Understanding Innovation-Decision Gaps in Utility Program Offerings

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ABSTRACT

Utilities remain at the forefront of decarbonization efforts, offering programs to support customers in reducing energy use, shifting demand, and transitioning to lower-carbon fuel sources. Customer engagement with utilities, however, remains largely stagnant and aren't yet reaching enough households to reach climate goals. Many customers are either unaware of or uninterested in many utility offerings, and fail to consult utilities on important energy-related purchases and upgrades. In this paper, we present findings from a survey that examined gaps along the decision-innovation process of utility program adoption, focusing on gaps in the knowledge, persuasion, and decision phases of adoption. Looking at a set of seven utility programs offered by four utilities across the US, we found an average participation rate of 19%, with the remaining customers being (1) unfamiliar with programs (43%); (2) aware but not interested in programs (15%); or (3) interested but not yet participating in programs (23%). Regression analyses identified demographic and psychographic predictors of familiarity, interest, and participation. We conclude with a set of behavioral science-informed recommendations for how utilities may address these gaps in the knowledge, persuasion, and decision phases of program participation; these recommendations include identifying and using trusted sources and channels, messaging beyond financial incentives, and incorporating nudges to move interested customers into action.

Introduction

As the need for decarbonization becomes increasingly urgent, utilities are on the forefront of efforts to decarbonize residential energy use. Through a portfolio of offerings, utilities provide support to customers in reducing energy use, increasing efficiency, shifting demand, and moving to lower-carbon fuel sources (Sussman and Chikumbo 2016). Yet customer engagement with utility decarbonization offerings remains stagnant, despite increasingly innovative strategies to reach and engage customers (Uplight 2022).

Prior work points to several possible explanations for this low engagement, including lack of trust in utilities (Horne et al. 2022; Tweed 2013), low program awareness (Illume Advising 2022), and confusion around utility regulatory frameworks (Glavan 2021). While past studies have focused on understanding predictors of program awareness (Forster et al. 2022), interest (Familia and Horne 2022), and/or participation (e.g, Frank and Nowak 2016; Pigman et al. 2021), very few have looked at all of these variables together.

Diffusion of Innovation Theory posits that adoption of a new technology (in this case, a utility program) is a multi-stage process that includes learning about the program, forming attitudes toward it, and making the decision to participate (Rogers 2003). Therefore, a more nuanced approach to program participation would incorporate all three phases to identify and overcome gaps along the innovation-decision process. Such is the approach that this paper takes.

Innovation-Decision Framework

Rogers' innovation-decision framework, pictured in Figure 1, provides a helpful guide for exploring program adoption for individual customers (Rogers 2003). It describes a five-stage process of how people move from no knowledge of a program to embracing and adopting it.

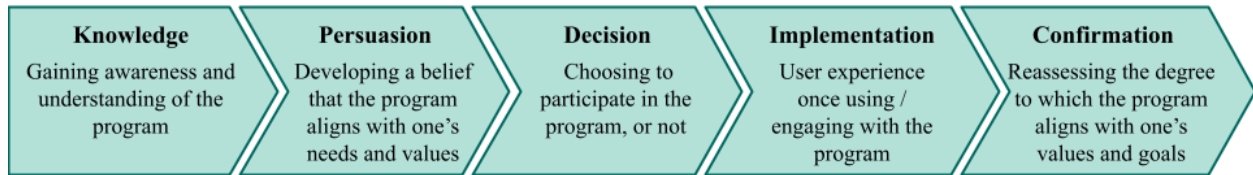| Knowledge	Persuasion	Decision	Implementation	Confirmation
Gaining awareness and understanding of the program	Developing a belief that the program aligns with one's needs and values	Choosing to participate in the program, or not	User experience once using / engaging with the program	Reassessing the degree to which the program aligns with one's values and goals

Figure 1. Innovation-decision process, adapted from Rogers (2003)

These stages are iterative and the process does not follow a linear path. For example, the Persuasion stage can begin as soon as customers become aware of the program, even while they are still acquiring knowledge to influence their decision. This iteration allows us to consider the innovation-decision stages as dimensions against which customers can be mapped: for example, customers may lack awareness but have high potential for interest, or may be interested but have yet to make the decision to participate.

