

# Demand-Side Management Programs Grow Again!

*Larry B. Barrett*

*President*

*Barrett Consulting Associates, Inc.*

## **ABSTRACT**

Demand-side management programs have experienced a wild ride the last couple of decades. These are programs to help their customers conserve energy use, including peak loads. This article explores some of the history and speculates on the future of demand-side management (DSM).

## **IRP and DSM**

Integrated Resource Plans (IRP) and DSM plans were key features of the utility world in the 1980s and early 1990s. Back then, utilities attempted to balance demand-side programs with supply-side resources to meet capacity and energy needs in a least cost fashion over five to 15 years.

Analysts performed wonderful studies on technical potential, economic potential, and market potential. Numerous benefit-cost tests were developed and debated from different perspectives: 1) the program participant, 2) the non-participant, 3) the utility, 4) the total resources of all participants, and 5) the societal test to account for environment impacts not otherwise avoided through pollution control laws and regulations.

As a result of the IRP and DSM processes, utility investments in energy efficiency programs grew dramatically. Utilities were encouraged financially through such practices as current or accelerated cost recovery of capital contributions and extra returns on energy efficiency investments to mitigate lost revenues associated with reduce sales.

## **EPACT and DEREGULATION**

Just when energy efficiency advocates were getting optimistic about the growth of demand-side management, the situation started to change. Congress passed the Energy Policy Act of 1992, which mandated competition in energy markets at the wholesale level.

In turn, state regulatory authorities considered offering customers choice at the retail level. Thus electric retail choice developed, particularly in states with high electric costs. California became the first by adopting restructuring in 1994. Some two dozen jurisdictions followed.

With the unbundling of vertically integrated monopoly utilities into wholesale and retail markets, the need for integrated resource plans became less compelling. Similarly, demand-side management programs became less justifiable. If one was willing to accept market forces on the supply side then one should allow market forces on the demand side.

Spending on DSM began to wane. Some utility programs were continued, but many stopped in states with retail choice.

However, in many deregulated states, public benefit charges were introduced. Larger pools of funds became available for energy efficiency incentives, renewable energy programs, and low-income assistance investments. Charges were levied on all customers based on usage and then pooled for spending by state agencies, other government authorized organizations, or utilities.

So energy efficiency spending did not disappear, but did decline. However, to many it appeared to decline too much. As a result the pendulum has begun to swing back toward more investments, by utilities, in energy efficiency.

## **HISTORY OF UTILITY DSM PROGRAM SPENDING IN THE U.S.**

Utility spending on DSM programs as of 1989 approached \$900 million. Based on surveys by the U.S. Energy Information Administration, this spending included both energy efficiency and peak load management programs. Also both direct costs for project labor and materials as well as indirect costs for program administration were included.

| Year            | Millions of Dollars | Change in Percent |
|-----------------|---------------------|-------------------|
| 1989            | \$873               |                   |
| 1990            | \$1,177             | 35                |
| 1991            | \$1,804             | 53                |
| 1992            | \$2,348             | 30                |
| 1993            | \$2,744             | 17                |
| 1994            | \$2,716             | -1                |
| 1995            | \$2,421             | -11               |
| 1996            | \$1,902             | -21               |
| 1997            | \$1,635             | -14               |
| 1998            | \$1,568             | -4                |
| 1999            | \$1,644             | 5                 |
| 2000 (estimate) | \$1,800             | 9                 |
| 2001 (estimate) | \$2,000             | 11                |

Spending grew rapidly to over \$2.7 billion in 1993. This was equivalent to 1.4 percent of utility revenues. But then spending started to decline in 1994, when California adopted retail choice.

The level of spending bottomed out in 1998 based on estimates for 1999 by the Energy Information Administration and the American Council for an Energy-Efficient Economy.

## **GROWTH TO CONTINUE**

Spending increased since 1999 to about \$1.8 billion in 2000. One reason is the desire of utilities to help customers offset the higher costs of energy associated with tighter capacity. This trend has probably accelerated somewhat in 2001 with a forecast of \$2 billion in utility spending on DSM programs.

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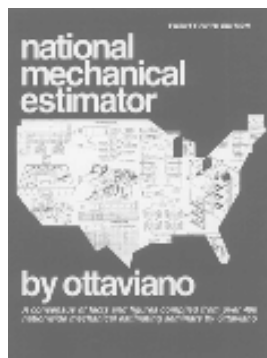
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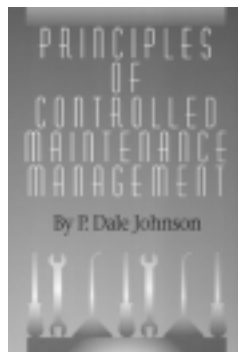
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One example of the increase in the last year comes from Southern California Edison. SCE issued four times as many rebates to residential customers in 2001 compared to 2000. The rebates covered such measures as air conditioners, refrigerators, heat pumps, whole-house fans, evaporative coolers, programmable thermostats, pool pumps, attic and wall insulation and windows. SCE paid out almost \$20 million in rebates, just for this one utility and just for residential.

