

Workforce Impacts of Expanded Utility Commercial & Industrial Energy Efficiency Funds in Massachusetts: 2009



Executive Summary

The New England Clean Energy Council (“NECEC”) has been engaged by a consortium of utility companies serving Massachusetts customers to help determine if Massachusetts’ energy efficiency infrastructure will be able to field a sufficient workforce to meet the state’s goals for increased commercial and industrial energy efficiency investment.

Massachusetts utilities are developing plans for a potentially significant increase in their funding for energy efficiency from state, regional, and federal sources. This expanded funding would increase the numbers of projects that are completed and the amount of energy efficiency generated, while reducing greenhouse gas emissions. The labor force that will drive this expansion will be utility employees and private services providers selling and delivering a range of analytical and installation services.

During February 2009, NECEC completed a series of interviews and surveys of companies currently active in this market. While individual respondents were promised confidentiality, their aggregate responses are described below.

Uniformly, survey and interview responses indicate great interest by service providers in a significant expansion of utility financial support for energy efficiency investments in this market, particularly in light of the current economic downturn. There is general acknowledgement that incentives and services offered by utilities to date have contributed significantly to the success of their businesses.

Regardless of the market segment served, technology specialty, or role that individual companies play, respondents believe they will have a strong cadre of workers and contractors available to meet an increased demand for services. That said, certain survey recipients identify particular workforce segments that are more difficult to find and hire, including energy efficiency-oriented engineers and project developers. Further, many companies observe that they will likely always need to provide on the job training to new hires to acquaint them with company-specific requirements and bring them up to full productivity.

Introduction

Massachusetts utilities presently offer a range of services and programs for commercial and industrial customers to encourage and support customer investment in energy efficiency. This utility support is designed to address the market obstacles that typically interfere with customers from investing in energy efficiency improvements. These obstacles include:

- Time conflicts between core business activity and energy efficiency opportunities,
- Insufficient knowledge or information about what to do and how to get it done,
- Inability to find trusted installation contractors,
- Budget limitations, and
- Fear of making mistakes.

Services provided by utilities include technical assistance, project development and implementation services, and financial incentives to reduce the out of pocket cost. Separate sets of services and programs are provided to large and smaller business customers.

Massachusetts utilities anticipate a potentially significant increase in their funding for commercial and industrial energy efficiency over the next five years from state, regional, and federal sources. In the face of this expanding funding, the New England Clean Energy Council (“NECEC”) was engaged by a consortium of utility companies serving Massachusetts customers to explore whether the Massachusetts energy efficiency infrastructure (i.e. the businesses that provide energy efficiency services) will be able to field a sufficient workforce to meet the state’s goals for increased commercial and industrial energy efficiency investment. In February and March 2009, Peregrine Energy Group, Inc. (“Peregrine”), on behalf of the NECEC, contacted and surveyed a representative sample of energy services companies that have been participating in utility funded energy efficiency efforts targeting commercial and industrial end users.¹

Survey participants have been both large and small energy service providers that were identified to Peregrine by the National Grid and NSTAR companies as important and active players in this market. They include large energy services companies that are active nationally, regionally, and locally; regional and local firms that have been designated special roles in assisting and supporting smaller commercial and industrial utility customers with identifying and implementing energy efficiency; specialized firms that provide limited services (e.g. energy audits or building commissioning) or work in limited technologies (e.g. lighting or controls); and, finally, select subcontractors to these companies.

The objective of the survey process has been to answer the following questions:

- Is there sufficient work force ‘infrastructure’ in Massachusetts to accommodate a ramp up in utility-sponsored energy efficiency activity?
- Would an increase in activity be accommodated by service providers with existing staffing or would an increase in service demand require an increase in staff?
- Is the availability of qualified staff perceived to be a significant obstacle in responding to increased demand for efficiency services?

¹ Copies of the survey instruments and a listing of survey participants is include as attachments to this report.

Energy Services Providers in Commercial and Industrial Markets

Summary of Findings

Who is active in this market?

- Companies identified to NECEC as major players in utility-supported commercial and industrial energy efficiency markets in Massachusetts have very different roles in energy services provision and operate with very different business models
- Participants include energy saving performance contractors (“ESCOs”), designated utility “expeditors” or service providers, specialized technology installers, and their subcontractors

What is their involvement in utility programs?

- Energy saving performance contractors (“ESCOs”) view utility programs as helpful, but not critical to their success in developing and implementing very large asset modernization projects in public and institutional buildings
- Designated utility “expeditors” or service providers, particularly for smaller commercial customers, support the needs of customers who are motivated solely by a desire to reduce future energy costs. Many of these designees have made providing services to utility customers as central to their business
- Specialized technology installers that brand themselves as energy efficiency companies are thriving by gearing their selling to utility targets and utility incentives, even as they may be part of larger electrical contracting or equipment supply companies
- Specialized service providers, primarily energy efficiency engineers, have been able to establish strong businesses based on utility-paid referrals to customers

What labor categories are employed?

- Relevant skill sets and labor categories for individual companies in the efficiency market vary significantly with the specific business model and market segment each pursues.
- Among the ESCOs, there is a heavy emphasis on engineers with capabilities in energy auditing, design, and measurement and verification. Financial expertise and accounting is also important for deal structuring. Project and construction management are important for all projects. Sales and customer service functions are critical to developing and maintaining long term relationships. And of course, installers of all sorts, including laborers and individuals with trade licenses are very important (often subcontractors for ESCOs).
- Among utility-designated expeditors and agents, engineers are generally less important since the efficiency measures for small customers are more prescribed and less customized. Sales and auditing are both very important labor categories; and strong project management is also critical to make sure projects are completed on time and budget and in a manner satisfactory to customers. Installation labor, often through subcontractors, is central to the services offered, with licensed trades being a large portion of the installers.
- Among the specialized technology installers, sales and finance/accounting personnel are important non-installation roles, with some auditing and project management staff as well. The big emphasis for these companies is on hiring technicians who work with and install equipment.

To what extent do companies use in-house personnel or subcontractors?

- Subcontracted labor is an important component of the energy efficiency market and allows larger companies to provide services while controlling risks associated with in-house workforce utilization
- Many companies use subcontractors for installation services, instead of and in addition to an in-house workforce
- There is a ready supply of subcontractors available in the current economic climate

How does an 'open program structure' where supplier participation is not restricted to a narrow number of firms help achieve efficiency objectives?

