STATE SCORECARD ON UTILITY ENERGY EFFICIENCY PROGRAMS

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EXECUTIVE SUMMARY

Utilities have offered energy efficiency and other *demand-side management* (DSM) programs to their customers for approximately two decades. Utilities have offered these programs for many reasons, including economic development, environmental protection, and to provide energy cost savings to consumers and businesses. In 1994, several states began to restructure their utility industries. In order to prepare for the expected onset of competition, many utilities began cutting discretionary spending, including energy efficiency programs. As a result, utility spending on energy efficiency and other DSM programs declined from a peak of $2.74 billion in 1993 to $1.57 billion in 1998.

While many utilities have cut their discretionary expenditures, some states have recognized that energy efficiency programs provide important benefits to the public, and have established mechanisms to ensure that these programs continue. By far the most common approach has been to establish a *public benefit fund* (PBF) as part of restructuring. Money for the PBF generally comes from a small surcharge on distribution service. Of the 23 states adopting restructuring legislation or final regulatory orders so far, 18 have made provisions for a PBF of some sort. In addition, Vermont and Wisconsin have established PBFs but have not yet restructured.

Given the many changes taking place regarding utility energy efficiency programs, and given the fact that many states are just now considering whether and how to restructure their utility industries, we thought it would be useful to compare and rank utility energy-efficiency efforts by state, in order to recognize the leaders, and encourage the laggards to improve their programs.

In order to compare utility energy efficiency programs across states, we used data collected from utilities by the U.S. Energy Information Administration (EIA). We allocated each utility's energy efficiency expenditures and savings to each state according to the utility's service area. We used four parameters to score state performance: (1) 1998 energy efficiency expenditures as percentage of utility revenues; (2) 1998 electricity savings as percentage of electricity sales; (3) change in expenditures as a percentage of revenues between 1993 and 1998; and (4) change in savings as percentage of sales between 1993 and 1998. After calculating each of these parameters for all states and the District of Columbia, we assigned "points" to each state based on their relative rating on each parameter. We then weighted each parameter to allow calculation of a total score for each state.

Overall, we found enormous variation among the states in each of the four variables we examined. Energy efficiency expenditures in 1998 range from a high of 1.9 percent of revenues in Massachusetts to a low of nearly zero in Kansas, Nevada, and West Virginia. Nationwide, energy efficiency expenditures were 0.42 percent of revenues on average. The five top states in terms of energy efficiency expenditures as a percent of revenues in 1998 are Massachusetts, Rhode Island, Washington, New Jersey, and Maine.

Electricity savings in 1998 range from a high of 9.2 percent of electricity sales in Washington State (due to nearly two decades of significant activity) to a low of nearly zero in Kansas. The national average was 1.74 percent of electricity sales. The six states that reported at least 4 percent

savings as a fraction of sales in 1998 were Washington, Oregon, Wisconsin, Rhode Island, Minnesota, and Vermont.

The change in energy efficiency expenditures from 1993 to 1998 ranged from an increase of more than 1 percent of revenues in New Jersey, which had programs that gradually ramped up over this period, to a decline of more than 5 percent of revenues in Washington State, which had very high expenditures in 1993, but still spent above the national average in 1998. Nationwide, energy efficiency expenditures declined by 0.42 percent of revenues over the 1993-1998 period.

Energy savings over the 1993-1998 period rose the most in Minnesota, increasing by 4.8 percent of electricity sales. Savings increased by more than 2 percent in six states—Minnesota, Oregon, Vermont, Maryland, Washington, and New Jersey. Savings declined in 14 states, including a reported decline of more than 2 percent of electricity sales in Maine and Tennessee. Nationwide, savings increased by 0.24 percent of sales over this period.

State-by-state spending and savings figures are summarized in Table ES-1. Based on this state-by-state data, scores were compiled for each parameter and overall scores tallied.

Overall, the five states with the highest scores (see Table ES-2) had energy efficiency expenditures in 1998 above 1 percent of revenues (more than double the national average) and savings in 1998 of more than 2.5 percent of electricity sales (substantially above the national average). The five states with the lowest score had 1998 expenditures and savings well below the national average. In addition, expenditures and savings were lower in 1998 than in 1993 in all five states. Scores and ranks for all states are summarized in Figure ES-1.

California, often considered a leading state in energy efficiency efforts, surprisingly does not appear among the top ten states but instead is ranked 17th. This is in large part due to the fact that California utilities underspent their energy efficiency budgets in 1998. Also, California reported less electricity savings as a fraction of total sales in 1998 than in 1993. So even a state like California, one of the first states to adopt a PBF to maintain utility energy efficiency programs, has room to improve.

Electric utilities cut their spending on end-use energy efficiency programs by nearly 50 percent between 1993 and 1998. But while these programs have been dramatically scaled back, utility energy efficiency programs are by no means "dead" or "dying." Almost $1 billion was spent on utility energy efficiency programs in 1998, and programs are expanding in a few states.

There always has been great diversity among states in terms of commitment to utility energy efficiency programs. The top states dedicated 1 to 2 percent of utility revenues to energy efficiency programs in 1998. Not surprising, energy savings correlates very closely with energy efficiency program spending. The top states were achieving electricity savings equivalent to 3 percent or more of total sales as of 1998. Of the top ten states that have restructured, all have adopted a PBF, indicating the importance of a PBF for continuing energy efficiency programs in a restructured environment. The top states tended to be concentrated geographically in the Northeast, Upper Midwest, and West Coast. On the other hand, large sections of the Southeast, Midwest, South-

Table ES-1. State-by-State Spending and Savings on Energy Efficiency Programs between 1993 and 1998

State/Region	Spending as percent of Revenues			Savings as percent of Sales		
	1993	1998	Change from 93 to 98	1993	1998	Change from 93 to 98
New England	**1.97**	**1.37**	**-0.60**	**3.54**	**3.23**	**-0.31**
Connecticut	1.79	0.96	-0.83	4.73	3.31	-1.42
Maine	1.27	1.30	0.03	3.62	0.74	-2.89
Massachusetts	2.55	1.91	-0.65	3.58	3.76	0.19
New Hampshire	0.33	0.41	0.08	0.38	1.31	0.93
Rhode Island	1.98	1.70	-0.28	3.92	4.93	1.01
Vermont	2.48	0.79	-1.69	1.60	4.55	2.95
Mid-Atlantic	**0.89**	**0.60**	**-0.28**	**1.17**	**1.75**	**0.58**
New Jersey	0.29	1.34	1.05	0.31	2.63	2.32
New York	1.66	0.66	-1.00	2.33	2.81	0.48
Pennsylvania	0.16	0.01	-0.15	0.38	0.17	-0.21
E.N. Central	**0.59**	**0.15**	**-0.44**	**0.76**	**1.03**	**0.27**
Illinois	0.02	0.06	0.04	0.04	0.09	0.05
Indiana	0.67	0.04	-0.63	0.21	0.75	0.54
Michigan	0.89	0.05	-0.84	0.66	0.40	-0.26
Ohio	0.38	0.08	-0.31	0.15	0.70	0.55
Wisconsin	2.29	1.02	-1.27	5.10	5.32	0.22
W.N. Central	**0.36**	**0.59**	**0.23**	**0.12**	**1.50**	**1.38**
Iowa	0.62	0.99	0.37	0.31	1.76	1.45
Kansas	0.00	0.00	0.00	0.00	0.00	0.00
Minnesota	1.13	1.16	0.03	0.19	4.94	4.75
Missouri	0.00	0.48	0.48	0.02	0.06	0.04
Nebraska	0.05	0.01	-0.05	0.09	0.06	-0.02
North Dakota	0.13	0.48	0.35	0.13	0.25	0.12
South Dakota	0.04	0.17	0.13	0.07	0.07	0.00
S. Atlantic	**0.63**	**0.29**	**-0.34**	**1.36**	**1.73**	**0.36**
Delaware	0.18	0.24	0.06	0.33	0.94	0.60
Dist. of Columbia	2.22	0.39	-1.83	0.88	2.10	1.22
Florida	0.64	0.54	-0.09	2.71	3.36	0.65
Georgia	0.70	0.02	-0.68	0.25	0.28	0.03
Maryland	1.83	0.80	-1.02	1.17	3.52	2.35
North Carolina	0.31	0.14	-0.16	1.78	0.94	-0.83
South Carolina	0.46	0.17	-0.29	0.93	1.80	0.87
Virginia	0.19	0.00	-0.18	0.26	0.40	0.14
West Virginia	0.09	0.00	-0.09	1.12	0.19	-0.93
E.S. Central	**0.10**	**0.06**	**-0.04**	**1.54**	**0.69**	**-0.85**
Alabama	0.13	0.01	-0.12	0.75	0.11	-0.64
Kentucky	0.06	0.09	0.04	0.07	0.18	0.11
Mississippi	0.01	0.01	-0.01	0.05	0.12	0.08
Tennessee	0.14	0.11	-0.03	4.10	1.88	-2.22
W.S. Central	**0.18**	**0.12**	**-0.06**	**0.62**	**0.84**	**0.22**
Arkansas	0.01	0.01	-0.01	0.07	0.08	0.01
Louisiana	0.04	0.01	-0.03	0.03	0.02	0.00
Oklahoma	0.04	0.01	-0.03	0.28	0.23	-0.06
Texas	0.26	0.17	-0.08	0.91	1.24	0.33
Mountain	**0.70**	**0.16**	**-0.54**	**1.03**	**1.19**	**0.17**
Arizona	0.24	0.11	-0.13	1.32	0.25	-1.06
Colorado	0.40	0.11	-0.29	0.53	1.26	0.73
Idaho	2.78	0.28	-2.50	1.55	2.62	1.08
Montana	1.61	0.72	-0.89	1.25	2.77	1.52
Nevada	0.51	0.00	-0.51	1.57	0.79	-0.78
New Mexico	0.04	0.11	0.07	0.28	0.08	-0.20
Utah	1.60	0.25	-1.35	0.85	2.16	1.31
Wyoming	1.33	0.23	-1.10	0.59	1.89	1.30
Pacific	**2.22**	**0.90**	**-1.32**	**4.54**	**4.91**	**0.37**
California	1.40	0.75	-0.65	4.03	3.00	-1.03
Oregon	2.51	0.96	-1.55	2.33	5.74	3.41
Washington	7.09	1.71	-5.39	6.82	9.24	2.42
P.N.*	**0.10**	**0.63**	**0.53**	**0.15**	**0.60**	**0.46**
Alaska	0.03	0.04	0.02	0.05	0.14	0.09
Hawaii	0.14	0.91	0.78	0.20	0.86	0.66
U.S. TOTAL	**0.83**	**0.42**	**-0.42**	**1.50**	**1.74**	**0.24**

