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POLICY AND PLANNING CONSIDERATIONS FOR INCORPORATING BEHAVIOR PROGRAMS INTO EFFICIENCY PORTFOLIOS

Anne Dougherty, Founding Advisor

May 8, 2013

About Illume Advising, LLC

OUR BEGINNING: Illume Advising, LLC (ILLUME), is a women owned consulting firm co-founded by Sara Van de Grift and Anne Dougherty, with the goal of marrying award-winning energy design and implementation with recognized expertise in behavioral research and evaluation.

OUR MISSION: We provide the lens that allows you to deliver programs and services that tie sustainable and enduring energy resources to your customers' dreams and aspirations. We provide pathways and perspectives that help you meet your goals while at the same time helping your customers, families and communities meet theirs.

EXAMPLE CURRENT CLIENTS:

- * National Grid
- * NiSource
- * Duke Energy
- * AEP Ohio

About Illume Advising, LLC



Anne Dougherty, Founding Advisor



Sara Van de Grift, Founding Advisor

OUR ASSETS:



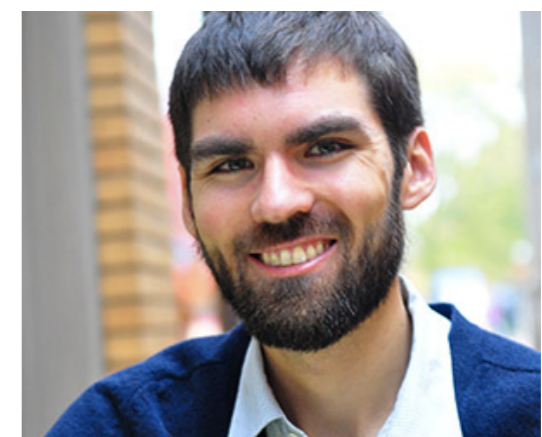
Megan Billingsley,
Managing Advisor



Allison Carlson, Project
Advisor



Eileen Hannigan, Senior
Research Advisor



Karl Bosse, Research Advisor

Agenda

- * What is the current role of behavior programs in energy efficiency portfolios?
- * How can behavior programs be better utilized?
- * How can we garner longer-term savings from behavior programs?
- * How can we draw deeper savings out of portfolios using behavior programs?

A change in emphasis

From “will it work?”

to

“How can we make it **work**
for us?”



REFLECT

How are our portfolios performing?

Overall portfolio spending is slowing

- * Year-over-year growth is slowing and declined significantly in 2012

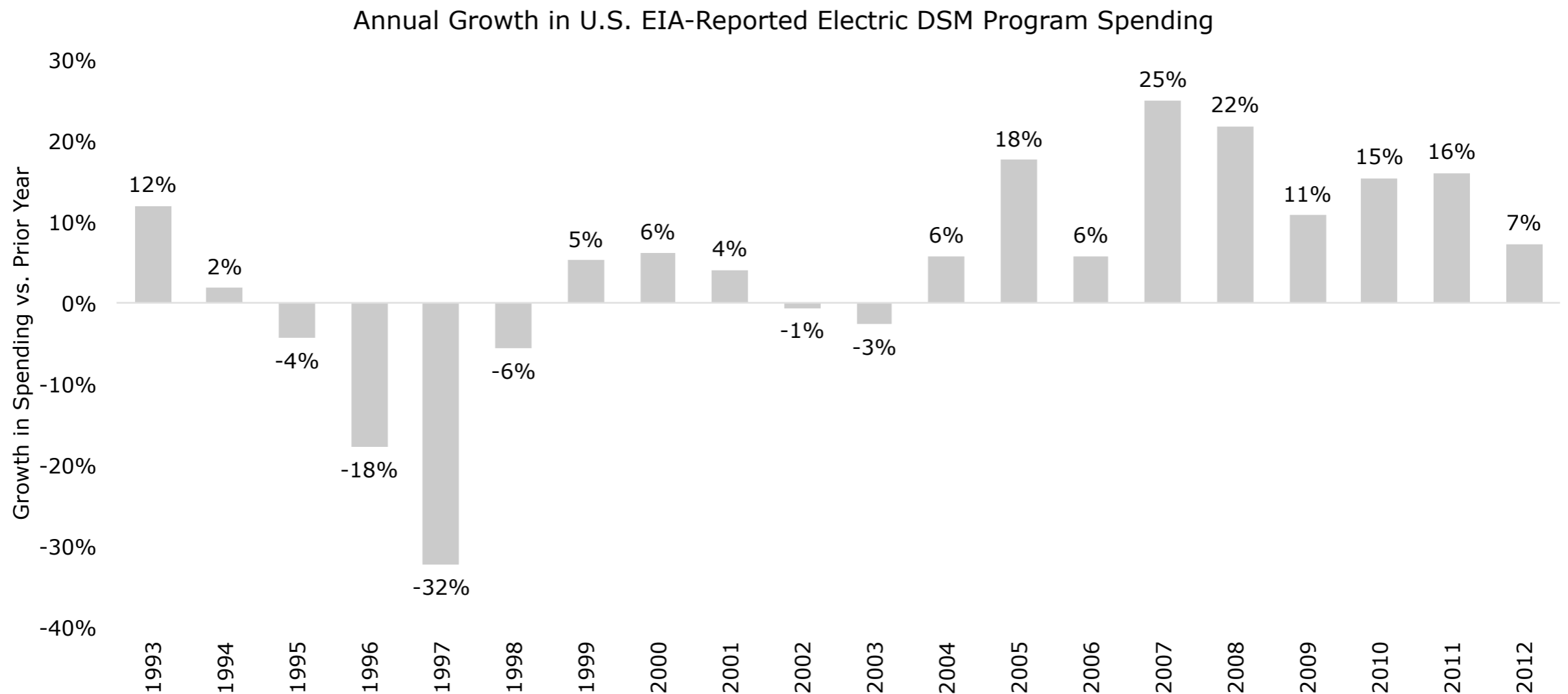
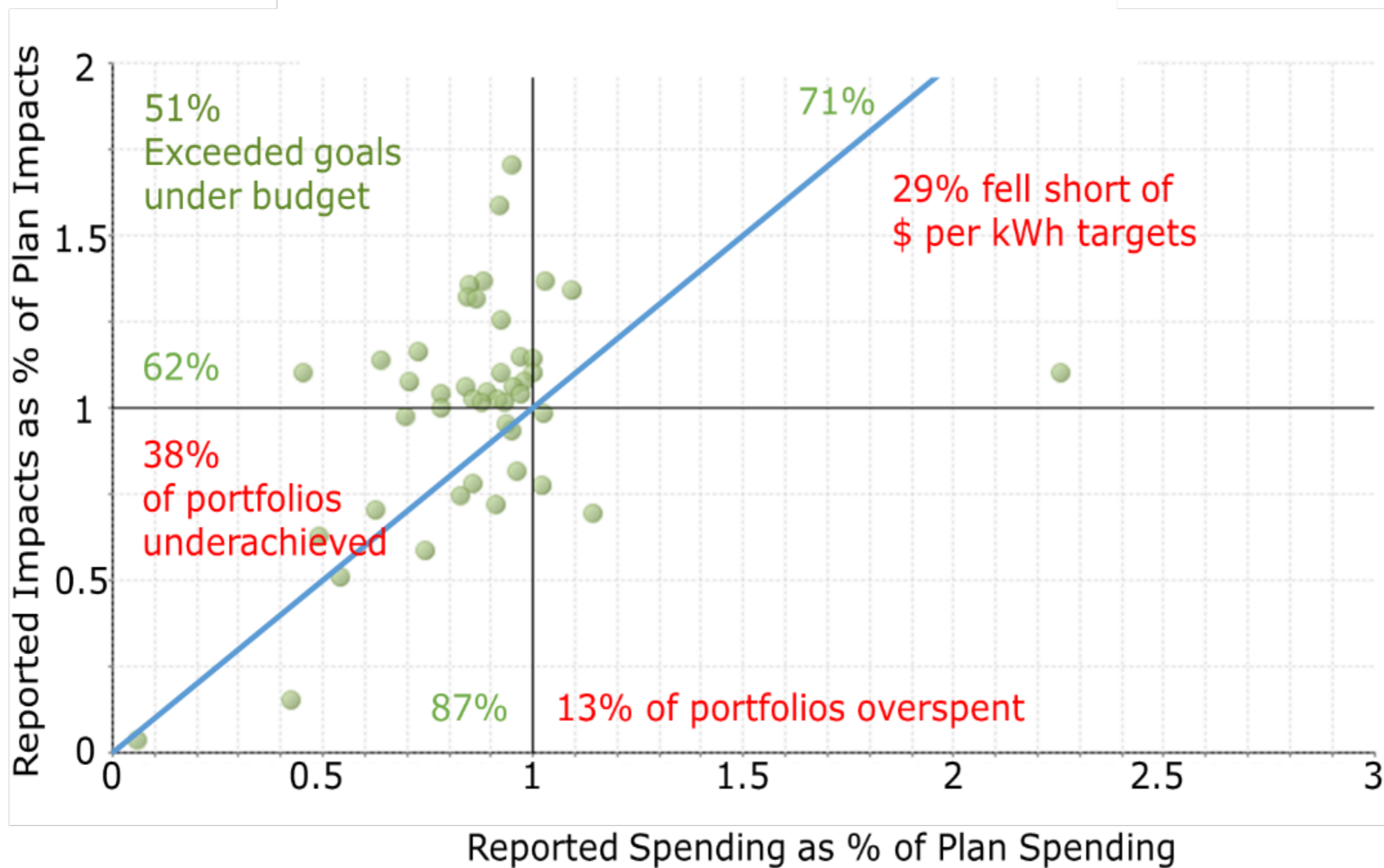


