

TRAINING AND EMPLOYMENT NOTICE	NO. 50-11
	DATE June 20, 2012

TO: STATE WORKFORCE AGENCIES and ADMINISTRATORS
STATE WORKFORCE LIAISONS
STATE WORKFORCE BOARDS and STAFF
LOCAL WORKFORCE BOARDS and STAFF
ONE STOP CAREER CENTER STAFF
STATE RAPID RESPONSE COORDINATORS
ALL COMPETITIVELY AWARDED GRANTEEES

FROM: JANE OATES /s/
Assistant Secretary

SUBJECT: Resources from Employment and Training Administration (ETA)
Investments and Research Related to Green Jobs

1. **Purpose.** To provide resources from ETA investments related to green jobs. ETA strongly encourages workforce practitioners to review the grant products and research cited in this notice, which provide valuable information that can help inform the design and implementation of green training and employment programs.
2. **Background.** The growth of emerging green industry sectors and the increasing adoption of green business practices by traditional industries is driving innovation in clean and efficient technologies and processes. In turn, the jobs emerging from this cycle of innovation require new workers to enter the job market prepared with green skills and competencies, and require workers in many traditional fields to retool their existing skill sets to meet the needs of the green economy. The Brookings Institution, in collaboration with the Battelle Technology Partnership Practice, recently published a report entitled, “Sizing the Clean Economy: A National and Regional Green Jobs Assessment.” The authors estimated that 2.7 million Americans are employed in positions related to the “clean economy” and that 90 percent of these jobs are located in traditional industry sectors, such as manufacturing. Furthermore, the U.S. Bureau of Labor Statistics (BLS) has identified 333 industries where green goods and services are classified, based on 6-digit industry codes from the North American Industrial Classification System (NAICS). The BLS is using these industries as the basis for surveys to develop more detailed data on green jobs.

To help advance the growth of green sectors and promote the adoption of green practices by traditional industries, ETA is supporting successful worker transitions in a changing

**EMPLOYMENT AND TRAINING ADMINISTRATION
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economy. ETA administers programs that provide employment assistance and job training to individuals in order to meet the current and future needs of employers. Since 2009, Congress has authorized a number of investments in green skills training programs and related activities that help prepare American workers for careers in green industries and occupations. The largest investments were made available by funding from the American Recovery and Reinvestment Act of 2009 (the Recovery Act, or ARRA). These investments included nearly \$500 million devoted to training and research in green jobs, and also included efforts to transition the Job Corps program to focus on green skills and competencies. The Department of Labor (the Department) has made additional investments that build upon the Recovery Act, including encouraging the public workforce investment system to align existing programs with green technology and practices, and reviewing requests to the Office of Apprenticeship to deem green occupations as apprenticeable.

At the present time there is information on the characteristics of green jobs from a variety of sources and several definitions. ETA designs and administers programs that enable training providers, educational institutions, and workforce intermediaries to effectively respond to the training needs of businesses in their local areas, and equip workers with the skills and competencies needed to take advantage of opportunities in green jobs. Consistent with this approach, in making investments in green jobs training, ETA did not provide a specific definition of green jobs, but provided grant applicants with a number of broad parameters based primarily on the Green Jobs Act of 2007 and research conducted by the Occupational Information Network (O*NET).

At the same time, a number of other organizations are working to help define green jobs and better understand the nature of the work and the skills required. These organizations include BLS, O*NET, numerous state workforce agencies, and various non-governmental organizations. The work of many of these organizations is cited in this Training and Employment Notice (TEN) and may serve as useful resources for workforce practitioners.

- 3. Research to Identify Green Jobs and their Occupational Skill Requirements.** The Department is supporting several research projects to gain a better understanding of the impact of green economic activity on occupations and their associated skill requirements, as well as to identify and count green jobs.

