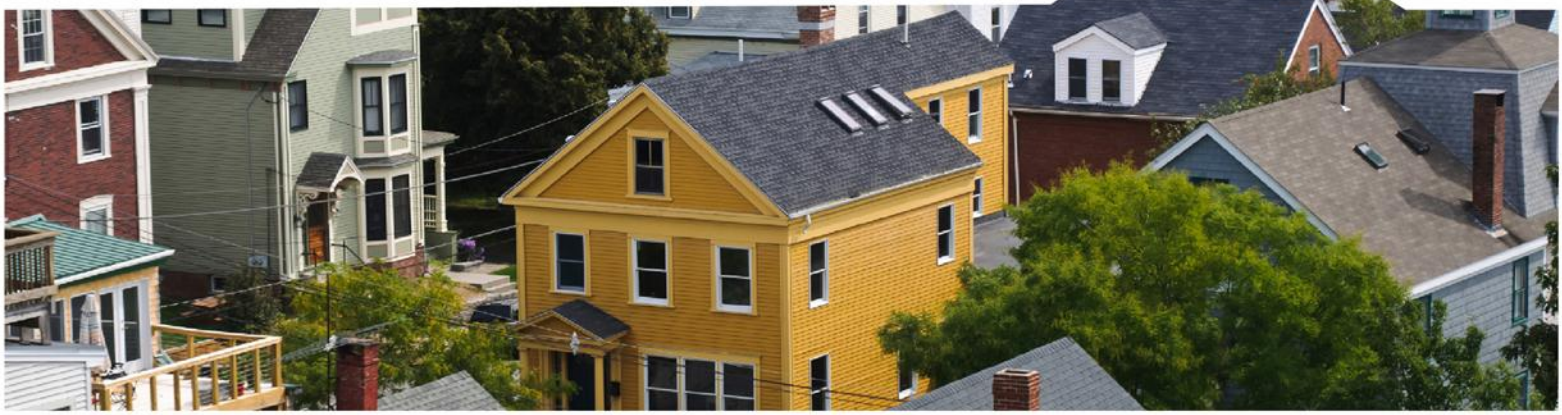
BETTER BUILDINGS
U.S. DEPARTMENT OF ENERGY

Better Buildings
Neighborhood Program

Business Model Guide Executive Summary

October 10, 2011



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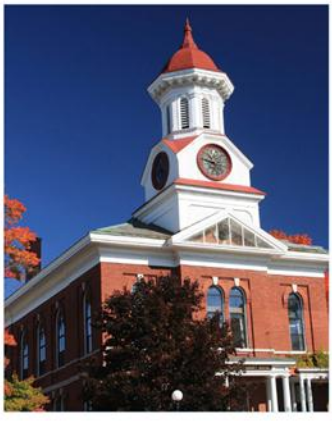

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (Better Buildings Program) is focused on creating self-sustaining markets for building energy efficiency that result in economic, environmental, and energy benefits for communities throughout the United States. DOE provided $508 million in grants to 41 state and local governments to test potential energy efficiency upgrade program delivery and business models that improve the efficiency of buildings across the country. These grants are piloting innovative ways to design programs, services, financial structures, and methods for engaging consumers with the goal of identifying effective and replicable practices.

A sustainable energy efficiency market benefits the public and private sectors through reduced energy usage, increased comfort and health, lower utility bills, job opportunities, and a better environment. In order to translate publicly funded innovations into sustainable models and expand the energy efficiency marketplace, the private sector will be a necessary and important partner and/or driver. Therefore, DOE and its grant recipient partners are collectively striving to understand the interests of businesses operating in this environment to identify where they could capitalize on and evolve the success of local Better Buildings programs.

The Better Buildings Neighborhood Program Business Model Guide 2011 combines early lessons learned from Better Buildings grant recipients, data from existing research studies, and insights from private sector sources to highlight business models that can help pave the way towards a sustainable residential energy efficiency market. These business models should help inform Better Buildings grant recipients, program administrators, contractors, and retail companies seeking to expand their services in and into the energy efficiency market. This version of the document is aimed at enhancing program administrators' understanding of critical market players as programs identify partners for long-term growth. In the future, DOE will incorporate additional information from Better Buildings grant recipients and partner businesses based on their experience implementing residential energy efficiency programs over the years of their grant.

ES 1.1 Guide Development

To identify business models that may help organizations expand and become sustainable in the energy efficiency market, the Better Buildings Program conducted a study of the market and its key players. This approach includes:

- Identifying key actors in the energy efficiency value chain
- Classifying common elements of a business strategy
- Conducting market research, interviewing more than 40 stakeholders, and reviewing financial data for six of the actors that form the core of the energy efficiency market
- Aggregating and analyzing the data to highlight common themes.

As a result, the research highlights:

- The energy efficiency value chain that characterizes the actors and services in the market
- Six actors critical to the development of a sustainable market for energy efficiency who provide the vast majority of needed energy upgrade services to consumers

- A framework for comparison across the different actors identified in the value chain
- A detailed look at key financial, operational, and market-related decision-making criteria relevant to the six actors
- Key points of interaction among market participants and key opportunities for collaboration
- Program practices and benchmarks that can assist the market evolve toward providing home energy efficiency services.

ES 1.2 Energy Efficiency Value Chain

The energy efficiency value chain is complex, with multiple actors from the private, public, and non-profit sectors providing overlapping services to the market. Upon mapping the value chain, DOE chose to examine six key market actors that influence and/or provide the opportunity to expand the residential energy efficiency market: three types of building contractors, retailers, and two types of energy efficiency program administrators.

A **value chain** is a representation of a market that highlights all key actors and how they interact with one another.

Companies that serve as contractors or providers of home energy upgrade services to consumers may include remodelers; heating, ventilation, and air conditioning (HVAC) contractors; home performance contractors; and retailers. These contractors have the potential to either grow their existing home energy upgrade services or expand into the energy efficiency upgrade market if they do not currently offer services. These contractors can provide significant partnership opportunities to program administrators as they provide home energy upgrade services directly to consumers.

The Better Buildings Program also studied multiple business models for program administrators because they have influence over programs, policy, regulation, and/or incentives in the energy efficiency market and can help enable the success of private contractors. The actors examined include non-utility program administrators (such as NYSERDA and Better Buildings for Michigan) and utility program administrators (such as Dominion Electric or Pacific Gas & Electric (PG&E)). These program administrators can specifically influence the value chain by providing financial incentives, training and certifications programs, and marketing and outreach tools that reach contractors and consumers.

