AEG
Applied Energy Group

LIFTING THE LID ON LIFT

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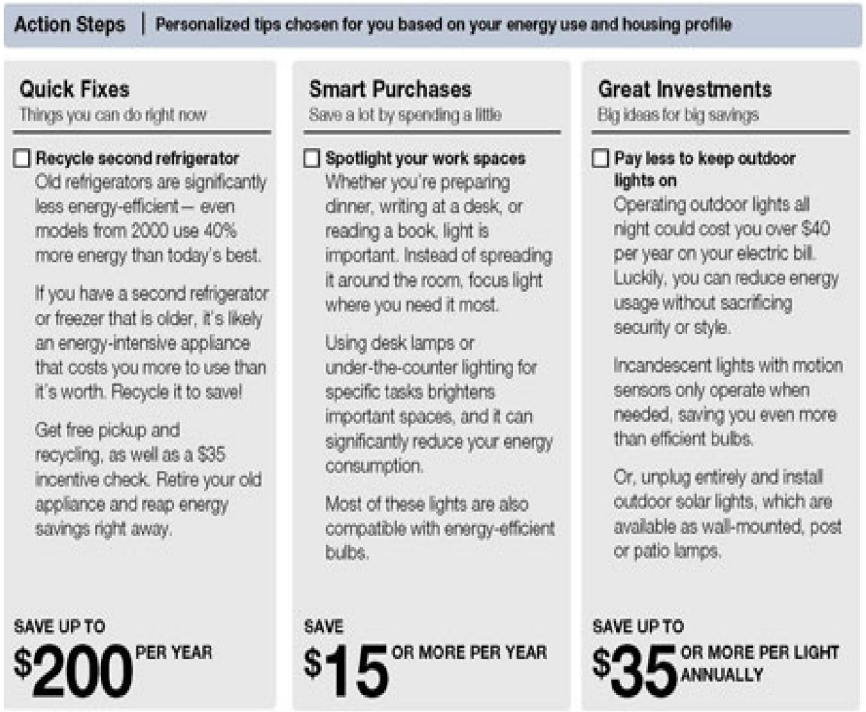
AGENDA

- What is lift?
- Why is it important?
- How can we account for it?
- What are some key issues?
- Summary

WHAT IS LIFT?

- Savings that can be attributed to one program, but are “counted” in another program
- Behavioral energy reports often provide energy saving recommendations that point customers to other Utility programs

- Fridge and Freezer Recycling
- Energy Efficiency Appliances
- High Efficiency Lighting



Action Steps | Personalized tips chosen for you based on your energy use and housing profile

Quick Fixes
Things you can do right now

☐ **Recycle second refrigerator**
Old refrigerators are significantly less energy-efficient — even models from 2000 use 40% more energy than today's best.

If you have a second refrigerator or freezer that is older, it's likely an energy-intensive appliance that costs you more to use than it's worth. Recycle it to save!

Get free pickup and recycling, as well as a $35 incentive check. Retire your old appliance and reap energy savings right away.

SAVE UP TO
$200 PER YEAR

Smart Purchases
Save a lot by spending a little

☐ **Spotlight your work spaces**
Whether you're preparing dinner, writing at a desk, or reading a book, light is important. Instead of spreading it around the room, focus light where you need it most.

Using desk lamps or under-the-counter lighting for specific tasks brightens important spaces, and it can significantly reduce your energy consumption.

Most of these lights are also compatible with energy-efficient bulbs.

SAVE
$15 OR MORE PER YEAR

Great Investments
Big ideas for big savings

☐ **Pay less to keep outdoor lights on**
Operating outdoor lights all night could cost you over $40 per year on your electric bill. Luckily, you can reduce energy usage without sacrificing security or style.

