



Low-Income
Forum on Energy

2016 Statewide Conference

Innovations in Home Energy Use: Directions and Considerations for Intervention

DR. BRIAN SOUTHWELL

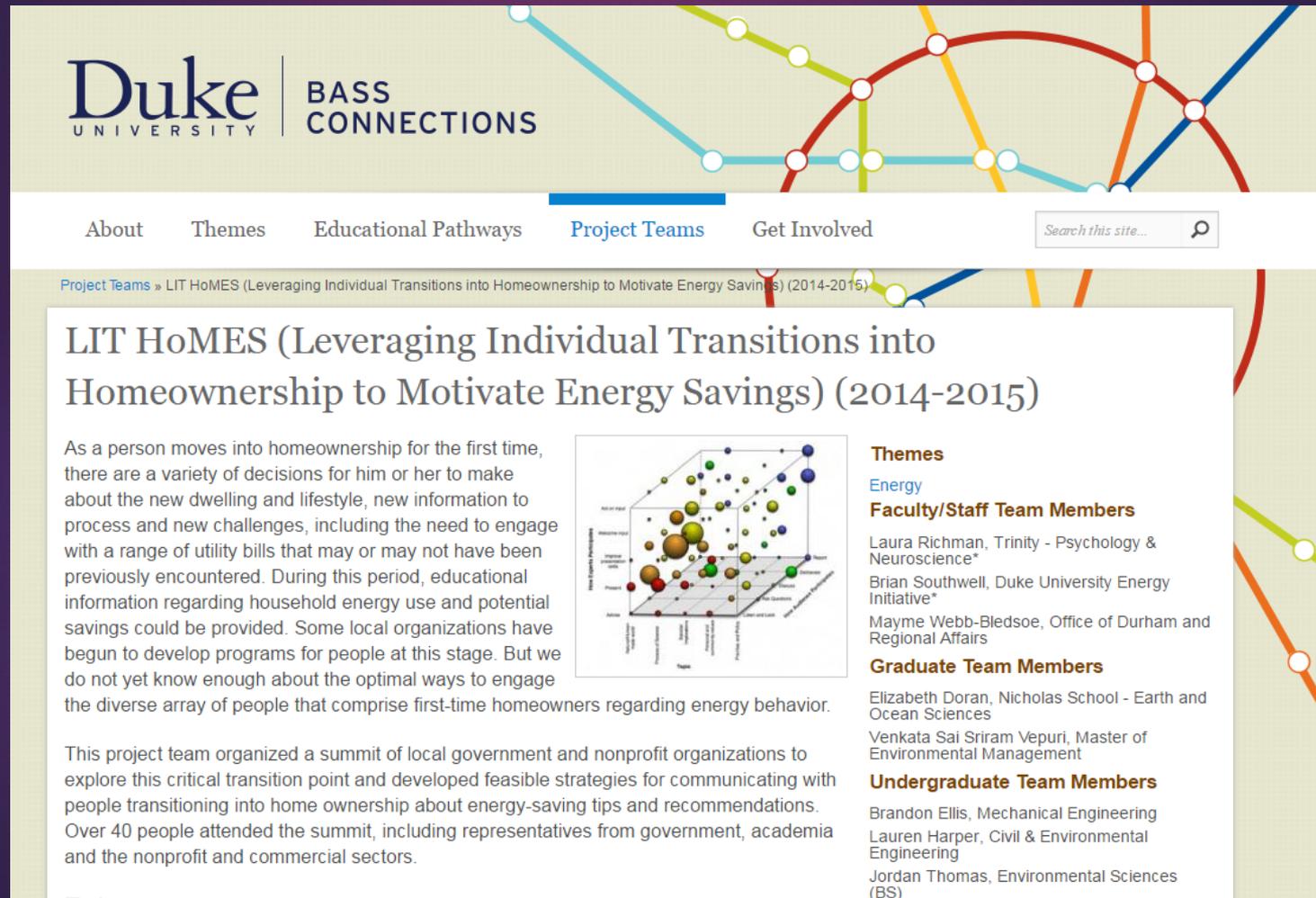
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DUKE UNIVERSITY
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Human behavior and public information

- ▶ Changing human behavior often requires effort to shape *public information environment*.
- ▶ How does existing environment facilitate or hamper behavior?
- ▶ Can we build and leverage partnerships between organizations and programs?