Current Study

In this work, we apply the innovation-decision model to the case of utility programs to better understand where in the adoption journey people are getting stuck, how this pattern varies across different programs, and whether there are any demographic or attitudinal predictors. This work helps establish a more nuanced understanding of the barriers at different stages of the innovation-decision process.

By examining where knowledge, persuasion, and decision gaps exist, and which factors may predict them, we can identify areas for targeted action to better meet customer needs. This provides insights to help us design or refine programs to enhance customer perceptions and support both interest and uptake.

Methods

We conducted an online survey of 1,016 residential energy customers in May-June 2023. We used a panel provider to recruit 250 participants from each of four utility territories: Pacific Gas & Electric (California), Georgia Power (Georgia), Con Edison (New York), and Consumers Energy (Michigan). These territories were selected to provide geographic and demographic diversity while enabling us to map actual utility program availability for each respondent. To be eligible for the study, participants were required to be (1) a customer of one of the utilities listed above, and (2) responsible for paying their electric bill and making energy-related decisions. Participants for each utility territory were recruited to be representative (at the state level) on income and age. A breakdown of demographics across the full respondent sample is provided in Figure 2.
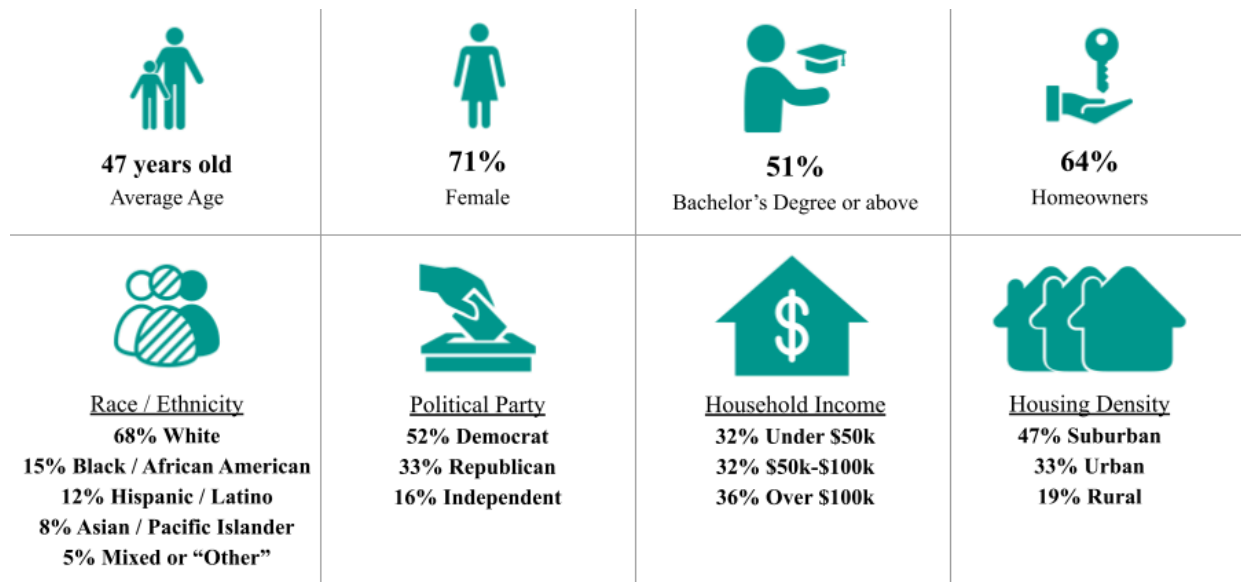
Figure 2. Demographics breakdown across the full sample of participants

Measures in this study include demographics, general and utility attitudes, and questions on the program innovation-decision process. For the latter, participants were shown a set of utility programs offered by all four utilities with descriptions (see Table 1) and asked about their familiarity (knowledge stage), interest (persuasion stage), and participation (decision stage) in the programs. Table 2 outlines key items and response options from the survey.