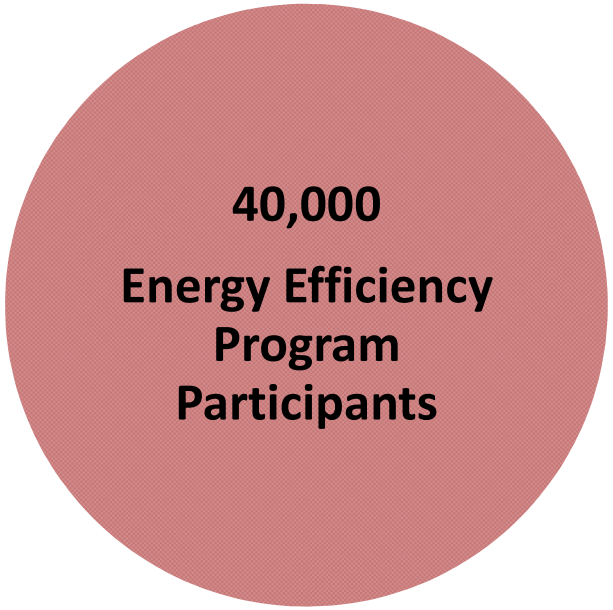
Incandescent lights with motion sensors only operate when needed, saving you even more than efficient bulbs.

Or, unplug entirely and install outdoor solar lights, which are available as wall-mounted, post or patio lamps.

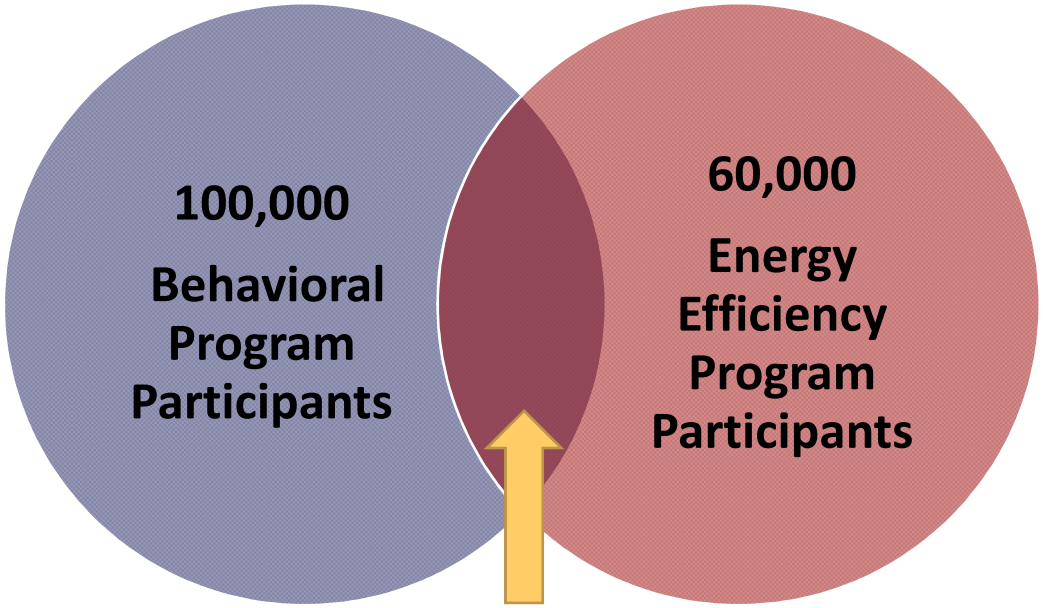
SAVE UP TO
$35 OR MORE PER LIGHT ANNUALLY

VISUAL EXAMPLE

Before Behavioral Program



After Behavioral Program



20,000 customers participate in both programs

Accounting for Lift - Why it's Important

- Increased participation in utility programs ✓
- Increased energy savings ✓
- Increased awareness of consumption ✓

But isn't That a Good Thing?

