Engaging Cybersensitives and Cyberawares in Energy Efficiency Part 2: Recommendations

Produced for the California Energy Commission by Indicia Consulting in fulfillment of Task 6 Deliverable 1 of the project Cybernetic Research across California: Documenting Technological Adoption and Behavior Change across Diverse Geographies and Populations to Inform Energy Efficiency Program Design. Funded by EPIC PON 14-306

July 31, 2018

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Abstract

Our goal for Task 6 in the project "Cybernetic Research across California: Documenting Technological Adoption and Behavior Change across Diverse Geographies and Populations to Inform Energy Efficiency" is the development of critical insights for supporting residential engagement in energy efficient behaviors. In this sub-report, "Engaging Cybersensitives and Cyberawares in Energy Efficiency Part 2: Recommendations" we revisit the literature on residential energy efficiency programs, in particular 'behavior-based' energy efficiency programs. Our recommendation is that 'feedback' type programs, whether asynchronous or real-time, would be a good fit for the population we have termed cybersensitives. We discuss the distinction between opt-in and opt-out program designs and argue for the use of opt-in programs. We review the definition and function of segmentation and discuss how our decision-tree models act to segment populations. We argue that opt-in designs should be used in conjunction with segmentation. We discuss how our recommended targeting of cybersensitives with feedback programs following this protocol could potentially provide higher rates of energy savings. We anticipate that, by building and sharing these models, other entities such as the California IOUs, could make use of them to better segment their audiences, and target them with appropriate programs and incentives.

1.Introduction

The goal of Task 6 is to build a model representing energy consumer behavior, and then recommend practices for utilities running energy efficiency programs grounded in social and behavioral science. Our brief is to produce an alternative energy efficiency potential model that can identify the portion of cost-effective potential achievable by segmenting populations. We segmented two California populations according to their level of 'cybersensitivity.' This term refers to how likely a person is to be receptive to, and emotionally engaged with information delivered via device.

We decided, for readability purposes, to split our Task 6 reporting into two sub-reports. Part 1: Decision Tree Models reports out on the building of our two decision-tree models, one an ethnographic decision tree model (EDTM) and the other a classification and regression tree model (CART). The report contains the models, and our energy savings potential calculations.

Goals:

- Develop critical insights for supporting residential engagement in energy efficient behaviors.
- Recommend redesign of approaches geared towards this population segment

This report is Part 2: Recommendations. In this report we will be reviewing the literature around residential behavior-based energy efficiency programs, specifically the savings attributable to two popular programs, home energy reports (HERs) and real-time feedback (RTF). We will discuss the differences between opt-in and opt-out research designs, and how this effects participation and savings. We assert that opt-out programs have erroneously been preferred to opt-in and argue for a change in direction. We will be discussing the role of marketing with respect to utility programs, and how the practices of segmentation and persona-building help utilities to better identify and target consumers for behavior change. Finally, we outline our specific recommendations for utilities seeking to increase the amount of savings generated from behavior-based efficiency programs (but which are also applicable to more traditional programs). Our belief is that a grounded understanding of some of the different ways people use energy will help the State of California increase the yield of negawatts, or energy not expended. This yield increase will be delivered through utility behavior-change programs.

2.Background

2.1. Residential Energy Efficiency Utility Programs

Rocky Mountain Institute founder Amory Lovins coined the term 'negawatt' in 1990 to describe the power of the "watt you don't use while still receiving the same goods and services from the watts you do use" (Lovins, 1990). This concept has been one of the underpinnings of Energy Efficiency as a Resource Standards (EERS) (ACEEE, 2007; CAP, 2011). EERS are long-term binding energy savings targets. California implemented this standard in 2004 (ACEEE, 2012) and strengthened its commitment in 2015 with the adoption of SB 350, which aims to "double the cumulative efficiency savings by 2030. Thanks to its EERS, California has the potential to reap significant economic and environmental benefits through 'negawatts' in the coming years. One of the primary means of accomplishing this goal is through the implementation of residential energy efficiency programs. Since approximately 2007 behavior-based energy efficiency programs, which incorporate social and behavioral science theories and methods in their designs and applications, have increasingly become part of residential energy efficiency program portfolios. The ability to deliver real-time energy information has accelerated with the deployment of Advanced Meter Initiatives, and with the proliferation of networked personal devices such as smartphones and tablets. The availability and wide distribution of such devices means that people can access energy information anywhere, and at any time. This project focuses particularly on people who seek to do just that, and who respond to energy information delivered via device with higher levels of engagement.