- The open program structure of commercial and industrial programs is a good match to the general ongoing dealings in this market, creating opportunities for maximizing the potential for energy efficient investment in every energy equipment transaction with a commercial and industrial customer
- However, many smaller installation subcontractors do not appear to be tuned in to the energy efficiency value proposition that utilities are trying to promote through their programs, perhaps creating lost opportunities

Overview of Service Providers

Energy services providers active in utility-supported commercial and industrial energy efficiency markets in Massachusetts are a varied group of companies which operate with different business models. Based on the responses to the surveys, our analysis segments the survey participants into five categories:

- energy saving performance contractors,
- designated utility agents or expeditors,
- specialized technology installers
- specialized services providers, and
- subcontractors to other companies directly servicing utility customers.²

This section offers a generalized overview of each of these categories, describing how the members' business models are similar, the members' participation in utility-supported activities, and the types of services they provide. It also describes the typical distribution of the in-house labor force by employment activity, including skills, training, and certifications, and any known hiring issues. Finally, it explores which skills and job titles these categories of companies tend to secure using contract labor and concerns they express about availability of subcontractors.

² The open structure of large commercial utility programs results in some of the survey participants being members of more than one category (e.g. as direct service providers themselves to utility customers and as specialized subcontractors to other direct service providers).

While this report does not present the detailed perspectives of each survey respondent in each category (or all energy services providers active in Massachusetts), it does reflect a good sample of companies that utilities identified to NECEC as major participants in this market.

Energy Savings Performance Contractors

Energy savings performance contractors, often called ESCOs, generally take a comprehensive approach to efficiency improvement for their clients. They focus on all energy end uses as well as water consumption. ESCO projects tend to be large, in excess of \$1,000,000 per contract, with projects of \$10,000,000 not uncommon.

ESCOs often are engaged by clients who have limited access to capital. Asset modernization is often the driver for projects. Their clients are seeking a comprehensive solution that supports replacement of older, inefficient building infrastructure components and major energy conversion equipment that may be at the end of its useful life, prone to failure, or requiring significant expense for maintenance and repair. These large projects are often difficult to finance through the annual capital budgeting process.

Contracts often have very long terms to keep payments low and are attractive to institutions that know they will be in business for an extended period. Public sector projects with large institutions (schools, hospitals, public housing, and other public buildings) are a large portion of an ESCO portfolio. Success is determined by an ESCOs ability to accurately predict and control the life cycle cost of the project, including operations and maintenance requirements, as well as anticipated energy consumption compared to the current baseline. Further, savings are often measured and documented.

The ESCOs that participated in this survey were ConEd Solutions, Constellation Energy Projects & Services Group, Inc., Johnson Controls, NORESKO, and Siemens. Both Ameresco, Inc, and Honeywell were invited to participate, but declined.

ESCO Involvement with utility programs

ESCOs responding to the survey indicate that they always try to make use of utility programs wherever they have clients. All ESCOs surveyed indicate that an increase in utility funding for commercial and industrial energy efficiency will be good for their businesses.

While ESCOs do not target efficiency measures specifically because they are covered by utility program incentives, they will incorporate as many of these measures in projects as they can and secure all available incentives. Bundling quicker payback items into larger projects will increase the cash flow to the total project, improving the project's economics and increasing the likelihood that it can move forward. Survey responses showed that while 90 – 100 percent of ESCO projects included measures supported by utility incentives, as little as five (5) percent or less of the total construction budget of a project may be funded by utility incentives.

Labor requirements

Keys labor categories for ESCOs are energy auditing, engineering, project development, and construction management, as well as project commissioning and maintenance. ESCOs maintain almost all of these capabilities in-house, to ensure a high level of quality, accountability, and control over results, though a number indicate they use subcontractors for commissioning or maintenance functions. The ESCOs install a full range of energy technologies (lighting, motors, drives, chillers, boilers, HVAC upgrades, controls, and building management systems). They may employ installers and/or subcontract for the necessary installation capabilities.

Two ESCOs, one with 30 full time employees and the other with 40 full-time employees, identified the following employee distribution by function:

	ESCO 'A': 30 full-time	ESCO 'B': 40 full-time
C/I Sales and Marketing:	3	5
C/I Program Management:	2	2
C/I Project Management:	6	5
C/I Finance/Accounting:	3	
C/I Engineering Staff:	9	3
C/I Design Staff:		3
C/I Auditing Staff:	2	4
C/I Information Technology	1	
C/I Technician Staff:		17
Customer Service:	2	1
Other: Measurement and Verification	2	

The 30 ESCO 'A' employees identified have the following degrees and certifications: five (5) electrical engineers and 12 mechanical engineers; 15 Certified Energy Managers and two (2) LEED certified personnel; and one licensed electrician and one licensed HVAC technician. None of this ESCO's employees provides actual installation services, all of which are being performed by subcontractors. Subcontractors are also used to support the auditing, engineering, and design functions. ESCO 'B' employees have the following degrees and certifications: three (3) electrical engineers, 11 mechanical engineers, and one chemical engineer; 10 Certified Energy Managers and one LEED certified person; and five (5) electrical, 12 plumbing, 12 HVAC, and 12 refrigeration licensees.

The following table summarizes the numbers of subcontractor companies used by these ESCOs.

	ESCO 'A'	ESCO 'B'
Auditing	2	
Engineering	4	
Design	2	
Construction management		
Installation of equipment and systems:		
Lighting	2	5
Motors	2	
Drives	3	
HVAC	4	
Refrigeration	2	
Process equipment	1	2
Controls	5	
Other		
Commissioning		3
Maintenance	5	

Designated Utility Agents or Expeditors

Utilities typically issue a competitive solicitation to select one or more contractors to provide commercial and industrial program support and services, generally for small customers. For

example, both National Grid Electric and NSTAR Electric have commercial and industrial energy efficiency contractors that receive customer referrals or are listed as primary service providers.

National Grid lists 12 Project Expeditors whose role is to provide “Turnkey Services” to customers. According to National Grid’s website, Project Expeditors are a select group of independent contractors qualified through a bid process to assist customers to help identify and install energy efficient opportunities. National Grid further indicates that it maintains tight control of the quality of their work and demand they maintain the highest standards for customer satisfaction. Interested customers can select an Expediter they want to work with off of a list provided by National Grid.

