
Evaluating Information and Training Programs: Beyond Net to Gross

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1

Topics

- Introduction
- Evaluation / research on 2 programs / definition
 - Training – non-residential
 - Information / advertising – residential
- Evaluation efforts / results / participants
- Conclusions / lessons

2

Introduction



- Builds on previous review of education / outreach evaluations
 - PG&E, Iowa, ACEEE summer paper
- Reviewed literature on past outreach / education / advertising / training evaluations
 - Small sample size
 - Limited focus, specialized programs
 - Limited techniques; not used for decision-making
- Attempted “meta” with some success
- Given focus of evaluation / outreach / training, need wider net, farther-reaching techniques – 2 recent applications

3

Research on High Performance Building Training



- Energy Center of Wisconsin / Focus on Energy Program*
- Outreach / training in HP Commercial buildings
 - Measures, design, specification focus
 - Training, assess impacts, refine training
- Data collection
 - Permit data
 - 30 detailed interviews with A&E, owners, developers
 - 148 shorter surveys on familiarity, attitudes, practices, training, needs, benefits

*Funded through FOE program, Wisconsin Dept of Admin, Division of Energy

4

High Performance Building Training



- Examined HP familiarity among participants / non-participants – not very familiar or widely used term / concepts
 - Varied by components of HP and dramatically by actor
- Examined practices – which elements used in buildings and rationale
 - High for integrated design, high efficiency lighting and HVAC, EMS; moderate for active daylighting; low for sustainable materials. Differences by building type.
 - Implications of reported decision-making process; who values what, how accurate are tradeoff perceptions among actors
 - Barriers and solutions addressed; education of clients, data, and demonstrating paybacks and performance important to change

5

High Performance Building Training



- Non-Energy Benefits (NEBs) addressed
 - Strong benefits perceived
 - HP perceived to improve: tenant satisfaction, lighting quality, comfort, productivity. Some negatives mentioned
 - Perceptions varied by actor, building type
- Assessed impact / penetration of HP and key concepts
 - Recommended training topics, approach
- Broader applications also apply to other types of training programs – analyzed NEBs of commissioning program

6

NYSERDA Program Introduction



- NYSERDA's responsibilities focus in
 - Residential
 - Low income
 - Commercial
 - R&D
- Comprehensive evaluation effort
 - Logic, M&V, process, MC, Attribution
 - Links – information back and forth because on-going / concurrent work

7

Our Project Activities (MCAC)



- Market Characterization (MC)
 - Characterize energy markets, and provide information to define programs and target populations
 - Provide a baseline on purchases, energy use, prices, market actors/roles, and product flow
- Market Assessment (A)
 - Track changes in market indicators (e.g., awareness, market share, pricing, etc.) that might be impacted by programs.
 - Effort is linked to program theory/logic
- Causality/Attribution Analysis (C)
 - Identify the impacts of program interventions beyond what would have happened without the program
 - Quantify baseline activity, as well as spillover

8

Attribution Focus



- Attribution
 - Absolute causality not possible, burden of proof goal.
- Steps include:
 - Demonstrating savings from technologies
 - Identifying changes (savings and other) that would not have happened without the program – various “pieces”
 - Ranges, not point estimates / more robust
 - Causality modeling approaches
 - Our choice(s)

9

NYSERDA's Residential Portfolio



Major programs include:

- ENERGY STAR® Products and Marketing
- Keep Cool Tips
- Keep Cool Room Air Conditioner Bounty
- ENERGY STAR® Labeled Homes
- Home Performance with ENERGY STAR®
- Assisted Home Performance with ENERGY STAR®
- Assisted Multifamily Program

10

NYSERDA's Residential Information / Outreach Programs

The logo for SERA (Statewide Energy Resources Administration) is located in the top right corner of the slide. It consists of a purple square with the word "SERA" in white, bold, uppercase letters.

- *ENERGY STAR® Products and Marketing*: information on E* lighting & appliances, emphasizing refrigerators, dishwashers, clothes washers, RAC, lighting fixtures, bulbs
- *Keep Cool Tips*: recommending methods to shift energy use off peak and choose more efficient appliances
- *"Homes" programs*: Involving training of contractors and builders

11

Primary Data Collection

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- Primary data collection includes:
 - Large-scale residential mail / phone survey
 - Residential phone survey (nested sample) of E* purchasers and non-participants
 - Participating and non-participating retailers – including in-store
 - Participating and non-participating manufacturers
 - Program staff and contractors / implementers
 - Homes programs: phone survey, realtors, lenders
 - Significant investment

12

Secondary Data Being Mined



- AHAM data for appliance shipments
- CEE national survey on ENERGY STAR® awareness
- NYSERDA ENERGY STAR® partner-reported sales data
- Purchased databases on manufacturers
- Purchased database on NY appliance / lighting retailers
- F.W. Dodge data
- Data available from other states and organizations
- Quarterly tracking and research reports from NYSERDA
- Leveraging

