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Business Models for Scaling Demand Flexibility Volume II — Customer relationship management strategies, challenges, and lessons learned from U.S. programs

Authors

Pereira, Guillermo
Regnier, Cynthia

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Business Models for Scaling Demand Flexibility

Volume II – Customer relationship management strategies, challenges, and lessons learned from U.S. programs

Guillermo Pereira and Cindy Regnier

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Business Models for Scaling Demand Flexibility: Volume II – Customer relationship management strategies, challenges, and lessons learned from U.S. programs

Prepared for the
Critical Minerals and Energy Innovation Office
U.S. Department of Energy

Principal Authors
Guillermo Pereira
Cindy Regnier

Ernest Orlando Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90R4000
Berkeley CA 94720-8136

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Acronyms and Abbreviations

ARENA	Australian Renewable Energy Agency
DER	Distributed Energy Resources
HVAC	Heating, Ventilation, and Air Conditioning
NERC	North American Electric Reliability Council
PG&E	Pacific Gas & Electric
SECC	Smart Energy Consumer Collaborative

Executive Summary

Load growth at the grid edge is driving increased attention to the distribution system and its ability to enable customer technology adoption in an affordable and timely manner. Key industry stakeholders, including electric utilities and regulators, can benefit from strategies to manage and balance customer needs with infrastructure investments, such as demand flexibility.

This report focuses on demand flexibility—the ability to reduce, shift, shed, generate, or modulate loads in response to building and grid needs—to reduce the need for costly grid upgrades by deferring investment needs and increase system reliability by shifting electricity usage during periods of high risk. Specifically, we focus on the emerging characteristics of business models for demand flexibility as a framework to understand how demand flexibility programs generate value.

In this report, we focus on demand flexibility program customer relationship management strategies, which provide information on value creation and focus on ensuring customers can navigate programs smoothly. This report discusses the role of customer relationship management strategies in demand flexibility programs, characterizes customer relationship management strategies that can be considered during program design and implementation, identifies existing challenges to customer relationship management strategies, and describes lessons learned.

Customer relationship management in demand flexibility business models

Effective customer relationship management requires program implementers to understand their program design and implementation plans and how they can impact the ability of customers to access program benefits. Customer relationship management approaches will vary depending on the customer segments targeted and their needs.

Customer relationship management strategies

Program implementers can pursue different strategies to manage customer relationships. Figure ES-1 provides an overview of potential strategies, including utility-centered customer relationship management, non-utility program implementer customer relationship management, phased customer relationship management approach, and shared customer relationship management approach.

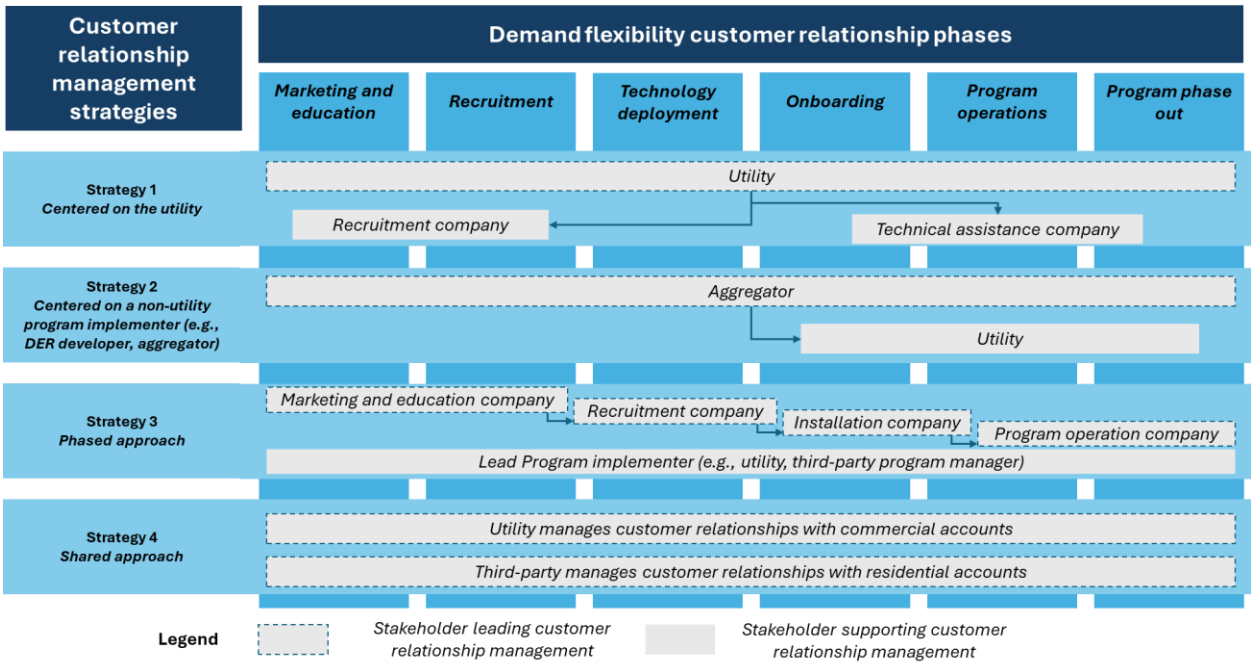


Figure ES-1. Customer relationship management strategies

Customer relationship management challenges

Challenges to effective customer relationship management include:

- Uncertainty about the impact of changes in program stakeholder priorities on customer experience
- Developing customer and building occupant journeys when the program customer is different from the building occupant
- Ensuring customer responsiveness during the various phases of the program

Customer relationship management lessons learned

Lessons learned to support program implementation and scaling include:

- Allocating adequate resources, including time, in the program implementation schedule to develop an effective customer journey
- Identifying and communicating customer responsibilities during the various phases of the program
- Ensuring that all the stakeholders who interface with program customers are aligned in terms of program development and customer needs over the various phases of the program

This report is part of a series that includes reports on value propositions, stakeholder ecosystem management, and program life cycle.

