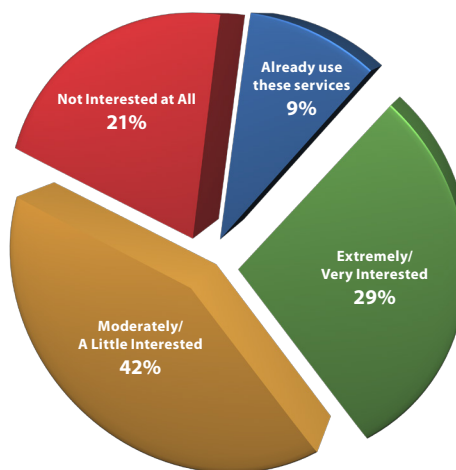


## Best Practices: Demand Response

### Interest Levels in Demand Response



In April 2013, the Energy Research Council (ERC) surveyed 1,254 middle-market companies to measure their interest level and best practices for reducing energy consumption. Two thirds (66%) of survey respondents said they were extremely or very interested in services that reduce energy consumption and costs.

One of the most widely available and effective ways to better manage electricity costs is “demand response.” In its broadest definition, demand response provides middle-market companies the opportunity to receive financial incentives for voluntarily reducing electricity usage during peak demand times when electricity prices are highest.

Demand Response programs help to prevent blackouts, reduce demand on the grid, and benefit the environment. Reducing electricity usage during peak demand times is important because more “peaker plants” must go online to generate enough power to meet peak load. Peaker plants are old, dirty, and expensive to operate.

Peak demand occurs only a few times per year, mostly during afternoon hours in the summer. According to the Demand

Response and Smart Grid Coalition, 100 hours of peak demand comprise 10-20% of annual electricity costs in the United States.

### Demand Response Participation

ERC survey findings show that more than one quarter (28%) of middle-market companies are extremely or very interested in demand response; however, only 9% currently take advantage of demand response programs. Large companies are much more likely than small- or medium-sized companies to enroll in demand response programs, partly because the amount of effort versus the potential savings is more appealing to larger operations.

Several reasons explain the gap between interest levels and actual participation in demand response. The Federal Energy Regulatory Commission’s (FERC’s) *Assessment of Demand Response & Advanced Metering Staff Report* lists barriers to the widespread use of demand response, including regulatory obstacles and technological challenges based on inadequate infrastructure.

A 2012 ERC survey of middle-market companies verifies that a significant barrier to demand response participation is lack of awareness and education. Only 20% of the 2012 survey respondents said they were very

or mostly familiar with demand response. The majority reported they were only somewhat familiar (34%) or not at all familiar (46%) with demand response services.

Despite barriers to widespread participation in demand response programs, the FERC's *2012 State of the Markets Report* notes a substantial increase in capacity enrolled in demand response programs, rising from 3 gigawatts (GW) of capacity in 2007 to 12 GW in 2012. The report states that demand response programs are becoming an increasingly important resource for grid operators during periods of system stress.

### Best Practices: Demand Response Programs

Curtailment Service Providers (CSPs) are responsible for registering, notifying, and paying demand response participants. CSPs act as an interface between Independent System Operators (ISOs) and demand response participants. "Demand Response programs are generally either incentive-based or time-based programs," explained Michael Payne, JD, LL.M., Executive Vice President & Corporate Counsel for APPI Energy. "Under incentive programs, a utility or an ISO prompts customers to use control systems or manual operations to reduce electricity consumption during periods of peak demand in exchange for financial incentives or lower electricity bills." Customers typically reduce their electricity load by operating onsite generators, shutting down equipment, adjusting HVAC or lighting, or changing operations from peak to off peak periods. Incentive-based demand response programs are most common and deliver the majority of energy savings.

"For those middle-market commercial and industrial end-users that have the ability to modify their energy usage behavior during different times of the day or week, time-based programs charge customers different rates depending on the time of day that electricity is consumed," said Michael Cozzi, head of demand response for Direct Energy Business. "Examples of programs include time-of-use pricing, critical peak pricing, real time pricing, day ahead pricing, and critical peak rebates." This concept is much like buying a low-cost airline ticket based on low travel demand days. During critical timeframes, electricity use can also be reduced according to preplanned load prioritization schemes. "With the convergence of smart meter technology, automated demand response technologies, smart load control device technologies, and attractive financial incentives for client load reduction, the timing and value of demand response program opportunities to middle-market commercial and industrial end-users is attractive," said Cozzi.

### Smart Grid

Comprised of millions of individual meters and thousands of local networks, the U.S. electricity infrastructure is expensive, challenging to maintain, and rapidly aging. Trillions of dollars must be invested nationally in the next few decades to upgrade from the current infrastructure to a modernized, fully interactive Smart Grid.

As utilities are required to rebuild transmission systems to ensure reliable delivery of electricity to homes and businesses, consumers will see electricity delivery costs rise to cover necessary expenditures. Some utilities are spending tens of millions per year on needed upgrades. While federal stimulus funds have been issued to some utilities for upgrades, most utilities will continually increase delivery tariff rates to cover costs.

### Best Practices: Smart Grid

Looking forward, Smart Grid technology will greatly improve demand response and its ability to better manage electricity costs. Smart Grids assign end-user contact points, through which the flow of electricity can be automatically controlled and load problems can be identified, isolated, and resolved.

For a Smart Grid to be truly effective, it must interface with smart buildings and smart equipment. Connected to a Smart Grid, smart buildings can respond to peak demand events and real-time electricity pricing. Electricity consumption can be automatically adjusted depending on end-user preferences and parameters. "Smart Grids will significantly enhance demand response by providing real-time data to electricity producers and consumers."

### Bottom Line

One of the most widely available and effective ways to reduce electricity costs and consumption is participation in a demand response program. Demand response programs are becoming an increasingly important resource for grid operators during periods of system stress. The ERC April 2013 survey of 1,254 middle-market companies revealed that only 9% of respondents currently take advantage of demand response programs; however, more than one quarter (28%) are extremely or very interested in demand response.

*For more information about the Energy Research Council, or to participate in future surveys, contact 410-749-5519 or visit [www.energyresearchcouncil.com](http://www.energyresearchcouncil.com).*

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