Notes: * Pacific Noncontiguous

Fig ES-1. Total Score and Ranking by State

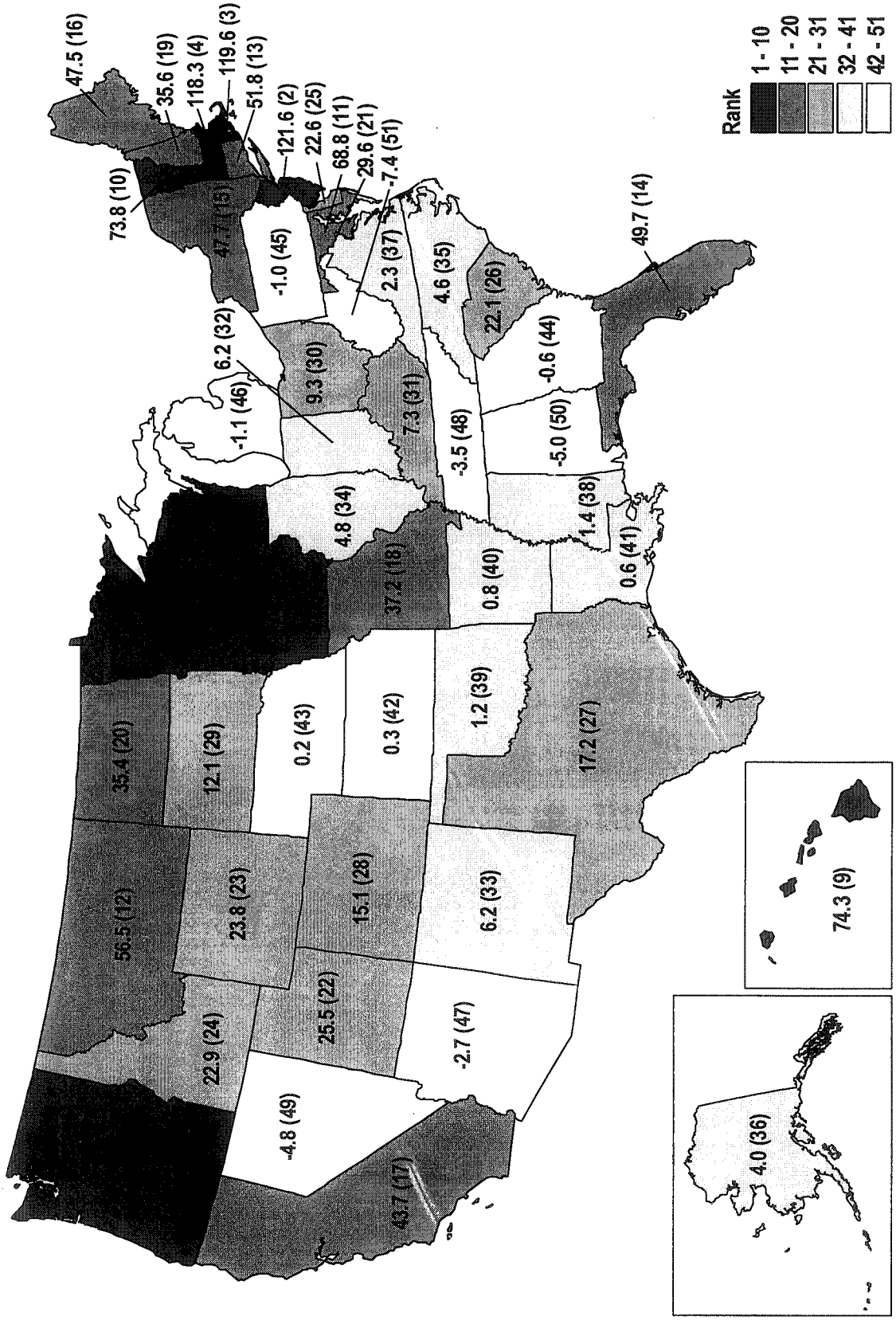


Table ES-2. Highest and Lowest Ranked States

Top Ten (in order)	Bottom Ten (in order)
1. Washington	51. West Virginia
2. New Jersey	50. Alabama
3. Rhode Island	49. Nevada
4. Massachusetts	48. Tennessee
5. Minnesota	47. Arizona
6. Oregon	46. Michigan
7. Iowa	45. Pennsylvania
8. Wisconsin	44. Georgia
9. Hawaii	43. Nebraska
10. Vermont	42. Kansas

Central, and Southwest regions demonstrated minimal commitment to utility efficiency programs in recent years.

If all states and utilities had achieved the level of savings of the top five states, national electricity consumption in 1998 would have been reduced by about 200 billion kilowatt-hours (kWh)—enough electricity to serve all the power needs of 18 million households, or stated differently, enough electricity to run all the refrigerators and freezers in the nation. But instead of saving 200 billion kWh, the actual savings from utility energy efficiency programs in 1998 was only about 56 billion kWh.

What are some states sacrificing by operating minimal utility energy efficiency programs? First, they are maintaining energy waste and higher energy bills for their consumers and businesses. Second, emissions from power plants are higher than they need be, contributing towards environmental and health problems. Third, they may be compromising electric system reliability. Utility energy efficiency programs often cut peak demand, thereby postponing costly investments in new power plants as well as transmission and distribution system upgrades, and improving power system reliability.

We urge state policymakers outside the regions where utility efficiency programs have been maintained to adopt PBFs and greatly expand their efficiency programs. This will provide broad benefits through energy bill savings, lower pollutant emissions, and greater system reliability. And it will increase equity among states (e.g., air quality and power system reliability will improve if all states—not just those in the Northeast, upper Midwest, and Pacific Coast—operate robust energy efficiency programs).

In order to encourage additional states to adopt public benefit programs, we urge federal policymakers to establish a federal public benefits trust fund, along the lines of the public benefits trust fund included in the Clinton Administration's federal restructuring proposal. The federal trust fund would provide matching funds to states for eligible public benefits expenditures. To be specific, we recommend an electricity sales surcharge of $0.002/kWh, identical to proposals included in

Senator Jeffords' (S. 1369) and Rep. Pallone's (H.R. 2569) utility restructuring bills, and twice as large as the trust fund included in the Administration's proposal.

This policy would encourage many states to expand their energy efficiency programs, without penalizing those states already making a major commitment. Decisions about program design and administration would be left up to state policymakers. We have previously estimated that a strong federal public benefit trust fund of this magnitude could result in about 340 billion kWh of electricity savings and 104 million metric tons (MMT) of carbon emissions reductions by 2010, about 750 billion kWh of savings and 207 MMT of carbon reductions by 2020, and about $130 billion in net economic benefits in consumers through 2020.

Strong end-use energy efficiency programs are one important element that can lead to greater efficiency (both energy and economic efficiency) and environmental improvement in the utility sector. But they are not the only element. Complementary initiatives should be taken to increase efficiency and reduce pollution from power supply, specifically initiatives to (1) remove or reduce the barriers limiting the adoption of combined heat and power systems, and (2) apply tighter emissions standards to older coal-fired power plants.

The activities of the leading states profiled in this report indicate what states can do. Now is the time for other states to learn from the leading states, and expand utility and public benefit energy efficiency programs so that their citizens, businesses, and environment can better take advantage of the many benefits these programs bring.

BACKGROUND

Utilities have offered energy efficiency and other *demand-side management* programs to their customers for approximately two decades. Utilities have offered these programs for many reasons, some of which are noted in Table 1. While rationales and levels of effort vary from state to state and utility to utility, spending and savings steadily increased throughout the 1980s and early 1990s. National trends are illustrated in Figure 1 and Table 2.

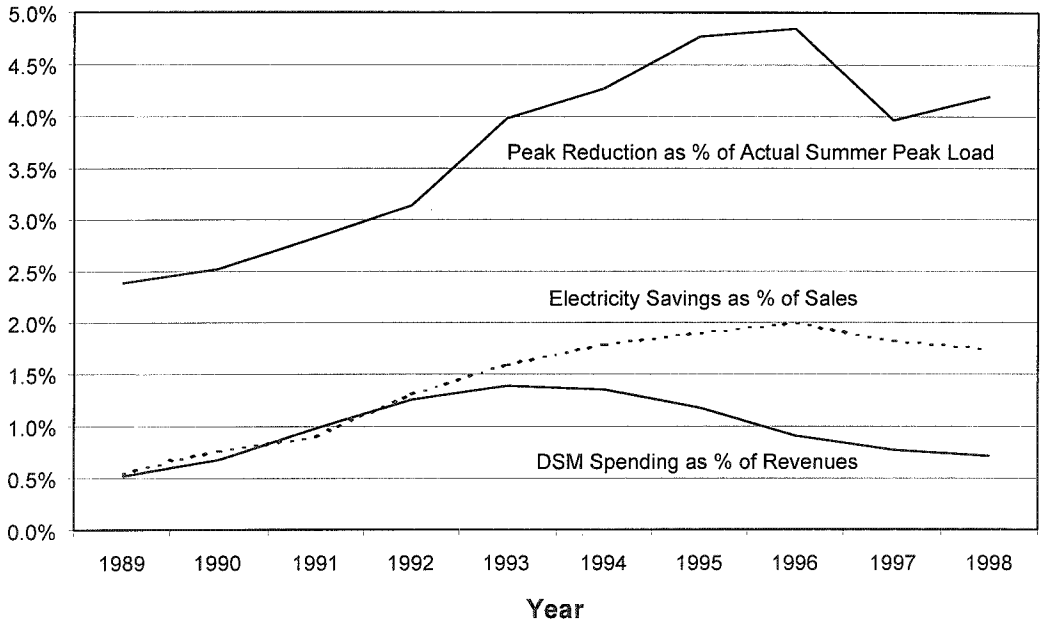
Table 1. Rationales for Utility Energy Efficiency Programs

Reduce energy use.
Reduce customer energy bills.
Reduce pollution associated with power plant generation.
Promote local economic development by providing work to local efficiency contractors and through the "multiplier effect" of reduced energy bills that will lead to increased spending on other goods and services.
Provide a valued service to customers.
Reduce peak demand and the need for new power plants.
Reduce the need for transmission and distribution system upgrades.
Improve public relations for sponsoring utilities.

