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**Independent Administration of Energy  
Efficiency Programs:  
A Model for North Carolina**

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# 1. Energy Efficiency Programs and Their Delivery

## 1.1 Introduction

The administration of utility energy efficiency programs has, in certain states, been successfully accomplished by investor-owned utilities. However, in other states where utilities may have had a poor history of offering broad spectrum, aggressive energy efficiency or there was a desire to simplify programs, enhance and protect program budgets or seek relief of utility obligations as a quid pro quo, the responsibility for administration of those programs has been moved to an independent entity. The rationale for considering such a shift in responsibility is multi-fold.

First, energy efficiency programs reduce electricity sales which in turn reduce utility revenues. The financial disincentive to implement energy efficiency means that it is difficult (read expensive) to compensate the utility sufficiently to negate the impact of lost sales. For example, Duke Energy's affiliate in Indiana, Duke Energy Indiana, proposed a set of efficiency programs in 2004 with incentives for their implementation that included lost revenues (the difference between the utility's costs and the revenues lost from the sales reduced) and shared savings (a portion of the savings realized by customers) that would have amounted to 144% of the program costs by 2009. An independent administrator, by contrast, is solely concerned with the implementation of energy efficiency.

Second, when examining new resource options, investments in supply-side resources will generally increase the utility's ratebase while energy efficiency will shrink it, adding a further disincentive to utility implementation of energy efficiency. An independent administrator has no choice but to implement energy efficiency so long as it is cost-effective.

Finally, an independent entity administering programs across multiple service territories can achieve economies of scale in administration and delivery not possible with individual utilities. The advantage of standardized programs across service territories can also result in a consistent set of programs regardless of the customer's service provider. Such consistency can enhance customer and trade ally recognition and participation, leading to more successful and cost effective programs.

As North Carolina moves forward in the debate over how to offer effective energy efficiency programs, it may be useful to have further information on the background, characteristics and achievements realized in the those states which have implemented independent administration. The six states discussed here, New York, Vermont, Oregon, Wisconsin, Maine and New Jersey, all employ an independent administration model. Some have a longer history than others, some are more aggressive than others. The common theme, however, is that the problems inherent in utility administration of energy efficiency have motivated the transition to a new, independent model.

## 1.2 Efficiency Programs Defined

In every U.S. state, there are a variety of publicly funded programs to encourage consumers to be

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more efficient in the use of energy. The premise of such programs is that publicly funded efforts are warranted in order to accelerate the acceptance of energy-efficient technologies and practices, thus gaining the economic and environmental benefits of using energy resources more productively. In most states, the largest source of funding for such programs comes from the ratepayers of publicly regulated, investor-owned electric and gas distribution utilities. The concern of this paper is with energy efficiency funded by such utility ratepayers. When terms like “energy efficiency” or “efficiency program” are used here, they refer to these ratepayer-funded initiatives, unless otherwise noted.

In certain jurisdictions, the rates of municipal or cooperative energy utilities are not set by state regulatory commissions. The ratepayers of such municipal or cooperative energy utilities are typically outside the framework of such mandated efficiency programs, except in cases where they are permitted to seek to participate, though they may have programs of their own individual design. For this reason, when we refer to “statewide” programs this generally means a state less its unregulated utility areas. In the six state cases profiled here, the bulk of utility service is provided by rate-regulated, investor-owned utilities.

Energy efficiency programs were initiated in a few states some thirty years ago, during the “energy crises” of the mid- to late-1970s. Despite fluctuations over time, the overall trend since then has been for the number of states offering ratepayer funded energy efficiency programs to grow. This paper focuses on the basic institutional structure by which such efficiency programs are administered. In particular, it describes leading cases of independent administration of efficiency programs, *i.e.*, states in which program administration has been in the hands of non-utility entities.

### **1.3 The Rise of Independent Administrative Approaches**

During the early period of ratepayer funded energy efficiency and for many years thereafter, the utilities whose ratepayers were funding energy efficiency were expected to design, administer and deliver the efficiency programs. There were few exceptions to the practice of utility-administered efficiency programs. Even today, in most states, utilities administer efficiency programs.

Yet, the primary business of an energy utility is to obtain or generate energy and distribute it to its customers. As businesses, utilities normally grow to the extent that they add customers and that energy use by their customers increases. Under traditional circumstances, encouraging customers to use less energy--including offering them financial inducements to do so, as is the case in many types of efficiency programs--does not offer a utility opportunities to grow its business. Early on in the development of energy efficiency programs, legislators and utility regulators in different states began to create special incentives intended to counter utilities’ underlying business disincentive to promote energy efficiency. Over time, these special incentives have included such measures as:

- Changes to the rate of return on investment allowed to utilities by regulators (rewards for promoting efficiency, or penalties for failing to promote efficiency as directed by regulators);
- Permission to include efficiency program spending in the utility rate base on which

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earnings are calculated;

- Financial rewards to the utility for achieving cost-effective efficiency gains such as a share in the savings realized by customers;
- Assurance of full recovery of utility costs for efficiency programs; and
- Annual adjustments in utility rates in order to speedily compensate the utility for reductions in revenues arising from customers using energy more efficiently.

But even as the approach of developing special incentives for utilities to pursue energy efficiency was evolving, a fundamentally different approach began to be articulated. This approach involves using entities that are *independent* of energy utilities to administer ratepayer-funded efficiency programs. As early as 1990, such an independent approach was formulated as follows:

The missing element in contemporary approaches to energy conservation is a capable institution whose primary interest is in achievement of cost-effective energy efficiency.... [W]e propose that consideration be given by US states to establishing conservation utilities ... organized on a statewide basis, with a mandate to achieve maximum levels of demand-side efficiency programmes consistent with lowering the overall cost to society of energy services.

The idea advanced here is to establish an institution whose purpose and prosperity are predicated on the successful exploitation of energy efficiency at the end-use level. The [conservation utility] would have no authority to produce or supply, only to husband and conserve. Its management and staff would gain recognition and rewards in proportion to success in meeting this unambiguous goal.<sup>1</sup>

In the mid-1990s, policy discussions in several jurisdictions began to consider the option of establishing independent administration of efficiency programs. By 2007, a number of states had established statewide administrative structures for ratepayer-funded efficiency programs that are independent of their energy utilities. The underlying purpose given by policymakers in establishing these structures has generally been to give the mission of achieving energy efficiency goals to an entity with a clear and specific mandate to conserve energy (and often to also help promote renewable energy resources).

In Oregon and Vermont, such concerns led utility regulatory commissions to establish separate structures independent of the utilities in order to provide both overall administration of energy efficiency programs and management of the major sets of efficiency programs. Both states, according to two researchers,

decided that despite consistent support from regulators, reasonable financial incentives to utilities, and a supportive public policy context, utility corporate culture and concerns about competition placed inescapable dampers on energy efficiency efforts. Both states decided to create an independent efficiency agency to administer the ratepayer funded programs whose sole business would be energy efficiency.

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<sup>1</sup> David Nichols and Paul D. Raskin, “The Conservation Utility: A New Institutional Approach,” in the United Nations Environment Programme’s *Industry and Environment Review*, Vol. 13, No. 2, pp. 26-7.

