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# **STATE ENERGY-BASED ECONOMIC DEVELOPMENT POLICIES AND EXAMPLES: A RESEARCH NOTE**

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## **Abstract**

States have adopted various policies and initiatives to develop and/or expand their energy industries, many of which have been driven by economic development purposes rather than specific energy or environmental concerns. Of the many reasons why states have considered explicit energy policies, the direct economic benefits of stimulating the economy, creating jobs, and increasing revenues, have often been at the forefront of policy decision making. This research note reviews existing policies targeted at developing the energy industry and presents two typologies of state-level energy policies. The first typology offers an organizing framework for categorizing such policies by energy source (existing versus new) and energy approach (production versus consumption). The second typology categorizes policies by regulatory approach (regulation versus incentives) and target audience (producers versus consumers). Different policy options are described and used to illustrate the different types of policies according to the two typologies.

**Keywords: energy policy, renewable energy, energy-based economic development, tax incentives, energy efficiency**

## **Introduction**

In the U.S., the past twenty to thirty years have seen an increase in federal and state energy policies to encourage the commercial deployment of advanced energy supply technologies to enhance fuel diversity and energy security, and to mitigate the human footprint and climate change, while at the same time sustaining the efficient utilization of energy resources. The majority of energy issues traditionally have been addressed not at the federal level, but at the state level (Hopkins, 2003), primarily because states have greater discretion and/or authority over utilities, transportation, taxation, and other policy areas affecting the energy sector. States may also be in a better position to address the energy issues that are unique to their region and climate (Morris & Qiao, 2012). There have been two primary forces behind the states' energy policy agenda: (1) environmental concerns surrounding the production and consumption of non-renewable energy sources, and (2) the link between energy production and consumption and state economic development. State policymakers have focused on a two-part strategy involving energy diversification and energy efficiency (Taylor, 2006).

Environmental concerns behind energy policies include emissions and pollution produced by traditional energy generation and consumption, and the lack of sustainability of current energy sources. In response, state governments have turned to clean energy policies. These policies often revolve around encouraging the development and use of renewable, alternative, or green energy technologies; attracting new and innovative businesses producing or using such technologies; and supporting the continued growth of the economy by ensuring affordable and reliable energy supply. The scope of this research note is energy-based economic development policies undertaken by states that focus on renewable, alternative, or green technologies, and the innovative use or technological advancement of existing energy resources. (1) The intent of this

research note is to provide a framework for organizing the many different energy policies that states have adopted under their economic development umbrella.

For many states, money spent on energy resources leaves the state, going to outside utilities or energy suppliers. When such dollars are spent on importing energy, they are no longer available to foster in-state economic activity. Because energy purchases account for a large amount of personal and business expenditures, these funds represent a substantial loss in terms of income and jobs that could instead have been used to strengthen the state economy. Developing or diversifying the state's energy industry by focusing on new energy resources or enhancing existing energy resources can result in more energy dollars being spent in the local economy, helping to generate local revenue (Hopkins, 2003).

When considering the environmental and economic potential that increased energy diversification and development hold for a state, policymakers need to be aware of the tools and options available to them to craft effective strategy. While environmental concerns do contribute to policy decision making in the energy arena, economic factors are often at the forefront of policy discussion. Energy policy and related initiatives have often been adopted as part of a state's economic development strategy, rather than as environmental initiatives.

There are several reasons why states have considered explicit energy policies. Given the current economic crisis, lower business investment, high unemployment rates, and the mounting evidence regarding climate change, many states are considering policies that can address these problems. Energy policies have the potential to stimulate the economy and create jobs, increase state tax revenue bases, allow states to better control energy costs for consumers and businesses, reduce consumption of foreign oil, and enhance domestic energy security. Of these, the direct

economic incentives of stimulating the economy, creating jobs, and increasing revenues, have helped fuel states' interest in the energy sector.

