

Home Energy Displays Project Planning

Delivered by:

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Services



Defining Project Objectives

- Decide *EXACTLY* What you Want to Know before you make any other decisions
- Decide how statistically significant you want the Results to be
- Decide if you want a *Product* or a *Market Test*
- Decide Roles & Responsibilities

Then Execute

Deciding “What You Want to Know”

- How will we define Value?
 - To our Customer
 - To our Utility
 - To our Stakeholders
- Do we need to M&V energy savings or will we Deem the Value based upon past research?
- Are we interested in Customer opinions regarding:
 - The installation process
 - The installation materials supplied by the manufacturer
 - The programming process

Other Want to Knows

- Do we want to determine which customer segments will best respond to information from Home Energy Displays?
- Any technical issues associated with installation of the devices, i.e. permitting issues, equipment compatibility issues, code issues, etc?
- How about compatibility with AMI/AMR?

Statistical Significance

- This issue relates to the reliability of the findings and the transferability of the data to your entire customer population
 - 80/20
 - 90/10
 - 95/5
- The differences result in increasing number of participants and costs

Product versus Market Test

- In a Product Test you *COMPARE* a variety of products and determine which product best suites your customers.
 - *Caveat: Customer opinions are just that and if you are selecting based on a sampling, the higher the reliability the better*
- In a Market Test you *IDENTIFY* product features and relate the features to customer segments
 - *This type of test is more suited to the development of requirements for an RFP and rarely will any one manufacturer's equipment represent all preferred features*

Roles & Responsibilities

- Will the project be managed Internally or Externally?
- Regardless, identify an internal Project Manager that has overall and ultimate responsibility and to whom all other entities report
- Equipment Installation – an licensed electrician, the utility metering department, the utility conservation reps, the manufacturer's installer?????
- Customer Acquisition – How will you identify potential participants, how many do you need in order to gain the sample required and who will do the recruitment?
- Scheduling the installations – who calls the participants and schedules the installation?
- Market Research – what vehicle will you use, telephone surveys, paper surveys, personal in-home interviews, focus groups??? And who will conduct the research?
- Final Report – who will be responsible for the drafting, review and comment and final report?

Project Description

- Authorized under Nevada Power's 2006 Integrated Resource Plan,
 - Deploy Home Energy Display devices (HEDs) in a field demonstration, to gain experience with equipment operations, economics, and customer experiences. Sierra will also participate in this deployment as one aspect of its Market and Technology Trials Project.
- The Home Energy Display Project expands the use in Nevada of a new type of household energy management technology.

Project Details

Nevada Power will install and monitor approximately 110 HEDs and Sierra Pacific Power will install and monitor approximately 70 HEDs through various usage and demographic strata to determine the effectiveness of the device(s) in changing consumer behavior to:

- Become more aware of energy use in the home
- Identify appliances and electrical equipment that contribute to growing energy use and are potential candidates for conservation efforts to reduce usage and cost
- Better understand how and when energy is used to better equip customers to take the best advantage of Time of Use and or Critical Peak Pricing schedules.
- Verify the value of Home Energy Monitoring devices (HEDs) as effective tools for energy use identification and usage modification to achieve energy efficient usage

Project Goals

- Expand and improve conservation & efficiency programs
 - Contribute to Renewable Portfolio Standard (RPS)
 - Prepare for Automated Metering Infrastructure (AMI)
 - Investigate promising new technologies
 - Identify and validate role of HEDs among SPR's programs
 - Reliable, cost-effective, customer-satisfying programs
 - *Incremental value of particular design over alternatives*
 - Serve mass market and special segments (senior, low-income)
- ➔ Pursue prudent and innovative program design

Strata Defined

- **Energy Strata**

There are five known and recognized energy use strata within the southern Nevada marketplace based upon average KWhr/month usage:

0 – 800

801 – 1250

1251 – 1750

1751 – 2500

> 2501

The task is to extract an equal number of customers within each stratum that meet the following selection criteria:

- *Having equal to or greater than a 13 month electric use and billing history*
- *Having a stable home environment (number of occupants does not fluctuate over a reasonable timeframe)*
- *Home size and style is representative of market*
- *Existing electrical equipment does not include item that would skew the usage pattern (i.e. kiln, arc welder, other intermittently used equipment)*

Manufacturer Information

- Manufacturers Invited to Participate:
 - Power Cost Display System – www.energycontrolsysinc.com
 - EUM -2000 Whole House Energy Monitor – www.energymonitor.com
 - TED – The Energy Detective – www.theenergydetective.com
 - Cent-a-Meter – www.cenergies.com
 - Blue Line Innovations – www.bluelineinnovations.com
 - Kill-A-Watt – sales@p3international.com .
 - Consumer Powerline – www.consumerpowerline.com/homejoule/
 - Aztech Power Systems - www.aztechmeter.com

ECSI: Energy Control Systems Inc.

