

Strategies for Utility Incentive Programs to Accelerate System Packages Deployment

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ABSTRACT

Utility incentive programs are a key avenue to support customers in deepening their energy savings, however these programs have predominantly focused on single technology approaches, limiting their energy savings potential. Incentive programs face several challenges in accessing deeper energy savings through system packages of technologies. These include cost-effectiveness, combining measures that are traditionally split across deemed, custom or calculated measures, regulatory hurdles combining measures with different useful life, cost-effectiveness and program delivery channels (upstream, midstream, downstream). Additionally, customers and trade allies face challenges with identifying and assessing appropriate strategies, coordination across different trades or suppliers, and implementation while ensuring performance is realized. These barriers result in difficulties in developing successful programmatic approaches, particularly when program administration costs are considered. Further, small commercial buildings are a typically underserved market, with system package retrofits being a heavier lift than for their large building counterparts.

This paper discusses takeaways from a study to identify key programmatic and delivery approaches to accelerate the uptake of system-based technologies in commercial buildings, including small commercial. The findings stem from literature reviews, data analysis, in-depth interviews, and stakeholder roundtable sessions. Interview and roundtable participants included utility program administrators, 3rd party implementers, and customer proxies. Key barriers and opportunities to support increased system package uptake will be covered, along with recommendations for work to support streamlined and cost-effective program implementation for all stakeholders.

The findings will be a reference for utility program managers, program implementers and key stakeholders in program development and execution.

Background

Commercial building energy efficiency retrofits remain a large deployment opportunity with potential for significant energy and greenhouse gas emission reductions. However, many retrofits are dominated by single equipment or measure upgrades, without consideration for the deeper energy savings and the benefits of an integrated system approach. These single equipment measure retrofits have been shown to have less potential for whole building energy savings as compared to comprehensive system-based approaches (Regnier et al. 2018). At the same time,

U.S. commercial building energy consumption has continued to grow, underscoring the need for new approaches to reverse this trend (EIA 2022). A system-based approach goes beyond a single component or piece of equipment to access deeper savings through combined measures, with the added benefits of interactive effects resulting in deeper levels of savings. In a previous effort, a set of utility partners worked to identify and deploy three system technology packages, achieving 49-82% greater energy savings compared to a standard component-based retrofit baseline (Regnier et al., 2018a). Analysis of a whole building retrofit comparing a widget based upgrade to an integrated systems based approach showed that the component approach saved up to 33% whole building energy use using best in class efficient versions of the replaced technology, as compared to 84% whole building savings using the integrated systems based approach (Regnier et al., 2018b).

Systems efficiency is emerging as a focus of energy policy and program efforts, but several barriers exist (ASE 2016). Utility incentive programs are a key deployment channel and this should be able to influence commercial building retrofits however these programs are typically designed to support either single prescriptive energy efficiency measures or whole building energy efficiency approaches such as through custom incentive programs. Recent work reviewed the range of approaches utilities have used for whole building programs and have found that while they can involve multiple energy efficiency measures, typically the program approaches are significantly more complex and administratively burdensome. The strategies employed in these programs include whole building energy modeling, normalized metering energy consumption evaluations (NMEC) and other labor-intensive processes (Srivastava & Mah, 2022). The higher amount of effort with these whole building approaches results in greater administrative costs, and consequently these programs are constrained to larger, well-resourced utilities, and they are targeted towards larger commercial customers with significant energy cost savings that can offset these efforts for a cost-effective program overall. As a result, a large part of the market is underserved in accessing deeper energy savings through multi-measure incentive programs, including less well-resourced utilities, and customers with smaller buildings (<50,000sf). Small commercial buildings represent approximately 47 percent of commercial energy consumption, 49 percent of total square footage, and 94 percent of commercial buildings in the United States (CBECS, 2012). Unfortunately, small commercial buildings have fewer opportunities to participate in efficiency programs due to the higher program costs associated with projects in smaller buildings. Other work demonstrates that utility custom programs (where an integrated system could be applied) are still highly ‘widget’ oriented, with energy savings that lag behind those of other models with integrated approaches to energy savings, such as those provided through energy service contractors (ESCOs) and federal retrofit programs (e.g., GSA) (Regnier et al, 2020). Overall, new strategies are needed to improve the effectiveness of utility incentive programs in deepening energy efficiency savings for all customers.