### **Typologies of Energy Policies: Two Organizing Frameworks**

This research note proposes two typologies as organizing frameworks for categorizing the different energy policies. Typology X and Typology Y are both four-cell typologies that categorize policies by energy approach (production versus consumption) and energy source (existing versus new) for Typology X, and by regulatory approach (regulation versus incentives) and target audience (producers versus consumers) for Typology Y.

#### **Typology X**

Typology X (summarized in Figure 1) proposes four categories of energy-based economic development policies. They are:

Type A – Policies targeted at enhancing energy production using native resources or homegrown technologies

Type B – Policies targeted at encouraging the development of new renewable, alternative, or green energy sources

Type C – Policies targeted at reducing energy consumption by emphasizing energy efficiency and conservation

Type D – Policies targeted at encouraging the adoption and use of renewable, alternative, or green energy sources

[Figure 1 about here]

Type A policies are focused on encouraging the use of native resources or homegrown technologies to enhance energy generation or production. For many American states, given their energy resources, these policies involve enhancing the use of existing coal, natural gas, or petroleum resources. These states can further capitalize on their energy assets by encouraging the development of such resources beyond their current uses. Type B policies revolve around enhancing, through research and development or through capital investment, the capacity to produce clean energy. Clean energy sources typically include renewable, alternative and green energy sources, which are often energy efficient, have low emissions of greenhouse gases and other air pollutants, and in some instances use renewable energy resources or employ alternative methods of energy generation. Type C policies focus on addressing the broader issue of energy dependence by reducing consumption. This strategy supports economic development by reducing the amount of money spent on energy. Finally, Type D policies complement Type B policies by focusing on the adoption and use of the clean energy produced.

### **Typology Y**

Figure 2 summarizes Typology Y which, in contrast to Typology X, organizes energy policies by whether the policy utilizes regulatory tools or incentives. According to this typology, there are four categories of energy-based economic development policies. They are:

Type I – Policies targeted at encouraging the development or production of new renewable, alternative, or green energy using business or industrial incentives

Type II – Policies targeted at encouraging the development or production of new renewable, alternative, or green energy sources through government regulation

Type III – Policies targeted at encouraging the adoption and use of renewable, alternative, or green energy sources using incentives

Type IV – Policies targeted at encouraging the adoption and use of renewable, alternative, or green energy sources through regulation

[Figure 2 about here]

Type I policies are aimed at encouraging energy producers to focus on developing clean energy sources through incentives. Such incentives are often financial in nature; for example, a state may offer tax breaks to companies that invest in research and development in a specific energy technology. In contrast, Type II policies encourage the production of clean energy through regulations, such as by setting standards or goals for renewable energy production. Policies in Types III and IV are primarily concerned with encouraging consumers (individuals, businesses, and government agencies) to use renewable, alternative, or green energy sources. Type III policies seek to achieve these goals through providing incentives to consumers, while Type IV policies use government regulatory tools. The next sections review several energy-based economic development policy options and discuss how they fit within the two typologies.

### **Coal Gasification Incentives**

Policymakers in several states with coal deposits have turned to gasification as a solution for using coal to produce cleaner and more efficient sources of electricity, natural gas alternatives, liquid fuels and other chemicals, and hydrogen-powered fuel cells. Several states have utilized incentives to encourage the development of coal gasification facilities, including tax incentives, financing incentives, commercialization- or development incentives, and cost recovery incentives. These policies fall under the category of Type A and Type I policies.

Tax-based incentives include a variety of exemptions or credits tied to different taxes. The Indiana coal gasification investment tax credit provides tax liability credits for qualified investments in an integrated gasification combined cycle (IGCC) power plant equivalent to 10% of the project cost for the first \$500 million and 5% of the remaining cost above \$500 million. Illinois' "Opportunity Returns" program provides incentives for coal gasification activities including up to \$200 million in bond funds for new gasification facilities. The "High Impact Business" program provides tax incentives (credits on or exemptions to the sales and use tax, income tax, retailers' occupation tax, and electricity excise tax) for gasification-related activities and the creation of jobs related to these activities (Illinois Department of Commerce and Economic Opportunity, 2010).

