

## Abstracts for Wednesday, November 18

### Topic 5A Policy Experiments

Valerie Richardson  
KEMA

Transitioning  
Mass Market to  
Critical Peak Pricing  
Rates through Policy  
Directive

The California Public Utilities Commission established policies and practices for advance metering, demand response and dynamic pricing in June of 2002 in response to the state's energy crisis. The California investor-owned utilities (IOUs) developed a portfolio of demand response programs and introduced them to the market in 2004. The IOUs achieved a modest level of success by launching the programs quickly and attracting significant numbers of large customers. However, the CPUC recognized that the initial levels of participation, particularly in the price responsive programs, needed to be increased. In late 2004, the CPUC made a major change to the Critical Peak Pricing (CPP) program, ruling that the program would shift from voluntary to default for all customers with interval meters.

Bryan Garcia  
Earth Markets, LLC

Energy Efficiency  
Markets: Fueling  
Innovation Through  
Behavioral Strategies

As states across the country enact more and more aggressive energy efficiency standards, a variety of markets have developed that grant an explicit property right, often called a white tag or an energy savings certificate, to public and private actors that can demonstrate energy savings. These energy efficiency markets have the potential to unleash a wave of innovation, especially in regards to behavioral strategies in the residential sector. Perhaps the most innovative market of this type is the Connecticut Class III Renewable Portfolio Standard (RPS) market, which mandates that energy suppliers purchase a certain amount of Class III RECs each year, with each REC equivalent to 1 MWh of energy savings. This market has already unleashed the innovation of the private market, developing new approaches to connecting with households. These new approaches include innovative community marketing strategies, next generation energy feedback devices, and sophisticated online tools. But there are also challenges to the market. Measurement and verification is not yet streamlined, with each project requiring separate approvals from the regulators. In addition, the lack of market transparency adds a great deal of price risk to potential investors. And issues around programmatic overlap have also arisen. Connecticut is addressing all of these issues, but they illuminate the challenges that other states will face as energy efficiency markets mature. A detailed analysis of the market dynamics of Class III RECs will be presented along with potential policies that can be added to strengthen the transparency and effectiveness of the market going forward.

Yael Parag  
Oxford  
Environmental  
Change Institute

Limits to personal carbon  
emissions: challenge for  
freedom or a path to  
equality?

Should there be an explicit obligation on individuals to reduce their own emissions? Or should the burden to deliver emissions reduction from the domestic sector fall only on government, utilities and the market? What are the reasons for the lack of social and political support of personal carbon limits? Is it because the complexity of putting such a scheme in place, or is it related to the restriction on individual's freedom?

At least a third of the direct carbon emissions in the developed world are the result of decisions and acts taken by individuals. Yet currently individuals are only encouraged to change their behaviour but have the option to continue and consume energy as much as they wish. Following the logic of the 'tragedy of the common' and the 'polluter pays' it makes sense to put some limits on individuals consumption, as the effect of high emitters are felt by all, and the risks of climate change are severe.

The discussion will focus on the concept of putting some limits on personal carbon emissions and how it relates to freedom, justice, and equality.

### **Topic 5B Attitudes, Beliefs & their Implications**

Anthony  
Leiserowitz  
Yale University -  
Forestry and  
Environmental  
Science

A Global Survey of  
Climate Change Attitudes  
and Behavior

Natural scientists warn that global climate change will have potentially devastating consequences for human societies and natural ecosystems around the world. Meeting this challenge will require a concerted international effort to dramatically reduce greenhouse gas emissions and adapt to future impacts. It will also, however, require strong public support for political leaders and government policies and behavioral change by individual citizens and consumers around the world.

Despite the vital importance of this issue, we currently know relatively little about whether the global public is either aware of or understands the threat of global warming, whether they support aggressive action by their respective governments, or what individual behaviors they are willing to change.

This presentation reports results from a global study of public climate change risk perceptions, policy preferences, and environmental behaviors conducted in collaboration with the Gallup World Poll – an unprecedented annual survey of the health, well-being, attitudes, and behaviors of citizens in more than 150

countries, representing 95% of the world's population.

