



Green Talent  
Research Initiative

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# Employer Insights: Skill and Workforce Needs for Green Jobs in New Jersey

A report of the New Jersey Department of  
Labor and Workforce Development

Prepared by the John J. Heldrich Center for  
Workforce Development

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## Introduction

Discussion is ongoing at the national and state levels about the potential for growth in green jobs and the need to expand the skills that existing and new workers acquire. To better understand the demand for green jobs and for new green skills in New Jersey's labor market, the New Jersey Department of Labor and Workforce Development (NJLWD) engaged the John J. Heldrich Center to gather insight and input from businesses that produce green products and services in the state.

## Research Approach

To define green jobs for the purposes of this effort, researchers relied on the following U.S. Department of Labor Bureau of Labor Statistics (BLS) definition:

Green jobs are:

- A. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources.

Or

- B. Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources (Notice of Comments Received and Final Definition of Green Jobs, 2010, p. 57511).

Through analysis of industry data and job postings labeled as green, researchers identified three primary categories of businesses that produce green products or services. These categories fit within Part A of the BLS definition and are the source of a significant number of jobs in New Jersey. They include:

### ***Energy Efficiency - Green Building / Construction / Design***

Companies in this group offer products and services that improve the energy efficiency of buildings and the efficiency of energy storage and distribution processes, such as Smart Grid technologies. Green building and construction-related activities such as green retrofits for energy and water efficiency; residential and commercial energy use assessment; green products and materials; and green construction that conforms to environmental standards, such as those established by the U.S. Green Building Council, are also included within this category.



### **Green Energy Production - Clean and Renewable Energy**

Companies included in this group produce electricity, heat, or fuel that has been generated from clean or renewable sources. These energy sources include natural gas, nuclear power, wind, biomass, geothermal, solar, ocean, hydropower, and landfill gas and municipal solid waste. This category also includes firms that research, develop, or manufacture products used in the green energy supply chain (i.e., wind turbine products and parts); as well as companies that sell, support, install, and repair clean or renewable energy infrastructure and technologies. Firms in this area often include major electric and gas utilities, as well as a wide range of R&D, manufacturing, and other types of companies.

### **Environmental Remediation/Waste Management**

This group includes companies involved in the elimination of waste materials through the collection, reuse, remanufacture, recycling, or composting of waste materials or wastewater, and the removal of pollutants or hazardous waste from the environment. They include recycling plants, toxic waste remediation facilities and firms, and others.

In addition, researchers recognize a number of green jobs that fit Part B of the BLS definition. This includes jobs that contribute to making the processes more environmentally friendly at a wide array of firms.

## **Participant Selection**

This research focused specifically on firms that provide green goods or services and that fit within the three key categories identified in the BLS Part A definition of green jobs which includes all workers at firms that produce green goods and services. These likely include the largest share of green jobs. This study did not include firms that fall under Part B which make up a smaller share of the employment base since the BLS definition only includes specific occupations involved in transforming, or “greening,” processes at those firms. The BLS is conducting its own survey of green process employment which will inform future NJLWD research.

Employer contacts were selected from lists including Heldrich Center green employment efforts; applicants to New Jersey Customized Training Grants; the New Jersey State Employment and Training Commission’s State Energy Sector Partnership (SESP) contact list; as well as other contacts from online research. Telephone follow-up was required to recruit participants for interviews and group discussions. The final group of participating employers included both organizations local to New Jersey, and national companies with significant presence in New Jersey.

*Research focused on firms that provide green goods or services*



Table 1 provides a breakdown of the firms that were included in this study by the categories defined in the previous section. The participants included 10 large firms and 20 mid- to small-size firms throughout the state. These firms represented an array of industries, including utilities, construction, architecture and engineering, professional services, manufacturing, and others.

**Table 1. Categories of Firms that Produce Green Goods or Services Represented in the Interviews**

Sector	Number of Companies Interviewed
Energy Efficiency - Green Building / Construction / Design (EE)	10
Green Energy Production - Clean and Renewable Energy (RE)	6
Firms that Span Both EE and RE	5
Environmental Remediation/Waste Management (ER/WM)	9
Total Number of Firms	30

Researchers explored gaps in existing green training and education programs

## Employer Discussions and In-Depth Interviews

In spring 2011, researchers conducted two interactive telephone-based discussions with groups of two employers, and one-on-one telephone interviews with an additional 26 employers. Researchers developed protocols to explore the following topics with participating businesses:

- Current and expected demand for jobs that require green skills;
- Green training and credentials that are most valued by employers;
- Current industry recruitment and training practices for green jobs, including partnerships to recruit new hires; and
- Gaps in existing green training and education programs.

Sub-topics included emerging trends in the use of green skills; key occupations that require green skills; the education and certification requirements for these jobs; and the employers' perspective about the potential for growth in green sector employment.