ES 1.3 Business Model Elements

Each member of the energy efficiency value chain utilizes a distinct business model characterized by multiple elements. These elements include:

- **Governance: How a firm makes decisions in the market.** Understanding the governance structure associated with a given business model can help uncover what objectives a business will prioritize, how they will respond to both market trends and policy, and who they recognize as relevant stakeholders.
- **Financial Model or Structure: How a firm raises capital for start-up or expansion and sets performance targets.** Establishing and tracking a key set of financial metrics and benchmarks across each industry segment can reveal the major motivations for a business to seek change, as well as key decision points.
- **Assets and Infrastructure: How a firm invests and brands itself in order to operate.** Assessing the benefits and costs associated with an asset or infrastructure enables management to identify opportunities for creating value and reducing costs.

- **Service Offering: What goods and services a firm markets and sells.** Examining existing service offerings and uncovering untapped opportunities to expand core business offerings or enter into partnerships may reveal ways of increasing customer traffic, consumption, and revenue over time.
- **Customer and Customer Acquisition: Who a firm's target market is and how they are reached.** Identifying customer segments associated with each business model can help to measure probability of success for partnerships and service offerings.

The unique mix of these business model elements determines how a given actor will be affected by various financial incentives, regulations, and fluctuations in the market. By analyzing each business model's unique components, DOE has gained some insight into possible opportunities for increased energy efficiency services in the market. An overview of key insights is described by actor and is grouped in two primary categories: contractors/retailers and program administrators.

ES.2 INTRODUCTION: CONTRACTORS/RETAILERS

ES 2.1 Contractor/Retailer Description

The home improvement market includes a range of private-sector contractors that currently provide or could potentially offer home energy upgrade services. Remodelers, HVAC contractors, home performance contractors, and retailers represent the majority of the contractors in the home improvement market today and are the focus of this business model analysis.

- The **remodeler** business model focuses on the remodeler's operating environment in the general home improvement market and highlights opportunities for expansion into the energy efficiency market.
- The **HVAC contractor** model reviews the operating environment for contractors whose primary service offering is HVAC installation and repair and highlights opportunities for expansion into the energy efficiency market.
- The **home performance contractor** model walks through the "one-stop-shop" model for delivering home energy upgrades. It illustrates both opportunities and barriers for becoming a home performance contractor company.
- The **retailer** model demonstrates how energy efficiency services are provided in combination with or through retailers. It examines the longstanding role of retailers as marketing powerhouses, and the newer trend towards retailers partnering with various types of service providers, such as general remodelers or HVAC contractors. Consequently, retailers may sell contractor services under their brand name or sell energy efficiency products to "do-it-yourself" consumers directly.

Figure ES - 1 provides an overview and descriptions of these contractors.

Description of Contractors

	Remodeler Model		HVAC Contractor Model	Home Performance Contractor Model	Retailer Model
Descriptor	**General Remodelers**	**Integrated Design and Build Firms**	**Trade Contractors**	**Home Performance Contractors**	**Retailers**
Market Role	▪ Represent the majority of home improvement market	▪ Represent a small segment of the general remodeler market	▪ Represent a large portion of the home improvement market	▪ Represent a small segment of the home improvement market	▪ Primary seller of goods to "do-it-yourself" consumers
Service Offering	▪ Offer standard range of home improvement services	▪ Offer services that integrate architects, remodelers, and project managers	▪ Offer specialized products and services such as HVAC and windows	▪ Specialize in energy efficiency services and provide "one-stop-shop" for home energy upgrades	▪ Provide goods and services either directly to the consumer or indirectly through network of qualified contractors that operate under the retailer brand
Implications	▪ Largest segment of the market, but also the least specialized ▪ May require the most additional training to shift from general home improvement to home energy upgrade model	▪ Generally have more control over entire home improvement process than general remodelers ▪ Design component of work may offer greater opportunity to work energy efficiency into home improvement projects	▪ HVAC contractors require highly technically skilled staff to startup/operate, which results in a lower marginal cost for them to enter the home energy efficiency market	▪ While larger firms in the related remodeler or trade contractor markets can shift their focus to become vertically integrated energy upgrade providers, small businesses may have more success by only focusing on providing home energy upgrades	▪ In addition to sale of goods, retailers help facilitate the home improvement market by providing home improvement services via partnerships with qualified contractors (e.g., general remodelers)

Source: Booz Allen research

Figure ES - 1: Description of Contractors

ES 2.1.1 Contractor Comparison

The business model analysis uses the five business model elements to highlight critical components that influence each contractor's delivery of home energy upgrade services. However, it is useful to first understand the key similarities and differences between these contractors, to better understand their opportunities for expansion, collaboration, and sustainability in the energy efficiency market. This section highlights key points of comparison in the categories of size, operating environment, competitive landscape, and collaborative landscape.

- **Size**: Remodelers, HVAC contractors, and home performance contractors are very similar in size, with the majority of firms employing 1-15 people. The majority of retailers, on the other hand, are large, established big box companies.

- **Operating Environment:** Each contractor experiences barriers to entry into both the broader home improvement and niche energy efficiency markets:
  - **Remodelers** have the lowest barriers to entry into the general home improvement market, as they require only a state license in order to operate legally. Remodelers generally start at the local level and are not seasonal businesses by nature.
  - **HVAC contractors** experience higher barriers to entry into the general home improvement market because they offer specialized services that require substantive training and certification, particularly

for health and safety requirements. HVAC contractors are also characterized by the seasonal and regional nature of their industry.
    - **Home performance contractors** focus primarily on the energy efficiency market, rather than the broader home improvement market. This emphasis may lead to slightly higher barriers to entry into the energy efficiency market than remodelers face entering the general home improvement market, as home energy upgrade services require specialized training and equipment.
    - The **retailer** market is saturated, competitive, and dominated by big box stores. Growth is achieved through the addition of new services or through mergers and acquisitions, rather than opening new stores.

- **Competitive Landscape**: Remodelers, HVAC contractors, home performance contractors, and retailers compete with one another directly when it comes to home energy upgrade services, although they occupy different niches of the broader home improvement market. The overlap of services can generally be summarized as:
    - **HVAC contractors** and **home performance contractors** compete solely in the installation and replacement of heating and cooling units.
    - **Remodelers** compete with **home performance contractors** in the provision of insulation, duct sealing, appliance installation, and other general home improvements that also relate to improving a home's energy performance.
    - **Home performance contractors, HVAC contractors and remodelers** may also compete with energy efficiency programs that offer free or discounted energy assessments or conduct home energy upgrades directly.
    - **Retailers** primarily compete with other service providers by selling goods and services to "do-it-yourself" homeowners.