Services provided by National Grid Project Expeditors include: inspecting facilities for opportunities; Recommend appropriate energy efficiency measures; analyzing project economics; maximizing benefits of incentive programs; providing complete installation services; providing extended lamp and ballast warranties; and recycling lamps and ballasts. Specific technology offerings include: lighting upgrades, HVAC efficiency improvements, energy management systems, variable speed drives, and motor upgrades.

Nine of the 12 National Grid Expeditors participated in this survey. They include: Atlantic Energy Solutions, Inc.; Bluestone Energy Services, LTD; Energy Management Consultants, Inc.; ENERCON, Inc.; Groom Energy Solutions, LLC; Horizon Lighting and Energy Solutions; Northern Energy Services; PRISM Consulting, Inc.; and RISE Engineering.

NSTAR’s Small Business Solutions program includes four companies with assigned geographic territories that provide free energy audits to customers whose average monthly demand is 200 kW or less. Also, a single vendor, National Resource Management, assist customers seeking assistance with refrigeration controls in all areas served by NSTAR.

The Small Business Solutions program pays for up to 70 percent of the total cost for retrofitting qualifying lighting and mechanical systems. Qualifying systems include: upgrading to energy efficient lighting fixtures, electronic controls, HVAC and refrigeration; and efficiency upgrades to mechanical systems.

Three of the four geographically-designated contractors agreed to participate in the survey: Northern Energy Services; PRISM Consulting, Inc.; and RISE Engineering. Northern Resource Management also completed a survey form.

Utility programs have been such significant drivers of energy efficiency investment that there are additional firms that do not have the formal designation of ‘expediter’ or an assigned geographic territory that also participate effectively. One company that participated in the survey, which is identified below as Firm ‘6,’ below provides installation services for NSTAR, National Grid, Western Massachusetts Electric Company, and the Cape Light Compact, with 90% of business making use of utility funds.

Services provided:

The energy service providers in this category tend to focus their attention on prescriptive measures that are identified as qualifying for utility program incentives, rather than the comprehensive treatment that characterizes ESCO work. 95% of the projects that these companies undertake make use of utility commercial and industrial energy efficiency funds. All are very enthusiastic about the potential for increased utility funding.

One respondent commented that:

“One of the biggest obstacles for Customers is the large cash outlay of energy projects. The current prescriptive incentives offered by National Grid and NStar for customers over 200KW cover approximately 25-35% of a turnkey lighting project. I am finding that customers are very receptive to energy projects, but they are put on hold by their upper management or parent companies. This is directly related to the poor economic climate and companies have to make hard choices on how to survive. It is difficult for a company to justify spending \$100,000 on an energy project and then having to lay off 10 employees.

“Both utilities offer Small C&I customers (under 200KW) and Municipal customers a 70% incentive as well as On Bill Financing. Not only is the cost of energy efficient lighting projects less than half for these customers compared to large customers, but there is also no cash outlay as well with 0% 2 year financing.

“My question is: why is there such a wide gap between the large C&I programs and the Small C&I programs. If the utilities are serious about achieving significant energy savings, then why not offer programs to the over 200KW customers similar to that of the Municipals and Small C&I customers. The larger over-200 kW customer is where the greater energy savings potential is. If utilities could offer “On Bill Financing” in addition to the incentives, this could alleviate the cash outlay problem for our customers.”

Another stated that, “Our customers depend on [utility] funding to keep the ROI down, especially now with the way the economy has changed [and] customers do not have the cash flow to go forward with energy efficiency projects.”

Labor requirements:

Key labor categories that contribute to the success of these companies are, similar to ESCOs, energy auditing, engineering, project design, and construction management. Project commissioning and maintenance seem to fall away as important service functions, in part perhaps because measures installed are more prescriptive and less customized and also, in the case of maintenance, because these companies do not have a long term performance obligation to their customers.

While firms still carry a lot of expertise in-house, increasingly, at least compared to the ESCOs, there is a tendency to hire contractors for specialized engineering support, while using internal staff for more general auditing. This is consistent with the business strategy these business employ are targeting equipment they know qualifies for rebates.

While installation of efficiency measures is a core business for these companies, they function more like general contractors, in most cases, than installation companies and are more likely to contract with than employ installers.

The following table summarizes the composition of in-house workforce for six of these companies. Firms ‘1’ to ‘5’ are listed National Grid Expeditors or NSTAR agents assigned to sub-territories. In general, the most frequent employee job titles are auditors, engineers, and project managers. Firm ‘5’ shows a heavy complement of sales and marketing, but the distribution of employees across jobs shows double counting, indicate perhaps a company philosophy that “everyone sells.” Firm ‘6’ is shown to demonstrate that there are other comprehensive service companies working in this market that are not utility-designated service providers. In this company’s business model, there are no installers on board, and the employees fill multiple roles.

Workforce Impacts of Expanded Utility C&I EE Funds
Peregrine Energy Group, Inc. for NECEC
April 10, 2009

	FIRM '1'	FIRM '2'	FIRM '3'	FIRM '4'	FIRM '5'	FIRM '6'
EMPLOYEES, FULL-TIME (FT) & PART-TIME (PT)	45 FT	11 FT 2 PT	11 FT 2 PT	14 FT 4 PT	6 FT	7 FT 2 PT
C/I Sales and Marketing:	2	1 FT, 1 PT	2	3 FT, 1 PT	5	1
C/I Program Management:	3		1	2 FT, 1 PT	2	3
C/I Project Management:	3	2 FT, 1 PT	2	2 FT, 1 PT	2	3
C/I Finance/Accounting:	1	1	1 PT	1	2	1
C/I Engineering Staff:	5	1	4 FT, 1 PT		6	
C/I Design Staff:	2	2			5	
C/I Auditing Staff:	15	4		6 FT, 1 PT	1	4
C/I Information Technology	1					6 FT 2 PT
C/I Technician Staff:	10		2			
Customer Service:	3				1	1
DEGREED ENGINEERS	2 EE, 3 ME	0	4 ME	0	3 EE, 2 ME 1 CE, 1 IE	0
CERTIFICATIONS	4 CEM, 1 LEED	1 LEED	1 CEM, 1 LEED	1 CEM	1 CEM	1 CEM
LICENSES	12 elec., 2 HVAC		1 elec.	1 elec.		1 elec.

Even Firm '1', with its 10 licensed technicians employed, relies heavily on sub-contractors for installation services.

