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AN INDUSTRY TRANSFORMED

THE IMPACT
OF THE GREEN COMMUNITIES ACT OF 2008
ON THE ENERGY EFFICIENCY INDUSTRY
IN MASSACHUSETTS



A report prepared by Peregrine Energy Group
on behalf of the Northeast Energy Efficiency Council (NEEC)

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Executive Summary

Massachusetts' Green Communities Act of 2008 was a transformative piece of energy legislation. It dramatically increased the goals and funding for the energy efficiency programs administered by investor-owned electric and gas utilities and municipal aggregators (Program Administrators). It mandated “the acquisition of all available energy efficiency and demand reduction resources that are cost effective.” And it moved from a one- to a three-year program planning and budgeting cycle.

Since the passage of the Act, Massachusetts has achieved nation-leading energy efficiency success. Not only does each year of program activity produce lifetime savings¹ of more than 13 million MWh of electricity and 300 million therms of natural gas, but also, for the past five years, the American Council for an Energy Efficient Economy (ACEEE) has ranked Massachusetts “number one” among all states in energy efficiency in ACEEE’s *State Energy Efficiency Scorecard*.²

The engine behind this achievement has been the state’s energy efficiency industry: Small, medium, and large companies that deliver, or support the delivery of, energy efficiency-related products and services. Since 2008, this industry has evolved from a small circle of specialty firms to an open, market-driven ecosystem of companies that compete with each other for a piece of the action.

In 2015, the industry stands on the cusp of a new three-year plan as the Massachusetts program administrators prepare their programs and budgets for the years 2016 to 2018. To complement this planning process, the Northeast Energy Efficiency Council (NEEC), a business association representing energy efficiency companies in Massachusetts and other northeast states, commissioned Peregrine Energy Group to examine that industry evolution. Specifically, Peregrine was tasked with investigating how the Green Communities Act has impacted both the types and the numbers of Massachusetts businesses that offer energy efficiency-related products and services in connection with the Massachusetts programs.

We reviewed data provided by Massachusetts program administrators and their vendors, which included lists and counts of businesses applying for incentives as a result of delivering energy efficiency services as well as retailer participation data. We additionally secured contractor participation lists from firms contracted to manage program administration and from companies that use a significant number of sub-contractors to deliver program services. Finally, we conducted in-depth interviews with representative energy efficiency businesses to gain a ground-level understanding of how the Green Communities Act and subsequent increase in energy efficiency funding has affected them.

We found two things: First, the Green Communities Act has transformed the energy efficiency industry in Massachusetts in five key ways: Growth in the overall population of companies working in the programs, growth within individual companies, the entry of “non-efficiency” companies into the business of providing efficiency-related services, the attraction of out-of-state companies to the Massachusetts market, and the development of a culture of energy efficiency that has motivated local innovation.

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¹ Cumulative savings over the lifetimes of all measures installed.

² <http://aceee.org/sites/default/files/pdf/state-sheet/2015/massachusetts.pdf>, accessed 10.21.15

Second, this energy efficiency investment has spurred the explosive growth of a large and diverse energy efficiency industry. While program funding increased 335% from 2008 – 2014, the number of companies participating in the programs increased by even more. We identified more than 7,000 companies participating in the Massachusetts energy efficiency industry today. What’s more, the majority of those companies are not energy efficiency-focused companies, but rather are companies that have added energy efficiency to an existing line of business.

This high level of engagement in efficiency work, especially by non-efficiency-focused companies, is a strong argument for the effectiveness of the programs in driving market change. It presents an opportunity to think about the programs’ end goals, for both the utilities and for the energy efficiency industry. And it offers a glimpse into what may be the ultimate legacy of the Green Communities Act, the mainstream integration of energy efficiency.

Introduction

Massachusetts is the national leader in energy efficiency. The Commonwealth has been ranked number one for five consecutive years on the American Council for an Energy Efficient Economy’s *State Energy Efficiency Scorecard*,³ a result of the state’s nation-leading commitment to aggressive efficiency goals, funding, and regulations. A major driver of this achievement has been the *Green Communities Act of 2008*.⁴ This far-reaching act dramatically increased the goals and funding for energy efficiency programs delivered by investor-owned electric and gas utilities and municipal aggregators, mandated “the acquisition of all available energy efficiency and demand reduction resources that are cost effective,”⁵ established a three-year program planning cycle, and unified utility energy efficiency programs under the Mass Save umbrella. With its sweeping language and the aggressive goals and investment that have followed from it, the Green Communities Act has created a booming Massachusetts market for energy efficiency products and services and set in motion a dramatic energy efficiency industry growth spurt.

Today, defined in its broadest sense, Massachusetts’ energy efficiency industry is bigger and more diverse than at any time in the past. The industry is an interrelated network of diverse large and small companies engaged in delivering energy efficiency products and services to residential building owners and tenants, municipalities and institutions, and large and small commercial businesses and manufacturers.

This report examines the impact of the Green Communities Act and its amplified funding from the perspective of the companies that provide these energy efficiency products and services. Specifically, it explores the five key ways that the Green Communities Act has created change in the population of companies that participate in the Massachusetts energy efficiency industry, and it provides a snapshot of what that industry looks like today.

Approach to the Research

3 <http://aceee.org/sites/default/files/pdf/state-sheet/2015/massachusetts.pdf>, accessed 10.21.15.

4 An Act Relative to Green Communities, Chapter 169 of the Acts of 2008, section 11.

5 Massachusetts Green Communities Act of 2008, Section 21, (b)(1).

Our research included an analysis of program data available from program administrators and their vendors, as well as interviews with individual energy efficiency companies.

Eversource, National Grid, and Columbia Gas provided lists of companies that participated in energy efficiency programs since the passage of the Green Communities Act. Some of these lists were shared directly with us while others were made available through program incentive processor Blackhawk Engagement Solutions.⁶

We recognized that some companies delivering efficiency-related services might not appear on the program incentive lists, for example sub-contractors to larger companies, where the larger company may be the one to pursue incentives. To ensure the inclusion of these hidden companies, we pursued and received sub-contractor information from several companies that maintain a robust set of sub-contractor relationships. We received this data in varying forms from Conservation Services Group (CSG), now CLEARResult,⁷ ICF International, Energy Federation, Inc. (EFI), the Center for EcoTechnology, Leidos, and RISE Engineering.

Additionally, we received a list of retailers participating in the Residential Products program from Lockheed Martin Services. Finally, we consolidated the contractor lists made available through the Mass Save web site (www.masssave.org). Appendix A details the specific data received.

In addition to performing data analysis, we interviewed executives at 34 energy efficiency companies in Massachusetts. We chose not to interview each and every company in Massachusetts that provides energy efficiency products and services. Rather we pursued strategic interviews based on a variety of factors, such as a company's:

- Ability to represent a particular perspective from within the Massachusetts energy efficiency programs
- Broad perspective on a particular industry segment
- Engagement with multiple Massachusetts energy efficiency programs
- Leadership position within the Massachusetts energy efficiency programs

Information from these interviews informed our understanding of the different kinds of companies that participate in and support the energy efficiency programs, as well as the ways the industry has changed since the passage of the Green Communities Act.

To bring as much focus as possible to the impact of the Act on Massachusetts, we narrowed our population of companies to those with a Massachusetts address in the data that we received. We applied this filter with the caveat that the presence of a Massachusetts address in these data files does not necessarily mean the company is headquartered in Massachusetts, and the presence of an out-of-state address in these files does not necessarily indicate the lack of a Massachusetts office. But while imperfect, this filter was time efficient and precise enough to make the data manageable.

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⁶ Individual customer data was protected. No individual customer data was shared.

⁷ This document refers to the name Conservation Services Group throughout because the company was operating under that name when data was provided, and it was operating under that name when performing the work that generated the data used in this report.

The Green Communities Act and the Energy Efficiency Industry

Massachusetts was among the pioneers of utility energy efficiency programs. The state has offered robust programs since the 1980s, and energy efficiency has long been a centerpiece of the state’s energy strategy. Then came the Green Communities Act of 2008, a sweeping piece of legislation that accelerated the programs dramatically. As a result of the framework that the Act put into place, what had been primarily a discrete set of companies working directly with the utilities or program managers to provide specified services has become a juggernaut of market-based and market-driven firms that seek out opportunities for energy efficiency investment and compete with each other for a piece of the action.

This market transformation was influenced by three key aspects of the Act:

1. A mandate to pursue all cost-effective energy efficiency

The Green Communities Act directs that the state’s “electric and natural gas resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply.”⁸ This language makes energy efficiency the state’s first fuel, and requires that Massachusetts acquire all of the energy efficiency that makes economic sense.

2. Creation of a funding mechanism to support the new level of activity

Prior to the Act, energy efficiency programs were funded by a legislatively-prescribed charge. That charge effectively capped the level of funding and, as a result, the level of program activity. The Green Communities Act directed additional sources of funding to energy efficiency, including funds collected from the Forward Capacity Market and the Regional Greenhouse Gas Initiative,⁹ as well as a new, reconciling funding mechanism.¹⁰ Together these resources have enabled the program administrators to collect the funds necessary to support the higher level of activity called for by the Act, and have supported a four-fold increase in program investment since 2008.

3. Establishment of a three-year program planning structure

Prior to the Act, the programs were planned and approved on an annual basis. The Act moved the programs to a three-year cycle. This change from one year to three has greatly increased financial and workload predictability, which has led to increased stability for both the program administrators and the efficiency companies implementing the programs. This stability has, in turn, enabled those companies to invest and grow to a degree that was not possible before.