- **Collaborative Landscape:** Contractors and retailers have many opportunities for collaboration with program administrators and other actors.
    - **Remodelers** and **HVAC contractors** may hire other specialists, such as insulation contractors, as subcontractors on large jobs. **Remodelers** also often subcontract to general **HVAC contractors** to provide specialized HVAC services.
    - **Retailers and program administrators** may partner with **remodelers** or **HVAC contractors** by retaining them as certified service providers who do home improvement or home energy upgrade work on their behalf.
    - **Home performance contractors** have not yet established a clear partnership track record, but do collaborate with both **non-utility** and **utility program administrators** to obtain new business.
    - In addition to partnering with **remodelers** and **HVAC contractors**, **retailers** may engage **home performance contractors** and **non-utility program administrators** through pilot programs. They may also consider acquiring those **home performance contractors** who can demonstrate sustainability of their service offerings in their market.
    - **Retailers** may also partner with **utility program administrators** by offering to market and/or offer their rebates in-store.

Of all the common elements of the various contractor models, profitability is arguably the most critical. As these contractors invest money into their businesses, they must achieve a required rate of return at least the

equivalent of their respective cost of capital (also known as their "hurdle rate"[1]) on those investments to sustain their businesses in the long run.

ES 2.2 Remodeler

A remodeler is a company whose core business is to provide a full array of home improvements, such as remodeling an individual room, replacing floors, or adding rooms. Remodelers compete with and often employ more specialized contractors as subcontractors. These include window, insulation, and HVAC contractors. They may also provide design and construction services. Only 20 percent of remodelers currently offer home energy upgrade services, although an additional 40 percent are considering offering these services.[2]

OPPORTUNITY STATEMENT: To capture a significant share of the overall energy efficiency market, remodelers must take a strategic approach to creating a business plan. This business plan should focus on understanding their local market for home energy upgrades; financing their business expansion through a combination of reinvestment of profits and external funding sources; and collaborating with any local efficiency programs.

Summary of Remodeler Insights

	Observations	Impact on Potential Expansion into Energy Efficiency
Market	▪ As of 2007, there were 650,000 firms in the remodeler industry, but only 200,000 generated more than $100,000 per year in revenue. ▪ Below $1 million in annual revenue, companies are typically not large enough to consider hiring new staff or adding service offerings. ▪ Most of the well-established remodeling firms generate $1 to $4 million in annual revenue, which represent the top 500 firms in the market.	▪ Established firms generating more than $1 million in annual revenue are most likely to have the capacity to incorporate energy efficiency products and services into their business. ▪ Alternately, smaller remodeler firms who are still trying to establish their firm's value to the market could build home energy upgrades into their core service line right from the beginning and brand the company as a home performance firm. This is the model common to the home performance contractor.
Governance	▪ Companies are typically small with 1–15 employees, but they can range to upwards of 1,000 employees. ▪ Firms in the remodeling industry tend to have a lean decision-making structure and are highly responsive to customer demand at the point of sale.	▪ Small companies, such as remodelers, have the decision-making ability to expand into new service offerings relatively quickly; however, they may require assistance in conducting long-term strategic planning to do so.
Financial	▪ Remodelers tend to reinvest profits rather than taking on financed debt to grow their business. ▪ Smaller remodelers have a high cost of debt due to the higher risk associated with the start-up of a business. Often, the cost of this debt is in the 10 to 20 percent range, or requires the posting of personal assets for collateral (such as in home equity lines of credit).	▪ Firms with annual revenue below $1 million typically do not generate enough cash flow to cover the cost of expanding their service offerings. ▪ Smaller firms experience lower profit margins and are often inhibited from expanding into home energy upgrades because of the high cost of debt and loss risks for needed specialized equipment and training.

[1] The full Business Model Guide has a more complete description of hurdle rates.

[2] Source: Building Science Academy and Booz Allen research.

Summary of Remodeler Insights		
	Observations	**Impact on Potential Expansion into Energy Efficiency**
Assets & Infrastructure	▪ Approximately $40,000 to $50,000 in equipment and training costs are required to expand from a typical remodeling contractor model to a home performance contractor model offering home energy upgrades. ▪ As a remodeler's business enters the growth stage, overhead costs typically increase due to additional administrative staff needed to manage job reporting and tracking, incentive paperwork, staff training, and marketing efforts.	▪ Technical training costs may be mitigated through leveraging existing manufacturer or program administrator trainings. ▪ Many overhead functions can be streamlined through the use of customer referral management and job reporting software that lowers the need to have dedicated administrative staff. Implementing this software can be costly up-front, but can reduce costs in the long run and pay for itself.
Service Offering	▪ Remodelers provide general home improvement services that can span many different types of measures. ▪ Approximately 50 percent of remodeler jobs are of the one-off variety or are simple repairs. ▪ Nearly 50 percent of jobs are for single rooms or feature renovations. ▪ A tiny fraction (one percent) of total jobs is whole-home renovations.	▪ Most remodelers already have skills - such as insulation installation, window replacement, appliance installation - that could be readily modified to improve energy efficiency. ▪ Remodelers may be more comfortable expanding their service offerings to providing a series of energy efficiency measures that can be completed over time, rather than trying to sell the less demanded whole-home package in one transaction.
Customers & Customer Acquisition	▪ The general remodeler's target customer base is homeowners with at least $60,000/year in income, in homes built between 1960 and 1990 of 1,500 to 3,000 square feet in size. This target group represents only eight percent of the total home improvement market. ▪ The primary drivers of sales for most remodelers are referrals from existing customers or repeat business.	▪ Customers requesting whole-home renovation and single room/feature services are demographically similar to those inclined to complete energy efficiency projects. Both customer types have upper middle incomes, smaller to medium sized homes and typically have higher levels of education. This illustrates the strategic opportunity for remodelers to expand their services to include home energy upgrades. ▪ Referrals from program administrators could provide a new source of leads for firms trying to establish themselves in the energy efficiency market.

ES 2.3 HVAC Contractor

An HVAC contractor is a specialized contractor whose core business is to install and maintain heating, ventilation, and air conditioning (HVAC) equipment. An HVAC contractor's specialized business model is focused primarily around the installation and maintenance of HVAC units.