Occupational Information Network (O*NET) Research on Green Jobs

To assist green jobs grantees and the workforce system in providing skills training for the green economy, ETA used its O*NET project to examine the occupational changes spurred by green economic activity, as well as the corresponding skill needs. O*NET, the government's only national source of occupational skill requirements, issued in February 2009 (and most recently revised in December of 2011) *Greening of the World of Work: Implications for O*NET-SOC and New and Emerging Occupations*

(<http://www.onetcenter.org/reports/Green2.html>). This study examined the potential impact of the green economy on occupational requirements via three likely consequences: 1) the emergence of new green occupations; 2) changes in skill needs within existing occupations as a direct result of green economic activity; and 3) occupations expected to grow as a direct result of green economic activity, but with few changes in skill requirements. Based on a literature review, the study focused on 12 sectors identified as

the main components of the green economy. Some 200 green occupations were identified as most likely to experience changing skill needs, although nearly 50 of these are new occupations for which no BLS employment data are collected.

O*NET then conducted additional research to better understand changing skill needs by more concretely identifying green job *tasks*, and determining which tasks are common to multiple occupations. The O*NET Green Task Development Project issued a report in late 2010 (<http://www.onetcenter.org/reports/GreenTask.html>) that identified nearly 1,400 separate green job tasks. By summer 2011, these tasks were incorporated in O*NET's ongoing surveys and expert reviews, which will allow O*NET to track the importance, level, and frequency of these tasks within all relevant occupations in an ongoing manner.

Bureau of Labor Statistics Green Job Surveys

In addition to O*NET's work on green occupational skills, BLS is implementing three separate surveys on green jobs. BLS released its definition for green jobs in September 2010 after considerable research and public comment. This definition states that green jobs are 1) jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources; and 2) jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources (www.bls.gov/green/#definition).

In March 2012, BLS released results from the first of its three green jobs surveys (2010 data). BLS expects to release 2011 green goods and services survey data in January 2013. Results from a second type of green jobs survey, on the occupations and wages for employees who devote more than half their time to green technologies and practices, is scheduled to be released in June 2012 (this is a one-time survey only). BLS' third type of green jobs survey, on occupational staffing patterns and wages for green goods and services employment, is scheduled to be released in September 2012.

The BLS green goods and services survey is the first U.S. national survey to attempt to ascertain information on green jobs (data issued to date from various sources have been estimates). The survey provided information on the detailed industries where green jobs occur, state-specific data, and information on green jobs in the private sector as well as all three levels of government.

The news release for the first issuance of the green goods and services survey data is available at www.bls.gov/ggs/news.htm. The data can also be accessed through a customized tool available at www.bls.gov/ggs/data.htm. Other BLS information on green careers is available at www.bls.gov/green/greencareers.htm (which also includes contact information for further assistance).

An ETA Webinar titled "First Bureau of Labor Statistics Green Jobs Data" (including the PowerPoint, transcript, recording and other materials), held on April 26, 2012, is available at www.workforce3one.org/view/5001209540268961840/info, and provides additional information about the survey results.

- 4. Investments in State Labor Market Information Improvement.** In addition to supporting the national occupational research discussed above in Section 3 of this TEN,

ETA made numerous investments through Recovery Act-funded State Labor Market Information Improvement (SLMII) grants. ETA awarded 30 competitive grants to states under this program, enabling state workforce agencies to collect, analyze, and disseminate new labor market information. Ultimately, the workforce and labor market information collected under this program will promote the development of more effective workforce development strategies and provide job seekers with information on current and future job opportunities.

SLMII Program Goals

Through the SLMII program, grantees pursued a number of goals, which are discussed in more detail below.

- *Identify Green Jobs and the Required Skills and Competencies:* The vast majority of SLMII grantees are working to identify green jobs, as well as the required skills and competencies. In conducting these activities, grantees are using the O*NET Standard Occupational Classification (SOC) systems to define and identify green jobs. Many grantees are also surveying and interviewing employers and experts, collecting and/or analyzing administrative data, and conducting focus groups in order to determine and document the skill requirements of green jobs.
- *Analyze Current and Future Green Jobs Demand and Supply:* In addition, most SLMII grantees are conducting analyses to measure and describe the current market for green jobs and develop projections for future green jobs in their State or region. These efforts include employer surveys and systematic assessments of job openings (such as through “scraping” job vacancy data from the Internet); conducting surveys of training providers; working with educational institutions and research organizations to develop projection models; working with employers to understand their green workforce projections; and surveying workers about their willingness to train for new occupations.
- *Identify Green Job Training Needs:* Many SLMII grantees are also identifying the training needs for green jobs and developing career pathways and curricula. This includes collecting data on existing green job training programs; assessing the sufficiency of existing training capacity; making recommendations for further development of education and training programs; and developing and distributing career pathway models and green job training curricula.