Table 1. Utility program offerings

Program Name	Description
Community Solar	A program in which you can invest an additional amount on top of your energy bill each month to fund a local community solar project.
Demand Response	A program that connects with your smart thermostat or other device and adjusts their energy use to manage electricity demand. Devices turn off and on automatically and you get a financial incentive for participating.
High Usage Alerts	A program in which you opt-in to getting alerts via, for example, text or email, when you are on track to use a higher amount of energy than normal.
Real-Time Energy Monitoring	A program in which you are shown your energy use in real time or in detailed intervals, such as hourly.
Renewable Energy Rate	An electricity rate that allows you to choose what percent of your monthly electricity you would like to source from renewables, such as solar or wind.
Time Variable Rate	A rate that varies over a given period of time. Often, this is a time-of-use rate, in which your energy rate varies based on the time of day.
Utility Marketplace	A site where you can find and purchase energy products, view reviews, and see rebates and incentives that help make the product more affordable.

Table 2. Survey questions, response options, and coding

Category	Variable	Item	Options (coding for regression)
Demographics	Age	How old are you?	Whole number of years (continuous)
	Gender	How would you describe your gender?	1- Man; 2 - Woman
	Race	Which of the following best describes you?	0 - Non-white; 1 - White
	Education	What is the highest level of education you have completed?	0 - Less than Bachelor's Degree; 1 - Bachelor's Degree or above
	Income	In 2022, what was your total household income before taxes?	1 - Less than $25,000; 2 - $25,000 to $49,999; 3 - $50,000 to $74,999; 4 - $75,000 to $99,999; 5 - $100,000 to $149,999; 6 - $150,000 or more
	Home Ownership	Which of the following best describes your current home?	0 - Rented; 1 - Owned by you or someone in your household
General and Utility Attitudes	Environmental Attitudes	(1) Whenever possible, I try to save natural resources; (2) It makes me sad to see forests cleared for agriculture; (3) Protecting the environment is more important than protecting people's jobs; (4) Humans are severely abusing the environment	1 - Strongly disagree; 2 - Disagree; 3 - Neither agree or disagree; 4 - Agree; 5 - Strongly agree (α = .71, average used for regression)
	Utility trust	To what extent do you trust your electric utility to: (1) Inform me about outages; (2) Provide fair prices; (3) Help me reduce my energy use; (4) Help me save money off my energy bill	1 - Strongly distrust; 2 - Distrust; 3 - Neither trust nor distrust; 4 - Trust; 5 - Strongly trust (5) (α = .87, average used for regression)
	Utility Satisfaction	How satisfied are you with your electric utility in general?	1 - Extremely dissatisfied; 2 - Dissatisfied; 3 - Neither satisfied or dissatisfied; 4 - Satisfied; 5 - Extremely satisfied
Decision-Innovation Process	Familiarity	To what extent are you familiar with each of these programs?	1 - Completely unfamiliar; 2 - Unfamiliar; 3 - A little familiar; 4 - Familiar; 5 - Completely familiar (α = .83, average used for regression)
	Interest	Based on the descriptions provided, how interested would you be in each of these programs?	1 - Extremely uninterested; 2 - Uninterested; 3 - Neither interested or uninterested; 4 - Interested; 5 - Extremely interested (α = .73, average used for regression)
	Participation	Have you participated in or used any of these programs?	0 - No; 1 - Yes

Findings

Customers' General and Utility Attitudes

Table 3 reports descriptives on the general and utility attitude as well as the decision-innovation questions. All items were asked on a Likert scale of 1-5, where 3 represents a neutral opinion. As such, anything below 3 for these items can be considered a negative response with anything above 3 considered positive.

All reported attitude scores were all relatively positive. Environmental attitudes were rated the highest, with an average of 3.76 and a standard deviation of 1 indicating that few reported an overall negative rating. We did not find any significant differences by utility, despite recent research (Antonopoulos et al., 2024) showing regional differences in environmental attitudes. Utility satisfaction and trust both rated slightly positive at 3.53 and 3.30, respectively. We did find significant differences by utility for both trust and satisfaction, with PG&E customers reporting significantly lower trust and satisfaction than the other three utilities. None of these scores rated above a 4.0 average, which would be considered a high rating.

Looking across regions, utility satisfaction and trust was significantly lower for PG&E customers. However, there were no significant differences in environmental attitudes, program familiarity, or program interest for customers in different regions.