Since the Act’s passage, these programs have continued their evolution. Two key changes have opened the energy efficiency industry even further:

1. Targets for efficiency improvement broadened. The addition of incentives for new technologies and

8 Green Communities Act, section 11.

9 Ibid.

10 Ibid.

services created opportunities for companies already in the programs to expand their service and product offerings and gave companies new to the programs a reason to enter the market.

2. Perhaps most significantly, new program designs allowed any firm that can meet specified quality standards to participate in the programs and compete for customers.

For example, the restructuring of the Home Energy Services (HES) residential program for existing buildings for the 2012 – 2015 three-year plan moved service delivery from the lead vendor, which is the company that manages the program, into the marketplace. This shift allowed hundreds of companies to compete for weatherization work that was previously delivered by the lead vendor and a small group of contractors. This restructuring created the role of Home Performance Contractor (HPC). Companies in this role, meaning companies other than the lead vendor, could now market the program and then do the installation work themselves or engage their own subcontractor. Additionally with this change, any company that meets minimum program requirements can now fill either the role of HPC or the role of Independent Installation Contractor (IIC), the companies that provide weatherization services for the lead vendor, and receive incentives for delivering energy efficiency services within the program.

Today, the core energy efficiency programs,¹¹ as well as their associated products and services, are delivered by thousands of companies throughout Massachusetts, as well as a number of out-of-state companies with unique or specialized service offerings. Distribution of program funds is both service-based and performance-based, and programs include rebates and incentives for energy efficient products and services as well as interest abatement on energy efficiency loans. Payments are tied to the installation of efficiency improvements and the energy savings achieved. Funding also pays for some outsourced program administration, engineering, and quality control needed to ensure the projects are delivering the savings that are expected. That funding additionally supports the marketing that is necessary to drive awareness of and demand for these programs and the incentives, products, and services they provide. And it enables recycling, so that equipment replacement does not create a new problem of excess waste.

The Evolution of the Energy Efficiency Industry since 2008

As we interviewed companies and analyzed the data provided by the program administrators and other market participants, we observed a number of trends in how the energy efficiency industry has evolved since the passage of the Green Communities Act. Five key themes emerged:

1. **Overall company population growth:** The number of companies offering energy efficiency products and services in Massachusetts has increased dramatically.
2. **Individual company growth:** Companies have expanded their offerings to meet the increasing demand for energy efficient products and services, and expanded their presence into new geographic markets.
3. **The entry of “non-efficiency” companies into the efficiency market:** Non-efficiency companies are recognizing the business opportunities around efficiency-related work and are adding efficiency to existing services, or in some cases transitioning completely to energy efficiency.

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¹¹ http://ma-eeac.org/wordpress/wp-content/uploads/ExhibitCompact_1StatewideElectricandGas_ThreeYearPlan_110212.pdf

4. **The attraction of out-of-state companies to the Massachusetts market:** Established companies from outside Massachusetts are also recognizing the efficiency-related business opportunities in Massachusetts and are investing in a local presence.
5. **The development of a culture of energy efficiency that motivates local innovation:** The Massachusetts reputation for supporting energy efficiency, its appreciation for innovative new technology, and the strength of its labor pool combine to make Massachusetts the logical place for innovative energy efficiency startups, many of which are either technology based or highly technology reliant, to call home.

Overall Company Population Growth

As the goals and support for energy efficiency programs have increased in Massachusetts, the number of Massachusetts-based companies engaged in energy efficiency-related work has increased significantly. To understand the scale of that growth, we pursued historical data to compare program participation in 2008 with 2014. National Grid provided both historical and current energy efficiency program incentive payment data, and lead vendors Conservation Services Group and ICF International provided historical and current contractor data for residential programs.

Between 2008 and 2014, the annual program budgets increased by 335%, from \$155 million to \$675 million. In that same time frame, the data sets we examined showed an even larger percentage increase in the number of companies delivering energy efficiency products and services. In other words, increased funding did not simply flow to the same set of companies already participating in the programs. Rather, it supported a continuously expanding network of energy efficiency providers.

Incentive Recipients

National Grid data on service providers for their Medium and Large Commercial and Industrial Retrofit (C&I) electric program shows that between 2008 and 2014, the number of companies receiving incentives¹² in this program increased from 62 to 314, an approximately 400% rise. Figure 1 illustrates this growth.

¹² The programs offer incentives to utility customers that install energy efficient equipment. Typically, the customer assigns the incentive payment to the firm that installs the equipment. Those are the firms reflected in this data set.

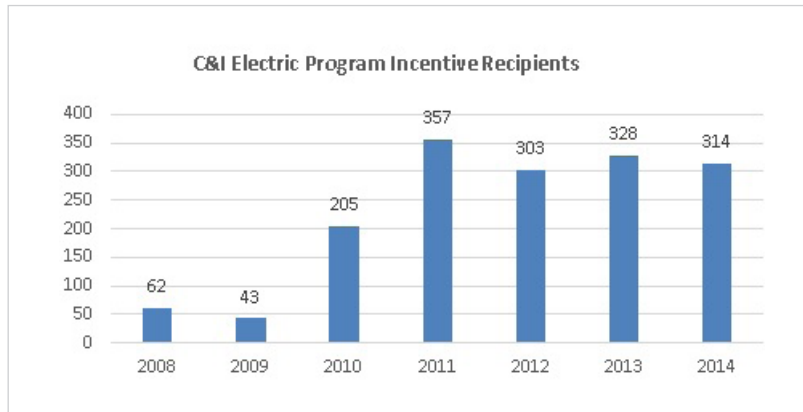


Figure 1. Companies receiving incentives through the National Grid Medium and Large Commercial and Industrial (C&I) Retrofit electric program 2008 - 2014.¹³

Participating Contractors

Conservation Services Group (CSG), now CLEAResult, served as one of three lead vendors with the HES program since before the passage of the Green Communities Act. The company’s role has been to market the program within its territory, provide administrative support, and conduct home energy audits. It then assigns installation work to a large pool of contractors with expertise installing a particular type of energy efficiency measure, such as insulation or HVAC systems. CSG has also managed the program relationship between Home Performance Contractors and the utilities, and it manages other programs, such as the COOL SMART and the Gas Networks residential cooling and heating programs.

CSG provided data on participating contractors participating in the COOL SMART and HES programs (Figures 2 and 3). Between 2008 and 2014, COOL SMART contractors, which are HVAC specialists trained to install energy-efficient cooling and heating equipment, increased from 24 in 2008 to 255 in 2014, a more than 960% increase. HES contractors, which are largely insulation and weatherization installers, increased from 10 in 2008 to 137 in 2014 – a nearly 1300% increase.

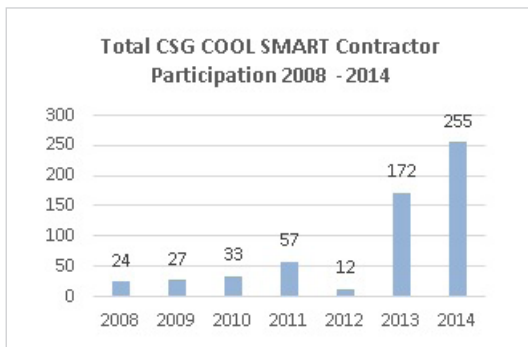


Figure 2: COOL SMART contractor participation through CSG for the years 2008-2014.¹⁴

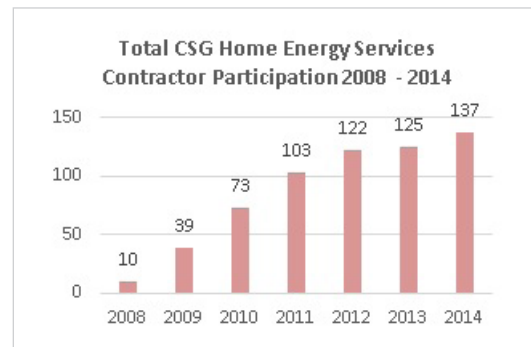


Figure 3. Home Energy Services contractor participation through CSG for the years 2008-2014.¹⁵

13 Source: National Grid.

14 Source: Conservation Services Group.

15 Source: Conservation Services Group. Data includes both IICs and HPCs.

ICF International, the lead vendor for the Mass Save Residential New Construction (MA RNC) program, also reported an increase in the number of service companies engaged. ICF’s data focuses specifically on HERS (Home Energy Rating System) raters. HERS raters work directly with ICF to register each new construction project within the program.

As Figure 4 illustrates, the number of HERS raters engaged with the program grew from 9 in 2008 to 54 in 2014, a 500% increase. While the total number of HERS raters is not very large, a 500% increase in HERS raters indicates a significant increase in program engagement by the much larger population of builders and architects. Working with a HERs rater is a requirement for program participation, and a single HERS rater could work with any number of builders and architects.

