SDG&E DRET Project: Data Analytics to Maximize Demand Response

Overview

This study is being conducted to develop a data analytics tool that incorporates battery storage to maximize Demand Response (DR) programs enrollment and DR event participation. The key objectives of the tool will be to drive up participation in Base Interruptible Program (BIP) and Capacity Bidding Program (CBP), allow SDG&E to analyze customer benefits from battery storage, understand the degree to which customers with battery storage can benefit from participating in DR programs, and identify which customers will benefit the most.

The scope is centered around six tasks:

1. **Develop a prototype of the tool.** This would be done by connecting a statistical computing package (Stata or Python) to Excel. The approach allows the DR program to focus on defining the inputs, user options, outputs and development of the computational engine. Because the tool relies on interval data analysis and simulation, it inherently needs to rely on a statistical computing package.
2. **Apply the underlying code to the full population of non-residential SDG&E customers.** This would be done for a preset number of scenarios. There are four main reasons to do so:
   a) It helps assess how well the design works for the full target population (versus a handful of selected customers)
   b) It allows the DR Program to analyze which type of customers benefit from BIP or CBP and specifically from battery storage under different designs/program.
   c) It helps identify which customers would benefit most from battery storage and generate a list – ranking customers from those who benefit most to those who benefit least from battery storage plus DR (targeting). The analysis would include all customer not just those that currently have battery storage.
   d) It allows the DR Program to produce individual reports for customers and plot figures that can be uploaded to the tool website
3. **Run analysis to identify the characteristics of customers that benefit most from DR participation in BIP and CBP, plus customers with battery storage.** The goal is to understand who benefits most and to enable SDG&E to direct aggregators and developers to them. SDG&E plans to implement two sets of analysis. The first analysis would be based solely on factors observable by aggregators and developers – business type, square footage, location (climate zone). The second analysis would also incorporate information that would require access to customer bills and load shape – e.g., concentration of load duration, load shape, ratio of energy to demand charges, etc.
4. **Reporting and training.** As part of the project, the project team would draft a report (using the Emerging Technology Coordinating Council report template), hold bi-weekly progress meeting, hold an in-person workshop to present results and train users.
5. **Development of an online website that allows customers to access the site-specific analysis implemented in Task 2.** The website contents would sit behind a user management system, which requires customers to login and set a password. Only

individuals with login credentials would be allowed to view the results for a particular customer. This will enable the DR Program to compartmentalize what show to each user (e.g., the content for Gmail is different for different users). Because the analysis is static, it may need to be updated periodically (e.g., once a year) to remain relevant. The budget does not include costs for updating the analysis and website with new results.

6. **Website module that provides the ability to run custom analyses.** This would enable developers, aggregators, and/or sophisticated customers to upload interval data and custom inputs for individual customers or for a batch of customers.

Collaboration

The progress and results have been shared with other CA IOUs ET-DR Leads. SDG&E's ET Team is also collaborating with its Demand Response Program Team to help them maximize their customer participation in CBO and BIP programs.

Results/Status

Tasks 1, 2, 3 and 5 have been completed. The vendor has completed the development of the web-based tool and is preparing its final analysis before conducting training on using the tool.

Next Steps

The next major step in the project is to complete tasks 4 and 6. The Project Team plans to have these completed by the end of 2020 so customers can be identified to enroll in DR programs.