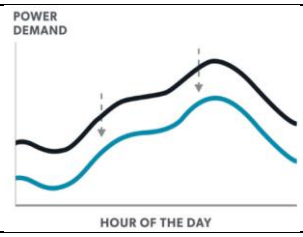
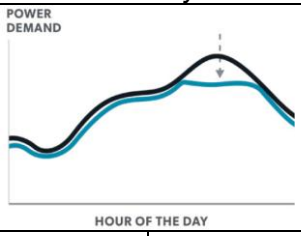
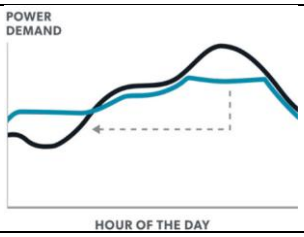
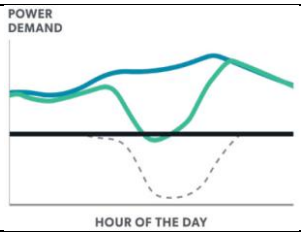
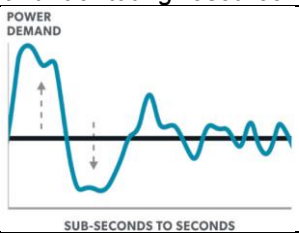
1. Introduction

Significant load growth is being driven by technology adoption at the grid edge, including electric vehicles and high-performance heating, ventilation, and air conditioning (HVAC), as well as larger loads such as data centers supporting artificial intelligence, and the increasing electricity needs of the industrial sector (Pereira et al., 2025). Recent North American Electric Reliability Council (NERC) estimates, released in 2024, show load growth is expected to lead to a 15% increase in summer peak demand and 18% winter peak demand, over the next 10 years for the U.S. and Canada (NERC, 2024). The pace and scale of expected load growth are leading to increased attention on the electricity sector infrastructure and investments needed to ensure it can provide service to customers in a reliable and affordable manner. At the grid edge, distribution systems play a key role as the interface between customer loads and the grid. Investments in distribution systems have increased in recent years and currently account for the largest share of costs for U.S. investor-owned utilities. For instance, data from the Edison Electric Institute for 2024 indicate that distribution system capital expenditures account for 32% of total capital expenditures (EEI, 2024). This further emphasizes the need for strategies that can enable additional load while managing the impact on affordability, such as managing flexible loads through demand flexibility (EFI Foundation, 2024; Goldenberg et al., 2018).

Demand flexibility is the ability of building electricity loads to change in response to building and grid needs and objectives. Demand flexibility can drive affordability improvements by shifting electricity consumption out of high-price periods, as well as by reducing the need for costly infrastructure upgrades. Affordability benefits for customers result from a more cost-effective use of utility infrastructure, which reduces the need for additional investments, such as increased capacity to meet higher peak loads. Utility benefits derive from the ability to allocate resources more effectively by being able to reduce, defer, or fully mitigate the need for infrastructure upgrades (Schwartz & Leventis, 2020). Demand flexibility can cost-effectively support grid reliability by reducing electricity demand in periods of high risk (Fox-Penner et al., 2025; Jackson et al., 2021; LBNL, 2025; NERC, 2024; Norris et al., 2025; Pereira et al., 2025; U.S. Department of Energy, 2024).

Building demand flexibility can be enabled by behind-the-meter distributed energy resources (DERs) and results from responses to price-based signals (e.g., dedicated time-of-use rate structures to incentivize customer behavior) or grid-based signals (e.g., grid operator requests change load behavior to manage and mitigate operational challenges) aimed at delivering benefits to the building occupants, owners, and the grid (Satchwell et al., 2021). DERs, in combination with building controls, can deliver demand flexibility by reducing, shedding, shifting, modulating, or generating load (See Table 1).

Table 1. Demand flexibility capabilities

Reduce load *Through energy efficiency measures that can reduce electricity bills and overall electric system capacity needs.*	**Shed load** *Through curtailment that balances building occupants and system needs, which can reduce building demand during periods of peak consumption or grid emergencies to support reliability.*	**Shift load** *From peak to off-peak periods, that can reduce system capacity needs by lowering peak demand and customer costs.*
		
Generate load *Through building DERs that can reduce the need for utility-scale generation assets and system losses.*		**Modulate load** *Through changes in DER operation that can provide ancillary services supporting grid operations and facilitating resource integration.*
		

Source: Adapted from Satchwell et al. (2021)

Recent studies have estimated the significant potential of demand flexibility to reduce system costs and improve affordability (Murphy et al., 2024). For instance, the U.S. Department of Energy estimated that demand flexibility could deliver system benefits worth $8-18 billion annually by 2030 (Satchwell et al., 2021). Similarly, the Rocky Mountain Institute estimated that demand flexibility from air conditioning and water heating could result in a ~8% decrease in peak demand in the U.S. in the residential sector alone, valued at $13 billion per year (Bronski et al., 2017). The Brattle Group estimated that cost-effective demand flexibility could reach ~20% of the U.S. peak load, resulting in $15 billion in annual benefits by 2030 (Hledik et al., 2019).