A project to reduce home energy use



The image is a screenshot of a website for Duke University's BASS CONNECTIONS program. The header features the Duke University logo and the text "BASS CONNECTIONS". A navigation menu includes "About", "Themes", "Educational Pathways", "Project Teams", and "Get Involved". A search bar is located on the right. The main content area is titled "LIT HoMES (Leveraging Individual Transitions into Homeownership to Motivate Energy Savings) (2014-2015)". The text describes the challenges of moving into a new home and the project's goal to provide energy-saving information. A 3D scatter plot with axes labeled "Time to Homeownership", "Energy Savings", and "Homeownership" is shown. The right sidebar lists "Themes" (Energy), "Faculty/Staff Team Members" (Laura Richman, Brian Southwell, Mayme Webb-Bledsoe), "Graduate Team Members" (Elizabeth Doran, Venkata Sai Sriram Vepuri), and "Undergraduate Team Members" (Brandon Ellis, Lauren Harper, Jordan Thomas).

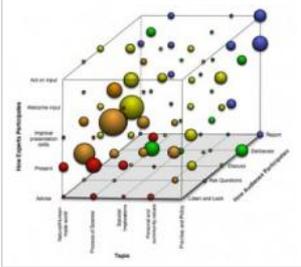
Duke UNIVERSITY | **BASS CONNECTIONS**

About Themes Educational Pathways **Project Teams** Get Involved

Project Teams » LIT HoMES (Leveraging Individual Transitions into Homeownership to Motivate Energy Savings) (2014-2015)

LIT HoMES (Leveraging Individual Transitions into Homeownership to Motivate Energy Savings) (2014-2015)

As a person moves into homeownership for the first time, there are a variety of decisions for him or her to make about the new dwelling and lifestyle, new information to process and new challenges, including the need to engage with a range of utility bills that may or may not have been previously encountered. During this period, educational information regarding household energy use and potential savings could be provided. Some local organizations have begun to develop programs for people at this stage. But we do not yet know enough about the optimal ways to engage the diverse array of people that comprise first-time homeowners regarding energy behavior.



This project team organized a summit of local government and nonprofit organizations to explore this critical transition point and developed feasible strategies for communicating with people transitioning into home ownership about energy-saving tips and recommendations. Over 40 people attended the summit, including representatives from government, academia and the nonprofit and commercial sectors.

Themes
Energy

Faculty/Staff Team Members
Laura Richman, Trinity - Psychology & Neuroscience*
Brian Southwell, Duke University Energy Initiative*
Mayme Webb-Bledsoe, Office of Durham and Regional Affairs

Graduate Team Members
Elizabeth Doran, Nicholas School - Earth and Ocean Sciences
Venkata Sai Sriram Vepuri, Master of Environmental Management

Undergraduate Team Members
Brandon Ellis, Mechanical Engineering
Lauren Harper, Civil & Environmental Engineering
Jordan Thomas, Environmental Sciences (BS)

Collaboration across sectors?



A summit on home energy innovations



A sourcebook for behavior change



The screenshot shows the Amazon product page for the book "Innovations in Home Energy Use: A Sourcebook for Behavior Change". The page features the Amazon Prime logo, a search bar, and navigation links. The book cover is displayed on the left, showing a green house icon with a leaf on top and the title "INNOVATIONS IN HOME ENERGY USE". The right side of the page contains the book's title, authors (Brian G. Southwell, Elizabeth M.B. Doran, and Laura S. Richman), and pricing information for Kindle (\$7.95) and Paperback (\$12.95, Prime eligible). A description of the book is provided, highlighting its focus on reducing homeowner energy use through communication-based intervention.