2.2. Behavior-based efficiency programs

We reviewed several recent publications looking at behavior-based energy efficiency programs. We wanted to situate our recommendations in terms of the most recent data available. We looked at reports from the State of Minnesota (CARD), ACEEE, Cadmus, Nexant, and the National Resource Defense Council published between 2015-2017.

Thanks to the robust evaluation of behavior-based energy efficiency programs over the last decade, we believe we now have enough reliable data to suggest that they could be run as 'deemed savings programs'[1] like installation and purchase measures, such as energy-efficient refrigerators (NRDC, 2017). At this point, we have a rich trove of data on various types of savings generated by behavior-based energy efficiency programs:

> "In its Home Energy Report [HER] program, Potomac Edison (serving Maryland and West Virginia) sends customers information on how their usage compares with their own previous usage and to that of neighbors with similar homes, as well as tips on how to reduce consumption. The program is a randomized control trial, and customers are randomly assigned to a treatment group receiving the reports and a control group not receiving the reports. In 2014 the program saved 22,084 MWh, and the 75,600 participants on average reduced their electricity usage by 1.63 percent, in the range of 1 to 2 percent savings from typical HER programs. There were 26,250 residential control group customers." (NRDC, 2017)

Home Energy Reports (and other behavior-based efficiency programs) usually use a savings estimation approach called 'Programs Basing Savings on Comparison Groups.' This approach uses a research design whereby different groups of customers are treated with messaging around energy savings behaviors, with one group acting as a control. This approach uses the average energy saved by a large population instead of using savings derived from an installation measure (Ibid). For the remainder of the paper we will be discussing savings using the definition provided above. They are estimated, they are population-wide, and they are not per household (also known as per premise).

[1] "For most of these [energy efficiency installation and purchase measures] programs, the expected amount of energy saved over each measure's lifetime is calculated, or "deemed," in advance, based on field data collected from a sample of customers."(NRDC, 2017)

2.2.1. Feedback programs

We focus in this paper on feedback programs, which provide information about energy consumption through a variety of mechanisms. Feedback programs are those that, "provide customers with information to encourage shifting of loads to off-peak periods and/or to encourage lower levels of overall consumption" (ACEEE, 2010). The term 'feedback' refers to how outputs of a system (in this case energy consumption) are fed back as inputs into the system (in this case consumer awareness of energy consumption) and form an on-going loop[2]. We focus on feedback programs because we believe that how people respond to information delivered via technology is a critical factor in understanding how they adjust energy consumption[3].

We further refined the definition of feedback programs into two types, which we called Asynchronous, and Real-Time Feedback (ACEEE, 2013)[4]. These two forms of feedback program types have undergone the greatest amount of evaluation with the most rigorous and reliable methodology among behavior programs (ACEEE, 2016). Thanks to on-going evaluation efforts, we know that feedback type programs also generate the highest documentable savings among behavior-based residential energy efficieny programs, whether per household or overall:

> "Among residential programs, the program classes with highest average per premise [meter] reductions include: Community-Based; **Real-Time Feedback**; and Competitions. Among residential programs, the program classes with the greatest savings overall are **Asynchronous Feedback** programs due to high participation levels." (CARD, 2015)

Asynchronous Feedback programs are best typified by Home Energy Reports, or HERs:

> "Home Energy Reports (HER) programs are the cornerstone of many utility energy efficiency portfolios. These programs involve sending electronic or paper reports to residential customers, educating them about their energy use and encouraging them to conserve electricity or natural gas." (Cadmus, 2017)