In addition to the benefits and potential of demand flexibility, key industry stakeholders, including state and utility decision-makers, are prioritizing demand flexibility. For example, a recent survey by the Association of Energy Service Professionals found that 93% of the utilities surveyed considered demand flexibility a medium-to-high priority for their business. Moreover, 49% of the utilities in the study indicated that they plan to implement a demand flexibility program within the next three years (AESP, 2024). Similarly, an analysis by the Smart Electric Power Alliance and the North Carolina Clean Energy Technology Center in 2024 found that 38 states took action to advance virtual power plants and support DERs, which can contribute to demand flexibility (SEPA, 2025). These actions include utilities proposing new or expanding existing programs (e.g., demand response programs, electric vehicle managed charging

programs, and multi-technology programs), and commissions and legislatures developing frameworks and assessing the role of existing policies.

In this context, business models play an important role in ensuring that the significant demand flexibility potential is realized (Li et al., 2022; Shen et al., 2021). Business models offer a conceptual framework to understand how demand flexibility programs generate value to customers, program implementers, and other key stakeholders and partners. Specifically, business models provide insights into how program implementers (e.g., utilities, aggregators, third-party program managers, etc.) create, deliver, and capture value (see Table 2). Value creation and delivery encompass the decisions, resources, and processes program implementers make to ensure that customers effectively benefit from program participation. Value capture encompasses program implementer decisions related to implementation and operation costs and program revenues. Collectively, these elements provide information relevant to understanding how demand flexibility program implementers combine technologies and capabilities in innovative offerings that generate value, including increased affordability and reliability (Hamwi et al., 2021; Teece, 2010; Zott & Amit, 2010).

Table 2. Value creation, delivery, and capture

Value creation	Focuses on the characteristics of the demand flexibility program and how it delivers clear benefits that address customer needs. For example, a demand flexibility program can deliver affordability benefits by providing customers with technologies and dedicated rates that automatically shift load to off-peak periods with lower rates. Similarly, demand flexibility programs can include behind-the-meter storage to provide customers with a resource to withstand outages. Value creation includes information on the value proposition and customer relationship management. It also includes information on the customer segments targeted by the program and the channels used to identify and recruit those customers.
Value delivery	Focuses on the processes program implementers utilize to ensure customers have access to and benefit from the demand flexibility program offerings. For example, a program implementer may design a program in partnership with a local organization to support recruitment and customer education. This can be an important business model decision as it can impact recruitment outcomes and overall program success. Value delivery includes information on the resources, partners, and activities necessary to deliver a demand flexibility program.
Value capture	Focuses on the financial model underpinning the implementation and operation of demand flexibility programs. This includes decisions on how costs are shared among program stakeholders, how different program delivery strategies impact costs and revenues, and how costs scale as programs expand. Similarly, this can include decisions that shape program revenue (e.g., revenue resulting from the provision of grid services, revenue resulting from implementing a program to defer traditional grid investments). Value capture also considers the overall cost-effectiveness key to inform program strategies and create the necessary conditions for a viable business model.

Program implementers have to design and implement business models that contribute to the program's vision and goals and deliver a clear value proposition. This can be challenging considering the need to balance resource constraints, policy and regulatory priorities and requirements, and the goals and capabilities of the network of stakeholders collaborating to deliver a program.

This series of reports focuses on providing insights into business models from existing U.S. demand flexibility programs. Our findings are structured as a series of challenges and lessons learned from program implementer experiences. Particularly, our analysis provides information to better understand value creation and value delivery through demand flexibility. Related to value creation, we provide insights on value propositions and customer relationship management. For value delivery, we provide insights related to the stakeholder ecosystem and the program's life cycle (See Table 3). This series of reports offers information for key demand flexibility stakeholders, including public utility commissions, utilities, aggregators, third-party program managers, equipment manufacturers, and others interested in supporting the scaling of demand flexibility solutions.

Table 3. Report series areas of focus

Value creation	
Value proposition	**Customer relationship management**
Translates the capabilities and benefits of a program and its technologies into a set of clear and compelling benefits that meet customer needs.	Effective customer relationship management ensures customers can navigate program participation smoothly and enables program implementers to deliver added value.

Value delivery	
Stakeholder ecosystem	**Program life cycle**
Demand flexibility programs require collaboration and alignment with multiple partners from different organizations. Program implementers can leverage partner capabilities to deliver programs for customers.	Implementing demand flexibility requires effective management of planning and design, implementation, operation, and scaling activities.

We interviewed 44 subject matter experts from 15 organizations, representing 21 demand flexibility programs, to understand the experience of the demand flexibility program implementer as the party leading the process of establishing a program vision, goals, coordinating resources, and partners to add value to customers and the grid. The insights presented are anonymized, with descriptive examples of program implementer experiences provided throughout the report.

The programs included in our analysis represent a range of multi-technology programs with different combinations of distributed energy resources such as distributed solar, electric vehicle charging, and battery storage. Other technologies present in the programs include thermostats, high-performance water heaters, electric water heaters, and building control systems, providing complementary perspectives. Additionally, the sample of programs represents a range of program implementers, customer segments, and regions across the U.S. (see Table 4).