SLMII Grant Products

The Recovery Act funding for the SLMII grants provided much-needed support for green jobs research and data collection. This funding has greatly increased the data available on various aspects of the emerging green jobs sector of State economies in at least 41 States. States collected the data; analyzed and interpreted the results; broadly disseminated the information within the workforce investment system; and published survey results for use by the wider workforce development, economic development, and educational communities. ETA encourages the public workforce system, State workforce agencies, and other practitioners to use this grantee data to develop or enhance education and

training curricula, improve efforts to transition workers from declining to growing industries, and develop tools and methods to support real-time labor market information.

Grantees presented their research and results at a Grantee Symposium in April 2011, which was streamed live and is archived, along with the agenda and presentations, at <https://winwin.workforce3one.org/view/4101115146126722546/info>. All of the SLMII grantee survey results, reports, tools, and other deliverables are available on the Workforce3One.org Web site's Workforce Solutions page at <https://wfsolutions.workforce3one.org>. To access the State LMI Improvement Grant deliverables, enter the acronym *LMI* in the *Keyword* field and click on the *Search* button.

Some examples of the research and products resulting from these grants are highlighted below.

- *Survey Results:* SLMII grantees completed and published a number of surveys in order to analyze green job skills and competencies, supply and demand, and training needs. These surveys included questions such as how many and what percentage of jobs can be classified as totally or partially green; how many community colleges, and education and training program providers have coursework that supports the development of the skills important in a green economy; how many green jobs are available now or projected to be available in the future; and what are the key skills that need to be developed to support green jobs growth in states? Green job survey data, analyses, and interpretation can be found on State LMI Web sites.
 - *Michigan, Ohio, and Indiana*
(<http://www.drivingworkforcechange.org/greenjobs.asp>): The “Driving Change, Greening the Automotive Workforce” initiative in Michigan, Ohio, and Indiana is a tri-state consortium of strategic partners tackling the workforce needs resulting from changes in the auto industry. The Driving Change Web site provides access to research on several topics including State green jobs surveys.
 - *Oregon*
(<http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007860#seg0002>): Oregon's QualityInfo.org Web site provides access to several reports based on surveys of the State's green employment sector. The following link leads to a report entitled “Comparing Oregon's Green Sectors: Employment, Wages, Hours, and Worker Trends.” In addition, Oregon's report “New Survey Counts Jobs in Natural Resources” can be found here:
<http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007584>.
 - *Washington*
(<https://fortress.wa.gov/esd/employmentdata/reports-publications/special-reports/green-economy-jobs-report>): Washington State's Green Economy Jobs report provides a complete overview of private- and public-sector green jobs. Report topics include education and experience requirements, necessary job skills and industries with green jobs. A good example of survey results and analysis can be found in the Forest Products and Industry report published in June 2010:

<https://fortress.wa.gov/esd/employmentdata/docs/occupational-reports/green-economy-jobs-forest-products-report-2009.pdf>. This report also included a March 2011 Addendum to the State's 2009 Washington State Green Economy Jobs report.

