

New York State Department of Labor

Part II – Technical Proposal

**State Energy Sector Partnership (SESP) and Training Grant
Solicitation for Grant Application
(SGA/DFA PY-08-20)**

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STATEMENT OF NEED

New York State's (NYS's) need for \$6 million (M) in Federal investment to fund the proposed activities in this application are supported by: an assembled State Energy Sector Partnership (SESP); nine assembled Regional Project Teams; extensive energy policy and planning; considerable labor market and workforce intelligence; measurable outcomes that drive progress; and substantial leverage. In addition, the State's energy sector strategy mirrors and advances the goals of USDOL's \$500M green jobs training Solicitation for Grant Applications (SGA) under the American Recovery and Reinvestment Act of 2009 (ARRA).¹

The need for the activities proposed in this application is derived from two sources:

1. **Increase in demand for skilled workers** in renewable energy (RE) and energy efficiency (EE) industries created by clean energy investments. For example, NYS's share of ARRA funding is \$26.7 billion, and President Obama's economic team estimates this spending will create or retain 215,000 jobs. Much of this funding is directed towards the RE and EE industries. In addition, ARRA investments in New York for State Energy Programs and the Energy Efficiency Conservation Block Grants are projected to create/retain 2,500 jobs, and the Weatherization Assistance Program is estimated to support 6,000 jobs. Furthermore, the recently enacted Green Jobs/Green NY Act of 2009 will create up to 15,000 openings.
2. **Shortage in funding for worker training** is demonstrated by \$35.4M in unfunded proposals in recent NYS competitive solicitations to procure green jobs training to implement the State's energy sector strategy.
 - ♦ The NYS Department of Labor (NYSDOL) received 100 proposals requesting a total of \$37M in response to its Emerging and Transitional Worker Training RFP, and was unable to fund 56 proposals totaling \$22M. NYSDOL also received 80 proposals requesting a total of \$17.5M in response to its Disconnected Youth Training RFP, and was unable to fund 56 proposals totaling \$12.5M.
 - ♦ The NYS Energy Research and Development Authority (NYSERDA) received 12 proposals totaling \$3.7M under the second round of the Clean Energy Technology Training solicitation and was unable to fund \$900,000 in proposals that have technical merit. The solicitation followed an earlier program that provided over \$5M for Clean Energy Training Initiatives.

It is also anticipated that there will be a significant funding shortfall for USDOL's green jobs training grants, as over \$60M in NYS applications were submitted to the Energy Training Partnership (ETP) SGA and Pathways Out of Poverty (Pathways) SGA.

¹ USDOL/ETA, Training and Employment Notice (TEN) No. 44-08, American Recovery and Reinvestment Act of 2009 Competitive Grants for Green Jobs Training, May 15, 2009.

Existing Energy Policies and Planning

NYS engaged extensively in state energy policy and planning, and is currently finalizing the NYS Energy Plan for 2009.² This effort is overseen by a State Energy Planning Board established by Executive Order and chaired by the Deputy Secretary for Energy.

For the Plan, NYSDOL prepared considerable labor market and workforce intelligence of the State's renewable energy (RE) and energy efficiency (EE) industry. A goal of this effort was to align State energy planning with the State's One Stop Career Centers under the Workforce Investment Act (WIA) and Wagner-Peyser (W-P) Act. The results of this effort are presented in the report *New York State's Clean Energy Industry: Labor Market and Workforce Intelligence*, May 2009. A copy of the report is provided in *Attachment 2*.

The Draft NYS Energy Plan provides considerable detail on policies for job creation in the EE and RE industries, and advances a State economy fueled by a broad base of clean energy initiatives to create new business opportunities and enables integration of clean energy technologies, practices and services across all sectors. RE and EE policies relevant to the State energy sector strategy are evidenced by four State initiatives: Energy Efficiency Portfolio Standard (EEPS); Renewable Portfolio Standard (RPS); Regional Greenhouse Gas Initiative (RGGI); and the Green Jobs-Green New York Act (GJ-GNY). Also relevant are three federally funded programs: State Energy Program (SEP); Weatherization Assistance Program (WAP); and Energy Efficiency Conservation Block Grants (EECBG).

Data Analysis

NYSDOL has conducted extensive research on the state's RE and EE industries. This research is ongoing and to date has identified approximately 130 common occupations in the following 13 RE and EE clusters: Solar Installation (NAICS 238); Wind Installation (NAICS 237); Solar Manufacturing (NAICS 334, 335); Wind Manufacturing (NAICS 333611); Weatherization (NAICS 238); Energy Service Companies (NAICS 221, 541); Energy and Environmental Systems Consulting Services (NAICS 541); Green Building Products Manufacturing (NAICS 314, 321, 325, 327, 335, 337); Indoor Environmental Quality Product Manufacturing (NAICS 333, 334); Water Quality and Resources (NAICS 221, 333, 334); Biomass/Biofuel (NAICS 111, 321, 322, 324, 325); Fuel Cells/Battery Products (NAICS 334, 335); Waste Management/Remediation (NAICS 562).

In addition, for each of the clusters, the NYSDOL has also identified wages, education/training requirements and outlook. This research also identifies career ladders, pathways out of poverty, training capacity, and assessment of labor supply and demand. NYS also submitted a state-level application under USDOL's LMI Improvement SGA (SGA/DFA PY 08-17). The application requests funding to quantify and qualify current and projected employment in production, distribution, installation and maintenance in the RE and EE clusters.

² Information on the NYS Energy Plan can be obtained at www.nysenergyplan.com

Skills and Competencies

The SESP has considerable expertise, data and analyses regarding skills and competencies gained through training activities, as well as the State's training capacity in the RE and EE industries. While New York has been able to invest in workforce development as part of its overall strategy to develop a clean energy economy, important gaps still exist that could begin to be addressed through the addition of ARRA funds. The SESP finds a shortage, both in skilled workers and training capacity, in energy efficiency and building performance; weatherization; solar electric (photovoltaic); solar thermal; wind; building trades; and geothermal systems. Based on this analysis, new federal funds requested in this application would be used in part to expand training and capacity activities in these areas, including purchase of related training equipment.

This effort will also support professional credentialing programs that provide a uniform set of national standards for training and certifying workers, including: Building Performance Institute (BPI); North American Board of Certified Energy Practitioners (NABCEP); American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE); U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED); and the Workforce Development Institute's Green Learning Center Project for the building trades.

Labor Force Characteristics

Labor market information continues to reflect an increase in NYS's unemployment rate. In August 2009, the State's seasonally adjusted unemployment rate jumped to 9.0% from 8.6% percent in July 2009 – the highest level since April 1983 which was also 9.0%.

Important drivers affecting the State's economic vitality are: aging population; slowing population growth among younger workers; more immigration; increasing skills requirements for workers; financial meltdown on Wall Street; and ARRA investments. Other labor-related issues for NYS are: 16% of individuals aged 25 years and over do not have a high school diploma; 16% of families with children under 18 years of age are below the poverty level; 37% of female households with children under 18 years of age and no husband present are below the poverty level; and 11% of the individuals ages 16-64 have a disability.

NYS's changing economy suggests that the skills and educational requirements of the State's declining industries, particularly manufacturing, do not match the jobs in the emerging sectors – creating a skills mismatch. Also, in a projected slower growth population scenario for NYS, efforts to reduce work participation barriers (e.g., lack of education/skills and lack of support services) will be critical in satisfying the labor force requirements of an expanding economy.

STATE ENERGY SECTOR PARTNERSHIP

Demonstration of Assembled Partnership

NYS has several clean energy initiatives with assembled senior level advisory bodies similar to

the SESP membership, and the same individuals regularly represent their organization across these initiatives. There is also strong participation by the Governor's Office. Initiatives relevant to the SESP are: State Energy Planning; EEPS; Interagency Environmental Justice Task Force; RPS; RGGI; National Governor's Association Policy Academy on State Sectors Strategies; WAP; GJ-GNY; and ARRA workgroups. This collaboration is also illustrated in **Attachment 3**.

USDOL's green jobs training competitive grants have been a topic of discussion among these partners since passage of the ARRA in February 2009. In advancing formation of the SESP, agencies developed a State energy sector strategy to articulate the goals of USDOL's green jobs training, which is presented in **Attachment 4**. In August 2009, State agencies delivered a series of webinars on the State's energy strategy and how it relates to USDOL's five green jobs training SGAs. The webinars were made available to eligible applicants and interested parties, to provide an opportunity to clarify questions, offer assistance and create value for the SESP.³

During the State Team meeting for the National Governor's Association Sector Policy Academy on July 23, 2009, it was agreed to advance the SESP as it reflects required membership needed to advance strategies.⁴ The Team discussed short-term, mid-term and long term goals for the SESP, and advancing the SESP and an application was deemed the priority.

The SESP's first meeting was convened on August 21, 2009 and the partnership has since met weekly to prepare this application. On October 6, 2009, the State Workforce Investment Board (SWIB) recognized the SESP as a subcommittee of the SWIB. The SESP is co-chaired by NYSDOL and NYSERDA. The Governor's Deputy Secretary for Labor and Financial Regulation, and Assistant Secretary for Renewable Energy are also active members of the SESP.

The Charter for NYS's SESP is presented in **Attachment 5**. The Charter is based on a State Assembly Bill to amend State labor law to establish a SWIB subcommittee on green jobs workforce.⁵ For this application, SESP signatories were held to required members outlined in the SGA. Therefore, an immediate goal of the SESP is for all members to be signatories on the Charter. State agency members include: NYS Public Service Commission (PSC); State University of New York (SUNY); NYS Foundation for Science, Technology and Innovation (NYSTAR), NYS Office of Temporary and Disability Assistance (OTDA); and the State Education Department (SED). Local Workforce Investment Board and One Stop Operator members are represented by the Regional Project Team leaders. Labor organizations are represented by the Workforce Development Institute (WDI), as the designee of AFL/CIO and the Building and Construction Trades. Organized labor membership also includes SEIU 32BJ, LIUNA and CSEA, who have had active involvement in developing the State energy sector strategy. In addition, SEIU 32BJ submitted an application to USDOL's Energy Training Partnership SGA, and LIUNA submitted an application to USDOL's Pathways Out of Poverty SGA. The SESP supports these applications as a key element of the strategy. Business/industry

³ The sessions are archived at <https://nysdol.webex.com/>. Click on "Recorded Sessions"; scroll down to the "Pathways out of Poverty" and "Energy Training Partnership" entries on August 11 and August 12.

⁴ NYS is participating on the National Governor's Association, Center for Best Practices, *Policy Academy on State Sector Strategies: Innovative Workforce Policies to Address Worker and Employer Needs* (accepted April 10, 2008). The Policy Academy is intended to help State leaders to accelerate cultivation of sector strategies to transform how the state supports workforce development, and aligns workforce policies.

⁵ A8377 introduced by A. LATIMER (05/18/2009).

membership includes the New York Power Authority, the Long Island Power Authority and National Grid. Nonprofit community based membership includes the Association for Energy Affordability; STRIVE and Consortium for Worker Education.

Member Participation in Planning and Development

Member participation in planning and development is to advise on opportunities which align policies and programs with the energy sector strategy, such that resources are used effectively and in the most optimal manner.

- ♦ State cabinet officials provide oversight and guidance to ensure consistency with state policies and initiatives.
- ♦ State agencies represent assets (funding, staff and programs) to advance the strategy.
 - NYSDOL represents the WIA, W-P and the State's One Stop Career Centers.
 - NYSERDA and PSC represent the EEPS, RPS, GJ-GNY (supported with RGGI funds), and SEP and EECBG programs (under the ARRA). NYSERDA will be a sub-grantee for this application to assist with competitive procurement of classroom equipment and other aspects of the proposal, based on their experience.
- ♦ Labor Organizations and Business/industry represent jobs (i.e., career paths to “livable” wages and benefits) and will help identify worker skill requirements.
- ♦ Regional Project Teams Leaders, Local Workforce Investment Board Directors, One-Stop Operators and Community organizations help determine a region's workforce needs for training, capacity, and marketing and outreach to communities and businesses.