In December 2009, one month after the BECC conference, world leaders will gather in Copenhagen to negotiate an international treaty to respond to the threat of global climate change. This research will analyze and assess the current state of public climate change awareness and engagement around the world, and provide critical context for the world negotiations.

Sally Blackwell  
Victoria University  
of Wellington

Electricity Conservation in  
Context

Household energy behaviour has been studied across a range of disciplines including economics, social psychology, technological and cultural models. Recognising that energy decisions are not economically rational this study draws on expanded social psychology approaches which recognise that whilst individual behaviour can be influenced to be more energy efficient it is often heavily constrained by contextual factors. This research examined conservation behaviour in the context of a dry year in New Zealand's hydro-dominant electricity system (winter 2008) and an associated conservation campaign. Two studies were undertaken. Study one involved a thematic analysis of media coverage that examined the social and political context of the shortage and the way the issue was framed. The issue was highly political and the debate was dominated by a focus on supply whilst conservation was predominantly portrayed as a result of government failure and detrimental to households and the economy. Study two entailed a nationwide longitudinal survey that examined conservation actions, motivations and attitudes before and after the shortage. Individual households showed a high degree of willingness to conserve electricity across time but undertook more actions during the shortage. Despite this, recorded savings during the period were lower than previous similar shortages (between 5 and 9%). The research suggests that the socio-political context is important to the behavioural response during a shortage and, more generally, that an environment which places little value on conservation will constrain the effectiveness of behaviour change programmes.

Martin Bunzl  
Rutgers University

Why Changing  
Attitudes Matter  
(More than Changing  
Behavior)

Changing individual behavior can only go so far. Our acquiescence to policy changes matters much more. But this involves attitudinal change more than behavioral change. In this talk, Martin Bunzl discusses effort to promote such change and different approaches to measuring the effectiveness of such efforts.

## **Topic 5C Organizational Decision-Making**

Marti Frank  
Research Into  
Action, Inc

Big Little Things: New  
Research in Business &  
Consumer Electronics

Electronics devices – products as diverse as computers, portable MP3 players, set-top boxes, and uninterruptible power supplies – represent an increasing share of electric consumption for households and businesses. While several studies have focused on consumer research, behavior changes required to address this market include manufacturers and others in the product supply channels.

Effective energy efficiency programs and policies will depend on an ability to motivate manufacturers not only to provide energy efficient products and market them effectively, but to increase the efficiency of products over time. Achieving these goals requires that program implementers and policy makers understand manufacturers the way they do consumers: their motivation, decision making process, and attitude towards energy efficiency.

The 2009 Business and Consumer Electronics Market Characterization Study focused on manufacturer behavior and decision making through interviews with nearly 40 electronics manufacturers across nine device types as well as an extensive literature review and additional interviews with national energy efficiency organizations.

Several key findings about manufacturer behavior may affect efficiency programs and policy, including: manufacturers' preference for standards with a longer term or "roadmap" format; barriers to efficiency ranging from no-cost (process issues) to higher cost (incremental cost of efficient components); reasons why efficiency standards work; and potential intervention points in product supply chains. The research also identified potential conflicts between the findings and typical programmatic structures and federal standards-setting efforts, and explored lessons learned from alternative approaches at work in the U.S. and abroad.

