

# **U.S. Electric Utility Demand-Side Management 1997**

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

# Electric Utility Demand-Side Management 1997

## Executive Summary

### Background

Demand-side management (DSM) programs consist of the planning, implementing, and monitoring activities of electric utilities which 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 that are occurring within the industry, electric utilities are also using DSM as a way to enhance customer service. DSM refers to only energy and load-shape modifying activities that are 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 1997, 971 electric utilities reported having DSM programs. Of these, 561 are classified as large and 410 are classified as small utilities. The 561 large utilities account for 89.5 percent of the total retail sales of electricity in the United States.<sup>(1)</sup>

Energy savings for the 561 large electric utilities decreased to 56,406 million kilowatthours (kWh), 5,436 million kWh less than in 1996. These energy savings represent 1.8 percent of annual electric sales of 3,140 billion kWh to ultimate consumers in 1997.

Actual peak load reductions, the goal of the DSM program, for large utilities was 15.4 percent lower in 1997, at 25,284 megawatts, than in 1996. Potential peak load reductions were 14.7 percent lower in 1997 than in 1996.

DSM costs continued to decrease from \$1.9 billion in 1996 to \$1.6 billion in 1997.<sup>(2)</sup> This is the fourth consecutive year that DSM costs have decreased from a high of \$2.7 billion in 1993.

For 1997, incremental energy savings for large utilities were 4,832 million kilowatthours, and incremental actual peak load reductions were 2,326 megawatts.

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### Endnotes

1. Large utilities are those reporting sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Small utilities with sales to ultimate consumers and sales for resale of less than 120,000 megawatthours are only required to report incremental energy savings and peak load reduction,

and total utility and total DSM costs for the reporting year and for the first forecast year.

2. It is tempting, but misleading, to compare DSM costs to supply-side investments on an unadjusted cost-per-kilowatthours or cost-per-kilowatt basis. The calculation of appropriate measures for economic comparisons of DSM and supply-side investments requires that consideration of the life-cycle cost of the options being compared be addressed on an integrated basis (i.e., the interaction of the change in end-use patterns with the production function of the utility must be considered over the expected life of the various options being compared). In addition, the rate impacts of each alternative must be compared because alternative DSM/supply-side combinations may result in differing patterns of revenue requirements over time. The data presented are not sufficient to allow for such comparison.

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**Table 1. U.S. Electric Utility Demand-Side Management Program Energy Savings, Actual and Potential Peak Load Reductions, and Cost, 1993 Through 1997**

Item	1993	1994	1995	1996	1997
Energy Savings (million kilowatthours)	45,294	52,483	57,421	61,842	56,406
Actual Peak Load Reductions (megawatts)	23,069	25,001	29,561	29,893	25,284
Potential Peak Load Reductions (megawatts)	39,508	42,917	47,029	48,344	41,237
Cost (thousand dollars)	2,743,533	2,715,657	2,421,261	1,902,197	1,636,020

**Notes:** Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.

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

**Table 2. U.S. Electric Utility Demand-Side Management Program Energy Savings  
by Class of Ownership, 1993 Through 1998**

(Million Kilowatthours)

<b>Publicly-Owned</b>	2,562	2,965	3,218	4,486	5,542	3,756
Federal	6,950	7,826	5,911	6,452	6,910	7,147

**Table 3. U.S. Electric Utility Demand-Side Management Program Energy Savings by Program Category, 1997-1998**

(Million Kilowatthours)

Program Category	Historical Savings	Projected Savings
	1997	1998
Energy Efficiency	55,453	53,013
Load Management	953	940
<b>U.S. Total</b>	<b>56,406</b>	<b>53,954</b>

**Notes:** Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.

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

**Table 4. U.S. Electric Utility Demand-Side Management Program Energy Savings by Sector, 1996 and 1997**

(Million Kilowatthours)

<b>Sector</b>	<b>1996</b>	<b>1997</b>
Residential	20,585	17,830
Commercial	29,186	27,898
Industrial	10,493	8,984
Other	1,578	1,694
<b>U.S. Total</b>	<b>61,842</b>	<b>56,406</b>

**Notes:** Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.

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

**Table 5. U.S. Electric Utility Incremental Energy Savings by Class of Ownership, 1996 and 1997**

(Million Kilowatthours)

Class of Ownership	Large Utilities <sup>1</sup>		Small Utilities <sup>2</sup>		Total	
	1996	1997	1996	1997	1996	1997
Investor-Owned	5,590	3,689	1	*	5,591	3,689
Publicly-Owned	619	506	8	16	628	522
Cooperative	94	115	4	12	99	127
Federal	540	522	0	0	540	522
<b>U.S. Total</b>	<b>6,844</b>	<b>4,832</b>	<b>13</b>	<b>28</b>	<b>6,857</b>	<b>4,860</b>

1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours.