We refer to these programs as Asynchronous Feedback because they deliver information about energy consumption and usage at a time distanced from the actual moment of consumption (e.g., monthly or quarterly). Programs that deliver energy consumption information either at the moment of consumption, or on demand (and in much smaller time increments, such as 15-minute intervals) we refer to as Real-time Feedback programs:

> "Real-time pricing and real-time energy data programs are defined as those programs that provide real-time feedback on energy pricing and energy consumption, respectively…Among real-time pricing programs, feedback was most frequently provided via an online portal or in-home display. For real-time data/information programs, hourly or daily energy consumption feedback was most frequently provided via an online portal." (CARD, 2015)

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[2] https://en.wikipedia.org/wiki/Feedback
[3] We also discuss programs that deliver feedback asynchronously, often with the paper bill; however our focus will be on delivering information via device, as more and more people go paperless.
[4] Also called, respectively, 'Indirect Feedback' and 'Direct Feedback' in the 2010 paper by Ehrhardt-Martinez, et al.

We present and discuss the savings from these programs, and how implementing them using opt-in vs. opt-out design affects these savings in the following subsections.

2.2.1.1. HERs savings

Opower is a well-known vendor who has been delivering HERs on behalf of their utility clients since 2008 and has conducted many rigorous trials of their efficacy.

> "Residential Behavioral Programs send targeted messages and reports about energy usage and potential savings opportunities to customers to try to change their behavior and increase energy savings. Often the messages apply social pressure by comparing a customer's usage with that of their neighbors…The programs usually measure energy savings and the effect of targeted messaging using randomized control trials of treatment and control groups of customers." (NRDC, 2017)

In general, HERs deliver 1-3% savings when applied to a population (ACEEE, 2016):

> "Since utilities launched the first large-scale HER programs in 2008, the utility industry has collected considerable evidence about the savings gained through these programs. Impact studies of one vendor's programs (Opower) revealed that HERs typically resulted in average electricity savings between 1.5% and 2.5% of energy use during the first and second program years (Allcott, 2011; Davis, 2011; Rosenberg, Agnew, and Gaffney, 2013)." (Cadmus, 2017)

2.2.1.2. Real-Time Feedback program savings

There are fewer Real-Time Feedback (RTF) programs than HERs for several reasons. HERs as we know them today were deployed in 2008, soon after the first smart meter rollouts in California in 2006. RTFs, meanwhile, were more expensive to deploy on a per household basis, because they relied on either providing an in-home device (costing approximately $250 per unit) or building a new web portal where customers could retrieve real-time data. However, there had been enough well-designed pilot projects by 2012 that Foster and Mazur-Stommen reviewed and evaluated the projects' energy savings in "Recent Results from Real-time Feedback" (ACEEE, 2012).

In 2016, ACEEE released an updated review that found a wide range of savings from 1-17% because, "savings range dramatically due to differences in target behavior, devices, and method of evaluation" (ACEEE, 2016). The Foster and Mazur-Stommen paper found a similar range, but also identified deciles of the population who seemed to demonstrate a varied response with differential savings. This observation was the springboard to the hypothesis about cybersensitivity being a personality trait, where 'cyber' refers to cybernetic, which in turn incorporates the central concept of feedback and response.

2.3. Opt-in vs. Opt-out Research Designs

When assessing the effectiveness of a measure, managers who are designing pilot projects have two common approaches to choose from, each with its own pros and cons. One method is called 'opt-in' treatment and the other is called 'opt-out.' Opt-in program designs offer a treatment, incentive, or opportunity to a group of individuals and allows them to choose whether to participate. Opt-out programs automatically enroll people in the treatment, incentive, or opportunity, and then require them to formally request exclusion from the treatment. They are sometimes also called ‘default enrollment’ programs.

Opt-in programs are great for getting engaged and committed participants, but there is usually some form of selection bias influencing the decision. Opt-out programs are great in that they remove selection bias, and since the entire population is treated there is little to no researcher bias. However, they may result in lower rates of ‘active’ participation.