- The behavioral participants are saving energy AND
- Some of them are taking additional action by participating in other utility programs
- So what is the problem?
- The savings achieved by dual participants will be counted in both programs – this is referred to as **Double Counting**
  - Billing analysis will capture all household savings
  - The savings will be embedded in the Behavioral Program as "Lift" increasing average per customer savings
  - The savings will also be included in the EE program during the evaluation

UPSTREAM VS. DOWNSTREAM SAVINGS

Downstream savings are generally easy to calculate

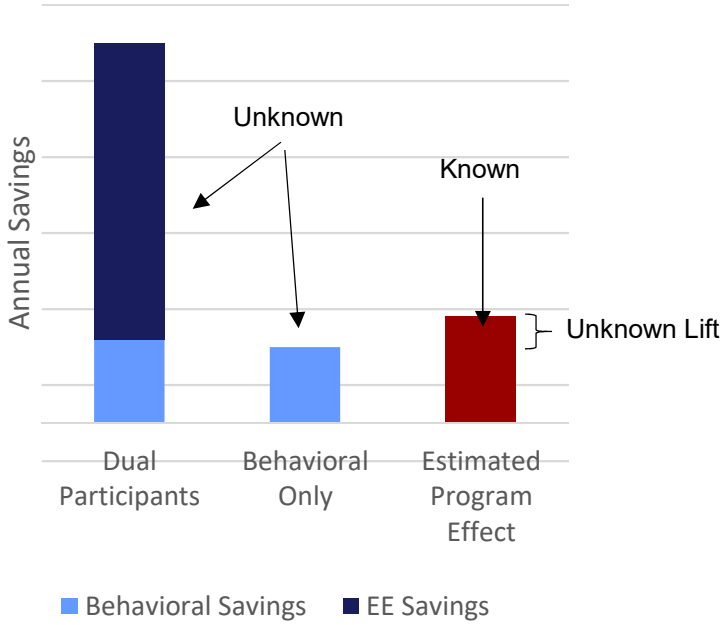
- Count EE participants in treatment and control by program
- Calculate the incremental participation in the treatment group by program
- Assign per participant savings for EE programs by programs
- Estimate incremental impacts

Upstream savings are much trickier

- Savings are not tracked at the customer level (upstream lighting programs for CFLs and LEDs)
- Surveys of treatment and control customers
  - PG&E Survey report (high efficiency lighting and flat screen TVs)
  - TRC lighting analysis memo
- Study results showed that treatment customers installed 0.95 more high efficiency bulbs than control customers
  - About half of those bulbs were likely rebated through the upstream lighting program

LOOKING CLOSER AT THE SAVINGS

- Lets take a closer look at the savings for a Behavioral Program. . .



- We know the real savings look something like the graph
- Because we use billing analysis, we cannot separate the lift
- Double counted savings is:

  Average Lift * 20,000

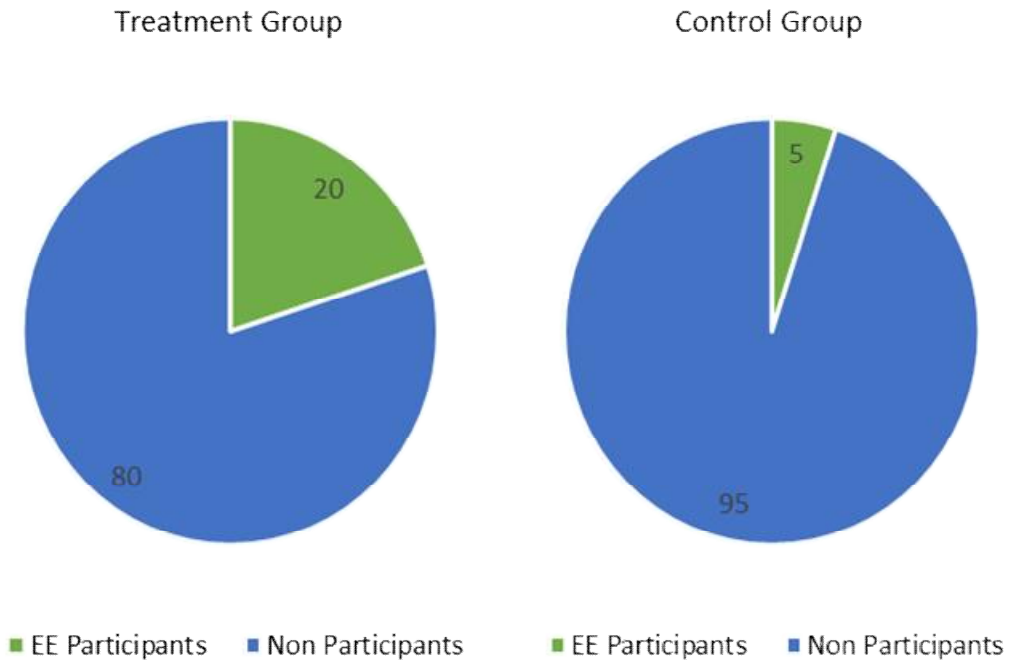
- We want to make sure we don't count the EE savings twice
- Option A – Estimate the dark blue bar (not usually done)
- Option B – Account for the Double Counting using the Evaluated EE Savings