Table 4. Sample characteristics

Program implementer (i.e., lead party implementing the demand flexibility program)	Programs led by vertically integrated utilities (9), community choice aggregators (2), demand-side aggregators (2), property managers, research institutions, and third-party program managers (8).
Customer segments	Programs focused on residential (11) or a combination of residential and commercial customers (10). Residential customers include renters and homeowners. Commercial customers include local government, university campuses, and other small and medium commercial properties.
Region	Programs interviewed (some programs implemented operate across multiple states) operated in Alabama (1), California (3), Colorado (1), Georgia (2), Indiana (1), Maine (1), Massachusetts (1), New Hampshire (1), New York (1), North Carolina (1), Ohio (2), Oregon (3), Utah (2), Washington (4), Wisconsin (1)

This report focuses on the demand flexibility program customer relationship management and is part of a series of reports focusing on demand flexibility business models – *Business models for scaling demand flexibility: challenges and lessons learned from U.S. programs*. Other reports in the series focus on value propositions, stakeholder ecosystem management, and program life cycle.

2. The role of customer relationship management in demand flexibility business models

Demand flexibility programs require customers[1] to understand the benefits of participating (i.e., the value proposition), adopt new technologies, and provide access to devices and data. Additionally, programs may require customers to interface with a new entity or group of entities when the program implementer is new to the customer (e.g., a program led by an aggregator with whom the customer does not have an existing relationship). Customers are also expected to remain engaged for the program's lifetime, which may require some degree of active participation by responding to program signals, such as demand flexibility events, or by adjusting electricity consumption patterns to benefit from the time-varying rate included in the program design (Li et al., 2022).

Effective customer relationship management is an important step to ensure customers can navigate the various phases of program participation smoothly and to ensure the program implementer can deliver added value without significant hurdles. Customer relationship management for demand flexibility programs may require program implementers to adapt existing processes and capabilities or introduce new customer management approaches (SEPA, 2022). For example, program implementers with experience in energy efficiency and demand response programs adapting their programs to include additional technologies, such as DERs, may need to assess existing approaches to attract and onboard customers, manage the customer experience, identify any potential gaps, and implement new processes.

Customer relationship management will vary depending on the type and characteristics of target customers. Programs targeting single-family homes will likely interface with a mix of homeowners, as well as landlords and tenants, and may also interface with property management companies. Programs targeting commercial buildings and campuses will likely interface with building owners and operators. When building occupants are not the decision-makers interacting with the program implementer, such as when a property manager enrolls its rental properties into a demand flexibility program, program design decisions must consider if and how to manage the relationship with building occupants. Customer relationship management is a building block of demand flexibility business models to ensure that value is created for customers (Hamwi et al., 2021; Shomali & Pinkse, 2016; U.S. DOE, 2023).

[1] In the context of this report, the term customers refer to demand flexibility program customers responsible for managing and paying for the utility bills, as well as manage or own the behind-the-meter DERs and associated technologies to enable demand flexibility.

3. Customer relationship management strategies

Program implementers can pursue different strategies to manage customer relationships. The decision for which approach to follow can be shaped by program implementer capabilities, as well as by the target customers and program technology package. Through our analysis, we identified four relationship management strategies that can be considered when designing demand flexibility programs. This section provides additional details for each strategy. Figure 1 illustrates the four strategies across program phases, including:

- **Marketing and education** includes activities related to developing and delivering information on the program's features (e.g., customer benefits, technologies included, eligibility) to prospective customers to support recruitment.
- **Recruitment** includes activities related to signing up interested customers to participate in the program, such as managing the registration process and ensuring interested customers meet program participation eligibility criteria.
- **Technology implementation** includes activities related to program technology installation, such as program-provided DERs and control and monitoring technologies installed behind-the-meter at the customer's building.
- **Onboarding** includes activities related to ensuring participating customers understand program operations, as well as different stakeholders' roles and responsibilities, such as the role of the utility in providing customer service and the ability of the customer to opt out of program participation.
- **Program operations** include activities related to ensuring all the elements necessary for program success are managed effectively, such as providing technical assistance to resolve technical issues.
- **Program phase out** includes activities related to ensuring a successful termination of program operations, such as decommissioning program technologies from customer buildings, sharing information with customers related to data management and resources, with information on other opportunities to participate in demand flexibility.