Chart courtesy of Mark Brown, QuadROI

Portfolio performance is shifting

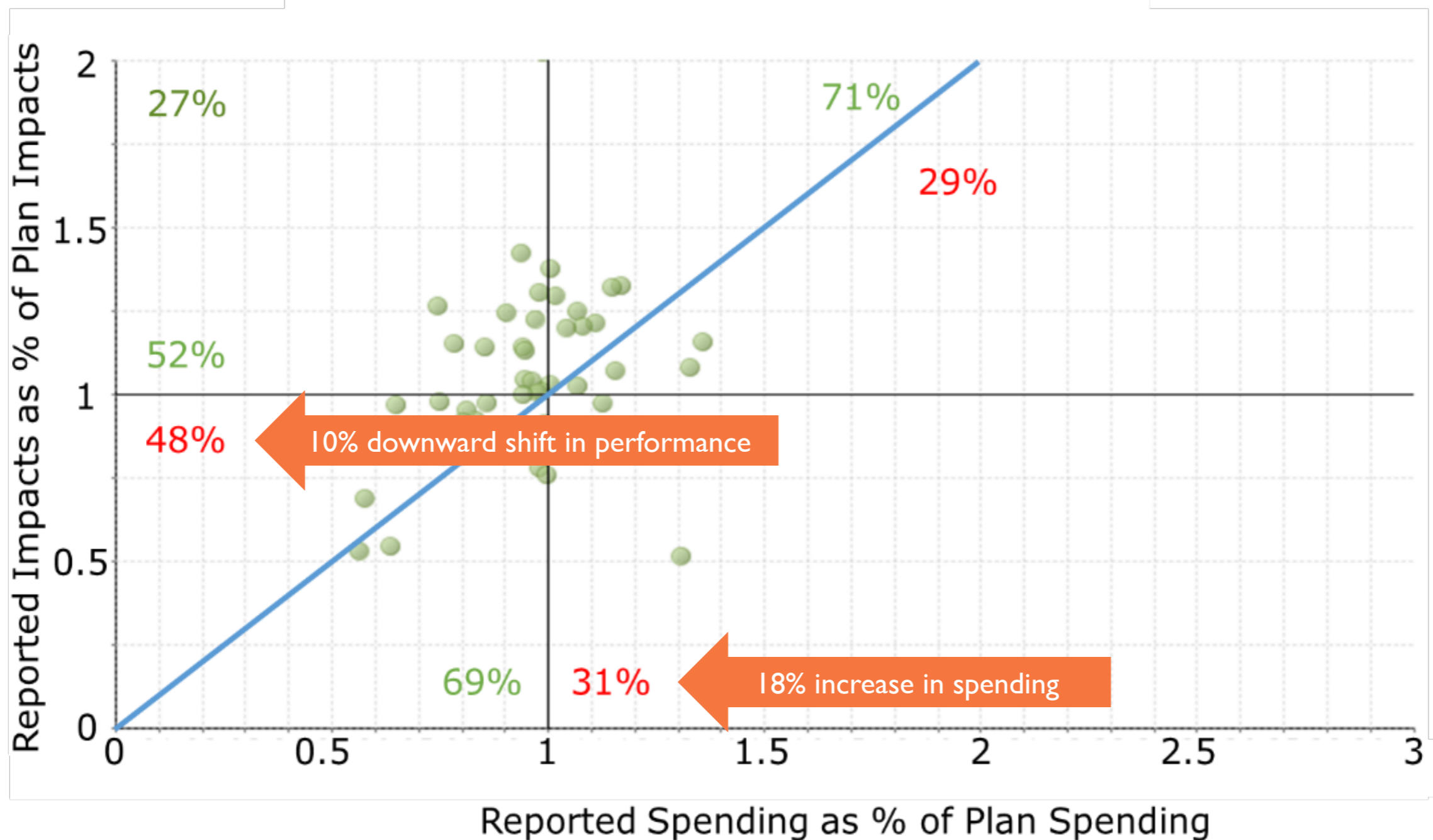
- * 2010 electric portfolio performance looked good



Source: ESource DSM Insights of 111 tracked PAs in 35 states

And has declined in recent years

- * 2012 electric performance shows a marked decline



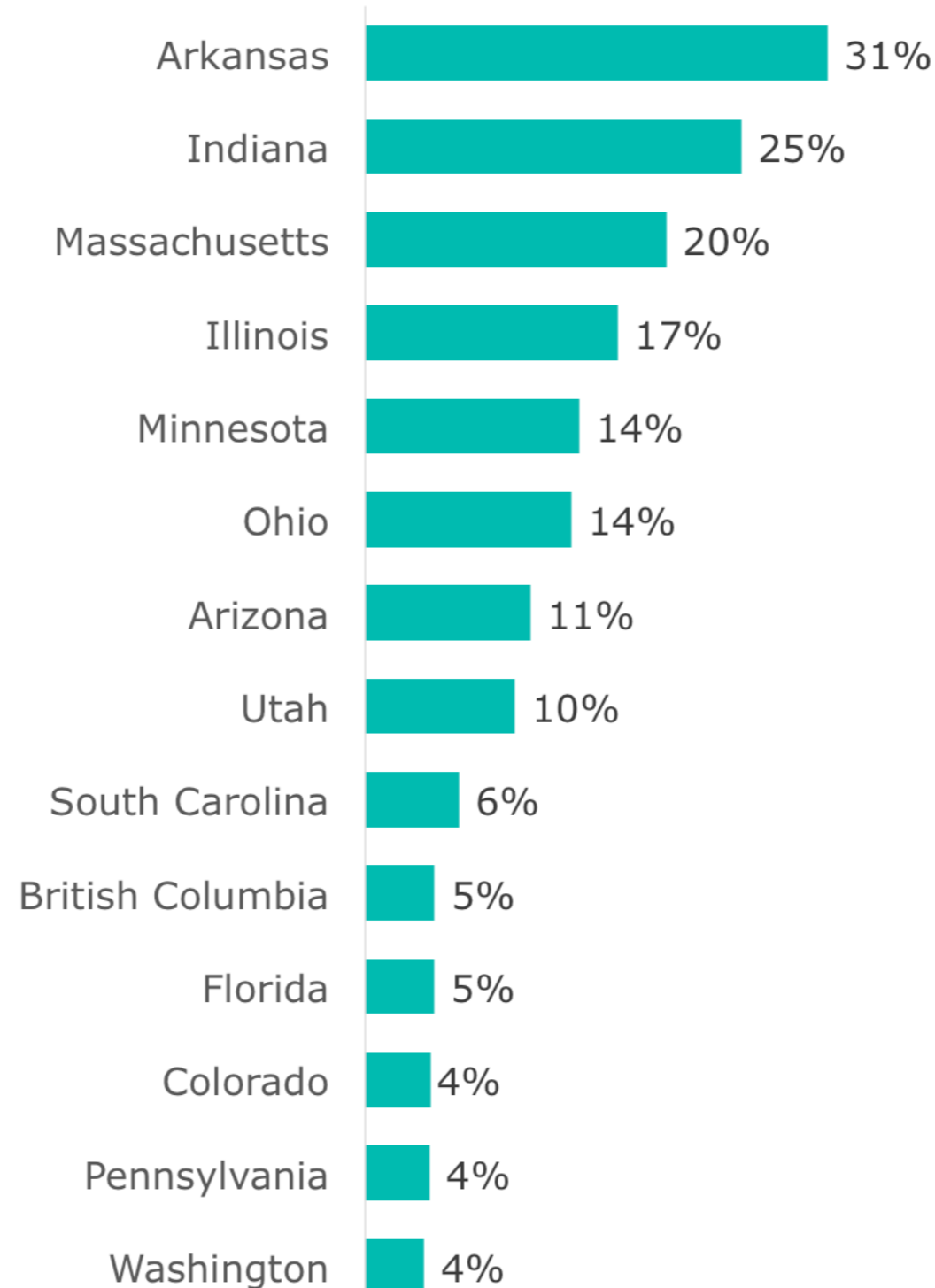
Source: ESource DSM Insights of 111 tracked PAs in 35 states

