

# ESTIMATING MEASURE LIFE FROM BEHAVIORAL PROGRAMS

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...What we know, What we need to know,  
How it challenges our thinking



What is the issue and why does it matter?



# Why are we talking about this issue?

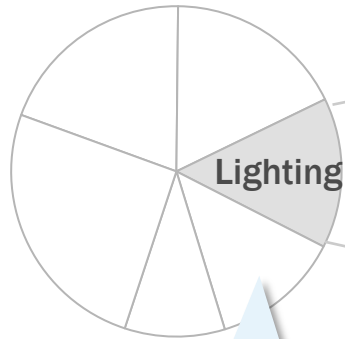
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- Program administrators (PAs) have been offering behavioral programs for a relatively short time and their fate as an effective program intervention depends on their associated costs and benefits.
- As part of cost effectiveness calculations, PAs look to Effective Useful Life (EUL) an estimate of the median number of years that a measure installed under a program is still in place and operable.
- However, EUL is less clear when considering actions taken by participants due to behavioral programs particularly when those actions are not equipment purchases or constitute multiple equipment installations.

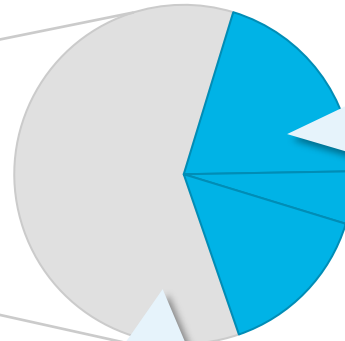


# Purchase and non-purchase actions are both aspects of behavior

End Use Profile  
Percentage of Total Annual  
kWh



Waste Profile  
Percentage of Annual  
Lighting kWh



**Waste:** How much of the remaining usage is due to inefficient equipment vs. wasteful behavior?

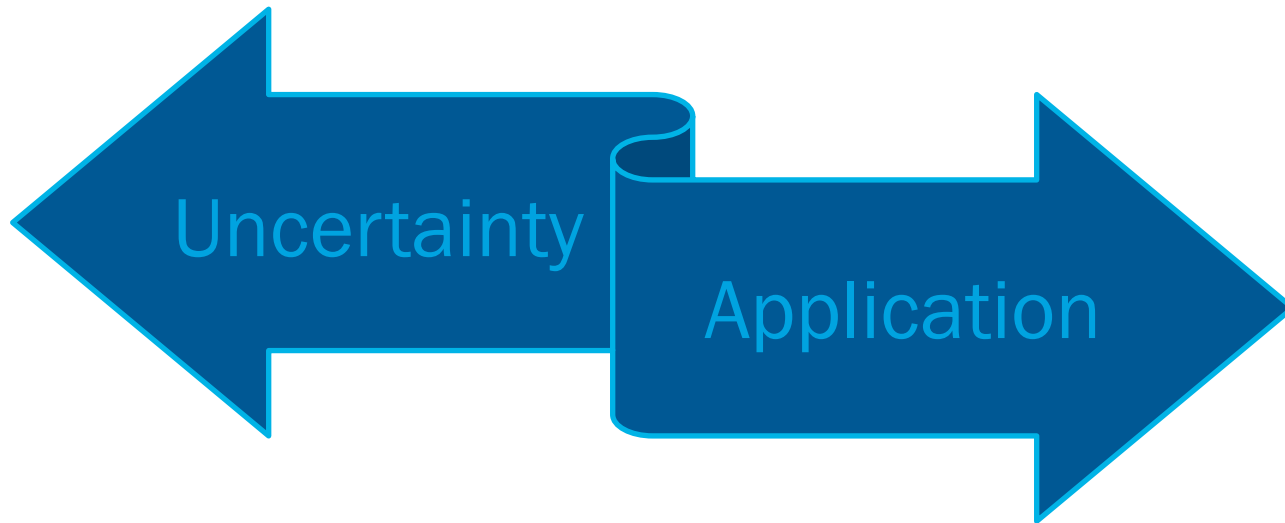
**Current Usage:** How much electricity actually goes to each end use?

**Efficient Usage:** How little lighting energy could be used if all customers installed efficient lamps and turned lights off when not needed?



