

How Well Do Pricing Pilot Impacts Predict Actual Program Impacts?

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Introduction. Pacific Gas and Electric's SmartRate™ tariff is one of the first large scale deployments of residential critical peak pricing (CPP) in North America and provided a unique opportunity to compare results from pricing pilots with those obtained from actual program implementation. Load impacts from CPP tariffs and/or peak time rebates have been a key element of many advanced metering infrastructure (AMI) business cases across the U.S. To date, load reductions from dynamic pricing in AMI business cases and tariff applications have been estimated based largely on results from pricing pilots, and regulators and interveners have questioned whether similar results would be obtained when tariffs are actually deployed. Until now, data required to compare pilot load reductions with reductions based on actual tariff implementation have not been available.

Method. Freeman, Sullivan & Co. (FSC) estimated load reductions from PG&E's 2008 deployment of the CPP SmartRate™ tariff in the Company's Bakersfield area, where summer temperatures during critical periods often exceed 100° F. In addition, FSC re-estimated price elasticities using data from California's Statewide Pricing Pilot (SPP) in order to produce ex-ante load impact estimates for dynamic pricing for the rest of the PG&E territory.

Results. The SmartRate™ evaluation and the re-estimation of the SPP data provided a unique opportunity to compare results from the full scale implementation of a dynamic tariff with predictions based on pilot-based price elasticities. The regressions based on the SPP data were used to predict SmartRate™ impacts controlling for event day temperatures, rate structure, central A/C penetration and low-income customer participation. As reported below, the results are remarkably similar. On average, the SmartRate™ tariff produced a load reduction of 16.6% across the 2-7 pm event window for nine event days during the summer of 2008. The demand models based on the SPP pilot predicted a load reduction of 16.4%.

Not only are the results similar in aggregate, they are also similar for specific customer segments and for each hour during the event period. In addition, the pilot based regression predictions are also similar to SmartRate™ impacts for customers who participate in PG&E's Customer Alternate Rates Program (CARE), a program whereby qualifying low income customers receive a discount on the electricity bill, and also for non-CARE customers.

Summary. For California's utilities and others that have relied on results from pricing pilots to predict load impacts for dynamic rates in support of AMI applications or tariff filings, the analysis summarized above provides with confidence that the demand response impacts and benefits that will ultimately be realized when tariffs are implemented will be similar to the predicted values.