Finding Efficiency Opportunities in Surprising Markets: Data, Targeting, and Messaging

Melanie Wemple, Rachel Cooper, Sarah Hutson, E Source

ABSTRACT

E Source has surveyed 32,000 U.S. residential utility customers annually since 2009, in partnership with The Nielsen Company, on a variety of efficiency and renewable-related decisions, particularly characteristics that drive enrollment and adoption and how those characteristics vary based on program, behavior, or technology. These data provide unmatched insight into customer decision-making and allow for the control for well-documented demographic drivers so utilities can be smarter about how they target and engage customers with conservation, efficiency and emerging technologies.

Though some utilities have become more sophisticated with segmentation, many continue to deliver efficiency messaging based on cursory segmentation schemes that focus only on one element, such as energy usage or age of home. However administrators will need segmentation that goes beyond a single archetype and also recognizes that one system does not fit all programs, desired behaviors, or technology adoption to meet more aggressive goals and to keep programs cost-effective.

What other characteristics are driving customers to enroll in programs, change their behavior, and embrace technologies? Initial analysis reveals interesting trends. Despite representing a small overall share of participants, Asian, black, and Hispanic customers report participation in energy-efficiency programs at higher rates within their own segment than do white customers. Customers who have participated in an energy-efficiency program are more likely to participate in another subsequent efficiency program, indicating an opportunity for cross-selling. Administrators struggling to maintain program cost-effectiveness can use these insights to more effectively and more strategically target customers to fit the right message to the right individuals.

Introduction

Residential energy efficiency portfolios are feeling the squeeze. Utilities are expected to meet more aggressive energy savings goals. Yet finding new customers to enroll in programs can be difficult, particularly in areas where programs are mature and a significant proportion of customers has already participated. At the same time, some utilities are facing stagnant or declining budgets, meaning that they have fewer resources to meet these more aggressive goals. If this wasn't challenging enough, utilities are also operating in a fast-changing landscape, in which customer demographics are evolving and consumer expectations are high.

So what does this mean for energy efficiency program administrators? It means that while a one-size-fits-all approach to enroll and engage customers may have worked in the past, it will no longer continue to work in the future. Regardless of whether utilities are operating in a regulated market with limitations in how they can market to customers, or time and budgetary constraints make a one-size-fits-all approach easier to implement, the environment is changing

and program administrators need to pivot as well. To increase program participation, meet or exceed customer expectations, and make the most of dwindling program budgets, program administrators must take a more nuanced approach to marketing—one that involves strategic targeting and messaging.

This paper will highlight the market opportunity of more effectively engaging multicultural customers, discuss opportunities for engagement when time and resources are limited, and provide examples of how utilities have successfully and strategically engaged these customers.

E Source Study Methodology

For several years, E Source has utilized The Nielsen Company's Energy Behavior Track survey to understand customers' energy-use attitudes and behavior. The annual online survey, conducted in partnership with E Source, of approximately 32,000 residential customers in the US yields a rich dataset of insights into the energy use and behavior of residential customers. The households were chosen from Survey Sampling International (SSI), a leading provider of survey sampling solutions. Fieldwork quotas for race, gender, age, and Census group were set up for the sample selection to ensure that the sample was representative of the national population. A post-fieldwork weighting scheme also was applied, using geographic and demographic data, such as age, household income, presence of children, and home ownership, to ensure the sample was nationally representative.

For this paper, we analyzed minority groups when sample size was adequate. Therefore, responses from customers who reported their race to be something other than Black/African-American or Asian/Pacific Islander were not included in our analysis; when analyzing ethnic trends, we focused on customers who reported to be of Hispanic or Latino decent.

Market Potential

Across the board, an increasing number of households report participating in utility programs, up from 16 percent in 2011 to 29 percent in 2015 (Nielsen EBT; see Methodology for more information) [1]. Some of the most influential customer characteristics that drive participation in an energy-efficiency program have been well-documented. Home ownership, house size, age of household, and income have shown time and again to be key drivers of participation (Burke 2011). However, after controlling for social, economic, demographic, and household characteristics,[2] a regression model revealed that minority racial and ethnic (Asian/Pacific Islander, Black/African American, and Hispanic/Latino) customers were as much as 2.5 times more likely to participate in utility programs than their white counterparts (Table 1) (Gladych, 2012).

