

SGIG Consumer Behavior Study

NV Energy: Nevada Power and Sierra Pacific Power

Nevada Dynamic Pricing Trial of the Advanced Service Delivery Project

Overview

NV Energy (NVE) is a summer peaking investor-owned electric utility with ~2.4 million customers in its ~46,000 square mile service territory. NVE's SGIG project (NVEnergy) includes the Nevada Dynamic Pricing Trial (NDPT) which is a consumer behavior study that evaluates customer acceptance and response to different combinations of enabling technologies, seasonal multi-period TOU rate with CPP overlay and energy education efforts.¹ NVE is targeting AMI-enabled residential customers in both its northern Nevada (i.e., Sierra Pacific Power or SPP) and southern Nevada (Nevada Power or NVP) service territories to participate in the study.

Consumer Behavior Study Features

Goals and Objectives—This study focuses on evaluating the timing and magnitude of changes in residential customers' peak demand and energy usage patterns due to exposure to a seasonal multi-period TOU rate with CPP overlay. NVE is also interested in assessing residential customer acceptance, retention and response associated with enabling technology and energy education efforts.

Treatments of Interest— Rate treatments include the application of a multi-period TOU rate that utilizes a five-hour on-peak period (2 – 7 p.m. at NVP; 1 – 6 p.m. at SPP) with rates that differ depending on the time of year (Shoulder summer- June and September, Core summer - July and August, and Winter - October – May at NVP; Core summer - July – September and Winter - October – June at SPP). The shoulder period, which is only applicable in SPP, covers weekdays and non-holidays 10 a.m. – 1 p.m. and 6 p.m. – 9 p.m. NV Energy is augmenting the TOU rate with a substantially higher critical peak price overlay (TOU w/CPP) during a 4-hour weekday critical peak period in the summer (June – September 3 – 7 p.m. at NVP; July –September 2 – 6 p.m. at SPP). The CPP overlay is applied with day-ahead notice to participating customers when forecasted temperatures, system load or wholesale market prices are expected to be very high and/or when system emergency conditions are anticipated to arise. Study participants can be exposed to no more than 18 events each year of the study (18 events at NPV; 16 events at SPP).

Control/information technology treatments include the deployment of PCTs. In addition, all customers participating in the study receive web portal access.

Education treatments augment the customer web portal access with a curriculum designed to educate customers about energy, energy usage, energy costs and rates and energy management. Study participants in NV Energy's enhanced education treatments are being provided with information, examples, training and feedback through a combination of written and online materials and experiences.

¹ Although the NDPT encompasses more treatments than are described here, LBNL chose to focus only on the three treatments that are the primary focus of DOE and the TAG.

NV Energy (continued)**NV Energy Rate Levels (¢/kWh)**

Period	TOU w/CPP (NVP)	TOU w/CPP (SPP)
Shoulder Summer Off-Peak	7.333	
Shoulder Summer Peak	12.670	
Shoulder Summer Critical Event	43.962	
Core Summer Off-Peak	7.333	6.898
Core Summer Shoulder	n/a	21.309
Core Summer Peak	38.081	34.435
Core Summer Critical Event	75.920	58.093
Winter Off-Peak	7.333	6.898
Winter Peak	7.333	10.219

Experimental Design— The study uses a randomized encouragement design (see Figure 10 and Figure 11). A stratified random sample of AMI-enabled customers in the service territory who meet certain eligibility criteria are assigned to one of two pools of customers: one acts as the control group (i.e., remain on the existing flat rate without receiving an invitation for the time-based rate, technology or enhanced education) while the other receives an invitation to opt in to the study where participating customers receive a single specific offer of treatment that is a combination of the rate, control/information technology and/or education material. Offers to participate in the study for the specific identified treatment are made at random to customers from the pool until the samples are filled or the pool is exhausted. Data from customers who are offered the specific identified treatment but eschew the offer are nonetheless included in the study's evaluation effort, as well as data from customers in the control group who are not offered the treatments.² All customers who opt in to the study by accepting their treatment offer are then screened to ensure they qualify to potentially receive a treatment.

Enrollment Incentives and Retention Activities— Participating customers receive bill protection that ensures that they pay no more than what they would have paid under the existing flat rate during the first twelve months of participation in any rate treatment. After this twelve month period is over, the bill protection is removed.

Sample Size Requirements— Sample size requirements are shown in the table below.

NV Energy Sample Size Requirements

Experimental Cell	NVP	SPP
TOU w/CPP	496	248
TOU w/CPP & Enhanced Education	496	248
TOU w/CPP & Enhanced Education & PCT	496	248
Control	4,960	2,480

² In a randomized encouragement design, customers are “encouraged” to take up the treatment but some may not do so. The evaluation of the treatment effect in such a design necessitates including both the customers who actually took up the treatment and those who did not. In aggregate, this “treatment” group can be compared against a randomly drawn control group from the general population, which would likewise be comprised of those who, if given the offer of treatment, would accept it as well as those who would reject the offer. This randomly drawn control group from the customer population is therefore, in expectation, an unbiased counterfactual to the behavior of the treatment group.

NV Energy (continued)**Key Milestones**

Key Milestones	Target Dates
Study begins	March 2013
Interim evaluation report submitted	September 2014
Study ends	February 2015
Final evaluation report submitted	September 2015

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