Financing-based incentives address the critical issue of intensive, up-front capital requirements for many energy projects. These incentives include loan and grant programs targeted at lowering the high initial capital outlays associated with energy- or power-related investments. For example, the Pennsylvania Economic Development Financing Authority and the Pennsylvania Energy Development Authority provide priority funding for advanced coal gasification projects, in addition to low-interest loans for IGCC projects.

Development-based incentives are typically used in association with state energy initiatives that emphasize supporting technology development. Colorado's New Energy Technologies legislation provides financial assistance for project engineering and development activities. Minnesota provides, through the state Renewable Development Account, a grant of up to \$2 million a year for five years for development and engineering activities associated with IGCC projects.

Cost recovery incentives, such as those offered by the state of Colorado, make certain projects or investments eligible for cost recovery of project expenditures during construction, start-up, and implementation phases. In Indiana, clean coal and energy projects are eligible for cost recovery for construction, repowering, expansion, operation and/or maintenance.

### **Renewable Energy Production Incentives**

Many states have introduced policies, particularly those involving financial incentives, targeted at encouraging investment in alternative energy generation and renewable energy technology. These policies fall under Type B and Type I categories.

For illustration purposes, consider policies targeted at the renewable energy sector. There are many different financial incentives available to states to directly encourage the development of renewable energy technology and generation. Most of these financial incentives are targeted at lowering the high initial capital outlays associated with renewable energy investments. Table 1 summarizes how the states have used different financial incentives such as production incentives, industrial recruitment incentives, grants, and loans to encourage industrial and commercial application of renewable energy technologies.

[Table 1 about here]

Production incentives can take the form of tax credits or cash rebates. These can be used to reward the generation of renewable, alternative, or green electricity. Twenty-seven states employ this incentive at the state-wide level. In the tax credit form, state incentives usually involve a 1 cent to 1.5 cents credit per kWh of energy produced (Hopkins, 2003). Rebates or cash payments incentives, on the other hand, are typically provided on a dollar-per-kWh basis. These types of incentives can be a more effective mechanism for ensuring that quality renewable

energy projects are being pursued, as the incentives reward ongoing performance rather than subsidizing one-time capital investments.

Loan and grant programs, on the other hand, offer financing for the purchase of specific renewable energy equipment. These are intended to encourage the development of different renewable energy technologies. While most states offer support for a broad range of renewable energy equipment and technologies, some states focus on promoting one particular type of renewable energy such as wind technology or alternative fuels.

Industrial recruitment/support incentives listed in Table 1 include financial incentives to recruit or cultivate the production, manufacturing and development of renewable energy and associated systems and equipment. These incentives commonly take the form of tax credits, tax exemptions and grants. Most of these incentives apply to renewable energy technologies broadly defined, but a few states target specific technologies, such as wind or solar. These incentives are generally designed to attract industries that will benefit the economy and create jobs. In most cases, the incentives are temporary measures that will help support the industries in their early years but they can also include sunset provisions to encourage the industries to become self-sufficient within a specified number of years.

Oregon offers the Business Energy Tax Credit to companies that invest in renewable energy development. Businesses that manufacture renewable energy equipment may be eligible for a tax credit of “50 percent of eligible costs, up to a maximum of \$40 million in eligible costs” (Oregon Department of Energy, 2008). Through this tax credit, the state has been able to encourage the development of wave power technology. The Iowa Power Fund is a state program that encourages renewable energy development by providing financing for approved projects, which then receive matching funds from private investors or the federal government. In addition

to helping the state achieve its energy independence goals, projects must provide job creation, work to establish public-private partnerships, and have external financial support (Iowa Office of Energy Independence, 2010). In Montana, the legislature passed the “Clean and Green” property tax incentives, which apply to a number of various energy facilities and equipment. Companies that invest in renewable energy research and development equipment can receive tax abatements for up to \$1 million of the equipment value. Other equipment and facilities that meet certain qualifications are eligible for a 3% tax rate, which is lower than the standard tax rate. Renewable energy manufacturing facilities may also qualify for the “Clean and Green” incentives (Montana Department of Environmental Quality, 2009).

