

## Customer Research Summary

To develop our customer strategy, we gathered information about customers' considerations, preferences, and thoughts through primary research such as focus groups and surveys. We supplemented this research with insights from secondary sources, such as the Smart Energy Consumer Collaborative, GTM Research, and other utilities' advanced grid plans. The following section reviews the research we have done primarily related to customer interest in and knowledge and awareness of advanced meters and the benefits of the advanced grid.

### 1. Primary Customer Research

The following studies have helped to inform our AGIS plans and deployment.

- *Grid Edge Product Survey* – This survey was conducted in March 2019 with the intent to gauge customers' opinions and interest toward several proposed product and service concepts that may become available after AGIS deployment. Beyond testing for concept interest, willingness to purchase and price sensitivity were also observed.
- *Advanced Meter Focus Groups* – Four residential customer focus groups were held in January 2019 with the goal of capturing customer understanding, perception, and attitudes toward advanced meters, as well as to understand customer expectations of the services enabled by advanced metering. Also included in these focus groups were learning customer preferences for communications around the deployment and implementation of new meters.
- *Residential Relationship Study* – The *Residential Relationship Study* has been conducted monthly since April 2018 in order to determine the pulse of Xcel Energy's customers' opinions and satisfaction with service. Included in the monthly survey are questions that gauge customers' interest in new products and attitudes of and practices around energy usage.
- *Electric Residential Study* – Xcel Energy subscribes to this study, conducted by JD Power, to benchmark the company against peer utilities, to measure customer satisfaction, and to analyze data about customer electric use in their homes.
- *CO & MN Time Of Use (TOU) surveys* – A series of surveys of TOU trial participants to gain a greater understanding of their TOU knowledge, behavioral adaptations, and preferences.
- *New Product Studies* – Focus groups and customer surveys to test product concepts enabled by AGIS. Studies were conducted across Minnesota and Colorado.

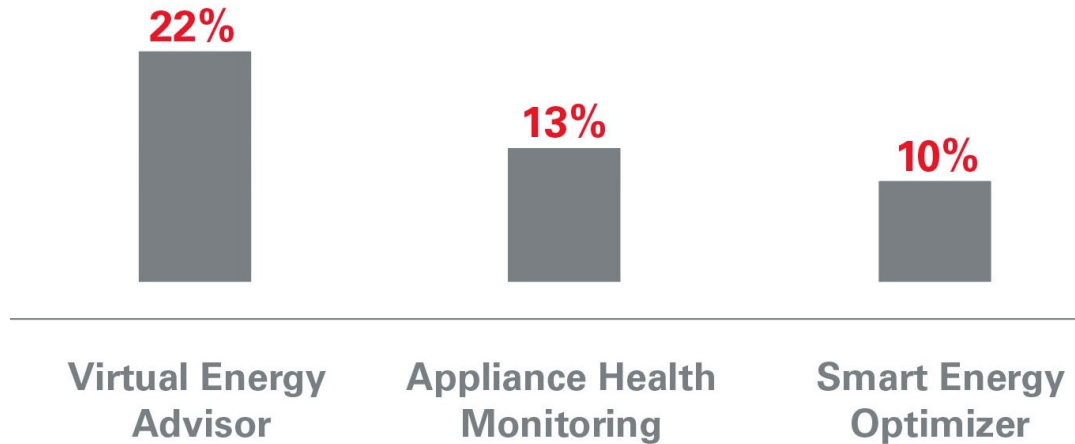
#### a. Grid Edge Product Survey

We conducted this survey focused on Xcel Energy residential customers in March 2019; we collected 5,119 survey completions, so consider these results robust. We tested multiple product concepts enabled by AMI. Of these concepts we have identified three, listed below, that we believe deliver significant customer value and help achieve our customer driven strategic priorities.

- *Appliance Health Monitoring*: A service that can help customers gain insight into the performance and health of their electric appliances. Xcel Energy would also provide a list of vendors that can offer expert advice and repair options to the subscriber.
- *Virtual Energy Advisor*: This product concept monitors energy consumption in the home via Amazon Echo or Google Home so that customers can control home appliances/electronics from anywhere.

- *Smart Energy Optimizer*: This product concept would connect to customers' smart home devices via Amazon Echo or Google Home and manage them based on a set budget.