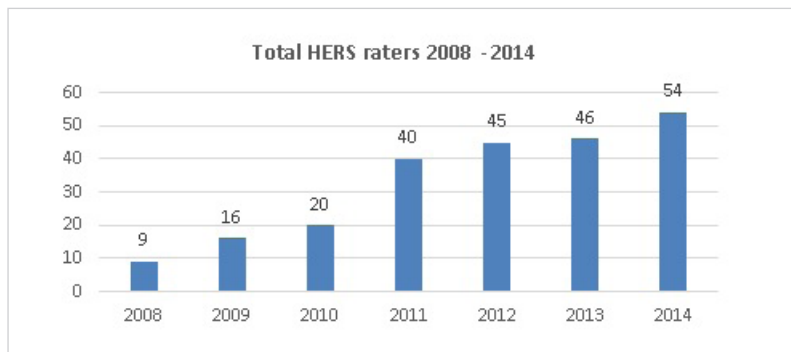


Figure 4. Total HERS raters registering projects with ICF 2008 - 2014.¹⁶

Figure 5 shows that the number of new construction projects completed in the program increased significantly in that time as well: From 1,396 projects completed in 2008, which represents 14% of the new construction projects completed in the state that year, to 4,942 projects completed in 2014, which represents 35% of the new construction projects completed in the state that year. This is a 254% increase in the number of projects applying for and receiving incentives, which, like the increase in HERS raters, suggests greater participation by builders and architects.



Figure 5. Total residential new construction projects completed. These numbers specifically refer to the total number of projects that have been finished and tested, and that have reported to and been paid incentives by the Residential New Construction program.¹⁷

¹⁶ Source: ICF International.

¹⁷ Source: ICF International.

One additional piece of data that points to industry growth is an increase in the number of HEAT Loan lenders. These are lending institutions that work with the programs to provide 7-year, interest-free loans of up to \$25,000 to homeowners for qualifying residential energy efficiency projects. CSG provided data on the number of HEAT Loan lenders from 2008 through 2014. Like the more traditional energy efficiency service providers, the growth in the number of HEAT Loan lenders has been significant as well. As Figure 6 indicates, their ranks swelled from 17 in 2008 to 70 in 2014, a more than 300% increase.

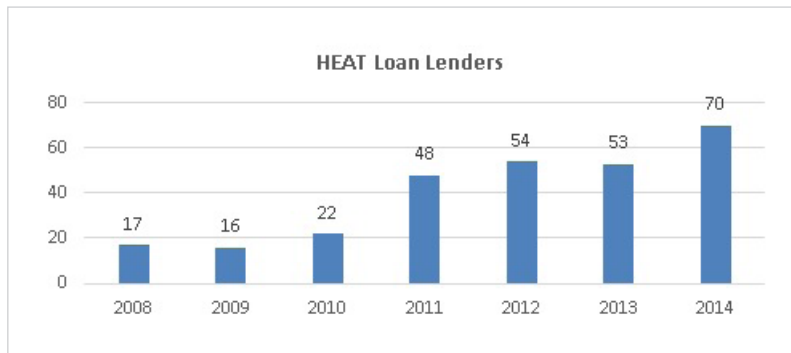


Figure 6. Number of HEAT Loan lenders that closed loans each year for the years 2008-2014. ¹⁸

Individual Company Growth

The majority of the companies in the Massachusetts energy efficiency industry are private companies that do not report their earnings publicly. As a result, data about industry-wide company growth is not available. However, company interviews uncovered no shortage of first-person testimonials from business owners that link their participation in the Massachusetts energy efficiency programs directly to their company’s ability to increase revenue and staff, expand their expertise, and move into new geographic markets.

Increased Revenue and Staff

Businesses of all sizes in all parts of the programs have experienced growth over the past six years. Many credit the predictability of three-year funding cycles and the steadiness of program work with allowing them to invest in the equipment, staff, and training necessary for that growth to occur. Others point to the incentives as key to making efficiency projects possible for customers. Still others use their program work to open doors for other services.

Raynham-based TNT Energy is a Direct Install vendor within the Small Commercial Retrofit program for National Grid, Eversource, and Unitil, which means they manage the delivery of audits and energy efficiency upgrades for small businesses. They are also a Project Expediter within Eversource’s Large Commercial and Industrial (C&I) retrofit program, which means they provide project management services around energy efficiency projects for medium and large C&I customers. In 2008, TNT was a 3-person company doing \$4MM in gross revenue. By 2014, the company had grown to 21 people, three offices, and \$20MM in gross revenue. Tim Blanchard, one of the company’s founders, has seen many of his 100 subcontractors grow their businesses as well and noted that

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¹⁸ Source: Conservation Services Group.

the three-year funding cycles makes that possible. “Our subcontractors can invest in hiring additional people because they know the work is going to be there,” he said. “So can TNT.”

Marlborough-based Guardian Energy Management Services, became a Project Expediter within National Grid’s Large Commercial & Industrial Retrofit program six years ago, after spending years as a subcontractor to companies that provide installation services for energy management systems. Guardian’s focus is municipal buildings, and they bring a strong expertise in energy management systems, variable frequency drives, building weatherization, and LED lighting. Before becoming a Project Expediter, the company had 5 in-house staff. Today there are 40 people on staff, including 8 who process program incentive applications, and they have almost doubled their revenue. “Every project we do is touched by the Mass Save incentive programs,” said Chip Goudreau. “Without this money, no one would prioritize putting in a new building management system.”¹⁹

The Brockton-based Yanow Companies has grown both within and outside of the energy efficiency programs. An electrical manufacturer’s representative, the company has seen a lift across its lighting division, which focuses on energy efficiency, as well as its core commercial/residential construction business, as a result of the state’s appetite for and commitment to energy efficiency. “Our strong growth and presence in both the energy conservation and commercial/residential construction markets has created mutually beneficial dividends,” said Randy Pinkofsky, Yanow Companies President. “The energy retrofit market has created strong demand for our offerings in other ways. For example, we’ve been able to pioneer new and innovative products and services in the core construction market, which have complemented and supplemented both businesses.”²⁰

On the residential retrofit side, Boston-based Next Step Living has also successfully used program work as a channel to sell and deliver other energy-related offerings. The company that drove the creation of the Home Performance Contractor role within the HES program, Next Step Living’s growth has been nothing short of meteoric. Founded in 2008 with just four employees, the company served approximately 800 customers with home energy audits in its first full year of business. Now delivering a range of home energy services that span both energy efficiency and renewable energy to customers in Massachusetts and other states, the company sits at approximately 600 employees, and in the first half of 2015 alone provided home energy services – both within and outside of the HES program – to more than 22,000 customers.

RISE Engineering, another one of the one of the largest companies working within the Massachusetts programs, has its own story of growth. A regional energy services company headquartered in Rhode Island and with an office in Canton, Massachusetts, RISE Engineering does 60% of its business in Massachusetts. RISE serves as a lead vendor for multifamily, small business, and the HES programs. The company also performs the Multifamily Market Integrator role in the Multifamily Residential program, connecting customers to the array of resources that can come into play for multifamily buildings. And it serves as a Project Expediter and municipal program vendor in the Large Commercial & Industrial Retrofit programs. RISE estimated that immediately prior to the Green Communities Act they were a \$25MM company with approximately 70 employees. Now they do about \$110MM in revenue and have grown to more than 300 employees.²¹

19 Conversation with Chip Goudreau, Director, Energy Management Solutions, Guardian Energy Management Services, 6.5.15.

20 Conversation with Randy Pinkovsky and Richard Cremmen, The Yanow Companies, 4.29.15.

21 Conversation with Vin Graziano, CEO of RISE Engineering, 2.24.15.

Even many smaller companies, like many of the IICs, have found program growth to be transformative for their business. For example, Graham Built Corporation in East Bridgewater is a small IIC that also works in the Multifamily program. Since making the shift from new home construction to weatherization work in the HES program five years ago, specifically as the only IIC that specializes in air sealing, Graham Built Corporation has grown from one person to 6 and is on track to double its revenue for 2015. Chris Graham, company owner, points to the steady program work as the reason he can run the kind of businesses he can be proud of. “My success in this program allows me to take care of my employees,” he said. “I can afford to give them top-of-the-line safety equipment and training.”²²

Christine McEachern of Braintree-based McEachern Insulation, an IIC, has seen similar growth. A small, two-truck company owned by a husband and wife team, McEachern gets 95% of its work through the HES program. Over the past three years, the company’s program work has increased by 40%. This year, the company is poised to get a third truck and hire on another crew. “My phone rings off the hook every day with customers looking to go through the Mass Save program,” said McEachern. “We have more work now than we ever have. We are trying our best to keep up with demand.”²³

Central Cooling and Heating, Inc., a 65-person heating and air conditioning company in Woburn and new Home Performance Contractor, has been on a slower, more controlled growth trajectory. But company owner Darren Hamilton is just fine with that. He estimates that they use program incentives for 80 – 85% of their projects, and he sees incentives as critical to his company’s ability to compete in the marketplace. “Using the incentives has been fantastic for us,” he said. “They allow us to offer a better product while remaining in the same price range as everyone else. We can do more work and do a better job without cutting into our profit margin.” He noted that in 2014 the company did \$750,000 in CoolSmart and manufacturers rebates and \$15 million in business.²⁴

Others echo the sentiment that incentives make day-to-day business possible. Paul Murphy, Director of Canton-based ENE Systems, Inc., noted that the incentives are the essential ingredient that allows them to get projects done. “It’s more difficult to put in a new piece of energy-efficient equipment than to replace a piece of equipment with the same thing,” he explained. “The new equipment might require new wiring, or new pipes as well, which is more difficult and more expensive. The incentives make it cost effective for building owners to agree to the change.” He added, “People want to do the right thing. The incentives make it possible for them to do that.”²⁵

Broader Expertise

One of the most frequently mentioned impacts of Massachusetts energy efficiency program participation on individual companies is the diversification of services, which often requires hiring new staff. Our interviews indicated that the programs drive this diversification in two ways: 1) By offering incentives for an increasingly broad array of energy efficiency measures, and 2) by setting aggressive savings targets in exchange for

22 Conversation with Chris Graham, Owner, Graham Built Corporation, 6.4.15.

23 Conversation with Christine McEachern, Owner, McEachern Insulation, 6.15.15.

24 Conversation with Darren Hamilton, Owner, Central Cooling & Heating, 6.25.15.

25 Conversation with Paul Murphy, Director, ENE Energy Services, 6.8.15.

program participation. The targets push the companies beyond easier retrofits like lighting and insulation to find savings, and the incentives give them new ideas for achieving those savings.