In 1994, California became the first state to begin restructuring its utility industry, seeking to give customers a choice of electricity suppliers, just as customers currently get to choose their long-distance telephone company. The rationale for restructuring is that by allowing customers to choose their supplier, alternative service providers will begin to compete with the local utility, and this competition will lead to lower prices (at least for some customer classes) and expanded services. Following California, other states began pursuing restructuring (see Figure 2). In order to prepare for the expected onset of competition, many utilities began cutting discretionary spending, including energy efficiency programs. At the same time, as utility commissions began focusing on restructuring, they sometimes repealed or de-emphasized requirements for *integrated resource planning* (IRP) or operation of DSM programs. As a result, utility spending on energy efficiency and other DSM programs declined from a peak of $2.74 billion in 1993 to $1.57 billion in 1998 (see Table 2).

While many utilities have cut their discretionary expenditures, some states have recognized that energy efficiency programs (as well as programs to promote renewable energy and programs to assist low-income families in paying their bills) provide important benefits to the public, and have established mechanisms as part of restructuring to ensure that these programs continue. Furthermore, as discussed elsewhere, restructuring can often provide an incentive to increase kilowatt-hour sales (Kushler and Suozzo 1999), making energy efficiency programs more important than ever. By far the most common approach has been to establish a *public benefit fund* as part of restructuring legislation or regulatory decisions with the PBF used to fund energy efficiency, low-income, and other designated public benefit activities. Money for the PBF generally comes from a small surcharge on distribution service, with charges typically running from 0.5–3.75 mills/kWh (1 mill = $0.001).

Figure 1. Trends in Utility Demand-Side Management Programs



Sources: Data from Table 2; Census 1997; EIA 1999a, 1999b.

Table 2. Estimated Utility Demand-Side Management Spending and Savings, 1989-1998

Year	Total DSM Spending[1] (Million $)		Energy Efficiency Spending (Million $)		Total Energy Savings[2] (Million kWh)	Actual Peak Load Reduction[3] (MW)
	Current $	Real (1998) $	Current $	Real (1998) $		
1989	873	1,097			14,672	12,463
1990	1,177	1,417			20,458	13,704
1991	1,804	2,089			24,848	15,619
1992	2,348	2,646			35,563	17,204
1993	2,744	3,013	1,608	1,766	45,294	23,069
1994	2,716	2,913	1,592	1,707	52,483	25,001
1995	2,421	2,538	1,409	1,477	57,421	29,561
1996	1,902	1,957	1,052	1,082	61,842	29,893
1997	1,636	1,653	892	901	57,193[4]	25,284
1998	1,568[4]	1,568[4]	913[4]	913[4]	56,866[4]	27,231

Sources: EIA 1995b, 1995c, 1997a, 1997b, 1999c, 1999d.

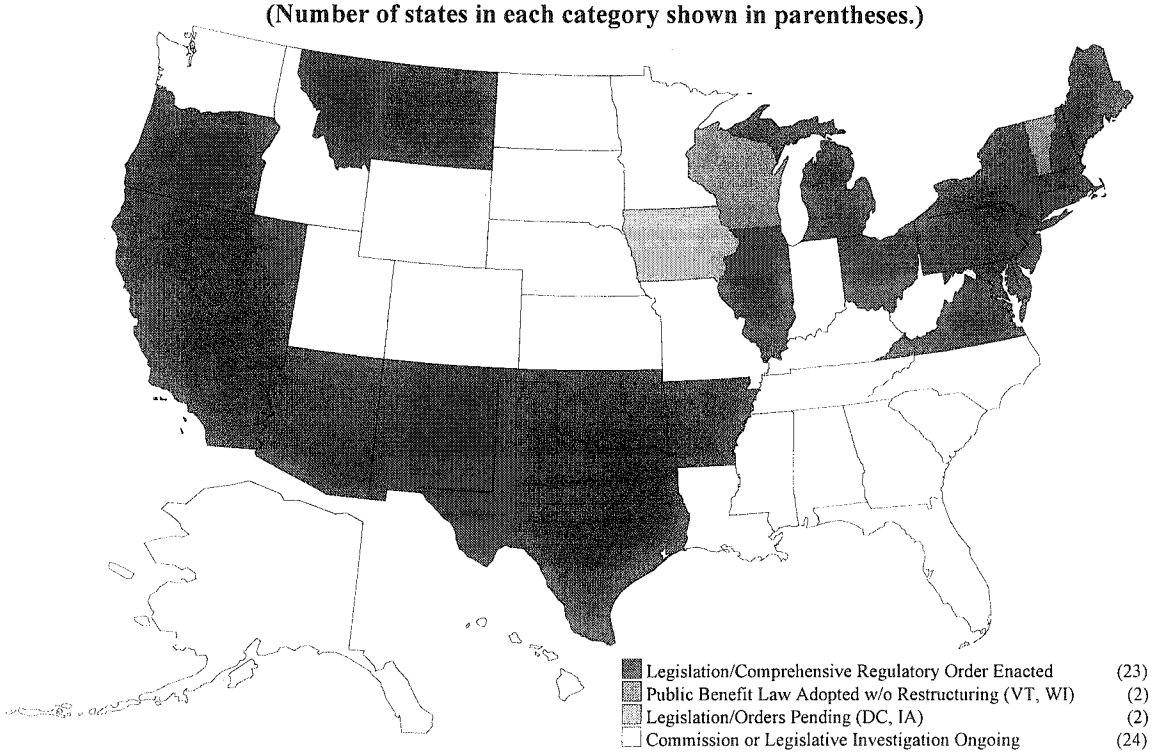
Notes: [1] Total of direct and indirect (administrative, marketing, etc.) costs on DSM programs.

[2] Annual energy savings from all DSM programs. Energy efficiency contributes to about 95 percent of total.

[3] Peak load reduction from all DSM measures in operation. Energy efficiency contributes to about 55 percent of total.

[4] Adjusted for caveats explained in METHODOLOGY section.

Figure 2. Restructuring Status by State as of March 2000.
(Number of states in each category shown in parentheses.)



Source: EIA 2000 with corrections and additions by ACEEE.

PBF surcharges are commonly set based on historic utility expenditures for public benefit programs. But by transferring the charge to distribution service, the cost is shared evenly by all customers, regardless of which provider they purchase electricity from, whether it be a traditional utility or a new independent provider. Of the 23 states adopting restructuring legislation or final regulatory orders, as of March 2000, 18 have specifically made provisions for a PBF of some sort. In addition, Vermont and Wisconsin have established PBFs but have not yet restructured. Information on PBFs established to date is summarized in Table 3.[1]

To provide an example, in 1998, the Connecticut legislature enacted restructuring legislation that includes establishment of a public benefit program to fund energy efficiency, low-income, renewable energy, and public benefit research and development programs. The programs are planned and administered by the state's distribution utilities, with directions from a public advisory board. Based on instructions in the legislation, these programs emphasize addressing market barriers and seeking to permanently transform markets so that efficient equipment and services are ultimately normal practice in the state (Connecticut Legislature 1998). Expenditures under the program total approximately $100 million per year. But the utilities estimate that the benefits of the programs will

[1] ACEEE maintains a table on the status of electric utility restructuring and PBFs on its website—www.aceee.org/briefs/mktabl.htm.

Table 3. Public Benefit Funds by State (mills/kWh) [1, 2]

Total Fund [3]		Energy Efficiency		Low Income		Renewable Energy	
State	mills [4]	State	mills	State	mills	State	mills
New Jersey	3.76	New Jersey	3.15	New Hampshire	1.50	California	0.80
Connecticut	3.75 +	Connecticut	3.00	Wisconsin	1.30	Connecticut	0.75
Massachusetts	3.70 +	Massachusetts	3.00	Maine	0.80	Massachusetts	0.70
California	3.00 +	Vermont	2.50	Ohio	0.70	Rhode Island	0.50
Wisconsin	2.90	Rhode Island	2.10	Pennsylvania	0.70	New Jersey	0.45
Rhode Island	2.60	Maine	1.50	Illinois	0.60	Oregon	0.30
Vermont	2.50 +	Wisconsin	1.50	Maryland	0.60	New Mexico	0.24 +
Maine	2.30	California	1.30 +	Oregon	0.60	Wisconsin	0.10
Oregon	1.90	Oregon	1.00	California	0.50	Illinois	0.04
New Hampshire	1.50 +	New York	0.60 +	Montana	0.19 +	Delaware	0.03
Montana	1.10	Maryland	0.23 +	New Jersey	0.16	New York	0.03
Maryland	0.83 +	Delaware	0.18	Delaware	0.10	Pennsylvania	0.02
Pennsylvania	0.82	Ohio	0.10	New York	0.10	Maine	Dona-tions
New York	0.80 +	Pennsylvania	0.10	Texas	0.07		
Ohio	0.80	Illinois	0.03 +	New Mexico	0.03 +	Arizona	TBD
Illinois	0.67 +	Arizona	TBD	Massachusetts	Current levels	Montana	TBD
Delaware	0.31	New Hampshire	TBD			Nevada	TBD
New Mexico	0.30	Nevada	TBD	Rhode Island	In rates	Vermont	TBD
Texas	0.07 +	Montana	TBD	Arizona	TBD		
Arizona	TBD	Texas	TBD	Connecticut	TBD		
Nevada	TBD			Nevada	TBD		
				Vermont	TBD		

Source: Kushler 2000.

Notes: [1] Mills = tenth of a cent. This unit is commonly used in the utility sector.

[2] TBD = To be decided.

[3] The total is the sum of efficiency, low-income, renewables, **and** other programs not specifically listed, such as research and development.

[4] A plus sign next to a value means that additional funding may be added due to administrative determinations or public utility programs.

be approximately 1.6 times the cost, resulting in substantial net benefits to ratepayers (CL&P 1999; UI 1999).

The Pacific Northwest provides another example of a strong commitment to energy efficiency in a period of industry restructuring. In the Northwest, the region's four governors (from Idaho, Montana, Oregon, and Washington) convened a special regional working group to conduct a comprehensive review of the Northwest energy system and make recommendations on restructuring issues. Among other recommendations, their report calls for the region's retail distribution utilities to "mount a coordinated effort to transform markets for efficient technologies and practices" and further notes that "because markets invariably cut across utility and jurisdictional boundaries, it makes sense to pursue these efforts regionally" (Steering Committee 1996). As a result of this recommendation, the region's utilities and state policy makers formed a new regional organization, the Northwest Energy Efficiency Alliance (NEEA), and gave it a $60 million initial 3-year budget to promote energy efficiency in the region by focusing on market transformation. NEEA is now nearing the end of this initial period and has operated more than 30 regional programs. Among other

achievements, these programs achieved the following: (1) established a self-sustaining commercial building operator training and certification apparatus in the region; (2) increased the market share of highly efficient clothes washers from infinitesimal to about 12 percent; (3) catalyzed the development of an energy-saving and productivity-enhancing method for growing silicon crystals; and (4) spread the use of scientific irrigation scheduling that helps farmers achieve substantial water and energy savings (NEEA 1999). As a result of these and other successes, the region's utilities and policy makers have recently committed an additional $100 million to fund NEEA for 5 more years (NEEA 2000).[2]

Given the many changes taking place regarding utility energy efficiency programs, and given the fact that many states are just now considering whether and how to restructure their utility industries, we thought it would be useful to compare and rank utility energy efficiency efforts by state, in order to recognize the leaders, and encourage the laggards to improve their programs.

