

## “Rate Reform: The Need for Rate Engineering”

As regulators continue to implement public policy related to Renewable Portfolio Standards and other decarbonization measures, one their most often used tools is Rate Reform. These reforms can take many shapes. The most common is time variant rates, typically referred to as Time of Use (TOU) rates.

There are, however, multiple business models that are being considered – often in parallel with a move to TOU rates. These business models include Demand Response, Net Metering, Energy Efficiency, and Energy Storage. All of these can play a role in meeting policy goals – and they all need the appropriate rate structures and incentives to be successful.

In many cases the urgency to pursue these business models is accelerating. Paradoxically, the ability for utilities to quickly design, market and bill for these new pricing plans is often hindered by manual processes and legacy systems, which can slow innovation and frustrate regulators. Of course, the regulatory process, itself, can also be a hindrance to rapid innovation.

For stakeholders in this Rate Reform process, the challenge is to design and create *effective* rates at a pace that will support achievement of the policy goals. Rate Engineering, which combines a utility’s internal rate design expertise and a big data Enterprise Rate Engine, is an innovative process to address these dual challenges. Rate Engineering allows utilities to achieve policy and business objectives by providing a more comprehensive view of how new rate designs impact revenues, customer classes, and every customers’ bills.

A key aspect of the Rate Engineering method is Whole Population Bill Impact Analysis. This analysis consists of two parts: (1) calibration of the Enterprise Rate Engine against the utility CIS to ensure the accuracy of the analysis results, and (2) use of Big Data Billing Analytics to evaluate the bill impacts for all of the utility’s customers.

An Enterprise Rate Engine can calculate hundreds of millions of bills in hours. With this power, utilities can run a nearly unlimited number of scenarios when developing new rates. A potential new rate plan, or multiple potential rate plans, can be calculated over the utility’s entire customer base, using each customer’s historic or projected load. This allows the utility to study how a potential new rate plan will affect each individual customer as well as each customer class.

After the new rate or rate design has been approved, the same Enterprise Rate Engine and calculations are leveraged for rate education and marketing. This can be particularly useful when moving to time-of-use rate plans. Every single customer’s bill can be simulated, based on the individual customer’s actual load or estimated load profile, identifying which customers will experience a bill increase, and by how much, and which customers will experience a bill decrease, and by how much. With this information, the utility can proactively advise customers how their bill is going to change and how much usage the customer should change from peak to off-peak to realize time-of-use savings.

## BENEFITS OF AN ENTERPRISE RATE ENGINE

**More Precise Rate Implementation** – Through calibration against the billing systems and evaluation of bill impacts for the whole customer population, the Rate Engineering approach results in more precise rate implementation. The massive amount of computation power made available by big data technology enables rate designers to simulate the bill impacts for a large number of design proposals, then choose the design with not only the right average, but also the right distribution of bill impacts among various rate classes.

**More Comprehensive Analyses** – By evaluating the bill impacts for the whole customer population, the Rate Engineering approach enables utilities to understand the impact of new rates on *every single customer, every month*, before submitting them for approval. The fine-granularity, bill impact analyses allows a utility to investigate the “tails,” those sub-populations whose bills are substantially impacted either positively or negatively.

**Analyses Available to More Stakeholders** – Given the importance of bill impact analyses with new rates, organizations outside of the rate design team have significant interest in the analysis results. The availability of across the Enterprise to the comprehensive fine-granularity, bill impact analyses frees the rate design team from these data requests and provide other stakeholders with self-serve options.

## SUMMARY

The Rate Engineering approach analyzes personalized bill impacts of new rates on a customer-by-customer basis for the whole population and enables the development of more precise rate designs to effectively achieve the policy, financial, and business goals. Using an Enterprise Rating Engine, utilities can derive insights to develop more effective marketing and customer engagement strategies, with large-scale, detailed bill impact analyses.