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Eliminating the utilities' mixed financial motives was important in each of these two states.<sup>2</sup>

Four other states with major efficiency programming decided to administer efficiency programs through state agencies. These are Maine, New Jersey, New York, and Wisconsin. The purpose of this paper is to describe the six state cases in which efficiency program administration has come to some substantial degree to be in the hands of structures that are independent of the utilities.

Each of the six states has taken its distinctive approach. The only common institutional characteristic is that administration and management of the statewide efficiency programs are not in utility hands. Even that characteristic is partially modified in Wisconsin's second phase, where there is a utility role in contracting for program management services, although those services continue to remain in non-utility hands.

The six cases profiled in this paper are all states whose programs are substantial in scale, with recent annual funding levels ranging from some \$10 million in Maine to over \$170 million in New York. As measured by funding for electric energy efficiency, their recent funding levels range between 0.8 percent of retail electric utility revenues in New York and 2.2 percent in Oregon and Vermont. Thus, they are all among the 17 states that fund electric energy efficiency programs at or above a level equivalent to 0.5 percent of electric revenues.<sup>3</sup>

In addition to the six states profiled here, there are a few other states which rely to some significant degree on non-utility administration and/or management of efficiency programs. That is the case, for example, in Illinois, where the Department of Commerce and Economic Opportunity both administers and manages programs funded through the Energy Efficiency Trust Fund established by 1997 electricity restructuring legislation. But Illinois programs are limited in scope and their funding level is much lower than that of the six cases profiled in this report. A similar situation prevails in Ohio. Such states are not profiled here, as they do not provide examples of structuring programs that we would consider to be among the more comprehensive in scope or substantial in scale.

## 1.4 Characteristics of Comprehensive Efficiency Programs

In all of the six state cases profiled here, efficiency programs are comprehensive in scope. That is, each set of programs includes components that aim to increase the adoption of energy efficient technologies and practices in all major markets in the buildings sector -- residential, commercial, institutional, industrial, and/or agricultural. Each uses a variety of tools including

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<sup>2</sup> Cheryl Harrington with Catherine Murray, *Who Should Deliver Ratepayer Funded Energy Efficiency?* Regulatory Assistance Project, May 2003, page 12.

<sup>3</sup> See Dan York and Martin Kushler, "A Nationwide Assessment of Utility Sector Energy Efficiency Spending, Savings, and Integration with Utility System Resource Acquisition", *2006 ACEEE Summer Study on Energy Efficiency in Buildings*, p. 8-349. The authors report that for the U.S. as a whole, electric energy efficiency programs were funded at a level equivalent to 0.5 percent of revenues in 2004.

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financial incentives and loans, site-specific and general information and analysis services, training of private contractors, partnerships with relevant dealers and vendors, and broadscale marketing of program services. Each incorporates regular independent evaluations to provide information on the operational effectiveness, energy savings, market effects, and cost-effectiveness of the programs themselves.

In each case, there is one or more advisory body to provide representatives of various interests in society and technical experts the opportunity to review efficiency programs in an ongoing fashion and to provide input to program managers and to the policymaking bodies for the programs. Importantly, these advisory bodies are not consultative groups serving at the whim of efficiency program administrators and managers, but rather are assigned ongoing status and roles by the basic regulatory and/or legislative decisions establishing the overall institutional framework for delivering energy efficiency. They have a functional role in helping assure that programs are comprehensive in scope and effective in design.

Another common element of comprehensive efficiency programs is the use of a wide variety of sub-contractors retained at the implementation level, for functions such as processing rebates, delivering energy audits, providing training, conducting inspections of work done, etc. The features of comprehensive programs that are identified here are not necessarily unique to these states that have pioneered forms of non-utility management, but rather can be found in many states with efficiency programs that are substantial in scale and scope. Whether or not specific reference is made to them in the specific descriptions in Section 3, it should be understood that the foregoing features characterize all six states.

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## 2. Summary of Findings

Over the past decade, several states have developed approaches to administering efficiency programs which depart significantly from the traditional approach of utility administered and managed programs.

Of states with major efficiency programs, the first to take this step was New York, which assigned administrative responsibilities to an existing public benefit corporation that the state had previously created, and which was already functioning as an energy authority. In Wisconsin's first phase, administrative responsibilities were assigned to an existing state department, whose Energy Division was already operating energy programs.

One approach, then, is to consider program administration by an existing state agency that already has energy program responsibilities. This could even be the utility regulatory commission itself, which is the approach that has been taken in Maine and New Jersey.

In the New Jersey case, a new office was created within the commission staff in order to assume overall management of the efficiency programs. A state could consider establishing a new authority, agency, or office specifically for the purpose of administering efficiency programs.

Another approach is for a state to create a non-governmental organization specifically to operate efficiency programs. This is the general approach that was taken by Vermont, where significant increases in energy efficiency program participation and results were found following the implementation of this strategy. This is also the approach that has been taken by Oregon.

Each of the approaches described herein has distinctive features, and each may be considered as a model that could be adopted or adapted by any state in which there is interest in non-utility approaches.

What approach to delivering efficiency programs may be best for North Carolina is a matter beyond the scope of this paper. What this paper does report is that several states operating major efficiency programs have found effective non-traditional means of structuring their administration. The example and experience of these states can provide insight, information, and inspiration for policy makers considering what approach may be best for North Carolina in the future.

The following table summarizes the six cases highlighted in this paper. Wisconsin is listed twice in Table 1, since its institutional approach has been modified effective in 2007. For each state, the elements in the table are:

- **Year** - The year when the institutional approach was decided upon.
- **Decision by** - Whether this decision was taken by law or by an order of the utility commission.
- **Primary oversight authority** - Whether the utility commission or the state's legislature.
- **Contract administration** - What entity administers the contracts which provide for management and operation of major efficiency programs.
- **Programs administration** - What type of entities hold the program management contracts ("NGO" refers to non-governmental organizations).



- **Scope** - Whether the programs focus on electricity, or on utility gas as well as electricity. While the table summarizes some key features of the approach taken by each state, it necessarily oversimplifies. Section 3 describes each state’s specific approach.

**Table 1. State Institutional Approaches to Administering Efficiency Programs**

State	Year Decided	Decision Type	Governmental Oversight	Contract Administration	Program Management	Scope
NY	1996	Order	Commission	NYS Energy Research & Development Authority (NYSERDA)	NYSERDA and several contractors	Primarily electricity
VT	1999	Statute, then Order	Commission	Independent Administrator	Efficiency Vermont (NGO)	Primarily electricity
OR	1999	Statute, then Order	Commission	Commission	Energy Trust of Oregon (NGO)	Electricity; gas added
WI Phase I	1999	Statute	Legislature	Department of Administration	WI Energy Conservation Corp. (WECC; NGO)	Electricity and gas
WI Phase II	2006	Statute	Commission	Utility Consortium	WECC (through 2008)	Electricity and gas
ME	2002	Statute	Commission	Commission	Several contractors	Electricity
NJ	2003	Order	Commission	Commission	Several contractors	Electricity and gas

Each of these six states has established to its satisfaction that its energy efficiency programs produce environmental, energy, and economic savings. Each state has established that, on an economic basis, program savings substantially exceed program costs. Aggregate economic benefit-to-cost ratios for each state’s program range from 1.7 to 3.2. Each state has identified additional “non-economic” net benefits as well, most commonly environmental benefits.