METHODOLOGY

Data Source

In order to compare utility energy efficiency programs across states, we used data from U.S. Energy Information Administration's *U.S. Electric Utility Demand-Side Management* reports (EIA 1995b, 1999d). These reports contain survey results on DSM expenditures and electricity savings from DSM activities of over 1,400 private and public electric utilities, among which 260 spent at least $1,000 on DSM programs or saved at least one million kilowatt-hours (one gigawatt-hour) from energy efficiency programs as of 1998. We consider only the energy efficiency portion of DSM programs, since other programs such as load management programs primarily result in peak load reduction and not overall energy savings. As of 1998, direct expenditures on energy efficiency programs represented 58 percent of total utility DSM expenditures (see Table 2).

We allocated each utility's energy efficiency expenditures and savings to each state according to the utility's service area. For investor-owned utilities serving multiple states, we prorated their energy efficiency expenditures and savings according to the proportion of electric sales to each state using data from Edison Electric Institute (EEI 1997).[3] There is no readily available source for state-by-state sales by multi-state noninvestor-owned utilities, therefore we surveyed these utilities via phone. We used the same ratio for prorating 1993 and 1998 data (using 1996 information), assuming that the fraction of sales to each state would stay relatively constant over time. We used U.S. Bureau of the Census data for state population (Census 1999) and EIA data for each state's total electric sales and revenues (EIA 1995a, 1999b).

[2] In addition to participating in NEEA's regional program, Montana and Oregon also have their own energy efficiency programs funded through a PBF. Furthermore, the Bonneville Power Administration, the major supplier of electricity in the region, is about to expand its energy efficiency efforts in order to address a gap between electricity supply and projected demand.

[3] Excepting Potomac Electric Power Company (PEPCO) and Northern States Power (NSP), where straight allocation by sales was inappropriate. For these utilities, state allocations were based on personal communication with the Public Service Commission of D.C. (Hu 2000) and NSP (Zaragoza 2000).

Scoring Method

We used four parameters to score state performance:

1. 1998 energy efficiency expenditures as percentage of utility revenues;
2. 1998 electricity savings as percentage of electricity sales;
3. change in expenditures as a percentage of revenues between 1993 and 1998; and
4. change in savings as percentage of sales between 1993 and 1998.

After calculating each of these parameters for all states and the District of Columbia, we assigned "points" to each state based on their relative rating on each parameter. We then weighted each parameter to allow calculation of a total score for each state. The highest weight was given to energy efficiency expenditures as a fraction of utility revenues in 1998. For spending as a percentage of revenue, we gave 100 points for the highest value, 0 points for the lowest, and prorated the others. For 1998 electricity savings as fraction of total electricity sales, we gave 50 points to the highest state, 0 to the lowest, and prorated the rest. For the two "change" variables, we gave 25 points to the state with the highest positive figure (increased spending or savings), 0 to states with no change, and -25 to the state with the lowest negative number (decreased spending or saving). States with positive change were prorated between 25 and 0, and states with negative change were prorated between 0 and -25. The rationale for giving 1998 expenditures higher weighting than savings is that spending data are more reliable since utilities self-report and use different methodologies for determining savings from their energy efficiency programs. Spending, on the other hand, is more straightforward to track and is therefore more accurate for the purpose of interstate comparison.

Caveats

Our analysis of state energy efficiency program data and trends is a broad and approximate analysis that is subject to a number of caveats. First and foremost, our analysis rests on data collected and compiled by EIA. While EIA undertakes extensive efforts to collect and check the data, the EIA data ultimately rests on utility self-reports of expenditures and savings. Not all utilities report to the EIA, and when they do report, different utilities use different methods to estimate savings. As a result, the EIA data is somewhat incomplete, and data from utility to utility may not be exactly comparable. To address this problem somewhat, we filled in some of the most noticeable gaps in EIA's 1998 report through individual contacts to several major utilities.[4]

Due to these limitations in the data, our rankings should be considered approximate—differences in ranks of just a few levels (e.g., from 14th to 17th) may not be meaningful, while differences in quintiles (e.g., top ten, next ten, etc.) are much more likely to be meaningful. Second, our analysis is for particular years and for particular variables. In some states, energy efficiency expenditures may have increased in 1999 or 2000, but these increases do not yet show up in our rankings. Likewise,

[4] Bonneville Power Administration (Keating 2000), Central Maine Power (Davulis 2000), and New York State Energy Research and Development Authority (DeCotis 2000). EIA is planning to address these gaps in future DSM reports, and is planning to incorporate state PBF programs and DSM programs by energy service companies since these are not currently covered in EIA's utility survey (Couts 2000).

if we had used different variables to rate states, the rankings may have changed somewhat. Finally, our analysis at the state level can mask substantial variations from utility to utility within a state. Some low-ranked states may have a few strong utility energy efficiency programs, but these strong efforts are diluted when programs are viewed statewide.[5]

RESULTS

Overall, we found enormous variation among the states in each of the four variables we examined. Energy efficiency expenditures in 1998 ranged from a high of 1.9 percent of revenues in Massachusetts to a low of nearly zero in Kansas, Nevada, and West Virginia. Nationwide, energy efficiency expenditures were 0.42 percent of revenues on average. Expenditures by state are presented in Appendix 1 and summarized in Figure 3. The five top states in terms of energy efficiency expenditures as a percent of revenues in 1998 are Massachusetts, Rhode Island, Washington, New Jersey, and Maine.

Electricity savings in 1998 ranged from a high of 9.2 percent of electricity sales in Washington State (due to nearly two decades of significant activity) to a low of nearly zero in Kansas. The national average was 1.74 percent of electricity sales. Electricity savings by state are presented in Appendix 2 and summarized in Figure 4. The six states that reported at least 4 percent savings as a fraction of sales in 1998 were Washington, Oregon, Wisconsin, Rhode Island, Minnesota, and Vermont.

The change in energy efficiency expenditures from 1993 to 1998 ranged from an increase of more than 1 percent of revenues in New Jersey, which had programs that gradually ramped up over this period, to a decline of more than 5 percent of revenues in Washington State, which had very high expenditures in 1993, but still spent above the national average in 1998 (see Table 4). Only six states—New Jersey, Missouri, Hawaii, North Dakota, Iowa, and South Dakota—reported an increase in energy efficiency expenditures of more than 0.1 percent of total revenues between 1993 and 1998. Nationwide, energy efficiency expenditures declined by 0.42 percent of revenues over the 1993-1998 period.

Energy savings over the 1993-1998 period rose the most in Minnesota, increasing by 4.8 percent of electricity sales (see Table 4). Savings increased by more than 2 percent in six states—Minnesota, Oregon, Vermont, Maryland, Washington, and New Jersey. Savings declined in 14 states, including a reported decline of more than 2 percent of electricity sales in Maine and Tennessee. Nationwide, savings increased by 0.24 percent of sales over this period. The fact that reported savings did not increase more, in spite of roughly $7.5 billion in utility energy efficiency program expenditures during the 5-year period, is due in part to the wearing out of measures installed in the previous decade. This trend may also be due in part to more careful analysis of energy savings as efficiency programs have matured.

[5] For information on expenditures and savings by utility, see EIA1995; 1999b.

