

WHEN MARKETS MEET MANAGERS: THE INTERSECTION OF FEDERAL REGULATION AND DEMAND RESPONSE, AND OPPORTUNITIES FOR LARGE FEDERAL CUSTOMERS

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Overview

Over the past decade, demand response (DR) has become a valuable part of the total resource portfolio used by utilities, independent system operators (ISOs), and regional transmission organizations (RTOs) to manage the day-to-day and instantaneous balancing of the electric system. End-use customers who are able to reduce consumption at the request of a utility or electric grid operator may be eligible to receive energy and capacity payments equal to or greater than that of an electric generation resource. This opportunity is especially significant for federal customers, which consumed over 175 trillion BTUs of electricity on an annual basis as recently as a decade ago (EIA, 2018). This study, presented by Exeter Associates, Inc. (Exeter), draws from a three-year effort, in partnership with the U.S. Army Corps of Engineers Commercial Utilities Program (USACE CUP) and the U.S. Department of Defense's (DoD's) Office of the Assistant Chief of Staff of Installation Management (OACSIM), to evaluate DR opportunities available to Army installations. This report interprets the findings of that work in the context of DR markets today, and evaluates the confluence of federal regulations, energy economics, and energy markets specifically as it relates to DR and large federal customer behavior in response to market incentives.

Methods

Exeter's evaluation of DR at Army facilities studied actual and potential market engagement on several levels. The first consideration was whether Army facilities had sufficient technological capabilities to reduce a significant amount of load for a designated period of time—as is the hallmark requirement of any DR opportunity. Relatedly, Exeter inventoried perceived and actual obstacles to implementing or exercising the above capabilities. The second consideration of DR was the location of the Army facility, because the benefits associated with DR programs vary widely from region to region. This analysis was complemented by the development of a decision tree. Finally, Exeter evaluated possible contractual arrangements and incentive structures for Army installations attempting to participate in DR. This examination unfolded within the context of Federal Acquisition Regulations (FAR) and other legal requirements applicable to large, federal government entities.

The above research included approximately 20 in-depth assessments conducted through in-person site visits, approximately 75 desk studies initiated through surveys and confirmed through phone calls, and numerous meetings with various stakeholders. These studies covered all major U.S. energy markets. Exeter extended the Army-specific findings to other large federal entities in consultation with USACE CUP, the General Services Administration (GSA), the Defense Logistics Agency Energy (DLA Energy), the U.S. Department of Energy's (DOE's) Federal Energy Management Program (FEMP), and other private sector stakeholders (e.g., curtailment service providers [CSPs], utility energy service contractors, and utilities).

Results / Conclusions

Some of the key takeaways include:

- Investments in energy management control systems (EMCSs), on-site generation, and advanced heating and cooling technologies have provided many entities sufficient capabilities to curtail

load. This capability is often unrealized, however, and infrequently applied to DR to the fullest extent possible.

- No single obstacle predominates as the cause of DR inactivity, in part because federal users span varied geographical areas, regulatory structures, and utility conditions. Additionally, sites differ in size, mission, and utility management. Among the most common obstacles is lack of awareness of capabilities or economic opportunity, in part due to the above inconsistencies.
- A handful of expected obstacles were not impediments. No installations cited the risk of budget cuts as a barrier, in this case because much of the federal government has successfully decoupled budgeting from utility expenditure for most installations and especially those sites engaged in an energy savings performance contract (ESPC).
- Concerns regarding the impact of DR on mission requirements, although not a direct impediment, often constrict participation. However, subsequent to consultation during the in-depth assessment process, installations identified potential DR opportunities that were not constrained by mission requirements. In this case, additional education addressed misconceptions about what DR entailed and helped these installations overcome their initial reluctance.
- Service arrangements with third-party energy savings performance contractors or utility energy service contractors can be structured in such a way as to develop DR capabilities as part of existing energy efficiency programs.
- Federal restrictions on receiving a direct benefit from DR can be overcome by applying DR benefits as utility billing credits.
- Federal restrictions against paying penalties (“something for nothing”) can be contractually overcome by working with third-party CSPs or aggregators.
- Capacity markets are responsible for a disproportionate share of the savings that DR providers earn each year. However, some of the best incentives for DR stem from markets without formal programs. Federal entities in the West often pay significant demand costs, sometimes in the form of punitive demand ratchets. Although federal power allocations help offset some of these costs, demand management is a major, untapped opportunity.
- Only small installations identified constraints related to high program initiation costs, in part because most programs provide a stream of benefits that outweigh any set-up charges. For smaller installations, there are significant information barriers to establishing aggregation arrangements, including challenges with opportunity assessment. There is a need for central entities to undertake this engagement program. Identification of consistent strategy could allow aggregators to enter and manage programs. Remote control technology is also important.

The findings from the above assessment are instructive for large federal facilities involved in or considering DR. They are also important as ISOs/RTOs, utilities, and CSPs help shape future DR programs and markets.

References

Energy Information Administration [EIA] (2018). “Annual Energy Review.” Retrieved from: <https://www.eia.gov/totalenergy/data/annual/showtext.php?t=ptb0113>