A favorite example for proponents of opt-out programs are the extremely high rates of organ donation in countries where default enrollment is policy. Rates of participation of up to 90% are pointed to as a measure of success[5] for these programs (and are assumed to be a feature of opt-out programs). In contrast, in the case of energy efficiency, the level of savings generated by opt-out enrollment is 1-2% (ACEEE, 2016). For HERs, the *maximum* savings for opt-out style programs appears to be about 3% aggregated across a population (ACEEE, 2016). Most opt-out programs average less than this, whereby “[t]raditional opt-out programs save 1.2-2.2% of electricity, and 0.3-1.6% of gas by the second year.” (ACEEE, 2016).

The same HERs program, with the identical treatments/incentives, when run as opt-in programs generate closer to 15-17% savings (see Table 1 below):

> “Opt-in programs may save up to 16% of electricity per customer, but for fewer people (in one study approximately 20% of customers participated in an opt-in program, approximately 98% participated in an equivalent opt-out program).”

According to ACEEE in the same publication, Real-time Feedback programs using opt-in designs average 5-8% savings across the set of pilot projects reviewed[6]. However, one of the most rigorous projects, due to its well-thought out research design, was conducted by the Sacramento Municipal Utility District (SMUD) and they demonstrated *opt-in designs using in-home displays returning between 10-26%* savings (CARD, 2015) see Table 1 below for details.

Table 1. SMUD Pilot Program Outcomes (adapted from CARD, 2015)

SMUD pilot program	Mode of Feedback	Design	% of population participati	# of participant	Savings
SmartPricing Options: CPP	Feedback via IHD, web portal	Opt-in	18.20%	1,651	26%
SmartPricing Options: CPP	Feedback via IHD, web portal	Opt-out	95.90%	701	12%
SmartPricing Options: TOU	Feedback via IHD, web portal	Opt-in	17.50%	2,199	13%
SmartPricing Options: TOU	Feedback via IHD, web portal	Opt-out	97.60%	2,018	6%
SmartPricing Options: CPP	Feedback via Web portal only	Opt-in	18.80%	223	22%
SmartPricing Options: TOU	Feedback via Web portal only	Opt-in	16.40%	1,229	10%
SmartPricing Options: TOU+CPP	Feedback via IHD, web portal	Opt-out	92.90%	588	8% summer peak; 13% critical peak

In the literature on opt-in versus opt-out programs, the point has been made that while opt-in programs have participants with much higher savings rates, the *scale* of opt-out (automatically enrolled) participants implies that overall savings will end up being higher (ACEEE, 2016). Upon review, we do not think this math holds up. Our example here uses the savings and participation estimates informed by the literature

[5] A lively discussion around this can be found in the paper, “The meaning of default options for potential organ donors” (Davidai et al, 2012).
[6] Ibid.

discussed above and referencing specifically Table 1. These estimates are within a range that has been achieved by both HERs and RTF programs.

Given a population of 100 households, each of which uses 100 kWh per month, our population consumes 10,000 kWh per month total.

- Assumption 1: An opt-in program might have a participation rate of 20% who saves 15% of their energy per month in response to an intervention.
    - Opt-in population of 20 households will collectively save 300 kWh per month (20 x [100 x 0.15]). Total population savings = 300 kWh
- Assumption 2: The same intervention, structured as opt-out, may garner 96% of the population, who save between 1-2% per month on their energy consumption.
    - Opt-out population of 96 households will collectively save 96-192 kWh per month (96 x [100 x 0.02]). Total population savings = 192 kWh

As can be seen, the opt-in progam delivers greater energy savings. Even if the savings for the opt-in program drop to only 10%, that is still 200 kWh per month in savings for the population, which is still more than the savings from the opt-out program.

3.Segmentation

For many years, utilities did not differentiate among their customers except by sector: residential, commercial, industrial. As interest in behavior grows, so does the desire to understand customer choice and consumer behavior in greater depth and specificity. More recently emphasis has been placed on 'low income residential' and 'small to medium commercial' – both of which are means of moving towards a more differentiated approach. Yet these attempts at differentiation still face challenges, particularly from a lack of definition.