### **Long-term Supply/Purchase Contracts**

State policymakers have used their regulatory powers to spur energy development, for example by allowing long-term purchase contracts for gasification products and other renewable energy. Illinois’ Senate Bill 90 permits gas utilities to enter into long-term supply contracts with any plant that uses IGCC to produce natural gas, resulting in the price for IGCC-produced natural gas being fixed between 18% and 30% lower than that of conventional natural gas. Pennsylvania, Minnesota, and Indiana are other states that allow similar long-term purchase or supply contracts at favorable prices, rates, or tariffs. Such incentives for enhancing energy production fall under policy Type A or Type B, depending on the type of energy source. Under Typology Y, these policies can be classified as Type II policies as they involve the loosening of regulations regarding energy purchases by allowing longer-term contracts and therefore encourage production of clean energy.

### **Incentives for Adoption and Use of Renewable, Alternative, or Green Energy Sources**

There are a number of incentives that states can use to promote renewable energy use by consumers (individuals and corporations). These policies can be categorized as Type D and Type III. Table 2 summarizes how states have used tax incentives and rebates to encourage consumers to adopt renewable, alternative, and green energy sources. Personal tax incentives typically include deductions and income tax credits. These are intended to make the purchase of renewable energy and energy efficiency systems and equipment more affordable. Property tax incentives also include tax credits, abatements, exclusions, and exemptions. North Carolina uses personal tax credits to induce businesses and individuals to install renewable energy technologies in commercial and residential buildings. Eligible technologies include solar, photovoltaics, landfill gas, geothermal heat pumps, and ethanol, methanol, biodiesel, and geothermal direct-use. The program “offers a tax credit equal to 35% of the cost of eligible renewable energy property constructed” (Database of State Incentives for Renewables and Efficiency, 2010).

[Table 2 about here]

States use sales tax incentives to encourage the purchase of renewable energy systems and energy efficient appliances and equipment by providing exemptions from or refunds of the sales tax. Many states without permanent sales tax exemptions now have “sales tax holidays,” where consumers are given a short period of time during which they can purchase renewable energy and energy efficiency products without having to pay the sales tax.

In some states, corporations that construct green buildings or install renewable energy systems in existing buildings are eligible for a variety of incentives including tax credits, deductions, and exemptions. Some states connect the incentive to the amount of energy produced

by a facility while others require the corporation to invest a minimum amount on an approved project.

Forty-seven states use rebates to promote the installation of renewable energy systems, especially solar water heating and/or photovoltaic systems (Database of State Incentives for Renewables and Efficiency, 2010). New Jersey's Renewable Energy Incentive Program helps to reduce the cost of installation of renewable energy systems for consumers. A variety of incentives are offered depending on technology, building type and system size. One incentive offered by the program is solar renewable energy certificates (SREC). Solar project owners can offset installation costs by earning an SREC for every 1,000kWh of electricity generated. Consumers can earn rebates of up to \$3.20 per kWh produced by wind systems and up to \$5.00 per watt for biopower systems (New Jersey Office of Clean Energy, 2010).

### **Renewable Portfolio Standards and Other Regulatory Policies**

In addition to incentives, states have used their regulatory powers to encourage energy development. Table 3 summarizes some of the different approaches that use the regulatory approach, including renewable portfolio standards (RPS), mandatory utility green power options, and energy standards for public buildings.