## Determining an EUL for behavioral programs is currently confounded by two issues

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- Uncertainty as to what occurs with non-purchase energy efficiency actions without continued program intervention
- The practical application of an EUL given how these programs are implemented



# Uncertainty Around the Source of Energy Savings

- It is unclear what specific actions are driving savings, and therefore how long those savings might persist
- Once a behavior is internalized, it is known to persist without continued prompting from outside sources. However, behaviors can decay and not be habituated indefinitely
- If non-purchase behaviors persist, we have no empirical evidence about the length of time they persist



# Practical Application of an EUL in Claimed Savings

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- Unlike standard programs with a specific “installation date,” behavioral programs treat customers over periods of time, usually multiple program years, in which customers can take a wide range of actions.
- This complicates how a program team might claim savings that extend beyond one year.
  - One example is claiming an EUL for each year of continued treatment



# Challenges of Potential EUL application

- Under this scenario, savings would be effectively double counted year-over-year.

		Years Savings are Claimed				
		PY1	PY2	PY3	PY4	PY5
Actual Treatment Year	PY1	*				
	PY2		*			
	PY3			*		

Note: orange shading represents double counted savings for customers who are present the first year, as well as subsequent years.

# What we know

# The Current State of Evidence from Analyses

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- Persistence with treatment
- Persistence without treatment



# Persistence with Treatment

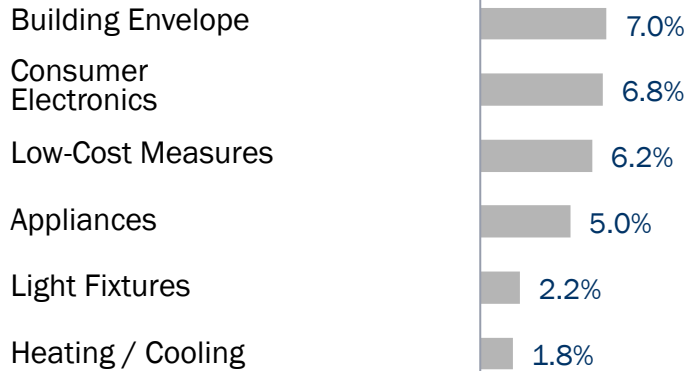
- Our review of behavior-based programs demonstrates that savings continue to persist with treatment year-over-year when the program continues to provide information to participants.

Persistence with Treatment	SMUD (Integral Analytics, 2012)		National Grid (Opinion Dynamics, 2012)			Puget Sound Energy (KEMA, 2010)	
	Wave 1	Wave 2	2009 Electric	2010 Electric	2009 Gas	Electric	Gas
Cohort	Wave 1	Wave 2	2009 Electric	2010 Electric	2009 Gas	Electric	Gas
Year 1	1.80%	1.60%	1.61%	1.25%	0.81%	1.71%	1.17%
Year 2	2.40%	NA	2.06%	1.63%	1.25%	2.00%	1.46%
Year 3	2.40%	NA	2.21%	2.12%	1.43%	-	-
Year 4	2.10%	NA	NA	NA	NA	2.60%	1.30%

