



Top Down and Bottom Up: Market Effects and Program Attribution in the Commercial and Industrial Market

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Outline

- Background
- Methods
- Results
- Conclusion





Definitions

- Spillover
 - energy savings due to EE programs from actions taken outside the program
- NPSO
 - efficiency gains among nonparticipants that are generated indirectly through the efficiency programs
- Market transformation
 - “a reduction in market barriers resulting from a market intervention, as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced or changed”



Top Down & Bottom Up

- Energy efficiency programs
 - Resource acquisition (bottom up)
 - Market transformation (top down)
- Evaluation Methods
 - Gross savings, free riders, spillover (bottom up)
 - Market effects, cross state (top down)



Background





NYSERDA Programs

- NYSERDA offers a wide variety of programs in the Commercial & Industrial existing facilities market
 - Flex Tech
 - Existing Facilities Program
 - Business Partners
 - Both resource acquisition and market transformation aspects



NYSERDA Evaluation Methods

- Impact evaluation
 - Typically bottom up in C&I sector
 - Gross savings through M&V
 - FR and SO through enhanced self reports
- Nonparticipant Spillover (NPSO)
 - Cannot be directly associated with a single program
 - Previous conducted sector-wide, cross program NPSO evaluations in 2005 and 2007



Methods





NPSO Study Design

- Estimate NPSO (Bottom up)
 - Enhanced self reports
 - Owners, contractors
 - All end uses (lighting, motors, HVAC, thermal, etc.)
- Reality Check (Top down)
 - Cross state study
 - High bay lighting only
 - Replicate studies done in Massachusetts and California



Estimating NPSO

$$kWh_{NPSO} =$$

$$I_{NYSERDA} \times \frac{kWh}{sq\ ft} \times C\&I\ area_{NP\ Remodel}$$

$I_{NYSERDA}$

= influence factor, % of remodeled C&I area with EE influenced by NYSERDA

$\frac{kWh}{sq\ ft}$

= estimated average kWh savings/sf for C&I nonparticipating projects

$C\&I\ area_{NP\ remodel}$

= total area of remodeled C&I space from nonparticipating end users



Estimating HB Market Effects

- Difference between the efficiency of high bay lighting
 - New York State v baseline (the comparison area)
 - Comparison area = Alabama, Georgia, South Carolina and Mississippi
 - Comparison states had no statewide efficiency programs
- Size of the New York State high bay lighting market



Cross State Studies

	Time Period Covered in Evaluation State Survey	Data Source for Evaluation State Survey	Time Period Covered in Comparison Area Survey	Data Source for Evaluation State Survey	High Bay Lighting Market
California (KEMA CA, 2010)	2006 to 2008	Primary data collection	2006 to 2008	Primary data collection	Existing buildings
Massachusetts (KEMA MA, 2011)	2007 to 2010	Primary data collection	2006 to 2008	Data collected in California study	New construction
New York State (ERS, 2012)	2007 to 2010	Primary data collection	2007 to 2010	Primary data collection	Existing buildings



Comparison of Methods

	NPSO/ESR	Cross State/ Mkt Share
AWARENESS OF NYSERDA	Added contractor surveys	Includes nonprogram effects
QUESTION COMPLEXITY/ SELF REPORTS	Influence is hard to quantify	Contractors asked share of products
CAUSALITY	Influence as proxy for causality	Causality not linked to program



Results





NYSERDA Influence & NPSO

NYSERDA influenced . . .	% Contractors Reporting High Influence
Efficiency levels of equipment recommended to customers	29%
How benefits of energy efficient equipment are explained to customers	26%
Methods or techniques used	17%
Manufacturers and distributors to stock higher efficiency equipment	19%

NPSO = 25% +/- 15%



Cross State Study

- Previous cross state evaluations (MA & CA)
 - Found market effects
- New primary data collection for NY
 - Comparison state contractor surveys were updated
 - HB efficiency was similar between NY and comparison states
 - No market effects