- *Northern Plains and Rocky Mountain Consortium*
(<http://greenjobs.workforce3one.org/view/4011218036743275227/info>): The Northern Plains and Rocky Mountain Consortium built upon existing green jobs research and constructed models that can be emulated in other regions and with LMI consortia. The project includes the States of Iowa, Montana, Nebraska, South Dakota, Utah, and Wyoming. The Researching the Green Economy site includes links to research products completed by the member States, including employer surveys, studies of labor supply and demand, research on regulatory impacts on growth of green occupations, and a final report published by the full consortium.
- *Improved State Labor Exchange Systems and Labor Market Information (LMI) Web sites*: The SLMII grantees used the data and information collected to improve State labor exchange systems. Several States improved or created new labor exchange and LMI Web sites focused on the needs of job seekers in the emerging green jobs sector. The following are good examples of the different approaches States took to inform labor exchange decision-making.
 - *Louisiana Workforce Commission*
(<http://lwc.laworks.net/sites/lmi/Greenjobs/Pages/default.aspx>): Louisiana's Growing Green Portal provides users with access to extensive information about the green economy in Louisiana through an online library that includes findings from a survey of more than 12,000 Louisiana employers, the results of nearly two years of research on green economic impacts, job projections in various industries, and customizable data on green job openings.
 - *New Mexico's Green Jobs Portal*
(<http://www.greenjobs.state.nm.us/>): The New Mexico Green Job Portal serves as a one-stop source of information on the green workforce in New Mexico. The portal provides information on the size and characteristics of New Mexico's green workforce and is a valuable tool to help job seekers, educators, students, State agencies, and businesses learn more about the state's green economy and workforce.
 - *Hawaii's "Find Green Employers" Tool*
(<https://lmi.ehawaii.gov/green/find-employers.html?execution=e1s1>): In this directory, employers can post profiles that describe their operations, specify their core occupations, and describe the skills and education they are seeking in employees. Job seekers, students, counselors, advisors, and others can access the employer profiles to learn about these companies and the workers they require.
 - *Mid-Atlantic Regional Collaborative Green Jobs Portal*
(<http://www.MarcGreenWorks.com>): This consortium, which includes the District of Columbia, Maryland and Virginia, developed a regional green jobs portal that allows job seekers to search and apply for jobs across the

jurisdictional borders in DC, MD and VA, and allows businesses to search for qualified candidates in the region.

- *Tools for Job Seekers and Businesses*: SLMII grantees also used a variety of other approaches. One example is the New Jersey Department of Labor and Workforce Development, which developed several ways to make green jobs data available to businesses and job seekers. The New Jersey “Connecting the Dots in the Green Economy” program provides information about the supply of, and demand for, green skills in the state’s workforce, and helps develop actionable information for job seekers, employers, and workforce professionals to use in their decisions about emerging green jobs. New Jersey’s grant products included:
 - *Green Jobs NJ* (<http://greenjobsnj.com/>): This is the dissemination Web site for LMI related to New Jersey's green sector. It includes links to research, tools, and resources produced from the SLMII grant, as well as links to other helpful green resources in the State.
 - *NJ Training Opportunities* (<http://njtopps.com>): On the New Jersey Training Opportunities Web site, users can search for schools and organizations that provide occupational education and job training opportunities. The site features a specific green search option. Search results include information on the various programs offered by each training provider and allow for comparison based on information such as the location and length of training, the cost and special services that may be offered, employment outcomes, and the starting salary after graduation.
 - *Jobs4Jersey’s OnRamp* (<https://webos.dol.state.nj.us/Career/Login.aspx>): This site provides job seekers with the tools they need to build a successful career. Using patented technology, the OnRamp job search tool analyzes and compares job seekers’ resumes to the resumes of thousands of successful job seekers in order to enhance job searches, job advancement, and career transitions. Specific searches can be performed for green jobs.

5. Investments in Green Jobs Training and Capacity Building. In addition to investments in improved LMI, the Recovery Act provided funding to ETA for several employment and training programs to help American workers acquire new skills and return to work. These investments in green jobs training are called the ARRA High Growth and Emerging Industries (HGEI) training grants, and include the State Energy Sector Partnership and Training (SESP) Grants, Pathways Out of Poverty (Pathways) Grants, and Energy Training Partnership (ETP) Grants. Collectively, these programs invested approximately \$435 million across 97 grants. In addition, ETA invested nearly \$6 million in 62 Green Capacity Building Grants to enable organizations to build the capacity to provide entry-level training leading to career pathways and/or additional training in the energy efficiency and renewable energy industries, as well as other green occupations.

