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## Nonresidential Behavior Programs: Big Opportunity, Challenges, Different Thinking Required

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### Abstract

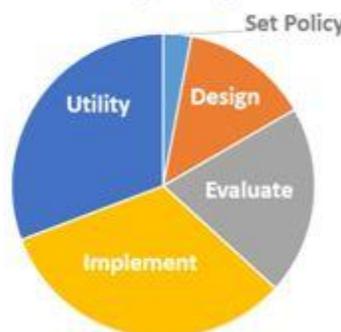
It seems many folks have clear perceptions of what constitutes a residential behavior program. Think home energy reports, energy reduction competitions, school classroom education and bill inserts. In short, think information. When folks think residential behavior programs, they think about informing and educating households about how they use and how they can conserve energy. Do people think about behavior programs in the same way for the nonresidential space?

Our research effort sought to better understand how policymakers, administrators, utilities, implementers, and evaluators think about behavior programs intended to reduce energy usage for commercial, industrial, institutional, and government facilities.

Our research included 269 completed web surveys – 214 responded to the residential question set and 55 responded to the nonresidential question set. There were more than 50 utilities represented in this sample along with those who set policy and those that design, implement, or evaluate programs. This article mostly focuses on the responses for the nonresidential sector. We also completed 11 in-depth interviews -- three with implementers and another three with regulators, and five with energy efficiency professionals within utilities.

### What we learned...or preconceived thoughts confirmed

#### Web Survey Respondents



First, the perceptions of key program elements are both similar and dissimilar within the residential and nonresidential sectors. At a high level, respondents described nonresidential behavior program attributes along the same lines as residential program attributes. There is agreement that they both provide information about energy usage and insight

Most broadly, a nonresidential behavior-based program was defined as, “a program that engages the C&I customers in energy efficiency behaviors...and makes them aware of opportunities and programs” and that “require education and training” ... similar to a standard definition for residential

on how to reduce usage as key components. However, the definition diverges for nonresidential behavior programs when talking about specific design elements, such as recruitment and outreach, energy reduction strategies, operational engagement, and the tools that are offered. For information- and education-based programming in the C&I space specifically, 30 to 50 percent of respondents identify technical assistance-type programs (such as helping energy managers with strategic energy management or providing energy audits) as behavior programs. This speaks to the diversity in thought about what constitutes behavior, with some even more broadly defining it as something that requires a participant to make a decision. Programs noted include quality installation training and incentives for Commercial HVAC equipment, operations and maintenance, retro-commissioning, strategic energy management, and dynamic pricing programs.

The table below summarizes thoughts and perceptions for the content of behavior programs per our survey respondents.

**What are considered behavior programs...and other fun stats in response to "Do you..."**  
(Number of selections for those identifying with nonresidential sector, n=55)

Category	Program Type or Element	...consider to be behavior-based?	...currently offer?	...claim savings for?	...not currently offer but are considering for the future?
Equipment based	Direct load control	13	14	7	9
Equipment based	Energy efficient product give-aways	10	14	13	9
Equipment based	Prescriptive rebates for new energy efficient equipment purchases	8	28	24	2
Equipment based	Custom incentives	7	30	26	3
Equipment based	Direct install measures such as energy efficient lighting retrofits	6	26	22	3
Equipment based	Operations and Maintenance (O&M) measures	1	1	1	1
Information and education based	Energy usage peer comparison benchmarking or reports	34	16	6	15
Information and education based	Customer training to provide education on where and how energy usage can be reduced	33	23	8	9
Information and education based	Energy usage feedback such as energy reports and dashboards	33	23	6	10
Information and education based	Helping customers with Strategic Energy Management (SEM) or sustainability plans	28	23	13	7
Information and education based	Games and competitions to reduce energy usage	27	5	2	17

Information and education based	Energy awareness marketing and outreach such as broad-based general energy awareness campaigns and targeted outreach	26	26	3	6
Information and education based	Call-to-action campaigns through social media avenues	23	15	2	11
Information and education based	Dynamic pricing	20	4	1	10
Information and education based	Technical assistance; energy audits and/or assessment of energy consultant recommendations or new construction facilities review to identify energy usage reduction opportunities	19	34	19	3
Information and education based	Retro-commissioning	18	24	21	9
Information and education based	Quality installation training and incentives such as for Commercial HVAC retrofits or new installs	12	16	12	10

Second, nonresidential programs present unique challenges among stakeholders. Not all states or stakeholders think about nonresidential behavior programs in the same way. A few utility representatives mentioned that they were struggling to make behavioral programs work in their state, where regulators had discounted behavioral savings compared to other measures. Conversely, a regulator in one state mentioned that there was "a lack of enthusiasm on the part of the utility." This acceptance challenge can be even more pronounced for nonresidential behavior programs as illustrated in the next discussion point.