OPPORTUNITY STATEMENT: The HVAC contractor possesses many unique advantages for expanding into the energy efficiency market. These include lower expansion costs due to fewer additional asset and training requirements than a general remodeler. Further, an HVAC contractor has established repeat business streams through service contracts and a reputation for maintaining home comfort—a natural selling point for home energy upgrade services.

Summary of HVAC Insights

	Observations	Impact on Potential Expansion into Energy Efficiency
Market	▪ The HVAC contractor market is composed of a majority of small businesses that earn less than $1 million in revenue per year. ▪ The HVAC industry is seasonal and regional in nature. ▪ Approximately 20 percent of HVAC contractors fail across the industry every year, with 70 percent of new HVAC businesses failing in their first year of operation.	▪ Smaller HVAC contractors with annual revenue below $1 million typically would not consider expanding into home energy upgrade services. ▪ The seasonal nature of the HVAC business provides an opportunity for expansion into the home energy upgrade business. Such a shift gives HVAC contractors a chance to bring in revenue year round, as home energy upgrade demand is not seasonal in nature. ▪ HVAC contractor failure has been influenced by the overall U.S. economic downtown.
Governance	▪ Most HVAC contractors are sole proprietorships or family-run businesses. ▪ HVAC contractors typically have a lean governance structure that is centered on the owner or a few key players.	▪ The owner has limited time to evaluate expansion opportunities for the energy efficiency market and may require assistance in that area. ▪ Lean governance provides HVAC contractors with the flexibility to make decisions quickly.
Financial	▪ HVAC contractors are generally funded through personal finance and often rely on lines of credit to cover their cash shortfalls during off-seasons. ▪ The HVAC contractor's key revenue driver is repeat business from maintenance contracts. Roughly 500 service contracts is a reasonable threshold for an HVAC business to be sustainable. ▪ Successful HVAC contractors typically aim for ~12 percent net margin for profitability. ▪ An HVAC contractor's gross profit[3] is higher for equipment (approximately 45 percent on average) than for labor. It is generally in the HVAC contractor's best interest to limit the amount of labor hours on a job in order to keep average margin up. HVAC contractors reach sustainable revenues after their initial growth phase at approximately $2 million annually.	▪ Personal credit cards carry a high cost of debt and high risk. A high cost of start-up debt lowers profitability of smaller firms. ▪ Since service contracts are key sources of revenue for an HVAC contractor and involve regular home visits, they can be leveraged to help drive sales of home energy upgrades as well. ▪ HVAC contractors can maintain desired levels of profitability even after shifting to a more labor-driven model by focusing on home energy upgrade sales during their slow season. ▪ To avoid shifting too far towards a labor-driven model, HVAC contractors can subcontract more labor-intensive components of home energy upgrade services to specialists such as insulation contractors.
Assets &	▪ HVAC asset requirements are broadly similar to those of a home performance contractor.	▪ Limited assets are required to expand services from HVAC into home energy upgrade services.

[3] Gross profit is revenues minus cost of goods sold

Summary of HVAC Insights		
	Observations	**Impact on Potential Expansion into Energy Efficiency**
Infrastructure	▪ HVAC contractors tend to lease their equipment, reducing the need to invest significant amount of capital in assets up front. ▪ The largest investment necessary for an HVAC contractor to expand into the energy efficiency market is training for existing staff in home energy upgrade concepts. ▪ Dedicating a line of business in home energy upgrades requires HVAC contractors to hire specialized staff, purchase additional equipment, and develop marketing materials.	The marginal investment needed to enter the energy efficiency market is approximately $45,000 and typically lower for an HVAC contractor than a remodeler. ▪ HVAC contractors can leverage existing manufacturer or program administrator training to mitigate some of the cost of technical training. ▪ Medium-sized contractors with an already established HVAC business are prime candidates for an expansion into the energy efficiency market. They have the assets already in place to expand and a solid body of established service contracts in hand to drive sales.
Service Offering	▪ HVAC contractors provide specialized services that focus on heating and cooling equipment installation, such as central air conditioning units, furnaces, and hot water heaters. ▪ HVAC contractors can also provide home energy audits and upgrades, including high efficiency equipment and thermostat installations.	▪ Adding labor intensive home energy upgrade services to a service mix primarily focused on material sales will require a shift in strategic thinking and may require additional sales training (from program administrators or manufacturers). ▪ An expansion in service offerings can also affect the way HVAC contractors organize their annual schedules, for example, keeping staff employed year-round rather than seasonally.
Customers & Customer Acquisition	▪ Direct interaction with customers through repeat service visits is the primary means of generating revenue for HVAC contractors. ▪ HVAC contractors are considered experts in "home comfort" by consumers due to their ability to moderate air temperatures.	▪ Service contract touch points provide HVAC contractors with an optimal means of providing energy assessment services, helping to drive year-round sales of home energy upgrades. ▪ Home comfort provides HVAC contractors with a natural platform to offer home energy upgrades, because consumers already rely on HVAC contractors to improve their home comfort by repairing HVAC units.

ES 2.4 Home Performance Contractor

A home performance contractor is a company whose primary business is to deliver the full suite of home energy upgrade services to consumers directly. Home performance contractors range from small, start-up businesses to large national franchise chains that specialize solely in the delivery of home energy upgrade services to the consumer. They have a dedicated business model that integrates all aspects of a home energy upgrade into one comprehensive service. Their offerings include the initial energy assessment through installation to quality assurance.

OPPORTUNITY STATEMENT: Starting a new business as a dedicated home performance contractor provides several advantages over a business expansion model. A new business allows a firm to better define its goals, understand its market prior to entry, determine its key selling points, and undertake training prior to the launch of the business. Once in the market, firms should push for rapid growth in order to build a sustainable customer base because most home performance contractor sales come from repeat business or customer referrals.