Leveraged Resources

Leveraging is the fundamental principle of the State's energy sector strategy, since it allows public investments in job creation, workforce development and pathways out of poverty to be used in the most effective and optimal manner. For this application, the State's energy sector strategy encompasses about \$1,216M in leveraged resources. These resources are accounted across two categories: 1) Jobs (Labor Demand) – Investments to create and retain jobs in RE and EE industries; and 2) Workforce Development (Labor Supply) – investments to provide workers with the requisite knowledge, skills and abilities to achieve productivity for those jobs.

1. **Jobs Investments** in RE and EE represent about \$1,138M in leveraged resources relevant to the SESP. This includes:
 - ♦ \$98M – RPS collections in 2009 (PSC RPS Order, 9/24/09);
 - ♦ \$172M – EEPS collections in 2009 (PSC EEPS Order, 6/23/08);
 - ♦ \$70M – GJ-GNY;
 - ♦ \$500M – WAP;
 - ♦ \$123M – SEP (under ARRA funding); and
 - ♦ \$175M – EECBG.
2. **Workforce Development Investments** in RE and EE (labor supply) represents about \$77.7M in leveraged resources relevant to the SESP. This includes:
 - ♦ \$44.5M in unskilled unemployed worker training (Pathways) by OTDA and NYSDOL through the following RFPs – Emerging and Transitional Worker Training (\$15M), Disconnected Youth (\$5M), Career Pathways (\$17.5M) and Green Jobs Training (\$7M);

- ♦ \$7.7M in regional sectors initiatives through NYSDOL’s Regional Economic Transformation Strategies;
- ♦ \$6.6M in workforce development funding by the PSC under the EEPS;
- ♦ \$4M in workforce training under GJ-GNY (funded through RGGI);
- ♦ \$4M in capacity by NYSERDA and PSC for the network of 10 residential EE learning centers (i.e., Centers for Energy Efficiency and Building Sciences);
- ♦ \$1.9M by NYSERDA in Knowledge Transfer and Accreditations-Certifications; and
- ♦ \$9M in energy efficiency and building performance training by NYSERDA under the System Benefit Charge (SBC) programs.

STRATEGY AND PROJECT WORK PLAN

Energy Sector Strategy

New York’s energy sector strategy (*Attachment 4*) targets EE, weatherization, Photovoltaic, solar thermal, wind and geothermal, and mirrors USDOL’s green jobs training initiative. This includes an assembled SESP to oversee the strategy; assembled Regional Project Teams; Labor Market Intelligence with state of the art job matching; Worker Training (including Energy Training Partnerships and Pathways out of Poverty); and Capacity Building.

A primary goal of the strategy is to drive the optimal use of the resources across Federal and State funding administered by multiple organizations. This elevates the role of the SESP beyond this application, assures relevance and sustainability of the SESP and makes leveraging resources a key outcome of the effort. The components of the State energy sector strategy are described below, and the SESP is discussed in the “State Energy Sector Partnership” section.

Regional Project Teams

The SESP is requesting \$550,000 to support the work of nine Regional Project Teams (RPTs) in this application. The strategy aligns the RPTs with NYSDOL’s Regional Economic Transformation initiative, in which NYSDOL has invested \$7.7M (since 2007) to support the work of eight regions. The eight regions will each receive \$50,000 under this application. The New York City region did not participate in NYSDOL’s regional initiative, and will receive \$150,000 under this application to develop a regional transformation strategy plan.

The RPTs are critical to the strategy because of their strong relationship with Local Workforce Investment Boards (LWIBs) and One Stop Career Centers in the region. Therefore, the lead for each regional project team is also a member of the SESP. Additional detail on the RPTs is presented in the Regional Project Team section of this document.

Labor Market Intelligence (LMI)

Funding is not requested in this application to support the State’s ongoing work on labor market intelligence (LMI) for the clean energy industry. However, LMI is a critical component of the energy sector strategy, and the state has committed significant resources to this effort. NYSDOL

also submitted a state-level application for \$1 million under USDOL's green jobs training LMI SGA. This grant, if awarded, would contribute substantially to the State's energy sector strategy.

Capacity Building

\$3,679,137 is requested in this application to support the State's capacity building strategy. NYSERDA has already invested millions of dollars to develop curriculum and train-the-trainers. In order to expand NYS's training capacity, additional funds are needed to help equip new training partners that already have the curriculum and trainers, but need funding for equipment. Additionally, many existing training facilities are at capacity and need equipment to offer training at multiple locations. NYS has invested over \$15M in workforce development capacity for RE and EE, which is viewed as leverage under the energy sector strategy.

Capacity Building has three components: Information / Technology Transfer (\$125,000); Interactive Video Presence (\$695,790); and Classroom Training Equipment (\$2,558,347) allocated across EE (\$850,000), Wind (\$838,347), Photovoltaic and Solar Thermal (\$600,000), and Geothermal (\$270,000).

Knowledge Transfer and Networking

\$125,000 is requested in this application to fund the 4th annual RE and EE workforce conference in November 2010 – which is the premier national workforce conference on RE and EE. Over \$400,000 has been invested over the past three years to host this conference, and NYSERDA has provided the majority of the resources. However, NYSERDA lacks the funds to fully cover the 2010 conference.

The November 2010 conference is an excellent national and international forum to discuss implementation of USDOL's green jobs training SGAs. The 2009 Conference, entitled *New Ideas in Educating a Workforce in Renewable Energy and Energy Efficiency* is November 18-20, 2009 and is expected to draw over 400 national and international attendees comprised of educators, practitioners, and policy makers in the field.⁶ One of the main organizers is the Interstate Renewable Energy Council (IREC), and the co-sponsors are the US Department of Energy, the Workforce Development Institute and NYSDOL.

In addition, the 2009 conference will feature internationally recognized speakers on energy research, energy technologies and applied energy technologies with global application. In addition, relevant, promising and visionary solutions to the global energy crisis will be unveiled and explored. Conference sessions include: Job Forecasts & Labor Profiles; Developing Curriculum; Essential Steps of Developing a Training Course; Hands-On Training; Degree Programs; Career Pathways; Developing Partnerships; Setting Standards; and State and Federal Resources.

Interactive Video Presence

The State's energy sector strategy includes Interactive Video Presence (IVP), and \$695,790 is requested in this application to purchase and install 13 IVP end-points and 3 IVP education

⁶ http://www.meetmax.com/sched/mie1109/~public/conference_register.html?event_id=3120

centers in One Stop Career Centers. This is expected to improve system performance by creating a cost effective face-to-face personal presence as follows.

- ♦ Instructors and Counselors will serve individuals in multiple One Stop Career Center via the IVP network, providing individuals with access to career planning, mentoring, and training which otherwise would not be available at their Center.
- ♦ SESP and RPT will conduct face-to-face meetings via the IVP, to enhance member engagement by easing the inherent lost time and expense associated with travel distance.
- ♦ Monitors and evaluators will conduct face-to-face meetings via the IVP to enhance effective communication with partners and participants on a regular basis.
- ♦ All information provided over IVP can be recorded, stored and re-used.

This activity leverages NYSDOL's recent \$700,000 implementation of video conferencing technology for use by the unemployment insurance program in One Stop Career Centers. The concept paper for the implementation is presented in **Attachment 6**. This will standardize equipment throughout the One Stop system, cut down on technical support issues, ease implementation of the project, and leverage discounts on purchases with grant funds.

NYSDOL's purchase was preceded by exhaustive research and due diligence in selecting a vendor. This included consulting with Gartner, Inc. – the world's leading information technology research and advisory company. The final equipment selection followed NYS Office of General Services processes and included quotes from four vendors. NYSDOL chose TANDBERG end points and infrastructure as it:

- ♦ Provides a completely standards based set of solutions;
- ♦ Is highly recommended by Gartner;
- ♦ Provides interoperability with other systems;
- ♦ Is flexible and scalable, including the use of desktop based webcams for individuals; and
- ♦ Is used by the NYS Office for Technology.

Classroom Training Equipment

\$2,558,347 is being requested in this application to support the State's energy sector strategy to invest in classroom training equipment, which has been identified as a barrier for establishing training centers for: Energy Efficiency and Building Performance; Wind; Solar (Photovoltaic and Thermal); and Geothermal. NYS has already invested over \$9 million in RE and EE classroom training capacity, largely in the form of curriculum. This investment represents leverage under the energy sector strategy. In addition, the strategy leverages \$6.6 million in workforce funding approved under the NYS EEPS.⁷

Classroom training equipment will be procured through existing and new competitive solicitations. New solicitations will be guided by the SESP. The State's current investment in classroom capacity has been through NYSERDA. Therefore, NYSERDA is a sub-grantee in this application for procurement of classroom equipment through their existing and new Request for Proposals (RFPs). In summary, this application requests funding for classroom training equipment as follows.

⁷ The NYS Public Service Commission announcement can be obtained at [www3.dps.state.ny.us/pscw+eb/WebFileRoom.nsf/Web/7986D86A1EB83DCB852575D900628B90/\\$File/pr09061.pdf?OpenElement](http://www3.dps.state.ny.us/pscw+eb/WebFileRoom.nsf/Web/7986D86A1EB83DCB852575D900628B90/$File/pr09061.pdf?OpenElement)

- ♦ Energy Efficiency and Building Performance – \$850,000 through new RFPs.
- ♦ Wind – \$838,347 where \$488,347 will fund an unfunded project solicited through an existing RFP; and \$350,000 through new RFPs.
- ♦ Solar (Photovoltaic and Thermal) – \$600,000 where \$100,000 will fund an unfunded project solicited through an existing RFP; and \$500,000 through new RFPs.
- ♦ Geothermal – \$270,000 through new RFPs.

Accreditation & Certification

\$300,000 is being requested in this application to support the State’s energy sector strategy to advance national accreditation for schools and national certification of workers. NYS has already invested over \$1.5 million to advance nationally recognized accreditations and certifications through the North American Board of Certified Energy Practitioner (NABCEP), Building Performance Institute (BPI), and Building Operator Certification (BOC) through the Northwest Energy Efficiency Council (NEEC). This represents leverage under the strategy.

Funds under this application will be used to deploy national standards for training and certifying workers and contractors including NABCEP, BPI, ASHRAE, and USGBC certifications. The deployment of these national certifications will help further establish appropriate certifications to ensure that trained building energy efficiency workers have the requisite skills to perform the work to the highest standards. It is important to note that these are nationally recognized accrediting bodies, therefore the nation as a whole would benefit from this effort.

Worker Training

\$1,450,000 is being requested in this application to support the State’s energy sector strategy to offer worker training grants to skilled unemployed workers and to contractors in: Energy Efficiency and Building Performance; Wind; and Solar (Photovoltaic and Thermal). NYS has invested over \$44.5 million in training to unskilled low-income individuals and there is a need to fund the cost of higher occupational skills training for the unemployed skilled worker. These investments are viewed as leverage in the State’s energy sector strategy.

Classroom training equipment will be procured through new competitive solicitations issued by NYSDOL, with input from the SESP. In summary, this application requests funding for worker training grants as follows: Energy Efficiency and Building Performance (\$850,000); Wind (\$300,000); Photovoltaic and Solar Thermal (\$300,000).

Priority Populations, Challenges and Solutions

Skilled unemployed individuals are a priority population to be served in this application. NYSDOL and OTDA recently awarded available workforce funding, and the skilled unemployed individual was not a priority. Rather, the priority of the solicitations was low income unskilled young adults, and the majority of funding went to serving this population.

Performance contractors are also a priority population in this application, as this is a priority population for NYSERDA state level funding. Note that it was PSC/DPS’s intent to leverage with this SGA in committing \$6.6 million in state level funds for EEPS workforce development.

Labor Organizations on behalf of membership are also a priority population in this application. SESP members have been in regular conversations with Labor Organizations, as they are a key element of the energy sector strategy.

The SESP also supports the “Good Jobs, Green Jobs” movement of social justice, environmental justice, environmental advocates and organized labor in this application. Therefore, Pathways Out of Poverty programs are also a priority in this application.

The following presents seven challenges and recommendations identified by the SESP.