Overview of ARRA HGEI Training Grant Programs

Each of the ARRA HGEI training-focused grant programs is described in more detail below:

- *State Energy Sector Partnership Grants*: To highlight the important role States play in building a national green economy, ETA invested nearly \$188 million in 34 projects to implement workforce sector strategies that target energy efficiency and renewable energy industries as well as other green industries. DOL encouraged grantees under this program to engage in a strategic planning process that aligns with their respective Governors' overall workforce vision, State energy policies, and local and regional training activities that lead to employment in targeted industry sectors.
- *Pathways Out of Poverty Grants*: For individuals who are living below or near the poverty line, the current economic downturn has created a unique set of challenges, and has heightened the need to find pathways out of poverty and into employment. ETA invested nearly \$148 million in 38 projects that integrate training and supportive services into cohesive programs that help targeted populations find green jobs.
- *Energy Training Partnership Grants*: ETA invested nearly \$100 million in 25 projects to train workers to enter energy efficiency and renewable energy industries, as well as green occupations within other industries. These grants include partnerships with a diverse set of stakeholders, including labor organizations, public or private employers in the energy efficiency and renewable energy industries, and the workforce system.

Results of ARRA HGEI Training Grants

ETA is performing two separate evaluations of these green job training grants. The first is a two-year implementation evaluation that will examine key differences and similarities across the training grant programs and across grantees. ETA expects to release the interim report in the spring of 2012, and will publish the final report in late 2012; both reports will be available in the ETA Research Publication Database at http://wdr.doleta.gov/research/eta_default.cfm. The second evaluation is a five-year study to estimate program impacts at each of four grantees from two specific grant programs – Pathways Out of Poverty and Health Care and Other Emerging Industries (which is also funded through the Recovery Act). This evaluation will estimate each grantee's impact on participants' post-program earnings, attainment and retention of employment, certification attainment, and career progression. The interim report for this evaluation is expected in March 2014, with the final report to follow in September 2017.

In addition, ETA provides technical assistance to the grantees through a cooperative agreement with the National Governors Association, which includes an effort to document promising practices. These case studies focus on topics such as employer engagement strategies, assessment and training methodologies, partnership structures, and participant support systems. These promising practices can help other grantees and workforce practitioners who are facing similar challenges, and the ARRA HGEI technical assistance team will continue to release additional promising practices compendia in the coming months, through <http://www.workforce3one.org>.

ARRA Green Capacity-Building Grants

As noted above, ETA also invested over \$6 million in 62 Green Capacity Building grants. These grantees bolstered the capacity of their training programs through the purchase of equipment, staff professional development, curriculum development and/or adaptation, and partnership development. The products developed by many of these grantees will be shared on Workforce3One's Workforce Solutions page at <https://wfsolutions.workforce3one.org/>, and ETA encourages workforce practitioners and others to view these resources and use them in their own work. A few examples of Green Capacity Building grant products are highlighted below.

- *Goodwill Industries International*
(<https://wfsolutions.workforce3one.org/page/info/1001131845335256345>): This grantee developed a staff capacity-building training series delivered in five PowerPoint presentations, and focuses in part on the Senior Community Service Employment Program (SCSEP). The series provides case-based instruction and collaborative group learning exercises that can be taught through live training or as webinars. The first four modules have general applicability to any workforce staff, and the final module is specific to SCSEP. The accompanying workbook serves as a companion to the modules and provides trainees with additional curricular activities and resources.
 - *Apprenticeship and Nontraditional Employment for Women (ANEW)*
(<https://wfsolutions.workforce3one.org/page/info/1001202338494343795>): This grantee developed a guide that provides support for employers, apprenticeship directors, and journey workers who seek to hire, train and retain tradeswomen. The grantee also developed a "Helmets to Hardhats" crosswalk that correlates military experience to construction trades.
 - *Community Teamwork, Inc.*
(<https://wfsolutions.workforce3one.org/page/info/1001202354203274327>): This grantee produced a curriculum designed to help students gain a basic understanding in a number of areas related to installation and maintenance of photovoltaic systems.
6. **Updates to Job Corps Programs Incorporating Green Skills.** In early 2009, Job Corps completed a review of emerging green jobs and resources with the intent of refocusing existing training programs to incorporate green skills, offer new training in emerging green occupations, and expose students to energy efficiency and environmental training and service opportunities. Recovery Act funding greatly expedited Job Corps' transition to a green career technical training system.