The following table summarizes results reported by the six states highlighted in this paper. For each state, the elements in Table 2 are:

- **Year** - The last year of full data (and which year of program operation that is).

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- **Spending** - Annual level of program spending in the last year of full data.
  - **Energy savings** - Level of annual savings reached, reflecting program activity from 1<sup>st</sup> year through the last year of full data.<sup>4</sup>
  - **Emission reductions** - Level of annual savings reached, reflecting program activity from 1<sup>st</sup> year through last year of full data.<sup>5</sup>
  - **Benefit-cost ratio** - A measure of the economic performance of the program, usually based on cumulative program activity through the last year of data.<sup>6</sup> The B:C ratios shown are not derived from data in Table 2. Typically, the B:C analysis was based on:
    - *Benefits* - Avoided costs not only from energy saved cumulatively to date, but also from energy projected to be saved during the lifetime of the program measures implemented to date. May include additional resource savings, and may monetize a portion of the benefits from reduced environmental emissions.
    - *Costs* - In addition to program spending for the period covered by the B:C analysis, includes costs incurred by program participants, e.g. their incremental spending on efficient equipment, net of program incentives received.

Table 2 summarizes some key results reported by each state. Data in Table 2 are taken from, or calculated or estimated based on, annual reports and evaluation studies available at the state program websites. Additional description of program results that the states have reported is contained in Section 4 below.

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<sup>4</sup> In addition to electricity savings, natural gas energy savings are listed where they reflect major program aims and are clearly reported. Whether or not listed in this table, all programs report some level of non-electric resource savings – gas, oil, water, and other.

<sup>5</sup> Air emission reductions shown are oxides of nitrogen (NO<sub>x</sub>) and sulfur (SO<sub>x</sub>) and carbon dioxide (CO<sub>2</sub>). “Tons” are short tons at 2000 pounds per ton. Whether or not emissions reductions have been estimated and reported, all energy savings programs reduce air emissions.

<sup>6</sup> For further information on benefit-cost analysis see Section 4.

**Table 2. Selected Results Reported by State Efficiency Programs**

State	Year	Annual Spending (Million)	Annual Energy Savings		Annual Air Emission Reductions (Tons)			Cumulative Benefit:Cost Ratio <sup>7</sup>
			Electricity (MWh)	Natural Gas (Dth)	NO <sub>x</sub>	SO <sub>x</sub>	CO <sub>2</sub>	
NY	2006 (8 <sup>th</sup> )	\$172	2,360,000		2,000	3,640	1,555,000	3.2
VT	2005 (6 <sup>th</sup> )	\$15	248,000				200,000 (est.)	1.7
OR	2005 (4 <sup>th</sup> )	\$54	972,000	282,000				3.2
WI	2006 (4 <sup>th</sup> )	\$40	931,000	4,700,000	1,000	2,140	842,000	2.4
ME	2006 (3 <sup>rd</sup> )	\$9	121,000		67	180	290,000	2.0
NJ	2005 (5 <sup>th</sup> )	\$125	1,216,000	2,050,000	1,590	3,500	923,000	2.7

<sup>7</sup> These benefit-cost ratios are unlikely to be directly comparable. Important factors such as the avoided cost assumed and how benefits are accounted for will significantly affect these ratios and may vary from state to state.

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## 3. Six State Cases

Six cases are presented in this section, described in the chronological order in which their independent institutional approach was first decided upon. A final section of the report highlights program achievements that have been reported.

### 3.1 New York

In 1996, the New York Public Service Commission (the Commission) decided that energy efficiency programs would no longer be conducted by the utilities.<sup>8</sup> The Commission directed that a system benefits charge be levied on the ratepayers of the six regulated utilities. The Commission assigned the responsibility for administering the system benefits charge programs to the New York State Energy Research and Development Authority (NYSERDA).

NYSERDA is a public benefit corporation that the New York State legislature had created in 1975. NYSEDA was already conducting a range of energy-related activities when it assumed responsibility for the new system benefits charge-based efficiency programs in 1998. The new efficiency programs are collectively called the New York Energy \$mart<sup>SM</sup> Public Benefits Program (the Program). In addition to a major focus on electric energy efficiency, the programs encompass some renewable energy, research and redevelopment, and fossil fuel efficiency activities. The Commission has twice renewed system benefits charge funding for the Program. Its December 2005 Order approved the extension of the program through July 1, 2011.

NYSERDA acquires administration and implementation services for specific efficiency programs through a competitive solicitation process. There are also certain NYSEDA programs which make awards to multiple bidders for energy projects within defined program areas.

NYSERDA's administration of the Program is carried out with the oversight of a System Benefits Charge Advisory Group, comprised of stakeholders representing varied interests, including utilities, business and environmental groups, energy service companies, community organizations, professional and trade associations, and national energy efficiency and research and development organizations. The Group also serves as the independent program evaluator.<sup>9</sup>

It was on the Commission's authority that the systems benefit charge funds were established and

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<sup>8</sup> Case 94-E-0952 *et al.*, In the Matter of Competitive Opportunities Regarding Electric Service, Opinion No. 96-12, *Opinion and Order Regarding Competitive Opportunities for Electric Service*, May 20, 1996. In its order the Commission stated that "the use of a third party fund administrator will produce economies in fund management by eliminating duplicative tasks and cumbersome decision making and will ensure that the funds are administered in a competitively neutral manner" (page 11).

<sup>9</sup> Actual contract awards for evaluation studies and reports are made through NYSEDA's competitive solicitation process. Requests for proposals are developed by technical panels on which members of the advisory group, as well as New York's Department of Public Service, are represented. The panels also review proposals submitted.

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twice renewed, and that NYSERDA was appointed and twice reappointed to administer the Program. NYSERDA has submitted operating plans for the Program in compliance filings to the Commission. In addition, regular evaluation and status reports are submitted to the Department of Public Service.

From the mid-1980s until 1998, individual utilities in New York operated demand-side management programs, including substantial energy efficiency programs, pursuant to Commission guidelines and orders. The context for the Commission's decision to establish systems benefit charges and assign program administration to NYSERDA was its overall restructuring of regulated energy utilities, which in New York was accomplished on the Commission's own authority, rather than by legislation. In addition to the NYSERDA programs, two public entities operate significant energy efficiency programs in the state -- the Long Island Power Authority, and the New York Power Authority.

Further information about the New York Energy Smart<sup>SM</sup> Public Benefits Program -- its administration, scope, results, and related matters -- may be found at the following website:

<http://www.nyserda.org/>

The Commission's history of the Program is available at:

<http://www.dps.state.ny.us/sbc.htm>

### **3.2 Vermont**

In 1999, state law (S.137) authorized the Vermont Public Service Board (the Board) to establish ratepayer funding for statewide energy efficiency delivered through an independent entity, replacing utility programs. Later that year, the Board approved a memorandum of understanding among utilities, regulators and other parties, providing for establishment of a statewide energy efficiency utility and a transition plan from utility-operated programs. Vermont has over twenty small electric utilities, and one motive in establishing Efficiency Vermont was to move toward coherent programs offered statewide. As noted in Section 1, overcoming the disadvantages of utility-based administration was another motive.