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Innovations in Home Energy Use: A Sourcebook for Behavior Change Paperback – December 14, 2015
by [Brian G. Southwell](#) (Author), [Elizabeth M.B. Doran](#) (Editor), [Laura S. Richman](#) (Editor)
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This collection highlights innovations to encourage reduction in homeowner energy use. The ideas described grew out of a summit at Duke University that brought together people from research institutions, county sustainability offices, government agencies, consultant organizations, architecture firms, building contractors, and real estate agencies—sectors of professionals and practitioners who do not often converse.

The resulting book provides a foundation for new dialog about ways in which homeowners can be engaged as partners in the quest to reduce our collective energy use. It focuses on how to change individual behavior, which is a function of not only general attitudes, but also perceptions of social norms, specific skill knowledge, and available technology and tools. The essays in this book will appeal to a range of people charged with curbing residential energy use through communication-based intervention.

Look inside

Flip to back

See all 2 images

Generated ideas



Quantify value
of home
improvements

Incorporate
energy
performance
into real estate
listings

Leverage
employer-
employee
relationships

Integrate
hazard
mitigation
and energy
efficiency

Neighborhood
education

Improve
extension
program
follow-up

Neighborhood education

Curry, D., Squire, C., & Besana, G. (2016). Energy efficiency 101: improving energy knowledge in neighborhoods. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 87-107). Research Triangle Park, NC: RTI Press.

- ▶ Education for behavior change needs to involve *more than provision of facts*.
- ▶ Range of behavioral theories note variety of beliefs that matter, e.g., Fishbein & Ajzen (2010).
- ▶ Skill building and social norms are also key.

Example: Assisting low-income families for energy efficiency

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Contents lists available at [ScienceDirect](#)

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss



Short communication

Energy information engagement among the poor: Predicting participation in a free workshop

Brian Southwell^{a,b,*}, Kristina Ronneberg^b, Kelly Shen^b, Emily Jorgens^b, Juanita Hazel^b, Rahiel Alemu^b, Jennifer Ross^b, Laura Richman^b, Daniel Vermeer^b

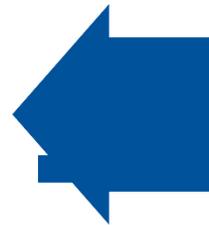
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Neighborhood education

PETE
STREET™



Where
Neighbors
Get Energy
Savings™

Natural hazard mitigation: A natural partnership?



Integrate hazard mitigation and energy efficiency

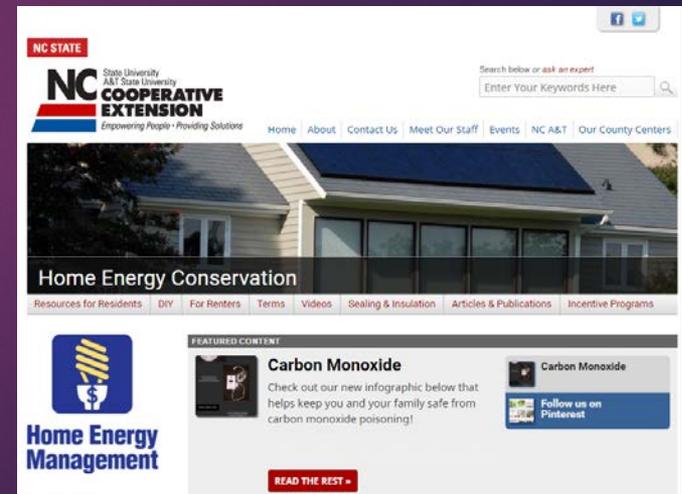
Galik, C. S., Rupert, D., Starkman, K., Threadcraft, J., & Baker, J. S. (2016). Enhancing home energy efficiency through natural hazard risk reduction: linking climate change mitigation and adaptation in the home. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 111-140). Research Triangle Park, NC: RTI Press.