[Table 3 about here]

RPS is a regulatory policy tool commonly used by states to encourage the use of renewable and alternative energy sources. It requires that more energy be produced from renewable sources, such as wind and solar power, and specifies that utility companies use renewable energy to account for a certain percentage of their electricity sales or a certain amount of generating capacity. These fall under policy Type II and Type D. Pennsylvania's RPS

program requires utility and retail energy suppliers to supply 18% of their energy from renewable sources (e.g. solar thermal, wind, geothermal, biomass) by 2020 (Database of State Incentives for Renewables and Efficiency, 2010). In addition to RPS, states have implemented mandatory utility green power options, which require utility companies to offer their customers the option of buying electricity generated from clean resources. The purpose of RPS is to encourage the development and use of renewable energy sources, create jobs, and increase domestic energy production (Taylor 2006).

States have also used government regulation to impose energy standards for state buildings and require new government buildings to meet strict energy standards. These standards are often dictated by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. LEED has been used by businesses and governments nationwide as a benchmark for the development and use of green buildings (U.S. Green Building Council, 2010) and is a popular tool among states wishing to promote energy efficiency. Policy examples include establishing green building standards, energy-reduction goals, equipment-procurement requirements, and/or the use of on-site renewable energy. These policies are examples of Type IV policies. Policies focusing on reducing energy consumption are Type C policies and policies focusing on use of renewable energy are Type D policies.

In 2007 Massachusetts passed Executive Order 484—Leading by Example: Clean Energy and Efficient Buildings. The legislation sets specific energy targets for state facilities. By 2012, Massachusetts agencies are expected to meet the goals of 25% reduction in greenhouse gas emissions, 20% reduction in energy use per square foot, and 15% of energy consumption attained from renewable sources. All newly constructed state buildings and major renovations on state buildings larger than 20,000 square feet must meet MassLEED Plus standards

(Massachusetts Division of Capital Asset Management, 2010). New Mexico's "Lead by Example" program calls for a 20% reduction in energy used to heat and cool state buildings by 2015, a 20% reduction in the amount of vehicle fuel used for employee transport by 2015, and reducing the per capita energy consumption of the general population 10% by 2012 and 20% by 2020 (New Mexico General Services Department, 2010).

### **Incentives for Energy Efficiency and Conservation**

Many states are incentivizing consumers to conserve energy and become more energy efficient (Type C and Type III policies). Most of these strategies involve providing tax incentives to consumers who purchase energy efficient equipment (see Table 4).

[Table 4 about here]

States offer rebates, grants, and loans to encourage energy efficiency and conservation. They are primarily available to commercial, industrial, educational and/or governmental consumers, but are also available to individual citizens. Most grant programs are designed to help pay the cost of eligible energy efficiency or conservation equipment and loan programs provide financing for the purchase of energy efficiency equipment.

An example is Wyoming's Energy Audit Program that provides matching grants to qualified small businesses to cover the cost of energy audits. These energy audits are designed to quantify energy use and losses through analysis of equipment, systems, and operational characteristics; calculate efficiency and energy and costs savings of suggested improvements; and perform economic analysis of recommended conservation measures. The state also offers low-interest loans to income-qualified homeowners to pay for energy efficient home retrofits including furnace replacement, programmable thermostats, caulking and weather stripping.

States are also using tax incentives to encourage the purchase of energy efficient equipment. For example, Kentucky offers a 30% income tax credit for installation of energy efficiency systems (e.g. interior lighting, hot water, and heating, ventilation and air conditioning systems). This tax credit applies to efficiency improvements made to residences and commercial properties, and can be claimed against individual or corporate income taxes. The state is also focused on improving energy efficiency of its manufacturing sector. Its Incentives for Energy Independence Act includes sales tax exemptions for the purchase of energy efficient manufacturing machinery and equipment that reduce consumption of energy or energy-producing fuels in the manufacturing process.