The authors researched these two categories previously and concluded that low income is not a true segment (ACEEE, 2013), and that the small to medium commercial segment is equally difficult to define in a way that finds broad, shared agreement. While these two attempts at defining unique segments may seem to be distinct from one another, both use structural and economic variables such as income or revenue to explain behavioral differences in both consumption of, and responsiveness to outreach and messaging around energy (primarily electricity). In *Trusted Partners: Every-day Energy Efficiency in the South* (ACEEE, 2013), we discussed how using income as a sole variable does not explain wide differences in attitudes and behaviors among even narrowly defined 'low income' households. Similarly, with respect to small to medium commercial enterprises, our ethnographic research suggested that levels of interest regarding offers from the utility had more to do with things like monthly cash flow, or access to credit, as opposed to size of the establishment in square footage, number of employees, or total revenue.

Instead of sectors and quasi-segments, utilities could apply modern market segmentation to improve uptake of energy efficiency recommendations. Market segmentation is a strategy for classifying potential consumers based on a set of identifiable common characteristics. These can include factors, such as shared needs, common interests, similar lifestyles, or demographic profiles. The primary goal with market segmentation is to establish groupings that possess both internal homogeneity (similarity within segments) and external homogeneity (differences between segments).

There are several classic forms of market segmentation, including:

Table 2. The various marketing segment types for classifying consumers.

Segment type	Exemplified	Description
Demographic	Personal attributes	Uses quantifiable population characteristics, such as income and age; includes common labels like "DINKs" for double-income no kids
Geographic	Urban or rural	Focuses on variables such as population distribution and settlement patterns as keys to attitudes and behaviors
Psychographic	Lifestyle	Calls out lifestyle patterns, such as "socially aware" or "conservative"
Behavioral	Purchase decision-making	Uses purchasing, consumption, or usage behavior such as 'benefit sought' or 'buyer readiness' to group people

In addition to these forms, there is also a range of market segmentation *output types*. These are termed 'undifferentiated' 'differentiated' and 'hyper-segmented.' These types form a continuum ranging from dividing up a population into the fewest number of sub-populations/segments to one that has the most sub-divisions. 'Undifferentiated' segmentation is the broadest type of segmentation, where everyone in a population receives the same message regardless of factors such as demographics, geography, or ideology. An example of undifferentiated segmentation would be how 19th century manufacturers sold soap, i.e. to the masses. There was not a 'men's' soap, and a 'women's' soap, and a 'baby' soap. Purveyors competed on the quality of their ingredients or the strength of their reputation (brand), but they competed for members of the same audience. The example of a soap advertisement from the late 1800s in Figure 1 below is an example of undifferentiated messaging that aims for universal appeal based on the quality and gift with purchase.

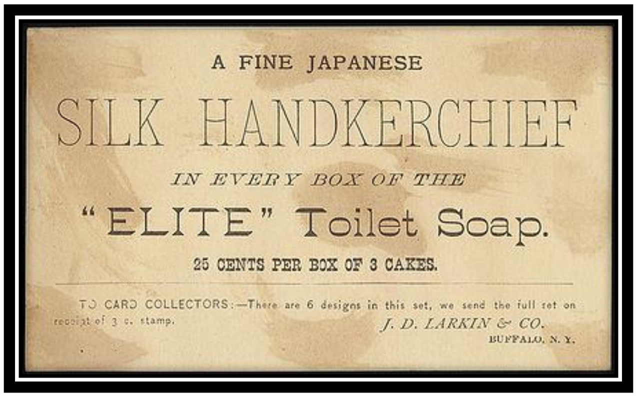

Figure 1 Larkin Soap Advertisement, 19th Century (Wikicommons)

A 'differentiated' segmentation strategy takes these variables into account and offers slightly different messages depending on the characteristics of the desired audience, such as age, income, region, or political leanings. The example of a soap advertisement from the 1920s in Figure 2 below is an example of differentiated messaging that appeals to women specifically:

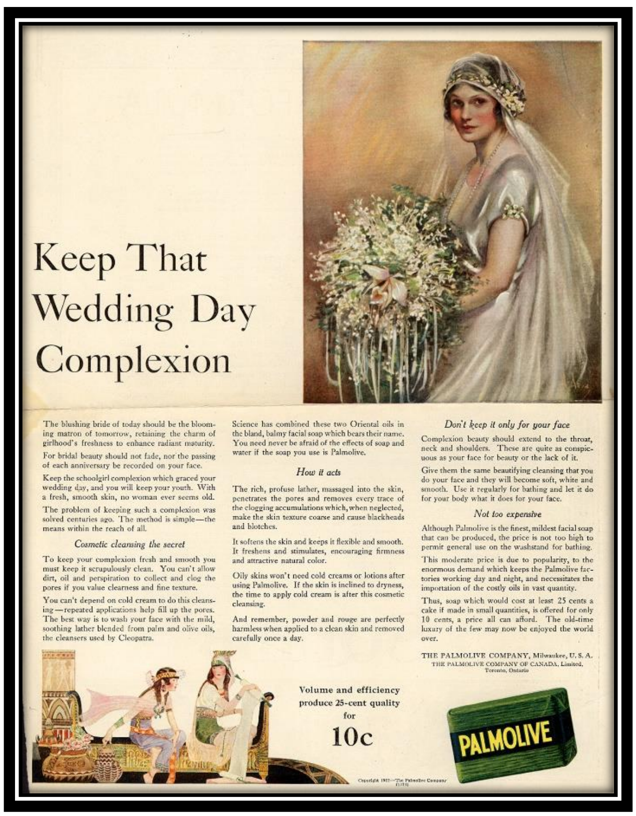

Figure 2 Palmolive Soap Advertisement, early 20th Century (Wikicommons)

Finally, a 'hyper-segmented' approach combines variables to precisely align messaging with target audiences. The concept of psychographics, pioneered by such firms as Nielsen, with its Prizm database (now Claritas) is a form of hyper-segmentation. The example of soap advertising in Figure 3 below is an example of hyper-segmented messaging that aims to appeal to people who have disposable income, time to be discretionary in their soap purchases, and a 'green' philosophy:

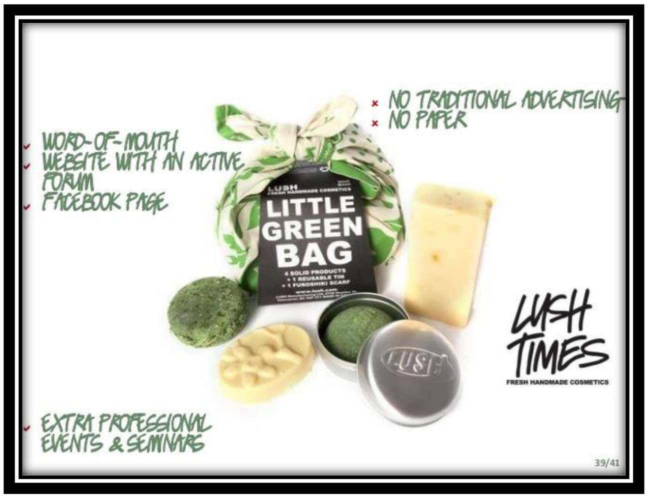

Figure 3 Lush Brand Soap Advertisement, 21st Century (Wikicommons)

In this project we identified four segments:

- Cybersensitives
- Cyberawares
- Mainstream
- Null

To construct our segmentation schema, we elicited attitudes and values by surveying and interviewing 45 households in two utility territories in California. We identified their electricity consumption patterns by looking at household-level utility data and compared it to their peers. Based on this research, we segmented consumers by degrees of ‘cybersensitivity.’ This is probably most akin to a classic ‘psychographic’ segment. We believe that these consumers diverge from the mainstream in several identifiable ways, many of which are related to lifestyle, per the ethnographic data. On the other hand, this type of segmentation is also similar to ‘behavioral,’ because we looked at aspects such as device purchase and usage, as well as energy consumption. Because we have identified four segments, our segmentation approach is a ‘differentiated’ type of segmentation.