Table 3. General and utility attitude descriptives

Construct	Mean (SD)				
	Overall	Con Edison	Consumers	Georgia Power	PG&E
Environmental attitudes	3.76 (1.01)	3.88 (0.98)	3.69 (0.99)	3.61 (1.08)	3.76 (1.01)
Utility satisfaction	3.53 (1.00)	3.52 (0.96)	3.61 (0.90)	3.78 (0.90)	3.18 (1.13)*
Utility trust	3.30 (1.10)	3.30 (0.91)	3.52 (0.85)	3.56 (0.81)	2.97 (1.00)*
Program familiarity	2.68 (1.14)	2.64 (0.77)	2.49 (0.76)	2.66 (0.77)	2.65 (0.81)
Program interest	3.20 (1.29)	3.15 (0.78)	2.93 (0.88)	3.24 (0.83)	3.12 (0.79)

* indicates that this utility is significantly different from the others at the $p < .05$ level

Placing Customers Along the Innovation-Decision Process

Based on responses to the three decision-innovation questions, we grouped participants into one of four groups for each utility program: unfamiliar, uninterested, interested, and participating (see Table 4). With just under 20% of customers on average reporting being program participants and not a single program with more than a third participants (similar to a recent study by Antonopoulos et al., 2024). In general, unfamiliar was the largest group, suggesting knowledge gaps are key to address. On average, 43% of customers were unfamiliar with programs and the only program in which unfamiliar was not the modal response was high usage alerts. Interestingly, the second largest group was "interested"; these customers indicated being familiar with and interested in programs but not yet participating. This suggests that many customers are willing to engage and may face logistical barriers or just need a nudge to move from interested to participating.

Table 4. Participants in each stage of knowledge, interest, and participation in programs

Program (n)	Unfamiliar (< 3 on "To what extent are you familiar?")	Uninterested (familiar & ≤3 on "How interested are you?")	Interested (familiar & >3 on "How interested are you?")	Participating ("Yes" to "Are you participating?")
Community Solar (555)	51%	20%	20%	9%
Demand Response (536)	53%	15%	18%	14%
High Usage Alerts (547)	29%	13%	26%	32%
Real-Time Energy Monitoring (555)	42%	12%	27%	19%
Renewable Energy Rate (563)	40%	17%	27%	16%
Time Variable Rate (565)	36%	13%	21%	29%
Utility Marketplace (561)	50%	15%	22%	13%
Average across all programs	**43%**	**15%**	**23%**	**19%**

We proceeded to ask participants who reported being unfamiliar with each program if they had become interested after learning about it in the survey (see Figure 3). Interestingly, we found a high percentage of customers who were initially unfamiliar with programs and then indicated interest when asked. These numbers were actually higher than the interest numbers among those who reported being familiar with these programs (see above). This suggests that the point at which customers are made aware of a program is a key opportunity to move them from unaware to interested and potentially into participation.
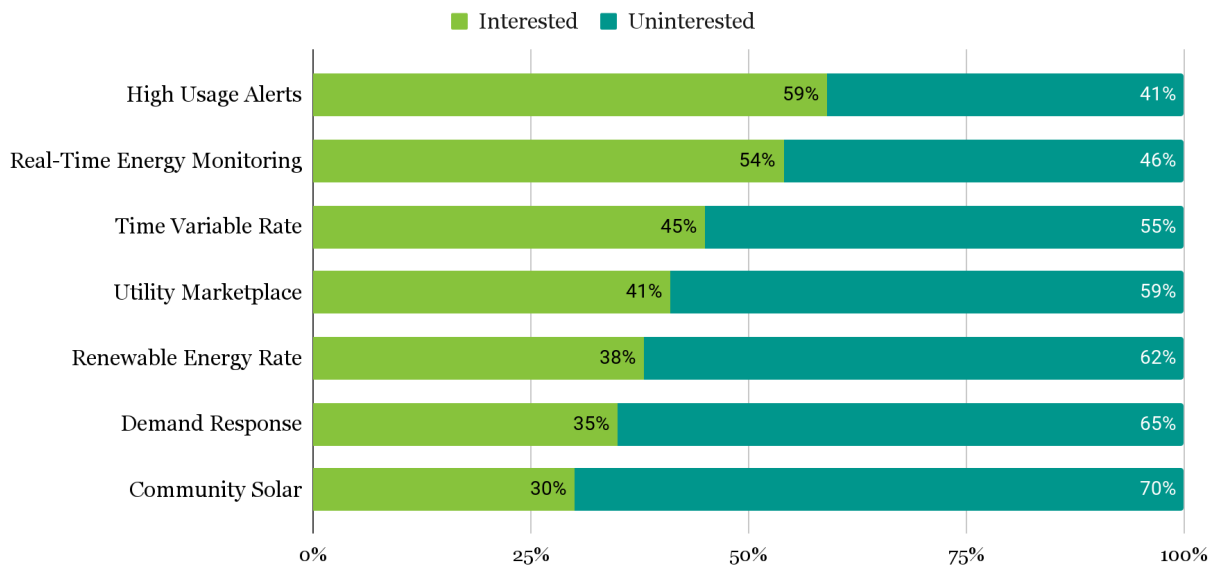