2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 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 6. U.S. Electric Utility Incremental Energy Savings by Program Category, 1996 and 1997**

(Million Kilowatthours)

<b>Program Category</b>	<b>Large Utilities<sup>1</sup></b>	<b>Small Utilities<sup>2</sup></b>	<b>Total</b>
<b>1996</b>			
Energy Efficiency	6,361	7	6,369
Direct Load Control	12	3	14
Interruptible Load	267	1	268
Other Load Management	-16	2	-14
Other Demand-Side Management	219	*	220
<b>U.S. Total</b>	<b>6,844</b>	<b>13</b>	<b>6,857</b>
<b>Program Category</b>	<b>Large Utilities<sup>1</sup></b>	<b>Small Utilities<sup>2</sup></b>	<b>Total</b>
<b>1997</b>			
Energy Efficiency	4,661	10	4,671
Load Management	171	19	190
<b>U.S. Total</b>	<b>4,832</b>	<b>28</b>	<b>4,860</b>
<p>1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours</p> <p>2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 megawatthours.</p> <p>* Value less than 0.5. 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, 1996 and 1997**  
(Million Kilowatthours)

Class of Ownership	Large Utilities <sup>1</sup>		Small Utilities <sup>2</sup>		Total	
	1996	1997	1996	1997	1996	1997
Residential	1,179	1,055	7	10	1,186	1,065
Commercial	3,537	2,382	3	3	3,540	2,385
Industrial	1,787	1,059	2	8	1,789	1,067
Other	341	336	1	7	342	343
<b>U.S. Total</b>	<b>6,844</b>	<b>4,832</b>	<b>13</b>	<b>28</b>	<b>6,857</b>	<b>4,860</b>

1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours.

2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 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, 1993-1998**  
(Megawatts)

Class of Ownership	Historical Actual Reductions <sup>1</sup>					Projected Actual Reductions
	1993	1994	1995	1996	1997	1998
Investor-Owned	16,362	17,932	22,035	22,080	18,557	18,083
Publicly-Owned	1,898	2,123	2,569	2,736	1,989	1,914
Cooperative	2,327	2,459	2,634	2,738	2,380	2,152
Federal	2,481	2,487	2,323	2,338	2,358	2,299
<b>U.S. Total <sup>1</sup></b>	<b>23,069</b>	<b>25,001</b>	<b>29,561</b>	<b>29,893</b>	<b>25,284</b>	<b>24,448</b>
Class of Ownership	Historical Potential Reductions <sup>2</sup>					Projected Potential Reductions
	1993	1994	1995	1996	1997	1998
Investor-Owned	28,059	30,823	34,163	35,068	29,531	27,341
Publicly-Owned	2,376	2,713	3,252	3,608	2,658	2,574
Cooperative	4,662	4,783	5,049	5,231	4,591	4,374
Federal	4,411	4,599	4,565	4,438	4,458	4,399
<b>U.S. Total <sup>2</sup></b>	<b>39,508</b>	<b>42,917</b>	<b>47,029</b>	<b>48,344</b>	<b>41,237</b>	<b>38,688</b>

1. Represents the sum of the actual peak load reductions attributable to energy efficiency and load management.

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.

Notes: Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.

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

**Table 9. U.S. Electric Utility Actual and Potential Peak Load Reductions by Demand-Side Management Program Category, 1996-1998**  
(Megawatts)

<b>Program Category</b>	<b>Historical Actual Reductions</b>	<b>Historical Potential Reductions</b>
	<b>1996</b>	
Energy Efficiency	14,243	14,243
Direct Load Control	5,575	9,443
Interruptible Load	7,390	21,558
Other Load Management	2,278	2596
Other Demand-Side Management	407	503
<b>U.S. Total</b>	<b>29,893</b>	<b>48,344</b>
<b>Program Category</b>	<b>Historical Actual Reductions</b>	<b>Historical Potential Reductions</b>
	<b>1997</b>	
Energy Efficiency	13,327	13,327
Load Management	11,958	27,911
<b>U.S. Total</b>	<b>25,284</b>	<b>41,237</b>
	<b>Projected 1998 Projected</b>	
Energy Efficiency	13,600	13,600
Load Management	10,848	25,088
<b>U.S. Total</b>	<b>24,448</b>	<b>38,688</b>
<p><b>Notes:</b> Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.</p> <p><b>Source:</b> 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, 1996 and 1997**

