Deloitte.

Nudging residential energy consumers

Influencing energy management behavior in different consumer personas

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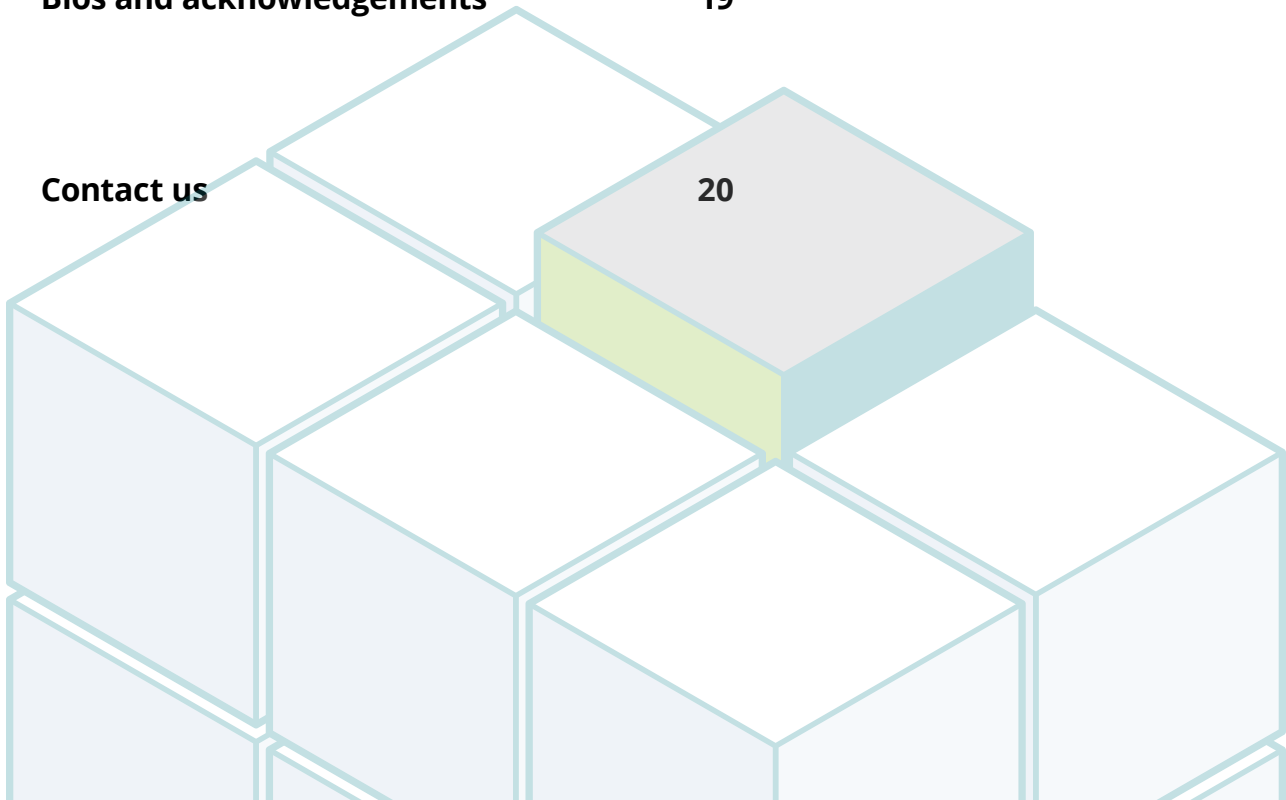


Introduction

About the Deloitte Resources Survey
Deloitte, with strategy and market research firm YouGov America, has completed annual nationwide Resources studies, from 2011–2020, to provide insights that can be useful in helping energy companies and businesses make energy-related investment and business decisions. The Study captures viewpoints through demographically balanced online interviews with household decision-makers for utility services. Survey populations have varied across years, with roughly 3,000 respondents in 2011 and an average of 1,500 from 2012 onward.

Over the past decade, Deloitte has conducted an annual Resources Study, in which we have documented the evolution of residential consumer energy management. Strikingly consistent over these 10 years is electricity providers' goal to engage their residential consumers in desirable energy management behavior and enhance the overall consumer experience. Desirable energy management behavior includes practicing energy conservation at home and participating in green energy or efficiency programs offered by providers. So how can electricity providers influence energy management behavior by appealing to their residential consumers' beliefs and attitudes? There is no single recipe for success, but our research shows that understanding the motivations and behaviors of certain residential consumer segments could help electricity providers and other stakeholders influence consumer decision-making.

Our research over the decade of the Resources Study supports three key conclusions. First, there are three key consumer "mindsets": environmental consciousness, technology acceptance, and economic sensitivity. Second, there are identifiable gaps among each mindset's beliefs, intentions, and actions. Commonly called the "belief-intention-action gap," this psychological phenomenon occurs when people act in a way that fails to support their values. Third, these mindsets can be used to create different residential consumer energy personas and indicate how consumers who fall under each persona might act and make energy choices.

Alongside these personas, we've leveraged behavioral economics to identify potential tactics for electricity providers to deploy to help sustained energy management behavior.