Pursuant to competitive requests for proposals (RFPs), the Board then obtained non-utility entities to serve as (1) the statewide energy efficiency utility to design, manage, and deliver programs, (2) the fiscal agent (to hold the funds for disbursement), and (3) the contract administrator (to manage the energy efficiency utility contract). The consortium selected to serve as the energy efficiency contractor was headed by the non-profit Vermont Energy Investment Corporation. The energy efficiency utility programs, called "Efficiency Vermont," commenced in 2000. Vermont Energy Investment Corporation was twice reselected to operate Efficiency Vermont. The contracts for the efficiency utility have included performance incentives.

The Board establishes annual funding levels for the energy efficiency utility and reports annually to the legislature on the application of these funds. Vermont's 2005 "Omnibus Energy Act" removed a previously established spending cap for Efficiency Vermont and required reviews of efficiency potential, allowing the Board to make budget adjustments to realize untapped energy efficiency savings. The Board periodically reviews the energy efficiency utility's plans,

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programs and interim budget modifications.

The Order establishing the energy efficiency utility charged the Department of Public Service with providing formal evaluation of the efficiency utility programs, which it has accomplished through competitively procured evaluation contractors. Evaluation includes verification of Efficiency Vermont savings claims and other contractual performance indicators. On the basis of these evaluations as well as Efficiency Vermont's own reports, the Department provides findings and recommendations to the Board.

Efficiency Vermont reports annually to the Vermont Department of Public Service and to the Efficiency Vermont Contract Administrator. For these reports and for further information about the history and scope of Efficiency Vermont programs, see the following website:

<http://www.encyvermont.com/>

Evaluation reports are at a separate website: <http://publicservice.vermont.gov/>

### 3.3 Oregon

Utility-based electric energy efficiency programming in Oregon began some three decades ago. But in 1999, electric utility restructuring legislation was passed. One aspect of this legislation created a new framework for energy efficiency. It defined new levels of ratepayer funding for energy efficiency and related public purposes including renewable energy and low-income weatherization. It authorized, but did not require, the Public Utility Commission (the Commission) to establish non-utility administration of programs.<sup>10</sup>

To administer the energy efficiency and renewable energy aspects of the new public purpose funds, the Commission decided in 2000 to establish a non-profit administrator. The commission hired consultants to assist in creating a new non-profit corporation, and appointed the initial board of directors in 2001, comprised of citizen members without interest conflicts, and a non-voting ex-officio member from the Commission. The new entity incorporated as the Energy Trust of Oregon, Inc. (the Trust).

The Commission contracted with the Trust to administer the new programs. The initial agreement between Commission and the Trust became effective in 2002, for a period of three years, with annual renewals (which have occurred) thereafter. The Trust hired an executive director and other staff. However, the Trust used competitive procurement to select contractors to manage major programs. After a transition period of utility-run and pilot programs, new Trust programs were launched beginning in 2003.

Primary oversight lies with the Commission. As an independent contractor, the Trust is required to report annually to the Commission on its makeup and operations as well as program activity. The Commission reviews Trust goals, plans, and budgets. In addition to program evaluations, the Trust is required to periodically commission independent audits of its own management

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<sup>10</sup>See Section 3 of Senate Bill 1149. This Act may be viewed at:  
<http://www.leg.state.or.us/99reg/measures/sb1100.dir/sb1149.en.html>

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performance. Additionally, the statute requires periodic independent reports to the legislature on the describing program spending and results.

After the Trust was established as an outgrowth of electricity legislation, two gas utilities contracted with the Trust to administer expanded energy efficiency programs for their residential and commercial customers. These programs are funded through a separate charge to gas ratepayers approved by the Commission. As a result, the Trust is now administering efficiency programs for most of the state's utility gas customers as well as most electric customers.

Further information about the Energy Trust of Oregon--its history and structure, the scope and results of its programs, and related matters--may be found at the following website:

<http://www.energytrust.org/>

The Commission's relevant web page is:

[http://www.puc.state.or.us/PUC/electric\\_restruc/indices/ppindex.shtml](http://www.puc.state.or.us/PUC/electric_restruc/indices/ppindex.shtml)

### **3.4 Wisconsin**

From the mid-1980s through the 1990s, the state's electric and gas utilities individually conducted energy efficiency programs at the direction of and under the oversight of the Public Service Commission of Wisconsin (the Commission). While funding levels fluctuated over time and by utility, the scope of energy efficiency programs--the range of technologies and services promoted and of markets targeted--was often broad. Since this period, the institutional structure of energy efficiency programs has gone through two major phases: (1) establishment and administration of statewide programs by a state agency, then (2) a hybrid form in which the utilities, under Commission oversight, contract for statewide program management services.

#### **Phase I**

In 1999 Wisconsin Act 9 was enacted, assigning to the state's Department of Administration the task of establishing and overseeing efficiency programs previously operated by investor-owned utilities under the regulatory supervision of the Commission. The evolution from utility to state management was to occur over a three-year period.

Act 9 provided for continued funding of energy efficiency by the ratepayers of Wisconsin's 12 electric and/or gas investor-owned energy utilities (the Public Benefits Fund). Provision was made for other utilities to participate in the programs on a voluntary basis. The Division of Energy in the Department of Administration proceeded to establish and oversee a new suite of energy programs, which were to include energy efficiency in all major market segments, as well as a smaller amount of on-site renewable energy. The Act also provided that the same state agency would operate energy-related low-income programs such as weatherization efforts partly funded by the U.S. government; these programs are separately budgeted and managed from the Public Benefits Fund programs.

The state administers the energy programs, called Focus on Energy, through a set of major contractors responsible for programs for the residential market, programs for the non-residential market (business/government/institutional), and programs to promote renewable energy installed

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at utility customer sites. There is also an independent firm that provides an fiscal audit of each major contracted program administrator. These contracts were let through a competitive procurement process. The Act required that the three master program administration contracts for the residential, non-residential, and renewable energy programs should be let to non-stock, non-profit entities.<sup>11</sup> Other contractors, including the various program delivery sub-contractors, were not subject to this constraint. The state also procured contractors to perform ongoing evaluation of the programs; provide marketing and communication services; and conduct environmental research and education and training programs.

In the solicitations to acquire the master program administrators, the state required that proposers present plans for programs to effectively deliver energy services with the budgetary range established by the Act and by the Commission. Thus, the state acquired program design services as an integral part of its procurement of administrative services.

The Utility Public Benefits Council, a stakeholder advisory group, receives information on Focus on Energy programs and provides input on them to the program administrators. There are also technical advisory groups providing specialized input.

By law, the Department of Administration has provided annual reports to the legislature on its application of the Public Benefits Fund.<sup>12</sup> The Commission has had no direct oversight over the Department of Administration during this phase. Thus, unlike most of the states profiled here, the utilities commission had no policy-making role. However, in some utility cases the Commission established individual utility-administered, service-area specific programs that supplement the central, statewide Focus on Energy program.

Further information about the Focus on Energy programs, their administration, their history, and related matters may be found at the following website:

<http://www.focusonenergy.com/>

## Phase II

Wisconsin Act 141 made significant changes to the institutional structure of efficiency programs. Over the past few years, there have been a number of occasions where monies intended for Focus on Energy were diverted by the governor and legislature to general state purposes. This led to Focus on Energy budgets in the current fiscal year being some 40 percent less than originally planned. Act 141 provides that 1.2 percent of gross operating revenues of electric and gas utilities shall be set aside in a trust fund for energy programs, and thus shall not become state money. This provision is intended to protect efficiency program monies from leaking into general state operations.