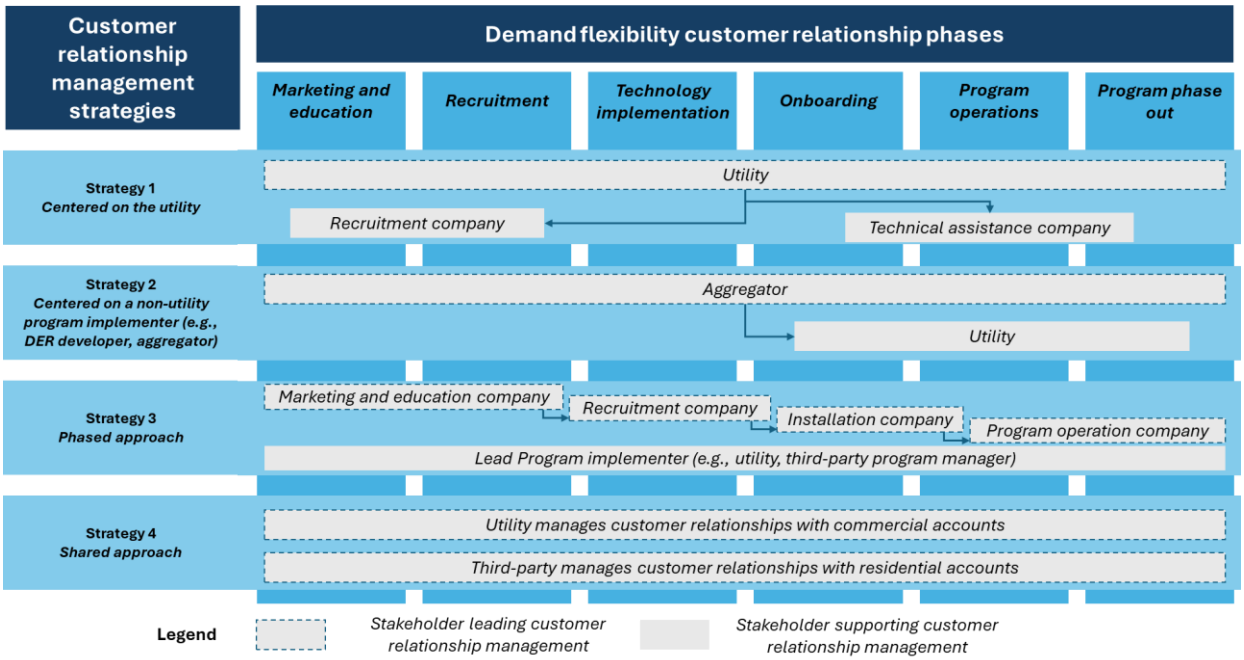


Figure 1. Customer relationship management strategies

Strategy 1 – Centered on the utility. Utilities have an established relationship with customers that can be leveraged to implement and scale demand flexibility programs. For instance, utilities may be well-positioned to lead program marketing, education, and outreach. Utilities can also leverage their existing customer support systems for participant onboarding. While utilities can lead customer relationship management, they may also have to collaborate with third parties, particularly for activities outside the scope of existing utility capabilities. For example, the utility will act as the main point of contact for customers and may coordinate with third parties to solve different issues, such as third-party technicians, to solve technical problems. One of the program implementers interviewed used a third party to manage the relationship with the property management companies, which they decided would otherwise be a difficult process to conduct in-house. In some cases, utilities may opt to train a dedicated team to lead program implementation to ensure that program knowledge is centralized, allowing the utility to identify challenges and implement solutions more rapidly (Long & Frick, 2025). Advantages of a utility centered approach overall include leveraging existing utility experience with its customer base, which may contribute to more effective marketing and education to support recruitment. This approach may also reduce the risk of inconsistent messaging with customers, as they will receive information related to the program from their electric utility. Disadvantages of this approach include the need for the utility to develop expertise with new processes, technologies, and customer expectations related to innovative program offerings.

Strategy 2 – Centered on a non-utility program implementer (e.g., DER developer, aggregator, third-party program manager). Non-utility program implementers can be effective managers of customer relationships as they may be able to address existing gaps in utility capabilities to implement and scale demand flexibility programs effectively. For example, non-utility program implementers may face lower institutional hurdles to rapidly adapting

customer management strategies (Baldwin, 2024). Non-utility program implementers may also be able to design innovative customer relationship management approaches more rapidly than utilities, which may be slowed down by internal siloes and the need to address competing priorities (HBR, 2020; J. D. Power, 2024). In this case, non-utility program implementers may still collaborate closely and develop workflows with the utility, such as for sharing customer data securely to support program operations. In some cases, non-utility program implementers may be geographically closer to program participants, allowing for faster resolution of technical issues. Advantages of this approach include a greater ability for the program implementer to develop innovative program offerings. This approach may also support the development of productive synergies between the utility and the program implementer to ensure coordination for successful program implementation, such as for customer meter data access or customer communication. Disadvantages of this approach include the need to educate prospective customers about a new entity for which they may have no or limited knowledge compared to their electric utility.

Strategy 3 – Phased approach. A phased approach can allow different stakeholders to focus on specific responsibilities associated with a customer relationship management phase that best aligns with their capabilities (e.g., recruitment, technology implementation, and onboarding). For example, a third-party contractor can manage customer relationships during initial outreach, recruitment, and implementation. After that program phase is completed, the customer relationship management can transition, for example, to an installation company responsible for the implementation of program technologies. This may be particularly beneficial when the third party understands and is trusted by potential customers. This contractor can then transfer the customer relationship to the utility, which will be responsible for managing customer experience and ensuring program success. Advantages of this approach include the ability of customers to access a range of stakeholders with specialized capabilities for each phase of program delivery. This can contribute to reducing program delivery challenges and improving the value proposition for customers. Disadvantages of this approach include the need to ensure sufficient coordination across multiple stakeholders while ensuring prospective and participating customers have access to clear information and understand the roles and responsibilities of each stakeholder and how they will interact.