For example, several Project Expeditors that began with one area of expertise have in recent years added additional capabilities as program targets and incentives have evolved. Marlborough-based Guardian Energy Management Solutions started with a strong foundation of energy management and variable speed drive expertise, and as a result of program participation added lighting capabilities. Northborough-based Northern Energy Services, Norwell-based Bluestone Energy Services, and Raynham-based TNT Energy all started with a foundation of strong lighting expertise and, in response to expanding program incentives, have expanded their offerings to include HVAC systems, controls, and variable speed drives. Don Robinson, Business Development Manager for Northern Energy Services observed, “As an industry, over the last six years, we have expanded well beyond lighting work where, if your contractor or staff had an electrician’s license, that may have been sufficient. Now, because we’re approaching customers with a much more comprehensive package of energy efficiency measures, we need to develop a growing cadre of business partners with specialized equipment & skills, especially people that focus on non-lighting efforts.”²⁶

Framingham-based Rogers Insulation Specialists, an IIC within the Home Energy Services residential retrofit program, tells a similar story. Rogers started as an insulation installer, then expanded to offer air sealing services. The change was a direct result of the air sealing incentives available through the program. Rick Taglienti, partner at Rogers, put a fine point on it when he noted, “Before the incentives came along, we weren’t doing air sealing. We didn’t appreciate its value.” Now Rogers Insulation does air sealing for projects both within and outside of the programs. Taglienti noted that air sealing requires diagnostic testing, which requires employees with a different set of skills than insulation installation. “The caliber of employee we have today is much higher than ten years ago,” he said, “and that is because the complexity of the work has changed.”²⁷

As the companies that provide services have evolved in response to the programs, so have the companies that supply these service providers with products. For example, Woburn-based Kamco Supply Corporation of Boston is a distributor of insulation and weatherization products to IICs – companies like Rogers Insulation. Kamco does not directly receive incentives from the Massachusetts energy efficiency programs, but the company’s business is directly tied to the projects that those programs drive. Jeff Scaia, Kamco’s head of business development, noted that Massachusetts is one of the states where the company has seen the most growth in recent in years. Not only have his customers increased in number, but the company has also doubled the number of products they make available in Massachusetts. “The program focus has expanded to include additional weatherization measures beyond insulation,” he said. “And as that focus has expanded, weatherization contractors are asking for a much broader range of products than they used to.” From his vantage point, he has also witnessed growth in the pool of weatherization contractors working in Massachusetts. “Six years ago or so we were working with five to ten contractors in Massachusetts. Now we work with 30 to 40.”²⁸

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26 Conversation with Don Robinson, Northern Energy Services, 6.8.15.

27 Conversation with Rick Taglienti, Rogers Insulation, 3.5.15.

28 Conversation with Jeff Scaia, Head of Business Development, Kamco Supply Corporation of Boston, 6.11.15.

A Presence in New Geographic Markets

We spoke with both small and large companies that have expanded outside of Massachusetts over the past six years, or are poised to do so. Every one of them pointed to the credibility and expertise that comes with being a part of the Massachusetts programs as key to their ability to grow.

In some cases, their expansion is on a project basis. For example, TNT’s Tim Blanchard noted, “Our work in other states often flows directly from Massachusetts projects. A customer might say ‘You’re doing great work here. I have a sister plant in Connecticut. Can you go there?’”²⁹

In other cases, a company might be able to establish an additional base for itself in one or more states outside of Massachusetts. That has been the case for Andover-based B2Q Associates. B2Q connects program participation both to expansion and to the ability to innovate. A Project Expediter for National Grid and a Preferred Vendor for efficiency engineering services for both National Grid and Eversource, B2Q now delivers efficiency services in Rhode Island, Connecticut, and New York as well as Massachusetts. “Participating in the Massachusetts utility programs has given us a foundation for growth,” said Rick Mitchell, B2Q Director of Business Development. “It has allowed us to build a proven track record, a base of business, and in-house expertise on working within commercial and industrial utility programs. And as a result of the steady business provided by the programs, we have been able to finance growth into other areas, including project design and implementation, as well as the development of new energy efficiency products and services.”³⁰

Newburyport-based LFE Solutions, a relatively new company, is on the edge of growth into new geographic markets right now. Founded in January 2013 by industry veterans Rob Quintal and Mike Doucette, LFE Solutions is an innovative lighting manufacturer’s representative. The company has a unique focus on energy efficiency and a new approach to the supply chain that includes cultivating direct relationships with the service providers that install lighting as well as cultivating more traditional relationships with wholesale distributors. LFE’s approach has been so well received by the New England market that the company almost doubled in revenue from year one to year two, and now in year three expects to double again. And now, LFE is already working to duplicate its model in other states in the Atlantic seaboard and the southeast.³¹

Bradley Steele, CEO of EFI, the lighting supplier for the residential retrofit and new construction programs, sees a direct connection between Massachusetts experience and out-of-state credibility. “There’s no question that people continue to look at firms from Massachusetts as having a track record and knowledge of what works and doesn’t work and best practices,” he said. EFI has experienced its own dramatic growth, though that growth began before the passage of the Green Communities Act. Founded in 1982, EFI has emerged as a major provider of utility program management and support nationally. The company got its start in Massachusetts, and it now operates in 26 states, doing approximately \$75MM in product sales and \$200MM in incentive processing annually.

29 Conversation with Tim Blanchard, Partner, TNT Energy, 3.12.15.

30 Conversation with Rick Mitchell, Director of Business Development, B2Q Associates, 7.21.15.

31 Conversation with Rob Quintal, Founder, LFE Solutions, 5.12.15

Steele noted that EFI’s expansion has directly benefited the state. “If you look at our business, 97% of our employees are based in Massachusetts,” he explained, “but about 70% of our business is with customers and clients located outside of Massachusetts. The long and strong commitment of Massachusetts to support energy efficiency programs has enabled us to be a net exporter of expertise as well as product and incentive fulfillment services. We have created a lot of jobs in Massachusetts based on work that we do in other states.”³²

Even companies with already established brands have benefited from an affiliation with Massachusetts. ICF International, a global consulting company, has been able to fine-tune its energy efficiency reputation in markets outside of Massachusetts because of its Massachusetts experience. ICF won the contract to serve as Lead Vendor in the Mass Save Residential New Construction (MA RNC) program contract in 2007, just before the passage of the Green Communities Act. Since then they have traded on that experience to win both energy efficiency work outside of Massachusetts as well as non-energy efficiency work within the state. As Michael Berry, Senior Manager of ICF International’s MA RNC and Green Communities Program, put it, “This program is where ICF branches off to do other work.”³³

The Entry of Non-Efficiency Companies into the Efficiency Market

By establishing a steady demand for energy efficiency projects and by providing the incentive funding that makes those projects possible, the Green Communities Act and the programs have not only made energy efficiency a profitable business for efficiency-focused companies, but also they have drawn in non-efficiency companies seeking new business opportunities.

Boston-based Weston & Sampson is just such a company. A 115-year-old environmental consulting company, Weston & Sampson has integrated renewable energy projects into its portfolio for a number of years. Several years ago, they took note of the growth in energy efficiency work in the state, and pivoted to pursue that work. They became a Project Expediter for National Grid in 2012, and they now use this designation to sell new services into existing customer relationships. Stephen Wiehe, Team Leader for Renewable Energy who also has responsibility for energy efficiency projects, said the decision to pursue energy efficiency was a good one. “Our team did \$800,000 of energy efficiency work in 2014,” he explained, “We are on track to do \$1,000,000 in 2015.” He was quick to credit the energy efficiency program dollars with creating these opportunities. “Upwards of 60-65% of the total project value was funded by Mass Save incentives or state grants. Without the incentives, we would not be on the same growth trajectory.” He pointed to their largely municipal customer base – the company did work for 160 public entities in Massachusetts alone last year – saying, “Incentives make the projects go. They make these projects doable when a municipal budget would not otherwise allow it.”³⁴

New home construction companies are getting involved, too, as in the case of Graham Built Corporation, mentioned previously. Owner Chris Graham started in the new home construction business right out of school. But after just a few years, he pivoted to air sealing work in the HES program and has never looked back.³⁵

32 Conversation with Bradley Steele 022515.

33 Conversation with Michael Berry, Senior Manager, ICF International, 4.23.15.

34 Conversation with Stephen Wiehe, Team Leader for Renewable Energy, Weston & Sampson, 6.15.15.

35 Conversation with Chris Graham, Owner, Graham Built Construction, 6.4.15.

Even financial institutions are entering the efficiency space. thanks to the HEAT Loan program. The program works through lenders to provide 7-year interest-free loans for qualifying energy efficiency efforts to homeowners. The program covers the interest, so borrowers are responsible only for the principal. HEAT Loan program lender participation has increased from 17 banks and credit unions in 2008 to 76 in 2015,³⁶ which means 70% of the 109 co-operative and savings banks in the state now participate.³⁷

For example, St. Mary’s Credit Union, which serves Worcester and Middlesex County, has done at least 250 HEAT loans. According to AVP of Consumer Lending Dean Harris, they would like to do more. “We really like this program,” he said. “83% of the applications that came in were approved. These are high-quality borrowers.” St. Mary’s sees the program as a way to build relationships with potential future members. “We look at this program as an opportunity to have a conversation with people we would never have spoken to if we weren’t in the program,” said Harris. There is a financial upside, too. “It won’t make or break our balance sheet,” he said, “But it’s \$1.8 million we would not have seen otherwise.”³⁸

Eastern Bank Senior Vice President Kenneth Dymant also sees value in the program. He helped to re-develop and relaunch the HEAT Loan program in 2011, the year the bank joined the program. Since then Eastern Bank has processed approximately \$49 million in HEAT loans. As a result of program participation, Eastern Bank receives Community Reinvestment Act (CRA) credits and attracts new customers. “Not everyone who initially reaches out to us is an Eastern Bank customer,” said Dymant. “However, many do establish a relationship with us because of the HEAT Loan program, which has attracted borrowers with very good credit.”³⁹

The Attraction of Out-of-State Companies to the Massachusetts Market

The appeal of the Massachusetts energy efficiency market is not limited to companies that get their start in Massachusetts. The opportunities available have also caught the attention of a small but committed cadre of companies outside of Massachusetts as well. The past six years has seen several companies make significant investments locally, such establishing offices, hiring local staff, and participating in industry groups, with an eye toward getting a piece of the Massachusetts market.