ACCOUNTING FOR LIFT IN PRACTICE

- Lets assume that our goal is simply to account for (vs. estimate) the lift
  - Usually we give the EE programs full credit for the savings
  - We only want to subtract incremental savings (resulting from EE participation) from the behavioral program
- Luckily we can use the control group (RCT, RED, or Matched) to help us
- Remember we only want to count the incremental lift!
  - There is likely some EE participation in the Control Group
  - Some of the EE savings is already embedded in the baseline

VISUAL EXAMPLE – TREATMENT VS. CONTROL

- Lets go back to our treatment group from the Venn diagram, but this time we will add in the control group
- 20% of the treatment customers AND 5% of control customers participate in EE programs
- When we estimate savings the 5% will net out, become embedded, etc.
- We only want to account for savings from the incremental 15%



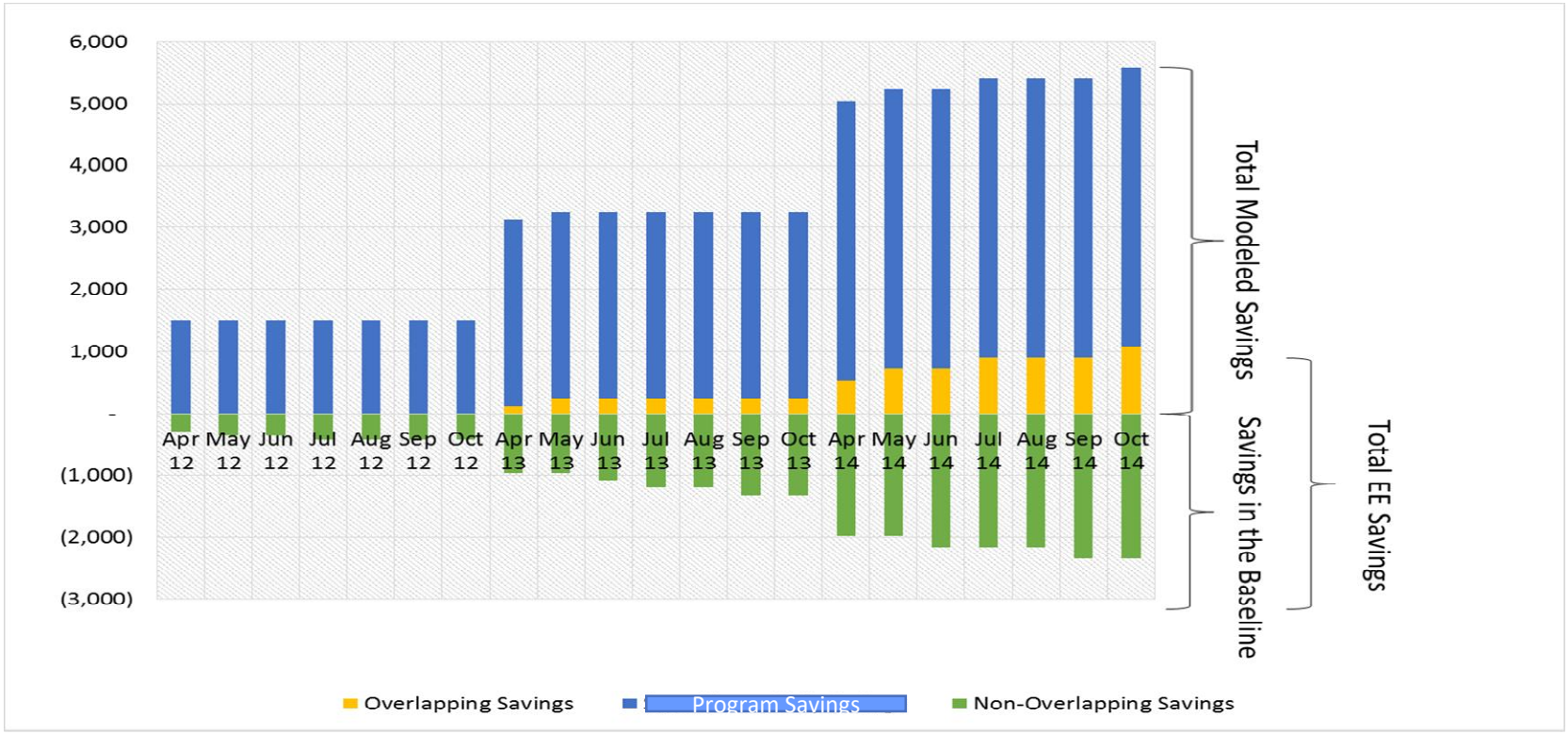
Simple Mathematical Example

Step 1.	Find out how many MORE customers participate in EE in the treatment group	
	Treatment (Behavioral Participants)	Control
	100,000 * 20% = 20,000 customers	100,000 * 5% = 5,000 customers
	We have 15,000 more EE participants in the treatment group	
Step 2.	Calculate the incremental savings from those participants	
	Treatment (Behavioral Participants)	
	300 kWh/year * 15,000 customers	
	Incremental EE savings = 4,500 MWH	
Step 3.	Subtract the incremental savings from the total annual savings	
	Total Annual Savings (including lift)	Adjusted Savings (net of lift)
	150 kWh* 100,000 cust. = 15,000 MWH	10,500 MWH

- In this case the lift was 30% of the behavioral savings
- The billing analysis estimated 150 kWh /customer
- The lift accounted for 45 kWh / customer (on average)
- The behavioral savings only accounted for 105 kwh/customer

MONTHLY APPLICATION ILLUSTRATION