1. **Attaching Employment-Related Outcomes to Training** – Employment-related outcomes (e.g., job placement, retention and wages) reside outside the primary objective of workforce development. The positive productivity effects of workforce development investments are conclusively documented in the literature, and this is of importance in establishing outcomes to measure the effectiveness of workforce development. Therefore, outcomes to measure effectiveness of workforce development investment should be based upon worker proficiency in the knowledge, skills and abilities required of the jobs to manufacture, install, operate and maintain the technology advances in clean energy.
2. **Loss of Income While Participating In Training** – For many individuals, the need to work to earn immediate income to cover basic needs far exceeds the desired greater income potential from not working and participating in training. Therefore, public workforce development investments should include sufficient funding for needs-related payments to encourage individuals to participate in training.
3. **Cost of Work Experience / On the Job Training: Need for Wage Subsidies** – For business, work experience/on-the-job-training (OJT) is a cost to the business in the form of lower worker productivity until the worker acquires the requisite experience. Many businesses cannot afford the cost of low productivity associated with inexperienced workers. Therefore, public workforce development investments should include sufficient funding for wage subsidies to cover business costs associated with worker inexperience.
4. **Pathways Out of Poverty: Need for Employment-related Supports** – A job alone does not remediate “employment barriers” which impede/prevent employment retention and advancement in the labor market faced by most economically disadvantaged individuals. Therefore, public workforce development investments targeted at entry-level positions should include sufficient funding to help an individual retain the job and progress along the career ladder for that occupation.
5. **Unaffordable Tuition Costs** – The cost of tuition and the related course books and materials is not affordable for many individuals. Therefore, public workforce development investments should include sufficient funding to help pay for the cost of tuition and related course books and materials.
6. **Need for Training Capacity** – Training infrastructure includes curriculum development, school start-up, and school accreditation and worker certification. It also includes the cost to properly equip workers with the requisite tools necessary for the job. Therefore,

public workforce investments should include sufficient funding for training capacity building to advance skills proficiency in installation work, operation work and maintenance work in the clean energy industry.

7. **Need for Marketing and Outreach** – Many individuals do not know of the availability of training programs in their area, or of the public workforce funds to assist them in completing training. This is particularly relevant in economically disadvantaged communities. Therefore, public workforce investments should include sufficient funding to promote clean energy training initiatives and opportunities. These efforts should initially focus on low income residence building performance and urban ecology.

Regional Project Teams

The SESP recognizes the following nine Regional Project Teams (RPTs): Central NY region; Finger Lakes region; Hudson Valley region; Long Island region; Mohawk Valley and Capital region; New York City region; North Country region; Southern Tier region; and Western NY region. *Attachment 7* presents a State map showing the RPT regions. *Attachment 8* presents a list of RPT members.

The RPTs align with the State's Regional Economic Transformation Strategies initiative. This initiative awarded \$7.7 million since 2007 to implement innovative workforce initiatives to train workers in renewable energy, energy efficiency, clean technology and environmental clusters. These grants all require collaboration between workforce development, economic development, educational institutions and the business community.

RPT leaders will serve as members of the SESP, to enhance communication between the RPTs and SESP. At the regional level, the RPTs are responsible for coordinating solutions among the Team, and assisting with the follow functions of this application.

- ♦ Recruitment – Utilize One Stop Career Centers for recruiting and referring individuals to training programs.
- ♦ Training – Broker occupational skill upgrading and training, including on-line learning. Broker basic skills training such as English as a Second Language and GED preparation.
- ♦ Placement – Broker advanced job-match services through the One Stop Career Centers.
- ♦ Retention – Broker services to help individuals retain employment and retain participation in programs which support the goals of this initiative.
- ♦ Business Outreach – Identify and communicate with RE and EE businesses in the region on training programs, facilities and skilled workers, to enhance placement outcomes.

The following provides a summary for each RTP, including the RTP leader, counties in the region, and number of members under membership categories specified in the SGA.

Central NY Region – The geographic region includes the following counties: Onondaga, Herkimer, Mohawk, Oneida, Cayuga, Cortland and Oswego.

The RPT leader is Hanah Ehrenreich, Green Sector Project Manager, CNY WORKS, Inc., and the RPT has 46 members as follows: 3 Local Workforce Investment Areas (LWIAs); 3

businesses; 7 business/industry organizations; 17 education organizations; 15 community organizations; and 1 labor organization.

Finger Lakes Region – The geographic region includes the following counties: Genesee, Livingston, Orleans, Wyoming, Monroe and Erie.

The RPT leader is Steven Hyde, President, Genesee County Industrial Development Agency, and the RPT has 10 members as follows: 2 LWIAs; 1 business/industry organization; 6 education organizations; and 1 community organization.

Hudson Valley Region – The geographic region includes the following counties: Westchester, Putnam, Rockland, Ulster, Dutchess, Orange and Sullivan.

The RPT leader is Donovan Beckford, Director, Westchester-Putnam WIB, and the RPT has 29 members as follows: 2 LWIAs; 1 business; 8 business/industry organizations; 3 education organizations; 13 community organizations; and 2 labor organizations.

Long Island Region – The geographic region includes the following counties: Suffolk and Nassau.

The RPT leader is Ray Donnelly, Deputy Executive Director, Long Island Forum for Technology, Inc., and the RPT has 6 members as follows: 3 LWIAs; 1 business/industry organization; 1 education organization; and 1 community organizations.

Mohawk Valley and Capital Region – The geographic region includes the following counties: Saratoga, Washington, Warren, Albany, Schenectady, Rensselaer, Columbia, Green, Fulton, Montgomery, and Schoharie Counties.

The RPT leaders are Daniel Gentile, Executive Director, Capital Region WIB, and Gail Breen, Executive Director, Fulton, Montgomery and Schoharie WIB. The RPT has 32 members as follows: 4 LWIAs; 5 businesses; 6 business/industry organization; 12 education organizations; 4 community organizations; and 1 labor organization.

New York City Region – The geographic region includes the five boroughs: The Bronx, Brooklyn, Manhattan, Queens and Staten Island.

The RPT leader is Melinda Mulawka Mack, Senior Vice President of the New York City WIB, and RPT members include the Mayor's Office of Long Term Planning and Sustainability, and the New York City Economic Development Corporation.

North Country Region – The geographic region includes the following counties: Clinton, Essex, Franklin and Hamilton.

The RPT leader is Susan Matton, Vice President of Economic Development, North Country Chamber of Commerce, and the RPT has 5 members as follows: 2 LWIAs; and 3 education organizations.

Southern Tier Region – The geographic region includes the following counties: Chemung, Schuyler, Steuben, Chautauqua, Cattaraugus, Allegany, Broome, Tioga, Chenango, Delaware, Otsego and Tompkins.

The RPT leader is Daniel Porter, Executive Director, Chemung-Schuyler-Steuben WIB, and the RPT has 101 members as follows: 4 LWIAs; 46 businesses; 8 business/industry organization; 18 education organizations; and 25 community organizations.

Western NY Region – The geographic region includes the following counties: Erie, Niagara and Chautauqua.

The RPT leader is James Finamore, Executive Director, Buffalo-Erie WIB, and the RPT has 14 members as follows: 4 LWIAs; 3 businesses; and 7 education organizations.

Applicant Capacity

NYSDOL is the applicant, and already oversees the RPTs under its \$7.7 million Regional Economic Transformation Strategy. In addition, NYSDOL oversees WIA implementation and the spending of billions of dollars in WIA funding. It has also administered hundreds of millions of dollars in funds awarded in the form of grants to a variety of public and private sector entities.

NYSDOL has considerable experience in partnering. This application represents a significant partnership with NYSERDA, who brings significant management capacity to the application.

IMPLEMENTATION AND TIMELINE

Timeline

The time line for the activities proposed in this application is presented in the following table. The goal is to expend all funds awarded under this application within 22 months of execution of the grant.

Timeline for Proposed Activities

Based on Execution of the Grant in February 2010. The work timeline is denoted by shaded areas.

Activity	SGA Funding	2009		2010												2011											
		N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	
SESP Membership																											
Expand SESP Membership	In-Kind																										
SESP Meeting	In-Kind																										
Interactive Video Presence																											
Monitor Existing Rollout	In-Kind																										
Determine locations	In-Kind																										
Procure Equipment	\$695,790																										
Installation	In-Kind																										
Accreditation/Certification																											
Direction by SESP																											
Implementation	\$300,000																										
Information/Technology Transfer																											
Conference preparation	\$125,000																										
Equipment Procurement																											

Timeline for Proposed Activities

Based on Execution of the Grant in February 2010. The work timeline is denoted by shaded areas.

Activity	SGA Funding	2009		2010												2011											
		N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	
Existing Solicitation	\$588,347																										
Direction by SESP																											
Implementation																											
New Solicitation	\$1,970,000																										
Direction by SESP	In-Kind																										
RFP Development																											
RFP Issue																											
RFP Deadline																											
RFP Review																											
Awards & Contracts																											
Implementation																											
Worker Training Procurement																											
Direction by SESP	In-Kind																										
RFP Development																											
RFP Issue	\$1,450,000																										
RFP Deadline																											
RFP Review																											
Awards & Contracts																											
Implementation																											

Projected Outcomes

Data Collection, Verification and Reporting (5)

The State's One Stop Operating System (OSOS) will be used to collect, verify and manage participant level data for each Regional Project Team under this SGA. OSOS is the web-based statewide information system used for federal reporting to DOL under the Workforce Investment Act and Wagner-Peyser Act. NYSDOL will be responsible for reporting, and has capacity to report the SGA's performance outcomes to USDOL on a quarterly basis.

Project Performance Outcomes

The fundamental operating principle of the State's energy sector strategy is leveraging public investments in job creation, workforce development and pathways out of poverty in the most effective and optimal manner. As such, success of the SESP should be measured by its ability to leverage resources in such a way as to sustain the partnership. Therefore, a goal of the SESP for this application is to double the amount of leverage of \$1,216M in the current State energy sector strategy, and be relevant upon close-out of this SGA.

Individuals served under this application will also be included in WIA Common Performance Measures reporting. In addition, the following specifies projections and outcomes for the categories identified in the SGA.

- ♦ Total participants served, is projected to be approximately 8,300 participants. Participant outcomes will be tracked in the State's One Stop Operating System (OSOS).
- ♦ Total participants beginning education/training activities, is projected to be approximately 5,500 participants.
- ♦ Total participants completing education/training activities, is projected to be approximately 5,300 participants (based on a retention/completion rate of 95%).
- ♦ Total participants that complete education/training activities that receive degree/certificate, is projected to be approximately 1,250 participants (based on 25% of those who complete education/training sitting on a degree/certificate exam, and a 95% pass rate).
- ♦ Total participants that complete education/training activities that are placed into unsubsidized employment projection, is projected to be approximately 770 participants. This is based on the State Goal for the Common Measure Adult Entered Employment Rate of 61% for the Program Year 2009 WIA Title 1B program.
- ♦ Total participants placed in unsubsidized employment who retain an employed status at the first and second quarters following initial placement, is projected to be approximately 630 participants. This is based on the State Goal for the Common Measure Adult Employment Retention Rate of 82% for the Program Year 2009 WIA Title 1B program.

SUITABILITY FOR EVALUATION

Aggressive Recruitment Plan – NYSDOL has access to over 700,000 individuals through One Stop Career Centers. An aggressive recruitment plan would identify individuals who could benefit from RE or EE training, and deploy NYSDOL business services representatives to recruit from these individuals. This effort could be enhanced through NYSERDA’s EE and RE outreach and marketing initiative by developing promotional RE and EE career planning materials for use in providing One Stop career development services.

Ability to Collect Participant-level Information – The SESP has the capacity to collect participant-level information, as stated in the “Data Collection, Verification and Reporting” section of this application.

Retention Strategies – The SESP would be willing to convene program operators and researchers to discuss strategies to minimize client attrition. In addition, the Interactive Video Presence strategy would readily allow researchers to conduct face-to-face interviews and surveys with program operators and participants. Face-to-face access to participants with a high probability of attrition is critical to understanding retention strategies.

Work Collaboratively with Evaluators and Academics – The SESP is willing to collaborate with an outside evaluator selected by USDOL regarding this SGA. The Partnership is equally willing to work with independent academic researchers on rigorous research.

