PROMOTING ENERGY EFFICIENCY AND CONSERVATION USING BEHAVIORAL PRINCIPLES AND COMMUNITY-BASED SOCIAL MARKETING

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Climate, Buildings and Behavior
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NYSERDA

- Public Benefit Corporation established by NYS Legislature in 1975

- **Mission Statement**
  Advance innovative energy solutions in ways that improve New York's economy and environment

- 2012-2013 Budget - $572,169,000

  Federal Grants * RGGI * State Appropriations * Energy Efficiency Portfolio Standard * Renewable Portfolio Standard

  2008 Budget - $340M

  1998 Budget - $80M

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New York State Goals

From 1990 levels,

- Increase energy efficiency 15% by 2015
- Meet 45% of State electric needs with renewable resources by 2015
- Reduce CO2 80% by 2050

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NYSERDA's Behavior Program

- Clean Energy Programs
  - Market potential
  - Economic potential
  - Δ = Economic potential – Market potential

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Decision-making, belief and behavior biases (Wikipedia, list of cognitive biases)

- Ambiguity effect
- Anchoring
- Availability heuristic
- Backfire effect
- Bandwagon effect
- Belief bias
- Bias blind spot
- Confirmation bias
- Conjunction fallacy
- Conservation or regressive bias
- Contrast effect
- Curse of knowledge
- Decoy effect
- Denomination effect
- Distinction bias
- Empathy gap
- Endowment effect
- Expectation bias
- Focusing effect
- Framing effect
- Gambler's fallacy
- Hindsight bias
- Hyperbolic discounting
- Illusion of validity
- Illusory correlation
- Impact bias
- Information bias
- Knowledge bias
- Loss aversion
- Mere exposure effect

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Decision-making, belief and behavior biases (cont.)

- Money illusion
- Moral licensing effect (moral credential effect)
- Negativity bias
- Neglect of probability
- Normalcy bias
- Observer-expectancy effect
- Omission bias
- Optimism bias
- Ostrich effect
- Outcome effect
- Overconfidence effect
- Pessimism bias
- Planning fallacy
- Post-purchase rationalization
- Pro-innovation bias
- Pseudocertainty effect
- Reactance
- Recency bias
- Recency illusion
- Restraint bias
- Rhyme as reason effect
- Selective perception
- Semmelweis reflex
- Social comparison bias
- Social desirability bias
- Status quo bias
- Stereotyping
- Subjective validation
- Unit bias
- Zero-risk bias

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Social biases (Wikipedia, list of cognitive biases)

- Actor-observer bias
- Defensive attribution hypothesis
- Dunning-Kruger effect
- Egocentric bias
- Extrinsic incentives bias
- False consensus effect
- Fundamental attribution error
- Halo effect
- Illusion of asymmetric insight
- Illusory superiority (Lake Wobegon effect)
- Ingroup bias
- Just-world phenomenon
- Moral luck
- Outgroup homogeneity bias
- Projection bias
- Self-serving bias
- System justification
- Trait ascription bias
- Ultimate attribution error
- Worse-than-average effect

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NYSERDA's Behavior Research Program

- Apply psychosocial insights into human behavior to energy-related decision making using controlled experiments
- Provide independent evaluations & disseminate the results
- New York clean energy programs

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"Linking Behavioral Research to Energy Decision Making"

RFP 1192 October 2009

$400,000

Services of a behavioral expert to design pilot experiments to identify potentially more effective approaches to achieve New York's clean energy targets

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Action Research, Inc.

- Full-service consulting firm
- Oceanside, CA
- Established P. Wesley Schultz in 2001

  Jennifer Tabanico, Cofounder/President
- Leverages the academic community to apply research to real world problems
- Uses Community Based Social Marketing (CBSM) approach

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Action Research Scientific Advisors

- Dr. P. Wesley Schultz, California State University
- Dr. Noah Goldstein, UCLA Anderson School of Management
- Dr. Jennifer Nolan, University of Scranton PA
- Dr. Renee Bator, State University of New York Plattsburgh
- Dr. Janet Swim, Pennsylvania State University

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Community Based Social Marketing Approach (McKenzie-Mohr)

- Roots in social science
- Research-driven process
- Focus on specific target behaviors
  - Select action with greatest combination of:
    - **Impact:** Impact potential
    - **Probability:** Likelihood of success
    - **Penetration:** Room to move
- Programs go beyond knowledge and awareness
  - Remove barriers and highlight benefits
  - Incorporate behavior change tools