Strategy 4 – Shared approach. This shared approach enables program success by leveraging synergies for customer relationship management. Through this strategy a demand flexibility program is designed to ensure that stakeholders are responsible for the program activities and customer segments that best align with their capabilities. For instance, for a utility-led program the utility may choose to manage relationships with large commercial customers, leveraging existing relationships and account managers expertise. In this case, the utility may opt to partner with a third-party organization experienced with residential sector demand flexibility programs to communicate with residential customers. Advantages of this approach include the ability to develop demand flexibility programs that target customer classes for which the program implementer has less experience, allowing the program implementer to access greater demand flexibility potential. Disadvantages of this approach include the possibility for siloes to develop between the program delivery activities associated with each customer segment. This

may impact the ability to share program learning and implement improvements that benefit all customers.

4. Challenges

Through our analysis, we identified challenges for managing customer relationships to ensure customer satisfaction and program success related to the customer journey and customer knowledge.

4.1 Customer journey

Program partners (e.g., vendors and contractors) can significantly impact the customer experience. Demand flexibility programs often combine multiple stakeholders who bring different capabilities to support the program. For instance, the program implementer may select a company that specializes in building technology installations (e.g., DER installer, or building controls and automation installer) to ensure technology packages are installed correctly and timely. However, relying on multiple stakeholders for program delivery can impact how customers navigate different program phases and their overall satisfaction as a participant. For example, when customer interaction relies on a third party, any changes to that third party's strategy and priorities can result in changes to the capabilities available to the program. This can impact how the customer interacts with the program or the benefits it receives. One of the program implementers interviewed shared an experience where they partnered with a technology vendor who was expected to integrate multiple devices and provide participating customers with an interface to control their technologies and access data. However, while the program was ongoing, the technology vendor changed their business strategy and ended up not providing the planned services to the program. This negatively impacted the customer journey, as the program was not able to deliver a meaningful customer interaction component as initially planned.

Consider customer and building occupant journeys when the customer differs from the building occupant. Demand flexibility programs can often include a customer – the party responsible for decision-making, which can be different from building occupants. In this case, designing an effective customer journey for the customer and the building occupants can be challenging. For example, building occupants may not pay for utility bills, which can reduce the incentive to respond to program implementer requests (e.g., demand flexibility events, participation surveys, on-site visits to resolve technical issues). Other challenges may result from lack of effective communication channels between the building owner and the building occupant, which may result in a lack of awareness on program benefits for building occupants. These challenges may occur for demand flexibility programs targeting residential rental properties, as well as for those focused on commercial buildings and campuses. One of the program implementers interviewed shared this experience for a program focused on demand flexibility from electric resistance water heaters. In this case, the program implementer interfaced directly with the property management company to enroll new properties and devices. However, this left building occupants out of the customer journey, which in some instances resulted in a lack of awareness that their water heater was part of a demand flexibility program and a lack of information on how to proceed to solve technical issues.

4.2 Customer knowledge

Secure customer trust. Demand flexibility programs can require access to sensitive customer data and control of their devices. Program participation may also require customers to collaborate on installing and setting up new technologies. For customers to engage meaningfully in these activities, customers must trust the program implementer and their ability to deliver clear benefits.

Ensure customer responsiveness. Demand flexibility programs may require customers to dedicate time and resources to understand program requirements and determine if the program's value proposition matches their needs. This can be challenging for different customer segments. For residential customers, it may fall as a lower priority compared to other household responsibilities. For commercial customers, responsiveness may be affected by internal decision-making cycles, which may not have been accounted for in the program's recruitment schedule.

5. Lessons learned

Below, we describe lessons learned related to customer relationship management informed by program implementer experiences.

5.1 Customer journey

Allocate adequate resources to design the customer journey during the early phases of the program. Developing the program's customer journey is a key step for program success. Text Box 1 illustrates the customer journey for customers who engage with a DER technology or service, which can be relevant to consider when designing customer journeys for demand flexibility programs, including one or more DERs. This process can be resource-intensive and require multiple iterations. For example, through this process, program implementers identify how the customer navigates the different phases of the program. This can include characterizing the different stakeholders the customer will interface with, such as installers implementing program technologies and account managers during onboarding, and to report any technical issues to technical teams. Developing the customer journey requires a thorough understanding of the target customers as well as of the technologies included in the program and the network of stakeholders partnering to deliver the program. Developing this understanding of the target customer requires robust methods to collect and analyze data on customer characteristics and preferences, to guide customer journey decisions. Innovative programs combining multiple demand flexibility technologies may face additional resource requirements when there is limited industry experience with similar approaches to use as a benchmark or to consider for identifying lessons learned.

Identify customer responsibilities over the lifetime of their participation. Programs can benefit from identifying customer responsibilities across the various phases of the program. For example, during onboarding, customers may need to install new devices or configure existing devices to meet program requirements. Similarly, during program operations, customers may be expected to help troubleshoot minor technical problems. One of the program implementers interviewed, focusing on the new construction residential market, required customers to sign two contracts. The first contract occurred when the customer signed off on their intent to construct the home, and it also described that the home would be part of the program. The second contract was signed after construction and included customer responsibilities, such as cooperating with the program implementer by participating in customer surveys and not disturbing demand flexibility technologies in the home during their participation.

Text Box 1. Customer journey for DERs

The Australian Renewable Energy Agency (ARENA) developed a customer journey for customers acquiring DER technologies or interfacing with DER-related services (Figure 2). Mapping the customer journey can contribute to positive customer experiences, including customer benefits. The DER customer journey includes various stages that depict the evolving relationship between a customer and its engagement with a product or service. In this case, the customer journey includes the initial phases where the customer may become aware of a DER technology or service (i.e., customer engagement and acquisitions), all the way to post-implementation activities to ensure continued customer satisfaction (i.e., retention) (ARENA, 2020, 2023).