	FIRM '1'	FIRM '2'	FIRM '3'	FIRM '4'	FIRM '5'	FIRM '6'
Auditing				2		1
Engineering		4		4		2
Design		4		4		
Construction management				2		
Installation of equipment and systems:						
Lighting	10	20	4	8	5	12
Motors	2	2	4	8	2	6
Drives	2	2	4	8	2	6
HVAC	5	3	4	2	1	3
Refrigeration			1	2		1
Process equipment	1		1	2		3
Controls	1		2	4	3	6
Other		2 renewables				2
Commissioning				1		
Maintenance				4		2

Firms '2', '4', and '6', that have only one or no staff engineers, backfill this need with subcontractors.

Specialized Technology Installers

Beyond the ESCOs that sell comprehensive energy services directly to larger commercial and industrial clients or utility-selected Expeditors and Agents offering services to commercial and industrial utility customers by way of referrals from or listings by utilities, there are many, many other companies who offer installation services to these same energy users.

While utility company programs suggest that customers use the 'expeditors', particularly smaller customers with less than 200 kW monthly demand, customers are not required to work with these designated firms to participate in utility programs. This open program design creates business opportunities for large numbers of qualified installation contractors who seek to sell their services to both large and small customers. Another result is promotion of utility incentives by firms who may or may not see themselves as "energy efficiency companies."³

Involvement with utility programs

This category of companies is primarily equipment suppliers and installation firms, some of which may also have offer maintenance services. As noted earlier, many of these companies

³ Some of these companies started in general construction and have migrated into a focus on efficiency; others emerged in a direct response to the business opportunity that utility efficiency has created; and others continue to do general equipment replacement or installation.

install specific technologies, lighting being the primary example. HVAC, refrigeration, and controls are other specialties that are represented in this group.

Being able to draw on utility incentives allows these firms to stretch their clients' investment in energy efficiency (and likely their own sales volumes and margins) above what customers might otherwise do when they are modernizing or otherwise improving their premises and operations. The effect has been the creation of a larger sales force promoting installation of more efficient technologies, and the minimization of lost opportunities where commercial and industrial construction investments are occurring anyway. Within this framework, when these companies are replacing energy systems as part of new construction or building rehabilitation projects, they can leverage utility rebates to convince customers to select a more expensive (and more efficient) product than would otherwise be installed.

One survey participant noted:

“Our business has been providing labor and project management to Utilities, ESCOs, and direct customers installing energy efficient lighting systems and controls. I have been in this business for the past 30 years and utility rebate programs have influenced building owners and tenants to supplemental invest.”

Labor requirements

Two larger lighting installation companies, one with 48 full-time employees and the other with 35 full-time employees, provided the following breakdown of their full-time work force.

	Installer 'A': 48 F-T	Installer 'B': 35 F-T
C/I Sales and Marketing:	4	
C/I Program Management:	2	
C/I Project Management:	2	3
C/I Finance/Accounting:	5	2
C/I Engineering Staff:		
C/I Design Staff:	2	2
C/I Auditing Staff:	2	2
C/I Information Technology		
C/I Technician Staff:	26	26
Customer Service:	5	
Other:		

For some of these firms, the Sales and Marketing staff is the Auditing staff, reflecting the close link between qualifying customers and closing deals. Installer A also has 2 electrical engineers (EE) on staff and Installer B employs one EE. Both have large numbers of licensed electricians as part of their Technician staff. Only the larger of the installers supplements its employee workforce with sub-contractors. They provide auditing support (3 companies), and install lighting (3 companies) and controls (3 companies).

Specialized Support Services Providers

Massachusetts utilities offer their large customers an array of engineering and support services to assist them to identify, evaluate, and implementing energy efficient opportunities. In addition to the numbers of and various installations companies that participate in utility program, there are also many companies with specialized energy efficiency analytical skills who

utilities depend on to advise individual customers. These companies educate customers regarding benefits and costs of specific energy efficiency improvements to ongoing operations or in the context of new construction, expansions, or major renovations. Many of these firms take assignments state-wide, providing services to customers of all the major utilities.

Services are available for new construction, expansion of manufacturing capacity or energy saving retrofit projects. Services include:

- Design and construction assistance
- Assistance developing applications for incentives
- Metering of old, inefficient equipment and detailed audits of electrical systems
- Assistance in the selection and installation of equipment.
- Testing and monitoring of new efficient equipment.

As National Grid notes, “These services are performed by independent experts working in partnership with us. Professional Engineers and Lighting Professionals from the region's top firms are available.”

One company working with utilities across eastern Massachusetts identified itself in the NECEC survey as a “preferred technical vendor that provides engineering services to the utilities. More utility funds mean more projects, more in-depth projects, and more business for us.”

Companies that provide these services for Massachusetts utilities may be one-person firms or large engineering companies or perhaps something in between. Employees may be ‘energy efficiency’ engineers (generalists), electrical engineers, mechanical engineers, chemical engineers, architects, designers, or have other specialties. What these firms share is the trust of utilities that will refer customers to them and pay their fees.

Subcontractors

Subcontracting is the foundation upon which the commercial and industrial energy efficiency services supply chain is built. While there are narrowly defined companies that do not use subcontractors and vertically integrated companies that may not use subcontractors, a large number of the firms that operate in this market are service integrators that develop and close project contracts and then secure the necessary help to deliver them successfully, often using subcontractors. This gives them the flexibility to reconfigure the composition of their workforce to meet the needs of individual clients and to avoid carrying staff that are unproductive during fluctuations in business volume. This market structure also spreads business risk for both the expeditors and their subcontractors so individual companies can specialize rather than vertically integrate and stay focused on core competencies.

Similarly, all firms providing demand-side services functions can be considered utility subcontractors. Collectively, they alleviate utilities’ need to employ a full cadre of sales people, auditors, engineers, contractor arrangers, construction managers, and installers to make energy efficiency happen in customer facilities.

The ESCOs indicated a preference to subcontract with larger companies with ten service employees or more. Mid-sized companies surveyed indicated that they worked with a range of subcontractors large and small, with the sweet spot appearing to be subcontractors who have from 4 to 20 employees, though some do work with very small (1- 3 person firms), presumably for smaller jobs. Surveys completed with subcontractors found that many of them are only

support one or two companies, even if they have 20 or more employees. They also seem to prefer to work in a more limited geographic area, rather than traveling widely across the state.

