

U.S. Electric Utility Demand-Side Management 2000

January 2002

Energy Information Administration
Office of Coal, Nuclear, Electric and Alternate Fuels
U.S. Department of Energy
Washington, DC 20585

Electric Utility Demand-Side Management 2000

Executive Summary

Background

Demand-side management (DSM) programs consist of the planning, implementing, and monitoring activities of electric utilities that are designed to encourage consumers to modify their level and pattern of electricity usage. In the past, the primary objective of most DSM programs was to provide cost-effective energy and capacity resources to help defer the need for new sources of power, including generating facilities, power purchases, and transmission and distribution capacity additions. However, due to changes occurring within the industry, electric utilities are also using DSM to enhance customer service. DSM refers only to energy and load-shape modifying activities undertaken in response to utility-administered programs. It does not refer to energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards.

Current Status

In 2000, 962 electric utilities report having demand-side management (DSM) programs. Of these, 516 are classified as large, and 446 are classified as small utilities. This is an increase of 114 utilities from 1999.⁽¹⁾ DSM costs increased to 1.6 billion dollars from 1.4 billion dollars in 1999.

Energy Savings for the 516 large electric utilities increased to 53.7 billion kilowatthours (kWh), 3.1 billion kWh more than in 1999. These energy savings represent 1.6 percent of annual electric sales of 3,413 billion kWh of reported sales⁽²⁾ to ultimate consumers in 2000.

Actual peak load reductions for large utilities decreased in 2000 to 22,901 megawatts. Potential peak load reductions of 41,369 megawatts were a decrease of 2,201 from 1999.

In 2000, incremental energy savings for large utilities were 3.3 billion kWh, incremental actual peak load reductions were 1,640 megawatts, and incremental potential peak load reductions were 3,162 megawatts.

Why the Numbers are Changing

Fluctuations in DSM data can be directly attributed to the changes that are occurring in the electric utility industry. In California, the California Board for Energy Efficiency (CBEE) was created to fund energy efficiency programs that had previously been funded by electric utilities. Utilities in California report their costs associated with and energy savings resulting from CBEE programs. In New York and Vermont, the opposite is true. Therefore, the numbers reported below are not included in the DSM database and tables.

Since 1998 the New York Energy Research and Development Authority (NYSERDA) has managed the New York Energy \$martSM program, which is funded through a systems benefit charge. This program offers consumer

education and assistance programs to increase the energy efficiency in New York. In 2000 the Energy \$martSM program savings of 580,300 MWh were realized with an estimated peak load reduction of 137.4 MW.⁽³⁾ As of March 31, 2001, 147.2 million dollars had been spent since late 1988 when the Energy \$mart Program was initiated.

Efficiency Vermont is Vermont's "Energy Efficiency Utility" which operates independently of the states electric utilities. Efficiency Vermont "provides a more streamlined and coordinated approach to energy efficiency." Efficiency Vermont reports that their energy efficiency programs resulted in energy savings of 20,142 MWh and peak load reductions of 2.2 MW at a cost of 5.4 million dollars in 2000.⁽⁴⁾ Of these energy savings, 47 percent were in the residential sector, while approximately 30 percent were in the commercial sector, and the remainder in the industrial sector.

The drop in the "Other" sector actual and potential peak load reduction and Federal ownership actual and potential peak load reduction can be attributed to a Federal utility discontinuing a load control program. In addition, factors such as weather variations, can influence fluctuations in actual peak load reductions. Reminder: It is no longer possible to directly compare 1998 - 2000 data with data from prior years as the threshold for small and large utilities was changed. Small utilities in 1998 - 2000 are classified as having sales for resale and sales to ultimate consumers of less than 150 million kilowatthours. For 1997 and prior years, small utilities were classified as having sales for resale and sales to ultimate consumers of less than 120 million kilowatthours.

Endnotes

¹ Large utilities are those reporting sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours. Small utilities with sales to ultimate consumers and sales for resale of less than 150,000 megawatthours are only required to report incremental energy savings and peak load reduction, and total utility and total DSM costs for the reporting year.

² Includes unregulated retail sales by energy service providers of 103.8 billion kilowatthours.

³ Quarterly Report, December 2000. New York Energy \$MartSM Program Evaluation and Status Report.

⁴ Schedule V – Demand Side Management Information”. Non-Utility Organization – Efficiency Vermont.