Ken Tiedemann BC Hydro	121	Commercial Sector Behavioural Savings: Conditions, Capacity and Commitment	In recent years, considerable attention has been paid to the role of behaviour in producing residential energy savings, but less attention has been paid to the potential role of behavioral change in achieving energy savings in business. The relative neglect of this area of energy savings is unfortunate, because research indicates that business sector behavioural savings are at least as large as those in the residential sector. This objective of this paper is to report the results of two behavioral surveys conducted with business clients in 2006 and 2008.
J. Mike Walker Beacon Consultants Network Inc.	95	Marketing Energy Efficiency to Businesses: Applying the Lessons of Social Science Research to Maximize Your Impact	<p>Energy efficiency and environmental programs frequently approach business audiences with the same kinds of marketing appeals that they make to consumers. Yet it's a mistake to assume that corporate decision makers respond in the same way to these messages. In some cases, consumer-oriented marketing appeals can have the exact opposite of the intended effect on business audiences.</p> <p>The objective of this presentation is to draw practical lessons from social science research that can help us better influence business managers when we promote energy efficiency and environmental protection. We will examine a number of relevant research findings and – drawing on the real-world experiences of several energy efficiency and environmental programs -- demonstrate how to apply them and how they can boost our effectiveness as marketers. But how can we use this finding to improve our persuasiveness with businesses decision makers? We will illustrate the answers with real marketing campaign materials and data on their effectiveness.</p>

## **Topic 5D Really Cool Competitions**

Ed Thomas  
UtilityExchange.org

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Home Energy Makeover  
Contests - Motivating  
Existing Homeowners to  
Make “Whole House”  
Energy Saving  
Improvements

Building code enhancements are making new homes more energy efficient, but how do we encourage owners of existing homes to take a comprehensive approach to home improvement rather than just replacing a furnace when it breaks? Several utilities and energy organizations are demonstrating that a comprehensive “whole house” approach can achieve energy savings of 50% or more in existing buildings. These “whole house” demonstrations are being achieved by conducting Home Energy Makeover Contests, modeled after reality television shows. The contest takes a building-science approach to the selection of a home that best demonstrates the potential for energy savings based on BTU-per-square-foot and other factors. The winning home receives a makeover using energy-saving products and services donated by local suppliers. Then, all contest entrants (i.e. contest losers) and other community members are invited to tour the newly-improved, winning home and learn how to conduct their own energy makeover at their own expense using the local suppliers. In all cases, the winning home owners make a compelling case to the home visitors and media for the non-energy benefits that the improvements achieve in comfort, health, safety and more. This innovative contest approach illustrates that there is a viable market to encourage homeowners to make more comprehensive home energy improvement choices. This presentation will compare and contrast Home Energy Makeover Contests conducted in Colorado, Maine, California and Oregon, as well as a workshop variation conducted in Wyoming and Colorado.

Rhonda Hunter

Washington State  
Dept. of Ecology

Cool School Challenge:  
Student Action to Reduce  
Greenhouse Gas Emissions  
and Save \$\$

Modeled after the U.S. Mayor's Climate Protection Agreement, the Cool School Challenge successfully engages students, teachers, and school districts in practical strategies to reduce greenhouse gas emissions school-wide. Using web-based tools and classroom activities, 7-12 grade students conduct classroom audits in energy, transportation and waste, then create a plan and challenge teachers to reduce CO2 emissions. Students follow-up with post-challenge audits to document improvements. And it's working! In these economic hard times, schools are actually saving money; year one at flagship school Redmond High saved \$7,500 and an additional \$7,000 the following year.

This is a collaborative statewide partnership with state and local government, local utilities, and schools across Washington to reduce GHG emissions using conservation and lifestyle changes first at school, then at home. A facilitator network conducts local teacher workshops and helps find local school support.

Since 2007, more than 30 schools across Washington have signed onto the Challenge, reporting collectively more than 560,000 lbs of greenhouse gas emission reductions. Students are creating their own leadership social organizations to communicate with their teachers and classmates, encouraging and challenging them to change their habits and make more climate friendly lifestyle choices, many creating new social norms in their schools.

Donald Kelley

**Topic 5E Youth & Education**

Jan DeWaters

Clarkson University

The Energy Literacy  
Assessment Project

Efforts to promote energy literacy – a citizenship understanding of energy that includes attitude and behavioral aspects – will help people make objective energy-related decisions and actions throughout their daily life. Effective energy education programs will improve energy literacy among today’s students, who will be the voters, consumers and professionals of tomorrow. The objective of this educational research project is to develop and apply a written survey to investigate energy literacy levels and the potential for improvement among middle and high school youth. A survey that is broad yet suitable for classroom administration will be useful for developing and implementing effective energy education programs.