Utilities in other states with retail choice are also required to spend resources on DSM. In Texas, utility distribution companies participating in retail choice are required to offset ten percent of the load growth experienced through DSM programs.

Some utilities are encouraged to spend a certain portion of their revenues on DSM. In Iowa, prior to 1996, electric utilities were required to spend 2 percent and gas utilities 1.5 percent of revenues on DSM. The requirement was removed in 1996 given the prospect for deregulation. Subsequently, electric utilities have been spending 1.5 to 2 percent of revenues and gas utilities 2 to 3 percent. One incentive is that costs can be recovered in the current year through existing rates, even capital costs.

It is noteworthy that gas utilities in Iowa have spent more in recent years under voluntary arrangements than when mandated. One explanation is that DSM spending offers a customer option to help mitigate the negative impact of high gas costs.

In the aftermath of energy problems in California, Iowa has put deregulation on the back burner. DSM is expected to receive more regulatory attention. It remains to be seen how prescriptive programs may be mandated relative to the more performance based approach currently in place.

## **MARKET TRANSFORMATION AND PERFORMANCE BASED DSM**

In the past, many DSM programs were highly prescriptive and unique to the particular utility. To participate, customers had to follow numerous steps. Commercial customers with similar facilities but in separate utility service territories typically found different qualification criteria and participation rules even though the equipment investments were the same.

One of the lessons learned from the early days of DSM was to simplify programs. This can be achieved by establishing standard participation rules, incentive structures and performance measures. The trend is likely to continue whether or not states have adopted retail choice.

Market transformation is more likely to occur with standard programs. Accordingly, Texas requires utilities to choose from among nine specific programs to offer to their customers.

## **RETURN TO DSM**

It appears there will be a return to more DSM. However, there will be differences, including standardizing DSM programs through market transformation designs.

Consistent with this will be a trend toward a different analysis of DSM programs. A sixth benefit-cost test is expected to better account for market transformation results of DSM programs. The “public purpose test” treats more explicitly non-energy benefits and costs. An example, according to consultant John Farley, would be water conservation benefits associated with energy efficiency savings. Also, a large scale program may reduce product costs to consumers as suppliers pass along economies of scale in manufacturing and distribution.

The public purpose test is calculated more for a portfolio of utility DSM programs rather than for individual programs. This makes reliance on any one test less likely for deciding utility-wide and statewide programs.

Another trend will be toward peak load management. The new round of DSM programs should pay more attention to peak loads. Events of recent years have educated customers and regulators what utilities have always known about the importance of peak demand. Peak load management can have substantial benefits in reducing price fluctuations, improving reliability, avoiding capacity shortages and deferring capacity additions.

Another trend will be toward distributed generation or more broadly distributed resources. This will include greater use of resources like backup generators, fuel cells and renewable-energy technologies.

While DSM may come back in different forms and different ways, so should IRP. Integrated resource planning fell out of favor and was perceived as less crucial in markets with unbundled services and retail

choice. It is unlikely that IRP will be renewed in its old heavy analytical constructs. This will be particularly true for utilities that are no longer vertically integrated. However, vertically integrated utilities will probably need to file long term resource plans which will be reviewed in part based on what offerings are planned for DSM.

At least one regulatory authority is considering transmission and distribution projects in the context of DSM offerings of the utility. In this case distributed generation options that reduce the need for additional transmission and distribution projects will be given favorable consideration.

**In summary, DSM grew rapidly in the early days. When it slowed, many predicted its death. However, its demise has been premature, as DSM is growing again. The difference now is that utility spending will hopefully be more effective and efficient.**

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#### ABOUT THE AUTHOR

**Larry B. Barrett** is president of Barrett Consulting Associates, Inc., Colorado Springs, Colorado, and consults on planning, implementing, marketing and evaluating programs for energy efficiency. He consults with utilities, research institutes, government agencies, and energy management businesses.

Prior to establishing his consulting practice in 1989, Mr. Barrett served for more than 10 years as the manager of Energy Management Programs for the Potomac Electric Power Company. Experience with the utility and since has encompassed residential, commercial, and industrial programs for energy efficiency and marketing including energy service companies.

Mr. Barrett is active in the Association of Energy Engineers, the Association of Energy Services Professionals, and the Association of Professional Energy Managers.

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