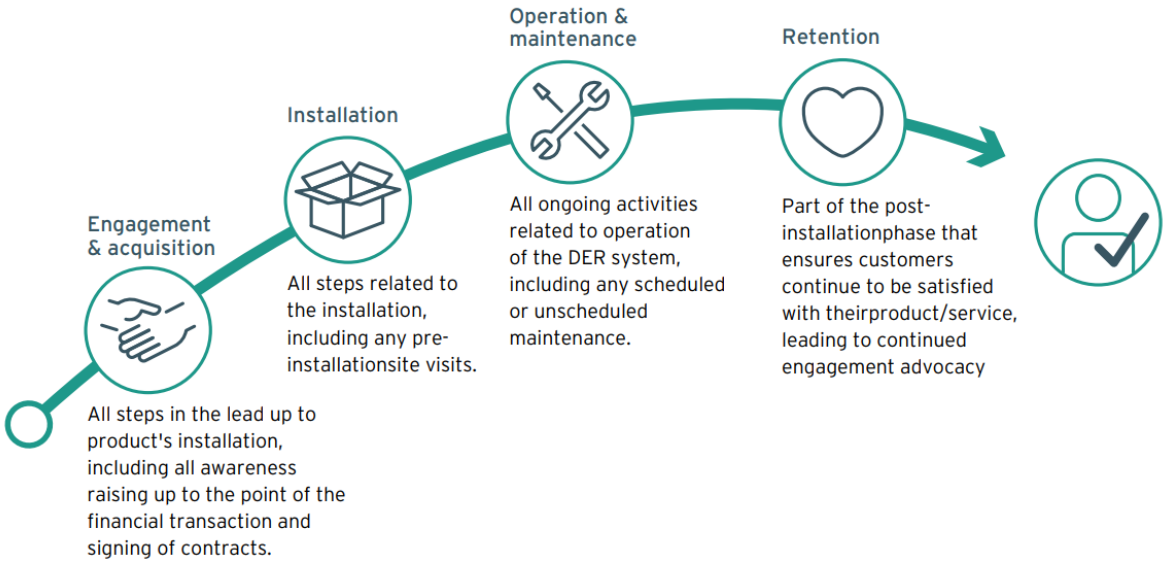


Figure 2. Customer journey for DERs

Source: ARENA (2020)

5.2 Customer knowledge

Understand customers, their needs, and values for successful customer engagement. Program design can benefit from understanding the local context of prospective program participants and their cultural norms and values. To enable a better understanding of customer values, program implementers can leverage customer research data, such as data by the Smart Energy Consumer Collaborative (SECC). SECC provides insights into customer values for different customer segments, which program implementers may use to inform successful customer engagement strategies (SECC, 2024). These elements can shape the program's marketing and education approach, as well as shape the program's value proposition and underlying technologies. Partnering with local organizations can be an effective pathway to ensure the program is informed by thoroughly understanding the program participants.

Collaborate with customer-trusted organizations to improve customer responsiveness. Demand flexibility programs can benefit from collaborating with organizations that are well-established with prospective program participants (Hledik et al., 2024). This can result in greater trust and support program success. For example, designing a demand flexibility

program to include a well-trusted organization to lead initial outreach efforts can improve recruitment outcomes, as well as contribute to a seamless installation of program-related devices. One of the program implementers interviewed shared how their programs have better recruitment outcomes when they partner with a local organization.

5.3 Customer interaction

Plan for lengthy and complex customer decision-making processes. For example, programs targeting commercial customers or campuses may require education and alignment between multiple internal stakeholders. One of the program implementers leading a campus-focused program shared the importance of providing information to secure buy-in from various decision-makers. For instance, in some cases, the initial point of contact may not be the final decision-maker.

Identify all the relevant stakeholders on the customer side to ensure alignment and smooth communication. Program implementation can benefit from ensuring all the relevant stakeholders on the customer side are identified, and their role in the decision-making process is well understood, including mapping internal dependencies and information needs. This includes identifying stakeholders responsible for making final decisions, such as executive teams, as well as stakeholders that play influential roles, such as facilities managers who understand buildings and the feasibility and potential to benefit from participating in the program.

Identify a key customer representative to support delivery and contribute to effective customer-program interactions. A customer-side program champion can be a key source of knowledge on customer facilities and facilitate internal stakeholder alignment, as well as support the program implementer in identifying customer pain points through the program life cycle.

Ensure technical assistance is readily available to support continued program operations. Program implementers can benefit from having a responsive team of technicians to solve customer technical issues. This is a valuable strategy to ensure program success, given that customers may vary in terms of their knowledge and comfort with interacting with program-related technologies. For example, some customers may be better able to collaborate in troubleshooting simple device issues, such as restarting a device or updating a device setting. However, some customers may require technical assistance. Ensuring readily available technical support can reduce program interruptions and contribute to a positive customer experience.

Implement adaptive customer relationship management strategies. Program implementers can evaluate the effectiveness of the customer relationship management strategy in place across different program stages. This evaluation can provide insights to determine any adjustments needed to ensure continued program success and customer satisfaction. For instance, program implementers may choose to manage customer relationships differently for smaller exploratory programs in their earlier stages of implementation compared to a full-scale

program. Similarly, program implementers may adjust their communication approach (e.g., volume of communications and frequency of contact) as the program unfolds, building on insights learned from continually assessing the customer's experience.

