

GovEnergy Conference

Research and Evaluation of Behavior-Based Programs

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August 18, 2010



> Knowledge to Shape Your Future

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What is Research and Evaluation?

- Evaluation is the systematic measurement or assessment of an energy program
- It collects qualitative and quantitative information to document a program's effects
- It is the process of verifying program effects
- Evaluation studies measure change induced by a program or activity
- Behavioral research is a methodological approach to improve design, adoption, and effectiveness

Why Conduct Research and Evaluation?



- Determine if programs are delivering agreed upon energy and demand savings
- Determine which programs are offering the highest cost/benefit ratios
- Understand the non-energy related benefits of your program
- Obtain information to improve program effectiveness in the future



Are You Meeting Your Program Goals? *Itron*

Types of Evaluation / Research

- Impact - Measurement & Verification
- Process Evaluation
- Behavioral Research
- Market Evaluation
- Non-Energy Benefit Research

Impact (Monitoring & Verification) Evaluation *Itron*

- Impact Evaluations are used to measure the changes in energy usage (kWh, kW and therms) attributable to energy efficiency and demand response programs and marketing campaigns
- Program results are determined based on changes to baseline (pre-program) levels

Impact (Monitoring & Verification) Evaluation *Itron*

- Impact studies are used to understand:
 - Energy (Kwh) Savings
 - Demand (Kw) Savings
 - Effective Useful Life (EUL)
- Impact Methodologies include: Field Metering and Monitoring Approaches, Regression Analysis, Building Simulations, Engineering Models, and Billing Analysis

Impact Evaluation – Behavioral Programs *Itron*

Behavior Based Programs Offer Unique Challenges!

- Unlike resource acquisition programs (where measures are installed behavior change efforts often have numerous goals and competing messages)
- For those programs that aim to generate behavior changes, quasi-experimental methods such as multi-variate regression analysis and structural equation modeling should be used to assess impacts to tweak out impacts attributable to your effort
- Important to assess not only behavior change, but also pre-cursors to change including changes in awareness, knowledge, and intention to act.

Impact Evaluation – Behavioral Programs *Itron*

- When assessing energy savings from behavior change, estimates of kWh should focus on similar behaviors
 - > conservation actions (turning off lights and TV, drawing shades, etc),
 - > low cost measures (CFLs, programmable thermostats)
 - > high cost measures (HVAC, EE appliances)
- Calculating energy savings requires careful consideration of interactions with other utility, statewide or federal efforts

Impact Evaluation – Behavioral Programs *Itron*

The following are some of the methods that can be used to obtain savings from behavior change programs:

- > Pre-Post Tracking Studies
- > Structural Equation Modeling
- > Participant observation (including event attendance, ethnographic research etc)
- > Social Network Analysis
- > Conjoint analysis
- > Web statistics and analysis

- Process Evaluations improve the design and delivery of energy programs w/ ultimate goal of increasing participation and energy savings
- Process evaluations use quantitative and qualitative research to examine how well a program is being implemented.

Process Methodologies include:

- Program Documentation
 - Program Theory / Database Reviews
- Qualitative In-depth Interviews
 - Program Managers, Administrators and Stakeholders
- Quantitative Statistical Surveys
 - Program Participants, Non-Participants and Market Actors
- Benchmarking Studies
- Secondary Research

Process Evaluation – Behavioral Programs *Iron*

- **For Behavior Change Efforts – Conduct Research on:**
 - > **Pre-program efforts** -Gauge goals and audience's reaction through
 - Goals assessment
 - Program tracking research
 - Pre-testing of messages and delivery methods.
 - > **Program implementation** - research includes:
 - Depth interviews with program staff and implementers
 - On-site event and course monitoring;
 - Website and online tracking
 - Reach and frequency verification; and
 - Data Collection - focus groups, surveys, comparison studies

Behavioral Research

incorporates insights from many fields including:

- ❖ anthropology,
- ❖ sociology,
- ❖ psychology, and
- ❖ public health



Behavioral Research methods include:

- *Ethnographic Research* : In-depth interviewing, participant observations and in-home visits
- *Sociological Research*: Social network analysis, structural equation modeling, segmentation analysis, and barrier research
- *Psychosocial Research*: Social norms, self-efficacy, attitudes, opinions, and belief assessment
- *Social Marketing*: Marketing and outreach based on behavior change principles

Studies include:

- > Efficiency of Program Channels and Delivery
- > Segmentation and Strategic Targeting
- > Effectiveness of Promotional Strategies
- > Levels of Customer Awareness and Adoption
- > Customer Satisfaction
- > Best Practices and Lessons Learned

- Market Evaluation or Assessment studies are conducted to understand the changes that a program is having on the marketplace
- Studies Include: Baseline Analysis, Awareness Studies, Adoption Modeling and Barrier Studies
- Market effect studies are used to understand:
 - > Reductions in market barriers
 - > Impact of rebates
 - > Free Riders
 - > Changes in product availability and price

Set Goals, Create Baselines and Define Metrics

- Determine appropriate goals for each behavioral program
- Determine Baseline (Conduct Survey)
- Determine the most appropriate metrics
 - > awareness,
 - > increasing knowledge,
 - > channeling into other programs, or
 - > behavior change

- Non-Energy Benefits (NEBs) studies are used to identify and quantify *non-energy* benefits associated with program implementation and participation
- NEBs studies are used to:
 - Understand public benefits of energy programs
 - Help programs become more “effective” by providing enhanced reasons for participation
 - Gain program support from a wider range of stakeholders
 - Help determine “true” cost/benefit ratios

- Examples of NEBs can include:
 - > Reduced emissions & environmental benefits
 - > Productivity improvements
 - > Reduced debt and lower levels of arrearage
 - > Reduced #'s of disconnects and reconnects
 - > Increased comfort level / convenience
of participant
 - > Job creation



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