Analytics for Energy Efficiency and Demand Response Programs in Utilities

UTILITIES

How to Use Data and Analytics to Optimize Energy Efficiency and Demand Response Programs

In a changing electric power landscape, energy efficiency (EE) and demand response (DR) programs have become central strategic concerns for any utility. Partly, this is due to energy efficiency and load reduction targets set by regulatory bodies, but there is also a considerable economic incentive to use EE and DR programs to help delay or avert the need to build new budget-busting power plants.

But EE and DR programs need engaged customers to succeed and increased customer participation depends on improvements in customer segmentation, program performance and measurement. Such improvements lead to reduced revenue losses, enhanced insight for regulatory bodies and even improved load management and power quality. Utilities expect integrated data and advanced analytics to deliver those benefits, but too often, a number of factors stymie their efforts. Among the concerns:

- Utilities struggle to bring together all the data necessary for understanding how best to structure DR plans that reduce peak usage or for precise identification of EE programs with the greatest opportunity for growth.
- Existing reporting may not identify precisely enough which customers and premises are the ideal candidates for EE and DR programs.
- Utilities cannot use their data and tools to confidently measure and verify the impact of DR events.

Unless your EE and DR teams can achieve the increased transparency, data reliability and analytic power to overcome these hurdles and enable key initiatives, their efforts to improve your DR and EE programs will inevitably fall short.

This is where the experts at Teradata can help.

By bringing analytical solutions to the table—along with industry-specific understanding of how to adapt solutions to your individual needs—we can help your EE and DR teams successfully pursue tightly integrated initiatives with the kind of results most only dream of in a time of unprecedented industry change. Our solutions also position you for future growth in your data and analytics journeys.

Improved Segmentation

The enhanced visibility into customer behavior enabled by integrated data and advanced analytics helps your marketing teams improve segmentation by:

- Identifying non-participating premises that could contribute the greatest impact during a demand response event. In turn, your marketing teams can reach out to these customers with timely, relevant offers.
- Identifying the common characteristics of the most recent adopters of EE programs and creating a list of customers that look like recent adopters.
- Providing customer counts for the various dynamic customer segmentations, such as interval usage, contacts, demographics, revenue and meter events/alarms.
- Incorporating conversion and participation rates to enrich segmentation.

Improved Program Performance

Your EE and DR project planners can use advanced analytics to oversee improved program performance by:

- Using load factor to help companies understand how to structure DR plans to reduce peak usage and maximize the grid.
- Identifying the EE programs that have the greatest opportunity for growth based on premise eligibility, including usage, premise equipment, rate code and revenue.
- Identifying which conservation programs work best for what customers.
- Using high risk/capacity transformers to help determine which premises may be candidates for energy efficiency programs that curb the load on the respective transformer.

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Improved Measurement

Finally, you can measure and verify your results with increased confidence, because you can use integrated data and advanced analytics to:

- Create more reliable reports on the impact of DR events in kW, kWh and dollars.
- Quantify customer savings by energy efficiency program including individual demand response events, showing the breakdown by such items as rate code—or any premise attributes available.
- Chart the conversion rates for each respective offering.
- Graphically display the count of customers by circuit and identify customers participating in some sort of EE/DR program.

Increased Enrollment, Reduced Costs and Construction

California's Pacific Gas & Electric serves more than 15 million people through 70,000 square miles of Northern and Central California and receives numerous incentives from the state to reduce usage. With the help of Teradata, PG&E used load shape segmentation to determine that 40 percent of residential customers accounted for 75 percent of load resource potential for one of its key DR programs and so increased participation dramatically through targeting of those customers. In addition, by monitoring a downtown San Francisco transformer, PG&E identified usage by customer and was able to manage its infrastructure so much more efficiently that it avoided having to add or replace the transformer.

Similarly, at Oklahoma Gas & Electric we used "dynamic customer segmentation" to improve target marketing efforts for DR and EE programs. In addition, measurement of key programs helped to identify participants that were not well aligned with the goals of the program. The results enabled the utility to keep its commitment to not build any new fossil fuel power plants until after 2020.

The Teradata Advantage

Teradata consultants help you realize these results by bringing the deep utility and technology experience needed to understand what works and what matters for your business. We partner with you in a straightforward and proven process aimed at quickly making you the experts in the use of your analytical tools.

Equally important, Teradata offers a flexible array of data storage and analytics options that we can readily integrate into your existing technology structures. This begins with our Teradata Unified Data Architecture™, a remarkably comprehensive, yet flexible platform for data integration that is widely recognized as the world's most scalable analytics platform for structured, multi-structured and Big Data analytics. The integration of the data warehouse with the Aster discovery platform and open-source Hadoop provides deeper insight, integrated access, ease of use, lower costs and better insights.

Our workload-specific platforms all take advantage of our Utility-specific logical data model. Data Labs enable individual units to test ideas in an environment safely isolated from day-to-day operations. And our Teradata Insight Advantage Integration optimizes the way your data interacts with our analytic tools or virtually any leading analytical applications.

In short, by significantly improving your ability to structure, market and measure your DR and EE programs, sophisticated data integration and advanced analytics enables you to thrive in a new era of power generation.

About Teradata

Teradata helps companies get more value from data than any other company. Our big data analytic solutions, integrated marketing applications, and team of experts can help your company gain a sustainable competitive advantage with data. To learn more about Teradata for Utilities, visit **Teradata.com/industry-expertise/utilities**.

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