## Key Findings

A number of key findings emerged from the interviews with employers that provide insight into factors affecting the demand for new green workers in New Jersey, as well as the training needs employers have for new hires and incumbent workers.

### *Demand for Workers Who Have Green Skills*

**Finding #1: While some hiring occurred among Energy Efficiency (EE) and**



**Renewable Energy (RE) employers in 2010 and early 2011, hiring has slowed as a result of the weak economy and lower consumer demand than expected.**

Several EE and RE companies that participated in interviews indicated that they had hired entry-level and other workers to staff up in preparation for projects funded by the American Recovery and Reinvestment Act, (ARRA) or supported with federal or state incentives. One RE company is the exception, as it has been hiring robustly since 2010 (170 positions including senior-level staff, entry-level solar installation and sales positions). Other employers in this study, however, made few new hires in the past two quarters. At least two employers reported considering layoffs in future months if business did not improve. Environmental Remediation and Waste Management employers also reported a drop in hiring in recent months.

*Existing incentives do benefit some types of employers*

Employers attributed this reversal in hiring trends to the ongoing sluggishness in the economy, which they believe is affecting non-green aspects of their businesses and making it difficult for consumers to take full advantage of federal and state incentives to weatherize homes, install RE technologies, and start other green projects. Both EE and RE employers also reported that recent changes in public policies, including reductions in federal and state EE and RE incentives, failure to adopt federal cap and trade legislation, and the introduction of a new Energy Master Plan in New Jersey have led to uncertainty regarding the future growth of energy-related green jobs. One EE employer hypothesized that the failure of certain programs has led her to reduce internal staff. The employer specifically cited the Home Star Program, the New Jersey Comfort Partners program, and reductions in the state budget for affecting her business. Similarly, Environmental Remediation employers reported that the rising costs of remediation, coupled with reductions in resources to assist consumers with costs and new, stricter, environmental cleanup regulations, are driving down the demand for workers.

On the other hand, existing incentives do benefit some types of employers. For example, the RE company cited above for hiring credits the New Jersey Clean Energy Program for its success. This firm has made a commitment to hire a sales force capable of educating potential clients about available incentive programs. One EE employer reported that some EE companies that have learned to market incentives effectively appear to be doing well, but the employer had no insight into their need for new workers. According to several employers, incentive-based demand for green products and services is also likely to be highest in wealthier communities where residents can afford to match incentives with required upfront investments.



**Finding #2: Incumbent workers currently are the primary source of green job growth, as many employers shift their existing workforce to handle demand for green products and services.**

Several EE and RE employers noted that green projects, ranging from weatherization, to solar panel installation and others are replacing, rather than adding to, non-green aspects of their businesses. For example, several construction firms that had lost traditional lines of business in the recession reported replacing some of their revenue with green activities such as weatherization work or work on RE projects. Similarly, one environmental engineering firm has noticed a shift in its business lines from traditional, urban planning to brownfields remediation in recent years. Several employers reported that, while new green projects in the commercial, industrial and single-family residential sectors have been slower to grow, somewhat better growth has occurred in public sector projects and EE projects for multi-family dwellings. Construction, engineering, and remediation companies noted this trend in particular. It is unclear how much job growth this will provide as businesses regain their confidence in hiring, but it may be a trend for job seekers, and agencies assisting job seekers, to consider.

*Companies reported shifting the responsibilities of incumbent workers to green projects*

Employers noted that some companies may experience growth in staffing needs as policies and incentives increase demand for their green products and services. Most businesses, however, are not seeing demand return for other parts of their business nor has demand for their green products and services been as robust as expected. As a result, many companies reported meeting demand for green projects by shifting the responsibilities of incumbent workers to green projects, and providing them with necessary, green training as needed. One employer noted that any near-term growth in EE will likely be met using existing workers and increasing their workloads, rather than hiring additional workers. When using incumbent workers for green work is not feasible, some companies reported outsourcing new green functions or hiring temporary workers. For example, two companies noted that when they do hire, they find subcontractors or temporary workers from a local union hall to fill their needs. Most of the companies included in this study reported that, unless they experience steady and reliable growth in their businesses, which has not yet materialized as anticipated, they will not be comfortable taking on more permanent employees.

**Finding #3: Some sectors anticipate job openings in the future, especially for high-skilled workers.**

Several employers indicated that they have openings related to geology and engineering that continue to be difficult to fill. Environmental Remediation firms also reported that the need for more higher-skilled workers with



environmental engineering, geology, and other earth science degrees may increase in the next three to five years as the economy recovers and businesses and consumers can afford remediation costs. In the nuclear field, experts expect a wave of retirements in coming years which could increase hiring needs for nuclear engineers and technicians. However, the New Jersey Energy Master Plan cites the possible closing of one plant in 2019, which may offset the effect of these retirements. Engineering / Construction companies in EE noted that senior project manager positions can be difficult to fill and may increase in demand in coming years, particularly if traditional lines of business, as well as green business, increase.