- ▶ Many mitigation and adaptation programs involve home retrofits.
- ▶ Energy efficiency considerations not always primary; construction costs often drive decision-making.

Improve extension programs

Langham, L., Singh, A., Kirby, S., Parvanta, S., Ziemian, M., & Coleman, D. (2016). Increasing the Effectiveness of Residential Energy Efficiency Programs. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 169-190). Research Triangle Park, NC: RTI Press.

- ▶ Many government extension programs offer home energy audits.
- ▶ What happens after the audit?

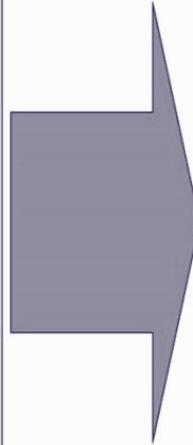


What can messages do?

Message engagement

Example variables:

- Exposure
- Attention
- Perception
- Message processing



Intermediate outcomes

Example variables:

- Memory
- Belief formation, change, reinforcement
- Emotional arousal
- Unintended consequences



Behavioral outcomes

Example variables:

- Talk with others
- Information seeking
- Purchase behavior
- Political behavior e.g., voting
- Health behavior e.g., dieting
- Unintended consequences

A need for decision aids?

Wong-Parodi, G., Kirby, J., Miller, R., & Girard, M. (2016). Considering the effect of incorporating home energy performance ratings into real estate listings. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 61-85). Research Triangle Park, NC: RTI Press.

- ▶ *Informed* search requires:
 - ▶ availability of decision-relevant facts
 - ▶ integration of facts and values for consistent preferences
 - ▶ active mastery of available information

A helpful information environment?

JOURNAL OF COMMUNICATION

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EDITORIAL

The Prevalence, Consequence, and Remedy of Misinformation in Mass Media Systems

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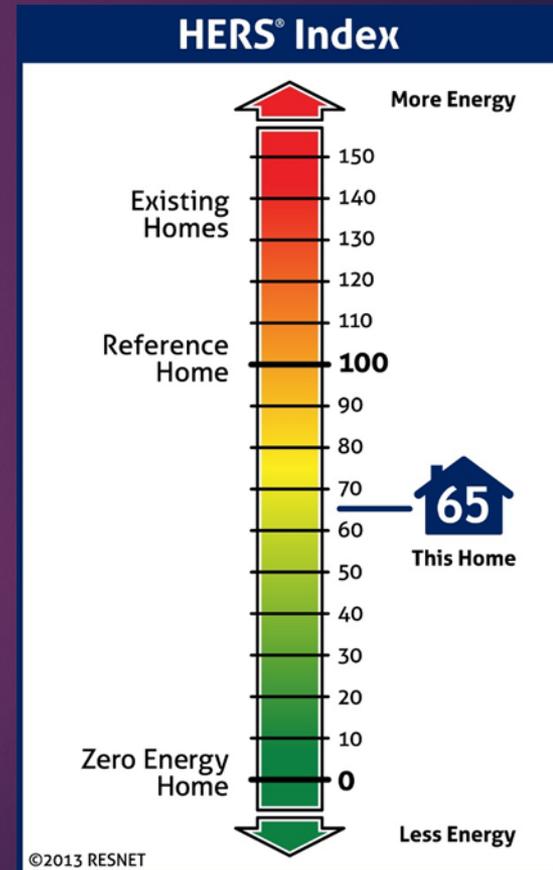
3 School of Journalism & Mass Communication, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA

4 School of Media and Public Affairs, George Washington University, Washington, DC 20052, USA

doi:10.1111/jcom.12168

Modify real estate listings

- ▶ Opportunity to coordinate with MLS.
 - ▶ Some states, like NY, already participate.
- ▶ Good metrics already available through RESNET, such as HERS Index.
 - ▶ Residential Energy Services Network (RESNET) is independent non-profit.
- ▶ RESNET-certified professional uses performance testing and energy modeling software to calculate score.