Behavior resource programs are buffering this shift in performance

- * In 2013 in 111 tracked program administrators across 35 states, Behavior/feedback resource programs:
- * Exceeded **\$54 million** in total allocated budget
- * Account for **751 GWh** of allocated savings in electric portfolios
- * Represent over **1/3 of all planned pilots**

And represent a significant portion of realized 1st-year savings in the residential sector

Behavioral Programs as Share of 2012 Reported Residential Impacts



Source: ESource DSM Insights of 111 tracked PAs in 35 states

Looked-to states are significantly increasing their investment in behavior programs



Massachusetts Behavior Program Plan

Electric Program Admins	Plan Year	Annual Res Savings (% of)	Lifetime Res Savings (% of)
National Grid	2012	41%	8%
	2013	38%	7%
	2014	49%	11%
	2015	53%	12%
NSTAR	2012	7%	1%
	2013	22%	4%
	2014	25%	4%
	2015	26%	4%
WMECO	2012	23%	3%
	2013	27%	5%
	2014	33%	6%
	2015	36%	7%
Cape Light Compact	2013	1%	0%
	2014	3%	0%
	2015	4%	0%

Source: ACEEE Energy Efficiency as a Resource, Dougherty and Schlegel



INQUIRE

Should behavior programs play such a prominent role in portfolios?

YES

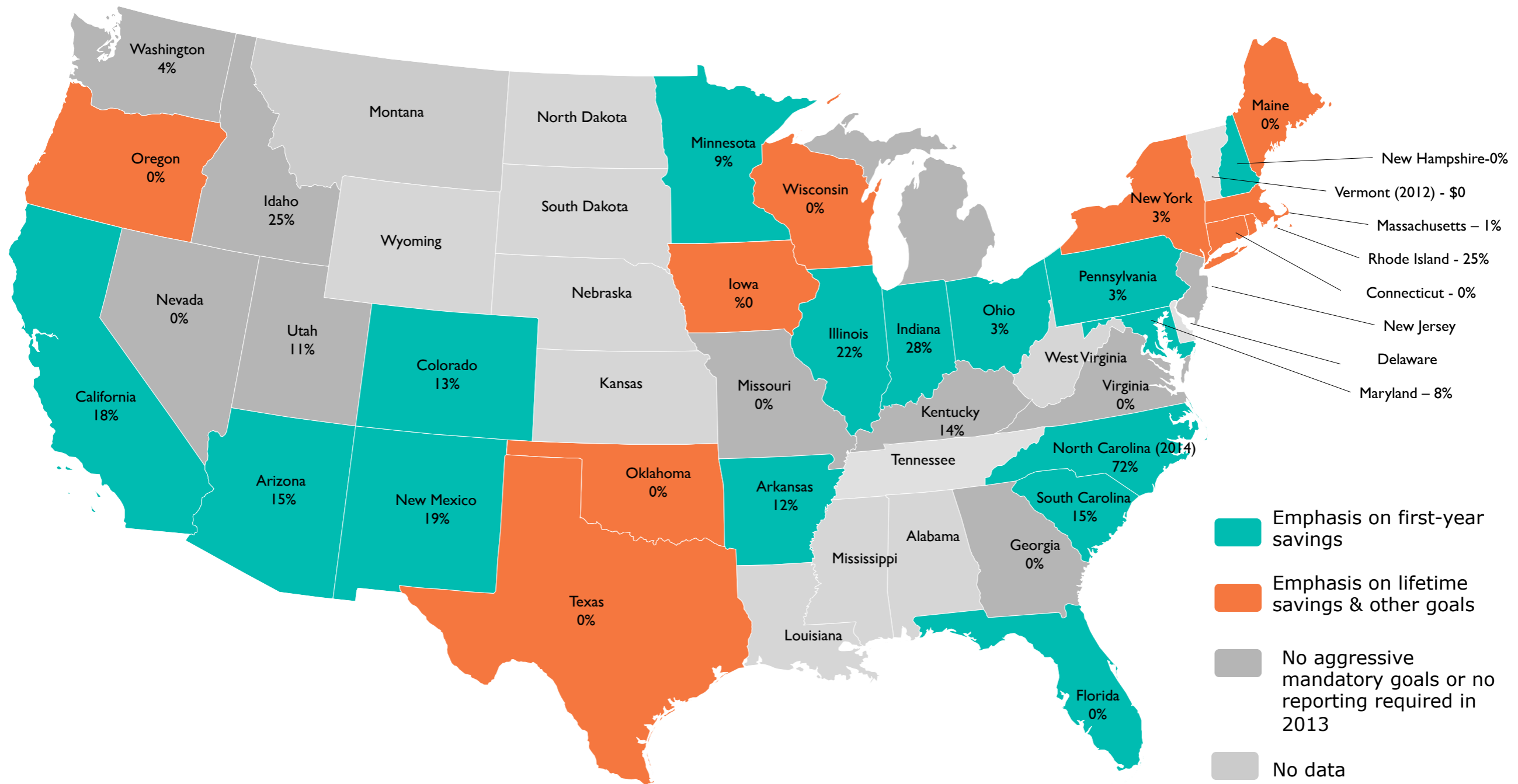
NO

YES: If leveraged as a mechanism to garner long-term, reliable savings.

YES: If used to draw deeper savings out of the portfolio.

NO: If used only as a quick savings solution.

Behavior programs have made traction in regions with first year goals



Source: E Source DSM Insights: 2013 % of Residential Savings Targets

Behavior programs have an impressive cost of saved energy

Utility cost of saved energy	\$ per kWh		\$ per therm	
	Midwest	West	Midwest	West
Behavior Change/Feedback	\$0.04	\$0.04	\$0.60	\$0.66
Building/Home Performance	\$0.93	\$0.74	\$3.77	\$5.41
Direct Install	\$0.32	\$0.29	\$0.91	\$3.47
Education/Awareness	\$0.20	\$0.27	\$1.05	\$5.33
Prescriptive Rebate	\$0.10	\$0.17	\$3.23	\$1.29

Based on first-year savings

Source: E Source DSM Insights: Based on gross savings and actual results where available. Average across 2009 - 2013