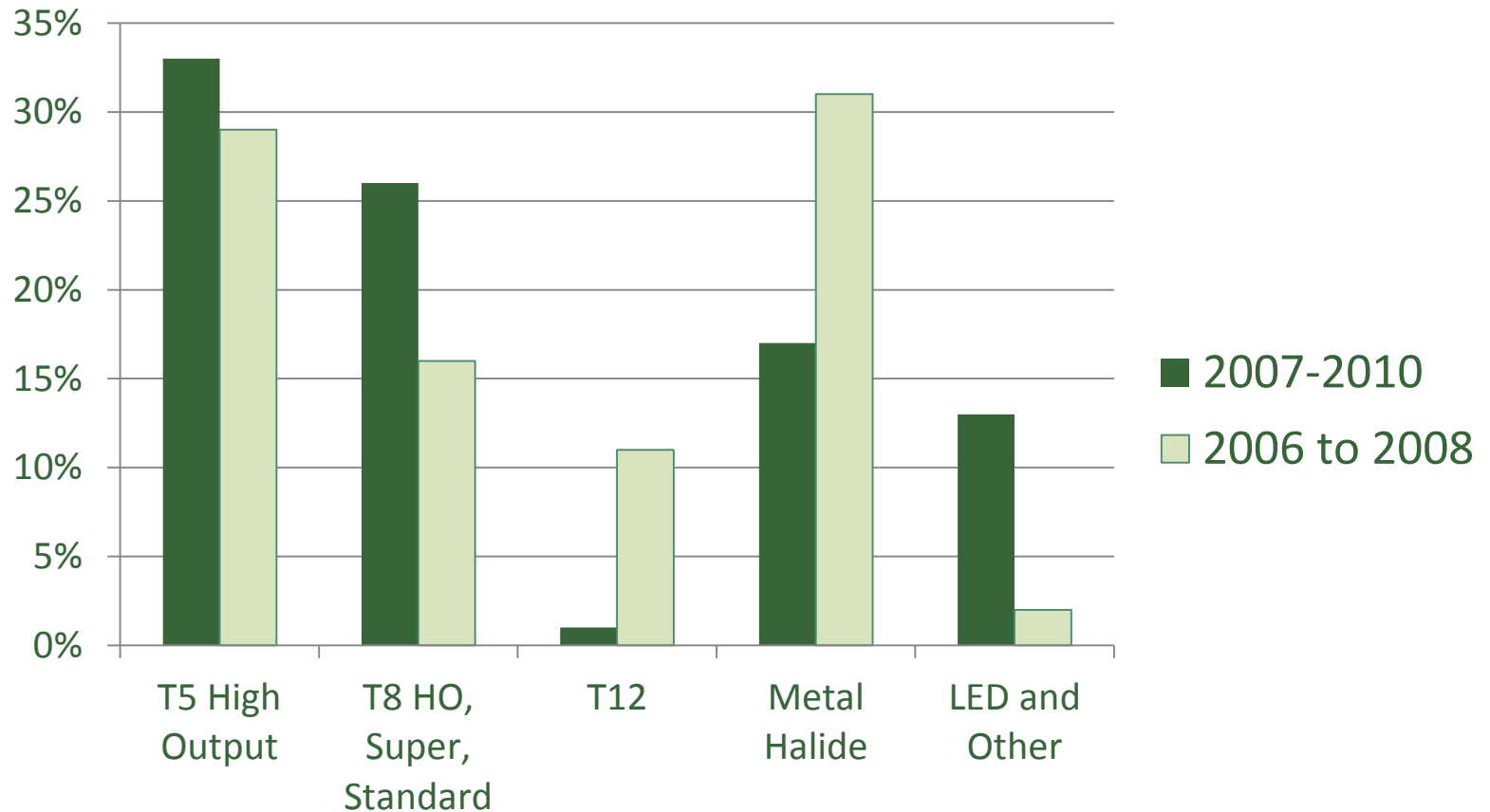


What happened?

- Comparison states more efficient & NY less efficient
 - Energy Codes
 - Comparison states adopted energy codes
 - NY is not regularly updated
 - Change in federal standards
 - T12s being phased out
 - National chains have instituted efficiency standards
 - NY HB market is less efficient than MA & CA

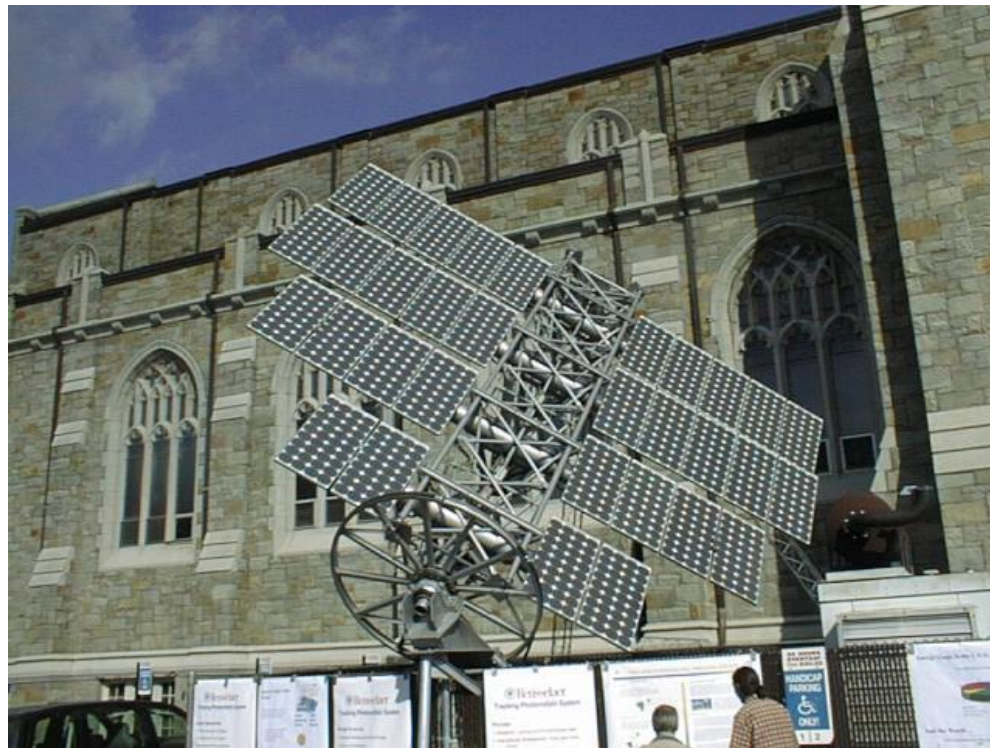


Comparison Area Efficiency





Conclusion





Conclusions

- NPSO and cross state gave different results
 - Combination reflects more nuanced picture of the market
 - Code impacts, market characteristics
 - NPSO for all end uses & cross state for HB lighting only
 - NY lags CA & MA in HB lighting efficiency
 - NPSO self reports indicate positive influence of NYSERDA programs on energy efficiency



Moving forward

- Cross state comparisons are becoming more difficult to implement
 - National and regional trends toward efficiency have reached all sectors
- Efficiency standards are being adopted by national chains
 - Baselines need to address these changes to avoid overstating savings



Questions?



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