Behavioral economics and green “nudges”

Behavioral economics focuses on integrating the psychology of human behavior with economic decision-making and analysis. Nudging is a concept within behavioral economics. Coined by Richard Thaler and Cass Sunstein, nudges are actions taken by a third party to alter an individual’s “behavior in a predictable way without forbidding any options or significantly changing their economic incentives.”[1] Not surprisingly, there have been nudges for the sake of energy management, as well as climate or “green nudges,” in recent years. Some examples of green nudges include the installation of an ambient orb in homes to visualize energy use and comparison of energy use with neighbors.[2]

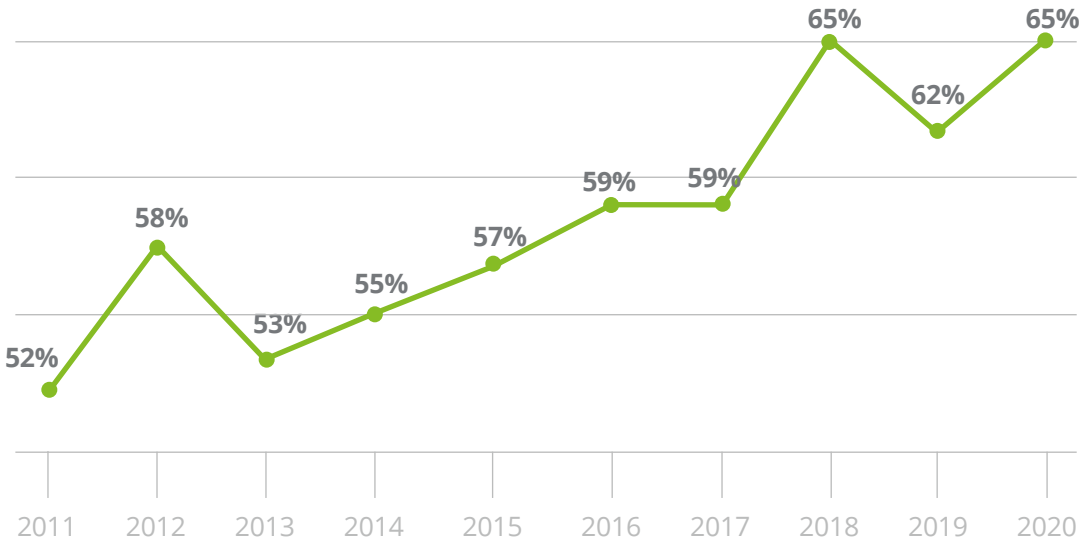
In our research, we’ve focused on several nudges, including (1) tailored messaging—appealing to one’s desire to appear eco-friendly in one’s self-image; (2) neighborhood benchmarking—appealing to one’s inclination to imitate the behavior of one’s peers, including benchmarking of energy consumption; (3) social trust reviews—also appealing to one’s inclination to imitate peer behavior by displaying favorable reviews of new products or programs from other consumers; and (4) green default setting—exploiting the behavioral effects of purposefully set defaults (where one has to opt out of a preset default for a green option).

Environmental consciousness

Consumers with this environmental consciousness mindset demonstrate a strong concern for climate change and their personal carbon footprint, believe in efficient use of energy, and promote higher renewable energy adoption in residential energy use. These beliefs influence these consumers' energy choices and actions.

Over the past decade of the Resources Study, the collective consciousness of consumers regarding environmental concerns has grown.

Figure 1. Percentage of residential energy consumers respondents showcasing the environmental mindset over the decade.



Source: 2011-2020 Deloitte Resources Survey data, Deloitte analysis

Environmental consciousness

Belief-intention-action gap: Not all consumers who have an "environmental consciousness mindset" necessarily act accordingly.

Differentiation based on the "belief-intention-action gap" separates residential consumers who perceive themselves as "environmentalists" from those consumers who actively engage in environmentalist activities such as participating in green or energy efficiency programs. There are three distinct ways in which environmentally conscious residential consumers approach energy efficiency and renewable energy in their everyday lives.

1. The first approach is taken by those residential consumers who **pioneer** actions around environmental concerns. These consumers are already participating or very interested in green programs and ready to pay a premium upward of 9% for green energy. Many of them also own rooftop solar or plan to purchase rooftop solar within the next year. *In 2020, roughly 29% of environmentally conscious consumers in the Resources Study take this approach.*

2. The second approach is taken by those residential consumers who are trying to **navigate** the various actions they can take to address environmental concerns. They have high intentions to be invested, but need nudges to help encourage green behavior. These consumers are interested in participating in green programs, if offered, and may be willing to pay a premium of up to 9% for green energy. They are already taking several actions toward energy-saving (actions that require a consistent level of effort on their behalf) and can be motivated to purchase solar rooftops in the future. *In 2020, roughly 45% of environmentally conscious consumers in the Resources Study take this approach.*

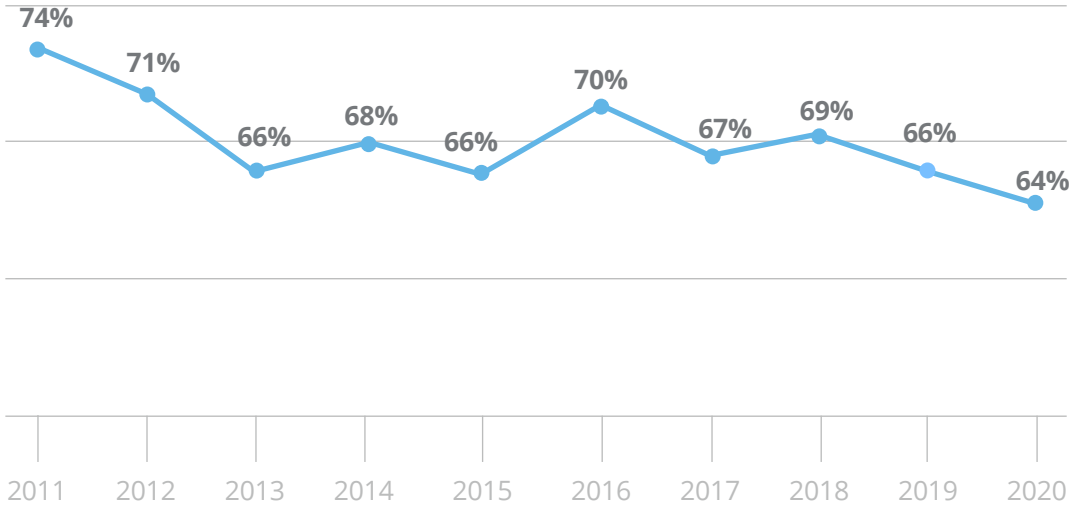
3. Similar to fans who watch their favorite sport but do not participate, the third approach is those who **spectate** when it comes to environmental concerns. Compared with consumers who take the other two approaches, these residential consumers take the least number of actions toward energy-saving. They do not wish to participate in green programs, and most of them do not plan to own residential solar. *In 2020, roughly 26% of environmentally conscious consumers in the Resources Study take this approach.*