However, their cost-effectiveness is less impressive against levelized costs

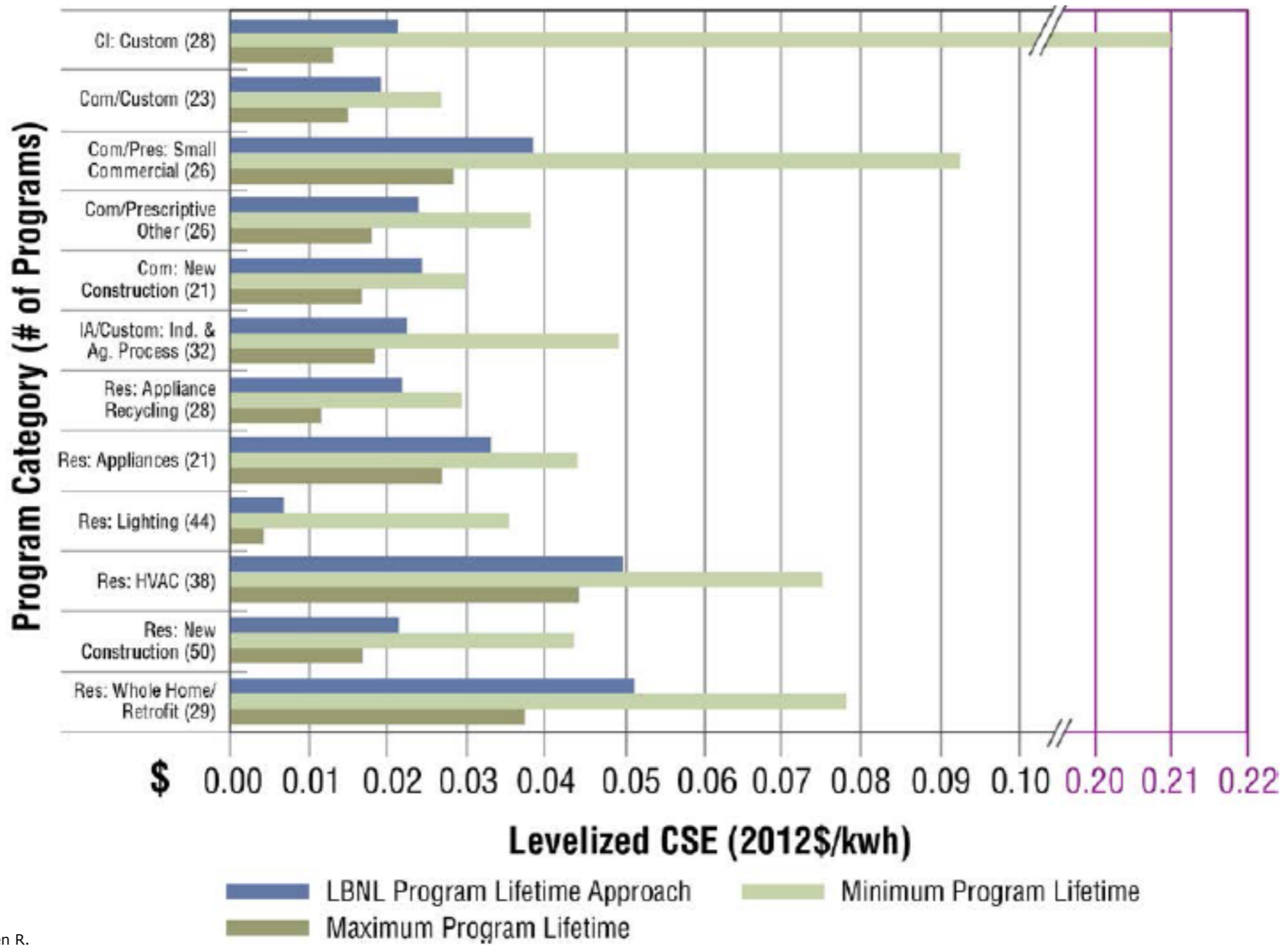


Figure 3-20. Impact of different program average measure lifetime assumptions on the levelized CSE for electricity efficiency programs

Billingsley, Megan A., Ian M. Hoffman, Elizabeth Stuart, Steven R. Schiller, Charles A. Goldman, and Kristina Hamachi LaCommare. Lawrence Berkeley National Laboratory. The Program Administrator Cost of Saved Energy for Utility Customer-Funded Energy Efficiency Programs. Report. 2014

Increases in measure life are unlikely to rival residential lifetime CSEs where we need significant gains

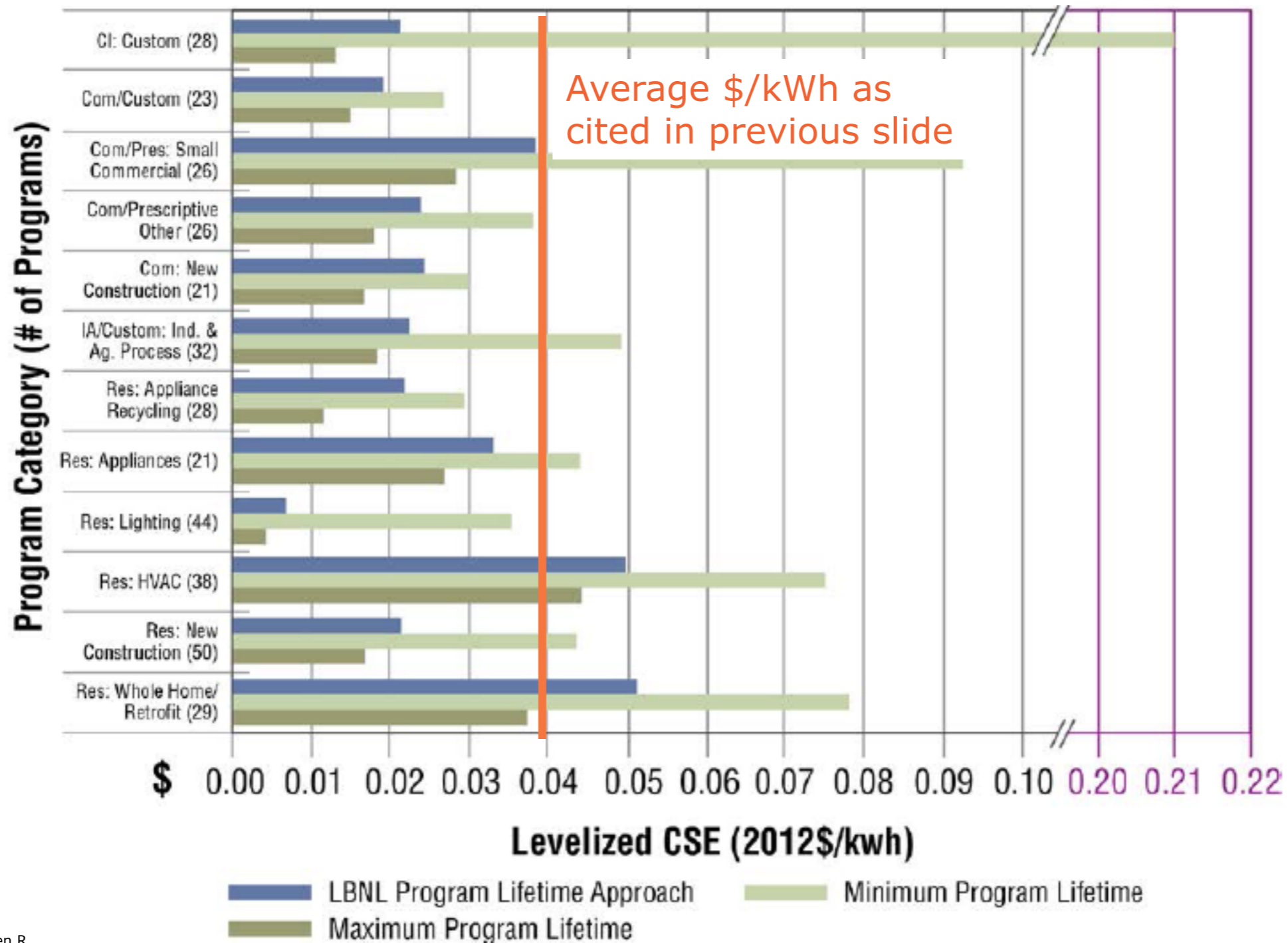


Figure 3-20. Impact of different program average measure lifetime assumptions on the levelized CSE for electricity efficiency programs



ROUTE

Should behavior programs play such a prominent role in portfolios?

YES: If leveraged as a mechanism to garner long-term, reliable savings.

- ✓ Give behavior programs a more appropriate measure life
- ✓ Determine how to apply an extended measure life
- ✓ Identify when the baseline should be adjusted

YES: If used to draw deeper savings out of the portfolio.

- ✓ Encourage cross-portfolio promotion
- ✓ Create incentives for leveraging behavior programs to drive other program participation
- ✓ Move toward market-wide models

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Behavior programs are a proven stand-alone resource.