Indirect Benefits to Individuals and Communities – The current and proposed members of the SESP are individuals who understand the value of transparency, collaboration and leveraging in implementing the State’s energy sector strategy. This unique partnership cuts across sources of funding and programs that historically have operated independently. These assets benefit individuals and communities well beyond those directly served by the funds requested in this application. However, the requested funds in this application are of critical importance in validating the SESP and the State energy sector strategy.

ABSTRACT
NYS Department of Labor
USDOL Green Jobs Training State Energy Sector Partnership SGA

Applicant Name: New York State Department of Labor

Project Title: State Energy Sector Partnership (SESP) and Training Application

Funding Level Requested: \$6,000,000

Areas to be Served – This is a statewide project that will cover urban, suburban and rural areas. Local needs and communities will be identified by the Regional Project Teams (RPTs), who provide a comprehensive knowledge base in their respective areas of the State. Input from the RPTs will drive partnership decisions on funding amounts allocated to each region of the state.

Niagara, Onondaga, and St. Lawrence Counties have been identified as being impacted by automotive-related restructuring in Attachment I of the SGA, Amendment One. Given that this is a statewide project, these counties will be served by grant funds should the Partnership receive an award. As discussed above, the amount of grant funds used in these counties will be determined by the Partnership as necessary with input from the Regional Teams in these parts of the state.

Sector Plan Synopsis: New York’s energy sector strategy mirrors USDOL/ETA’s green jobs training initiative. This includes: an assembled SESP to oversee the strategy; assembled Regional Project Teams; Labor Market Intelligence with state of the art job matching; Worker Training (including Energy Training Partnerships and Pathways Out of Poverty); and Capacity Building.

Attachment 1

The Plan targets two of the industries outlined in the Supplementary Information section of the SGA: 1) the energy efficient building, construction and retrofit industry, which includes weatherization, and 2) the renewable electric power industry, including solar electric (photovoltaic), solar thermal, wind and geothermal. The plan will address two workforce needs in the State: 1) the increase in demand for skilled workers in renewable energy (RE) and energy efficiency (EE) industries created by clean energy investments, and 2) the shortage in funding for worker training demonstrated by \$24.5 million in unfunded proposals of recent NYS competitive solicitations to procure green jobs training in implementing the State's energy sector strategy.

\$1,450,000 is being requested in this application to support the State's energy sector strategy to offer worker training grants to skilled unemployed workers and to contractors in: Energy Efficiency and Building Performance; Wind and Solar (Photovoltaic and Thermal). Classroom training equipment will be procured through new competitive solicitations, with input from the SESP. Priority populations to be served include: skilled unemployed individuals, performance contractors, and labor organizations on behalf of membership.

It is anticipated that grant funds will be used to serve approximately 8,300 participants. Of these participants, approximately 5,500 participants will enter training/education, 5,300 participants will complete training, 1,250 participants will receive a degree/certificate, 770 participants will be placed into unsubsidized employment and 630 will retain an employed status at the first and second quarters following initial placement.

David A. Paterson, Governor
M. Patricia Smith, Commissioner

New York State's Clean Energy Industry:

Labor Market and Workforce Intelligence

May 2009



www.labor.ny.gov



EXECUTIVE SUMMARY

This report has been prepared in response to the First Report of the Renewable Energy Task Force to then Lieutenant Governor David A. Paterson, *Clean, Secure Energy and Economic Growth: A Commitment to Renewable Energy and Enhanced Energy Independence* (February 2008), which directed the New York State Department of Labor (NYSDOL)...

*... to immediately undertake an inventory of existing workforce training programs and streamline such efforts to utilize existing resources in the most optimal manner.*¹

This directive is addressed from the perspective of three primary objectives of public investment in clean energy jobs.

- ♦ Stimulate Job Creation / Job Retention – provide capital investment in manufacture, installation, production and maintenance across the entire supply chain that supports the clean energy industry.
- ♦ Support Workforce Development – provide workers with the requisite knowledge, skills and abilities to allow business productivity to be competitive in a global economy and to assure business output achieves quality and efficiency expectations.
- ♦ Advance Pathways Out of Poverty.

The current economic landscape is too dynamic and evolving to accurately estimate the number of jobs in New York State's clean energy industry. However, the results of this report indicate that the clean energy industry largely employs workers with the same skills as other related businesses; compete in the same labor markets; and are affected by the same labor supply/demand relationships. So while new occupational titles will emerge for the clean energy industry, the skills for the vast majority of these occupations will be very similar to existing job titles, with incremental skill enhancements specific to the industry. This intelligence is sufficient to immediately advance clean energy jobs in New York State. In addition, the American Recovery and Reinvestment Act of 2009 (ARRA) provides substantial funding to support job creation and workforce development in the state's clean energy industry.

Also relevant to this report are the ongoing, transparent, genuinely willing, and often passionate state-level collaborations on renewable energy and enhanced energy independence. The collaboration extends across members of the following state-level initiatives: the Workforce Development and Training Working Group established under the state's Energy Efficiency Portfolio Standard; the Interagency Environmental Justice Task Force; the Renewable Energy Portfolio Standard; the Regional Greenhouse Gas Initiative; the state's participation on the National Governor's Association (NGA) Policy Academy on State Sectors Strategies; and most recently strategies on implementing the ARRA. These efforts have prepared the state to immediately and successfully understand, respond to, nurture and grow the clean energy sectors identified by the Renewable Energy Task Force and the ARRA.

¹ *The First Report of the Renewable Energy Task Force*, Section Four: Creating a Green Collar Workforce, February 2008 (page 26).

Clean Energy Jobs: Definition & Scope

Current literature on the jobs associated with “green” (i.e., jobs associated with improving environmental quality and health) is best characterized by the following statement.

“Green jobs” and “Green-Collar jobs” are evocative and potentially galvanizing terms; they are also notoriously ambiguous.²

The ambiguity stems from the all-encompassing and un-standardized nature of the “green” market-place, which impedes establishing a universally accepted definition of green jobs and/or green-collar jobs. In addition, studies on green jobs and/or green-collar jobs illustrate an important characteristic of clean energy jobs ...

Most clean energy jobs are not unique to the clean energy industry, and require the same range of education, skills and earnings as jobs in other energy sectors, and jobs in the construction and manufacturing industries.³

Therefore, the scope of the definition of green jobs and/or green-collar jobs for this report is to address the full range of jobs in the priority clean energy sectors identified by the Renewable Energy Task Force report, which include:

- Solar – Solar Electric / Photovoltaic and Solar Thermal;
- Wind Turbine;
- Renewable Fuels – Bio-Diesel and Ethanol; and Sustainable Materials Management (Bio-Mass / Forestry management); and
- Energy Efficiency / Weatherization.

The scope of the definition of clean energy jobs also recognizes the “Good Jobs, Green Jobs” movement of social justice, environmental justice, environmental advocates and organized labor ... that the jobs created by advancing the clean energy industry also create “pathways out of poverty” (i.e., a pathway into a career ladder to family sustaining wage positions) for individuals in economically and environmentally disadvantaged communities – a priority of Governor Paterson. In this regard, the definition of green-collar job advanced by the Apollo Alliance is relevant.⁴

Every green-collar job advances two simultaneous and complementary goals: 1) improving the environment; and 2) rebuilding a strong American middle class.

Green-collar jobs are good paying, career track jobs that contribute significantly to preserving or enhancing environmental quality. Like blue-collar jobs, green collar jobs range from low-skill, entry level positions to high-skill, higher-paid jobs, and include opportunities for advancement in both skills and wages.

² ***Greener Pathways: Jobs and Workforce Development in the Clean Energy Economy***, A report by Sarah White & Jason Walsh, Center on Wisconsin Strategy, The Workforce Alliance, The Apollo Alliance, 2008.

³ For example, see Bezdek, R., ***Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century***, American Solar Energy Society, 2007.

⁴ Apollo Alliance, Green for All, Centers for American Progress and Center on Wisconsin Strategy. ***Green Collar Jobs in America’s Cities: Building Pathways out of Poverty and Careers in the Clean Energy Economy***, 2008.

Green-collar jobs also tend to be local jobs because they focus on transforming the immediate natural and built environment – retrofitting buildings, installing solar panels, constructing transit lines, growing energy crops, etc.

In responding to pathways out of poverty, it is of critical importance to recognize that a job alone does not remediate “employment barriers” which impede/prevent employment retention and advancement in the labor market faced by most economically disadvantaged individuals. Employment barriers confronting economically disadvantaged individuals include but are not limited to: criminal records; probation requirements; drug use; work-readiness skill deficiency; English deficiency; reading, math and science deficiency; basic mechanical and technical skill deficiency; lack of transportation; lack of child care; and domestic violence.

Report Overview

This report addresses three key aspects of clean energy jobs in New York State.

- Labor Market Characterization – Describing the labor market characteristics of the state’s priority clean energy sectors, including staffing patterns, skill requirements, earnings, career ladder opportunities, occupational trends and labor supply/demand assessment.
- Workforce Development and Training – Identifying an inventory of existing training programs that support the priority sectors; and identifying barriers to training, including barriers facing low income individuals and communities of color.
- State Level Collaboration.

The report concludes with recommendations; some of which are already being addressed and some of which need further attention.

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INTRODUCTION

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Also relevant to this report are ongoing state level collaborations on renewable energy and enhanced energy independence, and implementation of the American Recovery and Reinvestment Act of 2009 (ARRA).

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- Workforce Development and Training – Identifying an inventory of existing training programs that support the priority sectors; and identifying barriers to training, including barriers facing low income individuals and communities of color.
- State Level Collaboration.

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The report concludes with recommendations; some of which are already being addressed and some of which need further attention.

LABOR MARKET CHARACTERISTICS

Methodology

The methodology used to identify labor market characteristics of the priority clean energy sectors (Solar, Wind, Renewable Fuels and Energy Efficiency) relies heavily upon industry and occupation classification systems used by federal statistical agencies (e.g., U.S. Census Bureau, the Department of Labor's Occupational Safety and Health Administration, and the Bureau of Labor Statistics). These are:

- Industry classification – The North American Industry Classification System (NAICS) is used to classify business establishments for the collection, analysis, and publication of statistical data related to the business economy of the U.S. It assigns business establishments a 6 digit code according to their industry.
- Occupation classification – The Standard Occupational Code (SOC) system is used to classify workers into occupational categories for the purpose of collecting, calculating and/or disseminating data. All workers are classified into one of over 820 occupations according to their occupational definition.

At this time, a systematic methodology to specifically differentiate occupational activity related to the clean energy sectors based on current NAICS industry and SOC classification systems is not available. The U.S. Department of Labor, Bureau of Labor Statistics has modified the 2010 SOC system to include solar photovoltaic installers (SOC 47-2231) and wind turbine service technicians (SOC 49-9081), but this data will not be available until after 2010. For example:

- NAICS classifies a solar panel installer/contractor the same as all plumbing, heating and air conditioning installers/contractors. Similarly, the NAICS code for a solar cell manufacturer is the same as all semiconductor device producers.
- SOC classifies a wind turbine installer as an industrial machinery mechanic, rather than distinguishing between different kinds of industrial machinery.

Therefore, the methodology for identifying the labor market characteristics of New York State's clean energy sectors is based on the following three elements.

1. Identify businesses operating in each sector in New York State.
2. Identify the NAICS codes and SOC codes associated with businesses in the sector.

To obtain a NAICS code (and employer registration number), each clean energy business name was manually queried (one-by-one alpha search) against confidential data of firms covered by unemployment insurance.

Quarterly Census of Employment and Wages (QCEW) data was then used to obtain:

- Total employment (2002 and 2007);
- Total wages (2002 and 2007);

- Geographic information (addresses, counties); and
- Each company's 6-digit NAICS industry description.

Occupational Employment and Wage Survey (OES) data was then used to obtain:

- Primary occupations making up more than 1% of the sector staffing;
 - Staffing pattern for the sector;
 - Wages (statewide, median, entry and experienced);
 - Skill requirements for the occupation; and
 - Occupation outlook (i.e., worker demand and supply).
3. Present the labor market characteristics of each sector based upon the identified NAICS code for each sector, and the staffing (occupations) associated with those industries. The rationale being that industries with the same NAICS code would typically have similar occupations, labor-sheds and workforce needs.