An opportunity exists to develop programs that access deeper energy savings by packaging multiple measures together and applying them through programs that are similar to a prescriptive program approach. This approach would benefit all sizes of utility and open the door

to support smaller commercial customers (under 50,000 square foot buildings) in equitably accessing these savings. A few multi-measure packages have been developed for utility programs with this in mind (Regnier et al, 2018a), however they received several barriers to adoption not foreseen. In this paper, the results of a literature review, roundtable discussions and stakeholder interviews are presented, focusing on identifying the key barriers and opportunities related to the deployment of multi-measure utility incentive programs. This study utilized two multi-measure packages as examples of possible program areas of focus, as shown in Table 1.

Table 1. Multi-Measure Packages Used in Study

Package ID	Measure Descriptions	Annual Whole Building Energy Savings Potential (existing bldg. baseline)
A	LED Lighting with Advanced Lighting Controls & HVAC Demand Control Ventilation (Integrates Occupancy Sensing from Lighting System)	12 to 15% 1.6 to 2.3 kWh/ft ² /yr.
B	LED Lighting with Advanced Lighting Controls & HVAC VAV Box Re-tuning to 15% Minimum Supply Air	20 to 22% 2.2 to 4.0 kWh/ft ² /yr.

These buildings were modelled using representative large commercial office systems as the focus of the previous work was on that building category. The model represented a building with approximately 500,000 square feet of space. Modeled annual whole building energy savings were computed for an existing building post-1980s baseline condition in multiple utility service territories in California, Colorado, Minnesota, Illinois, and New York. Building energy usage and measure savings in relative and absolute terms varied per region due to location-specific weather data and HVAC equipment sizing. Measure savings were also computed against a similar existing building baseline but with lighting systems updated to current building energy code minimum per service territory, with reduced measure energy savings found; 7 to 10% for Package A and 14 to 16% for Package B. Both of these packages benefit from systems integration, with significant annual energy savings potential, as evaluated using prototype models for large commercial office buildings (DOE 2022).

Study Goal

The goal of the study was to investigate potential deployment strategies for system package incentive programs and support those strategies with data and inputs from key market actors.

Major market actors include utility program managers, 3rd party program implementers, and customer proxies. For utility program managers, the goal was to understand existing utility program implementation practices and how it can enable or hinder adoption of incentive programs that promote systems packages. For 3rd party implementers, the goal was to understand the needs for decision-making assistance in both the upstream and downstream program spaces. For end-use customers, the goal was to understand the mix of trade-offs encountered during the consideration of a multi-technology incentive and which decision components are most influential in choosing a ‘go’ or ‘no-go.’

Also, critically important was identifying strategies that overcome the barriers to adoption unique to the small commercial market and underserved communities

Methods

To achieve the study goals, we conducted a literature review of innovative financing structures for small and medium businesses, and moderated roundtable discussions with subject matter experts and one-on-one confidential interviews with utility program managers and 3rd party implementers.

We selected roundtable participants from two pools. First, a pool of subject matter experts known to the research team as thought leaders with direct knowledge of program design that also represented geographically diverse utility markets nationwide. Second, a pool of researchers with expertise in whole building systems, commercial building energy management, evaluation, measurement, and verification (EM&V), and energy modeling. Both pools of experts bring a considerably enriched perspective from their day-to-day responsibilities.

For the roundtable discussions, we prepared materials (slides and on-line white boards) to serve as guides. After a brief introduction to the goals of the study, the moderator moved through several broad areas of market barriers: lack of awareness, risks, information gaps, programmatic and regulatory issues, and technical knowledge. An online whiteboard allowed contributors to respond not only to each other but to the overall market characterization as it emerged. The whiteboard was particularly useful as the discussion moved from barriers to solutions addressing those barriers.

For the one-on-one interviews, we created interview scripts with branching to allow the interviewer to quickly move through the material in a hierarchical manner. The scripts were designed to cast a wide net appropriate to the topic but bypass areas where the interviewee had less direct experience to focus on other areas where they could make a significant contribution to the data. Interview scripts covered five key areas:

- Role of the individual in the organization in the context of new measure development
- Policies and procedures driving decisions around new measure development

- Timelines associated with developing new measures
- Challenges and opportunities specific to system packages measures
- Deployment opportunities and challenges in:
 - Territories not well covered by trades
 - Small/medium business entities
 - Hard to reach and under-served customers

Literature Review of Innovative Financing Structures for Small and Medium Businesses

Legacy delivery and funding mechanisms present barriers to deeper energy savings, particularly for small and medium businesses that lack the upfront capital for significant energy efficiency improvements. In an ACEEE report on Energy Efficiency as a Service, Nick Henner and Bryan Howard note, “Grants, rebates, and other incentives for energy efficiency from utility and similar programs will not be enough to reach efficiency goals and targets, and the upfront capital needed for energy efficiency investment often requires a financing solution, particularly for retrofits and other major energy equipment or system upgrades” (Henner and Howard, 2022).