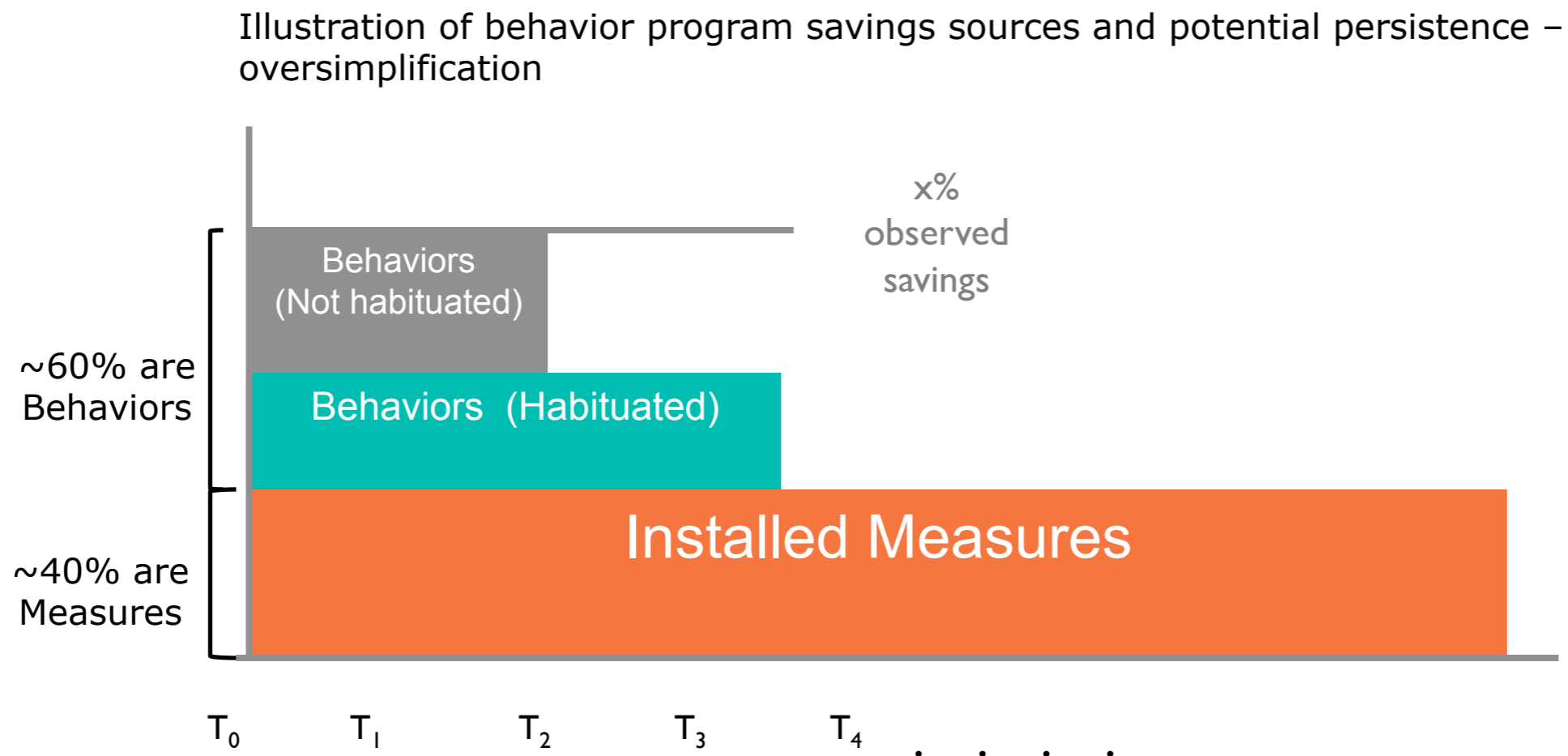
Key studies in behavior program persistence with treatment

Program Example (PA and Cohort Year)	Program Year Savings (Percent per HH)				
	1	2	3	4	5
Paper Opt-out					
SMUD HER (2008)	1.8%	2.4%	2.4%	2.1%	
National Grid HER (2009)	1.6%	2.1%	2.2%		
Online Opt-in					
ComEd C3 Program	4.4%	3.8%			
Lake Region MyMeter	2.6%	2.6%	2.6%		
Wright Hennepin MyMeter*	2.2%	2.2%	2.2%	2.2%	2.2%

Source: See reference section, Wright Hennepin findings were average annual savings over five years of engagement

YES: If leveraged as a mechanism to garner long-term, reliable savings.

- ✓ Give behavior programs a more appropriate measure life



Survey results from SMUD persistence study and MA Behavior evaluations point to mixed measure/behavior mix, SMUD citing ~40%:60% measures:behaviors,

YES: If leveraged as a mechanism to garner long-term, reliable savings.

- ✓ Determine how to apply an extended measure life



Year 1



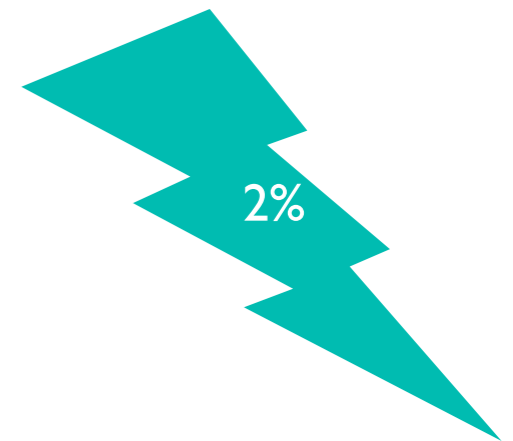
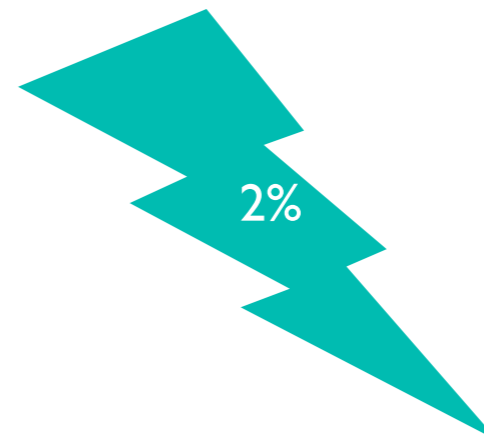
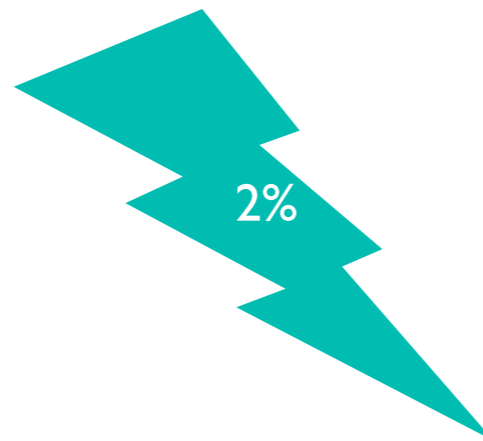
Year 2