- ***How the Power Cost System works...***
 - A transmitter is installed between the customer's panel box and the electric meter. Using the meter, the transmitter monitors usage and distributes that information to every outlet in the home
 - A receiver unit monitors and displays electric costs from any location where the unit can plug into a 120V convenience outlet
 - Requires intervention from the Utility Company for installation



Energy Monitoring Technologies, Inc.

- ***How the EM-2500 works...***

- Using clip-on CTs, the incoming power is monitored across the main circuit breaker
- Making a connection using coaxial cable to a display unit, which must plug into a convenience outlet, the device reads total home usage and displays in energy or cost units
- May require installation by a licensed electrical contractor depending on local codes



Energy Inc. – The Energy Detective

- **How T.E.D. works...**

- T.E.D. also uses clip-on CTs across the main circuit breaker to monitor the incoming power
- The CTs then connect to an MTU transmitter which is installed within the panel box and transmits to a receiver unit which is plugged into any convenience outlet located within 100 yds. of the MTU
- May require installation by a licensed electrical contractor depending on local codes



Blueline Innovations

How the PowerCost Monitor works...

- A detection unit, known as the sensor unit, is affixed to an existing household utility meter with a simple ring clamp.
- The clamp mechanism allows it to be attached to the outside of the meter glass. It can also be quickly attached and detached without making any changes to the existing meter.
- The display unit, located inside the home, receives a wireless signal from the transmitter and displays the consumption information in real time and in dollars and cents for the end user.
- No required contractor or utility involvement



 innovative energy solutions



P3 International – Kill A Watt EZ

- *How the Kill A Watt EZ works...*
 - *Program the unit by inserting a \$0.00 cost/kWhr.*
 - *Plug the unit into a wall plug*
 - *Plug the appliance into the unit*
 - *The unit reads cumulative energy and \$*

Kill A Watt™ EZ

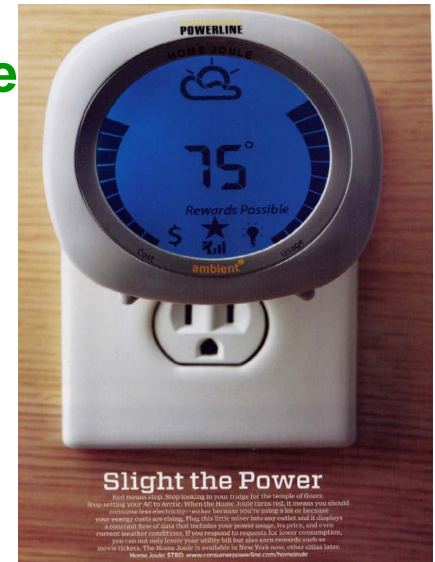


Consumer Powerline Joule

How the Joule works...

- The Joule was originally intended to monitor TOU price points and DR events
- Being re-configured to measure high energy use based on output from the meter received through a KYZ pulse
- Will continue to display Demand Response events

CONSUMER
POWERLINE



Aztech Technologies

How the Aztech In-Home Display works...

- Integrates with a “Smart Meter” using RF or Zigbee communication protocols
- The display unit, located inside the home, receives a wireless signal from the ERT installed within the Smart Meter and displays consumption information in real time and in dollars and cents. Is capable displaying TOU pricing signals
- Utility invests in Smart meter with RT and device
- Example of next generation

In-Home Energy Display



Utility Opportunity

- Develop a Demonstration Center in Reno NV to:
 - Highlight project and equipment
 - Interactive demonstration for Commission and other interested parties
 - Hold public meetings for builders, contractors and others

Results

- Project is culminating at end of July
- Final Market Research conducted in July and August
- M&V using Billing Analyses with adjustments for weather, demographic and appliance changes completed in August
- Final Report due in November/December 2008

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