### **Conclusion**

States have pursued energy policies for various reasons, many of which go beyond environmental and energy security concerns to include economic development purposes. Several types of policy options provide economic development-related opportunities through expanding and encouraging development of new and existing energy resources, in addition to diversifying the energy sector. Other policies focus on increasing energy efficiency and managing energy costs for businesses, citizens, and government agencies. These policies can be achieved either using incentives or regulation and can be targeted at consumers and producers. Many states have used a combination of these policy options as part of their overall economic development strategy, hoping to both expand and diversify their economies by developing and nurturing their energy industries. However, there is no single silver bullet policy solution. Each state must consider its unique circumstances and available resources to enact effective economic development-related energy policies.

This research note introduced two typologies useful for organizing energy policies that have been adopted or are being considered for adoption by the states. Note that these typologies are not exhaustive of all energy policies. For example, one popular method of coal extraction is mountaintop mining. While this is certainly one way to obtain access to an existing energy source (Type A), it does not fit with the spirit of that policy type, nor is it appropriate given the focus of this research note which is on renewable, alternative, or green technologies, and the innovative use or technological advancement of existing energy resources. Moreover, as some of the examples indicate, these policy types are not mutually exclusive. States can adopt policies that encourage both the production and adoption of renewable energy sources, or that promote the adoption of new energy sources and the conservation of existing ones. Other combinations are also possible.

While these policies are often thought to generate economic development, they are not without risks. Given the preponderance of policies that rely on incentives, an important issue is whether incentives actually contribute to economic development. Some research suggests that incentives are costly and do little to stimulate job creation (Bartik, 1995; Gabe & Kraybill, 2002; Ihlanfeldt & Sjoquist 2001). Incentives have been described as unnecessary gifts or welfare grants to private firms (Harrison & Kanter 1978; Walton 1982). Businesses may overestimate the number of jobs they created as a result of receiving incentives from the government in order to justify the need for such incentives (Gabe & Kraybill, 2002). The risk also exists that a business to which the government provides various incentives will fail, thus wasting the incentive money (Bartik, 1995). In terms of the effectiveness of the more popular tax incentives, research has uncovered contradictory findings, and some have concluded that their effects are neither good nor bad (Buss, 2001). It can also be difficult to determine whether the tax incentive

is the driving force behind an individual's or business' decision to adopt clean energy practices. For example, Morris and Qiao (2012) point to research that suggests energy credits that go towards income taxes tend to bring the most benefit to higher-income households that would have adopted energy efficient equipment and appliances anyway.

Like most other economic development policies, energy-based policies have fiscal implications and costs to the state. With direct financing of energy development activity, money spent on these incentives is money not spent elsewhere. As Barnekov and Rich (1989) argue, incentives drain resources from other types of community needs. For example, if a state chooses to devote significant resources to provide grants or loans for renewable energy projects, it may have less money to spend in other areas. Tax incentives, while not directly requiring the state to spend resources, result in tax expenditures or foregone tax revenues. They also tend to generate administrative costs, and it can be difficult to determine whether the benefits from the incentive offset those costs (Morris & Qiao, 2012). Property tax incentives, which are popular for energy-related economic development, can be challenging because these taxes are usually the main revenue source for local functions and school districts (Sweeney, 2004), and can therefore have intergovernmental fiscal implications.

Furthermore, Dewar (1998) argues that incentives are unlikely to succeed because success may lead to politically unpopular decisions. Likewise, policies that are politically attractive to elected officials are often not effective in generating economic development. Thus, according to Dewar, incentive programs are often effective and short-lived due to their unpopularity, or are maintained for a longer period of time but with little economic benefit. Burnier (1992) notes that for most policymakers "incentive programs are an imperfect development tool, but in the "real world" of economic development these shortcomings must be

balanced against the possibility of new jobs and incentives... officials must be willing to make trade-offs” (p. 19).

With respect to energy development incentives, states must be aware of specific challenges and unintended consequences. For example, Rabe (2007) finds several challenges associated with the popular RPS approach, especially with implementation. As states have begun to favor more heavily expensive renewable sources, they have had to contribute greater financial subsidies, thus increasing the cost of the RPS policy. Also, the focus on capitalizing on in-state economic development gains may come at the expense of ignoring other, potentially successful opportunities for cross-state collaboration.