Technology acceptance

Residential consumers with a technology acceptance mindset demonstrate a strong inclination toward using technology to support better energy decision-making. These consumers are motivated by engaging with their smart electricity meters to analyze energy data and exploring computer or software applications to use electricity more efficiently. These motivations influence these consumers' energy choices and actions.

Over the decade of the Resources Study, residential consumers exhibiting a technology mindset has moderated, even though it is present in a majority of respondents.

Figure 2. Percentage of residential energy consumers respondents showcasing the technology acceptance mindset over the decade.



Source: 2011-2020 Deloitte Resources Survey data, Deloitte analysis

Technology acceptance

Belief-intention-action gap: Not all consumers who have a "technology acceptance mindset" necessarily act accordingly.

Differentiation based on the "belief-intention-action gap" separates residential consumers who perceive themselves as high on the technology acceptance mindset from those consumers who actually take specific actions in this regard. There are two distinct ways that technology-accepting residential consumers approach their use of technology for energy consumption in their daily lives.

1. The first approach is taken by those residential consumers who are **confident** in their use of technology for energy purposes. They have programmable thermostats and some degree of home automation. They are also using software apps either from the electricity provider or otherwise to monitor their energy management efficiently. *In 2020, roughly 32% of technology-accepting consumers in the Resources Study take this approach.*

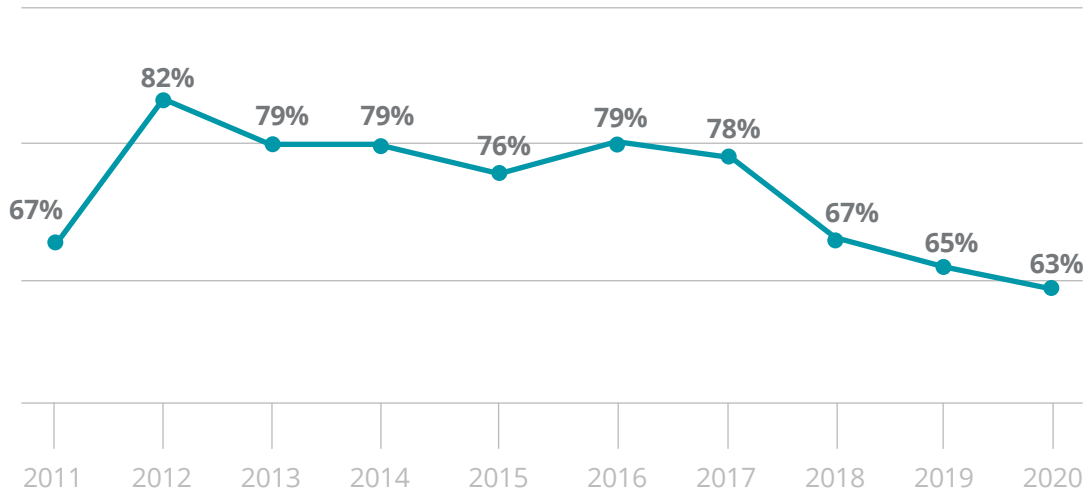
2. The second category is those who are **apprehensive** in their approach to using technology. They have basic thermostats with limited plans to upgrade. They are taking a limited number of high-tech actions to save energy and minimum degree of home automation. They are not adept at using software apps, either from the electricity provider or otherwise, to monitor their energy management efficiently. *In 2020, roughly 68% of technology-accepting consumers in the Resources Study take this approach.*

Economic sensitivity

Residential consumers with an economic sensitivity mindset demonstrate a strong concern for price or cost of energy while making energy-related decisions. Consumers evaluate the cost compared with the benefits of any decision with varying levels of sensitivity. Some shared behaviors include taking multiple steps to reduce electricity bills and making price an important aspect while choosing or switching electricity suppliers.

Over the decade of the Resources Study, the economic sensitivity mindset has seen some fluctuations, but remained above 60% for consumer respondents.

Figure 3. Percentage of residential energy consumers respondents showcasing the economic sensitivity mindset over the decade.



Source: 2011-2020 Deloitte Resources Survey data, Deloitte analysis

Economic sensitivity

Belief-intention-action gap: Not all consumers who have a "economic sensitivity mindset" necessarily act accordingly.

Differentiation based on the "belief-intention-action gap" separates consumers who perceive themselves as high on the economic sensitivity mindset from those consumers who take specific actions in this regard. There are three distinct categories of consumers representing different approaches to how economics impact their approach to energy-efficiency and adoption of renewable energy.