Summary of Home Performance Contractor Insights

	Observations	Impact on Potential Entry into Energy Efficiency
Market	▪ As the energy efficiency market is relatively new, the majority of home performance contractor firms in the market are small start-ups, with a few large franchises that expanded into the market from other business types (e.g., HVAC contactors).	▪ The potential size of the energy efficiency market is not yet known, but is currently being evaluated by many of the service providers looking to enter the market.
Governance	▪ Home performance contractors are typically small, private companies with clear chains of command focused around the owner. ▪ In markets where the home performance contractor interacts with an efficiency program, decision-making will be influenced by external reporting regulations associated with the capture of incentives, both on behalf of the firm and the customer.	▪ Home performance contractors can take advantage of lean governance structure to make decisions quickly and adapt to both market and partnership regulations. ▪ The ability to navigate the incentive landscape without taking on too much of the administrative burden is critical to keeping overhead costs down and maintaining a sustainable home energy upgrade business.
Financial	▪ Small home performance contractors are primarily funded through personal finance, such as credit card debt or home equity loans. Personal credit cards and home equity loans carry high cost of debt (between five percent and 16 percent) and a high risk due to the use of personal assets as collateral. ▪ Home performance contractors can break even around the same revenue threshold as a remodeler or HVAC contractor (~$1 to $2 million per year in revenue), but for true sustainability, they should seek to reach the threshold of $5 to $8 million per year in revenue. ▪ Materials and installation labor amount to approximately 80 percent of the cost of an average home performance job. Labor is very difficult to control without resulting in an increased need for quality assurance, while materials costs are generally set by the market.	▪ The high cost of start-up debt lowers profitability of smaller firms. To this end, a business line of credit, which protects small business owners from personal credit risk, may be the best option for financing growth. ▪ Many home performance contractors that do not secure external funding to grow or work in conjunction with an energy efficiency program administrator are unable to grow beyond $2-5 million in revenue per year and exit the market eventually. ▪ Home performance contractors must develop an understanding of market demand and leverage partnership opportunities to reach their target revenue threshold and achieve sustainability for the business. ▪ Home performance contractors can collaborate with program administrators and implement software solutions to control administrative, marketing, energy assessment, and quality assurance costs. These costs are 20 percent of

Summary of Home Performance Contractor Insights		
	Observations	**Impact on Potential Entry into Energy Efficiency**
		the cost of an average job.
Assets & Infrastructure	▪ The cost of starting-up a basic home performance contractor business ranges between $80,000 and $100,000, and includes basic remodeling equipment costs as well as specialized equipment and training costs. ▪ Home performance contractors can either reinvest their profits into their business or seek external investment sources such as debt or venture capital to fund future growth and control overhead costs. ▪ As a contractor's business enters the growth stage, overhead costs typically increase due to additional administrative staff needed to manage job reporting and tracking, incentive paperwork, staff training, and marketing efforts.	▪ Seeking additional external funding to grow the business is critical. Home performance contractors must develop a sound business plan and demonstrate that there is sufficient market demand for home energy upgrades to secure external financing, establish key partnerships, and become sustainable. ▪ A primary asset to invest in for overhead cost control purposes is customer referral management/job tracking and reporting software.
Service Offering	▪ Home performance contractors are a one-stop shop for homeowners that provide a variety of home energy upgrade services including energy assessments, customer financing and incentives, installation, and quality assurance.	▪ Home performance contractors should know the full range of financing, incentives, and reporting options, and communicate these options to consumers to drive home energy upgrade sales.
Customers & Customer Acquisition	▪ The primary drivers of sales for most home performance contractors are referrals from existing customers or repeat business. ▪ The home performance contractor's energy assessment process is the best venue for the sale of home energy upgrades. Engaging the homeowner throughout the process will increase likelihood of a sale. ▪ While homeowners trust contractors as experts in their field, having third party validation that a contractor is knowledgeable of home energy upgrades is helpful during the sales process. ▪ Home performance contractors with business and sales training often relate to customers better than those with only technical training.	▪ Home performance contractors should coordinate with local efficiency programs as much as possible to benefit from neutral third-party validation and referrals. For example, mass media advertising in time slots adjacent to program-sponsored advertisements has been shown to produce a bump in home energy upgrade sales for home performance contractors that have tried this strategy. ▪ Home performance contractors should consider involving both a technical and a sales staff member in the assessment to increase understanding of the value of the home energy upgrade and address technical questions. ▪ Home performance contractors should include options for discounted financing (either bought down by the contractor in conjunction with a private financial institution or arranged through a local efficiency program) in their sales pitches to help with the closing of sales.

ES 2.5 Retailer

The retailer is a highly profit-driven entity that traditionally has played a large role in providing goods and services directly to consumers. Energy efficiency products and upgrade services are just one of many types of offerings a retailer provides to the market. Retailers typically operate out of physical stores, although they are increasingly also providing shopping services over the Internet.

OPPORTUNITY STATEMENT: Retailers can be valuable partners in building a sustainable local energy efficiency market. They have well-established brand names and central store locations that provide partner contractors and programs with credibility and better access to customers. This access comes at the cost of being able to adapt around retailer profitability requirements, pilot processes, and project timelines. It is critical that anyone seeking to partner with a retailer come prepared with a well thought-out business plan that addresses these concerns and highlights estimated demand for the market in question.

Summary of Retailer Insights

	Observations	Impact on Potential Expansion into Energy Efficiency
Market	▪ Retailers range from small, local businesses ranging from 1–30 employees to large, national corporations with over 300,000 employees. ▪ While there are multiple sizes and forms of retailers, big box chains represent 82 percent of the national market. ▪ The national market is nearing saturation with brick-and-mortar stores. ▪ Big box retailers are purchasing small retailers with the hopes of enlarging their footprint at the local level.	▪ Because big box retailers are unable to grow though the addition of stores, they are considering expanding services, including those focused on energy efficiency, as an opportunity for growth.
Governance	▪ Big box retailers are typically publically traded and have multiple layers of decision-makers that determine corporate strategy, service offerings, and partnering opportunities. ▪ Corporate franchise retailers are difficult to influence because there is little central control over store operations outside of branding. ▪ Small private companies may be easier to collaborate with from a decision-making standpoint. However, these companies typically have difficulty operating at scale and may face competitive pressures from big box retailers in their region.	▪ Organizations that wish to partner with a retailer may find the decision-making process difficult to navigate. Partners must identify the right person within the big box retailer's chain of command. This person is typically the vice president of business development who can speak on behalf of the company and approve a new project. ▪ People seeking to engage local franchises may be able to work with specific stores, but could have difficulty replicating their model regionally or nationally. ▪ Smaller retailers may have an advantage in expanding rapidly into new services at the local level, as they have shorter, more streamlined decision-making chains.
Financial	▪ Big box retailers have high profitability requirements, with a typical gross margin target of 35 percent. ▪ Retailers are focused primarily on sales and revenue implications of launching a new service line rather than up-front cost.	▪ Big box retailers will seek similar profit margins for home energy upgrades as with their traditional services. ▪ A good understanding of the sales, cost, and potential profit implications of home energy upgrade services is critical to approaching an investor-owned retailer about long-term partnership opportunities.
Assets & Infrastructure	▪ A retailer's brand is its most critical asset. It is highly valuable in driving consumer demand and promoting consumer confidence in its	▪ Program administrators and other organizations seeking to leverage a retailer's brand name through a partnership must have an established

