Spillover: Worth Crying Over

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Overview

- An innovative methodology to estimate non-participant spillover
  - Unlike other spillover studies, this study does NOT rely on self-report installation
  - Equipment inventories collected during saturation studies
    - California Lighting and Appliance Efficiency Saturation Study (CLASS)
    - California Saturation Study (CSS)
    - California Market Share Tracking Study (CMST)

Background

- History of Spillover in California
  - From 2006-08 program cycle to 2010-12 program cycle, IOUs were not permitted to claim spillover savings
- What's New?
  - CPUC Decision 12-11-015 directed Commission staff to develop estimates of spillover effects attributable to 2013-14 IOU programs.
  - For the 2013-2014 portfolio cost-effectiveness calculation, IOUs may claim a 5% "market effects adjustment"
  - Studies underway to estimate spillover:
    - Residential (conducted by Opinion Dynamics)
    - Non-Residential (conducted by Itron)

Introduction: What is Spillover?

- Spillover defined as:
  - Energy savings associated with energy efficiency measures adopted by consumers who were influenced by an energy efficiency program, but without direct financial or technical assistance from the program
  - Does NOT include market effects (i.e. larger structural changes in the market)
- Types of Spillover
  - Participant vs. Non-Participant

Participant Spillover

- Program participation induces a customer to install an EE measure outside of a program
  - Example: a customer completes an HVAC upgrade through a program and then, based on that experience, completes a lighting upgrade without the receipt of an incentive.

Non-Participant Spillover

- Program induces a customer to install a high-efficiency measure without having participated in a utility rebate program
- Actions could result from increased awareness or understanding of energy efficient equipment
  - As a result of program outreach, customer education, communication with a program participant, etc.
  - Example: a customer who installs high-efficiency lighting due to hearing about the measure benefits from a utility program but does not apply for a utility rebate.

What Makes This Methodology Interesting?

Advantages of Using Saturation Study Data

- Eliminates self-report errors regarding installation of equipment
  - On-site data collection to verify installation
  - Cross-checked with program tracking data to identify non-incentivized EE measures
- Large sample of potential spillover sites
  - Potential non-participant spillover sites can be identified without a general population survey

Overview of Saturation Studies

- CLASS (California Lighting Appliance Saturation Study)
  - Residential sector
  - 1,987 onsite surveys
  - Undertaken by DNV GL as part of the CPUC's 2010-12 evaluation cycle
  - Data Collected
    - Home characteristics
    - Lighting inventory
    - Appliance inventory for HVAC, water heaters, refrigerators, freezers, dishwashers, clothes washers, dryers, ovens, TVs, PCs, etc.

Overview of Saturation Studies

Undertaken by Itron for the 2010-12 evaluation cycle

- CSS (Commercial Saturation Study)
  - 1,439 on-site surveys completed
  - Non-residential segments: food stores, health, office, restaurant, retail, schools, warehouses
  - Mostly electric equipment: lighting, TVs, HVAC, refrigeration, EMS, DG, office equipment
- CMST (Commercial Market Share Tracking survey)
  - Segments: CSS types + colleges, hospitals, hotels, industrial
  - Onsite surveys conducted
    - 500 Lighting, 400 TVs, 200 small HVAC systems
- Overlap between CSS and CMST sites
  - i.e. site count is not additive

Overview of Methodology

1. Identify EE equipment installations using saturation study data
2. Identify non-participants by cross-checking EE installation sites with IOU program tracking data
3. Attribute program influence through phone surveys
4. Calculate energy savings associated with spillover
5. Develop a non-participant spillover factor

Methodology – Step 1

Identify Energy-Efficient Equipment Installations

- Use onsite data from the saturation studies to identify customers who installed equipment during 2010-12
  - CLASS data for residential study
  - CSS/CMST data for non-residential study
- Equipment Types:
  - Residential: HVAC, appliances, envelope, hot water
  - Non-Residential: lighting, HVAC, refrigeration, EMS
- Identify the efficiency level of equipment installed at these sites using:
  - Energy-efficiency databases
  - Make/model lookups

Methodology – Step 2

Identify Non-Participants

- Cross-check EE measures with IOU tracking data
  - Verify that installed EE measures did not receive a rebate from an IOU program
  - Confirm that the customer site did not participate in an IOU EE program during the 2010-2012 period
- Preliminary Results:
  - Sites with EE measures installed without the benefit of an IOU program
    - 1,310 residential
    - 254 non-residential

Methodology – Step 3

Determine Program Attribution

- Survey non-participants to determine if IOU programs influenced the decision to purchase EE equipment
  - Is the customer aware of IOU EE programs?
  - If so, rate the following on a 0-10 scale:
    - Influence of the program in the decision to install
    - Likelihood that EE equipment would have been installed in the absence of the program
  - Any non-zero score results in the full attribution of spillover
    - Partial attribution is not awarded
  - Caveat: customers are asked to recall their decisions from 3-5 years ago

Methodology – Step 4

Calculate Measure Savings Associated with Spillover

- Ex post savings, when available, used for measures previously evaluated in 2010-12 programs
  - Does not include an adjustment for free-ridership
- DEER and Work paper values used for EE measures that have not been previously evaluated
  - 100% realization rate
- Population weights used to extrapolate savings to the IOU territories and statewide levels

Methodology – Step 5

Calculate Non-Participant Spillover Factor

$$\text{Factor} = \frac{\text{total spillover savings (kWh, kW, therms)}}{\text{total portfolio savings (kWh, kW, therms)}}$$

Results

- Results expected in late 2015
- Draft results will be available for public comment at www.energydataweb.com/cpuc
- Final results will be available at www.calmac.org
- Questions?