For Minnesota-based insulation distributor IDI Distributors, the effort is already paying off. In 2009 the company already had 37 locations across the United States. They decided to open their Sharon, Massachusetts, office with one truck to take advantage of what appeared to be an exploding weatherization market. “We were not seeing this kind of weatherization activity anywhere else,” remembered Frank Novgoratz, IDI’s Boston Branch Manager. Historically a fiberglass insulation company, IDI dramatically retooled their focus for the Massachusetts market so it could supply local weatherization contractors with cellulose insulation. Since then, IDI’s business has grown at a steady pace. Novgoratz estimates that their Massachusetts customer base has increased 10-15%

36 2008 data is the number of lenders that closed HEAT loans that year. Data courtesy of Conservation Services Group. 2015 data is the number of HEAT loan lenders on the MassSave list <http://www.masssave.com/~media/Files/Residential/Information-and-Edu-Docs/Heat-LoanLenderList.PDF>, accessed 6.4.15.

37 Data on lending institutions taken from the Massachusetts Division of Banks Division at at Glance: <http://www.mass.gov/ocabr/docs/dob/dobataglance.pdf>, accessed 6.3.15.

38 Conversation with Dean Harris, AVP of Consumer Lending, St. Mary’s Credit Union, 7.7.15

39 Conversation with Kenneth Dymant, Senior Vice President, Eastern Bank, 6.22.15.

every year since 2009, and they now have 10 trucks instead of one. He has also seen changes in their customer base as well. “For a number of our customers, the owners were doing the work themselves back in 2009,” he explained. “Since then, they have been able to grow. Now they are doing managerial work and delegating the installations to contractors.”⁴⁰

The program management market has drawn interest as well, though breaking in has presented a more difficult challenge for some. Utility program management companies Franklin Energy, based in Wisconsin, and CLEAResult, based in Texas, both set their sights firmly on Massachusetts and made investments to back that up. In 2011 CLEAResult opened a Boston office and hired local staff. In 2012 Franklin Energy hired Mark Bowen as Vice President of Business Development and gave him a specific charter to build business in the northeast and a particular focus on Massachusetts. “The Massachusetts utilities have a solid national reputation for the level of achievement in their energy efficiency programs,” said Bowen. “You want to be working with these leaders as it provides instant credibility in the industry.” With the 2014 acquisition of CSG, residentially-focused CLEAResult has gained a substantial foothold in the Massachusetts energy efficiency market. Franklin Energy, which manages commercial and industrial programs, is still building toward that foothold. The company has not landed any Massachusetts contracts yet, but Bowen is optimistic. “I’m in it for the long haul,” he said. “If I want to work in the east, I need to work in Massachusetts.”⁴¹

The Development of a Culture of Energy Efficiency that Motivates Local Innovation

We observed one final but compelling impact of the Green Communities Act, which has been the creation of a culture of energy efficiency that encourages innovation. A number of business leaders credited the Green Communities Act with delivering the both the market channels and the market predictability necessary to bring new ideas, and investments in those ideas, to market. As a result the past six years have seen innovation both from within and outside of the programs. LFE Solutions founder Rob Quintal offered a perspective from within the lighting industry, saying, “With regard to energy efficiency lighting specifically, the programs have complemented rapid technology advances in LED lighting and wireless controls to create a culture and a set of existing resources that generate an appetite for and interest in new energy efficient lighting technologies.”⁴²

This culture of innovation is not limited to the lighting industry. The success of Boston-based Next Step Living has been in large part due to program innovation. Specifically, in response to a charge led by the company, the Home Energy Services residential retrofit program introduced a new business model in 2012 – the role of HPC.

Prior to 2012, one company marketed the program and performed all home energy audits. That company then assigned any recommended insulation installation to a short list of subcontractors. If customers wanted additional energy efficiency measures beyond insulation, they were responsible for the challenging task of finding and managing the subcontractors and figuring out the incentives themselves.

After 2012, companies in the new role of HPC could lift these burdens from the customer. Unlike the IICs, who get projects from their Lead Vendor and focus on insulation and air sealing, HPCs can market and sell

40 Conversation with Frank Novgoratz, Boston Branch Manager, IDI Solutions, 6.12.15

41 Conversation with Frank Bowen, VP, Business Development, Franklin Energy, 6.15.15.

42 Conversation with Rob Quintal, Founder of LFE Solutions, 5.12.15

program services, deliver audits, install whatever energy efficiency measures the customer needs, insulation and otherwise, and help the customer secure incentives. As an added benefit, HPCs bring customers into the program with no additional marketing cost to the program. Next Step Living has used this role successfully to become a one-stop shop for residential energy efficiency services for thousands of customers in Massachusetts, and to use their presence in these homes as a channel for promoting and delivering a range of clean energy offerings, like community solar, that help move the state toward its clean energy goals.

Next Step Living CEO and Founder Geoff Chapin also credits the program with supporting innovation through incentives. He noted that the program has helped bring to market technologies like the EcoThermal Filter System, which captures the waste heat from a restaurant stove, then uses it to pre-heat the water used for food prep, dishwashing, and cleaning. By freeing restaurant owners from the need to use gas to heat their water, the system saves restaurants \$4,000 - \$6,000 a year. In the process, it saves 19 tons of carbon per restaurant that installs it. The technology has been proven so effective that Massachusetts utilities are offering aggressive incentives through the Mass Save program of 50 – 75%. Chapin observed that those incentives, plus financing options, make it possible for restaurants to install this technology with no capital outlay.

Looking beyond the specific success that Next Step Living has had, Chapin sees that the Green Communities Act and the efficiency programs have created an environment that makes it possible for innovative new companies to survive. “Through the utility programs, the state offers channels into homes and businesses,” he said. “Being able to say credibly ‘I will be in 1,000 homes or 100 businesses in 2 to 3 years’ allows entrepreneurs to attract the capital they need from investors to grow their businesses.”⁴³

Chapin observed that the language of the Green Communities Act creates a foundation that builds investor confidence. “Investors always ask, ‘How do you know these programs aren’t going away?’” he said. “My answer is to point them to the track record of the programs and the legislation in which it’s rooted, which is the Green Communities Act. That’s what gives people certainty that this is going to continue. The predictability is huge. It allows investment in this space and the channel to market encourages companies to be here that wouldn’t otherwise.”⁴⁴

Companies are responding to that encouragement. Massachusetts is now home to a cluster of new, potentially transformative energy efficiency businesses and technologies, for example, queuing-based technology for mitigating peak demand from Cambridge-based eCurv, thermal imaging technology from Boston-based Essess and Woburn-based Sagewell, virtual audit technology from FirstFuel in Lexington and Retroefficiency in Boston, and building performance management software from KGS Buildings in Cambridge. Even though they do not provide products and services within the programs, these companies benefit from the culture of energy efficiency the programs have created. “While the interest in energy demand management services is quickly growing faster outside of Massachusetts, it is very important for us to maintain our presence here,” said eCurv CEO and founder Edison Almeida, “Massachusetts has become a hub for energy efficiency and innovation. Here there is a critical mass of talent that we can tap into to help us advance our fledgling enterprise.”⁴⁵

43 Conversation with Geoff Chapin, CEO and Founder, Next Step Living, 6.25.15.

44 Conversation with Geoff Chapin, CEO and Founder, Next Step Living, 6.25.15

45 Conversation with Edison Almeida, CEO, eCurv, 6.5.15.

ROGERS INSULATION SPECIALISTS

For Rogers Insulation Specialists, Mass Save program participation has yielded not only increased revenue, but also increased expertise. A 35-year-old, 25-person, family-owned business, the company has installed cellulose insulation in residential buildings as part of the utility programs for 25 years. But since the passage of the Green Communities Act and specifically the addition of air sealing incentives, business has really picked up.

Rick Taglienti, a Partner and Owner of Rogers, estimates that revenues have increased 30 – 40% in the past six years. The company now serves upwards of 30% more customers than they did previously, and it has doubled the number of employees that are dedicated to Mass Save projects.

But the real change for Rogers has been the addition of air sealing services to their offerings, a change that occurred as a direct result of participating in the programs. “Before the incentives came along, we weren’t doing air sealing. We did not fully appreciate its value,” Taglienti said. “But now, even the work we do outside of the Mass Save program includes air sealing. The impetus came because incentives were offered.”