Figure 3. Energy Efficiency Expenditures as Percent of Revenues, 1998

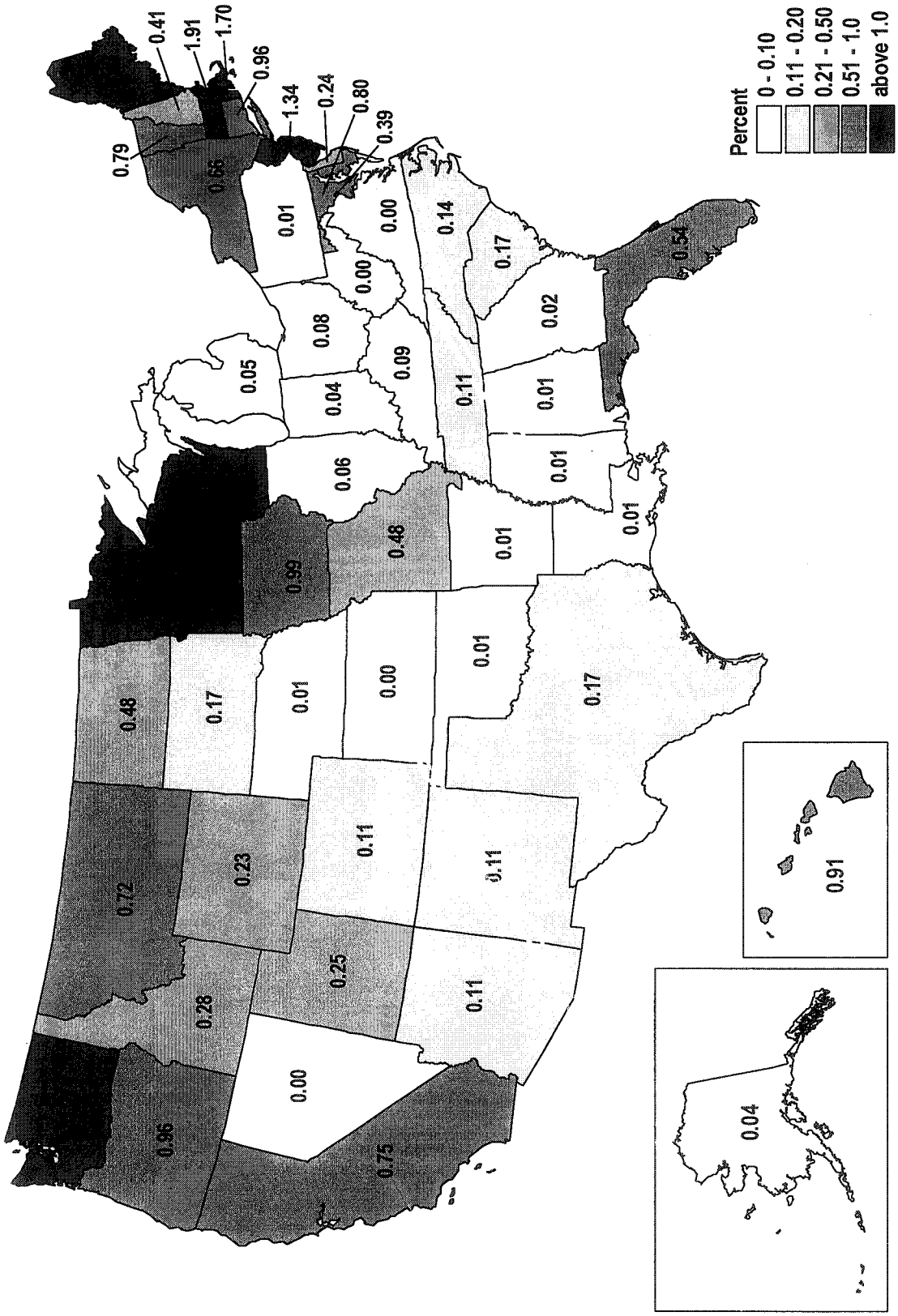


Figure 4. Electricity Savings as Percent of Sales, 1998

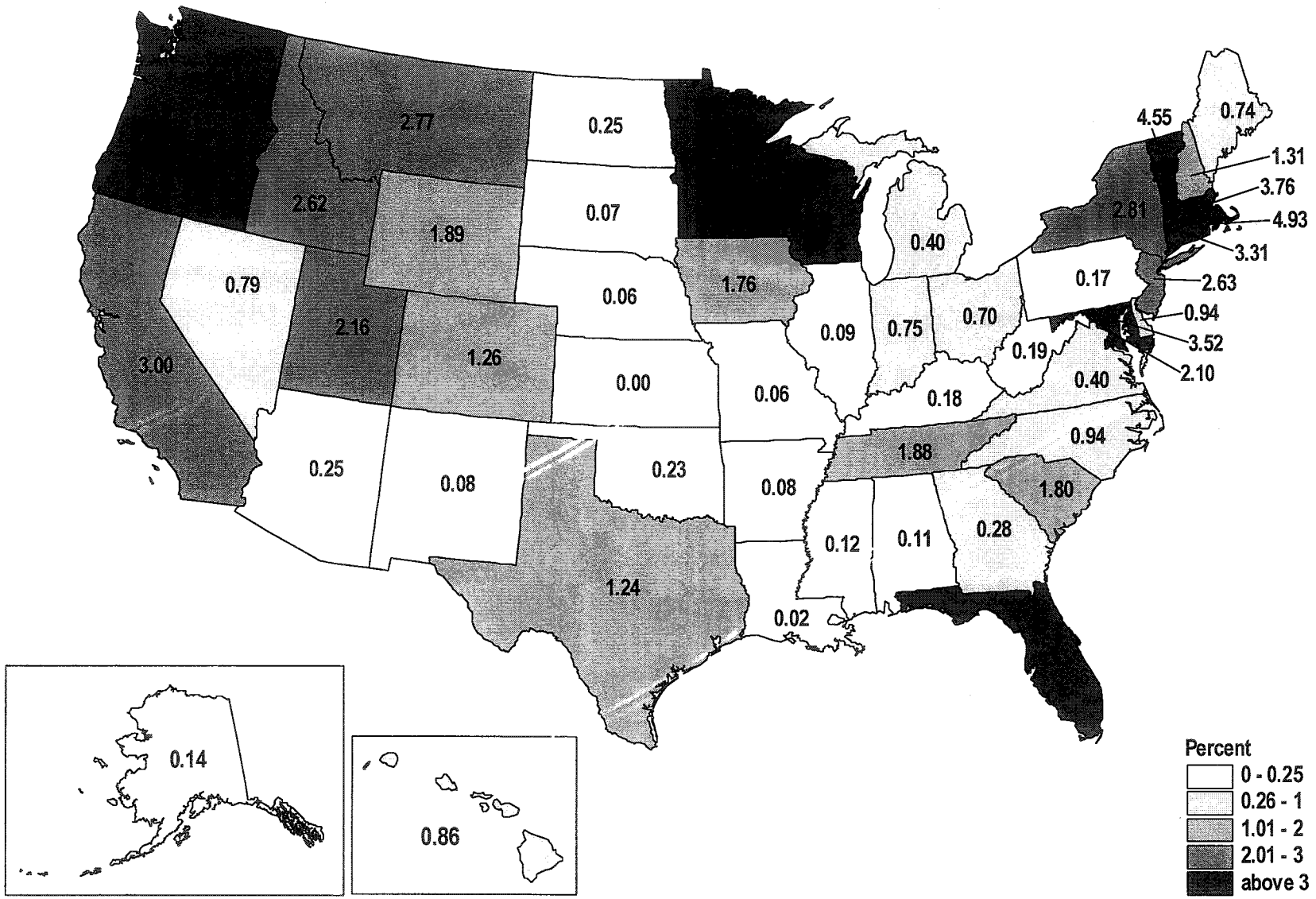


Table 4. State-by-State Spending and Savings on Energy Efficiency Programs Between 1993 and 1998

State/Region	Spending as percent of Revenues			Savings as percent of Sales		
	1993	1998	Change from 93 to 98	1993	1998	Change from 93 to 98
New England	**1.97**	**1.37**	**-0.60**	**3.54**	**3.23**	**-0.31**
Connecticut	1.79	0.96	-0.83	4.73	3.31	-1.42
Maine	1.27	1.30	0.03	3.62	0.74	-2.89
Massachusetts	2.55	1.91	-0.65	3.58	3.76	0.19
New Hampshire	0.33	0.41	0.08	0.38	1.31	0.93
Rhode Island	1.98	1.70	-0.28	3.92	4.93	1.01
Vermont	2.48	0.79	-1.69	1.60	4.55	2.95
Mid-Atlantic	**0.89**	**0.60**	**-0.28**	**1.17**	**1.75**	**0.58**
New Jersey	0.29	1.34	1.05	0.31	2.63	2.32
New York	1.66	0.66	-1.00	2.33	2.81	0.48
Pennsylvania	0.16	0.01	-0.15	0.38	0.17	-0.21
E.N. Central	**0.59**	**0.15**	**-0.44**	**0.76**	**1.03**	**0.27**
Illinois	0.02	0.06	0.04	0.04	0.09	0.05
Indiana	0.67	0.04	-0.63	0.21	0.75	0.54
Michigan	0.89	0.05	-0.84	0.66	0.40	-0.26
Ohio	0.38	0.08	-0.31	0.15	0.70	0.55
Wisconsin	2.29	1.02	-1.27	5.10	5.32	0.22
W.N. Central	**0.36**	**0.59**	**0.23**	**0.12**	**1.50**	**1.38**
Iowa	0.62	0.99	0.37	0.31	1.76	1.45
Kansas	0.00	0.00	0.00	0.00	0.00	0.00
Minnesota	1.13	1.16	0.03	0.19	4.94	4.75
Missouri	0.00	0.48	0.48	0.02	0.06	0.04
Nebraska	0.05	0.01	-0.05	0.09	0.06	-0.02
North Dakota	0.13	0.48	0.35	0.13	0.25	0.12
South Dakota	0.04	0.17	0.13	0.07	0.07	0.00
S. Atlantic	**0.63**	**0.29**	**-0.34**	**1.36**	**1.73**	**0.36**
Delaware	0.18	0.24	0.06	0.33	0.94	0.60
Dist. of Columbia	2.22	0.39	-1.83	0.88	2.10	1.22
Florida	0.64	0.54	-0.09	2.71	3.36	0.65
Georgia	0.70	0.02	-0.68	0.25	0.28	0.03
Maryland	1.83	0.80	-1.02	1.17	3.52	2.35
North Carolina	0.31	0.14	-0.16	1.78	0.94	-0.83
South Carolina	0.46	0.17	-0.29	0.93	1.80	0.87
Virginia	0.19	0.00	-0.18	0.26	0.40	0.14
West Virginia	0.09	0.00	-0.09	1.12	0.19	-0.93
E.S. Central	**0.10**	**0.06**	**-0.04**	**1.54**	**0.69**	**-0.85**
Alabama	0.13	0.01	-0.12	0.75	0.11	-0.64
Kentucky	0.06	0.09	0.04	0.07	0.18	0.11
Mississippi	0.01	0.01	-0.01	0.05	0.12	0.08
Tennessee	0.14	0.11	-0.03	4.10	1.88	-2.22
W.S. Central	**0.18**	**0.12**	**-0.06**	**0.62**	**0.84**	**0.22**
Arkansas	0.01	0.01	-0.01	0.07	0.08	0.01
Louisiana	0.04	0.01	-0.03	0.03	0.02	0.00
Oklahoma	0.04	0.01	-0.03	0.28	0.23	-0.06
Texas	0.26	0.17	-0.08	0.91	1.24	0.33
Mountain	**0.70**	**0.16**	**-0.54**	**1.03**	**1.19**	**0.17**
Arizona	0.24	0.11	-0.13	1.32	0.25	-1.06
Colorado	0.40	0.11	-0.29	0.53	1.26	0.73
Idaho	2.78	0.28	-2.50	1.55	2.62	1.08
Montana	1.61	0.72	-0.89	1.25	2.77	1.52
Nevada	0.51	0.00	-0.51	1.57	0.79	-0.78
New Mexico	0.04	0.11	0.07	0.28	0.08	-0.20
Utah	1.60	0.25	-1.35	0.85	2.16	1.31
Wyoming	1.33	0.23	-1.10	0.59	1.89	1.30
Pacific	**2.22**	**0.90**	**-1.32**	**4.54**	**4.91**	**0.37**
California	1.40	0.75	-0.65	4.03	3.00	-1.03
Oregon	2.51	0.96	-1.55	2.33	5.74	3.41
Washington	7.09	1.71	-5.39	6.82	9.24	2.42
P.N.*	**0.10**	**0.63**	**0.53**	**0.15**	**0.60**	**0.46**
Alaska	0.03	0.04	0.02	0.05	0.14	0.09
Hawaii	0.14	0.91	0.78	0.20	0.86	0.66
U.S. TOTAL	**0.83**	**0.42**	**-0.42**	**1.50**	**1.74**	**0.24**

Notes: * Pacific Noncontiguous

Based on this state-by-state data, scores were compiled for each parameter and overall scores tallied using the methodology described above. Overall, the states with the highest scores were Washington, New Jersey, Rhode Island, Massachusetts, and Minnesota (see Table 5). These states all had energy efficiency expenditures in 1998 above 1 percent of revenues (more than double the national average) and all had savings in 1998 of more than 2.5 percent of electricity sales (substantially above the national average). New Jersey made the top five in part due to a steady increase in expenditures and sales over the 1993-1998 period. Washington was number one due to its very high energy savings, despite the substantial decline in energy efficiency expenditures as a fraction of revenues from 1993 to 1998.