[1] The mix of programs probed has changed slightly each year. Respondents were asked to identify participation in seven different programs in 2013, 11 in 2014, and 9 in 2015. However, we analyzed participation in each of the programs / services that were included across all three years, and found upticks in participation within each one, validating the finding that program participation has been increasing over time.

[2] The regression model controlled for marital status, age, political mind-set, race and ethnicity, home ownership [rent vs. own], income, employment status, educational attainment, length of residency, number of household members, and household type

	Propensity to participate by ethnicity and race		
Utility Program	Hispanic/Latino	Asian/Pacific Islander	Black/African American
Weatherization services	1.75[a]	2.21[b]	2.52[b]
Whole-house audits	2.18[a]	2.16[b]	1.56[b]
Appliance rebates	1.43[a]	1.51[b]	NA
Appliance-recycling programs	1.61[a]	1.96[b]	NA
Equipment rebates	1.38[a]	1.52[b]	NA
Online Energy Audits	1.46[a]	NA	1.55[b]

Table 1: Propensity to participate in energy efficiency programs *Source*: E Source, 2012

Notes: a) Number indicates how many times more likely it is for Hispanic/Latino customers to have participated in a utility program compared to non-Hispanics/Latinos; b) Number indicates how many times more likely it is for the indicated race to have participated in a utility program compared to White/Caucasian respondents.

For most of the efficiency programs explored with this analysis, minority racial and ethnic customers were at least 50 percent more likely to participate than white customers were. This propensity for participation was even stronger in weatherization and whole-house audit programs. The weatherization program does not have the distinction of a low-income program; however given that many weatherization programs are designed for low-income customers and non-white households make up a larger proportion of low-income households in many states, it's possible this has an influence on the propensity to participate.

Hispanic/Latino respondents were 2.18 times more likely to have conducted a whole-house audit. Additionally, Asian/Pacific Islander and Black/African American respondents were, respectively, 2.16 and 1.56 times more likely to have participated in a home energy audit. Asian/Pacific Islander respondents were 1.96 times more likely to have participated in appliance-recycling programs and were 1.51 times more likely to have received an appliance rebate.

We found similar trends of Hispanic/Latino, Black/African American and Asian/Pacific Islander customers reporting a higher propensity to participate in at least one program than non-Hispanic/Latino and White/Caucasian customers, particularly among households with less than a $50,000 annual household income. The results indicate that customers who report their race to be something other than White/Caucasian, and those who denote Hispanic/Latino heritage report a higher propensity to participate in utility DSM programs and related services (like green energy). Other research supports these findings:

- Hispanic/Latino customers are willing to pay more, on average, for energy efficient features in their homes than their non-Hispanic/Latino counterparts (Quint, 2014).
- Hispanic/Latino residents were highly likely to show interest and participation in energy-efficiency measures, and much more so than White/Caucasians residents (Cohn, 2015).
- Asian/Pacific Islander and Black/African American residents were slightly more likely to participate in energy-efficiency programs than White/Caucasian residents (Cohn, 2015).
- Asian American households are twice as likely as the total population to own an electric or hybrid vehicle and 11 percent are more willing than the general population to pay more for a product if it is good for the environment (Nielsen, 2013).

These results underscore opportunity for program enrollment among multicultural customers, but are not an invitation to become complacent or assume that programs and outreach are effectively meeting the needs of these customers. While racial and ethnic customers report participation in

energy-efficiency programs at higher rates within their own segment than do non-Hispanic/Latino and White/Caucasian customers, they still make up a small share of program participants overall. Only a quarter of program participants are races other than White/Caucasian and just 16 percent are Hispanic/Latino (Nielsen EBT, 2015).