The approach employed most on public-sector projects is Energy Savings Performance Contracting (ESPC). As Steven Nadel of ACEEE explains, “With ESPCs, an energy service company (ESCO) designs projects, finances them, and oversees both their initial installation and ongoing maintenance. The ESCO is paid based on the actual energy savings” (Nadel 2019). A 2015 report for the US General Services Administration (GSA) noted, “ESPCs allow federal agencies to partner with an ESCO in order to complete energy savings projects without upfront capital costs or Congressional appropriations” (RMI, 2015).

A similar approach, known as an Energy Service Agreement (ESA), “is a pay-for-performance, off-balance sheet financing solution that allows customers to implement energy efficiency projects with zero upfront capital expenditure” (IMT, 2016). Under this approach, the ESA provider pays for all project costs, and once the project is operational the customer makes service charge payments based on realized savings at a rate set at or below the existing utility price. Under typical ESA arrangements, the ESA provider also owns the equipment installed for the duration of the contract (Henner and Howard, 2022). However, as the report by Institute for Market Transformation notes, ESA providers tend to favor larger projects, there can be a long negotiation process prior to implementation, and the approach may not be viable for leased spaces (IMT, 2016).

Another emerging strategy, called Energy Efficiency as a Service (EEaaS), combines elements of both ESPC and ESA into an approach modeled on other “as-a-service” businesses (e.g., ride hailing, streaming services, cloud software, and storage services, etc.) (Henner and Howard, 2022). Typically, an EEaaS vendor contracts with a customer, based on an ESA

model, and identifies and contracts with an ESCO to install and maintain the equipment similar to an ESPC model (Henner and Howard, 2022). This approach mirrors the benefits and barriers of ESPC and ESA models, while expanding the service offering beyond the typical public-sector and institutional customers (Henner and Howard, 2022), which may be useful for smaller commercial businesses and other customers.

Although these approaches have developed largely outside the utility program structure, Henner and Howard note that utilities are logical partners for expanding the reach of these market-based strategies. As they describe in reference to EEaaS approaches, partnering with utilities expands the customer base for EEaaS services, including previously unserved or underserved customers like small and medium business, and provides an additional avenue for utilities to meet energy savings and GHG reduction targets (Henner and Howard, 2022). Although utilities such as Duke Energy have begun offering these types of services, there are still barriers to broader utility integration, including contract complexity, administrative costs, and opportunity costs associated with drawing customers away from other utility offerings (Henner and Howard, 2022).

Deployment Barriers and Solutions for Multi-measure Programs

Roundtable discussions and interviews revealed a clear split between incentives that are common to most energy efficiency incentive programs and others that are unique to the system packages approach. Common known barriers are described in Table 2. Proposed solutions are included and are potentially more challenging and expensive to implement than for traditional unit-based incentive programs. For example, where lack of knowledge about the benefits is a barrier to adoption, conveying the knowledge of how the synergy between components increases the benefit of the package is more complicated than explaining only the benefits of the components.

Table 2 - Common Known Program Implementation Barriers

Known Barrier	Description	Proposed Solution
Knowledge / Awareness		
<i>Knowledge of the costs</i>	Lack of understanding of the cost/benefit of the offering. Lack of awareness of the existence of possible associated incentives.	Pilot projects and studies to feed cost and savings results to affiliate training.
<i>Knowledge of the benefits</i>	Customers want the benefits explained. Benefits are not always just financial and/or	Outreach to potential customers. Training for implementers to help them sell the measures to