**Figure 1. Product/Concept Interest (Top 3 Box)**



Key findings of this survey include:

- The product concepts were new at the time of the survey and do not exist in any form today, so education to build awareness and willingness to subscribe is likely necessary.
- Customers under age 45 have higher interest in AMI enabled concepts that are technology driven. 39% of customers under 45 expressed top 3 box interest in a home Virtual Energy Advisor.
- There were no significant differences seen between the larger states (Minnesota and Colorado) and smaller states (Texas, New Mexico, and Wisconsin).

**b. Advanced Meter Focus Groups**

These focus groups were conducted in Colorado among residential customers in January 2019. In preparation for advanced meter implementation in the coming years, our objective was to understand customer expectations, attitudes, and communications preferences around advanced meters. Key findings of these focus groups include:

- Customers believe that advanced meters will help them save money through detailed, incremental usage data.
- Customers are unclear about the basic functionality of smart or advanced meters and need to be informed before new meters are implemented.
- Customers want to be made aware of advanced meter installation 2-3 months in advance through a multi-channel approach.
- Customers under age 45 prefer to seek out information on a Frequently Asked Questions (FAQ) page or through online media tools.
- A major concern for customers is the potential for increased cost to them for new meters.

c. **Xcel Energy Residential Relationship Study**

This is a proprietary study conducted by Xcel Energy on a monthly basis to determine the pulse of the customer including satisfaction, attitudes, interest in new products or services. In May 2019, we added questions on grid edge products in the survey. Key findings include:

- 43% of respondents would like to be alerted when their energy usage/dollar amount is over a preset amount.
- Energy efficient products and appliances that help reduce energy usage are a popular concept: 42% of respondents currently have or use them, and 35% of respondents are interested in such products.
- Current use of Wi-Fi connected smart thermostats and smart plugs that allow Wi-Fi control of appliances or lighting is still relatively low at 14% and 8% respectively.
- 66% of respondents want to have control of their energy use when not at home.
- 34% of respondents are interested in receiving a notification through a phone app when electricity is available from renewable sources, while 4% currently have or use this type of service.
- Customers are currently lacking the tools to know why their bill may be high; 57% of respondents have the perception that their Xcel Energy bills have increased in the past three years.

d. **JD Power Electric Residential Study**

Xcel Energy subscribes to this study, which analyzes survey responses from utility customers around the country. JD Power surveys customers regarding their in-home electric usage, perceptions of their utility, and satisfaction their utility. Findings from year-end 2018 include:

- Xcel Energy ranked in the 2<sup>nd</sup> quartile among its peers for efforts to help manage monthly usage.
- Xcel Energy ended 2018 near the 1<sup>st</sup> quartile for keeping customers informed about an outage.
- Xcel Energy ranks at the 51<sup>st</sup> percentile in terms of providing pricing options that meet the needs of customers, which is right at threshold for 2<sup>nd</sup> quartile.
- Customers want detailed information about their monthly bills and can benefit from advanced meter data. Diagnostics from the study indicate:
  - 91% view their monthly payment amount.
  - 39% view their kilowatt hours used.
  - 27% view price per usage level.
  - 51% review their usage compared to the prior month.
  - 40% review their usage compared to the prior year.

e. **Colorado Time of Use Non-Participating Customer Survey**

We conducted this survey in December 2017 among customers that were only participating in a traditional rate plan. The objective of this survey was to gain insight into how customers learn about new pricing plans and how we can improve communications around these plans. Key findings include:

- Familiarity with advanced pricing plans is low:
  - 58% of respondents reported that they would need more specific information about rate plans, including rules and guidelines.
  - 39% said they would need additional examples of practices that would help them save while on a new rate plan.
  - 27% of respondents answered that they did not know enough about new rate plans to switch from their current rate plan.
- In order to learn more about the new rate plans, 46% of respondents answered that they were likely to visit the Xcel Energy website to obtain information.

**f. CO TOU Trial and MN TOU Pilot Measurement & Verification surveys**

Throughout the duration of the CO TOU trial, from 2017 to 2019, and the MN TOU Pilot, which launched in November 2020, our third part partner conducted surveys with pilot participants to understand their level of knowledge, behavioral changes, communication preferences, and opportunities for education. While the surveys are ongoing throughout the pilot, some learnings to date are as follows:

- Most respondents have AC and either a programmable or smart thermostat, providing a ripe environment for savings.
- Most respondent live in single-family homes and most homes are occupied during peak hours.
- Most customers take some small conservation actions but half are running the AC most/all of the time.
- Most customers can identify the actions with the largest savings opportunities and know electricity demand is highest in the summer. There are opportunities across segments for more education.
- Customers are generally satisfied with Xcel Energy and their energy use choices are motivated by comfort, convenience, and cost.

