



# Demand Response

A Distributed Energy Resource for Today and Tomorrow

There is much discussion around the growing importance of distributed energy resources. As reported in a recent *Utility Dive* study, “a whopping 84% of utilities predict that distributed energy resources will also increase as part of their overall fuel mix.”

Technology evolution and catalysts like environmental regulations and customer optionality are inevitably pushing the landscape of the electricity industry toward a more distributed future.

When people hear the term distributed energy resources, they typically think of residential customers putting solar panels on their rooftops, backup generation at large commercial and industrial customers, or using batteries for storage. However, when you look at the EPRI definition of distributed energy resources as “smaller

power sources that can be aggregated to provide power necessary to meet regular demand,” that sounds very much like residential or mass-market demand response.

Demand response is distributed. Millions of homes in the United States participate in demand response programs. It’s also a smaller power source (usually one-half to three kilowatts per home) and can be aggregated. For example, Itron client Pepco Holdings Inc. has amassed approximately 400 megawatts of capacity by aggregating residential customer loads. Demand response is also dispatchable and, importantly, it’s reliable when devices are used that enable an automated connection between the utility and program participants.

"There is a new way to think about DR—as one of the most obvious and natural distributed energy resources there is. It is dispatchable. It is flexible. It is available at any time. It is modular and distributed. But wait. DR is not only a resource, but it is a tool that can be used to help integrate those other DER options in a way that allows them all to get a seat at the DER table."

– Dan Delurey, CEO of the Association for Demand Response and Smart Grid, quoted in *Utility Dive*

When deployed in such a fashion, a demand response resource takes on the following characteristics:

- » **Accurate:** Statistical samplings or two-way connected devices provide an accurate forecast of available energy, enable utilities to leverage demand response every day as a valuable component of the supply mix, better integrate renewable sources of energy, facilitate real-time energy trading decisions and allow for more effective participation in capacity and energy markets.
- » **Responsive:** Fast-responding and flexible load shape enables high-quality outcomes. For example, in order for a demand response program to provide synchronized reserve services (e.g., PJM requires a ten-minute response time), as well as qualify to meet resource adequacy requirements or assist in managing through renewable intermittency, it must be capable of quick and accurate responses to real-time dispatch instructions.
- » **Quality load shape:** With detailed knowledge of available load and how to control it, a flat or even custom load shape can be produced.

- » **Locational control:** A residential demand response resource can be dispatched either en masse or targeted to precise locations, enhancing its value and flexibility as a resource.

A new channel for demand response programs has emerged as an increasing number of consumers install Wi-Fi thermostats in their homes, enabling the delivery of a bring your own device program. These customers provide utilities with a very inexpensive resource for demand response, and, by providing these customers with value-added services, utilities can increase customer satisfaction.

When utilities start formulating their strategy around distributed energy resources, it should start with a proven resource: demand response. This approach can not only deliver a reliable capacity resource, but also help integrate other variable distributed energy resources and improve satisfaction across the customer base, resulting in the ultimate outcome—fewer customers looking for alternatives ways to procure electricity.



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