Figure 3. Interest levels amongst participants who were unfamiliar with each program.

Identifying Predictors Across the Innovation-Decision Process

We ran three Ordinary Least Squares (OLS) regression models – one for each innovation-decision phase – with the demographic and attitude items above as predictors. Missing values were addressed using the multivariate imputation with chain-equation method, and categorical variables were converted to dummy variables to avoid multicollinearity. All three regression models are presented in Table 5 for significant variables at the .05 or higher level.

The familiarity regression was the strongest, with the model explaining 48% of variation, which is considered a large effect size in behavioral science (Cohen, 1988). Every demographic and attitude in our model predicted variance, with strong relationships for both utility trust and environmental attitudes. Looking at demographics, customers were more likely to be familiar with utility programs if they were younger, male, non-white, less educated, higher income, and renters. Some of these findings are inconsistent with past research, especially the renter findings (Pigman et al., 2021). Also interesting, we found utility satisfaction to be negatively correlated with program familiarity, though this effect was smaller and less significant than the others.

The interest regression was the weakest, with only 14% explanatory power (a small effect size per Cohen, 1988) and half of the modeled variables predicting interest. The findings for age and income were consistent but gender and race were not predictive and education changed direction, with higher education predicting higher program interest. We see similar positive effects for environmental attitudes and utility trust on interest, with satisfaction not predictive.

Finally, the participation regression fell somewhat in the middle of the two previous, with the full model predicting 20% variance in program participation (a small-medium effect size per Cohen, 1988). Age stayed consistent across all three models, suggesting a greater gap in familiarity, interest, and participation for older customers. Gender and race were also consistent with familiarity, while neither education or income were predictive of participation, interestingly. Finally, environmental attitudes and utility trust remained predictive of program participation, reinforcing their importance across the innovation-decision process.

Table 5. Regression models for each phase of the innovation-decision process

Variable	Familiarity			Interest			Participation		
	B	SE	β	B	SE	β	B	SE	β
Age	-0.008	0.001	-0.358[*]	-0.010	0.002	-0.007[***]	-0.002	0.000	-0.090[***]
Gender	-0.258	0.055	-0.110[*]	--	--	--	-0.064	0.019	-0.028[***]
Race	-0.235	0.043	-0.235[**]	--	--	--	-0.071	0.004	-0.000[*]
Education	-0.056	0.014	-0.013[*]	0.069	0.020	0.068[***]	--	--	--
Income	0.060	0.018	0.085[**]	0.061	0.026	0.061[*]	--	--	--
Home Ownership	-0.181	0.059	-0.129[**]	--	--	--	--	--	--
Env. Attitudes	0.159	0.035	0.130[***]	0.270	0.050	0.163[***]	0.060	0.012	0.032[***]
Utility Trust	0.251	0.038	0.017[***]	0.127	0.054	0.100[*]	0.041	0.013	0.043[**]
Utility Satisfaction	-0.047	0.034	-0.129[*]	--	--	--	--	--	--
Overall Model	F= 14.74 R^2 = 0.482[***]			F = 7.26 R^2 = 0.140[***]			F =7.77 R^2 = 0.202[***]		

[*] p<.05, [**] p < .01, [***] p < .001

Discussion

Across programs, it is clear that a combination of knowledge, persuasion, and decision gaps are preventing widespread adoption. Programs with low levels of initial familiarity, but high interest once participants become aware, suggest that a knowledge gap is acting as a critical barrier to adoption. For example, 50% of respondents were not aware of utility marketplace programs, but once they were made aware, 41% of those respondents became interested.