A shifting national landscape means that multicultural customers will continue to make up a larger share of residential customers in the future and that program administrators will increasingly need to engage these customers to maintain program equity. According to U.S. Census Bureau projections through 2060, the non-Hispanic/Latino white population is expected to peak in 2024 and subsequently decrease. Meanwhile, both Hispanic/Latino and Asian/Pacific Islander populations are expected to more than double in the same time period. And while at a less significant level, Black/African American, American Indian, and Alaskan Natives populations are also expected to increase over the next four decades. Ultimately, no single group will make up a majority of the population.

Yet another argument for targeted outreach to multicultural customers is that evidence suggests they have been traditionally vulnerable populations. Low-income, Black/African American, and Hispanic/Latino households experience some of the highest energy burdens in the U.S.; their energy expenditures are disproportionately higher than their household incomes (Drehobl & Ross, 2016). A Climate and Health Assessment also found that climate change is already impacting the most vulnerable populations, which includes some communities of color, immigrant groups (including those with limited English proficiency), and Indigenous peoples (USGCRP, 2016). Finally, as programs have traditionally been marketed from a one-size-fits-all approach, marketing materials are often not offered in multiple languages and some of the most vulnerable groups may be unaware of these offerings.

However, just because multicultural customers are interested in participating in energy efficiency programs, does not mean they are satisfied with the experience or the utility overall. In contrast to data that show racial and ethnic customers are engaging in DSM programs, these customers report slightly less favorable satisfaction ratings than their counterparts when asked to rate their overall satisfaction with their electricity provider.

However, customer satisfaction improves among customers as program enrollment increases (Figure 1), and minority racial and ethnic customers are no exception. Among Hispanic customers, those who reported their electricity provider provided excellent or very good service increased four percentage points when customers were enrolled in at least one program. Among non-White/Caucasian customers, ratings jumped five percentage points. These results indicate that not only is there energy savings potential within minority racial and ethnic populations, but there is also opportunity to improve these customers' sentiment toward their utility provider. For utilities, higher customer satisfaction equates to a more favorable regulatory environment, improved stakeholder relations, a greater shareholder security, and a customer base that may be more forgiving during the next outage or emergency.

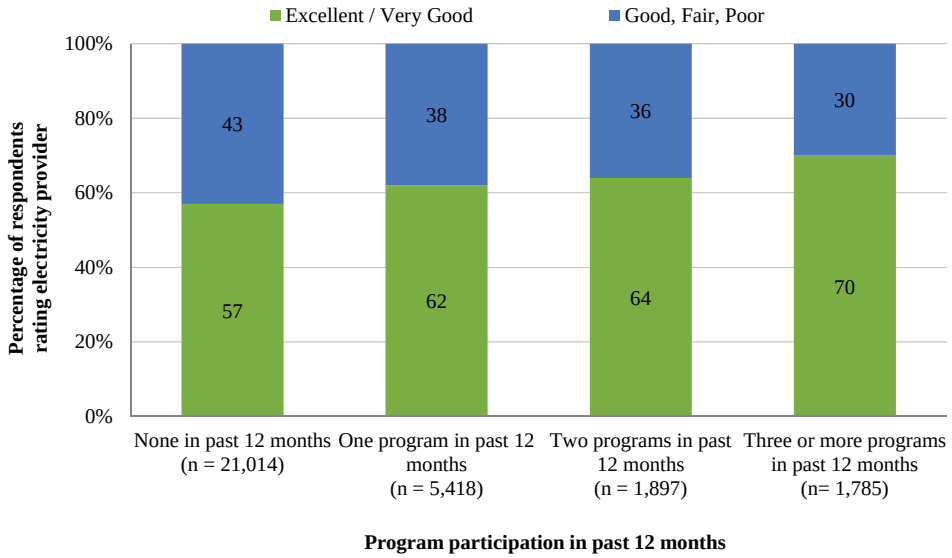

Figure 1: Customer reported satisfaction with their utility, grouped by program participation. Source: E *Source*; Data from The Nielsen Company's Energy Behavior Track 2015, compiled in E Source Residential Customer Insights Center.