The labor market characteristics identified include:

- a. The types of occupations common to the sector by:
 - i. SOC;
 - ii. Lay Titles – An occupational title associated with SOC which may be more commonly used by business, or may be more relevant to the type of work done in sector; and
 - iii. Emerging Titles – Common occupational titles used in the sector, as defined in the *Green Jobs Guidebook*, produced by the Environmental Defense Fund for the state of California.
- b. Staffing patterns – The percentage of workers in each occupation for the sector.
- c. Wages
 - i. Median – The median wage in an occupation; one half of the wages are higher and one half of the wages are lower.
 - ii. Entry – The mean (average) of the bottom third of wages in an occupation.
 - iii. Experienced – The mean (average) of the top two-thirds of wages in an occupation.
- d. Typical Training and Education Requirements – as defined by the US Bureau of Labor Statistics, where each occupation falls into one of 11 categories based on the amount of education, on-the-job training (OJT) and work experience required. The categories are:
 - i. First professional degree, such as one from a medical school or law school;
 - ii. Doctoral degree;
 - iii. Masters degree;

- iv. Bachelor or higher degree, plus work experience;
 - v. Bachelor degree;
 - vi. Associate degree;
 - vii. Postsecondary vocational award, such as from an apprenticeship;
 - viii. Work experience in a related occupation;
 - ix. Long-term on-the-job training – more than one year of training;
 - x. Moderate-term on-the-job training – between one month and one year of training; and
 - xi. Short-term on-the-job training – less than one month of training.
- e. Education Cluster – Three levels of education held by current workers in an occupation. This system allows for an occupation to have multiple classifications, depending on the educational attainment of the workers. The three levels are:
- i. High School (HS) – refers to having a high school diploma or less;
 - ii. Some College (SC) – refers to any amount of college education short of a Bachelor degree, and;
 - iii. College (C) – refers to a Bachelor degree or higher.
- f. Career ladder opportunities – Categorization of the occupations into the following three categories.
- i. Entry level – Requiring little to no education, training, or experience; often involves physical labor exclusively. Entry-level skill occupations typically require a high school diploma/GED equivalent and less than one month of job training (short-term OJT).
 - ii. Mid level – Requiring a modest amount of education, training, or experience. Mid-level skill occupations typically require from one month up to one year of training (moderate-term OJT) or post secondary vocational training.
 - iii. High level – Requiring a high amount of education, training, or experience; often a supervisory position or the end result of an apprenticeship. High-level skill occupations typically require over one year of training (long-term OJT), or college degrees (associates, bachelors, advanced degrees) and/or significant work experience.
- g. Worker Supply and Demand Assessment – Assessing estimated job openings against the available supply of labor participating in the state’s Workforce New York One-stop system. This labor supply includes individuals who are receiving state Unemployment Insurance benefits, and other adult and dislocated workers receiving career development services and training from the One-stop.

Based upon this methodology, labor market characteristics are presented for each of the following six clean energy sectors in New York State:

1. Solar manufacturing;
2. Solar installation;
3. Wind turbine manufacturing;
4. Wind turbine installation;
5. Weatherization; and
6. Energy service companies.

Note that, renewable fuels are not included in the list because little data is available to develop reasonable characteristics. Renewable fuels will be addressed in subsequent work.

Business Characteristics

A master list of over 2,500 New York State businesses involved in the production, distribution, consultation, architecture and installation of green/clean products was obtained from a variety of sources, including lists developed by existing organizations, industry association web sites, existing studies/publications, and projects funded by the New York State Energy Research and Development Authority (NYSERDA).

Of these, approximately 250 businesses were identified across the vertical spectrum of the state's clean energy industry – from highly technical companies that develop and design systems, to product manufacturers, to distribution and marketing networks, and to contractors responsible for installation/maintenance of the products and systems. Of the 250 businesses: 35% were installers; 23% were distributors; 21% were manufacturers; and 15% provided technical services.

Figure 1 presents a New York State map depicting the location of the 250 businesses by business type. A listing of the businesses by business type and product line is presented in **Appendix A: Table A-1**.

Figure 2 presents the percentage of these businesses in each region. As shown, 57% of the businesses are located in the “lower” part of the state including the Hudson Valley Region (22%), New York City (19%) and Long Island (16%). Upstate, the share of businesses was, for the most part, evenly distributed among regions.

Figure 1 – Location of Businesses Used in the Methodology, by Business Type

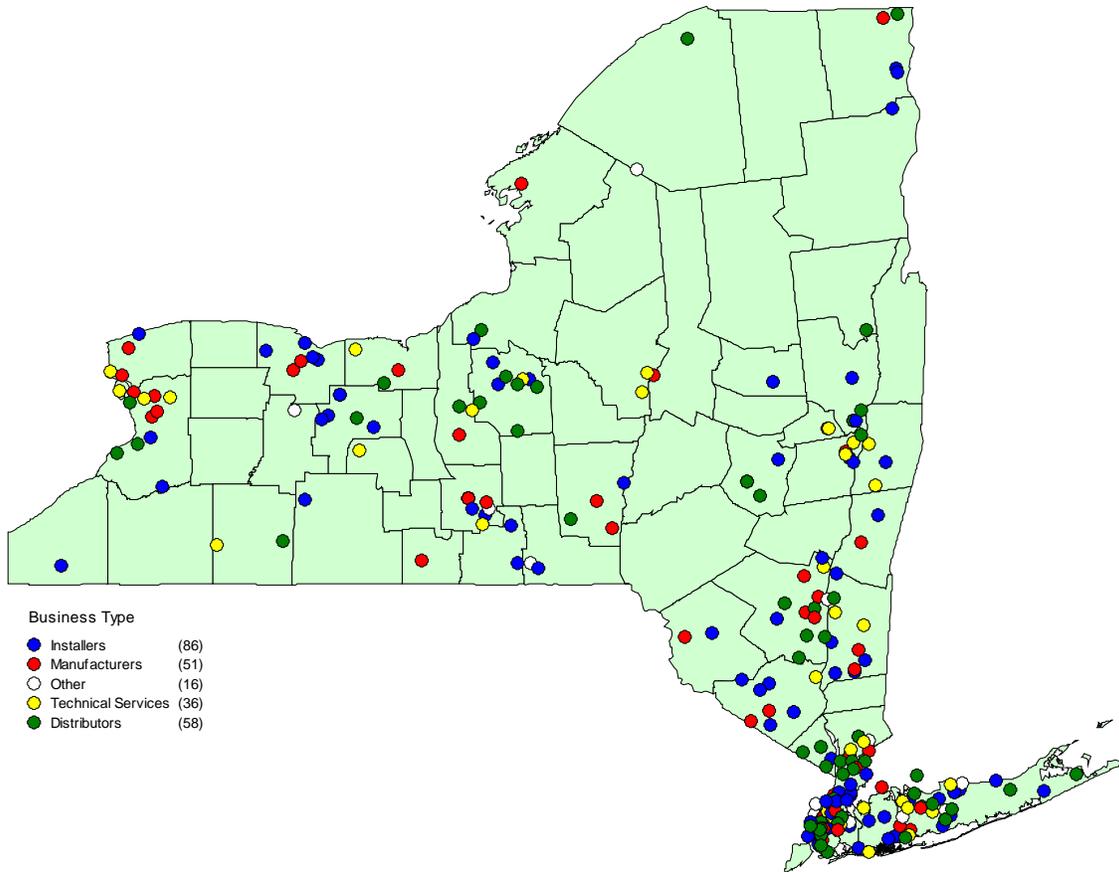
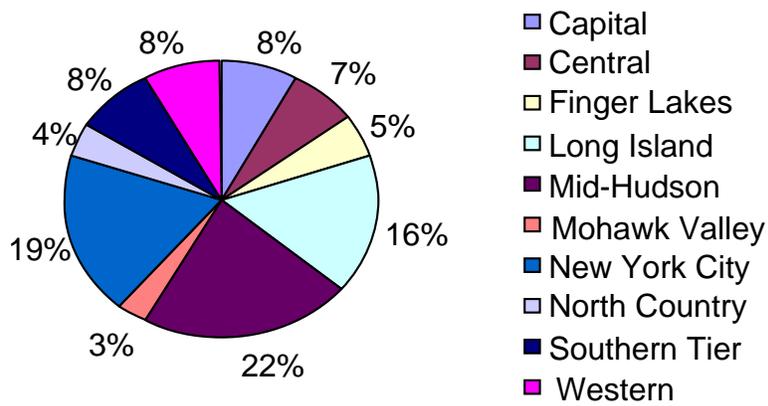


Figure 2 – Distribution of Clean Energy Businesses by Region



Additional research on 140 of these businesses found them to be “high value” – collectively employing approximately 5,200 workers in 2007 with an aggregate payroll of \$397.2 million. This equates to an annual average wage per worker of \$76,421 – which is \$17,000 or 29% higher than the all-industry average for New York State.

Appendix A, Table A-1 shows New York State employment activity of the businesses associated with the NAICS codes for each of these sectors. This is not an estimate of employment in the specific sector, but rather employment activity of the businesses similar to these sectors. However, the weatherization sector closely reflects actual employment activity related to improving home and business energy efficiency in New York State. With more than 11,000 firms and 92,500 jobs in 2007 – employment in weatherization related industries soared 13,600 or 17% over the previous five years. The average wage per worker stood at \$56,398 per year.

NAICS Mapping

The following provides examples of the NAICS mappings for solar, wind and energy efficiency/weatherization.

Solar Technology – Installation and Manufacturing

Solar Technology transfers the sun’s power into electricity or heat through:

- Solar Electric / Photovoltaic (PV) devices – which convert the sun’s energy directly to electricity; and
- Solar Thermal devices – which concentrate the sun’s rays to produce heat, usually for living space or water.

Construction businesses involved in the installation of solar equipment are concentrated in the plumbing, heating, electrical and air conditioning contracting (NAICS 2382).

Solar manufacturing is involved in the production of PV equipment, solar thermal devices and related components. Most of this activity in New York State is centered in semiconductor manufacturing (NAICS 3344), instruments for measuring electricity (NAICS 3345), lighting fixtures (NAICS 3351) and heating equipment (NAICS 3334).

Wind Energy – Installation and Manufacturing

Wind energy is the fastest growing alternative energy source in the country according to the U.S. Department of Energy. Major activities within this sector include blade, turbine and gear manufacturing and tower/turbine installation. Wind towers also create a need for maintenance services that clean blades, conduct repairs and maintain grid-connected power lines. Professional services to conduct wind assessments, mapping and environmental impact studies are also expanding. In New York State, production activity is concentrated in turbine/generator manufacturing (NAICS 3336); installation/maintenance is centered in power structure construction (NAICS 2371) and professional activity in environmental consulting (NAICS 5416).

Energy Efficiency / Weatherization

Efforts to increase energy efficiency in residential and commercial buildings, which includes retrofits and weatherization, will generate new employment opportunities. Retrofits involve

upgrading or replacing lights, heating and cooling systems, insulation, windows and other components of an existing building to facilitate less energy use. Weatherization activity specifically focuses on the lowering of heating and cooling bills at home and businesses, including insulation, improving furnace systems, reducing air flow, repairing chimneys, installing control/flow devices and improving lighting systems. Energy audits are an important and necessary function of the energy efficiency process. New York State businesses involved in energy efficiency are primarily classified as plumbing, heating and air conditioning contractors (NAIC 2382), insulation contractors and window/door installation (NACIS 2383).

Energy Service Companies

An Energy Service Company (ESCO) develops, installs and finances projects designed to improve energy efficiency and maintenance costs for facilities over a 7 to 20 year time period. ESCOs generally act as project developers for a wide range of tasks and assume the technical/performance risk associated with the project. What sets ESCOs apart from other firms that offer energy improvements is the concept of performance-based contracting. When an ESCO undertakes a project, compensation and often project financing, are directly linked to the amount of energy that is actually saved. ESCOs are concentrated in engineering services (NAICS 5413) and energy consulting services (NAICS 5416).