- We know that participant counts change over time, and that savings are not constant over the course of a program year
- We can do a similar analysis on a monthly level
- In the bar graph below – our goal is to estimate the yellow section of each bar



EVALUATION RESULTS

- Generally lift accounts for about 1- 7% of total program savings
  - There are some outliers
  - In these cases removing the lift from "claimed" savings can be detrimental to programs
- When there is an intentional integration of programs lift can be very large
  - 20- 34% of all energy savings for a technology enabled pricing program we evaluated were attributable to EE measures performed when techs were in the home installing thermostats

Program	% Lift
Ameren IL (2014)	1% - 3%
PG&E (2015)	1.2%
PSE (2013)	5.3%
SCE (2015)	5.7%
NGRID (2013)	5% - 6%
SDG&E (2013)	6.1%
PSE (2014)	7%
NSTAR (2013)	18%

OTHER ISSUES

- Small estimates of lift don't have a large effect, but large estimates of lift can spell trouble for behavioral (or other) programs
  - C/B tests can be affected if adjusted savings are used
  - Smaller perceived savings
  - **Should we be judging these programs on adjusted savings?**
- EE programs usually get to claim all the savings
  - EE programs may have already filed their savings
  - They are generally more expensive to run on a per customer basis
  - Might actually be comparable on a total MWH basis
  - **Should EE programs always get to claim the "lift"?**

RECAP

- Lift is the incremental savings resulting from increased participation in EE programs that is included in behavioral savings estimates
- Lift is important because if it is not accounted for properly incremental EE savings will be counted twice
- We usually account for lift using the control group to estimate only the incremental savings from EE programs and subtract those savings from the behavioral program
- There are still some questions to answer regarding the usual process

QUESTIONS?