Targeting Communities and Past Participants

Community engagement may be a driving force behind why multicultural populations are more likely to participate in energy efficiency programs than their White/Caucasian and non-Hispanic/Latino counterparts. Research shows that values of community and collectivism are strong among non-White/Caucasian and Hispanic/Latino populations (Speiser & Krygsman, 2014). And as other research has found, the social influence of community ties has implications on adoption of behaviors and technology. For instance, a geospatial analysis of rooftop solar adoption found that social interactions lead to a faster rate of adoption than could be explained by private characteristics alone (Graziano & Gillingham, 2014).

As utilities start to understand the energy savings potential within multicultural communities, they are rethinking marketing, messages, and outreach tactics. For utilities just getting started in this endeavor, finding energy efficiency opportunities doesn't necessarily require deep, sophisticated segmentation or a large investment in difficult-to-find-and-analyze customer data. Even those with tighter regulations on segmenting customers or those with limited resources can take steps in this direction without a complete overhaul of business-as-usual. The next section of this paper will discuss strategies to get started in engaging these populations to generate energy savings through traditional energy efficiency and renewable energy programs, and also looking toward new program types to generate energy savings.

Focus on urban centers. Race and ethnicity are inextricably tied to urbanicity. Utilities are more likely to find Hispanic/Latino, Black/African American, and Asian/Pacific Islander communities in the urban centers of their service territories (Table 2). Therefore, even if a utility is unable to segment by race or ethnicity, there are opportunities to use geographic data to more fully engage this segment of residential customers.

Urbanization Classification[3]	Percentage of respondents in each urbanization classification			
	White/Caucasian (n = 23,946)	Black/African-American (n = 3,924)	Asian/Pacific Islander (n = 1,734)	Hispanic (n = 5,382)
Urban	17%	32%	39%	37%
Suburban	25%	23%	31%	22%
Second City	21%	26%	17%	23%
Town and Country	37%	19%	13%	18%

Table 2: Self-reported race and ethnicity and urbanization classification in the US. *Source*: E Source; Data from The Nielsen Company's Energy Behavior Track 2015

Focusing on programs and value-add services that are most popular with minority racial and ethnic groups, as well as with those living in urban areas, such as appliance rebates, appliance recycling programs, green energy, and demand response is one strategic way to get started in better targeting these growing minority populations (Table 3).

Program	Percentage of respondents within each classification who report participation in each program				
	Overall (n = 31,577)	Urban (n = 7,027)	Black/ African American (n = 3,924)	Asian/ Pacific Islander (n = 1,734)	Hispanic/ Latino (n = 5,382)
Appliance Rebate	10%	12%	10%	15%	13%
Demand Response	5%	7%	6%	8%	7%
Equipment Rebate	6%	8%	6%	9%	9%
Green Energy	5%	8%	7%	10%	9%
HVAC Inspections & Maintenance	8%	8%	7%	8%	8%
Appliance Recycling Program	5%	6%	5%	7%	7%
Online Energy Audit	4%	5%	4%	4%	5%
Weatherization Service	4%	5%	6%	3%	5%
Whole-House Audit	3%	3%	3%	3%	3%
None of the above	71%	67%	70%	63%	63%

Table 3: Urbanization classification, racial and ethnic classification and self-reported program participation in the US. Respondents were allowed to select all programs they participated in during the previous year. *Source*: E Source; Data from The Nielsen Company's Energy Behavior Track 2015

Once customers are engaged, utilities can build off of that relationship to continue to fine tune their outreach. To drill down further, utilities can use free or low-cost geographical data to target specific neighborhoods within their urban centers that have a higher proportion of minority ethnic or racial residents. Working with trusted leaders and mentors who live in those communities has proven to be a successful approach that utilities should consider.

[3] As defined by Nielsen, urban areas have population density scores of between 85 and 99, suburban areas have population density scores of 40 and 90, second city regions have population density scores of between 40 and 85 (but unlike suburban areas are the population centers of their surrounding communities), and town and country have population density scores under 40.