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The CBSM Process

Select Behavior	• Identify specific actions (nondivisible) • Quantify energy savings for each behavior • Link to outcome and goals
Identify Barriers	• External barriers (e.g., infrastructure) • Internal barriers (e.g., motivation, convenience, etc.) • Conduct Surveys/Market Research as needed
Behavior Tools	• Social Norms • Commitment/Pledges • Competitions, Feedback, Incentives
Pilot Test	• Random assignment • Control or comparison group • Can test multiple approaches at once
Implement Broadly	• Scale up effective pilots • Identify ideal combination of approaches • Cost savings & environmental benefits

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Responsibilities

- NYSERDA Behavior Research Program funds Action Research services

- Client referrals responsible for implementing recommendations & providing data needed for evaluation

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NYSERDA's Behavior Referrals

- VPSI Capital District vanpool program
- Ithaca College/SUNY Plattsburgh computer labs
- Bard College dormitory dryer rack study
- NYSERDA New Construction Program (NCP)
- NYSERDA Paper Reduction Campaign
- ENERGY CHALLENGE TEAM Central New York Regional Planning & Development Board – (EPA Climate Change Innovation Program (C2IP)
- SUNY Albany fume hoods

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Case Studies

- VPSI Capital District vanpool program
- Ithaca College/SUNY Plattsburgh computer labs
- Bard College dormitory dryer rack study
- NYSERDA's New Construction Program (NCP)
- NYSERDA Paper Reduction Campaign
- ENERGY CHALLENGE TEAM Central New York Regional Planning & Development Board – (EPA Climate Change Innovation Program (C2IP)
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1. VPSI Vanpool

- Base case: only 2 out of 20 vanpools deployed
  - Peripheral vs. central route (Petty and Cacioppo, 1981)
  - System 1 vs. System 2 (Kahneman)

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Power of the personal (messenger, brochures & VPSI's website)

- Recommendations: Social Norms
  - Use photos that show people like YOU vanpool
  - Use personal communication & testimonials

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Capital District Large Employer survey

- Recommendations: VPSI redefine relationship with employers as a consultancy/conversation vs.
- An outside company trying to "pitch" the program
- Highlight organizational benefit of being a "green" business

- Results:
- 18 vans filled

  1,908,938 vehicle miles avoided (80 passenger cars/yr)
- 8/2009-10/2011

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2. Ithaca College Computer Lab

- Goal:
  - to get students to turn off machines in computer labs when not being used
- Theoretical Framework
  - *descriptive & injunctive norms*
  - (Oceja & Berenguer 2009; Aronson & O'Leary 1983)

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Computer lab 1 pilot descriptive norm & injunctive norm

N=308

Computers off, sign posted N=100	Computers on, sign posted N=88
Computers off, no sign N=60	Computers on, no sign (control) N=60

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Computer lab 1 pilot descriptive norm & injunctive norm

Computers off, sign posted 48%	Computers on, sign posted 11%
Computers off, no sign 15%	Computers on, no sign (control) 3%

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Computer lab 2 pilot descriptive norm & injunctive norm

N=772

Computers off, sign posted 30% (N=330)
Computers on, no sign 3% (N=442)

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Savings

Ithaca College

- ***Computer labs alone***
  - 34,552 kWh/yr ($3,196)
  - ***C02 emissions***
    - 54 barrels of oil
    - 5 passenger vehicles
- ***Campus wide***
  - 227,136 kWh/yr ($21,000)
    - 17,559 barrels of oil
    - 31 passenger vehicles

NYU

- ***Savings potential***
  - 1,471,579 kWh/yr
    - ($294,316)
- ***C02 emissions***
  - 2,360 barrels of oil
  - 200 passenger vehicles

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3. Reduce Residential Energy Use; Syracuse, NY

- Central New York Regional Planning & Development Board
  - Received funding under the EPA Climate Change Innovation Program (C2IP)
  - Implementation contractor for NYSERDA's Energy $mart Communities Program

- Goal: To achieve 30% CO2 reductions in Central New York Communities, including Syracuse

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Pilot Community: Syracuse, NY

- Recommendation: use an energy team concept to influence energy-efficiency behaviors in Syracuse neighborhoods
- & websites to maintain public interest and expand the pilot
  - N=5 teams (5-8 households) 1st wave 3/12-6/12
  - N=5 teams (5-8 households) 2nd wave 6/12-9/12