Clearly there are risks associated with economic development incentives and other tools. However, this does not mean they should not be used. Rather, it is important for state policymakers to be aware of the tools available to them and their corresponding risks, so that they may make responsible and effective policy. The typologies provide frameworks for understanding the different energy policies that states have adopted under their economic development umbrella. Using these frameworks, states and economic development practitioners may be more cognizant of how they are able to adopt a portfolio of policies that address all four types to result in a comprehensive energy-based economic development strategy, or to adopt policies in one category to result in a more focused energy-based economic development strategy.

### **End Notes**

1. While the focus of this research note is on state-level policies, we acknowledge that this focus on states may be too narrow. However, as Hopkins (2003) argues, energy-related

policies are typically the domain of state governments. While there may be inter-state elements of energy policies, most policies are adopted and implemented by individual states, hence the focus of this research note.

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Figure 1. Typology X

	<u>Energy Approach</u>	
	Production	Consumption/Use
<u>Energy Source</u>		
Existing energy sources	A	C
New energy sources	B	D

Figure 2. Typology Y

	<u>Target Audience</u>	
	Producer	Consumer
<u>Regulatory</u>		
<u>Approach</u>		
Incentives	I	III
Regulation	II	IV

Table 1. Financial Incentives to Support Renewable Energy Development and Production

State/Territory	Grants	Loans	Industrial Recruitment/ Support	Production Incentive
Alabama	x	x		
Alaska	x	x		
Arizona			x	
Arkansas		x	x	
California		x	x	x
Colorado		x		
Connecticut	x	x	x	
Delaware		x		x
Florida		x		
Georgia		x		
Hawaii		x		x
Idaho		x		
Illinois	x	x	x	
Indiana				
Iowa		x		
Kansas		x	x	
Kentucky		x		
Louisiana		x		
Maine	x	x		x
Maryland		x		x
Massachusetts	x	x	x	x
Michigan	x	x	x	
Minnesota	x	x		x
Mississippi		x	x	
Missouri		x		
Montana		x	x	
Nebraska		x		
Nevada		x	x	x
New Hampshire		x		
New Jersey		x	x	x
New Mexico		x	x	
New York	x	x		x
North Carolina	x	x		
North Dakota				
Ohio		x	x	x
Oklahoma		x	x	
Oregon	x	x	x	x
Pennsylvania	x	x	x	x
Rhode Island	x	x		x
South Carolina		x		x
South Dakota		x		
Tennessee	x	x	x	
Texas	x	x	x	
Utah			x	
Vermont		x		x
Virginia		x	x	
Washington			x	x
West Virginia				
Wisconsin		x		
Wyoming		x		
District of Columbia		x		x

Source: Data from the Database of State Incentives for Renewables and Efficiency ([http://www.dsireusa.org/summarytables/finre\\_printable.cfm](http://www.dsireusa.org/summarytables/finre_printable.cfm)) accessed October 21, 2011

Table 2. Financial Incentives to Support Use of Renewable Energy by Consumers

State/Territory	Personal/ Property Tax <sup>(a)</sup>	Corporate Tax	Sales Tax	Rebates
Alabama	X			
Alaska	X			
Arizona	X	x	x	
Arkansas				
California	X	x		
Colorado	X		x	
Connecticut	X		x	x
Delaware				x
Florida			x	
Georgia	X	x	x	
Hawaii	X	x		x
Idaho	X			
Illinois	X		x	x
Indiana	X			
Iowa	X	x	x	
Kansas	X	x		
Kentucky	X	x	x	x
Louisiana	X	x		x
Maine			x	x
Maryland	X	x	x	x
Massachusetts	X	x	x	x
Michigan	X			
Minnesota	X		x	x
Mississippi				
Missouri	X	x		
Montana	X	x		
Nebraska	X	x	x	
Nevada	X		x	x
New Hampshire	X			x
New Jersey	X			x
New Mexico	X	x	x	
New York	X	x	x	x
North Carolina	X	x		
North Dakota	X	x	x	
Ohio	X		x	
Oklahoma		x		
Oregon	X	x		x
Pennsylvania	X			
Rhode Island	X	x	x	
South Carolina	X	x	x	
South Dakota	X		x	
Tennessee	X		x	
Texas	X	x		
Utah	X	x	x	x
Vermont	X	x	x	x
Virginia	X			x
Washington			x	
West Virginia	X	x		
Wisconsin	X	x	x	x
Wyoming			x	
District of Columbia				x