When asked, "have you had any successes or challenges with evaluator acceptance for your current [nonresidential] behavioral programs," the responses fit into the following categories:

*"Acceptance seemingly is more easily overcome on the residential side. More states have data to back up their programs so service commissions feel more comfortable accepting something that has been done in several other states."*

- **ACCEPTED.** Some responded that they have received approval for program designs and savings assumptions for commercial behavioral programs. Michigan has even recently added this as a measure within the Michigan Energy Measures Database!<sup>1</sup>
- **TO BE DETERMINED.** Several mention that their program or programs are in a pilot phase and/or that they are yet to be evaluated.
- **IT ISN'T THE EVALUATORS. IT'S THE REGULATORS.** Several point out that evaluators will evaluate if evaluable. The challenge is getting regulators to accept nonresidential behavior-based programs, along with the estimated and/or evaluated savings. A common reason mentioned for this reluctance is the lack of precedence and/or studies on behavior-based savings in the commercial space.
- **NOT FREE RIDERS – GET OVER IT!** One respondent stated, "those regions [that are not comfortable with nonresidential behavior programs] need to stop marking low/no-cost measures as "free-rider" measures." If it is free and not implemented prior to program intervention, why was it implemented after program intervention?

Third, nonresidential programs present needed opportunities in a world of declining widgets. Several respondents expressed the need for innovative approaches and programs to replace impact-lucrative gravy trains like high-bay lighting programs. It is possible that behavior-based programs can fill much of the void, if not directly, then indirectly.

For instance, the Energy Trust of Oregon reports that Strategic Energy Management delivered 30 to 40 percent savings for the industrial sector after six years and 20 percent for the commercial sector after four years. Some interviewees told stories of customers saving more than 20 percent of their energy costs by participating in C&I behavioral programs.

Perhaps most importantly, effective behavior programs engage customers. As one respondent said, "behavior programs result in new energy measures, because they get people to think about their energy use and energy waste, so it naturally leads to new measures being installed." Interestingly, another interviewee saw an opportunity for C&I behavior programs to extend all the way to residential savings, stating, "nowadays, the most important social unit that people experience is their work. As we move to more C&I behavioral programs, they will have a multiplier effect because of their ability to influence people at home as well." The upshot is that behavior programs "spillover" to additional savings by the conventional definition (undocumented savings) and also by feeding other programs in the portfolio – programs for which utilities/administrators can rightfully claim savings.

## Conclusions

When you think about it, every energy efficiency program is a behavior program because at minimum, every program seeks to influence decision-making and decisions always precede behavior. Ironically, "behavior" programs, which are many things to different people, are evolving after simplistic incentive programs that trigger instinctual reaction for rewards. As our survey results indicate, behavior programs require a higher level of thought and engagement, and as a result can generate deeper, broader impacts.

Nonresidential behavior programs do require a change in mindset from the status quo program, and even a different way of thinking compared to residential behavior programs. This was indicated by several respondents who noted difficulty finding appropriate peer facilities for comparison – as is typical with programs for single-family homes. Benchmarking commercial buildings fills this role. Due to the uniqueness of industrial facilities, few (except possibly for facilities like water treatment plants) can benefit from any sort of peer comparison.

Lastly, nonresidential programs need a different approach for measurement and verification. One utility respondent indicated they use both a top down (billing regression) and bottom up (custom energy calculation) to determine impacts. To the authors, this is best practice. To claim savings, specific activity must be documented, preferably with savings estimates. When savings rise above a few percentage points, it should show at the utility meter level. Otherwise, "retrofit" isolation methods should suffice as with any capital project.

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<sup>1</sup>BOC: Building Operator Certification, for the Michigan Energy Measures Database see, [http://www.michigan.gov/mpsc/0,4639,7-159-52495\\_55129---,00.html](http://www.michigan.gov/mpsc/0,4639,7-159-52495_55129---,00.html)