Specific information on demand-side management may be directed to:

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Table 1. U.S. Electric Utility Demand-Side Management Program Energy Savings, Actual and Potential Peak Load Reductions, and Cost, 1996 Through 2000

Item	1996	1997	1998	1999	2000
Energy Savings (million kilowatthours)	61,842	56,406	49,167	50,563	53,701
Actual Peak Load Reductions (megawatts)	29,893	25,284	27,231	26,455	22,901
Potential Peak Load Reductions (megawatts)	48,344	41,237	41,430	43,570	41,369
Cost (thousand dollars)	1,902,197	1,636,020	1,420,920	1,423,644	1,564,901
<p>Notes: Data are final. Data for 1998 - 2000 are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours (prior years 120,000 megawatthours). Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>					

Table 2. U.S. Electric Utility Demand-Side Management Program Energy Savings by Class of Ownership, 1996 Through 2000 (Million Kilowatthours)

Class of Ownership					
	1996	1997	1998	1999	2000
Investor Owned	50,382	44,576	43,273	43,704	46,445
Publicly Owned	4,486	4,298	4,130	4,540	4,701
Cooperative	523	622	51	578	754
Federal	6,452	6,910	1,713	1,742	1,800
U.S. Total	61,842	56,406	49,167	50,563	53,701
<p>Notes: Data are final. Data for 1998 - 2000 are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours (prior years 120,000 megawatthours). Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>					

Table 3. U.S. Electric Utility Demand-Side Management Program Energy Savings by Program Category, 1999 and 2000 (Million Kilowatthours)

Program Category	1999	2000
Energy Efficiency	49,691	52,827
Load Management	872	875
U.S. Total	50,563	53,701
<p>Notes: Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>		

Table 4. U.S. Electric Utility Demand-Side Management Program Energy Savings by Sector, 1999 and 2000 (Million Kilowatthours)

Sector	1999	2000
Residential	16,263	16,287
Commercial	23,375	25,660
Industrial	8,156	9,160
Other	2,770	2,593
U.S. Total	50,563	53,701
<p>Notes: Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>		

Table 5. U.S. Electric Utility Incremental Energy Savings by Class of Ownership, 1999 and 2000 (Million Kilowatthours)

Class of Ownership	Large Utilities ¹		Small Utilities ²		Total	
	1999	2000	1999	2000	1999	2000
Investor-Owned	2,668	2,950	1	0	2,669	2,950
Publicly Owned	304	280	5	11	308	291
Cooperative	86	82	4	6	91	88
Federal	36	36	0	0	36	36
U.S. Total	3,094	3,348	9	17	3,103	3,365

¹ Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours.

² Refers to electric utilities with sales to ultimate consumers and sales for resale less than 150,000 megawatthours.

Notes: Data are final. Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."

Table 6. U.S. Electric Utility Incremental Energy Savings by Program Category, 1999 and 2000 (Million Kilowatthours)

Program Category	Large Utilities ¹	Small Utilities ²	Total
	1999		
Energy Efficiency	3,027	8	3,035
Load Management	67	2	69
U.S. Total	3,094	9	3,103
Program Category	Large Utilities ¹	Small Utilities ²	Total
	2000		
Energy Efficiency	3,284	8	3,292
Load Management	63	9	72
U.S. Total	3,348	17	3,365
<p>¹ Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours.</p> <p>² Refers to electric utilities with sales to ultimate consumers and sales for resale less than 150,000 megawatthours.</p> <p>Notes: Data are final. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>			

Table 7. U.S. Electric Utility Incremental Energy Savings by Sector, 1999 and 2000 (Million Kilowatthours)

Sector	Large Utilities ¹		Small Utilities ²		Total	
	1999	2000	1999	2000	1999	2000
Residential	990	856	4	9	994	865
Commercial	1,502	1,780	3	4	1,505	1,784
Industrial	475	547	1	1	476	548
Other	127	164	1	3	128	167
U.S. Total	3,094	3,347	9	17	3,103	3,365

¹ Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours.

² Refers to electric utilities with sales to ultimate consumers and sales for resale less than 150,000 megawatthours.

Notes: Data are final. Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."