Many companies in this energy efficiency market operate both as prime contractors and as sub-contractors to other prime contractors. This is particularly true of the firms that have specialized technical expertise or that specialize in installing particular technologies. However, most of these firms do not seem to participate directly in utility programs and are satisfied to have ESCOs and other market participants bring work to them. Asked what percentage of their work involves utility commercial and industrial energy efficiency, most did not know where the funding comes from for individual projects.

Labor requirements

Today, in the context of a major economic downturn that is freezing new construction and business expansion, there is no shortage of firms available to provide installation services on a subcontracted basis. One electrician estimates that one third of Massachusetts' licensed electricians are without work. Many of the subcontractor companies interviewed say, "We're dying out here. We want any work we can get." This is borne out by the energy services companies who are not concerned about finding additional subcontractors if they are needed.

Yet, at the same time, they are very protective of existing relationships and do not want to put them at risk. When asked for the names of subcontractors used, most were willing to identify very few and almost always insisted that the identity of subcontractors they use be kept confidential and not shared with their competitors as part of the survey results.

It is often a long difficult process to get new would-be installers to make the necessary transition from hourly billing plus materials to the by-the-piece pricing needed to meet budgets and protect margins. Few installation subcontractors find it easy at making this transition and no one wants to lose the proven subcontractors they have.

Growth projections and Future Workforce Needs

Summary of Findings

What is the reaction to a potential expansion in utility funds for efficiency?

- There is great enthusiasm about expanded utility funding for commercial and industrial energy efficiency.
- Every company contacted stated that they would be interested in increasing their involvement in utility programs.

How would such an expansion affect business hiring?

- Almost all companies stated that if there were a 50% increase in available utility funding, they would try to increase the volume of business they do by adding staff.
- All of the ESCOs responding said that they would add technical staff either first or second. Some of them indicated that they would also add sales persons or project managers.
- Among the companies that are designated utility expeditors or agents, particularly to small commercial customers, future hiring priorities varied with their individual business model. Companies that build their business around strong engineering credentials will focus on technical and engineering hires first. Companies that rely more on outside technical support would be interested in hiring auditors, sales persons, and project managers.
- Specialized technology installers were most interested in adding additional auditors and licensed technicians.

Are there concerns about finding qualified candidates to hire?

- Almost no respondents described themselves as either “very concerned” or “concerned” about finding qualified employees in the face of rapid expansion. Most companies described themselves as “not too concerned”. In informal conversations, most indicated that having demand for services exceed their current staff’s ability to meet it was a problem they welcomed having and addressing.
- Engineers proficient in energy efficiency strategies will be the most difficult staff to hire. Qualified auditors and project managers are also mentioned as difficult candidates to find. One ESCO said that Senior Project Developers and Senior-level engineers are particularly valuable to their business, but very hard to recruit.

Are there concerns about finding subcontractors?

- Most companies do not anticipate any difficulty in finding *installation subcontractors*. The only exceptions seem to be installation subcontractors with specialized skill sets such as process equipment, refrigeration, and drives.
- Companies that use *subcontractors for auditing and engineering* do anticipate difficulty finding needed support. One ESCO noted that their inability to find additional auditing, engineering, and design support through subcontractors may have an adverse effect on technical outcomes and delivery schedules.

Workforce Recruitment and Training

Summary of Findings

Is there a role for the State in providing training support to companies?

- Companies that are primarily subcontractors and whose employees are licensed trades people are not interested in training support from the State
- ESCOs, on the other hand, consistent with the difficulties that they expressed in finding engineers and project developers who are well versed in energy efficiency opportunities and their implementation, are interested in State involvement in this area.
- ESCOs suggest university-based training programs that focus on technical expertise. One ESCO says that “State training and education programs that would lead to professional development would be very appropriate and beneficial.” Another ESCO notes that “training a new workforce will be an expensive and risky endeavor. Support from the state could reduce or eliminate those costs and risks.”
- One mid-sized company serving smaller customers observes they are doubtful that any such training support could have results quickly and effectively enough to yield candidates that would not need additional training. Another says that because it’s so hard to find qualified people, they have to train most of the employees hired to be productive.

What degree, certificate, or other training programs are good models?

- One ESCO mentioned Mass Maritime’s Facility Engineering or Marine Engineering programs. Also mentioned were the Wentworth Facilities Degree and the Lakes Region Community College Energy Associates program.
- Another company says that Northeastern University’s cooperative education program is an excellent training program for bringing student engineers into energy conservation.

Conclusions and Recommendations for the C&I EE Market

The C&I market is very different from the residential energy efficiency market which relies heavily on utility involvement and referrals that match customers with installers and other related service providers. While there is some of that in the commercial market, particularly for the smaller customers, the commercial efficiency arena functions more like a fully functional market place. There are sellers and buyers who are brought together for reasons that may or may not emerge from an interest in efficiency: office renovations, business expansions, new construction, equipment failures, comfort issues, reliability concerns, etc.

Utility Incentives and Support Services

Utility incentives put certain products and services “on sale” permitting sellers to steer potential clients in new directions that would otherwise not be affordable or of interest. In some cases, the level of incentives, couple with attractive financing, makes these products and services nearly free. In other cases, the buyer needs to pay a still significant portion, though the ‘sale price’ is still a big driver. And in the case of new construction, it may result in solutions with life cycle benefits that would otherwise have been lost entirely. If utility incentives function as “manufacturer’s coupons” that boost sales in this market, it is little wonder that companies providing energy services are so enthusiastic about significant increases in these incentives. Unfortunately, many potential efficiency projects are more complex than one-to-one change outs of lighting fixtures.

RECOMMENDATIONS:

Consider increasing incentives available to larger customers so they more closely resemble those offered to small customers, including the potential for on-bill financing. Particularly in the context of the economic downturn and reduced credit availability, this could provide important extra motivation to customers and a big sales advantage to service providers.

Also, continue to support and further encourage comprehensive treatment of energy efficiency opportunities by expanding technical assistance funding to engineers and designers to help customers develop projects.

Service Providers

The companies employed in commercial and industrial energy efficiency are a diverse group. They includes businesses that have chosen utility-sponsored and supported services and installation as a ‘niche’ to work in, businesses that use utility incentives for efficiency to help make large and diverse infrastructure projects more attractive to customers, and other companies with specialized services and products that piggyback on utility objectives in their dealings (for installation services and engineering services).