Job Corps currently trains in 11 high-growth industries, but initial green efforts prioritized the advanced manufacturing, automotive, and construction industries. Job Corps used a four-pronged approach in implementing green activities: 1) enhance curricula to incorporate green skills and expand existing green programs; 2) develop new career technical training for emerging occupations in the green economy; and 3) develop strategies to sustain green programs and practices. Each of these efforts is described in more detail

below. For more information, visit the Job Corps ARRA e-report site at <http://arrareport.jobcorps.gov/>.

Enhance Curricula and Expand Existing Programs

To incorporate green practices into existing training programs, Job Corps facilitated workgroups of industry experts, national credentialing bodies, employers, and educators. These teams of experts helped to determine the appropriate content and levels of training in the areas of environmental awareness, trade-specific green practices and materials, green technologies and equipment, and environmentally-friendly shop practices.

In machining, manufacturing technologies and welding programs, Job Corps enhanced skill sets related to existing Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements to support pollution reduction, “lean-to-green” production processes, use of environmentally-friendly clean-up procedures, and reduction of energy use and consumption of materials. In the various automotive programs, curricular changes focused on environmental practices, as well as an introduction to alternative vehicles. In the 18 different construction trades, the curricula were enhanced to prepare students to work on Leadership in Energy and Environmental Design (LEED) and other green building-related projects, as well as learning basic environmental awareness and skills that students can transfer to conventional building projects.

As part of the Recovery Act initiative, Job Corps expanded the United Auto Workers’ Advanced Auto Technician Training to three new centers, expanding opportunities for students to work on hybrid and alternative energy vehicles.

Develop New Career Technical Training for Emerging Occupations

Job Corps completed extensive research to identify potential new areas of training in emerging green occupations that would be suitable for students in the program – matching a high school diploma or GED and training in skilled trades to employment requirements. Six new training offerings were developed as pilot programs: electronic health records specialist, solar photovoltaic and thermal systems installer, weatherization technician, smart meter technician, overhead line construction, and underground residential distribution. As in the curriculum enhancement activities described above, industry experts, national credentialing bodies, employers and educators were brought together in a facilitated process to develop these new programs, which will be reviewed and then introduced to additional Job Corps centers.

All career-technical training programs within Job Corps are aligned with relevant industry standards and certifications requirements, and the new green programs are no exception. Job Corps programs developed in emerging green occupations have curricula that are aligned with numerous industry-based certifications to ensure that students obtain knowledge and skills that are valuable in the marketplace.

Sustain Green Programs and Practices

In addition to the industries targeted initially, Job Corps has continued to update existing training offerings to include green knowledge and skills in other industry areas and occupations, including areas not traditionally considered green. Continued efforts will focus on career technical training programs in renewable resources/energy, transportation, and other

projected high-demand or emerging green occupations. The Job Corps strategy is to continue to increase green training to expose students to environmental stewardship as well as to prepare them for the green economy.

7. **Registered Apprenticeship Activities Related to Green Jobs.** The Office of Apprenticeship (OA) has increasingly received requests from Registered Apprenticeship stakeholders concerning the development of apprenticeable occupations that are aligned with green jobs. The process by which a given occupation with “green” characteristics can be considered apprenticeable by OA generally follows the same process as any other occupation. The Division of Standards and National Industry Promotion (DSNIP) within OA functions as the entity primarily responsible for the processing and analysis of all requests for Apprenticeability Determinations, with the OA Administrator having final authority to either approve or disapprove any given occupation.

Requests for the recognition of new apprenticeable occupations are, by and large, industry-driven, and as such are generally submitted for consideration by companies or organizations (e.g., industry associations or labor organizations). In determining whether or not an occupation satisfactorily meets the criteria of being apprenticeable, OA solicits input from industry subject matter experts, who provide input on the on-the-job learning and related instructional training components for a given occupation.