Occupational Analysis

The current economic landscape is too dynamic and evolving to accurately estimate the number of jobs in New York State's clean energy industry. However, the results of this report illustrate an important characteristic of clean energy jobs ... that most clean energy jobs are not unique to the clean energy industry, and require the same range of education, skills and earnings as jobs in other energy sectors, and jobs in the construction and manufacturing industries. For example, construction companies installing solar equipment or retrofitting buildings will need workers with traditional construction skills and incremental specialized skills in solar or energy efficiency. So while new occupational titles will emerge for the clean energy industry, the skills for the vast majority of these occupations will be very similar to existing job titles, with incremental skill enhancements specific to the industry.

This intelligence is sufficient to immediately advance clean energy jobs in New York State. In addition, the American Recovery and Reinvestment Act of 2009 (ARRA) provides substantial funding to support job creation and workforce development in the state's clean energy industry.

The remainder of this section presents an occupational analysis based on the labor market data presented in *Appendix B* through *Appendix G*. The data presented includes:

- ♦ The types of occupations common to the sector;
- ♦ Staffing pattern;
- ♦ Wages;
- ♦ Typical training and education requirements;
- ♦ Education cluster;
- ♦ Career ladder opportunities; and
- ♦ Worker supply and demand assessment.

Solar Installation

The occupational analysis of New York State’s Solar Installation sector is based on the labor market data presented in **Appendix B**:

- ♦ Table B1 – Solar Installation Common Occupations and Associated Skills.
- ♦ Table B2 – Solar Installation Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table B3 – Solar Installation Common Occupations: Labor Supply and Demand.

Construction businesses involved in solar installation and maintenance will employ a similar workforce to traditional HVAC contractors, but will require certification for electricians and advanced knowledge for other workers regarding solar theory and practice. Entry-level jobs include electrician and plumber helpers, installation workers, material movers and light truck drivers. Common mid-level skill jobs include construction laborers, maintenance/repair workers and sales representative. The majority of positions are in high-level skill occupations including journey construction trades, supervisors, cost estimators and managers.

Table 1 presents select solar installation occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in **Appendix B**, Table B3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 1 – Solar Installation Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry-Wage	Training Requirements
Electrician Helpers	140	\$22,560	Short-Term OJT
Plumber Helpers	150	\$21,210	Short-Term OJT
Light Truck Drivers	1,160	\$19,160	Short-Term OJT
Construction Laborers	1,190	\$25,980	Moderate-Term OJT
Sales Representatives	2,670	\$32,790	Moderate-Term OJT
Gen. Maintenance & Repair Workers	780	\$24,390	Moderate-Term OJT
First-Line Supervisors/Managers Of Construction Trades	900	\$47,610	Work Experience
Cost Estimators	390	\$39,010	Work Experience
Electricians	1,580	\$37,280	Long-Term OJT
Plumbers, Pipefitters, Steamfitters	1,070	\$35,360	Long-Term OJT
HVAC Mechanics/Installers	450	\$29,420	Long-Term OJT
Sheet Metal Workers	240	\$30,750	Long-Term OJT
Welders, Cutters, Solderers, Brazers	220	\$24,960	Long-Term OJT
Construction Managers	760	\$67,870	Bachelor Degree
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
General/Operations Managers	2,310	\$63,320	Bachelor plus Work Experience

Solar Manufacturing

The occupational analysis of New York State’s Solar Manufacturing sector is based on the labor market data presented in ***Appendix C***:

- ♦ Table C1 – Solar Manufacturing Common Occupations and Associated Skills.
- ♦ Table C2 – Solar Manufacturing Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table C3 – Solar Manufacturing Common Occupations: Labor Supply and Demand.

Production of solar photovoltaic and thermal equipment involves assembly, inspection, and quality control skills found in traditional manufacturing industries. Entry-level positions are primarily focused at assembly, stock and material moving functions. Middle-skill jobs involve machine operation and inspection. High-skill occupations include mechanics, technicians and metal-working tasks.

Table 2 presents select solar manufacturing occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in ***Appendix C***, Table C3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 2 – Solar Manufacturing Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry-Wage	Training Requirements
Industrial Truck and Tractor Operators	490	\$22,780	Short-Term OJT
Shipping/Receiving/Traffic Clerks	990	\$19,270	Short-Term OJT
Electrical/Electronic Equip. Assemblers	220	\$18,880	Short-Term OJT
Hand Packers	390	\$16,120	Short-Term OJT
General Maintenance/Repair Workers	780	\$24,390	Moderate-Term OJT
Coating, Painting & Spraying Setters, Oper./Tenders	50	\$21,590	Moderate-Term OJT
Computer-Controlled Machine Tool Operators	50	\$22,560	Moderate-Term OJT
Supervisors of Production Workers	480	\$36,180	Work Experience
Purchasing Agents	310	\$39,850	Work Experience
Supervisors of Office Workers	2,230	\$36,910	Work Experience
Welders, Cutters, Solderers, Brazers	220	\$24,960	Long-Term OJT
Sheet Metal Workers	240	\$30,750	Long-Term OJT
Machinists	220	\$24,330	Long-Term OJT
HVAC Mechanics/Installers	450	\$29,420	Long-Term OJT
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
General/Operations Managers	2,310	\$63,320	Bachelor plus Work Experience

Wind Installation

The occupational analysis of New York State’s Wind Installation sector is based on the labor market data presented in ***Appendix D***:

- ♦ Table D1 – Wind Installation Common Occupations and Associated Skills.
- ♦ Table D2 – Wind Installation Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table D3 – Wind Installation Common Occupations: Labor Supply and Demand.

Construction businesses involved in wind installation primarily employ skilled workers who erect towers, install turbines and connect electricity to the grid. They may also be responsible for the upkeep of the wind turbines – including blade cleaning and repair work. Entry-level jobs include material movers and installation helpers while middle-skill work includes construction laborers, operating engineers, heavy truck drivers, cement masons and general maintenance and repair work. High skill jobs include the journey construction trades, structural iron/steel workers, mechanics, supervisors and administrative positions.

Table 3 presents select wind installation occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in ***Appendix D***, Table D3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 3 – Wind Installation Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry-Wage	Training Requirements
Construction Laborers	1,190	\$25,980	Moderate-Term OJT
Gen. Maintenance & Repair Workers	780	\$24,390	Moderate-Term OJT
Mobile Heavy Equipment Mechanics	90	\$31,140	Post Secondary Vocational Training
Cost Estimators	390	\$39,010	Work Experience
Supervisors of Construction Trades	900	\$47,610	Work Experience
Supervisors of Mechanics/Installers	560	\$44,540	Work Experience
Carpenters	2,000	\$30,270	Long-Term OJT
Welders, Cutters, Solderers, Brazers	220	\$24,960	Long-Term OJT
Electricians	1,580	\$37,280	Long-Term OJT
Structural Iron and Steel Workers	190	\$40,980	Long-Term OJT
Construction Managers	760	\$67,870	Bachelor Degree
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
General/Operations Managers	2,310	\$63,320	Bachelor plus Work Experience

Wind Manufacturing

The occupational analysis of New York State’s Wind Manufacturing sector is based on the labor market data presented in ***Appendix E***:

- ♦ Table E1 – Wind Manufacturing Common Occupations and Associated Skills.
- ♦ Table E2 – Wind Manufacturing Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table E3 – Wind Manufacturing Common Occupations: Labor Supply and Demand.

Major activities in wind manufacturing are involved in the production of blades, turbines and gearboxes or their component parts. Entry-level positions involve traditional production, material moving and stock clerk positions while middle-skill jobs are centered in machine operation and inspection skills. High-skill positions revolve around metal-working and administrative functions.

Table 4 presents select wind manufacturing occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in ***Appendix E***, Table E3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 4 – Wind Manufacturing Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry-Wage	Training Requirements
Shipping/Receiving/Traffic Clerks	990	\$19,270	Short-Term OJT
Industrial Truck and Tractor Operators	490	\$22,780	Short-Term OJT
Computer-Controlled Machine Tool Operators	50	\$22,560	Moderate-Term OJT
General Maintenance/Repair Workers	780	\$24,390	Moderate-Term OJT
Multiple Machine Tool Setters, Oper./Tenders	110	\$19,830	Moderate-Term OJT
Cutting, Punching & Press Mach. Setters, Oper./Tenders	180	\$19,790	Moderate-Term OJT
Supervisors of Production Workers	480	\$36,180	Work Experience
Purchasing Agents	310	\$39,850	Work Experience
Machinists	220	\$24,330	Long-Term OJT
Welders, Cutters, Solderers, Brazers	220	\$24,960	Long-Term OJT
Electricians	1,580	\$37,280	Long-Term OJT
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
General/Operations Managers	2,310	\$63,320	Bachelor plus Work Experience

Weatherization

The occupational analysis of New York State’s Weatherization sector is based on the labor market data presented in ***Appendix F***:

- ♦ Table F1 – Weatherization Common Occupations and Associated Skills.
- ♦ Table F2 – Weatherization Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table F3 – Weatherization Common Occupations: Labor Supply and Demand.

Activities related to weatherization are specifically focused at retrofitting residences and businesses to lower heating and cooling bills, as well as reducing energy usage. Workers conduct a wide range of tasks including installing insulation, improving furnace systems, reducing air flow through buildings, installing control devices on water heaters/appliances, reducing hot water flows and improving lighting systems. Entry-level positions include helpers of carpenters, electricians and installers. Mid-level jobs include insulation work, general maintenance/repair and construction laborer. High-skill positions include journey construction trades, estimators and HVAC mechanics/installers.

New York State’s Weatherization Assistance Program (WAP) is administered by the New York State Division of Housing and Community Renewal (DHCR), and is the largest residential energy conservation program in the country. The program receives funding from both the U.S. Department of Energy and the U.S. Department of Health and Human Services. In 2007-08 approximately \$55 million was allocated to 64 community-based organizations selected through an annual State planning process to provide weatherization services. Under the ARRA, DHCR received an additional \$394 million in WAP funding. Most weatherization agencies are organized by work crews – with small agencies comprised of 4 to 6 employees while large entities may have 40 to 60 workers.

Table 5 presents the basic weatherization career path of most WAP agencies. Note that small agencies may comprise only 4 to 6 employees, while larger agencies may have 40 to 60 employees depending on location and funding. Office administration is not included on this list.

Table 5 – Weatherization Career Ladder (low skill to high skill)

Job Title	Description
Installation Helper	
Installer	Minor carpentry, dense pack/loose fill insulation, sheet metal work, air sealing.
Crew Supervisor	All of the above plus: blower door operation; lead safety certification; handling all paperwork; job-site material; and set-up logistics.
Heat Tech (Separate from crew)	Heating efficiency testing, repairs and some installation (not available at some agencies).
Building Auditor	Audits single family and some multi-family buildings. Develops scope of work using computer modeling. Also performs post-audit inspections of projects.
Production Coordinator	Develops scheduling for projects; manages crews; procures materials and equipment.
Assistant Weatherization Director (Large Agencies)	
Weatherization Director	

Table 6 presents select weatherization occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in *Appendix F*, Table F3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 6 – Weatherization Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry-Wage	Training Requirements
Carpenter Helpers	380	\$19,070	Short-Term OJT
Electrician Helpers	140	\$22,560	Short-Term OJT
Construction Laborers	1,190	\$25,980	Moderate-Term OJT
Gen. Maintenance/Repair Workers	780	\$24,390	Moderate-Term OJT
Cost Estimators	390	\$39,010	Work Experience
Supervisors of Construction Trades	900	\$47,610	Work Experience
Supervisors of Mechanics/Installers	560	\$44,540	Work Experience
Carpenters	2,000	\$30,270	Long-Term OJT
Electricians	1,580	\$37,280	Long-Term OJT
Plumbers, Pipe fitter, Steamfitters	1,070	\$35,360	Long-Term OJT
Sheet Metal Workers	240	\$30,750	Long-Term OJT
HVAC Mechanics/Installers	450	\$29,420	Long-Term OJT
Welders, Cutters, Solderer, Brazer	220	\$24,960	Long-Term OJT
Construction Managers	760	\$67,870	Bachelor Degree
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
General/Operations Managers	2,310	\$63,320	Bachelor plus Work Experience

Energy Service Companies

The occupational analysis of New York State’s Energy Service Company sector is based on the labor market data presented in *Appendix G*:

- ♦ Table G1 – Energy Service Company Common Occupations and Associated Skills.
- ♦ Table G2 – Energy Service Company Common Occupations: SOC Titles, Lay Titles and Emerging Titles.
- ♦ Table G3 – Energy Service Company Common Occupations: Labor Supply and Demand.