Reduce customer burdens during program operation. Program implementers emphasized the value of programs designed to minimize the need for repeated and continuous customer action. Programs can leverage mobile applications to gather customer preferences, such as comfort and financial incentives, and identify any dates or periods of the year when those preferences change. Program implementers can leverage this information to manage program operations while reducing the need for customer input. One of the program implementers described that their program would actively manage customer loads when their electricity consumption reached 80% of their expected bill for their billing period. With this approach the program implementer aimed to reduce the customer's cognitive burden associated with program participation. Text Box 2 describes a strategy to reduce the customer burden by streamlining customer service. Similarly, programs can reduce the cognitive burden by testing incentive information and opt-out procedures during program design to ensure they are clear (White & Sintov, 2020). One of the program implementers interviewed discussed their approach to designing a mobile application to interact with customers. The program implementer indicated that the application was developed to avoid information overload while providing an easy and convenient communication and interaction channel for program participants.

Text Box 2. Reducing customer burden through a single point of contact

Program implementers can reduce customer burdens by reducing the number of entities customers have to interact with throughout the program's life cycle. For example, Pacific Gas & Electric (PG&E) in California implemented a single point of contact approach for multifamily customers. PG&E has a range of program offerings and financing options (see Figure 3). To improve customer experience, PG&E integrated its delivery approach on a single customer service pathway, providing customers with a single point of contact for all aspects of these programs. PG&E implemented this approach to reduce the customer burden by removing the need for customers to identify available programs and understand their eligibility to participate (PG&E, 2018). A single point of contact approach can streamline a range of fragmented actions and decisions to allow customers to experience less friction when considering participating in a demand flexibility program (Consumers International, 2023).

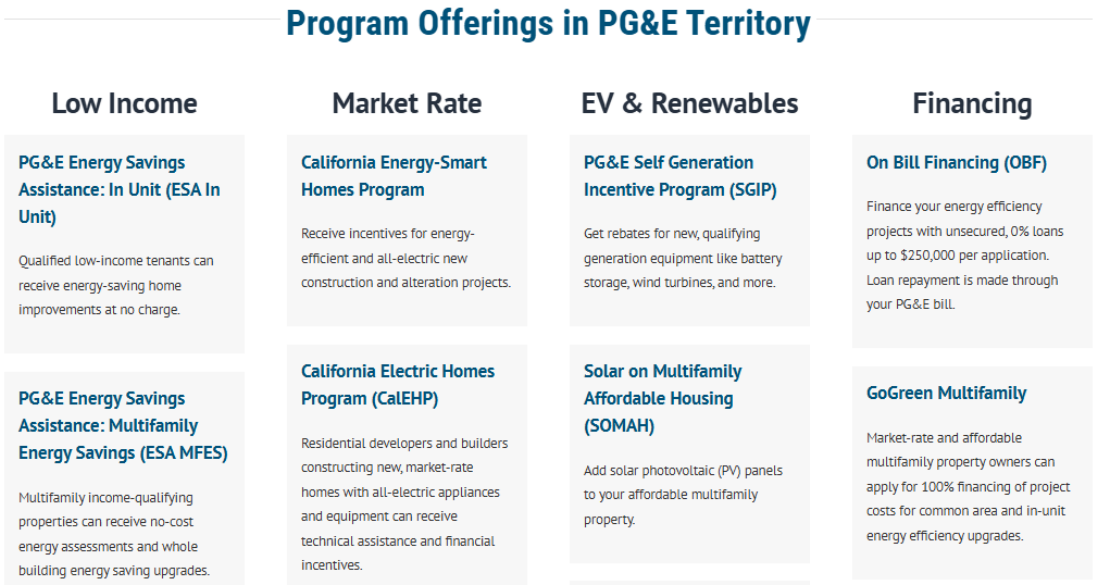


Figure 3. Program offerings available in PG&E's service territory
Source: PG&E (2018)

Account for the soft costs of program participation, such as the hassle factor. Program implementers can evaluate the role of soft costs on participants and implement mitigating strategies to enable program effectiveness and ensure a positive customer experience for program participants (Satchwell et al., 2021). The role of soft costs can be assessed considering the balance between customer needs and program goals (e.g., delivering grid services to address grid needs). For example, program implementers can assess if and how lack of time and perceived program complexity impact participant recruitment and retention (IEA, 2020). Additionally, program implementers can design their platforms to reduce friction (IEA, 2020), and consider the role of automation in reducing soft costs (Kane et al., 2024).

Provide clear guidance on customer opt-out options. Programs that include event participation as part of their design can benefit from enabling customers to opt out of flexibility events (Hledik et al., 2024; U.S. DOE, 2023). To balance the need to ensure customers retain control with program success, program terms and conditions can establish limits associated with opt-outs and describe how opt-outs may impact customer benefits. Limits can include the number of times a customer can opt out, how long they can opt out (e.g., 24 hours in advance), and for how long they may remain in the opt-out.

Establish program participation duration requirements. Demand flexibility programs can require customers to sign up for an established period. For example, residential customers may be required to participate for two years, while commercial customers may be required to participate for five years. Program participation requirements can be designed to ensure the expectations placed on customers are commensurate with the benefits they are expected to derive from program participation (e.g., value proposition). Providing customers with program duration participation requirements during initial outreach and education can contribute to informing customer decision-making and establishing clear expectations.

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