**g. New Product Focus Groups**

In August 2020, a focus group was conducted to gain customer feedback on a series of product concepts on the advanced grid-enabled product roadmap. Product concepts included those enabled by unique features of the meter including Distributed Intelligence and the Home Area Network. Specific product concepts introduced included real time energy use and insights visualization, disaggregation services, home appliance monitoring, and home automation and control.

- Customers want Xcel Energy to innovate in ways that save them money, time and make their lives better; however, they are not able to articulate specifics about how Xcel Energy should innovate.
- Customers indicate they intend to engage more with products and services which give them more insight into their energy use and empower them to manage it.
- Customers want to use products that help them understand and manage their energy cost
- Low energy use customers or high-income customers are motivated by managing their environmental impact

#### h. Ongoing New Product Concept Test Surveys

In a series of ongoing customer surveys, customers are presented with product concepts or design iterations and rank product/service concepts according to how much the product or service will help them understand and manage their energy, use, costs and environmental impact, as well as their likely engagement.

- Product concepts tested to date include real time energy usage app, rate advisor tool, home appliance monitoring, smart home automation and control, security services
- Customers indicate they will engage the most with products/services that give them insight into their energy usage
- Of product concepts tested to date, customers find the real time energy use app the most valuable

#### 2. Secondary and External Customer Research

In addition to conducting primary research, we also rely on external resources to supplement advanced grid planning. Secondary and external customer research serves to provide insight from national and international research organizations and other utilities that have or are in the process of deploying advanced grid plans. We have used the following sources and insights in our advanced grid planning.

##### a. E Source: [E Design 2020 Small Medium Business Ethnographic Research](#)

E Source conducted this research in 2018 in order to help utilities understand how to better engage with small and midsize business (SMB) customers through effective programs, services and offerings.<sup>1</sup> In the 2018 study, objectives included developing a better understanding of the SMB landscape, detailing SMB customer wants and needs, and determining ways that utilities can actively partner with these customers for increased satisfaction. Key findings from this research include:

- Utilities should build partnerships with business customers by building trust first.
- Improved infrastructure and availability of data will help SMB customers better monitor their energy usage and find ways to conserve on energy costs.
- Since business customers spend a significant portion of their budget each year on energy costs, bills and charges should be as transparent as possible, and utilities should be easily accessible if there is a question/concern about billing.
- Business owners define their relationship with a utility based on power reliability. Outages have a significant impact on this relationship.
- Businesses need utilities to guide them toward the tools that will allow them to be actively and passively energy efficient.

##### b. Department for Business, Energy & Industrial Strategy (U.K.): [Smart Meter Customer Experience Study: Post-Installation Survey Report](#)

The United Kingdom Department for Business, Energy & Industrial Strategy (BEIS) conducted a survey in 2017 focusing on customer experiences before, during, and immediately after smart meters were installed in residential homes. The BEIS also

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<sup>1</sup> ESource is an industry organization focused on advancement of the efficient use of energy. They help utilities and large energy users with critical problems involving energy efficiency, utility customer satisfaction, program design, marketing, customer management, and sustainability by providing syndicated research and counsel.

developed steps in the customer journey toward making changes to energy consumption. Findings from this research include:

- 80% of customers surveyed were satisfied with their smart meter; 50% were very satisfied with their smart meter (score 9 or 10 on a 10 point scale).
- Customers that proactively requested smart meter installation were among the most likely to be satisfied and highly likely to recommend smart meters to others.
- Making energy use visible was the primary motivation among respondents for having a smart meter installed.
- Respondents most commonly recalled receiving information in advance of the installation from energy suppliers.
- 67% of households that received an in-home display for their meter reported using it at least once a week to view the amount of energy being used.

c. U.S. Department of Energy: *Advanced Metering Infrastructure and Customer Systems: Results from the Smart Grid Investment Grant Program*

The Smart Grid Investment Grant (SGIG) Program, developed under the U.S. DOE is a project aimed at modernizing the electric grid, has invested heavily in deployment of AMI and customer systems technologies. This report outlines key findings from SGIG projects that have implemented AMI and customer systems technologies. This research aids the DOE in accelerating grid modernization and informing decision makers. Key findings from this report include:

- AMI deployment has resulted in reduced cost for metering and billing from fewer truck rolls, labor savings, more accurate and timely billing, fewer customer disputes, and improvements in operational efficiencies.
- New customer tools allow for more control over electricity consumption, costs, and bills.
- Customer bill savings and lower capital expenditures results in reduced peak demand and improved asset utilization.
- Outages are less frequent, restored faster, and less of an inconvenience for customers.

