and rebate programs, etc.) and will be released in 1998.

In addition to the reports, access to much of the database—both financial and regulatory—is available as a database application written in Microsoft Access 2.0 and via the DSIRE project's internet website: www.ncsc.ncsu.edu/dsire.htm.

TABLE 1. CHART OF REGULATORY INCENTIVES BY STATE.

STATE	Restructuring Driven				Directly Impacted			Indirectly Impacted					
* = passed restructuring legislation	RPS or Set Asides(*)	System Benefits	Green Pricing	Disclosure & Certification	Net Metering	Line Extension	IRP Mandates	Research & Outreach	Contractor Licensing	Equipment Certification	Training	State Construction	Solar Access
Alabama													
Alaska													
Arizona													
Arkansas													
California*			2										
Colorado			6										
Connecticut													
D.C.													
Delaware													
Florida			4										
Georgia													
Hawaii													
Idaho													
Illinois*													
Indiana													
Iowa	*												
Kansas													
Kentucky													
Louisiana													
Maine*													
Maryland													
Massachusetts*													
Michigan			2										
Minnesota	*		2										
Mississippi													
Missouri													
Montana*													
Nebraska													
Nevada*													
New Hampshire*													
New Jersey													
New Mexico													
New York													
North Carolina													
North Dakota													
Ohio													
Oklahoma*													
Oregon													
Pennsylvania*													
Rhode Island*													
South Carolina													
South Dakota													
Tennessee													
Texas			3										
Utah													
Vermont													
Virginia													
Washington													
West Virginia													
Wisconsin			3										
Wyoming													
Totals	6	5	26	8	21	4	3	7	13	12	6	7	14