At the same time, Act 141 transfers overall authority for the statewide ratepayer-funded programs away from the Department of Administration and back to the Commission, effective

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<sup>11</sup> Currently all three master contracts are held by the non-profit Wisconsin Energy Conservation Corporation, which in turn employs a number of subcontractors.

<sup>12</sup> See, for example, Wisconsin Department of Administration, Division of Energy, *Wisconsin Public Benefits Program Annual Report*, July 1, 2005 - June 30, 2006.



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July 1, 2007. It provides that the utilities shall contract for overall program administration of the statewide programs, with new contracts to become effective in January 2009. The utilities are establishing a joint corporate entity for the purpose of conducting these solicitations to manage the statewide programs. The form of the solicitations as well as the resulting contracts must be approved by the Commission. Unlike the earlier Act 9, Act 141 does not require that the program administration contractor(s) be a non-profit entity.<sup>13</sup>

Since it is expected that the utilities will contract with other entities to provide these administrative services for statewide programs, this new structure is not a return to the system of individual utility-run programs.<sup>14</sup> Rather, phase 2 appears to continue non-utility program management, while adding elements of utility contract administration, all under utility commission oversight.

### 3.5 Maine

In 2002, the Energy Conservation Act was enacted, charging the Maine Public Utilities Commission (the Commission) with the responsibility for implementing electric energy efficiency programs throughout the state. The state's earlier Electric Restructuring Act had set a lower and upper bound for the level of ratepayer funding for energy efficiency that the Commission could establish going forward, but utilities continued to administer the programs. The 2002 Act provided that the Commission itself would develop a statewide efficiency plan, and transferred responsibility for operating programs from the utilities to the Commission.

Maine was the first state in which the utility regulatory commission itself set out to administer energy efficiency programs. The Conservation Act directed the Commission to implement programs by contracting with service providers to administer and deliver programs. While the Act did not require the Commission to be the direct administrative entity, the Commission chose to perform that function, rather than contract it out.

After the Conservation Act was passed, the Commission added staff to administer efficiency programs, and developed interim programs. The Commission established goals and objectives and cost effectiveness criteria for electric efficiency programs, developed a statewide five-year plan, designed ongoing statewide programs, and engaged in a combination of competitive procurement and partnerships to arrange for program implementation and delivery services. The Commission dubbed its initiatives "Efficiency Maine." By law, annual reports on the activities of Efficiency Maine are submitted to the state legislature.<sup>15</sup> A stakeholder advisory group

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<sup>13</sup> See Section 69 of Act 141. A copy of "2005 Wisconsin Act 141" may be viewed at: <http://www.legis.state.wi.us/>

<sup>14</sup> However, Act 141 also allows individual utilities to voluntarily propose utility-specific programs for their large non-residential customers, as well as allowing such customers to propose self-directed programs. Such programs would be supported from the trust fund, subject to review and approval by the Commission.

<sup>15</sup> See, for example, Maine Public Utilities Commission, *Efficiency Maine: Saving Energy for Maine, 2006 Annual Report*.

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receives information on Efficiency Maine programs and provides input on them to the Commission and the program implementation contractors.

Efficiency Maine was explicitly inspired by, and has a partnership with, Efficiency Vermont. After a transition period, Efficiency Maine has operated a comprehensive suite of statewide efficiency programs of its design from mid-2003 through the present.

In the 1980s, the Commission had established procedures and criteria for energy efficiency programs run by electric utilities. Programs that were cost-effective compared with the electricity supply costs they avoided were encouraged. The state's largest electric utility, Central Maine Power, invested in energy efficiency programs at a relatively higher level than its smaller regulated utilities. Pursuant to Commission rules and orders, utilities had operated efficiency programs continuously until after the passage of the 2002 law, though funding and activity levels varied from year to year.

Further information about the Efficiency Maine programs, their administration, their history, pertinent Board orders, and related matters may be found at the following website:

<http://www.energymaine.com/>

### **3.6 New Jersey**

In early 2007, New Jersey became the latest state to put fully into place a system whereby energy efficiency programs are independently administered and managed on a statewide basis. The state's utility regulatory commission, the Board of Public Utilities (the Board), had decided upon such an approach in 2003.<sup>16</sup> The Board had already established its Office of Clean Energy in order to provide overall administrative oversight of the state's ratepayer-funded programs as well as some related functions, such as state energy programs funded by the U.S. government.

Some time after the Board's decision, state RFPs were formulated to select overall "Market Managers" for three sets of programs funded by utility ratepayers: residential electric and gas energy efficiency, commercial and industrial electric and gas energy efficiency, and renewable electric generation resources. These three programs are collectively known as the Clean Energy Program. An RFP was also issued to obtain the services of an independent program coordinator to manage certain program support activities: supporting accounting of program budgets and expenses, tracking of activity and results, and outside market research on, and evaluations of, the programs. The regulated energy distribution utilities were not eligible to submit proposals in response to these four RFPs.<sup>17</sup>

The market managers report to the Office of Clean Energy. Advising the Office of Clean Energy, the new market managers, and the Board itself is a Clean Energy Council. Comprised of stakeholders representing a variety of interests, the Council and its committees review the

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<sup>16</sup> New Jersey Board of Public Utilities, Clean Energy Order, Docket No. EO02120955, September 11, 2003.

<sup>17</sup> New Jersey Board of Public Utilities, Clean Energy Order, Dockets No. EO04030178 and EO02120955, April 30, 2004.

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performance of the ratepayer-funded energy programs and make recommendations to the Board. The fundamental policy decisions on the efficiency programs--the level of funding, the scope of the programs, and the retention of the program managers--are made by the Board.

New Jersey's efficiency programs had commenced at a modest level in the early 1980s. During the 1990s, efficiency programs were conducted on a larger scale, and involved the state's large combination gas and electric utility, Public Service Electric and Gas Company, as well as three other electric utilities and two other gas utilities. Throughout this period, the utilities administered these programs, subject to the Board's rule-making and other decisions and oversight. The 1999 state law that provided for restructuring of the state's regulated electric and gas industries, the Electric Discount and Energy Competition Act, also provided for continued funding of electric and gas energy efficiency. The law specified certain minimum funding levels, to which the Board could add. Implementing the new law, the Board at first continued the system of utility-administered efficiency programs.

However, an independent review of the utility-administered programs that was commissioned by the Board proposed improvements that could be made to them. Moreover, the Clean Energy Council took up the issue of program administration, and recommended that the Office of Clean Energy should replace the utilities and should administer the programs statewide, outsourcing program management duties as required. The Council's report stated that Board administration through the Office of Clean Energy "would most directly and effectively align the interests of the administrator with those of the policy-making entity for the Clean Energy Program. BPU administration also offers the most direct accountability and oversight for Clean Energy Programs."<sup>18</sup> The Council envisioned the Board authorizing the Office of Clean Energy to outsource program administrative duties as required. The Board then conducted hearings considering alternative institutional approaches to efficiency delivery, which led to the orders cited above, establishing non-utility administration.