- Treatment: Work through a simple 5-lesson curriculum & meet biweekly as a group over 7 weeks

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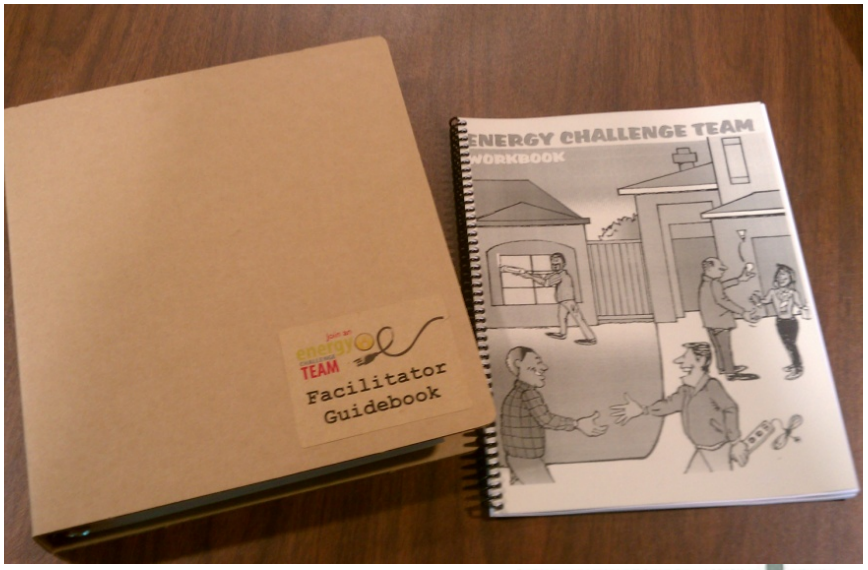
Energy Challenge Team

- Facilitator Guide and Participant Workbook
  - Materials & training for Team Leaders provided by Action Research
  - Curriculum Handbook also developed by Action Research
  - Built in research materials
    - Participant entry/exit surveys
    - Utility waiver
    - Feedback forms



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Energy Challenge Team

- Future pilots are being added in Central New York
  - Town of DeWitt and Madison County
- Is the model scalable?
- Can we rely on social diffusion for 2nd-tier & 3rd-tier effects?

- CNY Planning & Development Board *

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Challenge Initiatives

Join the Challenge

The Central New York Energy Challenge is a project of the Central New York Regional Planning and Development Board Energy Management program. The Challenge aims to reduce energy usage and greenhouse gas emissions throughout the region through the adoption of conservation, efficiency, and renewable energy technologies. The Challenge offers a variety of action-based initiatives for community-level adoption to advance a self-sustaining effort throughout the Central New York region. To learn more about our current initiatives, please follow the links below:

+ TAKE THE PLEDGE
+ HOST AN EVENT
+ ENERGY CHALLENGE TEAMS
+ YOUR STORIES

JOIN THE CHALLENGE
CHALLENGE INITIATIVES
ENERGY ACTIONS BLOG
CHALLENGE NEWS

Energy Challenge Teams

Join an energy CHALLENGE TEAM
save. learn. socialize. improve.

Join a Challenge Team. The CNY Energy Challenge has developed this team model to provide you with the support you need to learn about and take action towards improving your energy performance at home; we are currently seeking motivated individuals to serve as Energy Challenge Team Facilitators.

What is an Energy Challenge Team?

Photo: Energy Challenge Team Facilitator Guidebook and Participant Workbook

Energy Challenge Teams are made up of 5-8 households who meet over the course of 12 weeks following a guidebook. The Energy Challenge Team guidebook covers five different categories of actions for your home – from learning to calculate how much energy you use to reducing your phantom load. The team-based approach allows for peer-to-peer support, sharing, and learning.

Join a Team and:

SAVE: The Challenge was created to help you achieve long-lasting energy savings in your home; how much can YOU save?

LEARN: Follow the Energy Team guidebook – with fun and useful information for taking action to reduce your energy intake.

SOCIALIZE: Challenge your friends, neighbors, and co-workers to form a team. Teams consist of 5-8 households and meet bi-weekly for about 1hr over 12 weeks. So far Teams have met during their lunch hour at work, after neighborhood meetings, around the dinner table, and even in church basements. Where you gather is up to you.

IMPROVE: By following the guidebook you will discover ways to upgrade your home, lower your energy costs, and make your home more comfortable.