Our fieldwork observations have lead us to conclude that cybersensitives are interested in more ambitious and innovative energy efficiency measures, while cyberawares appear to be more interested in tools and applications for tracking energy consumption and savings. We believe that our segments cut across distinctions such as age, gender, income, and geography. This will have an impact on our recommended redesign of approaches as outlined below.

4.Recommendations

Our project began with the presumption that cybersensitive and cyberaware segments were more responsive to treatments than their peers, at least when delivered as real-time feedback via device. Our segments are defined psycho-graphically and behaviorally. That is, our cyber segments have a distinct set of attitudes and values from their peers (psycho-graphic), and at the same time they consume electricity differently from their peers (behavioral).

Our various literature reviews have consistently identified a group of people who choose to opt-in, and engage, at much higher levels than their peers. We found cyber-segment members serviced by separate utilities in distinct geographic territories. Further, while our research has shown the cyber-segments to generally have a lower baseline energy consumption than their non-cyber peers, we believe that they still have room to maneuver in terms of reducing their household energy consumption even further.

The variety of programs our households might have been exposed to preclude our assigning causality to any one of them. The fact that we find cyber-segments in different demographic cohorts and geographies speaks against the *a priori* nature of a program design/treatment being the cause of differing consumption patterns. Thus, whether the program goal is lower energy consumption on an aggregate level (e.g. states, or utility territories) or higher rates of savings per program, or higher rates of participation in a program, we believe that targeting cyber-segments is a sound strategy.

Our recommendation is to to 'narrowcast' messaging in alignment with consumer interests and psychographics. Based on our research, we believe that utility programs that understand psychographic and behavioral distinctions among their customer base, and market appropriately to them, will see increased uptake around energy efficiency recommendations. For example, "greater savings have also been reported among households with fewer occupants, smaller square footage, and older heads of household (Davis, 2011)." The lesson here is, the right tactic, to the right audience, delivers big savings.

We are drawing on our findings from the research and review of the literature to recommend that utilities should target the cybersensitive and cyberaware segments for opt-in enrollment in Home Energy Report and Real-Time Feedback programs. We believe that this strategy will result in higher savings rates, and longer-term persistence, than when programs treat general populations. Our research suggests that these segments comprise approximately 18% of the population[7], and depending on the program type and design employed, could reach savings of up to 26% (see Table 1).

Aligning messages according to segments could deliver a much higher return on investment in terms of energy savings harvested, with lower outlays in marketing dollars and materials. We believe that targeting these two segments will result in lowered soft costs for utilities that are implementing behavior-based energy efficiency programs across their service territories, particularly for Home Energy Reports. These may include such aspects as labor, materials (printing), postage, etc. Cost per premise has not been included in previous analyses comparing opt-in to opt-out programs. We argue that these reduced soft costs should be considered when evaluating and promoting behavior programs overall.

Further, because cybersensitives and cyberawares are more responsive to information delivered via device (primarily, but not exclusively smartphones) their receipt of/engagement with/response to such information is measurable. Digital channels have 'baked in' metrics for measuring outcomes from messaging in addition to outputs. Digitally delivered information can be tracked in terms of opens, and click throughs, and other actions taken. In addition, information delivered through smart thermostats could be paired with hourly readings of AMI data to determine the effectiveness of messaging in real time and at a granular level, a question for future research perhaps.

Ibid.

Finally, we recommend targeting the cyber-segments with more ambitious energy savings projects as several of our participants expressed a strong interest in going beyond the vanilla recommendations encouraged in most HERs. Current literature suggests that simply marketing CFLs and generic energy efficiency recommendations is missing the mark when it comes to actual drivers of energy savings achieved through behavior change:

> "Several different types of analysis provide circumstantial evidence that **most HER program savings come from habitual or reoccurring behavior changes**… Researchers have studied the HER program impacts on participation in utility energy efficiency rebate programs, finding that **purchases of durable equipment and envelope measures only accounts for a small percentage of HER savings** (typically less than 5%). **Non-rebated durables and envelope measures also may account for some HER savings, likely with a smaller contribution**. In addition, researchers have conducted telephone surveys and site visits to estimate HER impacts on residential CFL purchases. These analyses have not been conclusive, but suggest that **the adoption of CFLs can account for only a small percentage of HER savings** (FSC, 2013; DNV-GL, 2014)." (Cadmus, 2017)[8]

In other words, the primary driver of savings from behavioral programs has been via behavior change!