# Persistence with Treatment (Cont.)

Measures

**Lift in Uptake**  
(Treatment % - Control %)



Behaviors

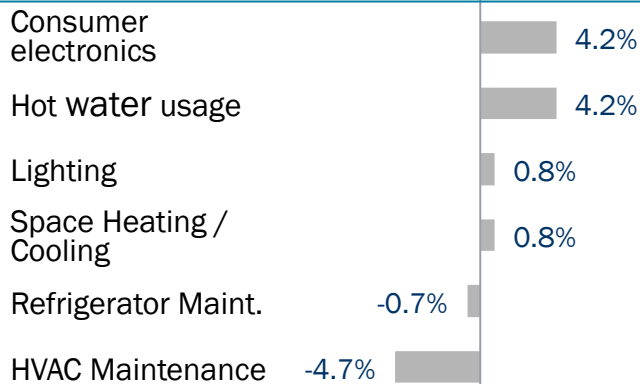
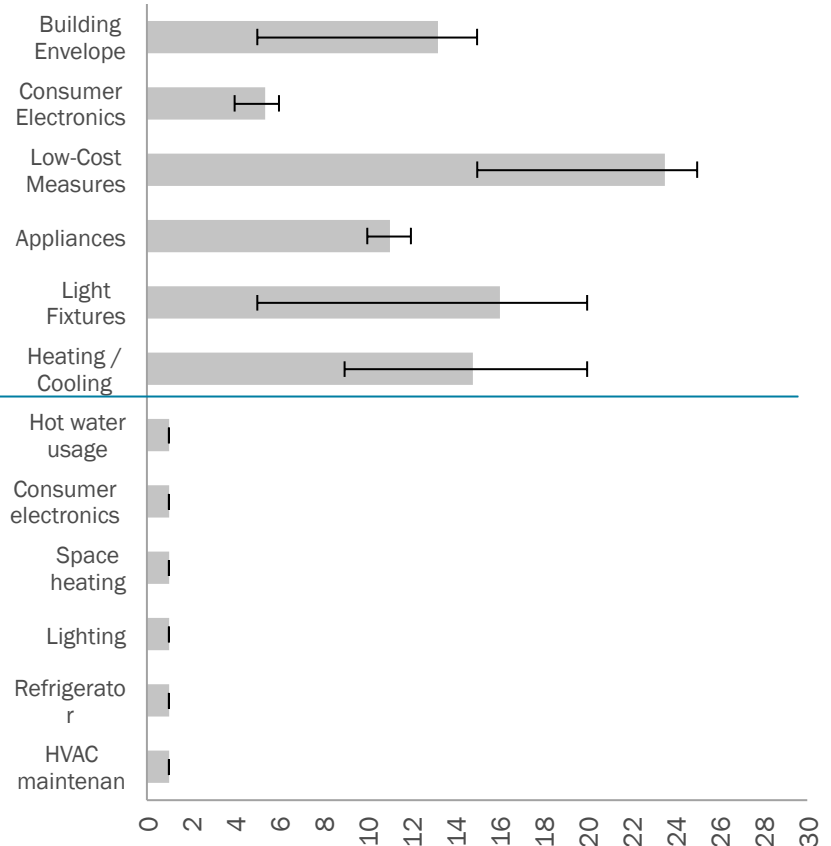


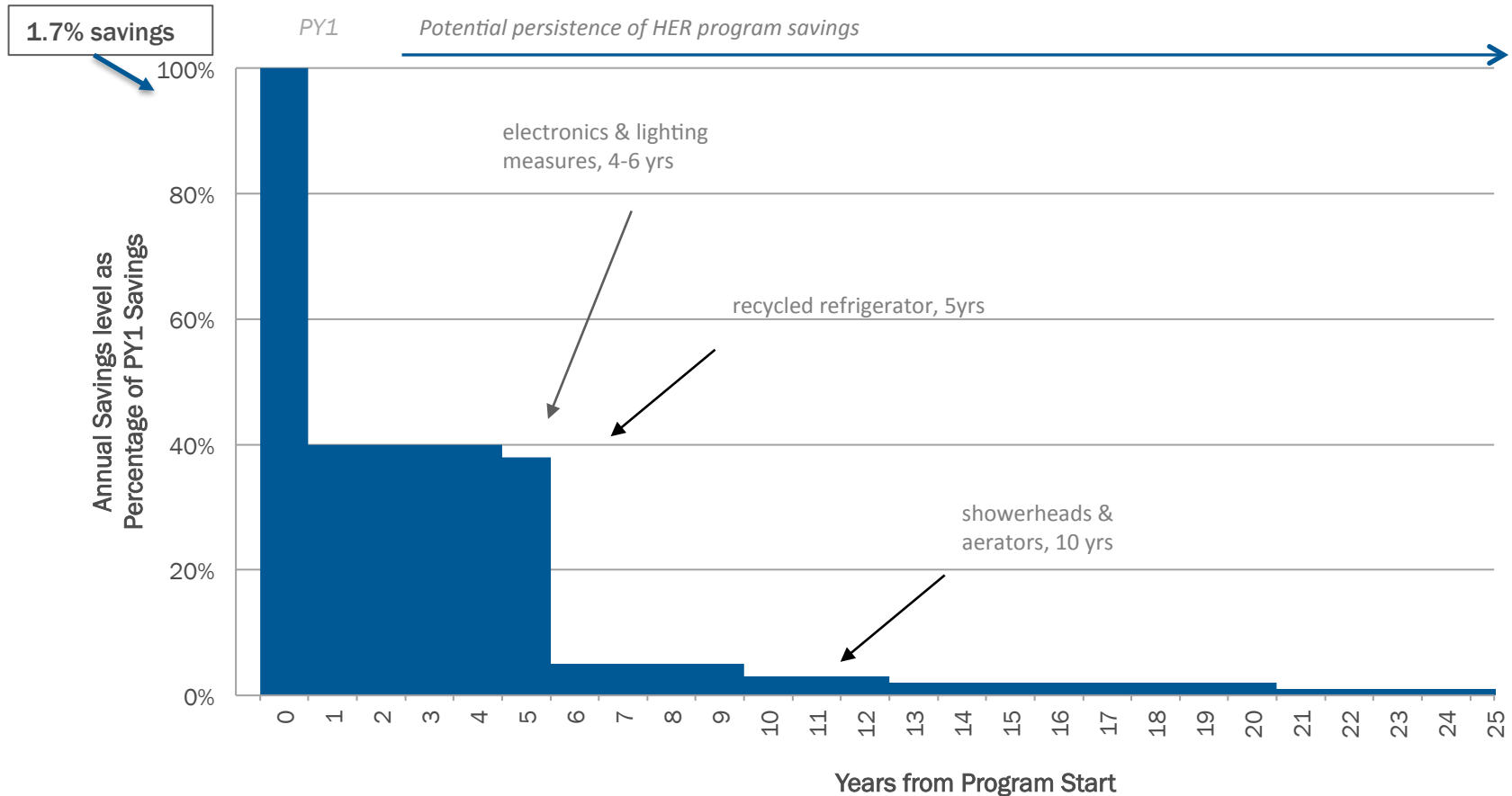
Chart ordered from highest to lowest lift in uptake by treatment group