1. The first approach is taken by those residential consumers for whom price **drives** their energy decisions. Despite requiring an up-front investment, these consumers engage in numerous energy-saving actions. A change in price will easily trigger a decision for these consumers. Easily persuaded, these consumers would consider switching electricity suppliers if there were any potential savings (however minimal the amount may be). *In 2020, roughly 32% of economic-sensitive consumers in the Resources Study take this approach.*

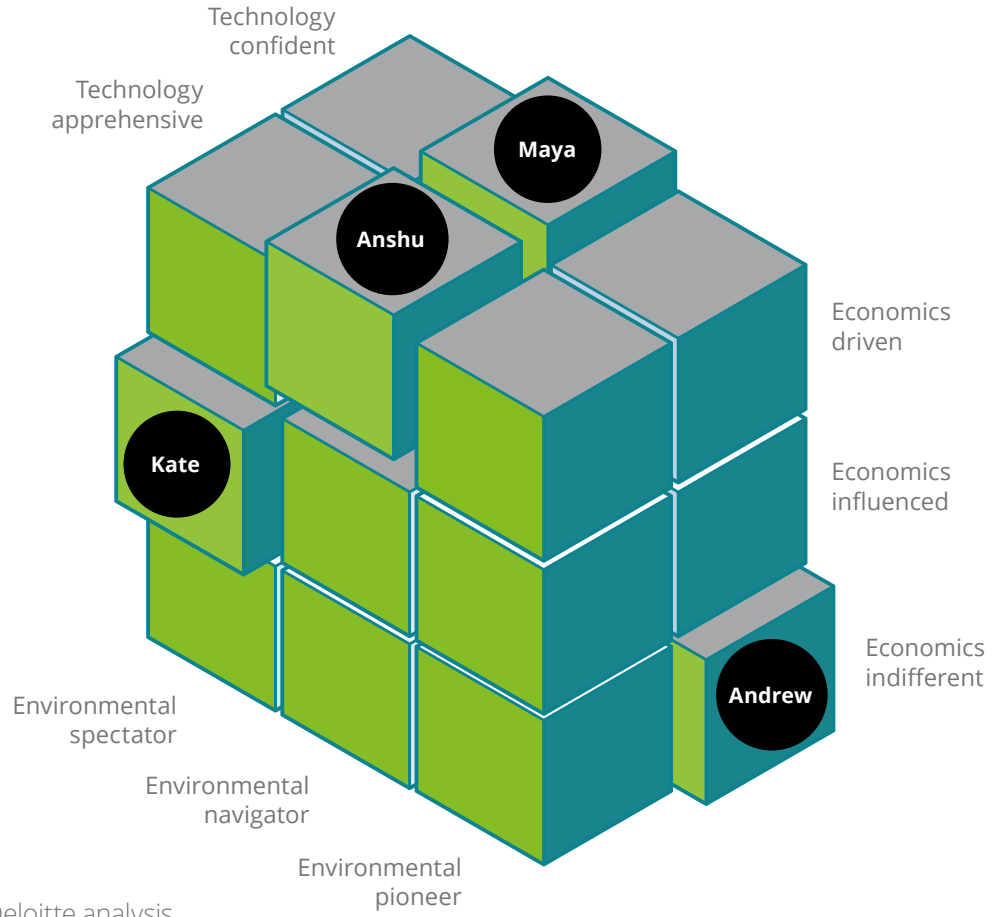
2. The second approach is taken by those residential consumers for whom price **influences** their energy decisions. They take a measured approach to energy decisions and thus engage in a modest number of energy-saving actions (especially those actions that require up-front investment). A change in price would only be one of many considerations that these consumers would review when making a new energy decision. Not easily persuaded, these consumers would need to realize savings above 10% before considering switching electricity suppliers. *In 2020, roughly 33% of economic-sensitive consumers in the Resources Study take this approach.*

3. The third approach is taken by those residential consumers who are **indifferent** with respect to price—they are fine with status quo. Individuals with this approach to price take a limited number of energy-saving actions. Typically, a change in price will not sway a new energy decision; additionally, there must be a savings higher than 15% to entice an individual with this approach to switch from his or her current electricity supplier. *In 2020, roughly 36% of economic-sensitive in the Resources Study consumers take this approach.*

Four key personas

Our research on the three residential consumer "mindsets" lends itself to the creation of numerous personas (figure 4). Here, we have focused on four key personas to more fully investigate how consumers who fall into each category make energy choices and act. Understanding the motivations and behaviors of certain residential consumer segments through these personas can help electricity providers and other stakeholders influence consumer decision-making and behavior.