d. Smart Grid Consumer Collaborative: *Effective Communication with Consumers on the Smart Grid Value Proposition*

The Smart Grid Consumer Collaborative (SGCC), now known as the Smart Energy Consumer Collaborative (SECC), conducted a customer survey in 2016 with the intent of capturing feedback that will help utilities effectively communicate with customers about smart grid implementation and values. This report outlines the messaging and methods to which customers were most receptive. Findings from this report include:

- Messages should be short, specific, and positive.
- References to increasing benefits rather than reducing harmful elements are better received by customers.
- Consumers are more interested in tech enabled improvements, less interested in how a utility achieves results.
- Smart grid benefits for consumers are generally grouped in three broad categories: environmental benefits, economic benefits, and reliability benefits.

e. Smart Energy Consumer Collaborative (SECC): *Understanding Your SMB Customers: A Segmentation Approach*

The SECC conducts utility industry research on a wide variety of subjects and customer segments. The SECC conducted this research using segmentation to more clearly define utility-customer relationships and how utilities can be a more active partner for SMB customers. Key findings from this research include:

- During the course of this research, five segments emerged:
  - *Established and Engaged* – Always on the lookout for ways to use energy more effectively and are already partnered with service providers to do so. (15% of SMB market)
  - *Motivated Yet Inactive* – Interested in the idea of energy efficiency, although they have not yet taken the first steps. (17% of SMB market)
  - *Interested if Incented* – Energy efficiency is not top of mind. Engaging in new programs and services will require a compelling incentive. (27% of SMB market)
  - *Saving and Satisfied* – Have already taken steps to use energy more efficiently and only passively interested in doing more. (13% of SMB market)
  - *Decidedly Disengaged* – Have no interest in the idea of energy efficiency and feel there isn't much they can do. (28% of SMB market)
- Size of business matters to engaging with utility in energy efficiency. Across all segments, half of SMBs with more than 50 employees surveyed would “definitely” engage with their utility, if the utility reaches out, on energy efficiency.
- Small- and mid-sized customers vary widely within their industries in terms of size of building, number of employees, and wants and needs from their energy provider.
- 92% of the Established and Engaged have interacted with their utility on energy usage data.
- 68% of the Established and Engaged have interacted with their utility around rate adjustments.
- 86% of the Motivated Yet Inactive segment is interested in usage rates relevant to their business.

f. Chartwell: *Demand Reduction Programs for TOU Customers – Madison Gas & Electric Case Study*

Madison Gas & Electric began an On Demand Savings (ODS) pilot program for commercial & industrial (C&I) customers in 2015, originally targeting 30 customers.<sup>2</sup> The intent of this pilot was to allow C&I customers to monitor their energy use in real time, reduce overall energy use, and implement practical load shedding or load shifting strategies to reduce their on-peak demand and improve their operational efficiency. The pilot sought to do this by identifying a customers' unique demand profile to suggest the best load shedding and cost saving strategies through use of AMI-enabled technology to provide data to both the customer and utility. Key findings from this report include:

- Customers participating in the initial pilot from 2015-2016 averaged 9% savings in monthly demand charges.
- Between June and September 2016, the average monthly savings was 2,760 kW.

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<sup>2</sup> The pilot has since been expanded to 50 C&I customers.



- The average monthly kWh savings for participating customers was 4.5% in the same time period.
- The initial pilot found that nearly 70% of participants changed their thinking about how they use their building automation systems after participating in the pilot program.

g. E Source: 2019 E Source Gap & Priority Study

Xcel Energy subscribes to this annual study from E Source to better understand small, mid-sized, and large commercial and industrial customers' needs – and how we are meeting those needs. In this study, SMB and large C&I customers are asked about their participation and interest in various energy efficiency programs, utility programs or services, and demand response services that can be offered by their utility. Key findings from this study include:

- 24% of large C&I customers surveyed currently participate in energy data analytics, strategic energy management, and behavior programs; another 32% are interested in participating in these types of programs.
- 31% of large C&I respondents currently use some form of energy management system, and 25% are interested in this technology.
- 21% of large C&I respondents currently participate in an Xcel Energy power monitoring program or service and 32% are interested in participating.
- Participation in energy data analytics, strategic energy management, and behavior programs is less common among mid-sized businesses. Only 4% currently participate in these types of programs and 19% are interested in participating.