Summary of Retailer Insights		
	Observations	**Impact on Potential Expansion into Energy Efficiency**
	goods and services. ▪ Retailers on average recycle their inventory every 75 days. Finding more efficient ways to reduce this time leads to increased revenues and is at the core of the retailer's business model. ▪ Retailers' physical locations are critical to driving walk-in sales. This is a major reason that retailers have raced to reach the widest possible range of physical locations in their initial expansion efforts.	track record within the industry. This track record includes well-qualified management and the ability to raise the retailer's confidence in the partner organization's ability to deliver on time, at cost, and with high quality. ▪ Retailers' physical locations can provide partners with a steady source of leads for new work, as well as a means of interacting with consumers in person.

Service Offering	▪ Retailers provide goods and services directly to consumers and small contractors that include:
	  ▪ Materials such as insulation and appliances
	  ▪ Information on energy efficiency options, installation of equipment, or other home remodeling through retailer-certified contractors
	  ▪ Financing directly to consumers in-house and through partnerships with financial organizations, such as credit card companies (optional).
	▪ Retailers may use pilot programs to evaluate home performance contractors and test the demand for their services in a local market prior to rolling these services out on a broader scale.
		▪ Partnering with local remodelers, HVAC contractors, and financial institutions helps retailers expand their ability to provide a wide range of services to the market.
		▪ Program administrators and other organizations seeking to work with retailers must demonstrate that there is strong local demand for home energy upgrades and an opportunity to drive sales for retailers.
		▪ Home performance contractors, as a relatively non-established niche of the market, may have a higher burden to illustrate their value to retailers as a potential partner.
		▪ Program administrators seeking to work with a retailer should create a detailed business plan focused around the retailers' pilot process and timelines, in order to ensure pilot success and expansion in the long run.

Customers & Customer Acquisition	▪ A retailer's brand and physical locations are its primary drivers of customer sales. ▪ Retailers reach a wide range of consumers, including both "Do-it-Yourself-ers" and customers that prefer access to a one-stop-shop for home upgrades, "Do-It-For-Me-ers." ▪ Customers visiting retailers typically cannot afford to invest in a whole-home energy upgrade, but prefer instead to make smaller home investments over time.	▪ Retailers have larger marketing budgets than most building contractors and utilize mass-media advertisements to help build their brand image with customers. ▪ Retailers focus on driving future sales by using the initial point of sale to highlight additional investments a consumer can make in their home in the future.

ES.3 INTRODUCTION TO PROGRAM ADMINISTRATORS

ES 3.1 Program Administrator Description

Program administrators in the energy efficiency market come in many forms; however, DOE's business model analysis focuses on two influential program administrator types:

- **Non-utility program administrators.** These program administrators include government-owned or non-governmental organization (NGO) programs. They are generally funded through grant awards (public funds), which are the largest individual source of their financing at the present time.
- **Utility program administrators.** These program administrators include government, NGO, or private contractor organizations that are primarily financed through utility rate-payer charges. However, they may supplement this funding with other types of income, such as the proceeds from regional carbon credit sales.

In both cases, program administrators can implement home energy upgrade programs themselves or hire a private "implementation contractor" to deliver the program on their behalf. This ownership structure, implementation strategy, and financing influence how program administrators impact the energy efficiency market (as shown in Figure ES - 2).

Description of Program Administrators

	Non-Utility Program Administrator Model		Utility Program Administrator Model
Descriptor	**Government Entity**	**Private Company or NGO**	**Utility**
Ownership and Implementation	▪ Completely government owned (federal, state, or local) ▪ Typically program funder and administrator; may be implementer as well	▪ For-profit or not-for-profit company hired by government and utilities to administer programs ▪ Typical an implementation subcontractor to government or utility program administrator ▪ Privately-funded programs are future possibility	▪ Public or investor-owned utility ▪ Typically program funder and administrator ▪ May be implementer as well
Key Decision-Makers	Federal, state, or local government representatives	Owner, shareholders (if public), board of directors, executive management	Shareholders (if public), board of directors, executive management
Sources of Financing	Public funds and debt	Public funds, owner's equity, debt, and venture capital	Investor capital, ratepayer funds, and public funds (if government owned)
Implications	▪ Products and services limited by government regulations and community needs ▪ Profit motive not as influential as other market actors ▪ Extensive reporting requirements	▪ Set product and service mix based on funder/owner/ leadership requirements ▪ May be subject to performance-based metrics that will limit ability to offer lower-return and/or riskier service offerings that still may provide value (e.g., education and outreach) ▪ Fewer reporting requirements	▪ Service offerings limited by Public Utility Commission (PUC) requirements, which require program costs per kilowatt hour (kWh) saved to be below standard generation costs per kWh ▪ Extensive reporting requirements

Source: Booz Allen research

Figure ES - 2: Description of Program Administrators

ES 3.1.1 Program Administrator Comparison

The business model analysis uses the five business model elements to highlight critical components that influence each program administrator's delivery of home energy upgrade services. However, it is useful to first understand the key similarities and differences among these program administrators, to better understand their opportunities for expansion, collaboration, and sustainability in the energy efficiency market. This section highlights key points of comparison in the categories of size, operating environment, market role, competitive landscape, and collaborative landscape.

- **Size**: Funding influences the size of a program administrator's organization.
  - **Non-utility programs** are heavily reliant on grant funding. This gives them a wide range of potential sizes (from $500,000-$100 million in total public contributions).
  - **Utility programs** are heavily reliant on rate payer funding, so program size varies depending on the size of the utility's market. Utility funds comprise the majority of energy efficiency program funding, at about $350 billion overall.

- **Operating environment**: The regulatory environment strongly influences how program administrators can behave in the energy efficiency market. External regulators place various restrictions on both non-utility and utility program administrators. These restrictions include:
  - Funder regulations on **non-utility program administrator** models, (e.g., government and NGO program administrators,) in exchange for grant funding. These regulations typically include reporting requirements that demonstrate a program's impact in terms of kilowatt hour savings.
  - **Utility program administrators** face regulator goals and benefit-cost tests (e.g., total resource cost (TRC)) among other requirements.