### **Education and Training**

**Finding #4: Employers reported that traditional occupational skills, training, and experience are more valuable than green credentials for new hires.**

While most employers are not currently hiring new workers to fill green jobs, researchers asked participants to describe the types of training and education they would value among new recruits for green jobs. In general, employers agreed that green education and credentials, the “green layer” of training that many education and training providers now offer, is less valuable for new hires than traditional training and experience. An employer from an engineering company noted that most young architects from traditional architectural programs already have a basic understanding of green. If the company is looking to hire senior staff it may look for tangible experience with projects that contained a sustainability component rather than, or in addition to, credentials related to green building such as Leadership in Energy and Environmental Design Advanced Practitioner (LEED AP) certification.

As finding #2 points out, workers are often asked to work on green and non-green projects, therefore, at least for the near- to mid-term, job seekers will benefit more from having a wide range of traditional construction, engineering, architecture, and other expertise. Even when the majority of work involved green projects, employers reported the primary skills and education they looked for is traditional rather than “green layer” credentials. According to some employers, such credentials can be a selling point for new hires, but only if they complement a broad background of traditional training and experience. According to one employer workers should “get trade skills first. Then add on green skills. Don’t start green.” The exception to this rule is in Environmental Remediation, where employers value “traditional green degrees,” including postsecondary degrees in areas such as environmental engineering, environmental law, and geology.

In the fields of construction, architecture, engineering, and law in particular, employers reported that they are accustomed to paying for new hires or

*Job seekers will benefit more from having a wide range of traditional expertise*



incumbent workers to obtain short-term green credentials, as necessary. Several employers reported hiring workers and then assisting them in obtaining LEED certification or other green credentials such as Building Performance Institute (BPI) certification for weatherization workers and energy auditors when they were required for certain projects. Employers also routinely sent workers to training in national, state, and local environmental regulations.

**Finding #5: Most employers reported satisfaction with the general level of preparation of their workforce. They did, however, cite a need for training programs to develop hands-on skills, knowledge of regulations, and systems-level applications of knowledge.**

Employers generally conveyed that their training needs are being met by education and training institutions in New Jersey. Few had concrete suggestions to improve the content of existing coursework. One employer stated, “From my perspective, what I need to run my business is out there.” The context of these discussions, however, focused, not on green training programs but rather, on the overall preparation of the workforce and development of more traditional knowledge and skills.

Employers expressed no opinion on the need for specific green education because they train incumbent workers as necessary. When considering job applicants with traditional degrees, one employer at an engineering company noted, “We look at the reputation of the institution, rather than specific certification programs.”

While employers were generally satisfied with the education of the workforce, they expressed a desire that more workers have hands-on experience, understand system-level effects, and receive more exposure to regulations as part of the regular training process. One major employer noted that entry-level workers given even as little as a three-month internship bring “greater value to the green job market than anything they (workers) can learn from a textbook. Both go hand in hand, but an education is not enough in this field.” Another manager noted, “We need people who are well-rounded and can solve problems for the client.” In fact, “we need workers who can work at a broader, system-level, instead of a product level. They need to be able to integrate their knowledge within a broader context, and understand larger, system-level energy programs and needs.” Another employer noted that providing workers with an overview of applicable state and federal regulations and common procedures in the industry would help new recruits get up to speed faster with day-to-day operations.

*Employers expressed a desire that more workers have hands-on experience*





### Recruitment

**Finding #6: Employers who are hiring find the majority of their new employees through internal referrals. This may limit the number of jobs employers post publicly.**

Although some employers have used networking with local training or education providers to find and hire the few new employees they have added, most reported filling available openings through referrals from existing workers. Researchers did not ask how this affected the company's tendency to post available jobs online or in other public places. It is possible that many positions were not listed publicly or were filled with an internally referred candidate before outside applicants were considered. Only one employer reported hiring through advertising online, and that was to fill a senior project manager position. However, the employer noted that, for the most part, "We don't do recruitment." This finding has implications for job seekers who are mining job classifieds ads and online job postings for green job opportunities since applying through these portals may not provide the most effective access to green job openings.

### Partnerships

**Finding #7: Several employers noted partnerships with education providers, however, relatively few had participated in a partnership or recruitment effort with a workforce partner.**

Although little hiring has occurred in the past six months at most companies consulted for this research, when companies were hiring in 2009 and 2010, a few employers cultivated and planned partnerships with colleges and, in a few cases, Workforce Investment Boards (WIB), to hire workers and advise on training curricula. Some maintain ongoing connections to these activities, despite their lack of an immediate need for new workers, in order to help ensure the development of a skilled pipeline of workers for the future.