**“Even the work we do outside of the Mass Save program includes air sealing.
The impetus came because incentives were offered.”**

Adding air sealing to their offerings means larger projects and deeper engagements. “Maybe a \$1,500 attic insulation project has become \$2,500 in the past few years, but that change is not just because prices have gone up,” Taglienti said. “It’s because we are doing more comprehensive work in that attic. Previously, we would go in and install blown-in cellulose into a customer’s house. We could do two jobs a day doing that. But now the blown-in insulation part is really only two hours of a day. The rest of the time, we are delivering other services that add substantial value, including air sealing, adding proper ventilation, and weatherstripping doors.”

As the complexity of Rogers’ services has increased, so has the expertise they require of their employees. Not only do the more complex projects come with a greater demand for skills, but they also require interacting more with customers and with the programs. Staff now need communications skills as well. “The programs have pushed us to learn more and deliver more,” said Taglienti. “The result is both stronger customer relationships for us and energy savings that the customer can count on for years to come because the job is being done so well.”

TNT ENERGY

Consistent program funding has made a big difference for TNT Energy. TNT Energy is a Direct Install vendor in the Small Commercial Retrofit program for National Grid, Eversource, and Unitil, and a Project Expediter within Eversource's Large Commercial and Industrial Retrofit program. The company started with a focus on lighting, but with the addition of incentives over the past six years, it has significantly expanded its repertoire of services to include gas measures, such as spray valves, shower heads, and boiler reset measures, as well as pipe and duct insulation.

The company has grown alongside its services. Six years ago, it was a \$4 million, three-person operation in a small office. Today it is a \$20 million, 21-person operation with 3 offices. CEO Tim Blanchard credits the consistency provided by 3-year program funding cycles with TNT's ability to add staff and other resources when they need them, instead of being limited by cash flow concerns. "Can I hire another person? Sure," says Blanchard. "They don't have to pay for themselves on day one. Can I buy another piece of equipment? Sure. It doesn't have to pay for itself on day one."

**"Can I hire another person? Sure.
They don't have to pay for themselves on day one."**

Like many companies in the Direct Install and Project Expediter roles, TNT's service delivery relies on the use of subcontractors, and a lot of them. For 2014, TNT worked with a total of 73 different subcontractors, and Blanchard estimates that on any given day, the company has about 30 subcontractors in the field with 100 people working for them. These are usually small businesses, a few guys and a truck. The kind of businesses that often lack the financial means to scale up when work gets busy.

But Blanchard has seen these businesses invest in their own growth, too, and again credits that to the consistency provided by three-year program funding cycles and the steady work that comes with that. "My subcontractors can bring on another crew if they need to," he said, "because they know that, as long as they do good work, the work will keep coming."

Blanchard also noted that TNT's growth is not all internally focused. Without cash flow worries, TNT has been free to develop deeper connections with the communities it serves. For example, TNT pays students from a local school as interns and gives out LED flashlights every Halloween with the Plymouth Chamber of Commerce. "The programs allow us to be supportive," explained Blanchard. "We can choose to participate in events without worrying about whether it's a good business decision. We can participate because it's the right thing to do."

REMPHOS TECHNOLOGIES

For Danvers-based lighting manufacturer RemPhos Technologies, the decision to focus on energy efficient lighting has defined the business. RemPhos Technologies was founded by David Gershaw in 2008 and started as a supplier of LED lighting fixtures to large manufacturers like Osram Sylvania. RemPhos is named for the remote-phosphor technology that makes LED lights appear uniform behind a large, light-emitting surface, such as the long tubes used for overhead office lighting.

Initially, RemPhos relied on those large manufacturers for 98% of its business. But in 2012, as the Mass Save incentives fueled an increasingly aggressive appetite for energy efficient lighting, Gershaw saw an opportunity. He retooled the business to sell LED lighting products to companies that deliver energy efficiency services. But to do it, he had to innovate on the traditional lighting sales channel.

Typically, lighting for commercial projects is delivered 8 – 10 weeks after an order is placed. For projects with long lead times, like new construction, the wait is not a problem. But for contractors implementing lighting retrofits in commercial buildings, it is a different story. “Lighting retrofits need to happen quickly,” said Gershaw. “These contractors have too much demand for their services to wait 8 – 10 weeks for lighting. We make sure they don’t have to.”

“These contractors have too much demand for their services to wait 8 – 10 weeks for lighting. We make sure they don’t have to.”

To make a faster retrofit possible, Gershaw stocks products in Massachusetts, so energy efficiency contractors can get what they need right when they need it. He also connects directly with those contractors rather than selling only through distributors, which is the traditional model of the lighting industry. Gershaw credits his partnership with LFE Solutions, a manufacturer’s representative that is, like RemPhos, focused on the efficiency market, as pivotal to his ability to target this market and streamline the delivery of his products.

The result has been dramatic. “In 2013, revenue doubled from the previous couple of years,” said Gershaw. “From 2013 to 2014, revenue quadrupled. We expect additional growth in 2015 in Massachusetts and elsewhere.” The RemPhos customer base includes companies of all sizes: from large companies, like Ameresco and Siemens, to medium-sized companies that manage large projects within the utility programs, like Horizon and RISE Engineering, to smaller electrical contractors.

“The Massachusetts commitment to energy efficiency is helping to push RemPhos forward,” said Gershaw. “We now ship 15- 20% of our product to programs in other parts of the country. That is business we were able to build because of our strong foundation in Massachusetts.”

NEXT STEP LIVING

Next Step Living was founded in 2008 to become a one-stop shop for residential energy efficiency services and energy efficiency products. At the time, the Home Energy Services residential program in Massachusetts was confusing for some customers and frustrating for participating contractors. “It was very disjointed,” said Next Step Living CEO and Founder Geoff Chapin. “You had one company doing your audit. Another company doing your insulation. One vendor is letting you know about the HEAT Loan, but they don’t recommend a company to help you with heating systems.” Additionally, companies like Next Step Living could only do the work that was assigned to them by their lead vendor. They could not market the program directly to potential customers.

Next Step Living wanted to make the program easier to work with and expand its reach. In 2009, they asked for and received approval to provide home energy audits and install insulation, and to market those services themselves. They built early momentum delivering those services to approximately 100 homes as part of the Renew Boston pilot initiative. Seeing their success at scaling up quickly, the utilities asked them to do more.

Customers responded well to this model. Chapin explained, “We found that the customers ended up trusting us and asked about other services, like replacing windows.” The company lobbied for and gained the right to offer a broad array of program services.

“The utilities have gained one-third of the program’s customers with little to no marketing costs to them.”

They went on to build their own customer base and proved that a single company could effectively market and deliver an array of program services to a large number of customers. In the first half of 2015 alone, the company helped more than 22,000 Massachusetts residents improve their homes’ energy efficiency and sustainability.

Chapin sees a success story for both the company and the utilities. “We have grown to become about one-third of the Mass Save Home Energy Services program in Massachusetts,” he said. “And the utilities have gained one-third of the program’s customers with little to no marketing costs to them.” Next Step Living’s success inspired the creation of the Home Performance Contractor (HPC) role within the program, which opened up the program to a new population of companies with the capacity to market and deliver a range of services.

Chapin now uses the company’s customer base as a channel to help the state further its clean energy goals. For example, the company integrated community solar into its offerings, and Chapin estimates that they take 500 reservations a month for it. “We are uniquely positioned to move other programs forward,” he said. “We’re in so many homes already. We can not only inform people of new ways to save money and live more sustainably, but we can also help them take action.”

The Massachusetts Energy Efficiency Industry Today

The Green Communities Act has built a thriving industry. Today, at the end of the second three-year plan and seven years after the passage of the Green Communities Act, our research found more than 7,000⁴⁶ diverse Massachusetts companies⁴⁷ delivering or supporting the delivery of energy efficiency-related products and services.

Those companies fell naturally into three major categories, which aligned with their roles in the programs and the marketplace:

<p>Program Management & Evaluation</p> <p>Includes Program Managers, Incentive Processors, and Program Evaluators.</p>	<p>9+ companies</p>
<p>Energy Efficiency Service Delivery</p> <p>Includes more than 6,000 Energy Efficiency Service Providers such as electricians, insulation installers, and controls experts. Also includes Recyclers, Independent Energy Engineers, HEAT Loan lenders, HERS Raters, and Independent Verifiers.</p>	<p>6,463+ companies</p>
<p>Supply Chain</p> <p>Includes more than 100 Wholesale Distributors and more than 600 Retailers, as well as Manufacturers and Manufacturer’s Representatives.</p>	<p>796+ companies</p>
<p style="text-align: right;">TOTAL 7,268+ companies</p>	

Table 1. Total companies by program role and total individual companies across all data sets.

46 Some of the data files delineated company lists by year and included some or all of the years 2008 – 2014. Some of the data files did not delineate company lists by year. This total is a sum of a) those companies in our data that were associated with the year 2014, for those files that delineated company lists by year, and b) all companies that appeared in data files that were not delineated by year. For the second group, our understanding is that in all cases, these files contain only those contractors that are currently active or engaged by the company providing the data.

47 A “Massachusetts company” is a company that has a Massachusetts address in the data that we received. However, this filter is imperfect. Companies with a Massachusetts address may be headquartered elsewhere, and companies that lack a Massachusetts address in this data set may possess a Massachusetts office.