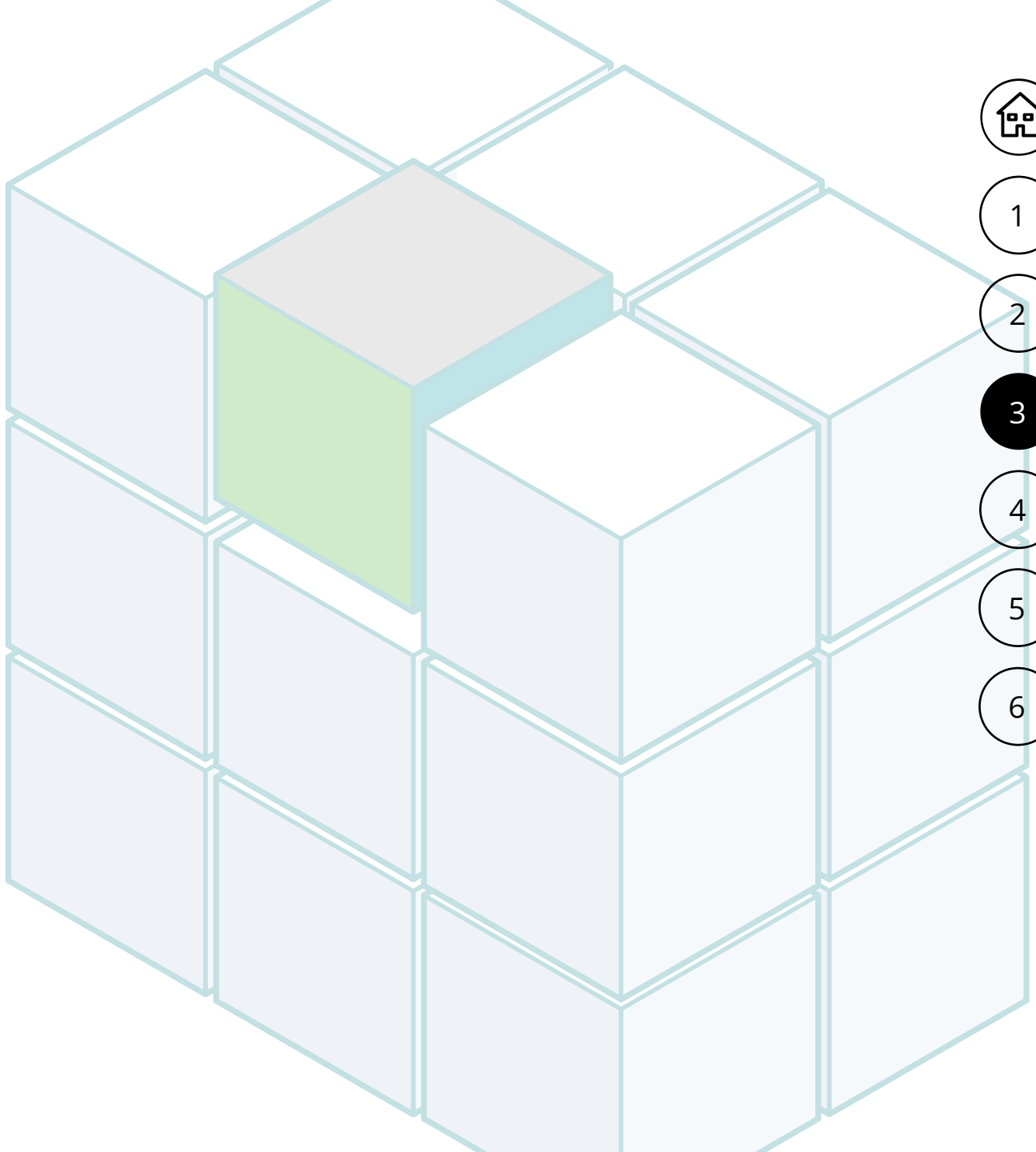
Figure 4. Identifying personas from the three residential consumer mindsets



Source: Deloitte analysis

Meet Anshu

Environmental navigator | Tech apprehensive | **Economics driven**



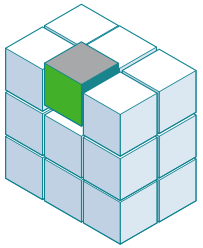
Anshu

Environmental navigator | **Tech apprehensive** | **Economics driven**

He is highly invested both in renewable energy and energy efficiency. Although not very adept at using technology, he is ready to make investments in new solutions that will have a long-term impact on his energy bills.

Anshu's energy preferences

- Plans to install solar panels on his rooftop within a year
- Does not use software apps for energy management
- Has a basic thermostat to control temperature settings in his home
- Is motivated by potential for cost savings
- Takes several energy-saving actions that require up-front investment beneficial program, and emphasizing the long-term economic benefits.



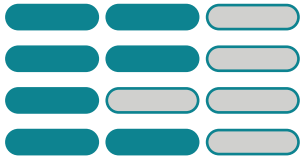
Dominant nudges*

Green default setting

Tailored messaging

Neighborhood benchmarking

Social trust reviews



*Source: Deloitte analysis

Scenario for increased engagement

Based on various interactions with Anshu, Anshu's electricity provider determines that he can be influenced to adopt more green energy solutions. As a result, the electricity provider wants to persuade him to enroll in a new community solar program that they are launching later in the year.