Persuasion gaps are also prevalent, for some programs more than others. For example, 20% of respondents were uninterested in community solar, and of the 51% unfamiliar with this program, over two thirds were not interested even when made aware of it.

Decision gaps exist where people are interested in the program but not yet participating. For example, over a quarter of respondents indicate they are interested in real time energy monitoring and high usage alerts but are not yet participating. These patterns highlight the need for interventions that can address knowledge, persuasion and decision gaps to enhance participation.

To support strategic behavior change, we drafted a communications framework that synthesizes the following three seminal theories to walk through the decision-innovation process from an intervention perspective (see Figure 4). According to the Theory of Planned Behavior, behavioral **intention** is a necessary–but not sufficient predictor–of **action** (Ajzen 1991). The Information-Motivation-Behavioral Skills model states that an intervention should **inform**, **motivate**, and **empower** people to drive behavior (Fisher et al. 2003). Finally, **nudges** have been found effective in helping to translate intention into action (Thaler and Sunstein 2009).
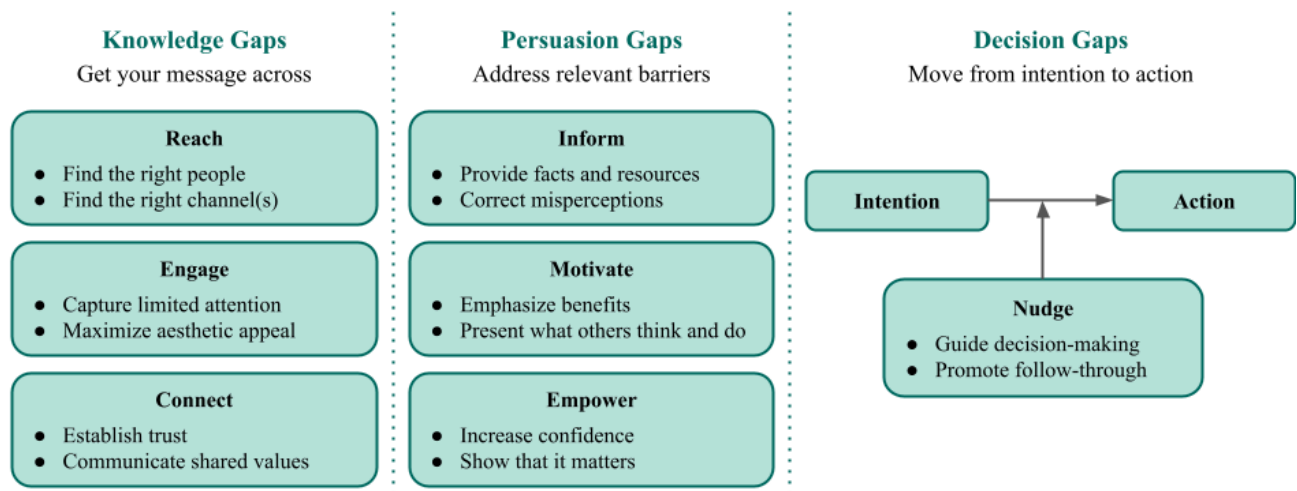

Figure 4. See Change Institute (SCI) behavioral messaging framework

Using this model as a framework and synthesizing it with specific findings from the current study, we have divided our discussion into three sections: (1) Get your message across (for knowledge gaps), (2) Address relevant barriers (for persuasion gaps), and (3) Nudge (for decision gaps). Each section explains the importance of these factors and demonstrates how to leverage insights from them to improve utility program participation. Importantly, within each section, a communications message doesn't need to address *all* boxes; rather the message should include strategies that address the most important barriers and friction points.