	energy.	customers.
Programmatic and Regulatory		
<i>Perceived project performance risk</i>	Utility concerns that the savings won't meet the calculated results, which can lead to failure to meet cost-effectiveness targets.	Develop pilots and case studies to refine the savings predictions and use the results to inform the modeling to ensure variability and underperformance are properly accounted for.
<i>Customer satisfaction risk</i>	Concern that a new program may have hidden pitfalls that will reflect badly on the utility or affiliates.	Develop pilot and case study projects to help identify the problem areas with the technology and the implementation. Identify the problems and make recommendations to avoid them in the full program rollout.
<i>Mismatched incentives among states and utilities</i>	Some utilities must spend, Percent of Gross revenue while others must spend, Percent of kWh unit sales on programs.	Program design should match utility compensation and incentive structure.
	States calculate cost-effectiveness differently.	
<i>Rate case cycle risk</i>	Program launch not timed with utility rate case cycle. Measure doesn't fit into the current utility business model.	Plan and coordinate program launch with utility.
Financial		
<i>Financial risk for the utility</i>	The cost of implementation might exceed the benefit to the utility.	Develop pilots and case studies to refine the costs of program implementation and the savings predictions. Use the results to inform the modeling to ensure variability and underperformance are properly accounted for.
<i>Financial risk for the customer</i>	Lack of available financing methods including lack of cash or cash flow to pay any upfront costs.	Develop funding mechanisms through the utility (on-bill financing), or other approaches (energy efficiency as a service,

<i>Complexity of financing vehicles</i>	3rd party financing solutions can be challenging, complex and overly burdensome for small/medium businesses.	UESCO or similar). Bundle projects into larger investment avenues for large scale capital investment moneys.
<i>Financial scale</i>	Fixed transaction costs of 3 rd party solutions are still prohibitively high. Most projects are \$1M and above, not exactly within reach of SMB's.	
Technical		
<i>Technical newness</i>	Inertial barrier to introduction of new technology not identical to existing program.	Attach system packages to existing measures
<i>Technical complexity</i>	Technical complexity requires more and different solutions for different building types and conditions.	Establish pattern books for solutions. Develop a calculation procedure to assist trade allies in creating proper solutions. Develop an engineering support contractor to support cost-effective program projects with design support.

Barriers that are unique to a multi-measure program (or at least have a unique focus that isn't likely to occur in a traditional program) are shown in Table 3 below.

Table 3 - Barriers and Solutions Unique to the System Packages Approach

System Packages Barrier	Description	Proposed Solution
Knowledge / Awareness		
<i>Availability and awareness of the program</i>	Few, if any, vendors currently offer a systems package measure.	Outreach and training for implementers to increase awareness.
Project Complexity		
<i>One trade cannot implement the entire system package</i>	Rarely does one contractor cover multiple trades, e.g. lighting and HVAC.	Develop trade ally networks and encourage partnering among the contractors. Encourage contractors that include all disciplines within a single company.

<i>Technical complexity</i>	System packages are more complex than simple components	Training for all parties, utilities, trade partners, customers will reduce misaligned expectations and ensure better systems project success.
<i>Package suitability</i>	Conditions must be right to support packages	Develop clear guidelines for package suitability and a screening procedure to ensure a package approach isn't implemented in an unsuitable host building. Ensure sufficient trade ally training to avoid problems.
Programs Market Limitations		
<i>Inertia/Market Friction</i>	Some utilities are not equipped to innovate in program development. Contractors are not comfortable deviating from the 'safe' EE activities.	Create pilot programs and demonstrations to develop supporting results data. Work with vanguard utilities to create program successes to prime the utility market. Promote new approaches in peer-to-peer contractor and utility networks.
<i>Mixed effects of upstream/downstream incentives</i>	Upstream/downstream incentive injection points can be different for different technologies. Program design doesn't handle this well.	Determine how the different intervention points impact the program and work to ensure that the least penalties occur with a system packages approach.
Financial		
<i>Financing risk</i>	Increased technical complexity, lack of case studies showing successful outcomes	Simplify and document. Financing entities want simple packaged solutions with low risk. Establish a track record of success (case studies).
<i>Financing accessibility</i>	Systems packages cost more and higher costs make them less accessible.	Work to provide innovative funding resources and partnerships with funders.
<i>Inability to fund a complete solution at a single time</i>	Implementers find customers staging deployment over multiple years as funding allows.	Develop a potential "A" and "B" sequence for the measures to allow sequencing of the work through

		multiple fiscal years.
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Several of the key barriers to multi-measure program implementation are discussed below in more detail.

Project Complexity

The multi-measure nature of this approach means there is the likelihood that there will be more than a single implementer involved in the project, or that the implementers will need to expand into more than one discipline, or that they may need to become both an implementer and a general contractor for another contractor to complete the retrofit work.