How to engage with Anshu

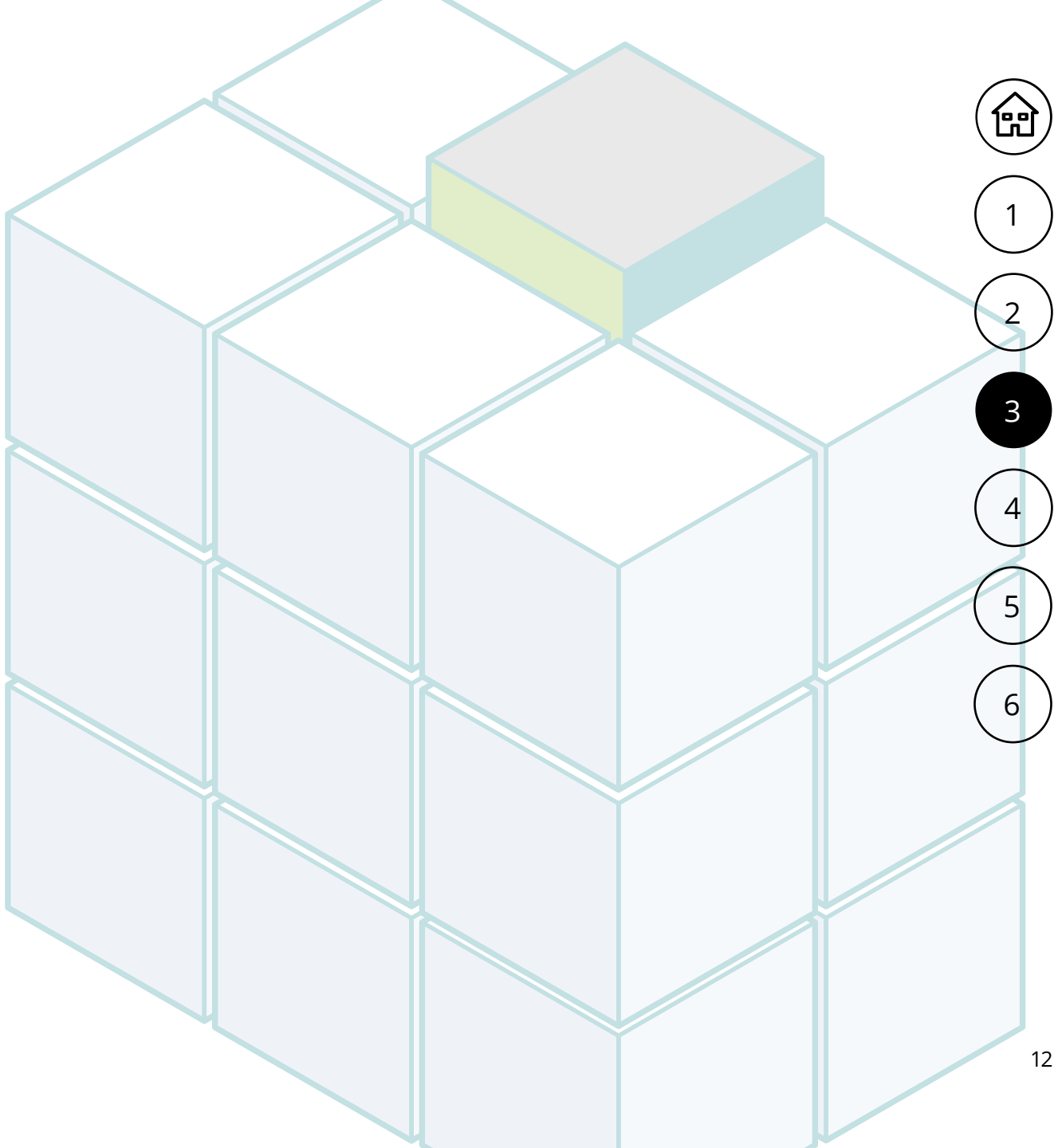
He can be motivated to invest in the community solar program by detailing the simple registration process, highlighting the "low-tech" nature of this environmentally beneficial program, and emphasizing the long-term economic benefits.

Channel: Anshu's electricity provider can communicate with Anshu through mail or written channels given Anshu's "technology apprehensive" approach. A "Recommended for you" section in his monthly electricity bill would be a suitable channel to persuade and engage Anshu. The electricity provider could consider sending a hand-written letter to Anshu explaining the new initiative and include imagery of solar panels.

Message: There are multiple messages that will likely resonate with Anshu including environmental messaging, energy efficiency and cost-savings potential. Demonstrating both the overall climate benefits and personal cost savings achievable over time can help persuade him (appealing to his price-driven mindset).

Meet Maya

Environmental navigator | Tech confident | **Economics driven**



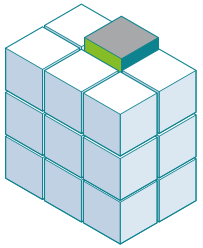
Maya

Environmental navigator | **Tech confident** | **Economics driven**

She has high intentions to invest in energy efficiency but can be pushed to do more. She is very adept at using technology and is focused on tactics to reduce her energy bill.

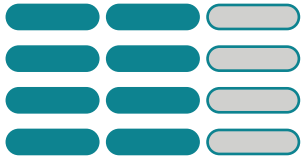
Maya's energy preferences

- Has shown interest in participating in green energy programs
- Uses multiple software apps for energy management with no integrated energy management solution
- Has programmable thermostat for temperature setting
- Is motivated by potential for cost savings
- Takes several energy-saving actions that require substantial investment



Dominant nudges*

Green default setting
Tailored messaging
Neighborhood benchmarking
Social trust reviews



*Source: Deloitte analysis

Scenario for increased engagement

In recent months, Maya has seen online advertisements for various home energy management apps; she explored the energy management section of both her electricity provider mobile app and website. As a result of her online and app activity, the electricity provider wants to engage Maya on their recently launched integrated home energy management solution.