If the sheer number of these companies seems remarkable, especially the number in the category of Energy Efficiency Service Delivery, their makeup may be more so. We further categorized the Energy Efficiency Service Delivery companies based on an evaluation of their program involvement and on how they position themselves in the marketplace.⁴⁸ The categories were not preselected, but rather emerged during the course of examining the list. Figure 7 illustrates our findings.

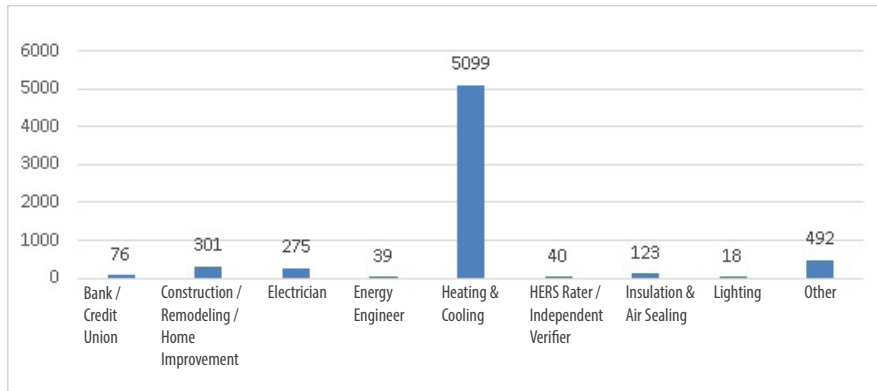


Figure 7. Energy Efficiency Service Delivery companies categorized by company type.

This categorization revealed two defining qualities of the Massachusetts companies that deliver energy efficiency services. First, they include a significant amount of variety. As Figure 7 indicates, while the vast majority, 79%, fall into the category of heating and cooling companies,⁴⁹ the others populated an additional seven categories, as well as a mix of company types in “Other.”⁵⁰ Digging further, we found additional variety. For example:

- Heating & Cooling - Includes a majority of companies presenting themselves as HVAC companies, but also heating oil companies, propane companies, plumbers, mechanical contractors, refrigeration specialists, solar hot water installers, and sheet metal companies, among others.
- Construction / Remodeling / Home Improvement - Includes not only those three company types, but also builders, general contractors, and landscapers.

48 This categorization process was manual and was based on judgement calls made by the research team after a quick review of each company web site. In reviewing each web site, the goal was to determine how the company presented itself or perceived its place in the marketplace and to reflect that self-perception in the company’s categorization.

49 We briefly explored the history of heating and cooling companies with the utility programs to try to understand the reason for the high representation of these companies in our data. Our conversations with both utility and industry contacts suggest this large number may be a legacy of two phenomena:

- a. The lengthy and effective relationship that the Massachusetts utilities have cultivated with the heating and cooling industry, which began long before the passage of the Green Communities Act and which included the deliberate nurturing of cohesion within the industry through programs like Gas Networks.
- b. The high market demand for heating and cooling contractors because of a) the prevalence of heating systems in nearly every commercial and residential building, b) the urgent need for these systems to function during cold Massachusetts winters, and c) the reality that few building or home owners are capable of repairing or replacing these systems without the help of a vendor when they inevitably break or wear out.

50 “Other” includes 298 companies marked as *unknown*. These were companies that appeared by name within the data but that either a) could not be found when searching for them via web-based search engines or b) could be found but their core line of business could not be definitely determined.

- Other - Includes program managers, architects, building management system specialists, commissioning agents, electricity suppliers, Energy Services Companies (ESCOs), recyclers, and even one interior design firm, among others.

Second and perhaps more notable, the majority of companies that deliver energy efficiency-related services are not companies built with a specific focus on efficiency. Rather, they are companies that have integrated efficiency into existing lines of businesses. The fact that the energy efficiency program budgets have been supporting the efforts of both efficiency-focused companies and companies that are not focused on efficiency suggests that energy efficiency is no longer a niche industry. Instead, it has been integrated into the business of many different kinds of industries, and in that way has become part of the mainstream economy of the state. This phenomenon presents a strong argument for the effectiveness of the energy efficiency programs in driving market change.

From our interviews with company executives, it became clear that all the companies engaged in delivering services in the energy efficiency programs exist in an interdependent, interconnected ecosystem. Relationships between companies are neither linear nor siloed, and it is not unusual to see subcontracting arrangements arise among them. As a result, the argument could be made that all participating companies, including those not specifically built around energy efficiency, should be viewed as part of the energy efficiency industry in Massachusetts.

Core Company Types

This section illustrates the particular landscape of the Massachusetts energy efficiency industry by laying out the various company types that make it up and describing what each type does, including both efficiency and non-efficiency companies. Specifically, it explores the three major categories of companies that work within the programs: 1) companies that perform **program management and evaluation** services; 2) companies that deliver or manage the delivery of **energy-efficiency services** to customers; and 3) companies within the **supply chain of energy-efficient materials**, such as manufacturers, distributors, and manufacturer's representatives. It also touches on a fourth category that we observed: companies that serve as **energy efficiency installation equipment providers**.

Program Management and Evaluation

Program Managers

A number of programs are managed by an external company that has been hired by the Program Administrator. Often called the Lead Vendor, the program management company provides services that generally include program marketing; utility customer outreach, intake, and scheduling of follow-on services; database management and tracking; and processing program rebates and incentives. Companies in this role are often larger companies with significant infrastructure and a diverse, skilled staff. A single company in a program management role may provide some or all of these management functions for a specific program, while also providing additional services that fit within one of the other categories, such as service or management of a piece of the supply chain for energy efficient products, such as lighting.

The residential programs have long included Program Managers / Lead Vendors. For example, in 2014, CSG, RISE Engineering, and the Center for EcoTechnology served as Lead Vendors for the HES program, which is a 1 – 4 unit program, while RISE Engineering additionally had this responsibility for the five (5) units and greater Multifamily Residential Retrofit program. In this role, these companies deal directly with customers as well as contractors. CSG was also tapped to manage other residential programs: residential heating (Gas Networks) and cooling (COOL SMART) retrofit initiatives that target heating and cooling contractors, as well as a residential new construction program targeting residential design professionals and builders. Rather than dealing directly with customers as in the HES program, for these programs CSG educated and encouraged the service providers to upsell their own customers to more efficient technologies and construction practices.

Program Evaluators

Program evaluators are consulting companies that are brought on by the program administrators to conduct evaluation studies of different portions of the programs. Comprising a relatively short list of companies that often have a national or even global footprint, these are companies like DNV GL, Tetra Tech, and Opinion Dynamics Corporation with specific expertise in energy efficiency that is supported by a robust, multi-faceted consulting practice.

Incentive Processors

As the category name suggests, incentive processors manage and/or track program incentive payments. Their responsibilities may include receiving rebate forms from consumers, receiving incentive application forms from contractors, sending payments out, and managing and reporting program participation data back to the Program Administrators. These companies include Blackhawk Engagement Solutions, which processes incentives for heating and cooling equipment, EFI, which processes incentives for HVAC and plumbing equipment, and Lockheed Martin, which both supports and tracks mid-stream incentive efforts with retailers and also recruits and trains those retailers.

Energy Efficiency Service Delivery

The companies in this category deliver energy efficiency services directly to customers, and their population includes all the company types depicted in Figure 7. Many of these companies have fine-tuned a division, or their entire enterprise, to meet the requirements of a particular role or program, which is a reflection of the ability of these programs to shape the industry.

Banks / Credit Unions

As described previously, banks and credit unions have become involved in energy efficiency by providing HEAT Loans. Specifically, these are lending institutions that work with the efficiency programs to provide 7-year interest-free loans of up to \$25,000 to homeowners for qualifying residential energy efficiency projects. These are institutions like Century Bank, St. Mary's Credit Union and Eastern Bank. 70% of the 109 co-operative and savings banks in the state now participate in the program. These lenders are not energy efficiency companies at all, but they are providing a critical service that enables the delivery of energy-efficiency services and products. By making no-interest loans available to homeowners for the purpose of energy efficiency upgrades, these

financial institutions make it affordable for residential customers to engage with energy efficiency service providers and pursue projects they might not otherwise pursue.

Construction / Remodeling / Home Improvement

This group of companies includes builders, general contractors, and landscapers. Some work in the HES program, applying their skills to insulation and air sealing. Others work in the residential New Construction program with HERS Raters and Independent Verifiers, helping to promote the value of using an energy-efficient approach to building owners and driving the building design that makes achieving efficiency possible.

Energy Efficiency Installers

In this broad category sit the nearly 6,000 companies, mostly technology specialists, that install energy-efficient products and technologies in existing or new buildings. As seen in Figure 7, the majority are heating and cooling contractors such as HVAC companies, heating oil and propane companies, plumbers, mechanical contractors, refrigeration specialists, solar hot water installers, and sheet metal companies, among others, are the lion's share of the population. Some provide services related to their core business while others have expanded from that core business to integrate program-related services.

Installers also include several hundred licensed electrical contractors that install hard-wired lighting or motors in commercial buildings, a small number of lighting-focused companies that have electricians on staff, and more than 120 insulation and air sealing installers, as well as compressed air system specialists, building management system specialists, commissioning agents, and others.

Service delivery can be as simple as weatherstripping a door or installing a light fixture or as complex as designing and building a combined heat and power plant that generates electricity and provides for a facility's thermal needs. Some of these companies operate as subcontractors, getting referrals or bidding against each other for work with larger companies, while others serve as prime contractors.