This also can mean that there are issues of task coordination between the contractors that will require special attention to ensure the systems are properly set up individually and so they are working synergistically. If this effort isn't done, there is little reason to set up a multi-measure program because the savings from the tuned system will not be achieved.

Lastly, the multi-measure aspect requires that all the conditions for site suitability have to be met for the project to be viably implemented within the full program. This will likely limit the number of possible sites to a small subset of the potential for a single measure project, like an LED lighting retrofit.

Solution: In all these cases, training and knowledge is the key to overcoming the potential pitfalls of the project. A properly trained trade partner will understand the limits of the program when determining suitability and will also know how and where cross-trade coordination is necessary to ensure that the project is maximizing the retrofit measure savings potential.

Programs Market Limitations

The programs market is built with an approach that has been employed with great success for many years now. While there are multiple programs approaches in many regions, the majority of the programs activity typically falls into the category of individual prescriptive measures, which is the basis for simplifying the program accounting process to make the activities as cost effective for implementers and the utilities as possible. Other programs, like the custom approach, require much more detailed calculations and support for energy savings before the credit will be given on the savings claims.

Additionally, the savings claim for a multi-measure program runs the risk of perceived double-dipping when savings are tied to both midstream and upstream interventions. This will be harder to resolve in a multi-measure program unless there is clear accounting at each point in the

delivery channel. The accounting for products will require special attention to ensure that either non-incentivized pricing was used, or that the distributor chosen is not participating in the midstream program. With a purely prescriptive measure approach, the units are likely to make this accounting relatively easy, but the hybrid nature of a multi-measure program may make the accounting less transparent.

Solutions: The program can be developed in a manner that ensures that additional calculations and tracking is kept to a minimum. However, it is impossible to make a program that incentivizes more than a single measure that won't have some additional accounting requirements to keep all the activities and savings claims straight and defensible.

Financial Issues

The design of a multi-measure program offering will be unique until it becomes mainstream, so there will be some issues with funding uncertainty associated with savings reliability at the onset of the program offering. In addition, there will likely be concerns related to the cost to the project for a list of activities that cross multiple end uses and the added complexity associated with integrating multiple measures for synergy. The project will cost more just because it represents a possible lighting measure list and an HVAC measure list rolled into a single contract. That cost may be high enough to dissuade many potential customers from participating. It may also encourage customers to try to find methods of sequencing the work to spread the cost over multiple years' worth of financial balance sheets.

Solutions: The initial weaning stage for a new program offering will be aided by pilot projects in the initial stages. These will assist in establishing the procedures for program execution, cost effectiveness of the activities, and generating data for trade allies to use for marketing the program offering but will also provide the opportunity to develop financial infrastructures needed to help small businesses secure the funding needed to get the work done.

Also, an innovative program design may provide other avenues for this financing as well. It might be possible to develop the program with sequenced incentives that are implemented as the retrofit activities take place. For example, in a program that might include LED retrofit and HVAC upgrades, an incentive for both HVAC and lighting retrofits can be calculated independently with an added incentive applied in subsequent years if one is implemented first and the second is implemented later with the confirmation that the inter-system integration is accomplished as part of the second retrofit activities.

Markets

Small Business/Disadvantaged Communities/Hard-to-Reach

Small business (SMB), disadvantaged communities (DAC), and hard-to-reach (HTR) groups are different and more complex categories of utility customers. The traditional methods of programs outreach may not work as well within these groups and programs that are geared towards large businesses. Customers who fall into one of these groups may also fall into others that make the outreach more difficult.

Solutions: Effective program delivery to SMB/DAC/HTR customers will benefit from a different approach than used in other markets. Designing complex incentives in advance may not be a successfully transferrable model. SMB/DAC/HTR customers will more readily adopt a customer-centric hybrid model (direct-install combined with financing) for program delivery that follows a few simple steps:

- Eliminate complexity by assembling a small suite of prescriptive measures for the specific geographical or utility market (assemble possibilities).
- Prepare a subset of incentives appropriate for a given business type and building—refrigeration unit motor upgrade for small grocery or heat-exchanger addition to compressed air system for an auto shop (targeted scope).
- Determine the intersection of what is needed, what is implementable, and what is financially accessible to the customer (assessment).
- Combine all viable retrofit options into a single custom-tailored, direct-install solution: including building systems, hot water supply, air compressors, display case lighting, etc. (the offer).