To date, whether opt-in, or opt-out, HERs, or Real-time Feedback, the various segments have received the same messaging. We understand the policy imperatives set by the state to give consumers access to the same information, however, if all information is accessible by anyone in a given utility territory (e.g., through a web portal) we do not see the rationale in running programs that provide lower energy savings, at a higher overall cost. Given the higher levels of participation, engagement, and responsiveness evinced by our cyber-segments, we think that their ultimate savings rates will be much higher than heretofore seen and be reliably bankable by utilities, like those generated by deemed savings programs.

[8] Emphases ours

5.References

Davidai, Shai, Thomas Gilovich, and Lee D. Ross. "The Meaning of Default Options for Potential Organ Donors." Proceedings of the National Academy of Sciences 109, no. 38 (2012): 15201- 5205.

Dougherty, Anne, Courtney Henderson, Amanda Dwelley, Mallika Jayaraman, Edward Vine, and Susan Mazur-Stommen. Energy Efficiency Behavioral Programs: Literature Review, Benchmarking Analysis, and Evaluation Guidelines. Report. Conservation Applied Research & Development (CARD) Final Report. Madison, WI: Illume Advising, 2015. 1-114.
Prepared for Minnesota Department of Commerce, Division of Energy Resources.

George, Stephen, Eric Bell, , Aimee Savage, Alexandra Dunn, , and Benjamin Messer, . California Statewide Opt-in-Time-of-Use Pricing Pilot: Interim Evaluation. Report. Nexant and Research Into Action, 2017. 1-451.
Prepared for The TOU Working Group, under contract to Southern California Edison Company.

Hendricks, Bracken, Bill Campbell, and Pen Goodale. Efficiency Works: Creating Good Jobs and New Markets Through Energy Efficiency. Publication. Center for American Progress and Energy Resource Management, 2010. 1-48.

Khawaja, M. Sami, , and James Stewart, . Long-run Savings and Cost-effectiveness of Home Energy Report Program. Report. Waltham, MA: Cadmus Group, 2017. 1-20.

Ehrhardt-Martinez, Karen, Kat A. Donnelly, John A. Laitner, Dan York, Jacob Talbot, and Katherine Friedrich. Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities. Report no. E105. Washington, D.C.: American Council for an Energy-Efficient Economy, 2010. 1-128.

Potter, Jennifer M., Stephen S. George, , and Lupe R. Jimenez. SmartPricing Options Final Evaluation: The Final Report on Pilot Design, Implementation, and Evaluation of the Sacramento Municipal Utility District's Consumer Behavior Study. Report. Sacramento, CA: Sacramento Municipal Utility District, 2014. 4-192.
Prepared for U.S. Department of Energy.

State Energy Efficiency Resource Standards (EERS). Policy Brief. American Council for an Energy-Efficient Economy. 2012. 1-6.

State Energy Efficiency Resource Standards (EERS). Policy Brief. American Council for an Energy-Efficient Economy. 2017. 1-9.

Sussman, Reuven, and Maxine Chikumbo. Behavior Change Programs: Status and Impact. Report no. B1601. Washington, DC: American Council for an Energy-Efficient Economy 2016. 1-94.

Szinai, Julia, Merrian Borgeson, and Emily Levin. Putting Your Money Where Your Meter Is: A Study of Pay-for-performance Energy Efficiency Programs in the United States. Report. 1-62. Prepared for the Natural Resources Defense Council and Vermont Energy Investment Corporation.

York, Dan, "Positive on Negawatts: The Increasing Role of Energy Efficiency as a Utility Resource." Presentation. American Council for an Energy-Efficient Economy, 2008.