How to engage with Maya

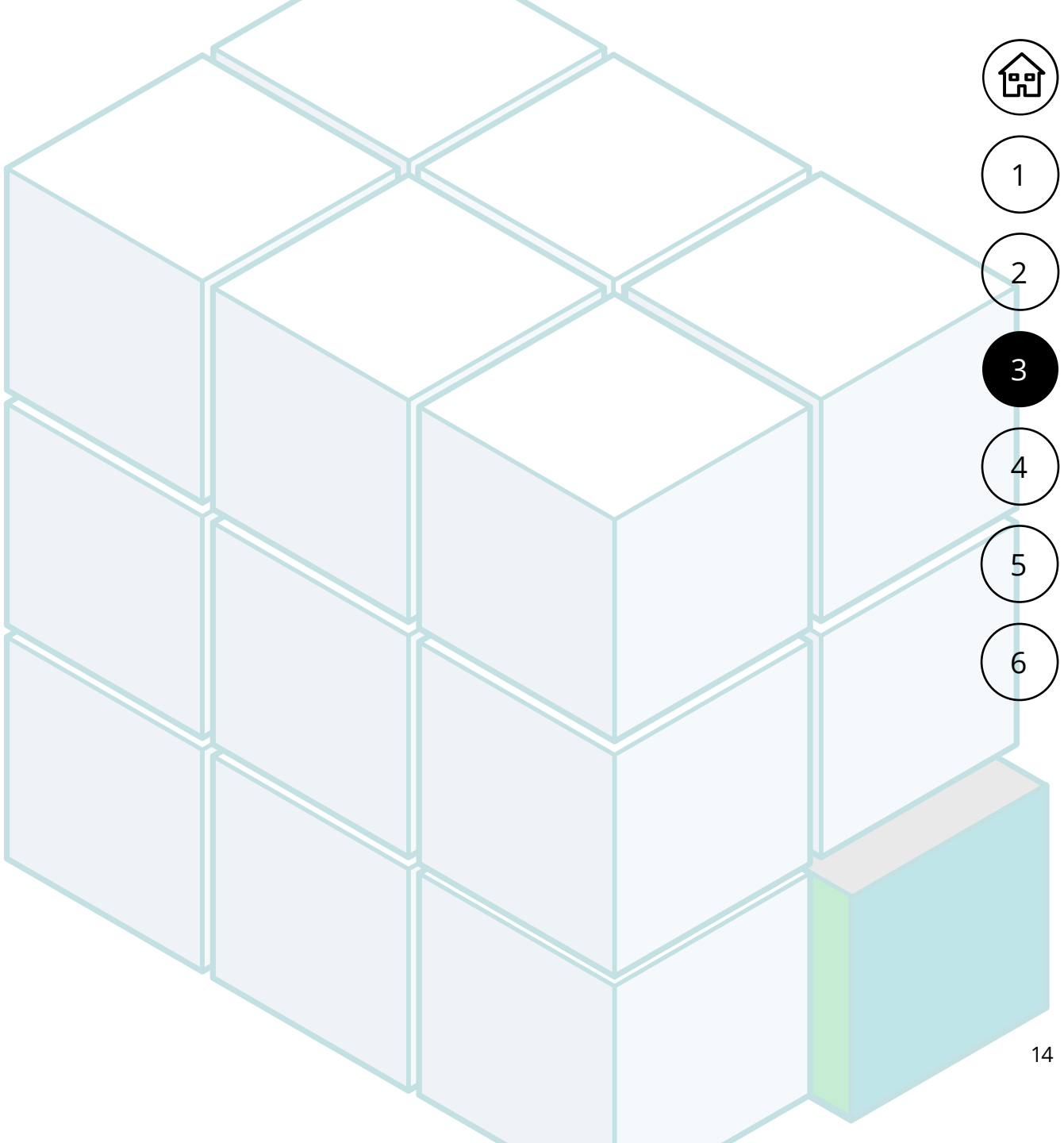
She can be motivated to purchase her electricity provider's home energy management solution by understanding the technological features of the system as well as the possible cost benefits.

Channel: Maya's electricity provider should consider focusing on technology savvy channels such as email messaging and targeted social media efforts to engage with Maya. Available online information might also include reviews/ratings from other users of the solution.

Message: There are multiple messages that will likely resonate with Maya including environmental benefits from increased energy efficiency, real-time energy data, and cost benefits. Providing her with the beta versions of new features may create interest and aid in long-term investment in the solution given her confidence in technology related to energy management.

Meet Andrew

Environmental pioneer | **Tech confident** | **Economics indifferent**



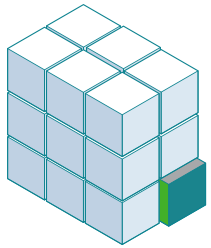
Andrew

Environmental pioneer | **Tech confident** | **Economics indifferent**

He is interested in reducing his personal carbon footprint and is adept at using technology to support that goal. He is less interested in the cost implications of such pursuits and doesn't pro-actively look for cost savings related to energy.

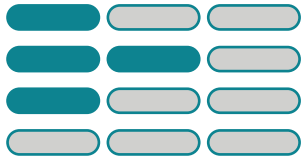
Andrew's energy preferences

- Already subscribed to his electricity provider's green programs
- Owns solar rooftop at his residence
- Often uses software apps for energy management and automation of home functions
- Has programmable thermostat for temperature setting
- Not easily swayed by cost when making energy decisions



Dominant nudges*

Green default setting
Tailored messaging
Neighborhood benchmarking
Social trust reviews



*Source: Deloitte analysis

Scenario for increased engagement

Andrew's electricity provider wants to enroll him to its pilot Electric Vehicle (EV) charger plan and tap his EV for its new demand response program.