Energy Service Companies (ESCOs) perform comprehensive energy retrofits that require a large initial capital investment and offer a relatively long payback period (7 to 20 years). Typically they offer the following services: develop, design, and finance energy efficiency projects; install and maintain the energy efficient equipment involved; measure, monitor, and verify the project’s energy savings; and assume the risk that the project will produce the same amount of energy guaranteed. Most ESCOs use contractors (such as HVAC businesses) that are directly or indirectly involved in the energy projects.

The occupational trends discussed here for ESCOs primarily reflect the high-end engineering and energy consulting services for these performance-based energy efficiency projects. The vast

majority of jobs are in high-skill occupations that require a bachelor degree – many of which are in high demand across a broad spectrum of industries.

Table 7 presents select ESCO occupations which are likely to have a “tight” labor supply relative to the available supply of labor participating in the state’s Workforce New York One-stop system (based upon the assessment in *Appendix G*, Table G3). A tight labor supply may be indicative of difficulty in filling positions or a shortage of qualified workers.

Table 7 – ESCO Occupations Likely to Have a Tight Labor Supply

Occupation	Projected Annual Openings	Entry Wage	Training Required
General Office Clerks	4,950	\$18,130	Short-Term OJT
Bookkeeping Clerks	3,300	\$25,130	Moderate-Term OJT
Construction/Building Inspectors	190	\$36,750	Work Experience
Construction Managers	760	\$67,870	Bachelor Degree
Accountants/Auditors	3,230	\$50,050	Bachelor Degree
Financial Analysts	780	\$56,430	Bachelor Degree
Computer Programmers	760	\$47,790	Bachelor Degree
Architects	370	\$50,470	Bachelor Degree
Electrical Engineers	210	\$55,620	Bachelor Degree
Electronics Engineers	140	\$58,150	Bachelor Degree
Environmental Engineers	200	\$50,310	Bachelor Degree
Mechanical Engineers	210	\$53,090	Bachelor Degree
Market Research Analysts	550	\$41,670	Bachelor Degree
General/Operation Managers	2,310	\$63,620	Bachelor plus Work Experience
Management Analysts	1,180	\$49,290	Bachelor plus Work Experience

WORKFORCE DEVELOPMENT AND TRAINING

Training Infrastructure

Much of the infrastructure for clean energy training (e.g., curriculum development, school start-up, school accreditation and industry certifications) is largely being developed under initiatives funded by NYSERDA, and includes community colleges, BOCES, labor unions, 4-year colleges, Local Workforce Investment Boards and national/regional energy associations.

- ◆ Since 2004, NYSERDA has provided solar electric (PV) installer training across the state. NYSERDA's Clean Energy Training Program began with a \$1 million investment to develop nationally accredited PV training facilities. At this time, New York State has four institutions with training programs that have been accredited by the International Institute for Sustainable Power: Hudson Valley Community College, SUNY Delhi, SUNY Farmingdale, and Bronx Community College. Other early providers of PV installer training include Ulster County BOCES, SUNY Alfred, and four International Brotherhood of Electrical Workers (IBEW) locals. Through the Fall of 2008, over 800 practitioners have been trained. In 2009, NYSERDA invested an additional \$4 million in six clean energy training teams consisting of 28 training centers. These teams include

community colleges, four-year colleges, building trades and BOCES, and will be offering training in solar water heating, PV, small and large wind, fuel cells and geothermal technology. NYSERDA emphasizes quality instruction and accreditation of training programs by independent, third party entities, when available. All PV and solar thermal installers are encouraged to pursue national certification by the North American Board of Certified Energy Practitioners.

- ♦ NYSERDA has also developed a network of ten residential energy-efficiency learning centers – called the Center for Energy Efficiency and Building Sciences (CEEBS). These learning centers – on par to train 1,000-1,500 practitioners annually – are located at Hudson Valley Community College, Onondaga/Cortland/Madison BOCES, Erie Community College, Bronx Community College, Broome Community College, Westchester Community College, Association of Energy Affordability (Bronx), Fulton-Montgomery Community College, SUNY Canton, and Onondaga Community College.

The state's community colleges and universities are also proactive in incorporating renewable and alternative energy technology into their existing trade programs. For example:

- ♦ Hudson Valley Community College recently received state approval to offer a five-course, 19-credit certificate program in photovoltaic installation. This certificate is offered through their School of Engineering and Industrial Technologies.
- ♦ SUNY Delhi also offers photovoltaic training courses as an extension of their existing curriculum in Electrical Construction and Maintenance. This allows a qualified electrician to become skilled in PV installation. Delhi also offers a credit-bearing course in introductory PV design/installation, as well as continuing education training for contractors and PV practitioners.

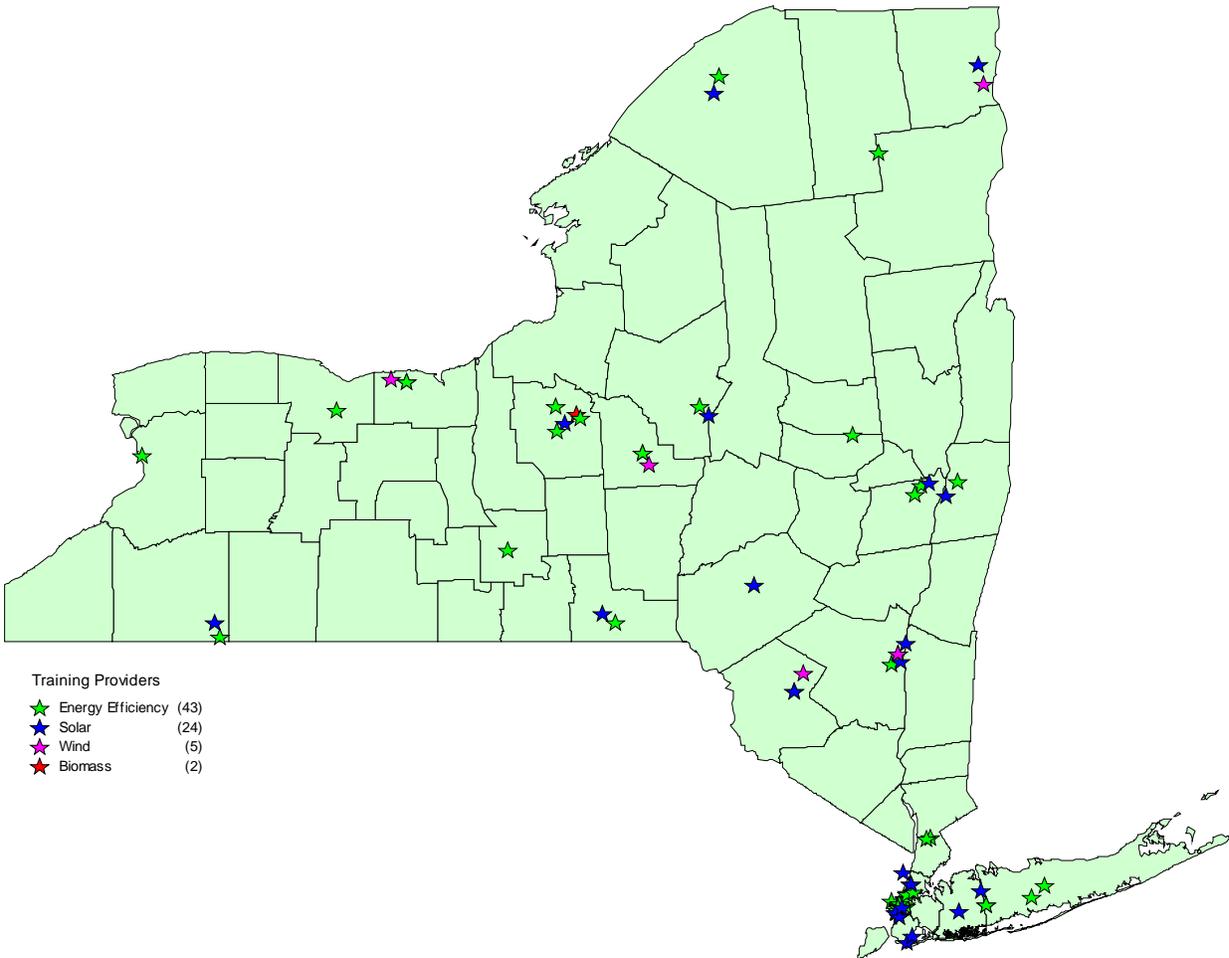
NYSDOL is also advancing the clean energy industry through its Regional Industry Cluster Grants (13N), where approximately \$4.1 million (2007-09) has been awarded to five New York State regions who are implementing innovative workforce initiatives to train workers in renewable energy, energy efficiency, clean technology and environmental clusters. These grants all require collaboration between workforce development, economic development, educational institutions and the business community. Grants were awarded to the Mohawk Valley and Capital Region (\$1,050,000 – biofuels and energy), the Hudson Valley (\$1,050,000 – cleantech), Central New York (\$1,000,000 – energy and environmental systems) and the North Country (\$1,000,000 – renewable energy).

Training Inventory

An inventory of 49 renewable energy and weatherization training locations across the state, delivering approximately 70 distinct programs, were identified for this report. A listing of the training providers included in the inventory is presented in *Appendix H*.

Figure 3 is a New York State map depicting the 49 training locations by sector. Many locations provide training programs in multiple sectors. As shown, the largest share of the training programs is in energy efficiency (57%) followed by solar (32%), wind (7%) and biomass (3%).

Figure 3 – Clean Energy Training Locations in New York State, by Sector



Energy Efficiency Training

Figure 4 is a New York State map depicting the location of the weatherization training programs, and energy efficiency training programs recognized by the Building Performance Institute (BPI). BPI certification of workers is nationally and internationally recognized, and supports the development of a highly professional building performance industry through organizational accrediting and a rigorous qualified assurance program. BPI standards focus on a “whole-house” approach, including areas such as ventilation, heating, foundations, and windows. Certification is awarded only after both written and field tests, to ensure contractors’ understanding of BPI standards. BPI recognized training and certification assures professional competency in the building performance industry.