While the Office of Clean Energy assumed overall administrative control of the programs soon after the Board's decision, phasing the utilities out of management of the programs took more time than had been anticipated. At first the Board hired an independent fiscal agent to hold Clean Energy Program monies collected from the utilities, and also endeavored to issue its own RFPs to obtain the "market managers" to assist the Office of Clean Energy to manage the energy programs. However, the New Jersey Treasury objected to these procedures. Subsequently, additional time was required to phase out the fiscal agent, and to have the Treasury conduct standard state procurement procedures to obtain the services of the new market managers. For this reason, the utility program management role was not fully phased out until 2007. The new non-utility program managers then assumed responsibility for programs already designed and in operation, unlike jurisdictions where program design and delivery services were procured simultaneously (e.g., Wisconsin). Over time, however, the new non-utility managers are expected to advise the Office of Clean Energy and the Clean Energy Council as to new programs

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<sup>18</sup> New Jersey Clean Energy Council, *The New Jersey Clean Energy Program: Recommendations for Administration and Fund Management*, Report to the Board of Public Utilities, July 21, 2003.

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or program modifications the managers may recommend.

Additionally, the Board decided to leave administration of one statewide energy efficiency program, the direct installation program for lower-income households, with the distribution utilities. The Board has also approved modest pilot programs for distribution gas utilities to complement the Clean Energy program. Apart from these exceptions, administration and management of the state's ratepayer funded energy efficiency (and renewable energy) programs is, at this writing, conducted independently of the utilities.

Further information about the New Jersey Clean Energy Program--its administration, its history, pertinent Board orders, annual program reports, and related matters--may be found at the following website:

<http://www.njcleanenergy.com/>

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## 4. Achievements

The six states profiled here have been operating efficiency programs managed through non-traditional institutional structures. Each of the six has succeeded in fielding a comprehensive portfolio of statewide efficiency initiatives, often accompanied by related activities such as research and development or promotion of renewable energy. As noted above, each state provides for systematically tracking program activity, expenditures, and results. Several states set goals for program achievements and note results relative to those goals. This section of the paper provides summary information on the results that the six programs report achieving.

Methods of establishing savings and definitions of costs and benefits vary somewhat from state to state. While similar types of results are presented here, research to place them on a strictly comparable basis has not been conducted. The intent is to show what sorts of results states are finding.

**1. Direct energy and economic impacts of the programs.** The direct energy and economic impacts of the programs consist of the resource savings the programs have produced, the economic value of those savings; and comparison of the economic value of resource savings to program costs. Resource savings include reductions in the level of electricity demand compared to what would otherwise be experienced, as well as savings in the overall amount of electric energy consumed.<sup>19</sup> Resource savings also include savings in fossil fuel or water use resulting from the programs. Our focus in this section of the paper is on these, the direct results of the programs, though some attention is paid to other effects.

Each state aims to save energy in a cost-effective fashion overall. That is, the costs of the program are compared with the benefits. A good summary of basic economic analysis methods has been developed by California.<sup>20</sup> The economic analysis methods used by six states profiled here all apply the procedures described by California, with some minor variations. Two basic economic analyses are:

- Program cost-effectiveness, comparing the spending by the efficiency program to its direct economic benefits, where the latter are based on net energy savings produced by the program, taking into account the projected lifetime of program efficiency measures. The net benefit may be presented in terms of its cumulative present value and/or as the ratio of benefits to costs. A benefit-to-cost (B:C) ratio over 1.0 means benefits exceed costs.
- A “total resource cost” test which uses the same direct economic benefits as just described, but compares those to the aggregate spending caused by the program, comprised of both what the program spends, and the amount of private spending by participants that the program calls forth. Both savings and costs are on a net basis, i.e., the energy efficiency

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<sup>19</sup> To the extent programs support distributed or renewable electric energy systems, the savings from those program measures are reductions in the consumption of conventionally generated and centrally distributed electricity.

<sup>20</sup> See California Public Utilities Commission *Energy Efficiency Policy Manual*, October 2001, chapter 4; and California Governor’s Office of Planning and Research, *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*, October 2002.

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investments and savings that it is believed would have occurred even without the program are deducted. The difference, savings minus costs, is the program benefit, which again may be expressed in net present value, B/C, or other terms.

Other economic analyses may include the effect of the program on energy price and utility rate levels, and the costs and benefits of the program to its participants. The specific discussions below show that each state has established to its satisfaction that its efficiency programs produce significant resource and economic savings. Each state has found that, on a program cost basis and/or on a total resource cost basis, program savings substantially exceed program costs.

**2. Other program effects.** States report other identifiable impacts from their programs. Examples of effects in addition to direct energy impacts that are commonly reported are:

- Environmental benefits, such as reductions to the emissions of greenhouse gases and other air pollutants. Like direct energy and economic benefits, environmental benefits are usually reported on a net basis. Part of the economic value of net environmental benefits may be captured in the cost-benefit analysis of direct program impacts, to the extent emissions reductions have a market value (e.g., SO<sub>2</sub>). States may also ascribe an economic value to the portion of environmental benefits that are current external to the energy economy, in order to include them in additional cost-benefit analysis scenarios.
- Macroeconomic effects of the programs, such as their net impacts on total in-state employment levels. The Appendix contains some information on employment effects.
- Qualitative effects on the market, such as increased consumer awareness, the development of energy efficiency business services, and long-lasting increases to the typical efficiency level of buildings and equipment, all sometimes referred to as “market transformation”.

**3. The role of evaluation research.** Each state conducts independent evaluation studies, i.e., evaluations performed by entities other than those which manage or deliver program services. These periodic evaluations use field and market research to modify and refine initial estimates of direct program results. Evaluations often address other aspects of the programs as well, such as their co-benefits, their market effects, or how well they are being managed or delivered in the field. Where there are performance incentives for program managers, the evaluations serve to adjust and verify performance claims.

## 4.1 New York

New York’s Energy \$mart<sup>SM</sup> Public Benefits Program has been conducted for nearly nine years, the longest time period for independent administration of the six states profiled here. NYSERDA’s submission to the Public Service Department for the period through September 30, 2006, reports that \$737 million in system benefits charge funds had been expended by the program during its first eight years, of which 88 percent was spent on residential commercial,

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and industrial efficiency programs, and research and development.<sup>21</sup> The remaining 12 percent was spent on program administration, metrics and evaluation, and other items.

The main direct savings impact of the program has been the reduction in centrally distributed electricity required from the utilities. The annual electricity usage reduction from program measures installed during the program through September 30, 2006 reached 2,360 GWh, while statewide annual system peak was reduced by 1,090 MW. In terms of other direct impacts, the Program also yielded some gas and oil savings and some renewable generation.

A summary of New York's Energy \$mart<sup>SM</sup> Public Benefits Program was provided by the Public Service Commission on the occasion of its Order extending the program into 2011. In its December 14, 2005, press release accompanying the Order, the Commission stated:

Based on evaluation reports of the program, the SBC program has:

- Lowered annual energy bills for participants by nearly \$230 million,
- Reduced the statewide peak demand for electricity by 1,000 megawatts (enough power for as many as 1 million homes),
- Funded installation of more than 100 megawatts of customer-sited cogeneration facilities,
- Reduced annual emissions of nitrogen oxides by 1,500 tons, sulfur dioxides by 2,700 tons, and carbon dioxide by more than 1 million tons (the equivalent of removing more than 200,000 vehicles from the state's roads), and
- Supported the creation/retention of 4,800 jobs per year.