  While both program administrators provide and enable home energy upgrades, **non-utility program administrators** generally have greater program flexibility than **utility** programs due to utility benefit-cost test restrictions.
  - In addition to rebates and other standard program offerings, **non-utility program administrators** may also provide consumer education and outreach, low-cost financing for home energy upgrades, and contractor training.
  - Despite their restrictions on program design, **utilities** can leverage customer energy usage data and provide on-bill financing and outreach services that other programs cannot without a utility partner.

- **Competitive landscape:** Programs may compete with each other to provide a range of incentives or with private sector contractors to conduct installation work directly. This competition may cause confusion in the market as reporting requirements and incentives shift over time. In markets where programs provide subsidized installation services, the private sector may be squeezed out altogether.

- **Collaborative landscape:** Program administrators can provide services directly, partner with others to deliver services jointly, or hire a third-party administrator to perform services on their behalf.
  - Both program administrator types partner with contractors (e.g., remodelers, HVAC contractors, home performance contractors), assuming the program does not offer installation work directly.
  - Both program administrator types may partner with retailers to help improve program brand image and expand the number of physical locations at which program services are offered.

- **Non-utility programs** typically partner with or sub-contract to other programs to provide additional, specialized services such as contractor training or customer education.

ES 3.2 Non-Utility Program Administrator

A non-utility program administrator is an organization (e.g., government, NGO, or private contractor) that manages a home or commercial energy efficiency program. Non-utility program administrators span a range of financing and administrative types. They are primarily seeded with grant funding from federal, state, or NGO sources. They may be administered by the primary funding recipient (state, local or NGO) or an implementation contractor (typically an NGO or private firm).

OPPORTUNITY STATEMENT: Non-utility program administrators have many advantages in designing and structuring their services to best reach local contractors and customers. A program that understands its local market's needs can form critical partnerships through outreach and education to help local businesses generate new revenue streams and increase demand for home energy upgrades. Ultimately, all non-utility program administrators should seek to move towards a more sustainable model not reliant solely on grant funding.

Summary of Non-Utility Program Administrator Insights

	Observations	Impact on Potential Expansion into Energy Efficiency
Market	▪ While the home energy efficiency market was $38.3 billion in 2009[4], there is still much that is not fully understood at the regional and local level about the dynamics of the market. ▪ Program administrators typically range from approximately $500,000 to $100 million in grant funding.	▪ Program administrators may lack sufficient data on markets, including the baseline building stock, customer demographics and demand, and other regional considerations. ▪ Efficiency program administrators were created to help lower many of the barriers that have slowed the development of the market to date, such as lack of information, high up-front costs, and lack of consumer demand for energy upgrade services.

Governance	▪ Program administrator's governance models include the following:
	  ▪ Government-owned (Federal, state, or local government)
	  ▪ Private company or NGO (typically a subcontractor to a government-funded program)
	▪ Regulations associated with grant funding may restrict program design or operations, limit service offerings, or increase administrative burdens on potential partners.
	▪ The program administrator owner may be a different entity than the program implementer, adding layers of bureaucracy.
		▪ Program administrator regulatory reporting requirements can be burdensome and may discourage the private sector from working with a program effectively.
		▪ Program design flexibility enables non-utility programs to partner with a wide range of private and public organizations in pursuing their mission of delivering home energy upgrades.
		▪ Program administrators can increase market sustainability by enabling private companies. This shifts market activity away from government funded and run programs to fully private funded and run programs.

Financial	▪ Program administrators often rely heavily on public funding and do not have comprehensive business plan for generating sustainable revenues. ▪ Program administrators can identify sustainable	▪ At the present time, program administrators typically only last as long as their influx of public funding. ▪ Program administrators must leverage their initial funding to implement programs that

[4] Pike Research.

Summary of Non-Utility Program Administrator Insights		
	Observations	**Impact on Potential Expansion into Energy Efficiency**
	revenue streams through engaging contractors to determine potential demand and pricing for these services. ▪ Once pricing and services are determined, a program administrator can forecast potential revenues by integrating data from contractors, market research into a simple income statement model.	generate sustainable revenue streams. ▪ Program administrators can partner with utilities, contractors, and financial institutions to leverage the expertise of established firms to deliver services that the program cannot provide directly.
Assets & Infrastructure	▪ A program administrator's primary asset is program management software, which can be costly if not optimized to program needs. ▪ Program administrators can leverage software to streamline administrative functions. They can also generate revenue by providing data services to home performance contractors and other programs. ▪ Program administrators may be able to purchase a multiple-license agreement at a bulk discount and/or sub-license additional licenses at a discount to neighboring programs. ▪ Program administrations wishing to sell software other programs or contractors as their primary service will need to build their own customer software package.	▪ Investment in software enables a program administrator to be more sustainable in the energy efficiency market by reducing costs and creating additional revenue streams. ▪ Software packages that can collect data on customer demand, job progress, and building performance can also enable program administrators to streamline reporting requirements and illustrate program value and growth potential to future investors.

Service Offering	▪ The program administrator's services include the following:
	  ▪ Educating consumers
	  ▪ Serving as enablers of financing or incentives for home performance work
	  ▪ Qualifying and training contractors
	  ▪ Providing installation work and quality assurance work directly in some cases.
	▪ Program administrators can offer valuable business and sales training to companies seeking to become home performance contractors, since there is a greater need for this type of training than technical.
	▪ If given a choice between indirect benefits such as discount loans and direct incentives, homeowners will take the direct incentives. It is difficult to find the right balance between direct, non-sustainable subsidies to homeowners to spur demand and indirect service offerings that can extend program life.
		▪ Program administrators need to build and maintain relationships with local contractors and customers to effectively drive home energy upgrades in the long run.
		▪ Program administrators can help smaller home performance contractors generate business by allocating leads, although this may be frowned upon by established home performance contractors who have more established lead generation systems.
		▪ Program administrators may stunt private sector growth by doing installation work directly, rather than enabling private companies to provide home energy upgrades more effectively.
		▪ Program administrators must balance customer incentives with other service offerings that can cover program administrative costs.
		▪ Program administrators can offer training, software, audits and partnerships with financial institutions to generate sustainable sources of revenue.