**Measure Life (Years)**  
Average and Range



Range bands represent minimum and maximum measure life of measures within each group

# Example of Potential Behavioral Savings over Time due to the EUL of Measures



# Persistence without Treatment

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- Program administrators and evaluators are studying the persistence of savings from behavioral programs once the treatment (i.e., the messages from the program) has been stopped several jurisdictions, but it's still early
- There are current analyses within the industry that indicate that savings persist for longer than a year, but these analyses do not help answer how long they last.



# What we need to know





## At present, there is insufficient evidence for a specific EUL estimate

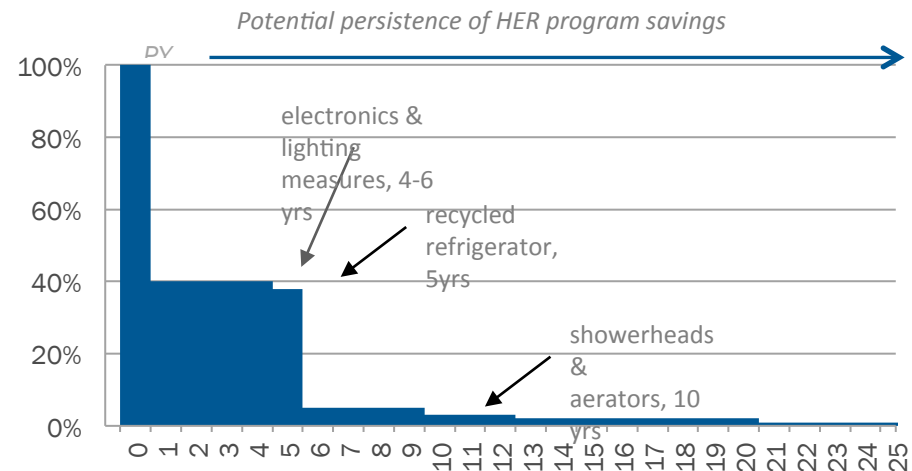
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- Current studies do not provide conclusive evidence of standard, predictable actions taken as result of the programs.
- Program design and implementation matters:
  - Empirical research has demonstrated that savings magnitude and persistence with treatment varies based on target population and program model (opt-in vs. opt-out).
  - Further, the frequency and duration of behavior interventions has a big impact on the persistence of the behavior being promoted by the intervention.



# Industry research on EUL is needed

- Cohorts must be dropped from treatment to assess persistence and some experimentation is happening
- There are two primary ways to determine the EUL of these programs:
  - Conduct a longitudinal persistence test: Remove treatment of reports and observe how savings change over time
  - Conduct annual survey research: Determine measure installations due to the program



# What EUL should be used and how?

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- At present, savings should be counted only in the current program year and research should be conducted to figure out what's occurring in the home
- However, in jurisdictions where there is interest in developing a revised value:
  - Leverage the stakeholder process
  - Clarify *how* these savings can be claimed over time
  - Use conservative estimates



# How this challenges our current thinking



# A Challenge for the Audience

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- Our regulatory framework was developed to deal with equipment-based programs, and the engineering-based assessments of these measures
  - The framework needs to change
- Persistence for behavioral programs is very different than for traditional “effective useful life” concepts
  - The language needs to change

# Thank You

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