The results reported by the Commission were taken from the latest comprehensive independent evaluation of the Program. That evaluation also estimated the cumulative total benefits and costs of the residential, commercial, and industrial efficiency programs. One of the key cost-benefit analyses in that evaluation used a total resource cost perspective. It compared program and participant costs versus the resource benefits. The resource benefits were based on avoided costs associated with electric energy and capacity savings, plus natural gas, oil, propane, and water savings. On that comparison, the B:C ratio from the program was 3.2.<sup>22</sup>

NYSERDA's program evaluations also assess the effects of the program on overall markets. NYSERDA reports that it is "on a trajectory toward market transformation", for example:

NYSERDA has demonstrated leveraging national energy efficiency efforts -- particularly ENERGY STAR® in the residential sector -- to brand and disseminate energy efficient products in New York. Results from the evaluations show awareness and penetration of these products in New York are significantly higher than the

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<sup>21</sup>NYSERDA, *New York's Energy \$mart<sup>SM</sup> Program Quarterly Evaluation and Status Report*, Quarterly Report to the Department of Public Service, Quarter Ending September 30, 2006, pp. 2-3 and 2-6.

<sup>22</sup>New York Energy \$mart<sup>SM</sup> *Program Evaluation and Status Report*, Report to the System Benefits Charge Advisory Group, Final Report -- May 2006. Executive Summary, page ES-6.

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national average. NYSERDA has [also] influenced some markets to the extent that efficient actions are being taken outside direct program participation but are directly attributable to program activities.<sup>23</sup>

## 4.2 Vermont

The Energy Efficiency Utility (EEU) program has been conducted for over six years. Efficiency Vermont's submission to the Public Service Department for the period through 2005 reports that \$65 million in system benefits charge funds had been expended by the program during its first six years.<sup>24</sup>

The program has reduced electricity energy consumption and peak demands. The annual electricity usage reduction from program measures installed during the program through 2005 reached 248 GWh. Statewide system (winter) peak was reduced by 42 MW, while summer peak was reduced by 33 MW. Some savings in fossil fuels and water resources are also reported.

In its Order establishing and increasing EEU funding for 2006 through 2011, the Board observed that the EEU program "results in total electric costs (including the EEU's costs) that are lower than they otherwise would be."<sup>25</sup> From a total resource cost perspective, the B:C ratio from the program through 2005 was 1.7.<sup>26</sup>

Early assessments of the EEU program found that in its first few years its statewide approach and program designs significantly increased the levels of implementation of energy efficiency measures in both residential and non-residential markets.<sup>27</sup> The most recent independent evaluations of Efficiency Vermont's initiatives found that they are among the nation's more effective programs in promoting awareness of and implementation of efficiency measures in both residential and non-residential markets.<sup>28</sup>

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<sup>23</sup> NYSERDA, *op.cit.*, page 2-5.

<sup>24</sup> Efficiency Vermont, *Year 2005 Annual Report and Annual Energy Savings Claim*, August 21, 2006, Table 2.1.2.

<sup>25</sup> State of Vermont Public Service Board, *Order Re: Energy Efficiency Utility Budget for Calendar Years 2006, 2007, and 2008*, August 2, 2006, page 15.

<sup>26</sup> Calculated from data in Efficiency Vermont, *op. cit.*, Table 2.1.2. Specifically, resource cost savings from the program's activity through 2005 are expected to total \$207 million. The main component of these savings is avoided electric system costs, but also included are modest fossil fuel and water savings and an environmental externality value of 7 mills/kWh saved. Total costs, including participant investments triggered by the program, were \$119 million, for a net benefit of \$88 million (\$2003).

<sup>27</sup> B. Hamilton and M. Dworkin, *Four Years Experience of the Nation's First Energy Efficiency Utility: Balancing Resource Acquisition & Market Transformation Under a Performance Contract*. American Council for an Energy-Efficient Economy, Summer Study, August 2004.

<sup>28</sup> KEMA, Inc., *Final Report: Phase 2 Evaluation of the Efficiency Vermont Residential Programs*, December 2005; and RLW Analytics and KEMA, Inc., *Final Report: Phase 2 Evaluation of the Efficiency Vermont Business Programs*, February 2006.



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### 4.3 Oregon

The Energy Trust of Oregon expended some \$145 million during its first four years.<sup>29</sup> The annual electricity usage reduction from program measures installed during the 2002 - 2005 period reached 972 GWh. The annual gas usage reduction reached 282,000 decatherms.<sup>30</sup>

The Trust's economic analysis of its activities is based on a tracking program activity, estimating the savings from program measures, and confirming program impacts through independent evaluation studies. Several evaluations have been performed, but there has not yet been an independent evaluation of the program as a whole. In its annual reports, however, the Trust provides cost-effectiveness assessments relating to each year's program activity. For example, in its 2005 report, the Trust estimated that energy has been saved at an average cost of \$.013/KWh of electricity and \$.28/therm of natural gas, both well below the costs of supplying these resources.<sup>31</sup>

### 4.4 Wisconsin

For the four years through June 30, 2006, the Focus on Energy program expended over \$173 million.<sup>32</sup> The level of annual electric energy savings from the program reached 932 GWh/year in 2006, and the level of demand reduction reached 160 MW. Cumulative natural gas savings reached an annual level of 4.8 million dekatherms.<sup>33</sup> Wisconsin also quantifies the environmental emissions reductions from Focus on Energy, as well as its impacts on net state income and employment.

In 2007, a cost-benefit analysis of the entire Focus on Energy program was prepared. It was based on the first five years of the program's operation and a projection of a further five years of program operation. Impact evaluation studies that had been conducted on various program components were used to establish the program's experienced and projected energy savings for the cost-benefit analysis. A total resource cost perspective was employed. The resource benefits were primarily based on avoided costs associated with electric energy and capacity savings and natural gas energy savings. In addition, benefits included the documented value of avoided SO<sub>x</sub> and NO<sub>x</sub> air emissions based on existing cap and trade markets. This analysis resulted in a B:C ratio of 2.4.<sup>34</sup>

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<sup>29</sup>Calculated from annual reports for 2002 through 2005, at website.

<sup>30</sup>Energy Trust of Oregon, Inc., *2005 Annual Report*, April 14, 2006. Calculated from data on page 11.

<sup>31</sup>*Ibid.*, page 4. No B:C ratio for the program as a whole, for 2005 or cumulatively, is reported; the simple unweighted average of the reported 2005 B:C ratios for the five major component programs is 3.2.

<sup>32</sup>Estimated from the Wisconsin Department of Administration's Public Benefits Program annual reports for FYs 2003 through 2006.

<sup>33</sup>Wisconsin Department of Administration, *Wisconsin Public Benefits Program Annual Report*, July 1, 2005 - June 30, 2006, pp. 9, 11, and 13. Unlike most states, Wisconsin here reports "verified gross savings," not attempting to estimate and deduct the efficiency gains that might have been realized in the absence of the program.