Knowledge Gaps: Get Your Message Across

Before customers can become interested or participate in any programs, they must first become aware of its existence (for example, through messaging campaigns). Communications about programs must reach customers, capture their limited attention, and engage them long enough to absorb the information. Key steps in this phase include:

- **Reach the target population**. A recent study found that about half of energy customers hate opening their electricity bills, with another 59% saying that some parts of the bill seem like they are written in another language (SECC 2022). To reach the broadest customer base possible, additional channels may be needed. Determining where customers get energy-related information (e.g., bill mailers, social media, news) will help strategically select channels that maximize the likelihood of reaching them.
- **Engage customers**. Research suggests that people are more likely to engage with information that is visually appealing and contains culturally relevant pictures (Kreuter and McClure 2004). Adjusting the colors, fonts, pictures, and languages in marketing materials accordingly can communicate cultural competency and relevancy, which helps engage customers with the content. Additionally, be aware of text density: too much will lead to cognitive overload and disengagement with material.
- **Connect with the target audience**. Messages are more likely to have an impact if they come from a source that is credible and trusted (Priester and Petty 2003). When framing and delivering messages to customers, utilities should establish two broad types of trust in the message source: (1) competence-based trust (perceived expertise and experience) and (2) integrity-based trust (perceived honesty, fairness, openness, and concern). When an audience does not trust a message, they will dismiss it.

Familiarity was predicted by demographics, including age, gender, income, and race. This suggests that there may be some systematic bias in terms of who is and is not receiving and/or paying attention to utility communications. Specifically, women, older adults, lower income, and white individuals are less likely to be familiar with programs. Further research is needed to understand why these groups are less familiar and what channels could reach them.

This study found both that trust in utilities is not particularly high and that utility trust was a key predictor of program familiarity. It may be better to engage trusted communicators, such as independent researchers and community leaders. When sharing complicated or technical information, which may be necessary when communicating about some program offerings (e.g., demand response or time variable rates), perceived trustworthiness of the information *source* is particularly important: decision-makers often over-rely on source credibility to determine whether they should believe information. (Frederiks et al. 2015). For this reason, using a trusted messenger is a critical strategy to ensure effective communication.

Two features generally determine whether a source is credible or not: perceived *expertise* and perceived *trustworthiness* (Pornpitakpan 2004). Perceived trustworthiness has been found to be more important than expertise (McGinnies and Ward 1980). Further, people are less likely to discern false information from someone that they trust, and are likely to retain trust in those that they identify with (Swire‑Thompson et al. 2020). As such, the use of peer testimonials and/or sources perceived to be trustworthy, such as doctor, scientists, and teachers (Ipsos 2022) are highly recommended.

Persuasion Gaps: Address Relevant Barriers

Once customers are engaged with information about a program, the next step is to ensure that program messaging addresses any relevant barriers to participation. These may include:

- **Inform**. Provide succinct and accurate program information; identify and address any inaccurate beliefs about the program and/or utility.
- **Motivate**. Connect program benefits to outcomes that the customer values, and motivate them to participate via extrinsic (e.g., financial) and intrinsic (e.g., social) mechanisms.
- **Empower**. Increase customers' sense of their ability to engage in a target behavior and/or their belief that engaging in a behavior matters (Bandura 1977).

It is important to note that *perceived* barriers can impede behavior change just as much as actual barriers. If a customer believes that a program is too costly or difficult to enroll in (even if not true), they are less likely to participate. Addressing perceived barriers is vital to enrollment.

When shown multiple benefits, people tend to pay preferential attention to the one they care about most (Ungemach et al. 2017). Fundamentally, energy is a commodity that customers pay for. As a result, most messages around energy use are related to money (e.g., how customers can save money by doing a specific action).

However, research has consistently found that energy choices are often motivated by non-financial factors (Dillahunt et al. 2009). For example, this study found that environmental beliefs are strongly correlated with program familiarity and interest; however, this pattern is not often reflected in program messaging. Research consistently finds that across the political spectrum, belief in climate change is relatively high (Howe et al. 2015). Further, pairing climate change messages with other environmental messages that emphasize air and water quality can further mitigate any risk of environmental messages backfiring (Tabi and Wüstenhagen 2017).

In addition, a person's perceptions of others (social norms) influences their own behaviors (Cialdini 2007). People are more likely to engage in an action when they believe others also are doing it or that others approve of it. For example, when people believe others are reducing their energy use, they too will reduce their energy use (Schultz et al. 2007). Sharing norms about peer participation or interest in programs can help boost support.