Apprenticeable Occupations

In order for an occupation to be deemed apprenticeable, it must meet the following criteria, as indicated under the Federal Regulations on Apprenticeship, found at 29 CFR 29.4, Criteria for Apprenticeable Occupations:

1. Apprenticeable occupations will typically require a high level of technical skill in a clearly identified occupation that is commonly recognized throughout an industry.
2. The occupation will be one that can be learned through a structured, systematic program of supervised on-the-job learning and related classroom instruction.
3. To be eligible, the occupation must require at least 2,000 hours of on-the-job learning (equivalent to one year) and comprise a minimum of 144 hours of classroom instruction.

Nationwide, OA presently has recognized more than 900 occupations. The listing of apprenticeable occupations is published through OA policy guidance at:

<http://www.doleta.gov/oa/guidance.cfm>.

The following is a partial list of “green” occupations that have been recently recognized by OA as being apprenticeable, and the sponsoring organizations:

- Wind Turbine Technician/Local 150 Operating Engineers;
- Energy Auditor and Analyst/Building Science Academy, LLC;
- Geothermal and Well Drilling Operator/International Union of Operating Engineers; and

- Home Performance Laborer/Laborers' International Union of North America (LIUNA).

Integrating Green Skills into Existing Registered Apprenticeship Programs

Although OA worked with Registered Apprenticeship program sponsors to develop new green apprenticeable occupations, many existing program sponsors have incorporated green skills into their existing training programs. This is perhaps best exemplified by the many program sponsors that have updated their Registered Apprenticeship program standards to include training elements emphasizing the use of green technologies and/or processes. Most often this integration involves the revision of the Work Process Schedule to reflect the addition of green elements into an existing apprenticeable occupation. The updating of Registered Apprenticeship program standards to effectively incorporate green skills ultimately serves the purpose of ensuring that apprentices receive training in the most up-to-date green techniques and processes that are relevant to the needs of industry and simultaneously allows industry to benefit from a highly skilled, adaptive workforce that will allow it to better compete in today's global economy.

In addition, the increasing development of partnerships between Registered Apprenticeship programs with organizations offering pre-apprenticeship training with a green emphasis serves as another example of how Registered Apprenticeship sponsors have increasingly integrated green skills into their programs. The establishment of such partnerships has proven beneficial in several different ways. Pre-apprenticeship training in green skills and awareness has served to provide a bridge between traditionally hard-to-serve populations, providing these individuals with the requisite knowledge and skills to gain entry into Registered Apprenticeship programs that will ultimately provide them with a pathway towards good paying jobs and sustainable careers. Pre-apprenticeship programs with a green emphasis also serve the interests of business, by laying the foundations for the preparation of a skilled workforce conversant with the latest green technologies and processes, and additionally serve the function of establishing an available conduit of skilled green workers for business.

Additional Resources on Registered Apprenticeship and Green Jobs

For additional information and resources on Registered Apprenticeship and Green Jobs, access the following links:

- *Office of Apprenticeship Web site*
<http://www.doleta.gov/oa/>
- *Registered Apprenticeship Community of Practice (Green Industry Tab)*
<https://21stcenturyapprenticeship.workforce3one.org/page/tag/green>
- *Greening of Registered Apprenticeship – Environmental Scan Report*
<https://21stcenturyapprenticeship.workforce3one.org/view/2000927554145216784/info>
- *Green Jobs Community of Practice*
<https://greenjobs.workforce3one.org/>

8. **YouthBuild Activities Related to Green Jobs.** ETA’s YouthBuild program focuses on the goals of providing a high school diploma or GED to youth who have dropped out of high school while also providing occupational training in construction skills through the building and rehabilitation of low-income housing. Because of the increasing use of energy-efficient and clean energy technologies in residential construction, particularly related to energy auditing and rehabilitation of older housing stock, YouthBuild is integrating green training and certification programs into the program model. Related to this, the YouthBuild program hosted hands-on regional and national conferences on green construction, and green construction techniques are being integrated into construction curriculums used by local YouthBuild Programs.