When adoption is driven by the trades (through door-to-door recruitment), offering system packages is an opportunity, not a barrier. Comprehensiveness is a selling point. Larger multiple-measure jobs are larger in revenue reduce individual administrative cost as a percentage of the project. A successful multi-measure adoption process starts with an assessment—an onsite mini-audit leading to a custom-tailored direct-install solution.

HTR customers may be more likely to participate if they receive encouragement from a local community member or community liaison who is known in the area. Smaller business owners often do not have the resources to do research into programs but may be willing to act on an endorsement from another person in the community who can speak for the program.

Consider developing a referral credit approach to encourage word-of-mouth spread of the program's merits to potential customers. While the role of lighting measures may be diminishing in future program offerings targeted to the large commercial sector, for the SMB/DAC/HTR sector, lighting remains the gateway to adoption of multiple measures.

Discussion

We found strong stakeholder interest in the system packages approach. In a program environment where lighting measures are approaching saturation, an option that offers the simplicity of a prescriptive solution and relief from site-specific constraints of a custom approach has appeal. However, an absence of utility programs supporting system packages presents a causality dilemma. If system packages were available in utility programs, they would become more widely available in the market. But a lack of market availability (and consequent lack of awareness) makes system packages less appealing for utility programs. An opportunity exists for a third party to outline the parameters of system packages market offerings and provide the stimulus for the market to function.

Even after the awareness and availability hurdles are overcome, our subject matter experts (SMEs) anticipated three main types of risk unique to a system packages approach that a utility will likely encounter: technical complexity risk, financial risk, and trade coordination risk.

Technical complexity risk refers to the inevitability of more and different technical components for different building types and conditions in the system packages solution. The challenge is to make the technical complexity of an integrated system appear simple to the trades and the customer. One way to accomplish this is to develop a calculation procedure that assists trade allies in creating site-appropriate solutions. With simple inputs and outputs filtering the inherent complexity, different system packages can be quickly generated (and sold to the customer) in the field.

Financial risk is the risk funding entities encounter when asked to underwrite new technology without established outcomes. It also includes the risk or simple inability of a customer to self-finance site improvements out of savings or cash flow. Over time, this risk is mitigated by simplified solutions with an ongoing track record of success and cost-effectiveness. However, to initially reduce risk for market actors with exposure to loss, it may be more effective and increase uptake more quickly, for a government entity to serve in a financial risk-mitigation capacity.

Finally, trade coordination risk is the risk of deployment failure or delay due to trades not understanding all the technology in the proposed system. A lighting contractor is unlikely to have expertise integrating sensors with HVAC controls and vice versa. The solution in this case is to encourage or incubate trade-ally networks so experience working together in the field on system packages is gained and retained for future projects.

Table 4 shows ‘de-risking’ solutions linked to specific program implementation outcomes.

Table 4 - Program Implementation Outcomes and Associated Actions

Program Implementation Outcome	Associated Action
Implementation simplified	Create a calculation engine with simple inputs and outputs regardless of underlying complexity
Precedent, a track record of success	Facilitate peer exchange and develop case studies of successful installations that produced energy savings and were cost-effective
Financing available	Foster connections to utility or other market incentives and to financing entities with options to serve SMB/DAC/HTR customers
Information disseminated	Increase program awareness and promote benefits to customers. Create demand using a clear call to action
Industry acceptance achieved	Involve government, trade, and subject matter experts in a process of reaching consensus on benefits of system packages. Produce workpapers/TRMs or outline a clear path to workpapers/TRMs
Market actors educated on the technology and the approach	Communicate the technical aspects of the package and how they work together as a system.
Successful field deployments	Create trade ally networks, approved vendors, contractors with the capability to install system packages

Conclusions

In previous work, we identified how components of system packages work synergistically and developed the energy and cost modeling for implementation across utility markets in the U.S. Introduction of a new concept into a market that is receptive but has not achieved traction or momentum requires overcoming inertia and decreasing risk. To stimulate the process, we identified barriers to system packages deployment and collected data from subject matter experts, utility program managers, and 3rd party implementers using roundtable discussion and one-on-one interview formats. The results of the effort provided a structure for organizing desired program implementation outcomes and associated actions for achieving those outcomes. A natural next step would be to compile the solutions into a reference for utility program managers, program implementers and key stakeholders in program development and execution where system packages are a good fit.

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