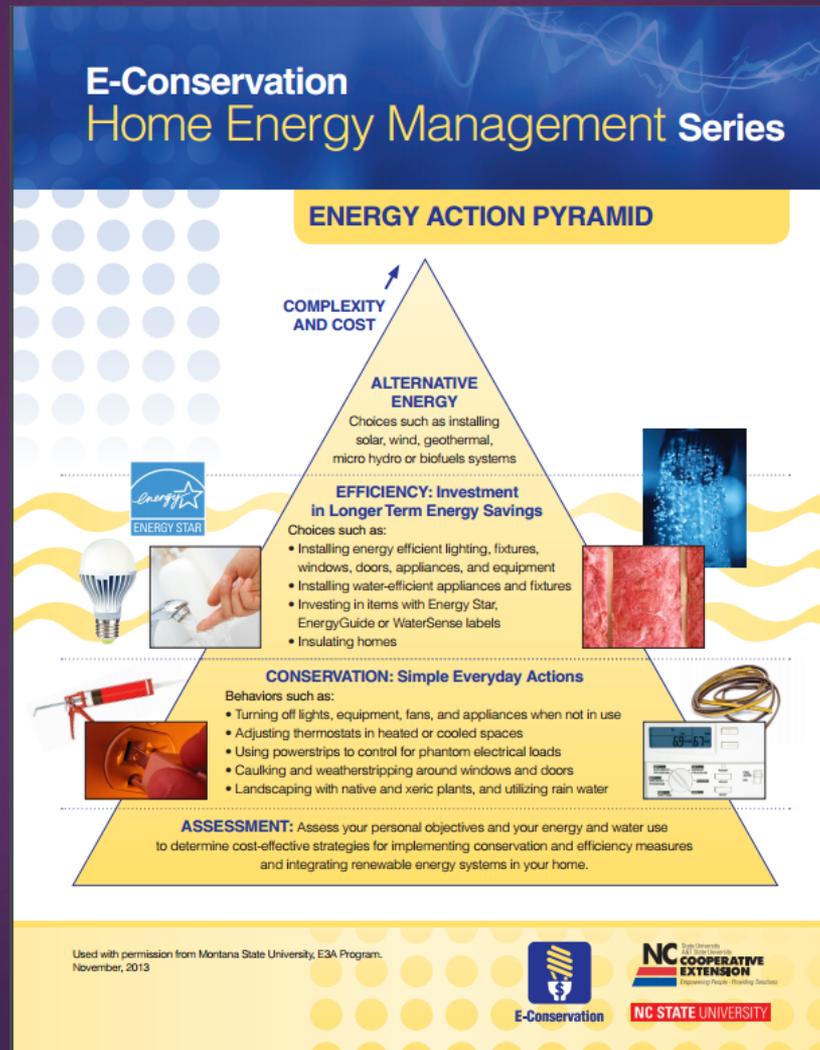


Quantify value of home improvements

Kauffman, D., & Garafola, N. (2016). Quantifying the value of home energy improvements. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 31-59). Research Triangle Park, NC: RTI Press.

- ▶ Lack of easily understood metrics for value of energy savings complicates decision-making for home improvements.

Sufficient information?



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November, 2013



E-Conservation



NC STATE UNIVERSITY

Leverage employer programs

Adair, C., Weiss, J., & Elliott, J. (2016). Leveraging the employer-employee relationship to reduce greenhouse gas emissions at the residential level. In B. G. Southwell, E. M. B. Doran, L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior change* (pp. 141-168). Research Triangle Park, NC: RTI Press.

- ▶ Consider *gamification* and incentive models used for health improvements by various employers.
- ▶ What level of competition and incentives are motivating for employees?

Contact information for collaboration or questions



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