What do Energy Challenge Team Facilitators do?

JOIN THE CHALLENGE
CHALLENGE INITIATIVES
ENERGY ACTIONS BLOG
CHALLENGE NEWS

RECENT POSTS

- Bring Earth Week into your Home
- CNY Energy Challenge Partners with Words in the World at SUNY Oswego
- Collaboration to Develop Traveling Exhibit for the Energy Challenge
- Energy Challenge Team Program Expands
- $30 Million Solar Research Initiative Launched in New York

NYSERDA's Behavior Research program, future…

- Technical behavior consulting services are available, so referrals always welcome!
- RFP $1,200,000 seeking proposals for clean energy behavior pilots in New York State

- *Proposals with*
  - Behavior expertise
  - Interested client
  - Ability to implement the treatment &
    Provide data for evaluation

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Future projects we would like to do…

Hospitality	• Replace environmental messaging with social norm messaging • Make pro-social environmental behavior visible • Reward environmental behavior publicly/privately • Environmental commitment
Commercial Office	• Frame energy-efficiency as green behavior • Change the artwork on the wall • Friendly competitions (ongoing)
Building Manager	• The Lone Operator & Social Norms • Competitions, Feedback, Incentives, Shared Savings
Residential	• Home Energy Audit recommendations • Persuasion techniques & framing • Pure time preference & interest free upfront financing

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Guest Conservation Behavior

- **Guest Conservation Opportunities**
  - Towel re-use
  - Linen re-use
  - Turning off lights and appliances
  - AC/Heating settings
  - Water conservation (shower use)

- Towel and linen reuse programs already in place in many hotels using environmental messaging

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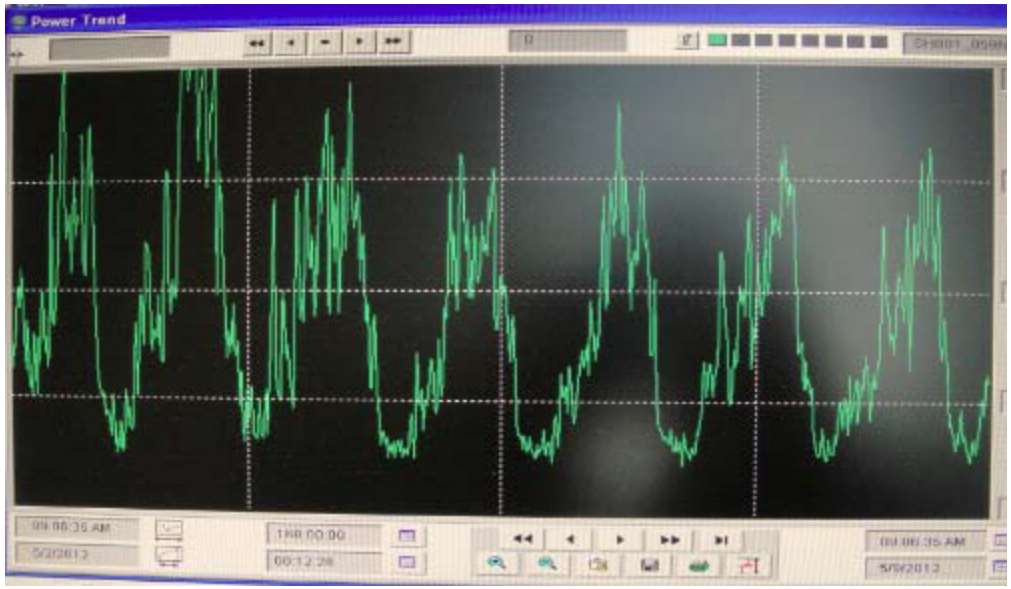
Commercial Office Feedback Technology & Office Worker Behavior Change



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Building Managers

- Training (if necessary) to remove barriers to building commissioning
- Framing building commissioning as the norm rather than the exception
- Provide incentives
  - $
  - Social recognition
- Bring together building operators via social networking sites
  - showcase members' successes, lessons learned & new opportunities

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Residential Programs

- Frame potential energy-efficiency upgrades in three options tied to payback
- 1. Efficiency of investment achieved in 1 to 3 yrs
- 2. Efficiency of investment achieved in 4 to 6 yrs
- 3. Efficiency of investment achieved in 7-10 yrs

With/	Interest free money (1yr)
Without	Upfront cash/gift bonus

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Thank you!

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Ideas?

Potential sites?

Potential partners?

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