Consider packaging programs together in messaging to promote a choice frame. Providing customers with choices allows them to feel like they are in control and can make their own decisions about their energy use (Lefcourt 1973). Self-Determination Theory suggests that the more control a person feels, the more likely they are to follow through with a behavior (Ryan and Deci 2000). Adding this dimension of choice to a behavior increases a person's intrinsic motivation (i.e., an internalized desire to engage in a behavior), which is essential for getting people to act on their intentions (Zuckerman et al. 1978). This is especially the case in instances where people do not feel like they have a lot of power, such as may be the case for many low-income customers (Inesi et al. 2011). Overall, choice frames promote follow-through by making people happier and more persistent with their decisions.

Finally, when people feel higher self-efficacy, they are more likely to take action and persist when faced with difficulty. Messaging that emphasizes both the ease of program enrollment and the positive impact that participation will have on the customer and society are more likely to be effective than either message alone (Rogers 1975).

Decision Gaps: Move from Intention to Action

While behavioral intention is a leading predictor of behavior, the correlation is not perfect. As we saw in our findings, 23% of customers (on average) were interested, but not yet participating, in utility energy programs. Once customers have the intention to engage in a behavior, nudges can help facilitate the translation of intentions into action.

Nudges are subtle verbal or environmental cues that target people's implicit information processing and subsequently affect their behavior in predictable ways (Thaler and Sunstein 2009). They are used to guide decision-making and promote follow-through with intended actions. Numerous nudges have been identified in the scientific literature, with more emerging each year. Below, we highlight four suggestions based on existing research and the findings from this gap analysis study.

Include calls to action in communications. Our study found higher levels of interest among customers who were hearing about programs for the first time than among those who were already familiar with the same programs. One way to leverage early interest is to include a call to action (CTA), such as "sign up," "indicate interest," "request information," or "schedule an interview," in all program communications and materials. CTAs can help maintain early interest and move curious customers along the decision process. Providing a CTA button directly in the body of an email or website not only reduces the effort it takes for people to act, but also makes program messaging easy to find. The Principle of Least Effort asserts that people like to use the least amount of effort necessary to accomplish a goal (Zipf 2016); this is true regardless of how able, or confident in their ability, a person is to find relevant and accurate information.

Ask for a commitment. One of the most effective CTAs is to ask customers to commit immediately, such as clicking a button to schedule an appointment. A recent meta-analysis found commitment strategies to be highly effective for environmental behaviors, especially when combined with other intervention strategies (Lokhorst et al. 2013). Why do commitments work? People like to be consistent, and will seek to adjust behavior to align with their previous actions. As a result, their brains will treat even a small commitment like a previous action, increasing the likelihood of follow-through on an action over expressing interest alone.

Prompt customers make a plan. For more complex behaviors, prompting people to create a plan (or implementation intention) early in the process can also increase follow-through (Gollwitzer and Sheeran 2006). In order to create an implementation intention, messages should ask customers to make specific plans regarding when, where, and how they will enroll in the program or follow up for more information. Because the process of creating specific implementation intentions involves committing to a series of behaviors, people are more likely to follow through on each behavior than if they made a vague plan or no plan at all. Additionally, creating concrete plans allows customers to better anticipate and prepare for any obstacles that may arise.

Provide action plans and lists. Nudges like commitments and implementation intentions will work best among customers who are already motivated and empowered, or when combined with additional motivation messaging strategies. Some programs, however, such as those involving home upgrades, require more planning or resources than others. Providing action plans and lists of resources may help customers navigate these obstacles and be more successful in translating their intentions into action. While every customer journey may be different, including a checklist of "things to look out for" or "key steps" helps demystify the process and gives customers a roadmap to follow as they progress through their own process.

Conclusion

       This research set out to understand gaps in the innovation-decision process of utility programs. Overall, we identified a **knowledge gap** between the programs that are offered and the programs that people are aware of; a **persuasion gap** among those who are not interested; and a **decision gap** wherein many customers are interested, but not yet participating, in programs. We also identified several key predictors across the decision-innovation process. These findings suggest that trust is key to reaching customers, and that environmental messaging may be more beneficial than harmful to garnering interest in programs.

       This study has provided further evidence that the innovation-decision process may be helpful in expanding the way we think about utility program participation. It extends our team's past research categorizing customers along the innovation-decision process (Karlin et al. 2015; Sanguinetti, Karlin, and Ford, 2018) from product purchase to program participation. Such research can help identify promising opportunities to enhance communication, targeting messaging to specific customers and highlighting how programs can help them address their needs and/or deliver benefits they care about.

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