RECOMMENDATIONS:

Utilities should continue to use market forces to drive the activities of both established and would-be services providers to support utility C&I energy efficiency goals. This strategy should recognize that these companies are, like other businesses, opportunistic in their business planning and resource allocation: they will move toward opportunities to reduce risk, increase sales volume, lower costs, and maximize profits.

As year-on-year goals increase, utilities should make every effort to open up participation in small commercial service provision (i.e. the National Grid Expeditors and NSTAR

geographically-based Agents) to more qualified companies, and rely on the companies' entrepreneurial instincts to reach additional customers.

Further, more attention should be paid to direct outreach, perhaps one-on-one, to potential service providers of all kinds, to sell the benefits of participation in and using utility incentives to boost sales. Targets can be all levels of the supply chain, but perhaps can focus on larger installation companies that operate as subcontractors or in general construction to let them see that this is a good opportunity to diversity their business.

Workforce

Effective use of utility incentives by energy services companies requires that they have the skills available to them to develop projects successfully. Commercial and industrial energy efficiency relies primarily on engineers, construction managers, and licensed technicians to identify and deliver services. These specialties continue to be educated and trained as part of the general, ongoing workforce development process where it takes many years for an individual to become degreed or licensed. "Auditors" are for the most part sales personnel whose role is to qualify customers. They may or may not have formal technical training.

Specialized engineering and project development skills appear to be the major workforce gap in this market. This skill set definitely requires formal training, but expertise is only acquired as a result of extensive field experience over time. In fact, the future C&I energy efficiency workforce is likely already trained, though it is not necessarily applying itself to energy efficiency goals. While none of the survey participants said they were desperate to find candidates with these skills, the likely difficulty of finding such individuals was identified by many of them. The implication of this is that that could be market disruptions if many firms need to find these candidates at the same time in the context of a big new commercial and industrial energy efficiency push.

RECOMMENDATIONS:

Deploy a range of strategies to try to shorten the time it takes for recent technical graduates to become fully productive in this market, which requires excellent diagnostic and solutions development skills. These can include:

- **Working with universities to identify C&I EE career paths and provide practical applications of engineering knowledge in C&I EE. University engineering programs should have energy efficiency-related programs where students can focus their studies on commercial and industrial energy efficiency. Multi-disciplinary tasks can link this learning to professional training in business and finance skills. Curriculum developers can tie portions of programs' content to know certification requirements, such as those of the Association of Energy Engineers.**
- **Provide practical experience in real projects to students through the expansion and promotion of internships and co-op education opportunities. Again, partner with universities to identify intern and co-op opportunities with active participants in utility C&I EE programs.**
- **Collaborate on and support the creation of a Northeast Energy Efficiency Job Board, that becomes the "go to" destination for EE job hunters. This will also provide clear signals to educational institutions and their students that there is a strong and serious demand for energy efficiency professionals.**

Study Appendices

- Companies Surveyed
- Surveys

Survey Participants



Company name	Survey Classification	Contact	Position	Utilities Worked With	Business Lines
Atlantic Energy Solutions	NGrid expediter	Giusti, Jerry	President	1, 3	A, E, I, J, K
Bluestone Energy	NGrid expediter	Fairbanks, Peter	President	1, 2, 3, 4, 8	A, B, C, E, F, G, H, I, J, K
ConEd Solutions	ESCO	Nathanson, Ken	National Accts Manager	1, 2, 3, 4, 5, 6, 7, 8	A, B, C, D, E, F, G, H, I, J, K
Constellation Energy Projects & Services	ESCO	David Braslau	Vice President	1, 2, 3, 4, 5, 6, 7	D, E, F, G, H, I, J, K
DMI, Inc.	Technical specialist	Stevens, Alec	President	1, 2, 3, 4, 8	A, B, I, J, K, L, P
EMC Energy Management Consultants	NGrid expediter	Hanson, Jeff	President	1, 3, 5, 7, 8	A, B, C, E, F, G, H, I, J, K
Enercon	NGrid expediter	Jerry Helbis	President	1, 3, 7	A, C, E, I, N
Groom Energy Solutions	NGrid expediter	Bob Kirby	Principal	1, 2, 3, 4, 5, 6, 7, 8	A, B, C, D, E, F, G, H, I, J, K
Horizon Lighting	NGrid expediter	Quintal, Rob	Director	1, 3	A, B, C, E, F, G, J, K
ICF International	Technical specialist	Mernick, Mike	Sr. Vice President	1, 2, 3, 4, 5, 6, 7, 8	A, B, I, K
Johnson Control	ESCO	Cotton, James	Regional Manager	1, 2, 3, 4	A, C, D, E, F, G, H, I, J, K
Lighting Retrofit Service	Lighting supplier	Cohee, Rick	President	1, 3	A, D, E, J
Munro Electric	Equipment supplier	Munro, Brian	President	1	A, B, E, F, G, J, K
National Resource Management	NSTAR agent	Staley, Jim	COO	1, 2, 3, 4, 5, 7, 8	A, B, C, E, F, I, K
NORESCO	ESCO	Davis, Alan	Project developer	1, 2, 3, 4, 6	D, K
Northern Energy Services	NGRid expediter; NSTAR agent	Mallet, Paul	President	1, 2, 3, 4, 5, 8	A, B, C, D, E, F, G, H, I, J, K
Prism	NGRid expediter; NSTAR agent	Simmons, Wendy	President	1, 3, 5, 7, 8	A, E, F, G, H, I, J, K
RISE	NGRid expediter; NSTAR agent	Graziano, Vin	President	1, 2, 3, 4, 6, 8	A, B, E, F, G, H, I, J, K
Seimans	ESCO	Armstrong, Jim	Energy Services Manager	1, 2, 3, 4, 6, 7, 8	A, B, C, D, E, F, G, H, I, J, K, M
Sylvania Lighting Services	Lighting supplier	Ciampa, Frank	National Accounts	1, 3, 7	A, E
TNT Energy	Expediter	Blanchard, Tim	President	1, 3, 7, 8	A, C, D, E, F, G, H, J, K
UTS Consulting	Technical specialist	Guertin, Jim	Owner	1, 2, 3, 4, 8	A, B, L, O

KEY: Utilities working with

1. NSTAR Electric
2. NSTAR Gas
3. National Grid Electric
4. National Grid Gas
5. Fitchburg Gas & Electric
6. Bay State Gas
7. Western Massachusetts Electric
8. Cape Light Compact

KEY: Business lines

- | | |
|----------------------------|---------------------------------|
| A. Energy audits | I. Controls and BMS |
| B. Engineering | J. Industrial energy efficiency |
| C. General contracting | K. State and local projects |
| D. Performance contracting | L. Commissioning |
| E. Lighting replacement | M. Controls optimization |
| F. Motors replacement | N. Pre- and post-inspections |
| G. Drives | O. Metering |
| H. HVAC upgrades | P. Impact evaluation |

**Massachusetts Commercial and Industrial Energy Efficiency
Workforce Needs Survey**

ENERGY SERVICES COMPANIES

The New England Clean Energy Council has been engaged by a consortium of utility companies serving Massachusetts customers to help determine if Massachusetts' energy efficiency infrastructure will be able to field a sufficient workforce to meet the state's goals for increased commercial and industrial energy efficiency investment.