Customers & Customer Acquisition	▪ Program administrator marketing efforts are essential to the development of the market, but can be costly to maintain if outside stakeholders are not properly leveraged. ▪ Program administrators can train local "champions" to promote program goals is a cost-effective way to promote education on efficiency.	▪ The program administrator can play a key role in generating awareness of energy efficiency and driving demand for home energy upgrades. ▪ Collaborating with other actors and market champions is an effective way to develop market demand.

ES 3.2.1 Utility Program Administrator

A utility is a public or investor-owned entity that is in the business of generating and disseminating energy to a range of customers. The vast majority of the electricity consumed by U.S. homeowners is generated by a utility, which may be structured as investor owned, municipally owned, and or cooperatively owned (coop). While utilities have been running energy efficiency programs for many years, utility programs are primarily driven by mandates—either portfolio standards or targets set at the state or local level. Utilities have traditionally responded to the requirements to run these programs by providing efficiency rebates or technical assistance for homeowners, which are largely funded through efficiency surcharges on rate payer utility bills. Specific programs dedicated to whole-home energy performance are a more recent trend in the industry, with only the most aggressive utility energy efficiency programs having reached just two percent of the single-family homes in their region.

OPPORTUNITY STATEMENT: While many utility programs do not currently offer home energy upgrades directly, their ability to track customer usage data and provide targeted rebates and services makes them highly valuable partners for contractors and non-utility program administrators. However, understanding how utilities evaluate cost, stakeholder value, and service reliability is critical to informing potential partnership options.

Summary of Utility Program Administrator Insights

	Observations	Impact on Potential Expansion into Energy Efficiency
Market	▪ Utilities can be divided into three categories: ▪ **Municipal utilities** are influenced by the municipal government and are generally regulated at the local level, rather than at the state level ▪ **Cooperative utilities'** service offerings are driven by the decisions of their members, which are their customers ▪ **Investor-owned utilities (IOUs)** have a traditional corporate governance structure and are motivated by primarily by profit ▪ IOUs represent the majority of the market, in terms of installed generation capacity (375 gigawatts as opposed to 195 gigawatts for all other utility types[5]).	▪ While many IOUs have efficiency rebate programs in place, on average, only one percent of overall utility revenues are spent on energy efficiency programs. ▪ Municipal and cooperative utilities, while smaller in terms of market share, often have advantages in that their stakeholders are willing to take a less profit-driven approach to energy efficiency investment.
Governance	▪ Most IOUs are constrained by state regulations that have public agendas that can contrast with shareholders' profit requirements. ▪ State legislatures directly impact the regulation of utilities through public utility commissions (PUCs). ▪ Regulated utilities prioritize reliability above other considerations, unless directed to do otherwise by mandates. Stakeholder value is the second priority followed by clean energy in the hierarchy of utility priorities. ▪ IOUs have profitability requirements (average. net margin in 2010 was eight percent[6],	▪ Working with an IOU requires an understanding of the corporate chain of command. Managers of existing energy efficiency programs are key points of contact for program administrators as they are more familiar with energy efficiency. ▪ Program administrators and other entities seeking to influence utility regulations can do so at the legislature level, but it is a long-term process. The intervention process allows for some public participation in regulatory cases, such as rate evaluations. ▪ Other programs should be prepared to make a partnership case based on both cost and reliability

[5] Energy Information Administration (EIA) 2010.

[6] Google Finance.

Summary of Utility Program Administrator Insights		
	Observations	**Impact on Potential Expansion into Energy Efficiency**
	whereas municipal and cooperative utilities are not bound by similar profit mandates from their stakeholders.	grounds as well as on the value of efficiency as a social good.
Financial	▪ Utilities most commonly finance energy efficiency programs through rate-payer funding. This funding can take the form of a surcharge or cost-recovery rate. ▪ Many utilities advocate decoupling revenues from the sale of kWh to customers when developing energy efficiency programs, as the decrease in sales of electricity stemming from demand-side management negatively affects their profitability. ▪ Decoupling lowers the value of energy efficiency for customers as their energy costs may not decrease despite their investments in home energy upgrades.	▪ Decoupling is just one of many ways to remove negative financial incentives to utilities for pursuing energy efficiency. Other ways include allowing the utility to increase its rates to compensate for decreased revenues caused by energy efficiency programs, or by removing the onus for the utility to run the program altogether. ▪ Third-party efficiency program administrators can provide similar benefits to decoupling, while being funded by fees levied on rate-payers. This structure removes the onus for running the efficiency program from the utility itself and provides incentives to homeowners to invest in home energy upgrades.
Assets & Infrastructure	▪ Utility energy efficiency programs must meet mandatory cost-benefit tests, such as the TRC test. This test compares the generation and transmission cost savings from energy efficiency against the program's operating costs.	▪ If other programs wish to collaborate with utilities in the energy efficiency market, understanding the benefit-cost methodology used by their local utility, as well as their basic infrastructure constraints is critical to determining how the program may add value to a utility's existing programs. ▪ Expansion into the energy efficiency market can be more cost-effective than creating new capacity. An average tipping point is approximately $600 per kilowatt hour for the cost of new generation.

Service Offering	▪ The overall market role of a utility may include the following:
	  ▪ Generation and distribution of electricity to residential, industrial, and commercial customers
	  ▪ Investment in electricity infrastructure such as the transmission and distribution grid
	▪ The services for residential customers in the energy efficiency market may include the following:
	  ▪ Demand-side management (DSM)
	  ▪ Customer services (rebates, home energy upgrades, loans, and education)
	▪ Utility energy efficiency programs do not typically offer home energy upgrades, which represent one of the least commonly offered services among utilities. Penetration rates are under two percent, due to a lack of demand, incentives, or sufficient contractor breadth.
		▪ Utility cost-benefit tests are cited as a barrier to entry into the energy efficiency market. Bundling packages of highly cost-effective and less cost-effective energy conservation measures together and submitting them to the test as a package can help get deeper energy upgrades above the cost-benefit bar.
		▪ Another way to navigate difficult cost-benefit regulations is to partner with other, non-utility, programs or private firms that can provide services that would not pass strict utility tests.

Customers & Customer Acquisition	▪ Utilities have direct access to customer energy usage data, which allows them to target key customers and better measure the effectiveness of specific energy efficiency programs. ▪ Utility bills are an often-cited advantage in program advertising, as they provide free advertising to potential customers.	▪ Utilities can effectively target customers in the energy efficiency market and enable greater impact of program dollars spent through the use of energy usage data. ▪ Positioning the program information next to the total cost of the bill is the optimal way to get customer attention when conducting on-bill advertising.