The five states with the lowest scores were West Virginia, Alabama, Nevada, Tennessee, and Arizona (see Table 5). All of these states had 1998 expenditures and savings well below the national average. In addition, expenditures and savings were lower in 1998 than in 1993 in all five states. In the case of Tennessee and Alabama, the low scores are due in part to the very limited activities of the Tennessee Valley Authority, a federal power generation and marketing agency. Other leading and lagging states are shown in Table 5. Scores and ranks for all states are summarized in Table 6 and Figure 5.

Table 5. Highest and Lowest Ranked States

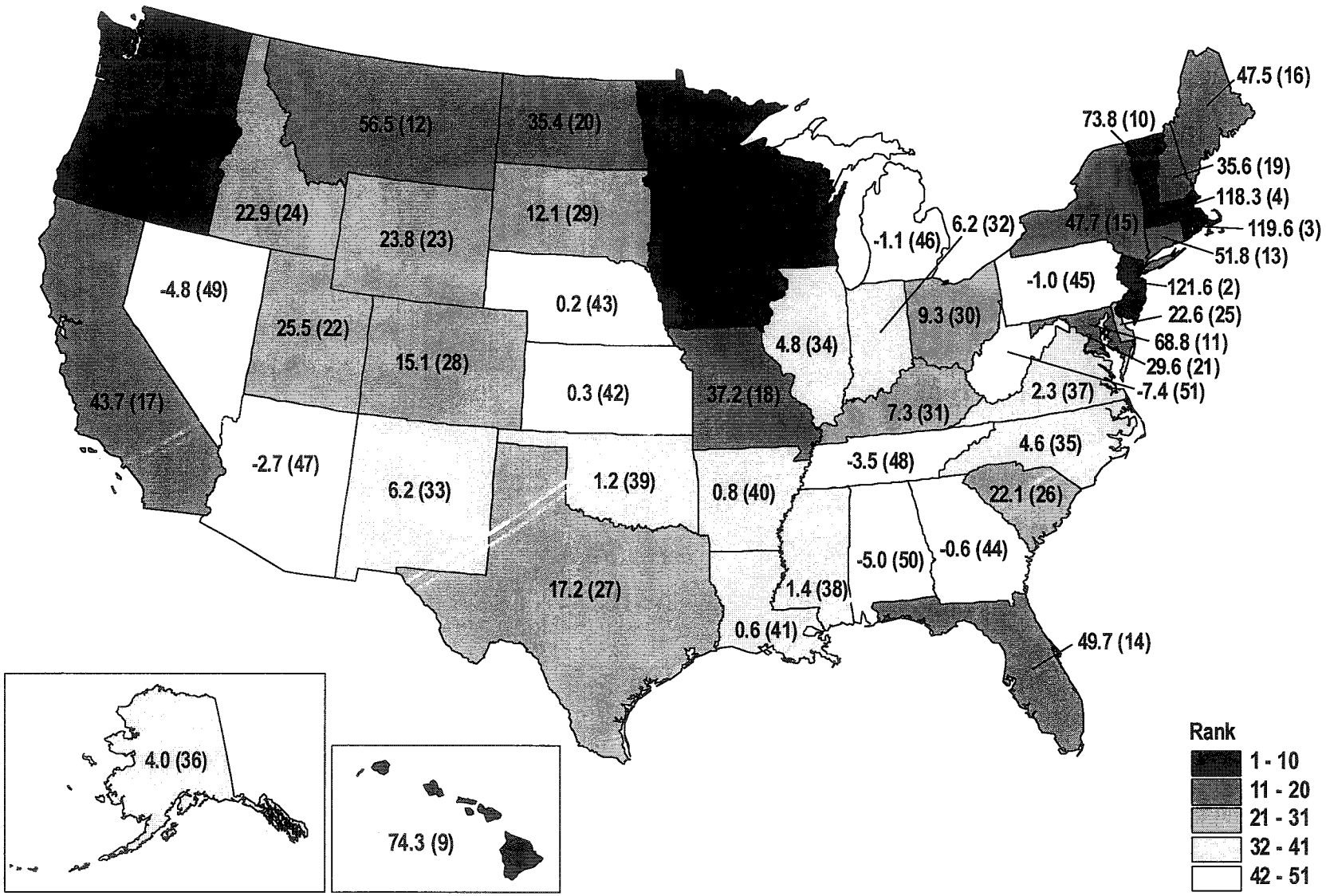
Top Ten (in order)	Bottom Ten (in order)
1. Washington	51. West Virginia
2. New Jersey	50. Alabama
3. Rhode Island	49. Nevada
4. Massachusetts	48. Tennessee
5. Minnesota	47. Arizona
6. Oregon	46. Michigan
7. Iowa	45. Pennsylvania
8. Wisconsin	44. Georgia
9. Hawaii	43. Nebraska
10. Vermont	42. Kansas

California, often considered a leading state in energy efficiency efforts, surprisingly does not appear among the top ten states. California's overall rank is 17th based on the data and methodology used here. California's utility energy efficiency expenditures as a fraction of revenues declined from 1.4 percent in 1993 to 0.75 percent in 1998. Given California's size, this represented over $150 million in energy efficiency spending in 1998—by far the most in the nation in absolute terms, but only about 40 percent as much as the top state (Massachusetts) in percentage terms. California's restructuring legislation directed the states investor-owned utilities to spend $218 million on energy efficiency programs, but these funds were not fully spent in 1998, and the balance rolled over for use in subsequent years. Also, California reported less electricity savings as a fraction of total sales in 1998 than in 1993. So even a state like California, one of the first states to adopt the PBF to maintain utility energy efficiency programs, has room to improve.

Table 6. State Score on Energy Efficiency Efforts

State	Rank	Total Score	Score for Spending as % of Revenues		Score for Savings as % of Sales	
			1998	Change from 93-98	1998	Change from 93-98
Washington	1	127.1	89.4	-25.0	50.0	12.8
New Jersey	2	121.6	70.1	25.0	14.2	12.2
Rhode Island	3	119.6	89.0	-1.3	26.7	5.3
Massachusetts	4	118.3	100.0	-3.0	20.4	1.0
Minnesota	5	113.1	60.6	0.8	26.7	25.0
Oregon	6	92.0	50.2	-7.2	31.0	18.0
Iowa	7	77.9	51.9	8.8	9.5	7.7
Wisconsin	8	77.2	53.2	-5.9	28.8	1.2
Hawaii	9	74.3	47.7	18.4	4.7	3.5
Vermont	10	73.8	41.5	-7.9	24.6	15.5
Maryland	11	68.8	42.1	-4.8	19.0	12.4
Montana	12	56.5	37.6	-4.1	15.0	8.0
Connecticut	13	51.8	50.1	-3.9	17.9	-12.3
Florida	14	49.7	28.5	-0.4	18.2	3.4
New York	15	47.7	34.6	-4.7	15.2	2.5
Maine	16	47.5	67.9	0.7	4.0	-25.0
California	17	43.7	39.4	-3.0	16.2	-8.9
Missouri	18	37.2	25.3	11.4	0.3	0.2
New Hampshire	19	35.6	21.6	2.0	7.1	4.9
North Dakota	20	35.4	25.2	8.3	1.4	0.6
Dist. of Columbia	21	29.6	20.3	-8.5	11.4	6.4
Utah	22	25.5	13.2	-6.3	11.7	6.9
Wyoming	23	23.8	11.9	-5.1	10.2	6.8
Idaho	24	22.9	14.7	-11.6	14.2	5.7
Delaware	25	22.6	12.8	1.5	5.1	3.2
South Carolina	26	22.1	9.1	-1.3	9.7	4.6
Texas	27	17.2	9.1	-0.4	6.7	1.8
Colorado	28	15.1	5.8	-1.3	6.8	3.8
South Dakota	29	12.1	8.6	3.0	0.4	0.0
Ohio	30	9.3	4.0	-1.4	3.8	2.9
Kentucky	31	7.3	4.9	0.9	1.0	0.6
Indiana	32	6.2	2.2	-2.9	4.1	2.9
New Mexico	33	6.2	5.8	1.6	0.5	-1.7
Illinois	34	4.8	3.0	1.0	0.5	0.3
North Carolina	35	4.6	7.5	-0.8	5.1	-7.2
Alaska	36	4.0	2.3	0.4	0.7	0.5
Virginia	37	2.3	0.2	-0.9	2.2	0.8
Mississippi	38	1.4	0.4	0.0	0.7	0.4
Oklahoma	39	1.2	0.6	-0.1	1.2	-0.5
Arkansas	40	0.8	0.3	0.0	0.5	0.1
Louisiana	41	0.6	0.6	-0.1	0.1	0.0
Kansas	42	0.3	0.2	0.1	0.0	0.0
Nebraska	43	0.2	0.3	-0.2	0.3	-0.2
Georgia	44	-0.6	0.9	-3.2	1.5	0.2
Pennsylvania	45	-1.0	0.7	-0.7	0.9	-1.8
Michigan	46	-1.1	2.9	-3.9	2.2	-2.3
Arizona	47	-2.7	5.7	-0.6	1.4	-9.2
Tennessee	48	-3.5	5.7	-0.1	10.2	-19.2
Nevada	49	-4.8	0.0	-2.4	4.3	-6.7
Alabama	50	-5.0	0.6	-0.6	0.6	-5.6
West Virginia	51	-7.4	0.0	-0.4	1.0	-8.0
U.S. Average		30.7	21.9	-1.9	9.4	1.3

Figure 5. Total Score and Ranking by State



A few other major states that did not make the "top ten" or "bottom ten" also are worth commenting on. New York ranked 15th overall, with spending and savings in 1998 well above the national average. However, New York's utility energy efficiency spending (including spending now going through a state program administrator) declined by 60 percent from 1993 to 1998. Florida ranked 14th overall, with less spending as a percent of revenues in 1998 than New York, but more energy savings and a smaller drop in energy efficiency spending between 1993 and 1998. Texas ranked 27th overall, but had relatively low energy efficiency spending in 1998 (only 0.17 percent of revenues, compared to 0.42 percent for the nation as a whole). Texas reported growing savings between 1993 and 1998, even though its energy efficiency spending declined significantly during this period.