One large New Jersey employer that has small, but significant, footprints in both EE and RE has long maintained relationships with college recruiting departments focusing on high-skilled workers to fill engineering positions. The employer's strongest relationship is with a large research university to fill senior positions, although the company also has a strong relationship with a southern New Jersey community college for hiring skilled technicians. These relationships are driven by a desire to identify the best talent. This employer has not had difficulty in recruiting appropriate personnel because there is strong competition among students in these programs for positions within the company.

*A few employers cultivated and planned partnerships with colleges and Workforce Investment Boards (WIB)*



One employer reported a different method of partnering with a college for recruitment purposes by engaging students with current employees as a means of reviewing potential new hires. The employer has a partnership with a State University of New York campus whereby the company sends senior workers to teach at the university or to serve as judges at the school's sustainability conferences.

In 2010, another company received funding that allowed it to hire multiple employees in EE. This company immediately hired nine residential EE field auditors referred from a nonprofit training program because the employer concluded that the program managed its training and screening process particularly well. The employer noted that, for these positions, customer service skills and flexibility were critical in addition to the BPI certification and background in building inspection required for these positions. With training funds for energy auditors running out, this training organization has begun a solar project to diversify its business lines in order to manage difficulties related to inconsistent grant funding.

*Overall, employers are less optimistic now about their hiring prospects for green jobs*

Overall, employers that reported some type of past or present partnerships were more likely to engage with training providers than with a WIB or One-Stop Career Center. One employer reported a negative experience engaging with a WIB and One-Stop in New Jersey, although the employer reported later hiring eight unemployed workers through a WIB in Pennsylvania. In southern New Jersey, one company engaged in both EE and RE had previously looked to private training providers, including Conservation Services Group, Energy Blue, and Clean Edison to provide training in BPI. More recently, it partnered with a southern New Jersey WIB, hired three new workers, and trained them with assistance from a publicly funded New Jersey On-the-Job Training program. The company also anticipates hiring 10 new workers if it is able to obtain additional training funds from the state. It has planned a partnership with a southern New Jersey community college to provide training in solar installation pending the award of the grant.

## Conclusion

Overall, the employers interviewed for this study are less optimistic now about their hiring prospects for green jobs than they were when ARRA first began to fund both green projects and green training programs. Most have found that the limited growth in green projects, while important for keeping their businesses going during a slow economy, has not added significantly to their workload. Rather, it has led to shifting job responsibilities more than spurring new hiring. Some industries, such as the nuclear energy industry, face structural issues related to expected worker retirements in coming



years. That situation may spur hiring in the mid- to long-term future. Employers that could create green products and services are hesitant to project future hiring needs. They cite inaccurate past estimates of green project growth, continuing policy uncertainty, and a generally fragile, recovery for their uncertainty.

In terms of education and training for green work, employers did not report difficulty finding needed “green layer” training for incumbent workers; and most believe that the core skills needed to perform green work are found more in traditional disciplines, such as construction, architecture, engineering, and management, among others. The primary exception is environmental remediation where employers require postsecondary degrees in green areas such as geology, environmental science, and environmental engineering. While some workers who perform green work in EE and RE also need certifications in green areas, this education and training is routinely provided after hire. This type of training may boost an otherwise qualified candidate’s chances of getting a green job but employers agree that the “green layer” of education is not, by itself, sufficient for most green jobs. While employers are satisfied with the level of preparation available through most traditional degree and training programs, employers did note a need for better hands-on training, improved knowledge of systems-level concepts, and more in-depth regulatory knowledge. Several employers are involved in partnerships with education providers to ensure the development of a skilled pipeline of workers to fill future workforce.

In the near-term, the implications for job seekers are clear: they should not prepare exclusively for green jobs, focusing instead on preparing for work in traditional occupations associated with green work and adding layers of knowledge in green projects, technologies, regulations, and concepts, as well as hands-on training. For workforce and education providers, improved partnerships with employers may provide better information on hiring needs and could lead to longer-term partnerships that improve alignment between education and workforce services and employer skill and workforce needs.

## Reference

Notice of Comments Received and Final Definition of Green Jobs, 75 Fed. Reg. 182 (2010), retrieved on 4/5/11 from: [http://www.bls.gov/green/frn\\_2010\\_09\\_21.pdf](http://www.bls.gov/green/frn_2010_09_21.pdf).

*The core skills needed to perform green work are found more in traditional disciplines*



**About the Heldrich Center**

*The John J. Heldrich Center for Workforce Development, based at the Edward J. Bloustein School of Planning and Public Policy at Rutgers, The State University of New Jersey, is a dynamic research and policy center devoted to strengthening the nation's workforce. It is one of the nation's leading university-based centers devoted to helping America's workers and employers respond to a rapidly changing 21st Century economy.*

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