Year 3

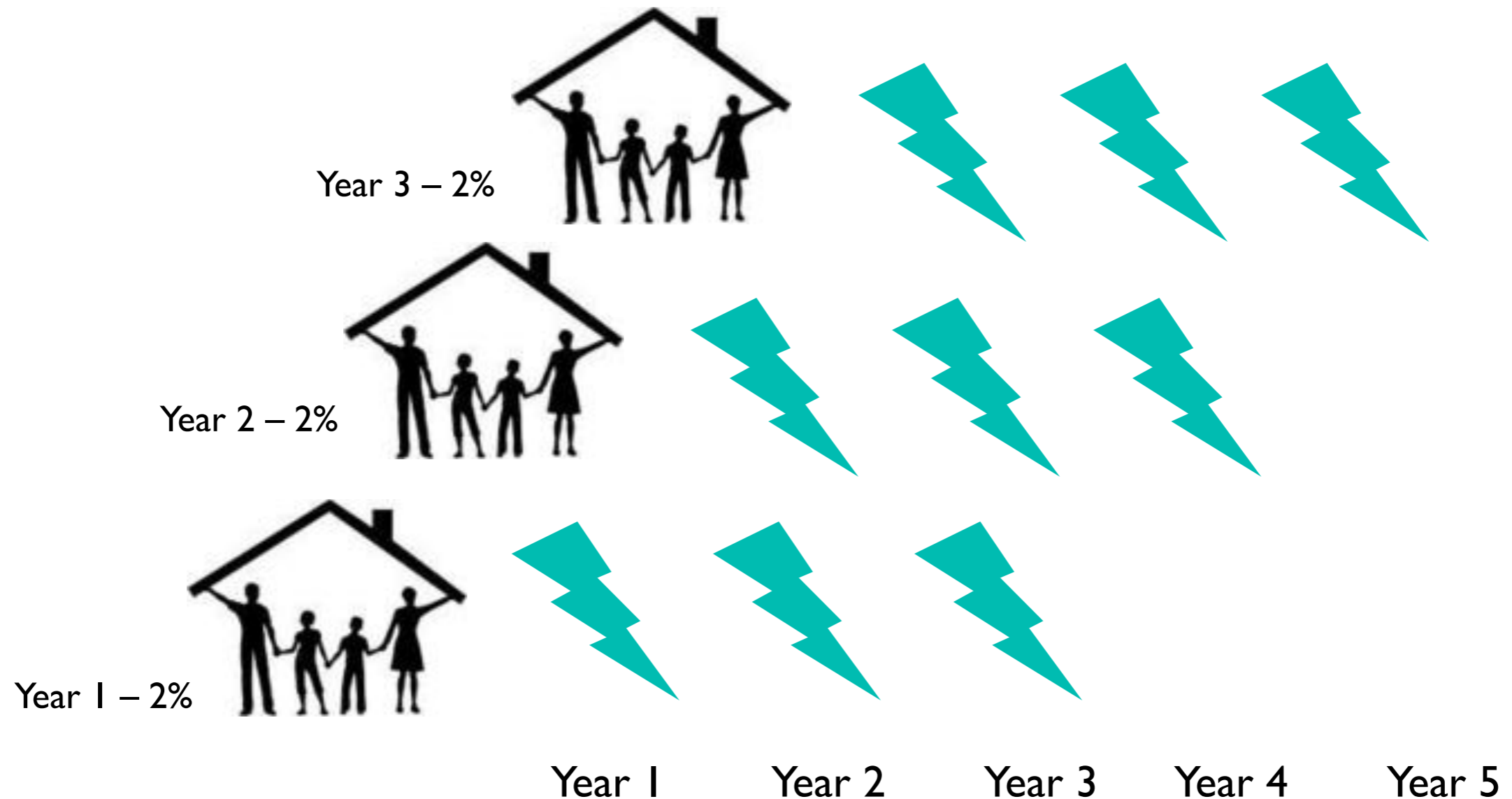


For each year of received reports, participants take actions that persist over time



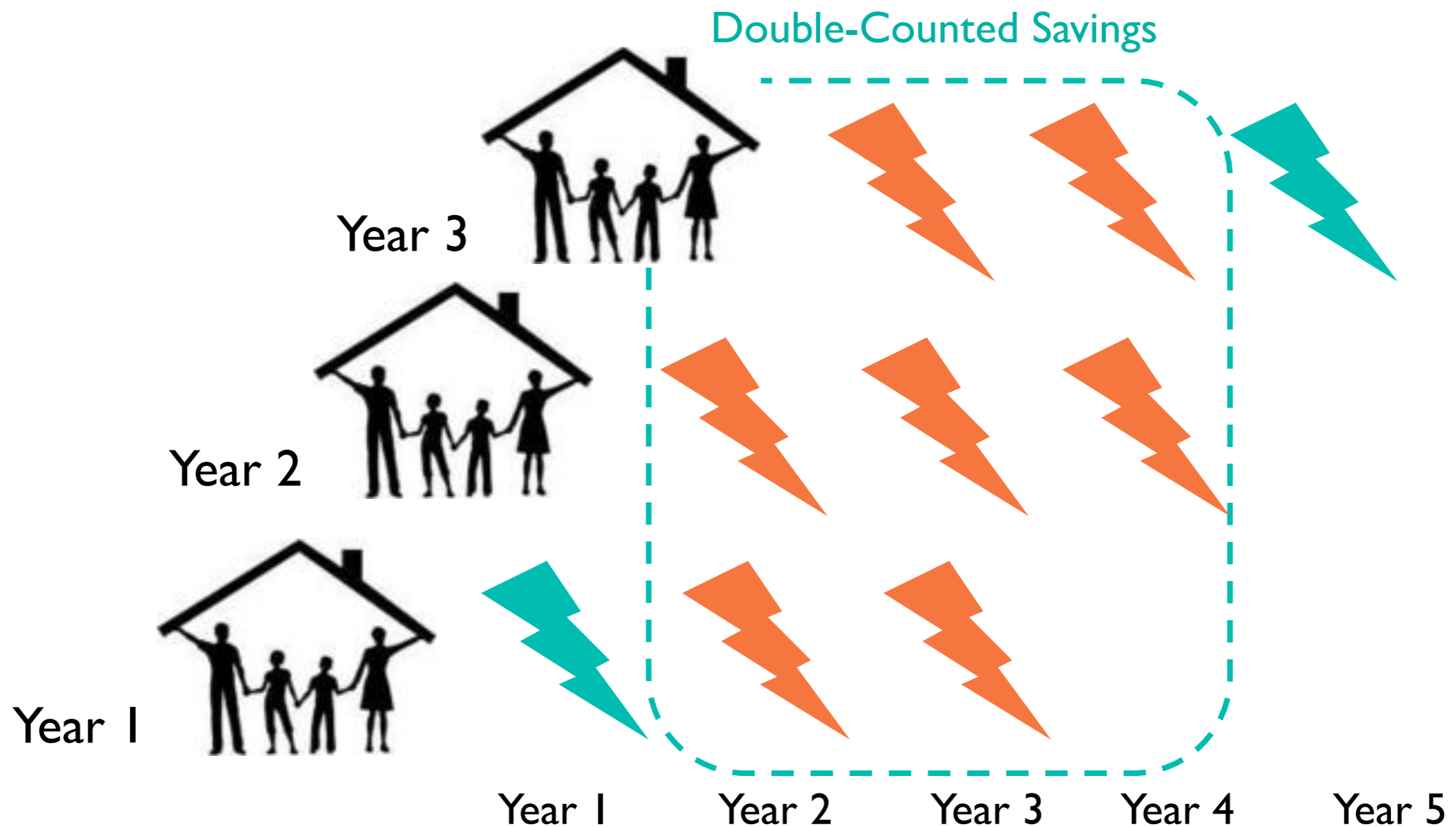
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- ✓ Determine how to apply an extended measure life