CONCLUSION

Electric utilities cut their spending on end-use energy efficiency programs by nearly 50 percent between 1993 and 1998. But while these programs have been dramatically scaled back, utility energy efficiency programs are by no means "dead" or "dying." Almost $1 billion was spent on utility energy efficiency programs in 1998, and programs are expanding in a few states.

There always has been great diversity among states in terms of commitment to utility energy efficiency programs. The top states (including Washington, New Jersey, Rhode Island, Massachusetts, Minnesota, and Oregon) dedicated 1 to 2 percent of utility revenues to energy efficiency programs in 1998. In contrast, the weakest states (including West Virginia, Alabama, Nevada, Tennessee, Arizona, Michigan, and Pennsylvania) dedicated 0.1 percent or less of utility revenues to energy efficiency programs that year. The top states tended to be concentrated geographically in three regions—the Northeast, Upper Midwest, and West Coast. On the other hand large sections of the Southeast, Midwest, South-Central, and Southwest demonstrated minimal commitment to utility efficiency programs in recent years.

Not surprisingly, energy savings correlates very closely with energy efficiency program spending. The top states were achieving electricity savings equivalent to 3 percent or more of total sales as of 1998. The top five states in terms of energy savings in 1998—Washington, Oregon, Wisconsin, Minnesota, and Rhode Island—saved the equivalent of 6 percent of their electricity sales. If all states and utilities had achieved this level of savings, national electricity consumption in 1998 would have been reduced by about 200 billion kWh—enough electricity to serve all the power needs of 18 million households, or stated differently, enough electricity to run all the refrigerators and freezers in the nation.

But instead of saving 200 billion kWh, the actual savings from utility energy efficiency programs in 1998 was only about 56 billion kWh. The actual savings was pulled down by minimal savings (0.1 percent of sales or less) in a number of states, including Kansas, Missouri, Louisiana, Nebraska, Arkansas, South Dakota, New Mexico, and Illinois. In total, 15 states achieved paltry electricity savings of 0.025 percent of sales or less in 1998 as a result of their cumulative utility efficiency programs.

What are some states sacrificing by operating minimal utility energy efficiency programs? First, they are maintaining energy waste and higher energy bills for their consumers and businesses. Large-scale utility energy efficiency programs operated in a number of states during the 1990s were very cost-effective—saving energy at an average cost of $0.03/kWh or less, well below the cost of supplying electricity (Eto et al. 1995; Nadel and Geller 1996). And the new market transformation program approaches now being used in some states can produce savings at less than $0.01 in many applications (Nadel and Latham 1998). Consumers and businesses in states like Washington, Oregon, Wisconsin, Minnesota, Rhode Island, Massachusetts, Vermont, and California have realized billions of dollars of net savings as a result of vigorous utility efficiency programs offered there during the 1990s.

Second, the energy savings resulting from utility energy efficiency programs provide environmental benefits by reducing the need to operate fossil fuel-based power plants—plants that generate 70 percent of the electricity consumed in the United States. These power plants spew out pollutants contributing to local, regional, and global air pollution. Power plants, in fact, produce about one-quarter of nitrogen oxides and mercury emissions, more than one-third of carbon dioxide emissions, and nearly two-thirds of sulfur dioxide emissions in the United States (Wooley 2000). Given the regional nature of both power supply and air pollution, utility energy efficiency programs help to cut pollution and improve public health over wide areas—in states with strong efficiency programs as well as in nearby states with minimal programs. Thus, some states are unnecessarily fouling the air while getting a "free ride" to some extent from their more environmentally responsible neighbors.

Third, utility energy efficiency programs often cut peak demand, thereby postponing costly investments in new power plants as well as transmission and distribution system upgrades, and improving power system reliability. System reliability has become a growing concern as facilities age and major cities such as Chicago and New York increasingly experience power outages during summer heat waves. Efficiency programs can reduce air conditioning usage and other loads contributing to peak demand, thereby lowering the risk of these costly, burdensome, and dangerous power outages.

Cuts in energy efficiency programs have been one of the consequences of utility restructuring, or the threat of restructuring, in many states. But some states have protected energy efficiency programs by establishing a PBF based on a small surcharge on all electricity sales (see Table 2). These PBFs support energy efficiency programs as well as low-income assistance and renewable energy efforts in most states that have enacted PBFs. In some cases, energy efficiency programs continue to be operated by distribution utilities; in other cases programs are administered by a state or regional agency (Kushler 1998).

In 1998, energy efficiency public benefit programs were operating in California, Massachusetts, Montana, New York, and Rhode Island. Since 1998, a number of states have adopted or begun to implement energy efficiency public benefit programs. Programs have begun, or are scheduled to

begin soon, in 12 additional states.[6] With the expansion of state PBFs, the tide may be turning. It is conceivable that utility energy efficiency spending and savings have grown since 1998, following the small increase in energy efficiency spending from 1997 to1998 (see Table 2).

RECOMMENDATIONS

Based on the success of many states in adopting public benefit programs and implementing energy efficiency programs in concert with restructuring, we urge state policy makers outside the regions where utility efficiency programs have been maintained to adopt PBFs and greatly expand their efficiency programs. This will provide broad benefits through energy bill savings, lower pollutant emissions, and greater system reliability. And it will increase equity among states (e.g., air quality and power system reliability will improve if all states—not just those in the Northeast, upper Midwest, and Pacific Coast—operate robust energy efficiency programs).

In order to encourage additional states to adopt public benefit programs—thereby increasing energy efficiency and pollution reductions nationwide as well as improving consistency among states—we urge federal policy makers to establish a federal public benefits trust fund, along the lines of the public benefits trust fund included in the Clinton Administration's federal restructuring proposal. The federal trust fund would provide matching funds to states for eligible public benefits expenditures. To be specific, we recommend an electricity sales surcharge of $0.002/kWh, identical to proposals included in Senator Jeffords' (S. 1369) and Rep. Pallone's (H.R. 2569) utility restructuring bills, and twice as large as the trust fund included in the Administration's proposal.

This policy would encourage many states to expand their energy efficiency programs, without penalizing those states already making a major commitment. Decisions about program design and administration would be left up to state policymakers. We have previously estimated that a strong federal public benefit trust fund of this magnitude could result in about 340 billion kWh of electricity savings by 2010 and 750 billion kWh of savings by 2020, and about $130 billion in net economic benefits in consumers through 2020 (Geller, Bernow, and Dougherty 1999; Nadel 1999). Furthermore, this policy could reduce U.S. carbon emissions by 104 MMT by 2010 and 207 MMT by 2020, thereby making a major contribution to U.S. efforts to limit greenhouse gas emissions and global warming (Geller, Bernow, and Dougherty 1999).

Strong end-use energy efficiency programs are one important element that can lead to greater efficiency (both energy and economic efficiency) and environmental improvement in the utility sector. But they are not the only element. Complementary initiatives should be taken to increase efficiency and reduce pollution from power supply, specifically initiatives to (1) remove or reduce the barriers limiting the adoption of combined heat and power systems, and (2) apply tighter emissions standards to older coal-fired power plants. By emphasizing both demand and supply-side efficiency, economic and environmental benefits would be maximized (Geller, Bernow, and Dougherty 1999).

[6] These are: Oregon, Connecticut, Delaware, Illinois, Maine, Maryland, New Hampshire, New Jersey, Ohio, Texas, Vermont, and Wisconsin.

The activities of the leading states profiled in this report indicate what states can do. Now is the time for other states to learn from the leading states, and expand utility and public benefit energy efficiency programs so that their citizens, businesses, and the environment can better take advantage of the many benefits these programs bring.

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APPENDIX 1. SPENDING AND SAVINGS ON ENERGY EFFICIENCY PROGRAMS BY STATE, 1998