(Megawatts)

<b>Sector</b>	<b>1996</b>		<b>1997</b>	
	<b>Actual</b>	<b>Potential</b>	<b>Actual</b>	<b>Potential</b>
Residential	11,471	14,697	10,799	16,662
Commercial	8,678	12,452	8,174	12,896
Industrial	9,083	20,275	5,812	11,035
Other	661	921	498	644
<b>U.S. Total</b>	<b>29,893</b>	<b>48,344</b>	<b>25,284</b>	<b>41,237</b>

Notes: Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours. Totals may not equal sum of components because of independent rounding.

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

**Table 11. U.S. Electric Utility Incremental Actual Peak Load Reductions by Class of Ownership, 1996 and 1997 (Megawatts)**

Class of Ownership	Large Utilities <sup>1</sup>		Small Utilities <sup>2</sup>		Total	
	1996	1997	1996	1997	1996	1997
Investor-Owned	3,115	1,815	*	*	3,115	1,815
Publicly-Owned	374	256	35	103	409	359
Cooperative	185	236	17	39	202	275
Federal	16	19	0	0	16	19
<b>U.S. Total</b>	<b>3,689</b>	<b>2,326</b>	<b>52</b>	<b>142</b>	<b>3,742</b>	<b>2,468</b>
<p>1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours.</p> <p>2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 megawatthours.</p> <p>* Value less than 0.5</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 12. U.S. Electric Utility Incremental Actual Peak Load Reductions by Program Category, 1996 and 1997**

(Megawatts)

<b>Program Category</b>	<b>Large Utilities<sup>1</sup></b>	<b>Small Utilities<sup>2</sup></b>	<b>Total</b>
<b>1996</b>			
Energy Efficiency	1,381	2	1,383
Direct Load Control	399	24	423
Interruptible Load	1,692	11	1,702
Other Load Management	191	9	200
Other Demand-Side Management	27	6	33
<b>U.S. Total</b>	<b>3,689</b>	<b>52</b>	<b>3,742</b>
<b>Program Category</b>	<b>Large Utilities<sup>1</sup></b>	<b>Small Utilities<sup>2</sup></b>	<b>Total</b>
<b>1997</b>			
Energy Efficiency	1,065	12	1,077
Load Management	1,261	130	1,291
<b>U.S. Total</b>	<b>2,326</b>	<b>142</b>	<b>2,468</b>
<p>1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours.</p> <p>2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 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, 1996 and 1997**

(Megawatts)

Class of Ownership	Large Utilities <sup>1</sup>		Small Utilities <sup>2</sup>		Total	
	1996	1997	1996	1997	1996	1997
Residential	792	743	30	40	822	783
Commercial	935	699	9	21	944	720
Industrial	1,870	836	8	61	1878	897
Other	93	48	5	20	98	68
<b>U.S. Total</b>	<b>3,689</b>	<b>2,326</b>	<b>52</b>	<b>142</b>	<b>3,742</b>	<b>2,468</b>

1. Refers to electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatthours.

2. Refers to electric utilities with sales to ultimate consumers and sales for resale less than 120,000 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 14. U.S. Electric Utility Demand-Side Management Program Costs  
by Class of Ownership, 1993 through 1998**

(Thousand Dollars)

<b>Class of Ownership</b>	<b>Historical Costs</b>					<b>Projected Costs</b>
	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Investor-Owned	2,251,227	2,190,646	1,951,874	1,548,510	1,321,194	1,276,774
Publicly-Owned	166,774	183,274	185,294	159,849	167,553	171,696
Cooperative	87,818	95,244	93,073	92,258	87,889	88,016
Federal	237,714	246,493	191,020	101,580	59,384	49,725
<b>U.S. Total</b>	<b>2,743,533</b>	<b>2,715,657</b>	<b>2,421,261</b>	<b>1,902,197</b>	<b>1,636,020</b>	<b>1,586,211</b>
<p><b>Notes:</b> Data are final. Data are provided for electric utilities with sales to ultimate consumers or sales for resale greater than or equal to 120,000 megawatt-hours. Totals may not equal sum of components because of independent rounding. Source: Energy Information Administration, Form EIA-861, "Annual Electric Utility Report."</p>						