Cross-sell programs. Customers who have participated in an energy-efficiency program are more likely to participate in another subsequent efficiency program. For example, of people who have recently participated in at least one energy-efficiency program, 21 percent participated in two programs and 18 percent participated in three or more programs; the same rings true when drilling down by race and ethnicity (Nielsen, 2015). This may be because utility efficiency programs are providing excellent benefits to the customers they're already reaching. It could also be that participating customers already understand the importance of energy efficiency, they're motivated to make upgrades to their homes, and they want to save money on their utility bills. Utilities can leverage participation data to cross-sell other programs.

Table 4 demonstrates which programs pair well together based on self-reported program participation data (Nielsen EBT, 2015). Given the popularity of program among minority racial and ethnic customers, it is a helpful exercise to see what other programs pair well. As shown in the table below, 26 percent of those who had participated in an appliance rebate program also participated in an equipment rebate program, underscoring that cross-selling opportunities may exist among those who participate in one of these programs.

Start with the first energy-efficiency measure selected and then follow the column down to understand the additional measures selected by participants of the first energy-efficiency measure. →		First energy-efficiency measure selected by participant								
		Appliance Rebate (n = 3,345)	Demand Response (n = 1,878)	Equipment Rebate (n = 2,109)	Green Energy (n = 1,957)	HVAC Inspections & Maintenance (n = 2,612)	Major Household Appliance Recycling Program (n = 1,613)	Online Energy Audit (n = 1,357)	Weatherization Service (n = 1,212)	Whole-House Audit (n = 1,012)
Additional energy-efficiency measure(s) selected by participant	Appliance Rebate	*	25%	43%	31%	25%	39%	32%	30%	26%
	Demand Response	14%	*	19%	23%	15%	18%	25%	16%	14%
	Equipment Rebate	26%	21%	*	23%	20%	27%	24%	23%	19%
	Green Energy	17%	23%	20%	*	12%	20%	28%	18%	13%
	HVAC Inspections & Maintenance	21%	23%	28%	19%	*	25%	30%	29%	27%
	Appliance Recycling Program	19%	17%	23%	19%	15%	*	19%	24%	18%
	Online Energy Audit	12%	18%	16%	21%	14%	15%	*	18%	20%
	Weatherization Service	12%	11%	15%	14%	14%	19%	18%	*	26%
	Whole-House Audit	9%	9%	11%	9%	11%	12%	18%	23%	*

Table 4: Self-reported cross-participation in utility programs in the US. Respondents were allowed to select all programs they participated in during the previous year. *Source*: E Source; Data from The Nielsen Company's Energy Behavior Track 2015

To support the value of cross-selling, utilities don't have to invest substantially to test whether their cross-selling approach is cost-effective. Many program managers intuitively know which programs align well together, like appliance rebates and appliance recycling. To know if marketing efforts are effective, any targeted messaging should cost less to acquire participants than a non-targeted alternative. For instance, a utility in the south found that targeting was effective for its duct repair program. It targeted customers who received a home energy audit but failed to move forward with recommended duct testing. The targeted message, reminding these customers to move forward with duct repairs, received a higher response rate and the messages only cost $26 per conversation, compared to $42 for a non-targeted message (Tarantur, 2012).

Reach out to solar customers. In line with leveraging program participation data to cross-sell other programs, our research shows that many customers with solar panels installed on their homes are more likely to report participation in at least one energy-efficiency program in the previous year than those who do not have a solar panel system. Interestingly, our data shows that Asian/Pacific Islander customers are 1.5 times more likely to report having solar panels installed at their home (Nielsen EBT, 2015).

The residential PV market experienced its largest annual growth rate to date, an impressive feat given that 2015 marked the fourth consecutive year of greater than 50 percent annual growth (SEIA, 2015). This growth in customer interest in solar is starting to push utilities to think more broadly about how they engage with customers to end-use technologies (Schofield, 2015). Given that some minority customers are already participating in this space, utilities that don't proactively engage with customers about solar could face many lost opportunities, including lost opportunities to sell additional products and services to key customers.