The Energy Literacy Survey has been developed according to established psychometric principles and methodologies in the sociological and educational sciences. Two rounds of pilot testing among 1655 New York State middle and high school students have resulted in an instrument comprised of three subscales related to energy literacy: attitude, behavior/intention, and knowledge. Internal consistency values for the pilot instrument, measured by Cronbach’s alpha, range from 0.78 to 0.84 for the three subscales.

Preliminary analysis of the pilot data indicates that the level of energy-related knowledge is lower than expected (overall mean 42%). Behavior scores were somewhat higher (mean 66%) and attitude scores, higher still (mean 73%). These results demonstrate the need for improved energy education – students may be sympathetic to the energy problems we face, but apparently lack the knowledge and skills that will enable them to take effective action.

Marilyn Cornelius  
Stanford University -  
IPER

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Reducing energy use in the  
residential sector: a behavior  
change curriculum for high  
school

The U.S. residential sector accounts for a third of energy use, and about a quarter of greenhouse gas emissions, excluding transportation, for which cars and light trucks constitute 60% of emissions. Barriers to energy reduction in the residential sector are often behavioral. Yet few theory-based interventions have been designed, implemented, and rigorously evaluated. This is particularly true of interventions that incorporate multiple behavior change techniques in order to maximize effectiveness. Teenagers are an important target for changing energy efficiency behaviors; they believe they will be personally affected by climate change; changes in youth have the potential for greater impact over a lifetime; and teens tend to be “early adopters” and spread innovations to their families/peers. We conducted a randomized controlled trial to test the efficacy of a behavior change curriculum implemented in a public high school in northern California. The

curriculum applies behavioral science techniques and design principles – an innovative combination – to help individuals use less energy. Individual action is linked to community action by having the students design media messages for their peers. Based on the results of this trial, this curriculum could be adapted for implementation in schools across California in concomitance with AB32 goals, and form a basis for behavior change initiatives for adults.

Lisa Skumatz  
Skumatz Economic  
Research Associates  
Inc.

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DRILLING DOWN ON  
EFFECTS OF OUTREACH,  
MARKETING, AND  
EDUCATIONAL  
PROGRAMS: THE ROLE  
OF ATTITUDES AND  
NEBS

Education, outreach, advertising, and training programs provide evaluation difficulties as they focus on modifying knowledge, attitudes, intentions, behaviors and influencing purchases rather than directly installing measures. This paper presents quantitative results illustrating the role of several elements that are traditionally omitted from evaluation of these programs – yet they are critical in understanding the impacts of outreach efforts.

- Role of Attitudes and Self-Efficacy: Demographics aren't nearly robust enough to explain differences in energy-related decision-making and behavior. We examined self-efficacy attitudes as a factor in the impact of the educational / outreach programs on changing purchasing and energy-use behavior – and demonstrate their importance in adoption and lessons for reaching the “next level” of potential participants. Examples for renewables, student, and residential recycling programs are used for illustration.
- Understanding the “Bundle” of Features Affecting Energy Decision-Making – Non-Energy Benefits (NEBs): Results from program examples show that NEBs often outrank energy savings as important factors influencing participation and measure decision-making (positively and negatively). Relying on energy effects and rebates as the “hooks” to entice participation ignores key drivers in residential and non-residential program decision-making. Understanding (and promoting) valued benefits, addressing “negative” NEBs (representing “barriers”), and solving “disconnects” and market misperceptions illustrated by NEBs can go far in modifying behavior. NEBs can also be a program's most effective marketing tools – and provide most valued feedback to program design.

The paper presents these results, augmenting usual evaluation studies, and provides insights to guide education / outreach / training programs, maximize

effectiveness, understand decision-making, and improve participation.

### **Topic 5F Behavioral Economics**

Dallas Burtaw  
Todd Rogers  
Hunt Alcott

### **Closing Spotlight**

Hannah Granade