State/Region	Spending on Energy Efficiency Programs				Savings from Energy Efficiency Programs			
	Program Spending	Revenues from Sales to Consumers	Spending as % of Revenues	Spending per Capita	Electricity Savings	Electricity Sales to Consumers	Savings as % of Sales	Savings per Capita
	Thousand $	Thousand $	%	$	GWh	GWh	%	kWh
New England	**152,076**	**11,062,265**	**1.37**	**11.32**	**3,575**	**110,647**	**3.23**	**266.21**
Connecticut	28,551	2,983,159	0.96	8.72	957	28,956	3.31	292.32
Maine	14,656	1,131,165	1.30	11.78	85	11,599	0.74	68.58
Massachusetts	88,968	4,659,237	1.91	14.47	1,829	48,607	3.76	297.51
New Hampshire	4,553	1,103,783	0.41	3.84	121	9,254	1.31	102.10
Rhode Island	11,174	657,826	1.70	11.31	339	6,868	4.93	342.73
Vermont	4,174	527,095	0.79	7.06	244	5,363	4.55	413.18
Mid-Atlantic	**186,895**	**30,898,591**	**0.60**	**4.88**	**5,688**	**325,581**	**1.75**	**148.55**
New Jersey	92,788	6,932,014	1.34	11.43	1,794	68,162	2.63	221.08
New York	92,871	14,043,372	0.66	5.11	3,681	131,161	2.81	202.55
Pennsylvania	1,236	9,923,205	0.01	0.10	213	126,258	0.17	17.71
E.N. Central	**53,614**	**35,408,307**	**0.15**	**1.21**	**5,645**	**545,637**	**1.03**	**127.74**
Illinois	5,663	9,791,850	0.06	0.47	121	131,217	0.09	10.04
Indiana	2,051	4,913,561	0.04	0.35	691	92,059	0.75	117.18
Michigan	3,901	7,129,310	0.05	0.40	405	100,506	0.40	41.24
Ohio	7,712	10,197,625	0.08	0.69	1,126	159,793	0.70	100.41
Wisconsin	34,287	3,375,961	1.02	6.56	3,303	62,061	5.32	632.23
W.N. Central	**83,297**	**14,018,636**	**0.59**	**4.46**	**3,538**	**236,377**	**1.50**	**189.28**
Iowa	22,336	2,254,581	0.99	7.80	658	37,318	1.76	229.81
Kansas	78	2,144,621	0.00	0.03	0	34,140	0.00	0.03
Minnesota	37,501	3,239,046	1.16	7.94	2,802	56,744	4.94	592.92
Missouri	20,250	4,194,868	0.48	3.72	39	68,986	0.06	7.10
Nebraska	71	1,227,265	0.01	0.04	14	23,145	0.06	8.48
North Dakota	2,253	468,861	0.48	3.53	21	8,220	0.25	32.37
South Dakota	808	489,394	0.17	1.09	6	7,824	0.07	7.79
S. Atlantic	**127,511**	**43,745,348**	**0.29**	**2.61**	**11,740**	**679,757**	**1.73**	**239.87**
Delaware	1,747	715,678	0.24	2.35	97	10,398	0.94	130.93
Dist. of Columbia	2,953	761,540	0.39	5.65	216	10,281	2.10	413.17
Florida	71,412	13,126,644	0.54	4.79	6,297	187,355	3.36	422.19
Georgia	1,248	7,087,107	0.02	0.16	306	110,720	0.28	40.04
Maryland	32,520	4,045,023	0.80	6.33	2,035	57,834	3.52	396.32
North Carolina	10,450	7,332,425	0.14	1.38	1,069	113,596	0.94	141.71
South Carolina	6,990	4,008,476	0.17	1.82	1,304	72,454	1.80	339.95
Virginia	192	5,323,715	0.00	0.03	365	90,609	0.40	53.69
West Virginia	0	1,344,740	0.00	0.00	50	26,511	0.19	27.82
E.S. Central	**9,218**	**15,257,203**	**0.06**	**0.56**	**1,995**	**289,283**	**0.69**	**121.11**
Alabama	496	4,404,244	0.01	0.11	85	79,173	0.11	19.62
Kentucky	2,951	3,154,844	0.09	0.75	135	75,850	0.18	34.33
Mississippi	171	2,542,743	0.01	0.06	52	42,510	0.12	18.83
Tennessee	5,600	5,155,372	0.11	1.03	1,723	91,750	1.88	317.16
W.S. Central	**32,972**	**27,849,287**	**0.12**	**1.10**	**3,946**	**469,633**	**0.84**	**131.47**
Arkansas	135	2,271,531	0.01	0.05	33	39,315	0.08	12.99
Louisiana	495	4,489,585	0.01	0.11	19	77,716	0.02	4.39
Oklahoma	316	2,601,691	0.01	0.09	109	47,897	0.23	32.44
Texas	32,026	18,486,480	0.17	1.62	3,785	304,705	1.24	191.56
Mountain	**19,425**	**12,210,289**	**0.16**	**1.16**	**2,461**	**206,019**	**1.19**	**146.37**
Arizona	4,482	4,091,929	0.11	0.96	142	55,843	0.25	30.44
Colorado	2,613	2,356,601	0.11	0.66	499	39,574	1.26	125.73
Idaho	2,393	854,768	0.28	1.95	558	21,276	2.62	454.38
Montana	4,749	661,283	0.72	5.40	382	13,774	2.77	433.69
Nevada	4	1,442,006	0.00	0.00	198	25,037	0.79	113.59
New Mexico	1,359	1,232,749	0.11	0.78	15	18,173	0.08	8.80
Utah	2,685	1,068,812	0.25	1.28	446	20,700	2.16	212.51
Wyoming	1,139	502,141	0.23	2.37	220	11,641	1.89	456.55
Pacific	**237,536**	**26,317,898**	**0.90**	**5.70**	**17,799**	**362,528**	**4.91**	**427.46**
California	153,747	20,438,971	0.75	4.71	6,798	226,396	3.00	208.10
Oregon	21,177	2,209,290	0.96	6.45	2,586	45,083	5.74	788.02
Washington	62,612	3,669,637	1.71	11.01	8,414	91,050	9.24	1,479.04
P.N.*	**9,981**	**1,578,321**	**0.63**	**5.52**	**87**	**14,356**	**0.60**	**48.02**
Alaska	226	508,097	0.04	0.37	7	5,095	0.14	11.50
Hawaii	9,755	1,070,224	0.91	8.18	80	9,261	0.86	66.82
U.S. TOTAL	**912,526**	**218,346,145**	**0.42**	**3.38**	**56,474**	**3,239,818**	**1.74**	**208.93**

Sources: Census 1999; Davulis 2000; DeCotis 2000; EIA 1999b, 1999d; Hu 2000; Keating 2000; Zaragoza 2000

Notes: * Pacific Noncontiguous

APPENDIX 2. SPENDING AND SAVINGS ON ENERGY EFFICIENCY PROGRAMS BY STATE, 1993

State/Region	Spending on Energy Efficiency Programs				Savings from Energy Efficiency Programs			
	Program Spending	Revenues from Sales to Consumers	Spending as % of Revenues	Spending per Capita	Electricity Savings	Electricity Sales to Consumers	Savings as % of Sales	Savings per Capita
	Thousand $	Thousand $	%	$	Billion kWh	Billion kWh	%	kWh
New England	**207,051**	**10,485,738**	**1.97**	**15.67**	**3,710**	**104,797**	**3.54**	**280.83**
Connecticut	49,957	2,795,080	1.79	15.26	1,288	27,238	4.73	393.52
Maine	13,779	1,087,316	1.27	11.14	433	11,952	3.62	350.04
Massachusetts	115,435	4,518,345	2.55	19.21	1,619	45,281	3.58	269.47
New Hampshire	3,122	950,684	0.33	2.78	33	8,761	0.38	29.41
Rhode Island	13,499	680,962	1.98	13.53	257	6,548	3.92	257.52
Vermont	11,259	453,351	2.48	19.61	80	5,016	1.60	139.93
Mid-Atlantic	**266,441**	**30,013,821**	**0.89**	**7.01**	**3,690**	**315,772**	**1.17**	**97.03**
New Jersey	18,737	6,554,406	0.29	2.38	203	65,621	0.31	25.80
New York	232,206	13,960,391	1.66	12.80	3,034	130,170	2.33	167.24
Pennsylvania	15,498	9,499,024	0.16	1.29	453	119,981	0.38	37.72
E.N. Central	**188,143**	**31,789,611**	**0.59**	**4.38**	**3,736**	**489,034**	**0.76**	**86.90**
Illinois	1,516	9,122,712	0.02	0.13	45	117,786	0.04	3.88
Indiana	28,502	4,234,987	0.67	5.00	171	81,931	0.21	29.94
Michigan	55,707	6,256,380	0.89	5.85	582	87,589	0.66	61.09
Ohio	35,242	9,239,617	0.38	3.19	226	148,571	0.15	20.45
Wisconsin	67,176	2,935,915	2.29	13.33	2,713	53,156	5.10	538.41
W.N. Central	**44,268**	**12,182,887**	**0.36**	**2.45**	**233**	**201,831**	**0.12**	**12.86**
Iowa	11,868	1,915,530	0.62	4.21	99	32,104	0.31	35.18
Kansas	2	1,902,019	0.00	0.00	0	28,808	0.00	0.09
Minnesota	31,024	2,755,867	1.13	6.86	93	49,211	0.19	20.61
Missouri	109	3,709,661	0.00	0.02	9	58,622	0.02	1.72
Nebraska	530	1,038,748	0.05	0.33	16	18,749	0.09	9.92
North Dakota	573	432,986	0.13	0.90	10	7,432	0.13	15.56
South Dakota	162	428,076	0.04	0.22	5	6,905	0.07	6.92
S. Atlantic	**244,215**	**38,503,403**	**0.63**	**5.35**	**7,937**	**582,431**	**1.36**	**173.74**
Delaware	1,143	636,812	0.18	1.64	30	9,121	0.33	43.59
Dist. of Columbia	15,610	703,077	2.22	27.05	92	10,375	0.88	158.69
Florida	70,014	10,994,035	0.64	5.11	4,139	152,748	2.71	301.85
Georgia	42,015	5,982,598	0.70	6.09	221	89,191	0.25	32.05
Maryland	68,552	3,748,338	1.83	13.86	629	53,872	1.17	127.19
North Carolina	20,234	6,618,805	0.31	2.91	1,772	99,778	1.78	254.97
South Carolina	16,013	3,471,952	0.46	4.42	570	61,533	0.93	157.30
Virginia	9,477	5,071,811	0.19	1.47	210	81,372	0.26	32.52
West Virginia	1,157	1,275,975	0.09	0.64	274	24,442	1.12	150.67
E.S. Central	**12,434**	**12,946,790**	**0.10**	**0.79**	**3,824**	**247,788**	**1.54**	**243.50**
Alabama	4,863	3,687,334	0.13	1.16	489	65,058	0.75	116.62
Kentucky	1,623	2,943,291	0.06	0.43	49	68,149	0.07	12.91
Mississippi	263	2,147,198	0.01	0.10	16	34,749	0.05	6.07
Tennessee	5,685	4,168,967	0.14	1.12	3,270	79,832	4.10	643.32
W.S. Central	**43,611**	**24,737,608**	**0.18**	**1.56**	**2,428**	**390,034**	**0.62**	**86.80**
Arkansas	304	2,096,490	0.01	0.13	22	31,663	0.07	9.26
Louisiana	1,556	4,241,904	0.04	0.36	18	67,756	0.03	4.30
Oklahoma	983	2,415,301	0.04	0.30	115	40,531	0.28	35.67
Texas	40,767	15,983,913	0.26	2.26	2,272	250,084	0.91	125.98
Mountain	**73,604**	**10,520,577**	**0.70**	**4.96**	**1,757**	**171,193**	**1.03**	**118.36**
Arizona	8,775	3,644,564	0.24	2.20	584	44,408	1.32	146.27
Colorado	7,900	1,994,131	0.40	2.22	176	32,958	0.53	49.40
Idaho	20,819	748,582	2.78	18.91	290	18,720	1.55	263.07
Montana	9,075	564,227	1.61	10.80	162	12,929	1.25	192.73
Nevada	5,515	1,086,769	0.51	3.99	290	18,499	1.57	209.94
New Mexico	451	1,078,881	0.04	0.28	42	14,927	0.28	25.81
Utah	14,357	898,415	1.60	7.66	143	16,867	0.85	76.09
Wyoming	6,712	505,008	1.33	14.31	70	11,885	0.59	149.82
Pacific	**569,919**	**25,674,148**	**2.22**	**14.44**	**15,689**	**345,550**	**4.54**	**397.50**
California	286,409	20,401,476	1.40	9.18	8,482	210,500	4.03	272.02
Oregon	49,570	1,974,306	2.51	16.33	1,038	44,578	2.33	341.79
Washington	233,940	3,298,366	7.09	44.56	6,169	90,473	6.82	1,175.01
P.N.*	**1,377**	**1,365,606**	**0.10**	**0.78**	**19**	**13,033**	**0.15**	**11.08**
Alaska	125	442,809	0.03	0.21	2	4,375	0.05	3.35
Hawaii	1,252	922,797	0.14	1.08	17	8,658	0.20	15.05
U.S. TOTAL	1,651,062	198,220,189	0.83	6.41	43,023	2,861,462	1.50	166.91

Sources: Census 1998; EIA 1995a; 1995b

Notes: * Pacific Noncontiguous