Source: Data from the Database of State Incentives for Renewables and Efficiency

(<http://www.dsireusa.org/summarytables/finre.cfm> accessed October 21, 2011

(a) Morris and Qiao (2012) offer an analysis and inventory of incentives offered by states through residential energy income tax credits and deductions.

Table 3. Regulatory Policies

State/Territory	RPS	Required Green Power	Energy Standards for Public Buildings
Alabama			X
Alaska			
Arizona	X		X
Arkansas			X
California	X		X
Colorado	X	X	X
Connecticut	X		X
Delaware	X		X
Florida			X
Georgia			X
Hawaii	X		X
Idaho			X
Illinois	X		X
Indiana	X		X
Iowa	X	X	X
Kansas	X		
Kentucky			X
Louisiana			X
Maine	X	X	X
Maryland	X		X
Massachusetts	X		X
Michigan	X		X
Minnesota	X		X
Mississippi			
Missouri	X		X
Montana	X	X	X
Nebraska			
Nevada	X		X
New Hampshire	X		X
New Jersey	X		X
New Mexico	X	X	
New York	X		X
North Carolina	X		X
North Dakota	X		
Ohio	X		X
Oklahoma	X		X
Oregon	X	X	X
Pennsylvania	X		X
Rhode Island	X		X
South Carolina			X
South Dakota	X		X
Tennessee			X
Texas	X		X
Utah	X	X	X
Vermont	X	X	
Virginia	X		X
Washington	X		X
West Virginia	X		
Wisconsin	X		X
Wyoming			
District of Columbia	X		X

Source: Data from the Database of State Incentives for Renewables and Efficiency (<http://www.dsireusa.org/summarytables/rrpre.cfm>) accessed October 21, 2011

Table 4. Financial Incentives to Encourage Energy Efficiency

State/Territory	Personal/ Property Tax	Corporate Tax	Sales Tax	Rebates/Grants	Loans
Alabama					X
Alaska				X	X
Arizona	X				
Arkansas					X
California				X	X
Colorado					X
Connecticut			X	X	X
Delaware				X	X
Florida					X
Georgia		X			X
Hawaii				X	X
Idaho	X				X
Illinois				X	X
Indiana					
Iowa					X
Kansas					X
Kentucky	X	X	X	X	X
Louisiana				X	X
Maine				X	X
Maryland	X	X	X	X	X
Massachusetts				X	X
Michigan	X			X	X
Minnesota					X
Mississippi					X
Missouri	X		X	X	X
Montana	X	X			X
Nebraska					X
Nevada	X		X	X	X
New Hampshire				X	X
New Jersey		X		X	X
New Mexico	X				
New York	X		X	X	X
North Carolina				X	X
North Dakota				X	
Ohio					X
Oklahoma	X	X			X
Oregon	X	X		X	X
Pennsylvania				X	X
Rhode Island					
South Carolina	X		X		X
South Dakota					X
Tennessee				X	X
Texas			X		X
Utah					X
Vermont				X	X
Virginia	X		X	X	X
Washington					
West Virginia				X	
Wisconsin				X	X
Wyoming				X	X
District of Columbia				X	X

Source: Data from the Database of State Incentives for Renewables and Efficiency (<http://www.dsireusa.org/summarytables/finee.cfm>) accessed October 21, 2011