13

Priority Indicators – Key Categories



- Awareness / knowledge
- Availability and practices
- Sales / market share
- Pricing and incremental cost
- Non-energy benefits
- Other market indicators
- Beyond just advertising hits, market share, sales...
- Derived from program objectives, logic, interim effects

14

ENERGY STAR® Products – Awareness / Knowledge



- “Hits”, but also awareness / knowledge
- ENERGY STAR® awareness has increased for all geographic areas of the state. Latest survey shows increase from time series of 34% in 1999, 43% in 2001.
 - Awareness is generally lower in NYC, but growing
- Recall for logo on equipment – lower for lighting, higher for appliances; confirmed by retailer interviews
- Comparison to baseline, national

15

ENERGY STAR® Products – Availability / Practices



- Percent of models on display that are ENERGY STAR® compliant has grown steadily since 1999.
 - Variations by appliance
 - Lower for lighting
 - Participating vs. non-participating retailers
- Retailer feedback on influence of program
- High share of participating compared to non-participating retailers – NYSERDA has done a good job of recruiting partners around major metropolitan areas.

16

ENERGY STAR® Products – Sales / Market Share



- Mail survey provided percent purchasing appliances annually, and percent purchasing ENERGY STAR®. Confirmation / “bounding” also from:
 - Reporting retailer sales, shelf / stocking observations, shipments, other
- Market share for appliances increased beyond 1999 and 2001 values; review by area of state with heavier ad focus; comparison to baseline, national
- Behavior changes – load shift behaviors adopted after program intervention / “tips”

17

ENERGY STAR® Products --Pricing and Incremental Cost



- Incremental costs appear to be decreasing: 3 sources of information:
 - Differentials from survey respondents
 - Perceived higher / lower – slightly higher from purchasers
 - “Hedonic” analysis – attribution of price differentials to product attributes and ENERGY STAR® feature
 - Analysis method
 - Shows small difference in lighting
 - Estimated percentage differences in refrigerator and dishwasher prices due to E*

18

ENERGY STAR® Products and Keep Cool: Non-Energy Benefits (NEBs)



- Participant NEBs from programs on the order of the energy savings; other benefits (societal, etc.) also.
- Participant NEBs of highest value:
 - Performance, satisfaction, environmental, noise, water
 - Quality perceptions
 - Also recycling benefits from Keep Cool Bounty Program
- NEBs are very strong – implications for program, impacts, B/C, marketing

19

ENERGY STAR® Products –Self Efficacy



- Defining self-efficacy; relation to other concepts
- Measurement approach – data on participants and non-participants, along with purchasing, behavior changes, demographics, familiarity.
- Results for NYSERDA ENERGY STAR®
- Link to purchase / no purchase, behavior change decisions
 - Results for plans to purchase

20

Attribution Research



- Elements / Inputs
 - Savings -- demonstrated
 - Free Riders / Not Influenced
 - Participant *inside project* spillover
 - Participant *outside project* spillover
 - *Non-participant* spillover
 - Snapback / Take back
- Importance of ranges / high-low over just point estimates
- Outside influences
- Complications for applying principles to education / ENERGY STAR® program – lack of documented participants

21

ENERGY STAR® Products and Keep Cool: NTG / Energy Savings



- NTG results – component elements
 - Complexities in defining component elements for this type of program
 - Variations by key measures
 - Comparison with national / other results for NTG and elements
- KWh and KW savings for residential program efforts

22

Summary and Conclusions

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- Program has had strong impacts:
 - Awareness / knowledge strong growth, from program
 - Availability, market share / sales
 - Savings, Net to Gross, Attributing effects...
- Beyond NTG:
 - Savings, but also other interim steps and indicators
 - Attribution steps – and ranges, not point estimates, for results
 - Non-Energy benefits
 - Price analyses as market indicators and market changes
 - Self-efficacy / importance of attitudes and beliefs in change / impacts
- Ongoing work – panels and other data collection to expand / track

23

Challenges and Next Steps

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- Databases (content, quality, flexibility)
- Survey length – specialized / nested might work better; panel and other efforts planned for Phase II
- Some on-going tracking, some first time to be tracked into future (e.g. price)
- Approach has worked well and given well-rounded assessment of program's impacts / market effects – techniques applicable into future

24

Context / Evaluation Lessons



- Limited past work evaluating education, outreach, training programs in the field
 - Limited scope, small sample sizes, “specialized” programs
- Given budgets, transferability / cross-cutting useful
- Standard practices still applicable, but sometimes need special definitions / application (attribution)
- Issues beyond NTG important elements of evaluation
 - Interim stages (links), broader list of impacts, adapted / new techniques; can support decision-making / refinements