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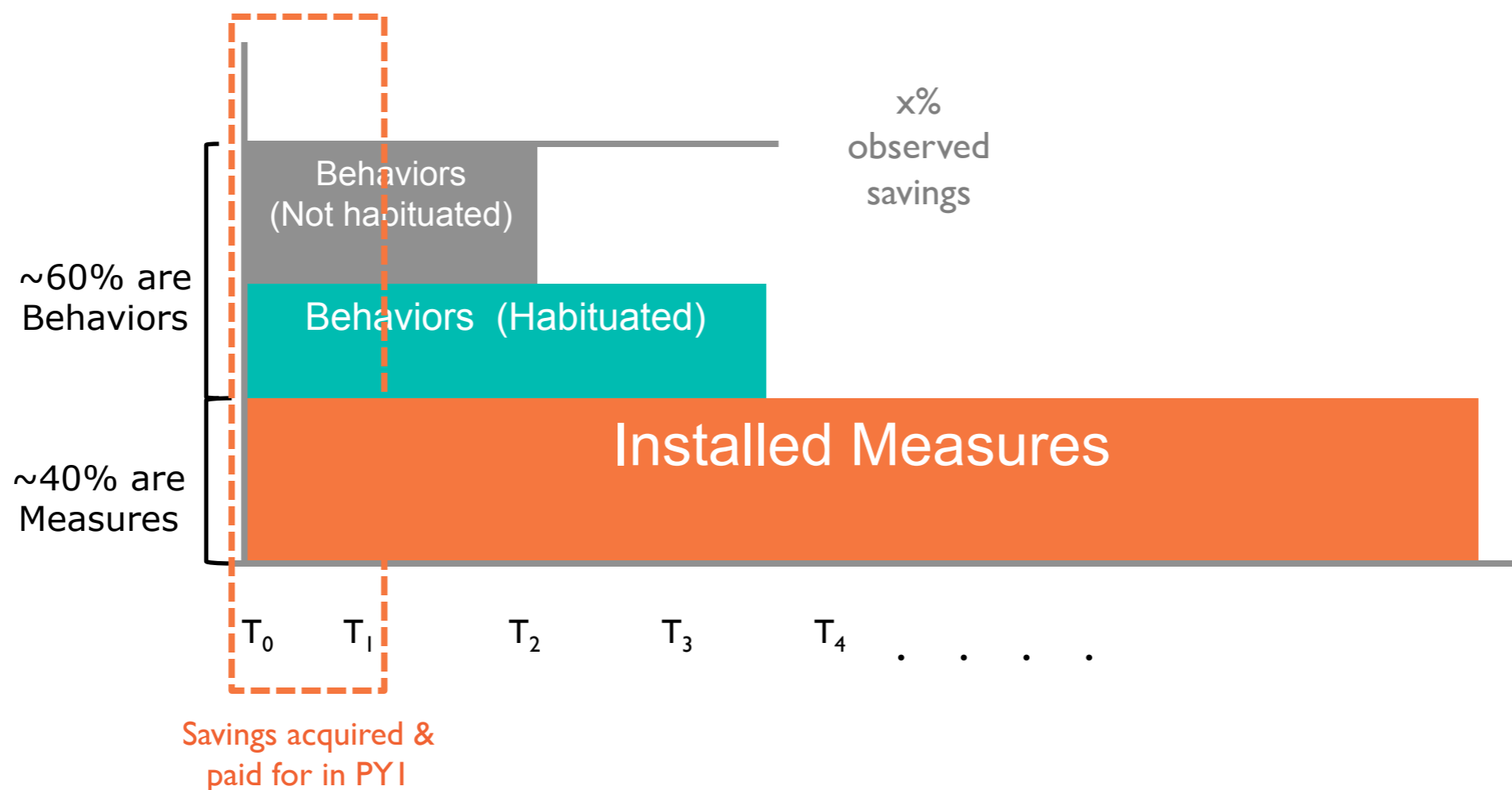
- ✓ Determine how to apply an extended measure life



YES: If leveraged as a mechanism to garner long-term, reliable savings.

- ✓ Identify when the performance standard should be increased

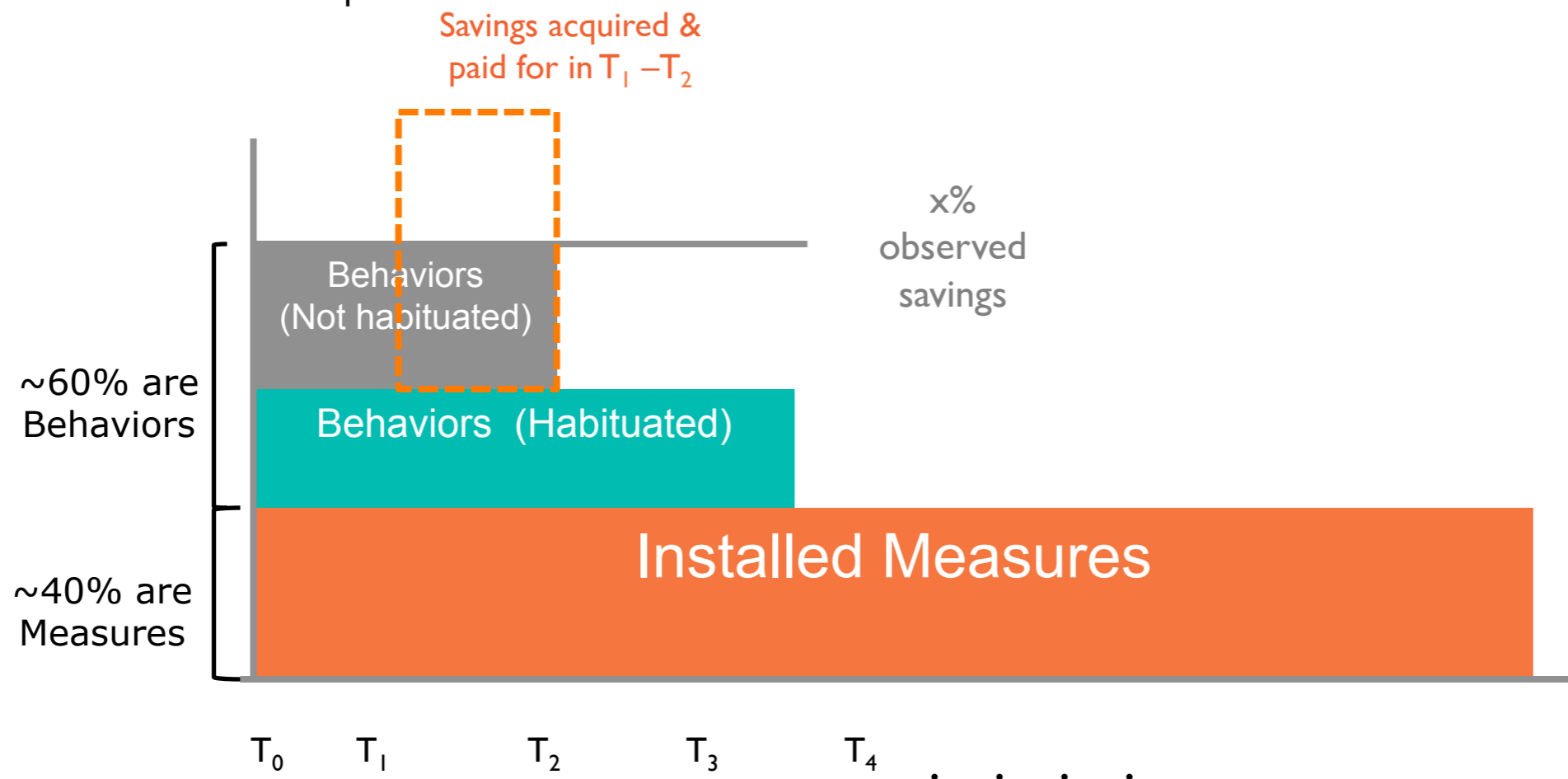
Illustration of behavior program savings sources and potential persistence – oversimplification



YES: If leveraged as a mechanism to garner long-term, reliable savings.

- ✓ Identify when the baseline should be adjusted

Illustration of behavior program savings sources and potential persistence – oversimplification



We see policy makers pushback on first year savings calculations

- * Minnesota implemented the average savings method to adjust for plans that overweight behavior programs to capture first-year savings

APPENDIX A. EXAMPLE OF GROUP BEHAVIORAL-BASED PROJECT

Table A.1: CIP Triennial Plans (IOUs) or Annual Plans (COUs)

ROW	Metric	Year 1	Year 2	Year 3
A	Anticipated Average Reduction in Energy Use	250	250	250
B	Approved Participation	10,000	10,000	10,000
C	Anticipated Savings [A*B]	2,500,000	2,500,000	2,500,000
D	Approved Savings Goal [C/3]	833,333	833,333	833,333
E	Savings In Cost-Effectiveness Modeling [C]	2,500,000	2,500,000	2,500,000
F	Equipment Life in Cost-Effectiveness Modeling	1	1	1
G	Approved Budgets	\$130,000	\$100,000	\$100,000
H	Anticipated Benefits (assume \$0.1 per kWh)	\$250,000	\$250,000	\$250,000
I	Anticipated Net Benefits [H-G]	\$120,000	\$150,000	\$150,000
J	Anticipated Benefit/Cost Ratio [H/G]	1.92	2.50	2.50

Average Annual Savings	2,500,000	[AVERAGE OF ROW C]
Total Savings Claimed Toward 1.5%	2,500,000	[SUM OF ROW D]
Program Cost (\$/kWh)	\$0.044	[(SUM OF ROW G)/(SUM OF ROW C)]
Benefit/Cost Ratio for Three Years	2.27	[(SUM OF ROW H)/(SUM OF ROW G)]