Massachusetts utilities are developing plans for a potentially significant increase in their funding for energy efficiency from state, regional, and federal sources. This expanded funding would increase the numbers of projects that are completed and the amount of energy efficiency generated, while reducing greenhouse gas emissions.

The labor force that will drive this expansion will be your employees and contractors. Its success will depend on your interest and ability to increase your work volume in response to the availability of increased efficiency funding support.

During February 2009, we will complete a series of interviews and surveys of companies currently active in this market. The results of this information gathering will be a report to the utility sponsors recommending actions necessary to ensure that the Commonwealth will have a strong infrastructure of workers and contractors in place to meet its energy efficiency goals. Individual responses will remain confidential and only aggregate data will be cited in the final report.

Thank you in advance for your assistance.

Contact Information

Name:

Title:

Division/Department:

Company:

Street Address:

City, State and Zip:

Phone:

Email:

Website URL:

Your Involvement in Utility-Sponsored Commercial/Industrial Energy Efficiency (C/I EE)?

1. Does your company's business rely on or make use of utility funds promoting commercial and industrial energy efficiency? Y/N
2. Please indicate which of the following utilities you work with. Rank your involvement with each in terms of number of customers served and total project revenues (1 is the highest).

	Do you work with?	Numbers of Customers Rank	Total Revenue Rank
NSTAR Electric			
NSTAR Gas			
National Grid Electric			
National Grid Gas (former Keyspan)			
Fitchburg Gas and Electric			
Bay State Gas Company			
Western Massachusetts Electric			
Cape Light Compact			

3. What percent of your **Massachusetts business** makes use of utility C/I EE funds?
_____%
4. Would an increase in utility funding for commercial/industrial efficiency projects be good for your business? **Yes or No?**

Please explain your response briefly.

Current Commercial/Industrial Energy Efficiency (C/I EE) Workforce

1. What are your firm's **primary** C/I EE business lines? (check all that apply)

Energy audits	
Engineering	
General contracting	
Energy saving performance contracting	
Lighting replacement	
Motors replacement	
Drives	
HVAC upgrades	
Controls and building management systems	
Industrial energy efficiency	
State and local government projects	
Other (please list)	
Other (please list)	

2. What C/I EE services do your firm supply **using your own employees**? (check all that apply)

Auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	

Other	
Commissioning	
Maintenance	

3. How many employees does your company have who are **primarily involved in commercial/industrial energy efficiency work in Massachusetts?** (DO NOT INCLUDE ANY EMPLOYEES OF SUBCONTRACTORS.)

Please consider all aspects of C/I EE work, including: project design and management, sales and marketing, engineering and technical work, installation and maintenance, evaluation, assistance with utility program participation, etc.

Number of full-time	
Number of part-time	

4. What is the distribution of your full-time and part-time employees by function

	# full-time	# part-time
C/I Sales and Marketing:		
C/I Program Management:		
C/I Project Management:		
C/I Finance/Accounting:		
C/I Engineering Staff:		
C/I Design Staff:		
C/I Auditing Staff:		
C/I Information Technology		
C/I Technician Staff:		
Customer Service:		
Other (specify)		
Other (specify)		
Other (specify)		

5. In all the categories above, how many **degreed engineers** are employed?

We have no engineers	
Electrical Engineers	
Mechanical Engineers	
Other engineers (specify)	
Other engineers (specify)	

6. For all the categories above, please estimate the number of people employed that have trade certifications or licenses.

Certified Energy Manager	
LEED	
Electrical	
Plumbing	
HVAC	
Refrigeration	
Other trades (specify)	

7. What C/I EE services do your firm supply **using sub-contractors**? (check all that apply)

Auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	
Other	
Commissioning	
Maintenance	

8. If you use **sub-contractors**, what size companies do you tend to work with? (Number ranges refer to direct service providers assisting you.) Please rank, with (1) being most frequently.

	Company size used	Frequency Rank
1-3 persons		
4-10 persons		

10-20 persons		
20 persons or more		

9. Please estimate the number of Massachusetts subcontractors (companies) performing each of the following C/I EE services for your company.

Auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	
Other	
Commissioning	
Maintenance	

Growth Projections and Future Workforce Needs

1. Would your company be interested in expanding the volume of your C/I EE involvement with Massachusetts utilities?

Very interested	
Interested	
Neutral	
Not very interested	
Not at all interested	

2. If there is a **50% increase in utility funding for C/I EE**, would you:

Try to maintain business volume at the same level	
Try to increase the annual volume of business you do <u>without</u> adding	

staff	
Try to increase the annual volume of business you do by adding staff	

Please explain briefly:

3. If you would add staff in response to a **50% increase in utility funding for C/I EE**, what type of staff would you add and in which order (1 being first)?

	Which would you add?	What order?
Sales		
Technical		
Project expeditors		
Project managers		
Other (specify)		
Other (specify)		

4. State Officials are concerned that companies like yours could have a hard time finding and recruiting qualified employees to fill a variety of roles (e.g. managers, engineers, designers, auditors, technicians, laborers, sales, and customer service) in the face of rapid expansion.

Do you share this concern? Choose the answer that best applies.

Very concerned	
Concerned	
Not too concerned	
Not at all concerned	

Comment?