This population of companies includes the HPCs and the IICs from the HES program as well as the Direct Install (DI) vendors from the Small Commercial program and the Project Expeditors. Some project expeditors specialize in relatively straightforward off-the-shelf technologies and systems, such as commercial lighting retrofits. Others target complex technologies like heating plants, HVAC retrofits, or combined heat and power systems that may require significant system design engineering prior to construction.

The large Energy Services Companies (ESCOs) such as Ameresco, Noresco, Honeywell, Siemens, Johnson Controls, ConEdison Solutions, and others also sit in this category. These companies offer extensive engineering and energy system expertise and bundle together packages of technology upgrades for customers, combining project development, investment grade energy audits, design engineering, equipment procurement, applications for program incentives, subcontractor selection and management, project commissioning, and even performance guarantees with measurement and verification of savings.

Energy Engineers

These firms are retained by the Program Administrators to provide sales support for projects in commercial facilities. Some are mechanical or electrical engineering generalists. Others are specialists in particular technologies or building types, such as industrial processes, laboratory and clean room design, water and wastewater management, and data centers. For example, B2Q Associates, also a Project Expediter, offers particular expertise in large commercial & industrial buildings.

Engaged before a project is defined, engineers support a utility account manager by evaluating and identifying energy efficiency opportunities at a customer facility. In some cases, these engineers are brought in to address customer concerns about higher-than-expected energy use. They help the customer to develop a project specification and secure bids for project completion. They can also complete applications for program incentives, support project commissioning, and perform quality assurance testing and review when an installation is complete. Engineers also work as subcontractors to other energy efficiency service providers. For example, they may be retained to provide detailed design drawings and specifications prior to construction or help with construction oversight.

HERS Raters and Independent Verifiers

Within the Residential New Construction Program, HERS raters and Independent Verifiers work with architects and builders to register projects within the program, model the energy efficiency of a new project, optimize a project to receive the most incentives possible, and perform midpoint and final inspections to verify that a project is built as planned and will achieved the target level of efficiency. HERS Raters work with low-rise buildings (1-3 stories), while Independent Verifiers work with high-rise buildings (4+ stories). Frequently small, one- or two-person operations, HERS Raters and Independent Verifiers contract directly with program participants, like builders, architects, or even homeowners, and the program subsidizes their fees.

Program Managers

In addition to program administration, the role of program manager also includes service delivery. Specifically, within the HES program, program managers deliver home energy audits.

Recyclers

Recyclers are specialized companies, such as nationally operating Veolia North America and JACO Environmental, as well as Bridgewater-based Consolidated Recycling, that support installations and equipment replacement by recycling the equipment that is replaced. For example, JACO Environmental collects residential refrigerators and freezers, drains and properly disposes of refrigerants, and recycles the components. Others pick up discarded fluorescent tubes from lighting replacements and contain and recycle the mercury in them.

Supply Chain

The supply chain sources the products that are installed by contractors, as well as equipment like light bulbs and ENERGY STAR appliances that can be purchased and installed by consumers. Product selection is especially

important to the success of the programs, and the Massachusetts program administrators work hard to ensure that approved, high-performance, long-lasting, and affordable products and equipment are available for purchase in Massachusetts. The programs put a great emphasis on enlisting equipment manufacturers, manufacturers representatives, distributors, and retailers as business allies, even involving them in some cases in point-of-sale efficiency initiatives.

Program Managers

Program manager roles exist on the supply chain side as well. These are often companies with incentive processing capabilities. For example, in the residential sector, Lockheed Martin Services was engaged to manage a program promoting ENERGY STAR lighting and appliances through the independent and chain store product retailers across Massachusetts. In addition to providing retailer recruitment and training services and point-of-sale information, they also process all consumer rebates for the program.

Manufacturers

These companies build and make available the products that contractors install on a customer site, for example, lighting and insulation. While manufacturing in Massachusetts is limited and most manufacturers are based elsewhere, there is some in-state equipment manufacturing in the energy efficiency industry, for example LED lighting manufacturer RemPhos in Danvers and cellulose insulation manufacturer National Fiber in Belchertown.

Wholesale Distributors

Wholesale distributors can include both companies that use only warehouses for distribution and those that have a retail storefront as well. Examples include IDI Distributors, a national insulation distributor with an office in Sharon, Interstate HVAC Controls, an HVAC controls distributor, and lighting distributor Rexel Energy Solutions in Fall River, formerly Munro Energy.

Manufacturer's Representatives

These companies serve as the link between manufacturers and markets. Generally, they own a geographic territory for one or several manufacturers and serve as the interface between that manufacturer and a local market. They work directly with distributors, customers, and utilities, offering education on their products and creating demand. Reflex, OmniLite, and Boston Light Source are well-known lighting Manufacturer's Representatives. Canton-based APV is an HVAC equipment Manufacturer's Representative. Some Manufacturer's Representatives also serve a distribution role and maintain their own warehouse of products, as with The Yanow Companies.⁵¹

Retailers

These companies include large chains such as Home Depot, local hardware stores, dollar stores, and any other retail location where energy efficient products such as light bulbs, refrigerators, air conditioners, and the like are sold to consumers.

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⁵¹ Conversation with Randy Pinkovsky and Richard Cremmen, B.N. Yanow Lighting, 4.29.15.

Installation Equipment Suppliers

In addition to the previously described company types, which are the core of the Massachusetts energy efficiency industry, another tier of companies exists, the Installation Equipment Suppliers. One or more steps removed from manufacturing, selling, or providing energy efficiency products and services, these companies provide the specific tools that are necessary for the core companies to do their work. Examples of this next tier of companies include:

- Installation equipment manufacturers and distributors, such as insulation-blowing machine manufacturer Accu1 Direct in East Longmeadow
- Truck leasing and sales companies, providing box trucks for insulation installation or trucks with lifts for lighting installation
- Equipment leasing and sales companies that provide lifts to companies working on outdoor lighting

Given the indirect and sometime limited impact of Green Communities Act-driven programs on these businesses, we did not identify or attempt to count the companies in this category. As a result, they do not appear in the earlier totals. However, they were mentioned often enough in interviews that they merit noting. At a minimum, their recognition can serve as a reminder that the impact of the program funding does not stop with the core companies that deliver energy efficiency-related services and products, but rather extends to a whole population of supporting companies as well.

Conclusion

Since the passage of the Green Communities Act in 2008, energy efficiency has become a serious industry in Massachusetts. By our count, more than 7,000 Massachusetts companies were involved in delivering or supporting the delivery of Massachusetts energy efficiency programs in 2014. And it is very likely that there are many more Massachusetts businesses to be counted.

The participation of such a large number of companies in the delivery of these programs, and in particular such a large number of companies that are *not* focused on energy efficiency as their core businesses, suggests that energy efficiency is becoming accepted by the marketplace. As we noted earlier, we believe this phenomenon presents a strong argument for the effectiveness of the programs in driving market change, in transforming energy efficiency from a niche industry into a mainstream expectation.

This high level of engagement by so many industries in program delivery raises a question for the programs about what their end goal is. Is it to continue nurturing the development of additional energy efficiency companies? Is it to further embed energy efficiency into non-efficiency industries? Both? And how will they know they have achieved their aim?

It raises a similar set of questions for the Massachusetts energy efficiency industry itself. What is the industry's vision for its own future? Is the goal to create a larger peer group of energy efficiency focused companies in Massachusetts, or the northeast? Or, now that energy efficiency-focused companies can see how many other companies are doing the work of efficiency in the state, is there value to formally embracing those other companies within the energy efficiency industry and creating a stronger voice? Perhaps these efforts are not mutually exclusive.

Whatever comes next, it is clear that the impact of the Green Communities Act extends beyond Massachusetts' nation-leading position in energy efficiency, beyond the ability to defer new generation, beyond the quantification of reduced greenhouse gas emissions, and beyond the dollars that utility customers are able to save on their energy bills and invest or spend for other purposes. The Green Communities Act of 2008 has helped create, expand, and sustain of thousands of companies and the livelihoods of their employees.

For these tens of thousands of employees, professionals who work every day to insulate buildings, retrofit lighting, install and maintain HVAC equipment, energy efficiency has become quite literally a way of life. That shift, the embedding of energy efficiency into the mainstream economy, may be *the* transformative legacy of the Green Communities Act in Massachusetts.

Appendix A – Data Sources

Blackhawk Engagement Solutions

- Lists of electric and gas incentive recipients for the years 2012 – 2014 for National Grid, Eversource, and Columbia Gas of Massachusetts

Center for EcoTechnology (CET)

- List of contractors for 2015

Conservation Services Group (CSG) , now CLEAResult

- List of contractors for the years 2006 - 2014

EFI

- Counts of distributors receiving upstream incentive payments for 2013 through April 30, 2015

Eversource

- List of companies receiving payments through the Eversource residential and commercial gas and electric programs for the years 2012 – 2014
- List of IICs and HPCs
- Primary program vendor list for 2015

ICF International

- Total HERS raters and program market penetration for the years 2008 – 2014
- List of Independent Verifiers for 2015

Leidos

- National Grid industrial vendors for 2015
- National Grid Project Expeditors for 2015

Lockheed-Martin

- Residential Products Participating Retailers for 2015

Mass Save– all lists downloaded between March 1 and May 31, 2015

- IICs
- HPCs
- HEAT Loan providers
- COOL SMART contractors
- Upstream HVAC distributors
- Upstream Lighting distributors

National Grid

- List of companies receiving payments through the National Grid Medium and Large Commercial & Industrial electric programs for the years 2008 - 2014

RISE Engineering

- List of contractors for 2014