PG&E Taps into the Internet of Things: Tackling Demand Side Analytics for Utilities

Like so many Utilities companies, Pacific Gas & Electric (PG&E) serves a diverse population with unique needs. As one of the largest Utilities in the United States, they provide gas and electric power to over 15 million people across a wide range of climates in regions from Silicon Valley to Central California's agricultural hub. To say that there are customer service challenges is an understatement.

In order to address the distinct needs of each segment of their customer population, PG&E needed to update their data processes and grow their analytic skill set, leading to an 'Evolution of Analytics.' And, with Smart Grid and Smart Meter capabilities ramping-up, PG&E was better positioned than ever to tap into the Internet of Things to drive value, insights, and efficiencies across their enterprise.

This cultural shift laid the foundation for a more refined process of identifying challenges, testing solutions, and tracking impact for more targeted customer programs and cross-cutting strategic issues. In one instance with Electric Operations and Energy Procurement, this new process led to a pilot program targeted at the deferring of distribution equipment investments using demand-side resources and based on shared analytics.

A Need to Evolve the Analytic Culture

PG&E has always been at the forefront of the data conversation for the Utility industry, investing heavily in demand side programs to benefit customers, like Energy Efficiency, Demand Response, and Distributed Generation. Despite their past efforts, however, PG&E saw many opportunities for further analytical growth.

Past: Analytics Siloes
The major issue was the overarching analytic culture that existed in the organization. Not only was their data siloed, but so were their organizations. In fact, analytical teams would have to request raw data from the data teams in order for them process it, create reports, and develop models and tools for analytic insight. This slow and cumbersome process simply did not allow for scalability.

Analytics and reporting were not integrated, either, making portfolio analysis or data segmentation extremely difficult—sometimes, impossible. Moreover, access to historical data was challenging and the hiring and retaining of analysts in a competitive market made it even harder to drive change.

With such a broad population of customers and a wide variety of challenges within the organization, PG&E found itself needing to alter their analytic culture in order to progress.

> Now, queries can be performed at will—no need to make requests to outside teams or spend weeks having a request fulfill. What took several days can now be performed in a matter of seconds—all without the high costs associated with ad hoc requests.

Present: Going from Data-Driven to Insight-Driven
To address the unique challenges of the organization, PG&E enlisted Teradata to modernize their data tools and processes.

The initial step was the establishment of the Demand Side Analytics Team. Combining several data groups with the analytic team, they are now viewed as an internal consulting group, focused on quantitative analytic support. Not only has this process and team embraced a more sophisticated process for isolating business issues, developing solutions, and charting progress, but PG&E is now more capable of serving the various customer groups through more precisely targeted programs.

In addition, the upgraded Teradata platform provides the ability to perform queries at will—no need to make requests to outside teams. There is also significant improvement in query time. Requests that previously took weeks to complete, can now be performed in a matter of seconds—and without the high costs associated with ad hoc requests.

TERADATA.

Data Integration and Visualization Helps Transition from Reporting to an Analytics-Driven Culture
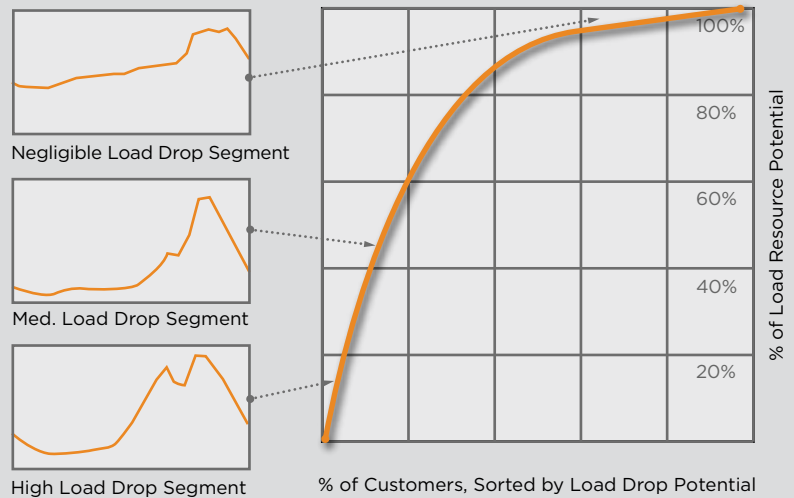
Metrics and data have long been leveraged at PG&E to drive decisions. Yet, the data had always been presented on massive spreadsheets, so accessing them to build reports represented great amounts of time and money.

By integrating various analytical teams and using Teradata as a backbone, PG&E built interactive dashboards that could be easily accessed in near real-time. Each organization in the Customer Energy Solutions group (CES) has custom-built performance dashboards which track key metrics, finances, and safety stats. The availability of these dashboards frees up time previously spent looking at endless rows of data on spreadsheets to tackle more complex energy and business challenges.

40% of residential customers account for over 80% of load resource potential for SmartAC

Negligible Load Drop Segment

Med. Load Drop Segment

High Load Drop Segment

% of Customers, Sorted by Load Drop Potential

% of Load Resource Potential

Additionally, the dashboard view allows users to segment the customer data, bringing the Internet of Things to life. In the case of load segmentation, it was discovered that 40% of residential customers accounted for more than 80% of load resource potential for the Smart AC program, a residential DR program. With better data to understand how and when people use air conditioning, they can more accurately identify to whom they market this offer.

Data integration and visualization has led PG&E to deeper analytic insights than were ever imagined. Executive leadership is now able to hold each organization individually accountable by tracking performance on specific data and metrics, evolving the culture to embrace analytics-driven decision making rather than simply reporting.

With the Demand Side Analytics Team, PG&E can now provide greater strategic and analytical support for decision makers within the Customer Energy Solutions (CES) group, as well as others in the larger organization. The more complex analysis that has been enabled yields greater analytic insights and opportunities for the organization to save time, save money, and create better programs to serve the diverse population of customers.

Future: Collaborative Analytics

By bringing teams together and empowering them with Teradata, PG&E has created a culture of "collaborative analytics" where leaders aren't simply looking to data to drive decisions, but insights. Subject matter experts are now able to view data to make objective decisions as a unified organization, rather than from a singular perspective.

With modern tools like Teradata, their Demand Side Analytics Team is starting to break down those walls to develop a truly integrated data view across the organization. Now, PG&E's Demand Side Analytics Team, as well as the organization as a whole, has the ability to ask more of their data. When you know more, you can do more. Teradata.com/Utilities