5. Which types of staff would be most difficult to find and hire?

	# full-time	# part-time
C/I Sales and Marketing:		
C/I Program Management:		
C/I Project Management:		
C/I Finance/Accounting:		
C/I Engineering Staff:		
C/I Design Staff:		
C/I Auditing Staff:		
C/I Information Technology		

C/I Technician Staff:		
Customer Service:		
Other (specify)		
Other (specify)		
Other (specify)		

6. If there is an opportunity to increase your C/I EE services volume, do you anticipate difficulty in finding **subcontractors**? (check all that apply)

Not interested in increasing volume	
Don't use sub-contractors	
Do not anticipate difficulty finding subcontractors	
Anticipate difficulty finding subcontractors	

7. Which subcontractors would be difficult to find?

Auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	
Other	
Commissioning	
Maintenance	

Commercial/Industrial Energy Efficiency Workforce Recruitment and Training

1. Do you see a role for the State in providing training support to companies active in energy efficiency? **Yes / No?**

If yes, please describe

2. Are you aware of existing degree, certificate or training programs (in any state) that are good models for officials in Massachusetts to consider when designing a system to support the C/I energy efficiency industry in the Commonwealth? **Yes / No?**

Please share your referrals below.

**Massachusetts Commercial and Industrial Energy Efficiency
Workforce Needs Survey**

ENERGY SERVICES SUBCONTRACTORS

The New England Clean Energy Council has been engaged by a consortium of utility companies serving Massachusetts customers to help determine if Massachusetts' energy efficiency infrastructure will be able to field a sufficient workforce to meet the state's goals for increased commercial and industrial energy efficiency investment.

Massachusetts utilities are developing plans for a potentially significant increase in their funding for energy efficiency from state, regional, and federal sources. This expanded funding would increase the numbers of projects that are completed and the amount of energy efficiency generated, while reducing greenhouse gas emissions.

The labor force that will drive this expansion will be your employees. Its success will depend on your interest and ability to increase your work volume in response to the availability of increased efficiency funding support.

During February 2009, we will complete a series of interviews and surveys of companies currently active in this market. The results of this information gathering will be a report to the utility sponsors recommending actions necessary to ensure that the Commonwealth will have a strong infrastructure of workers in place to meet its energy efficiency goals. Individual responses will remain confidential and only aggregate data will be cited in the final report.

Thank you in advance for your assistance.

Contact Information

Name:

Title:

Division/Department:

Company:

Street Address:

City, State and Zip:

Phone:

Email:

Website URL:

Your Involvement in Utility-Sponsored Commercial/Industrial Energy Efficiency (C/I EE)?

7. Does your company work as a subcontractor to firms offering commercial and industrial energy efficiency services in Massachusetts, using utility funds? **Yes or No?**
8. If you do work as a subcontractor, did you primarily subcontract to one or two companies in the last year? **Yes or No?**
For how many different companies did you work as such a subcontractor in the last year? **Total:** _____
9. Does your business provide services directly (i.e. not as a subcontractor), relying on utility funds promoting commercial and industrial energy efficiency? **Yes or No?**
10. Please indicate which of the following Massachusetts utilities you work with. Rank your involvement with each in terms of number of customers served and total project revenues (1 is the highest).

	Do you work with?	Numbers of Customers Rank	Total Revenue Rank
NSTAR Electric			
NSTAR Gas			
National Grid Electric			
National Grid Gas (former Keyspan)			
Fitchburg Gas and Electric			
Bay State Gas Company			
Western Massachusetts Electric			
Cape Light Compact			

11. What percent of your Massachusetts work involves utility C/I EE funds?

___% ___ **Don't know**

12. Would an increase in utility funding for commercial/industrial efficiency projects be good for your business? **Yes or No?**

Current Commercial/Industrial Energy Efficiency (C/I EE) Workforce

3. What C/I EE services do your firm supply? (check all that apply)

Energy auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	
Other	
Commissioning	
Maintenance	
Other (please list)	
Other (please list)	

13. How many employees does your company have who are primarily involved in commercial/industrial energy efficiency work in Massachusetts?

Please consider all aspects of C/I EE work, including: project design and management, sales and marketing, engineering and technical work, installation and maintenance, evaluation, assistance with utility program participation, etc.

Number of full-time	
Number of part-time	

14. What is the distribution of your full-time and part-time employees by function

	# full-time	# part-time
Sales and Marketing:		
Project Management:		
Finance/Accounting:		
Engineering Staff:		
Design Staff:		
Auditing Staff:		
Technician Staff:		
Customer Service:		
Other (specify)		
Other (specify)		
Other (specify)		

15. In all the categories above, how many **degreed engineers** are employed?

We have no engineers	
Electrical Engineers	
Mechanical Engineers	
Other engineers (specify)	
Other engineers (specify)	

16. For all the categories above, please estimate the number of people employed that have trade certifications or licenses.

Certified Energy Manager	
LEED	
Electrical	
Plumbing	
HVAC	
Refrigeration	
Other trades (specify)	

Growth Projections and Future Workforce Needs

7. Would your company be interested in expanding the volume of your C/I EE activity?

Very interested	
Interested	
Neutral	
Not very interested	
Not at all interested	

8. If there is a **50% increase in utility funding for C/I EE**, would you:

Try to maintain business volume at the same level	
Try to increase the annual volume of business you do <u>without</u> adding staff	
Try to increase the annual volume of business you do by adding staff	

3. State Officials are concerned that companies like yours could have a hard time finding and recruiting qualified employees to fill a variety of roles (e.g. managers, engineers, auditors, technicians, laborers, sales, and customer service) in the face of rapid expansion.

Do you share this concern? Choose the answer that best applies.

Very concerned	
Concerned	
Not too concerned	
Not at all concerned	

Comment?

4. If there is an opportunity to increase your C/I EE services volume, do you anticipate difficulty in finding additional workers? (check all that apply)

Not interested in increasing volume	
Do not anticipate difficulty finding employees	
Anticipate difficulty finding employees	

12. Which types of staff would be most difficult to find and hire?

Auditing	
Engineering	
Design	
Construction management	
Installation of equipment and systems:	
Lighting	
Motors	
Drives	
HVAC	
Refrigeration	
Process equipment	
Controls	
Other	
Commissioning	
Maintenance	

Commercial/Industrial Energy Efficiency Workforce Recruitment and Training

3. Do you see a role for the State in providing training support to companies active in energy efficiency? **Yes / No?**

If yes, please describe

4. Are you aware of existing degree, certificate or training programs (in any state) that are good models for officials in Massachusetts to consider when designing a system to support the C/I energy efficiency industry in the Commonwealth? **Yes / No?**

Please share your referrals below.

This report is funded by:

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