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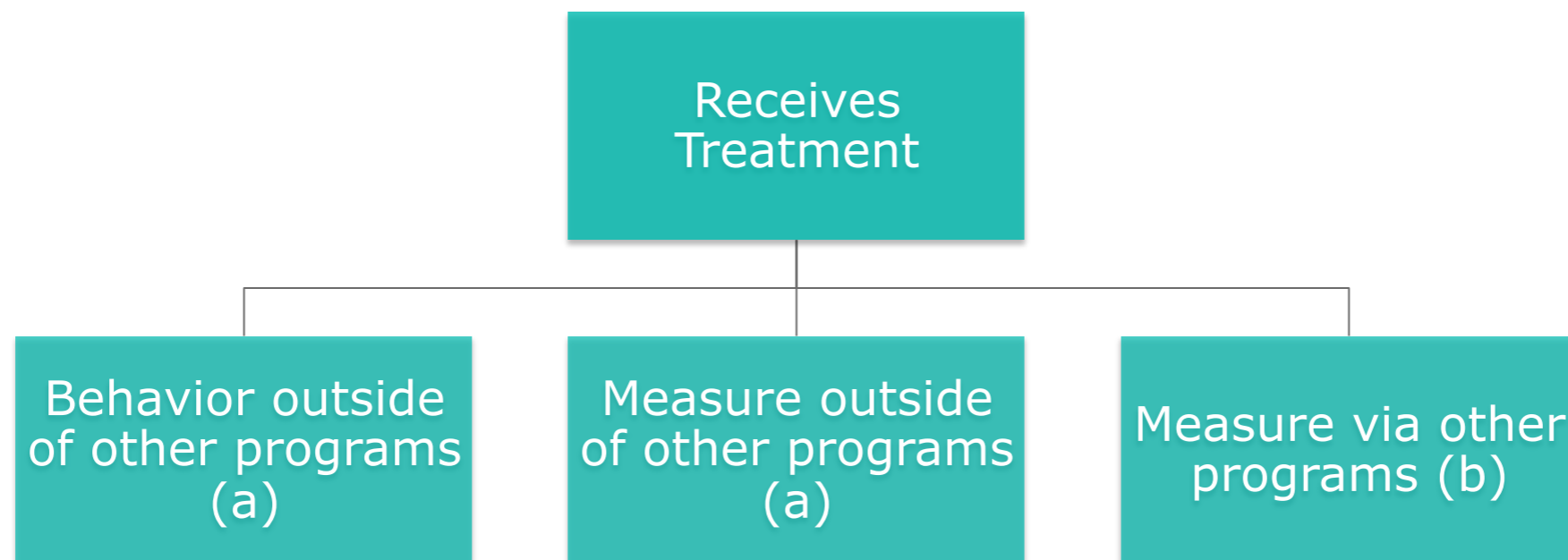
YES: If used to draw deeper savings out of the portfolio.

- ✓ Encourage cross-portfolio promotion
- ✓ Create incentives for leveraging behavior programs to drive other program participation
- ✓ Move toward market-wide models

If the goal is reliable, long-term savings, behavior programs should be utilized as both a unique resource and as a driver of portfolio-wide impacts.

YES: If used to draw deeper savings out of the portfolio.

- ✓ Encourage cross-portfolio promotion



- * Behavior programs are a cost-effective resource (a)
- * *And* they offer an opportunity to optimize portfolio savings (b)

YES: If used to draw deeper savings out of the portfolio.

- ✓ Encourage cross-portfolio promotion

Electric Feedback Program Examples

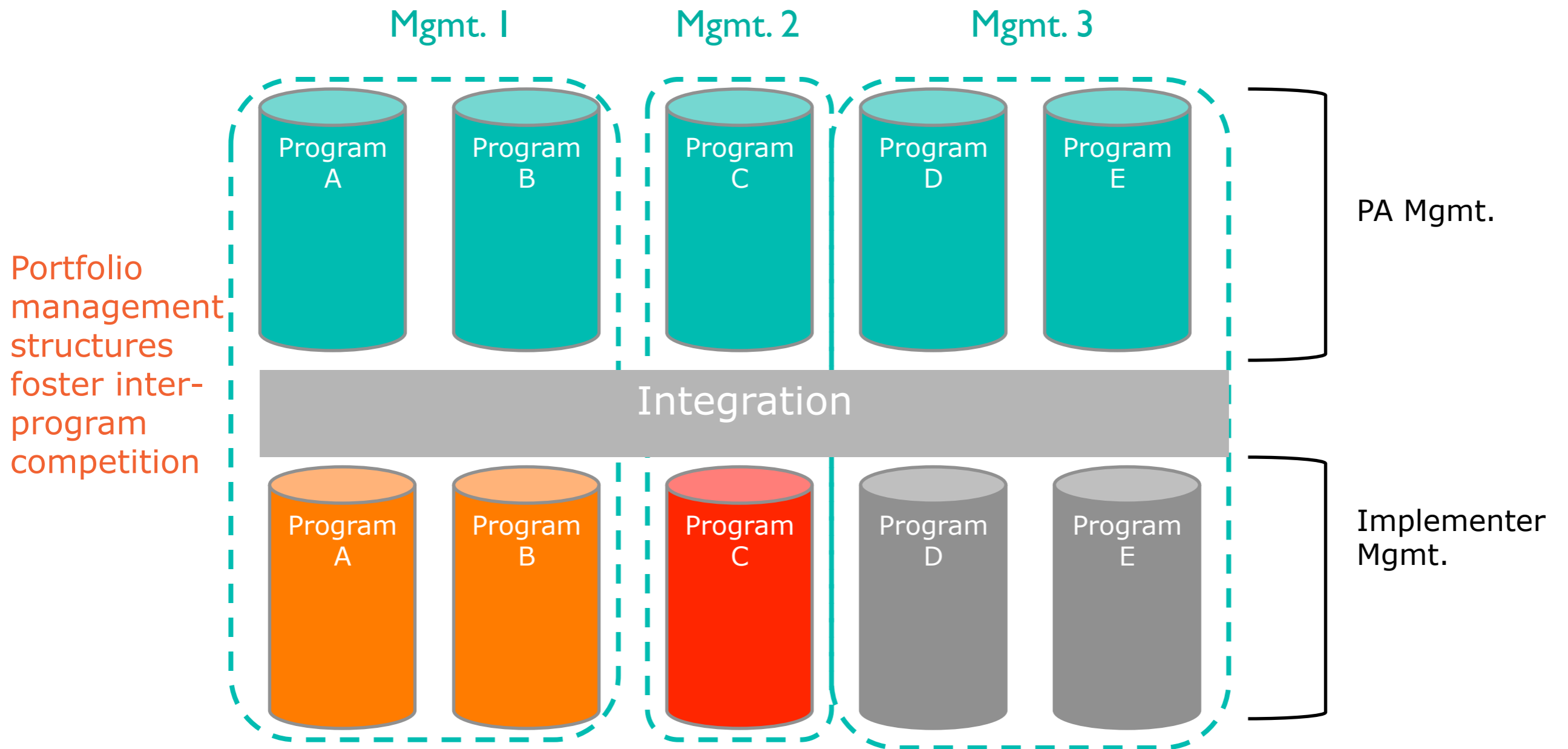
Estimated Savings via Other Programs

Program	Cohort Year	Total Savings (kWh)	Percent of HER Savings
Upstream			
Pacific Gas and Electric HER	All	6,600,000	11.6%*
Puget Sound Energy HER	2012	97,730	1.8%**
Downstream			
Pacific Gas and Electric HER	All	230,317	0.4%
Puget Sound Energy HER	2012	3,554	0.1%
SMUD HER	2008 & 2010	910,594	33%
National Grid HER	2009-2012	5,298,000	2.0%

Source: See reference section *Reported effects from onsite verification, not statistically significant. **Reported effects from end user survey

YES: If used to draw deeper savings out of the portfolio.

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Explore ways to offset double-counting reductions to program Benefit Cost Ratios, such as:

- * Reducing behavior program costs by saved marketing costs
- * Implement non energy benefits for program participation lift or for supporting overall portfolio cost-savings (such as reducing marketing costs)
- * Test attribution strategies to more fairly allocate or split benefits between programs

Create incentives for cross-program participation

- * Reducing behavior program costs by saved marketing costs



\$.15 per postcard



15,000 per outreach campaign

12 reports a year = \$27,000 savings

YES: If used to draw deeper savings out of the portfolio.

- ✓ Move toward market-wide models (and design carefully for them)

Model of National Grid Rhode Island Statewide Behavior Program



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DISCOVER

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QUESTIONS

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