The YouthBuild program also created numerous online tools for use by YouthBuild grantees including the “Shades of Green” construction manual, tip sheets on being green, and the Green Tool Bench, which contains step-by-step instructions for some of the most common Green Building improvement projects. Each tool includes easy-to-follow directions along with diagrams and pictures in a downloadable pdf format. The YouthBuild program also has created a number of “green” project-based learning modules for YouthBuild instructors to use in their classrooms that teach both academics and construction skills. Each learning module covers topics essential to quality new green construction, gut rehab, weatherization and energy auditing. For example, one of the modules, “Heat Transfer and R-Values,” teaches youth how to calculate the thermal resistance of various insulation materials. This helps them learn various math concepts while gaining knowledge to use on the worksite. All resources and tools are stored on the YouthBuild Community of Practice, a Web site available to current and previous YouthBuild grantees.

9. **Tools and Resources Related to Green Jobs.** In addition to the research and grant products discussed above, ETA supports a number of other tools and resources that can help workforce practitioners and job seekers better understand the skill requirements, credentials, and career options related to green industries and occupations. Several key resources are summarized below.

- *My Next Move*
(<http://www.mynextmove.org>): In the new O*NET tool called My Next Move, green jobs are highlighted in various O*NET products by the presence of a green leaf symbol ( green). My Next Move also provides a dedicated list of green occupations (<http://www.mynextmove.org/find/green>). My Next Move is especially useful for students, young adults and other first-time workers as they explore potential careers based on their interests. Each occupation that a user selects has an easy-to-read, one-page profile, including information about what knowledge, skills and abilities are needed; the occupation's employment outlook; the level of education required; technologies used within the occupation; and other similar jobs. In addition, each occupational listing includes direct links to local salary information, training opportunities and relevant job openings. My Next Move easily allows job seekers to connect to several premier Internet job banks, including the national job bank used by ETA’s mySkills myFuture and other State, national and veterans’ job banks. To do so, job seekers simply click

select a green occupation and click on the “Find Job” icon at the bottom of the occupation’s description. The site also indicates whether a Registered Apprenticeship program exists for each green occupation, and if so, how to locate it.

- *CareerOneStop – Green Careers*
(<http://www.careeronestop.org/GreenCareers/GreenCareers.aspx>): This site allows job seekers to quickly identify, for more than 200 green occupations, how many current and projected future jobs exist, with up-to-date salary information for each occupation by State (including median wages and the range of pay within each occupation). The Green Careers site also provides essential information on the training necessary to qualify for specific green occupations, the specific locations of colleges (including community colleges), programs that offer training for specific green occupations, and links to information about relevant certifications and required state licenses for green occupations.
- *Green Jobs Community of Practice (CoP)*
(<https://greenjobs.workforce3one.org>): The Green Jobs CoP is designed to provide professionals, businesses, and organizations working in the green jobs field with current information, news, publications and resources. It includes promising practices from the field; announcements of upcoming events; green jobs contacts, partnerships, and coalitions; information about existing green jobs grants and grantees; education and training models (including career pathways resources); and an opportunity to share information and ideas with other professionals in the field.
- *O*NET – Greening of the World of Work*
(<http://www.onetcenter.org/reports/GreenRef.html>): O*NET’s Greening of the World of Work project has compiled, and periodically updates, a Book of References. This approximately 100-page document includes over 300 references to books, articles, Web sites, and other sources that can help users learn more about the greening of occupations in various industries.
- *BLS – Green Careers Page*
(<http://www.bls.gov/green/greencareers.htm#articles>): BLS has consolidated its own green career articles here, including articles on careers in green construction, solar power, and wind energy. The site also links to several other articles on green jobs from the *Occupational Outlook Quarterly*, written primarily for a student audience. These articles target specific green occupations, as well as sectors such as organic food production and recycling.

10. Inquiries: Any questions about this Training and Employment Notice should be addressed to the appropriate ETA Regional Office, your Federal Project Officer, or green.jobs@dol.gov.