How to engage with Andrew

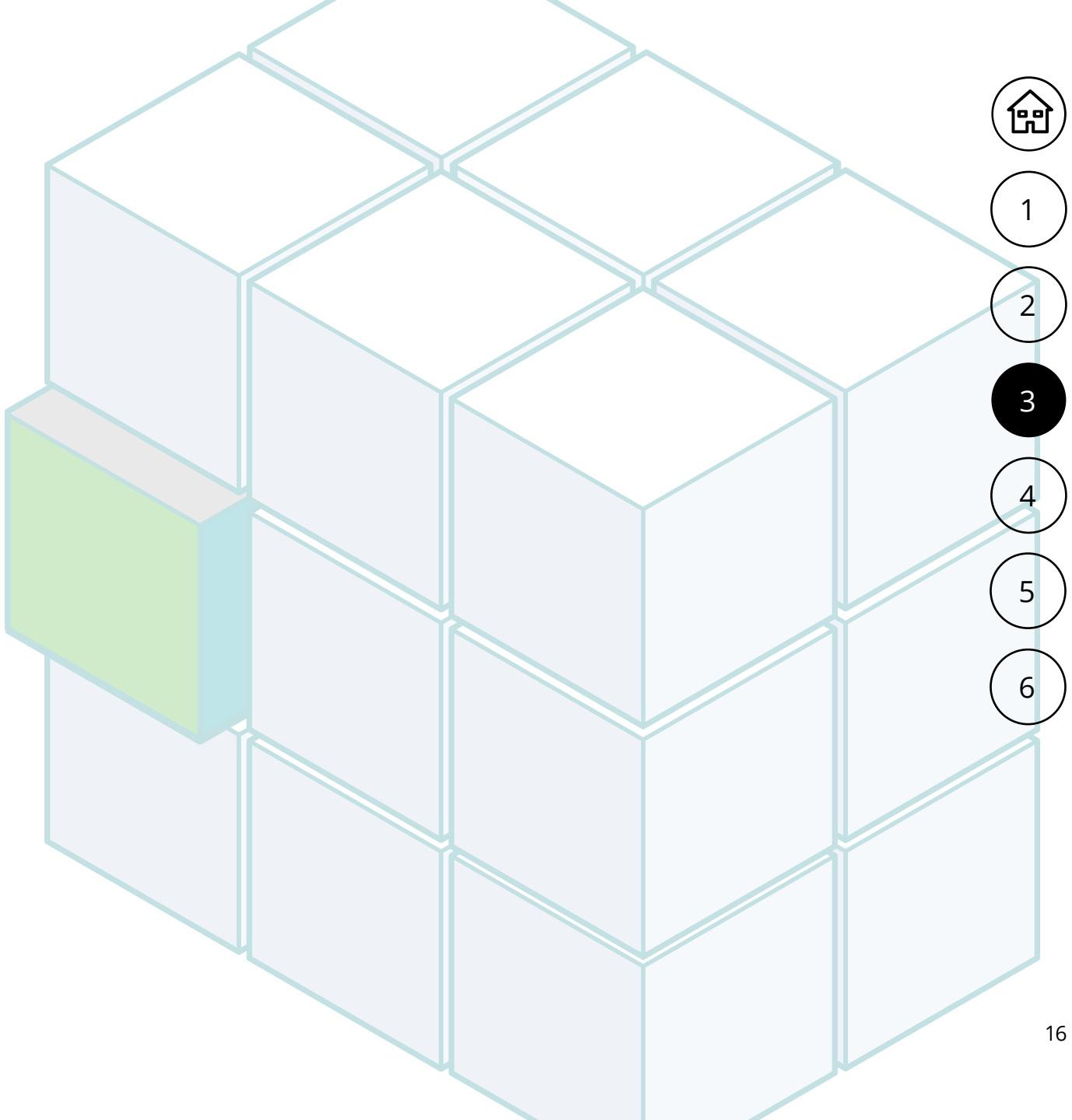
As an environmental pioneer, Andrew needs little motivation to participate in green programs but by providing him detailed information on the total benefits through various channels, the electricity provider can confirm Andrew's beliefs and attitudes around renewable energy and energy efficiency.

Channel: Through its app and web portal, the electricity provider can provide information about the new plan in the form of "personalized recommendations". Additionally, the electricity provider can tap into Andrew's home digital assistant and automatically reach out prompting him with the targeted information.

Message: Key messaging to Andrew should capitalize on his desire to maintain an attractive self image through 'green' behavior. Additionally, the electricity provider might highlight that Andrew's participation in the pilot program as being a first-mover in adoption of a new technology resonating with his confident approach to technology.

Meet Kate

Environmental spectator | **Tech apprehensive** | **Economics influenced**



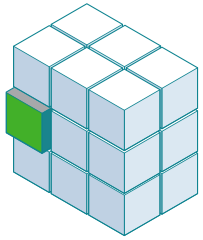
Kate

Environmental spectator | **Tech apprehensive** | **Economics influenced**

While she has some intentions to be more energy efficient, she needs substantial external pushes to bring those intentions to action. Similarly, she is not very confident with technology for energy management. Price is only one factor in her energy decisions.

Kate's energy preferences

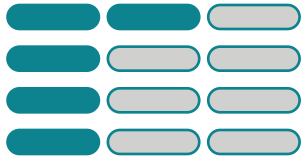
- Has no plans to own solar rooftop
- Does not use software apps for energy management
- Has basic thermostat for temperature setting
- Would only consider switching electricity supplier if the savings amounted to more than 10%



Dominant nudges*

Green default setting
Tailored messaging
Neighborhood benchmarking
Social trust reviews

*Source: Deloitte analysis



Scenario for increased engagement

The electricity provider wants to enroll Kate in its smart thermostat program that combines energy reduction with demand response management to reduce energy consumption during peak demand periods.

How to engage with Kate

She can be motivated to participate in the program by auto-enrolling her in the program and as part of the welcome communication stating she can opt-out of the "low-tech, low maintenance" program at any time.

Channel: The electricity bill would be a suitable channel to persuade and engage Kate - other channels could be direct mail and in-person communication.

Message: Key themes in the messaging to Kate might include education about her carbon impact and explanation of environmental benefits in simple terms. Clear messaging highlighting potential trade-offs and energy savings can help Kate make any future decisions.

Endnotes

1. Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving decisions about health, wealth, and happiness* (New Haven, CT: Yale University Press, 2008).

2. Clive Thompson, "Clive Thompson Thinks: Desktop Orb Could Reform Energy Hogs," *Wired*, July 24, 2007.

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