<sup>34</sup>M. L. Goldberg, C. Clark, and S. Cohan, *Focus on Energy Statewide Evaluation -- Interim Benefit-Cost*

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## 4.5 Maine

Efficiency Maine has operated a comprehensive suite of electric energy efficiency programs of its design from mid-2003 through the present. Its latest annual report summarizes program activity and impacts for the three-year period through June 30, 2006. According to that report, the program expended \$23 million during the three years. Expected lifetime economic benefits from those investments are \$87 million, based on projected aggregate reductions to electricity bills.<sup>35</sup>

Annual electricity savings from Efficiency Maine program activity over the three years had risen to an annual level of 121 GWh. Additionally, the reductions in NO<sub>x</sub>, SO<sub>x</sub>, and CO<sub>2</sub> emissions associated with these energy savings are reported.

The Commission has estimated the resource savings from these three years of program activity and compared them with total program costs (comprised of Efficiency Maine costs plus participant costs). The resulting B:C ratio is 2.0.

The Commission's economic analysis of the Efficiency Maine program is based on a combination of program activity tracking and engineering estimates of the savings from program measures. While some specific evaluations have been performed, independent evaluations of the impacts of the programs are just being completed.

The results currently reported by Efficiency Maine are based on gross program costs and savings. Net results are expected to be included in future reports that incorporate the findings from impact evaluations.

## 4.6 New Jersey

New Jersey's statewide Clean Energy Program did not come fully into a non-utility administration and program management regime until 2007. In 1999, the state's energy industry restructuring law authorized the levying of a societal benefits charge on electric ratepayers, one of whose functions is to support a new generation of energy efficiency programs.<sup>36</sup> The law authorized similar funding for gas energy efficiency. In 2001, the new programs began, initially under the administration of the utilities, with the aid of a collaborative group and a set of consultants who designed new programs, all under Board of Public Utilities oversight. The new programs were statewide, replacing the previous more utility-specific approach. In 2003 and 2004 the Board authorized its new Office of Clean Energy to administer the programs instead of the utilities, and to acquire non-utility program management services through competitive

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*Analysis: FY07 Evaluation Report*, February 26, 2007, page 1-4. Additional cost-benefit scenarios were analyzed. In a scenario in which program funding was increased and additional program benefits were monetized--such as the reduced air emissions of CO<sub>2</sub> and mercury, increases to household disposable income, and increases to value added by Wisconsin businesses--the resulting B:C ratio is 5.3. Emissions factors in Appendix 2 of this evaluation were used to calculate the emissions reductions in Table 2 above.

<sup>35</sup>Maine Public Utilities Commission, *op. cit.*, page 2.

<sup>36</sup> Electric Discount and Energy Competition Act, *N.J.S.A.* 48:3-49 *et seq.*

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solicitations. The Clean Energy Council replaced the prior collaborative group as a channel for reviewing programs and making suggestions for budgets and program modifications. Some program modifications were made, often derived from suggestions by non-utility and/or utility members of the Council. But as indicated in Section 3, new non-utility program managers did not assume their duties until 2007.

Thus, the results achieved by the Clean Energy Program during its first six years do not reflect an independent institutional framework. The administrative and managerial structure was in a hybrid or transitional state for several of those years. Nevertheless, the results for the Clean Energy Program are of interest in that they give an idea of the scale of the efficiency program in New Jersey during those years.

During its first five years, 2001 through 2005, the Clean Energy Program expended a total of \$487 million. Approximately 86 percent of these funds went to energy efficiency, and some 14 percent went to renewable energy. The portion of funding for renewable energy was higher than in the other five states during this period, and since then has grown to near parity with energy efficiency, due to the state's aggressive commitment to renewable energy.

Electricity savings from program activity since 2001 had risen to an annual level of 1216 GWh by 2005, while natural gas savings had risen to an annual level of 2 million decatherms. Also quantified are the resulting reductions in air emissions of NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>2</sub>, and mercury.<sup>37</sup>

Pending completion of the comprehensive multi-year impact evaluation of the Clean Energy Program scheduled for 2007, some preliminary indices of cost-effectiveness are available. The program's 2005 annual report estimates that program activities that year resulted in a cost of saved energy of \$.024/kWh for electricity and \$0.22/therm for natural gas, both well below the costs of supplying these resources.<sup>38</sup> Additionally, an evaluation of the 2003 program only evaluated its costs and expected benefits from a total resource cost perspective, finding a B:C ratio of 2.7.<sup>39</sup>

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<sup>37</sup> Preceding data from "New Jersey Clean Energy Program -- Program Summary: 2001-2005", a set of tables prepared by program coordinator Michael Ambrosio, 2006.

<sup>38</sup> New Jersey Board of Public Utilities, Office of Clean Energy, *New Jersey's Clean Energy Program™ 2005 Annual Report*, page 24.

<sup>39</sup> Rutgers University Center for Energy, Economic, and Environmental Policy, *Program Cost-benefit Analysis of 2003 New Jersey Clean Energy Council Energy Efficiency Programs*. "Draft Report for Technical Review – For Discussion Purposes Only", February 15, 2005, Table 2.2.

## Appendix: Effects of Efficiency Programs on Employment

Because demand-side energy efficiency reduces total customer bills for electricity, it frees up net disposable income for other uses. When all of the economic impacts of energy efficiency programs on a state's economy have been analyzed, their net impact on state employment is normally found to be positive. This appendix highlights the employment effects of the state programs described in the report.

To isolate the employment effects of energy efficiency programs requires rigorous macroeconomic analysis. Results are reported here from the three states which have had such analysis performed. The states which have not yet completed macroeconomic evaluations are planning to do so in the future.

Analyses of the macroeconomic effects of energy programs are complements to the direct cost/benefit analyses whose results are summarized in the Section 2 of the report. Macroeconomic analysis attempts to identify the long run effect of energy programs on such measures as total gross state product, per capita expendable income, and net annual employment. The sum total of effects of energy programs on employment arise from many different elements. For example, increased business by vendors who sell, install, or service energy efficiency or renewable energy measures may lead directly to employment increases. On the other hand, there may also be program elements that contribute to employment decreases; for example rate impacts from energy programs may reduce income available to spend on local goods and services. The major source of positive employment impacts comes from the fact that implementation of energy efficiency measures reduces the consumer spending required to obtain the same level of energy services as they would without the efficiency measures. Responding of the resulting energy bill savings on local goods and services has a positive employment impact. Responding of bill savings is usually the biggest single source of employment impact, exceeding all other types of employment impact, positive or negative.

**Table 3. Estimated State Employment Impacts of Energy Programs**

State	Annual Net Jobs Created	Notes
NY	4200	Average from program through 2005
OR	325	From 2004 and 2005 program activity
WI	2420	Annual Average from program through 2006 and projected through 2012

Sources for the employment data in Table 3 are as follows:

New York Energy \$mart<sup>SM</sup> Program Evaluation and Status Report, Report to the System Benefits Charge Advisory Group, Final Report -- May 2006. Executive Summary, page ES-7.

Energy Trust of Oregon, Inc., 2005 Annual Report, April 14, 2006, page 4; and Energy Trust of Oregon, Inc., 2004 Annual Report, April 15, 2005, page 4.

L. Petraglia, G. Weisbrod, and B. Baird, *Focus on Energy Public Benefits Evaluation -- Economic Development Benefits: FY07 Economic Impacts Report*, February 23, 2007, page v.