Table 8. U.S. Electric Utility Actual and Potential Peak Load Reductions by Class of Ownership, 1995 Through 1999 (Megawatts)

Class of Ownership	Actual Peak Load Reductions ¹				
	1996	1997	1998	1999	2000
Investor-Owned	22,080	18,557	19,456	18,943	17,042
Publicly Owned	2,736	1,989	2,819	2,466	2,450
Cooperative	2,738	2,380	2,636	2,706	2,869
Federal	2,338	2,358	2,320	2,340	540
U.S. Total	29,893	25,284	27,231	26,455	22,901
Class of Ownership	Potential Peak Load Reductions ²				
	1996	1997	1998	1999	2000
Investor-Owned	35,068	29,531	28,345	31,710	32,085
Publicly Owned	3,608	2,658	3,542	3,170	3,814
Cooperative	5,231	4,591	5,123	4,250	4,930
Federal	4,438	4,458	4,420	4,440	540
U.S. Total	48,344	41,237	41,430	43,570	41,369
<p>¹ Represents the sum of the actual peak load reductions attributable to energy efficiency and load management.</p> <p>² Represents the sum of the potential peak load reductions attributable to load management, including the actual peak load reduction achieved by energy efficiency programs.</p> <p>Notes: Data are final. Data for 1998 - 2000 are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours (prior years 120,000 megawatthours). Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>					

Table 9. U.S. Electric Utility Actual and Potential Peak Load Reductions by Demand-Side Management Program Category, 1999 and 2000 (Megawatts)

Program Category	Actual Reductions	Potential Reductions
	1999	
Energy Efficiency	13,452	13,452
Load Management	13,003	30,118
U.S. Total	26,455	43,570
Program Category	Actual Reductions	Potential Reductions
	2000	
Energy Efficiency	12,873	12,873
Load Management	10,027	28,496
U.S. Total	22,901	41,369
<p>Notes: Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>		

Table 10. U.S. Electric Utility Actual and Potential Peak Load Reductions by Sector, 1999 and 2000 (Megawatts)

Sector	1999		2000	
	Actual	Potential	Actual	Potential
Residential	9,976	12,812	9,446	12,970
Commercial	7,777	8,868	6,987	9,114
Industrial	6,360	17,237	6,141	18,775
Other	2,342	4,653	327	510
U.S. Total	26,455	43,570	22,901	41,369
<p>Notes:Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>				

**Table 11. U.S. Electric Utility Incremental Actual Peak Load Reductions
by Class of Ownership, 1999 and 2000
(Megawatts)**

Class of Ownership	Large Utilities ¹		Small Utilities ²		Total	
	1999	2000	1999	2000	1999	2000
Investor-Owned	1,817	1,119	*	*	1,817	1,119
Publicly Owned	166	247	48	116	214	363
Cooperative	254	249	29	46	283	295
Federal	25	25	0	0	25	25
U.S. Total	2,261	1,640	77	162	2,339	1,802

¹Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours.

²Refers to electric utilities with sales to ultimate consumers and sales for resale less than 150,000 megawatthours.

* Value less than 0.5.

Notes:Data are final. Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."

Table 12. U.S. Electric Utility Incremental Actual Peak Load Reductions by Program Category, 1999 and 2000 (Megawatts)

Program Category	Large Utilities ¹	Small Utilities ²	Total
	1999		
Energy Efficiency	695	22	717
Load Management	1,568	54	1,622
U.S. Total	2,262	76	2,338
Program Category	Large Utilities ¹	Small Utilities ²	Total
	2000		
Energy Efficiency	720	25	745
Load Management	919	137	1,056
U.S. Total	1,640	162	1,802
<p>¹ Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatthours.</p> <p>² Refers to electric utilities with sales to ultimate consumers and sales for resale less than 150,000 megawatthours.</p> <p>Notes: Data are final. Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>			

Table 13. U.S. Electric Utility Incremental Actual Peak Load Reductions by Sector, 1999 and 2000 (Megawatts)

Sector	Large Utilities ¹		Small Utilities ²		Total	
	1999	2000	1999	2000	1999	2000
Residential	605	572	27	37	632	609
Commercial	684	515	22	37	706	552
Industrial	929	502	7	62	936	564
Other	45	50	19	26	64	76

Table 14. U.S. Electric Utility Demand-Side Management Program Costs by Class of Ownership, 1996 through 2000 (Thousand Dollars)

Class of Ownership	1996	1997	1998	1999	2000
Investor-Owned	1,548,510	1,321,194	1,208,940	1,183,440	1,300,287
Publicly Owned	159,849	167,553	117,306	165,063	168,900
Cooperative	92,258	87,889	84,849	64,196	84,814
Federal	101,580	59,384	9,825	10,945	10,900
U.S. Total	1,902,197	1,636,020	1,420,920	1,423,644	1,564,901
<p>Notes: Data are final. Data for 1998 - 2000 are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 150,000 megawatt-hours (prior years 120,000 megawatt-hours). Totals may not equal sum of components because of independent rounding.</p> <p>Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>					