Engage low-income customers. Given that minority racial and ethnic customers report a higher propensity to participate in programs, particularly those with an annual household income of less than $50,000, utilities may find strategic opportunity in reaching this customer segment by engaging with low income households who are struggling to pay their energy bills. For example, billing alerts and prepayment programs can yield higher customer satisfaction as well as a reduction in energy usage (Shepard, 2014). Given that smart meters are becoming more prevalent, both budget tracking and pre-pay programs are becoming easier to implement, and they both could provide opportunities for low income as well as minority racial and ethnic customers to better manage their bills and reduce energy usage (Heath, Vroman, LeBlanc, Schofield, 2015).

Market research by The Nielsen Company and E Source shows that respondents with annual household incomes of less than $25,000 are about twice as likely as those with an annual household income over $100,000 to set a monthly energy bill budget (Figure 2).

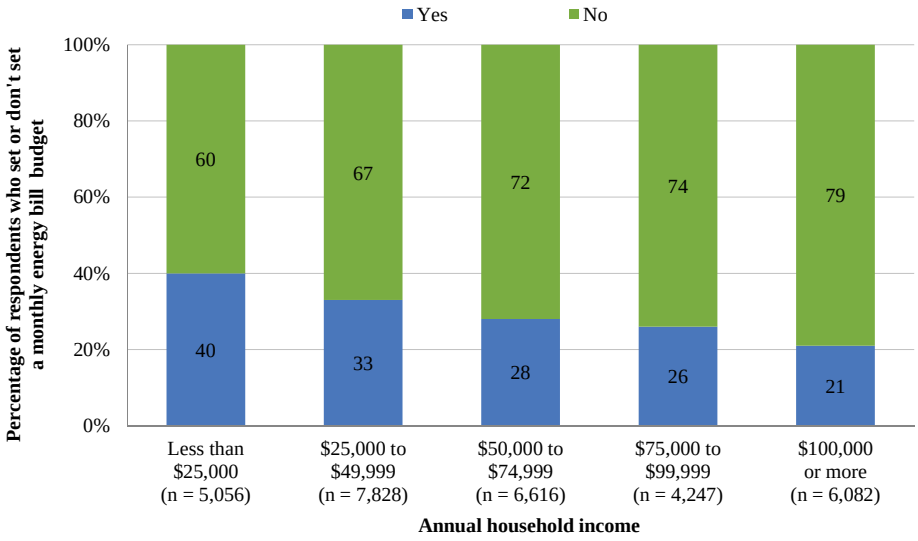

Figure 2: Lower income customers are more likely to set a monthly energy bill budget. Source: E Source; Data from The Nielsen Company's Energy Behavior Track 2015

Those who set budgets for energy, particularly lower income households, are also the most interested in receiving billing alerts that tell them when they are on a trajectory to exceed their budget (Nielsen EBT, 2015), making them great candidates for prepayment plans. When customers who reported that they set a monthly energy bill budget were asked how valuable, if at all, receiving text or email alerts from their utility would be, lower income customers were more likely to indicate that such messages would be "very valuable". Forty percent of customers with household incomes of less than $25,000 annually noted that such alerts, which would be used to let them know they are not on track to meet their budget, are very valuable. Percentage of respondents reporting that such alerts would be "very valuable" decreased slightly as household income increased, highlighting that such communications resonate most among customers within lower income brackets.

One of the key elements of prepay is that, as with billing alerts, customers regularly know where they stand relative to their energy budget, and that's where utilities may find a promising strategic opportunity (Shepard, 2014). In 2014, E Source analysis found that:

- A southwestern utility's prepayment customers use 10 to 12 percent less energy than customers on standard billing
- A study conducted in the northwest of prepayment programs in two co-op territories found an average decrease in energy use of 14 percent for one co-op and 5.5 percent for customers of another co-op
- A retail utility reports a 14 percent reduction in peak demand from its prepaid customers in Texas.
- A cooperative in Oklahoma has found energy use reductions of 11 percent among its prepay participants.

While it won't be enough to help all limited-income customers, adding alerts and prepayment programs can yield higher customers satisfaction and participants in prepayment programs have been shown to reduce their energy use significantly (Shepard, 2014).

Case Studies in Energy Efficiency and Communications

The following case studies demonstrate how tapping into minority markets in strategic ways can yield positive results. Through targeted community engagement, one utility found success educating customers about efficiency and conservation within its burgeoning Asian population. The other has found that a pivot in the way it delivers messaging means that it can communicate more effectively with all customers while taking into account nuances between customer segments.

Leveraging community engagement for energy savings. In an effort to address the knowledge gap about how to make a home more efficient, a Canadian utility developed an in-language energy conservation program specifically designed for new Chinese and South Asian immigrants that were rapidly moving to the territory. The program uses trained energy advisors to provide home-efficiency kits and individual customized energy-savings plans for participating customers. Currently the program is offered in nine languages: Punjabi, Gujarati, Cantonese, Mandarin, Taiwanese, Hindi, Urdu, Kannada, and Marathi (Joyce, 2015). The utility contracted with a third party vendor to recruit people from the local communities and train them to deliver three main points: Encourage energy saving, reduce utility bills, and improve safety in the home. These energy mentors learned about conducting home energy audits, the program, and the utility's additional offerings.

The program is high touch, but the utility has been pleased with results. The utility attributes effectiveness to the level of trust that's established between the mentors and the utility's customers. That trust develops because the mentors live in the communities they serve. Their familiarity makes people feel comfortable enough to open their doors and invite the mentors into their homes and their lives.

The entire program has been launched and run without any paid media. Instead, the program relies primarily on earned media and word of mouth generated by in-person and online social networks. Mentors attend lots of cultural festivals and events. When they visit ethnic radio stations, call-in lines are flooded with questions. But the real power of the program design became apparent when the utility mapped the locations of program participants and discovered how close the mentors' houses were to the participating customers' homes. In fact, 85 percent of all homes participating in the program come from word-of-mouth referrals.

Implementing a total-market approach to ensure effective messaging. A west coast utility's customer base is very culturally and racially diverse. Two-thirds of the utility's customers are Hispanic/Latino, Asian, African-American, or of mixed race, while notable shares of residents speak Spanish, Chinese, Korean, or Vietnamese. Reaching out to different customer segments is not just a nice idea but a business necessity.

The utility has embraced a total-market strategy to engage and message to customers, rather than dividing its service territory into a general market and several multicultural market branches. In other words, the utility looks at its entire residential customer base as an integrated market and designs campaigns to meet the needs of all. This total-market approach, while more familiar to outside industries, is only just beginning to gain traction with utilities. The total market approach helps this utility ensure that not only does the overall market respond positively to ads, but also multicultural customers.

Getting this feedback through focus groups helps the utility realize when a message may resonate with the overall customers, but not others. If that happens, the utility will go back to the drawing board to develop a campaign that meets the needs of the whole market. In other words, rather than just translating one message into different languages, the utility works closely with minority agencies to develop creative concepts that will resonate with various customer segments.

As an example, to increase awareness around the dangers of downed power lines, the utility developed an advertising campaign that featured shovels, clippers, and ladders wrapped in yellow caution tape with the message "Keep tools 10 feet away from power lines." While the ad was received positively by the overall market, it did not work for multicultural customers. Further exploration uncovered that some multicultural customers associated the yellow caution tape with police tape, while others did not make the connection between the tool and power lines. Based on consumer feedback, the utility developed a new ad which instead featured stick figures climbing ladders and clipping branches near power lines. This new approach worked much better for all customers

Conclusion

As the demographic landscapes shifts to a broader mix of races and ethnicities, it is increasingly important for utilities to understand their customers to better communicate, cross-sell the right combinations of programs, and target the right customers with rebates and incentives. While non-White customers report participation in energy-efficiency programs at higher rates within their own customer segments than do white customers, they still represent a small overall share of program participants.

This paper highlights the market opportunity of more effectively engaging specific minority racial and ethnic customers, provides some examples of how utilities have successfully and strategically engaged these customers, and discusses opportunities for engagement when time and resources are limited.

Program administrators have to take a closer look at demographic trends and opportunities to cross-sell services to fit the right message to the right individuals. Future research should explore the needs of other racial and ethnic groups not represented in this paper, and specific programming and messaging needs for increased participation and energy savings.

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