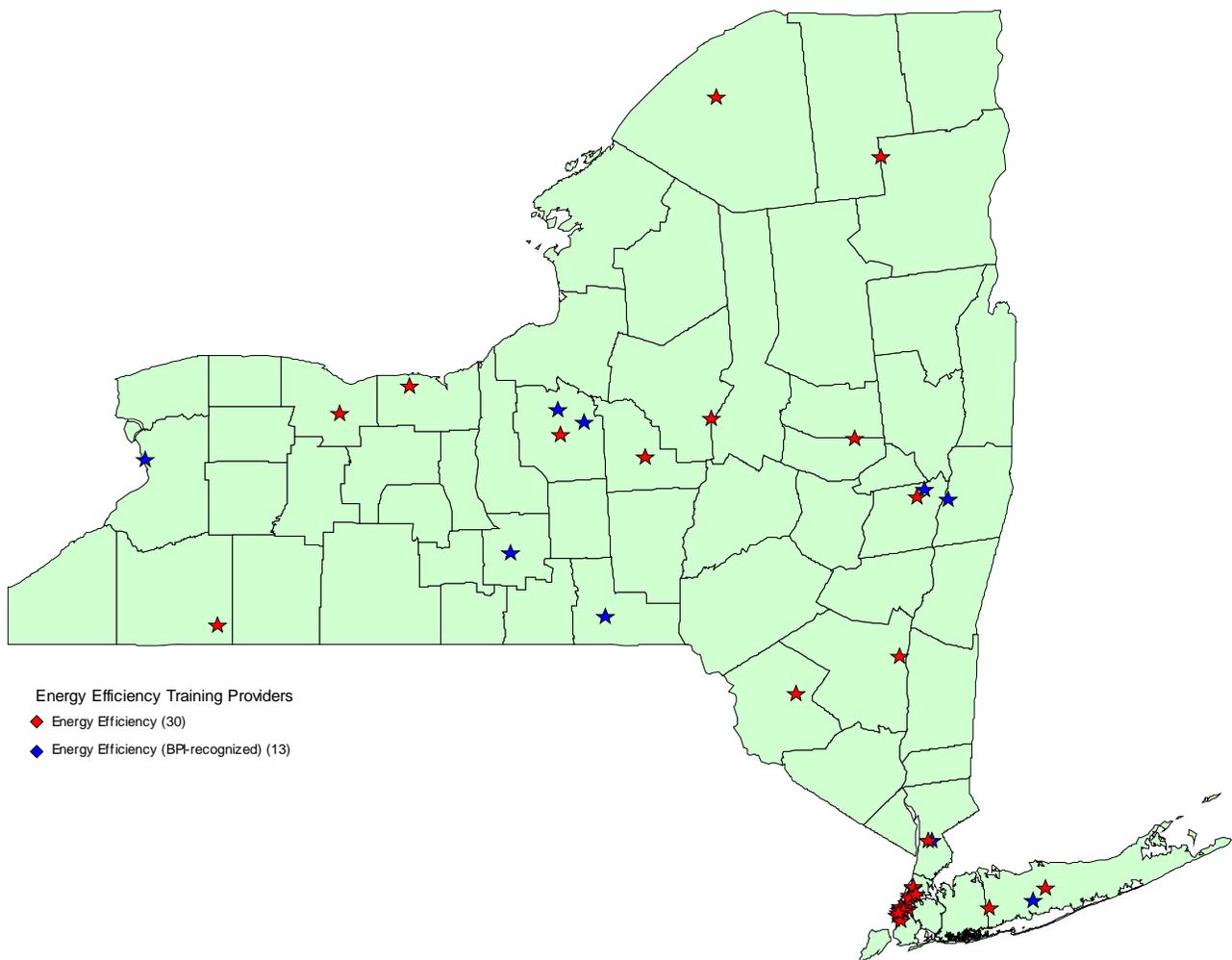
BPI certifications include:

- ◆ Certified Building Analyst;
- ◆ Multifamily Building Analyst;
- ◆ Air Conditioning and Heat Pump Specialist;

- ◆ Certified Heating Specialist;
- ◆ Certified Envelope Professional;
- ◆ Mobile Home Specialist;
- ◆ Multifamily Building Operator; and
- ◆ Multifamily Hydronic Heating System Designer.

Among the energy efficiency programs, approximately one-third were recognized by BPI.

Figure 4 – Energy Efficiency Training Locations in New York State



Solar Training

Of the 35 specific solar training programs offered across the state, approximately 67% are PV and 33% are solar thermal. Approximately 50% of the PV and solar thermal programs are recognized by the North American Board of Certified Energy Practitioners (NABCEP). NABCEP certification is nationally recognized and NABCEP is committed to providing training programs of quality and integrity for the professional and consumer public.

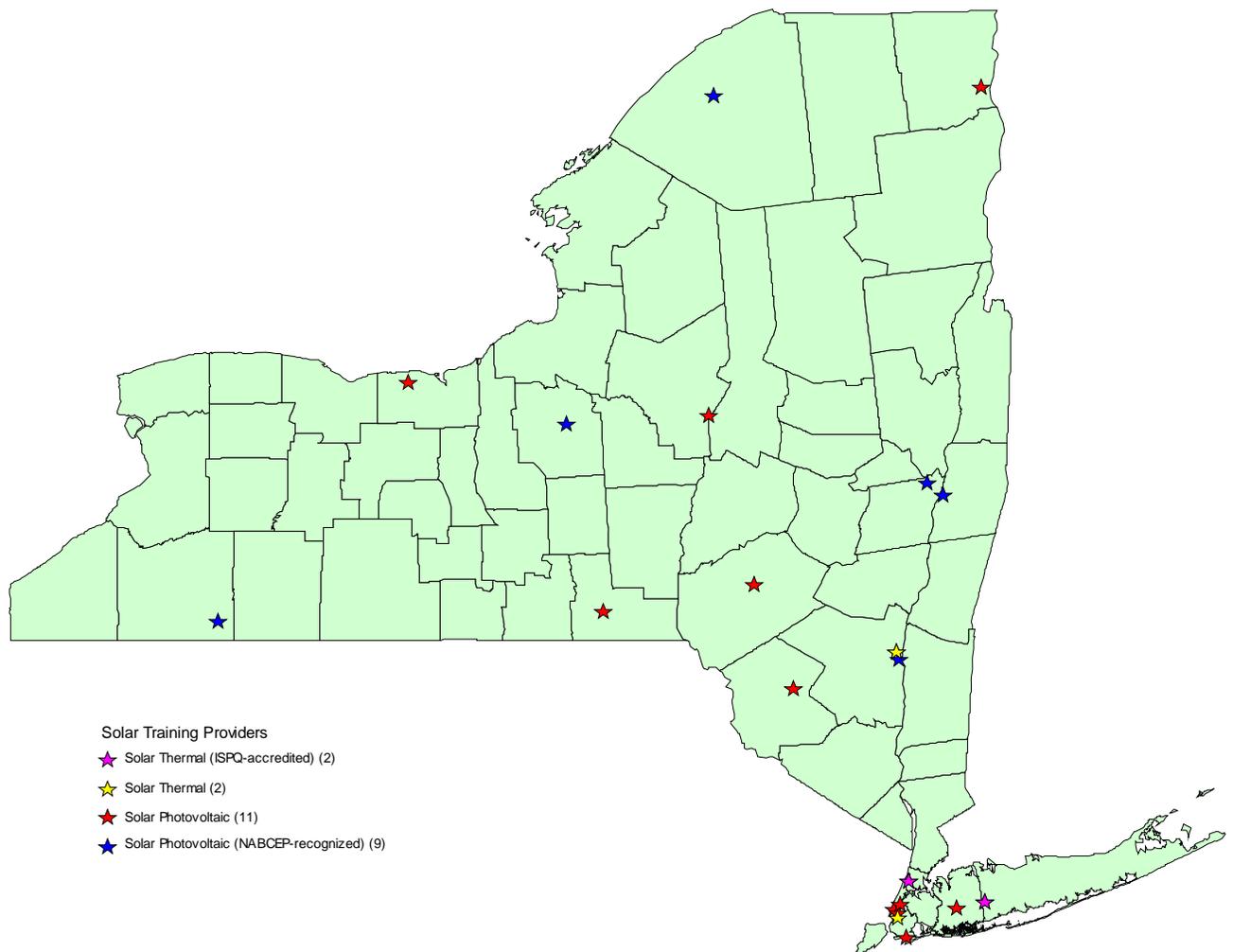
NABCEP issues certification credentials to PV and solar thermal system installers who satisfy eligibility requirements established by its Board of Directors and pass a written exam. NABCEP certifications include:

- ♦ Solar Photovoltaic Installer;
- ♦ Solar Thermal Installer;
- ♦ Entry-level Solar Photovoltaic Certificate of Knowledge; and
- ♦ Small Wind Energy Systems Work (in development).

According to NABCEP, 514 PV installers have been certified nationally from the Fall of 2003 to August 2008. New York State ranks 2nd nationally with 8% of total certificates.

Figure 5 is a New York State map depicting the location of the solar training programs in New York State.

Figure 5 – Solar Training Locations in New York State



Barriers to Training

The barriers to training addressed in this report are listed below. The remainder of this section describes each barrier and provides one or more recommendations for addressing the barrier.

1. Attaching employment-related outcomes to training (e.g., entered employment, employment retention and wage increases).
2. Loss of income while participating in training (particularly loss of needs-related income).
3. Cost of Work Experience / On the Job Training.
4. Pathways out of Poverty: Need for Employment Retention Supports.
5. Cost of Tuition.
6. Need for Training Infrastructure.
7. Need for Marketing and Outreach.

Attaching Employment-Related Outcomes to Training

Productivity growth in firms, industries, and the general economy occurred as a result of technical change embodying both: 1) technology; and 2) skilled labor. The positive productivity effects of workforce development and training investments to increase worker knowledge, skills and abilities have been conclusively documented in the literature. Therefore, the primary objective of public investment in workforce development and training is increasing worker knowledge, skills and abilities in targeted sectors.

This finding is important in establishing outcomes to measure the effectiveness of public investments in workforce development because, if the expected outcomes do not closely align with the primary objective, then the ability of the investment to effectively achieve the primary objective will be compromised. While attaching employment-related outcomes (e.g., job placement, retention and wages) to workforce development investments is laudable, these outcomes reside outside the primary objective of workforce development and training.

Recommendation – Outcomes to measure effectiveness of workforce development investment should be based upon worker proficiency in the knowledge, skills and abilities required of the jobs to manufacture, install, operate and maintain the technology advances in clean energy.

Loss of Income While Participating In Training

For many individuals, the need to work to earn immediate income to cover basic needs far exceeds the desired greater income potential from not working and participating in training. That is, the affordability of training for many individuals is highly dependent upon the individual's ability to financially provide for their basic needs.

Recommendation

- ♦ Workforce development investments should include needs-related payments to encourage individuals to participate in training.

- ♦ Individuals approved for Unemployment Insurance (UI) benefits should be allowed to receive these benefits while attending a clean energy training program determined by an employment plan.

Cost of Work Experience / On the Job Training

From a business perspective, work experience/on-the-job-training (OJT) is a cost to the business in the form of lower worker productivity while workers acquire the requisite experience. Many businesses cannot afford the cost of low productivity associated with inexperienced workers.

Recommendation – Workforce development investments should cover the cost that business incurs associated with Work Experience / OJT.

Pathways Out of Poverty – Need for Employment-related Supports

In responding to pathways out of poverty, it is of critical importance to recognize that a job alone does not remediate “employment barriers” which impede/prevent employment retention and advancement in the labor market faced by most economically disadvantaged individuals. Employment barriers confronting economically disadvantaged individuals include but are not limited to: criminal records; probation requirements; drug use; work-readiness skill deficiency; English deficiency; reading, math and science deficiency; basic mechanical and technical skill deficiency; lack of transportation; lack of child care; and domestic violence.

Recommendation – Workforce development investments targeted at entry-level positions of a career ladder should include supports to the individual upon obtaining a job, to help them retain the job and progress along the career ladder for that occupation. Employment-related supports are essential to pathways out of poverty.

Cost of Tuition

The cost of tuition and the related course books and materials is not affordable for many individuals.

Recommendation – Workforce development investments should help pay for the cost of tuition and related course books and materials.

Need for Training Infrastructure

Training infrastructure includes curriculum development, school start-up and accreditation, and worker certification. It also includes the cost to properly equip workers with the requisite tools necessary for the job.

Recommendation – Workforce development investment should create a training infrastructure to advance skills proficiency (including certification) in installation work, operation work and maintenance work in the clean energy industry.

Need for Marketing and Outreach

Many individuals do not know of the availability of training programs in their area, or the public workforce investment funds available to assist them in completing training. This is likely to be particularly relevant in economically and environmentally disadvantaged communities.

Recommendation – Workforce development investments should promote clean energy training initiatives and opportunities. These efforts should initially focus on low income residence building performance and urban ecology.

STATE LEVEL COLLABORATION

Relevant to this report are the ongoing, transparent, genuinely willing, and often passionate state level collaborations on renewable energy and enhanced energy independence. This collaboration extends across members of the following state level initiatives: the Workforce Development and Training Working Group established under the state’s Energy Efficiency Portfolio Standard; the Interagency Environmental Justice Task Force; the Renewable Energy Portfolio Standard; the Regional Greenhouse Gas Initiative; the state’s participation on the National Governor’s Association (NGA) Policy Academy on State Sectors Strategies; and most recently strategies on implementing the ARRA. These efforts have prepared the state to immediately and successfully understand, respond to, nurture and grow the clean energy sectors identified by the Renewable Energy Task Force and the ARRA.

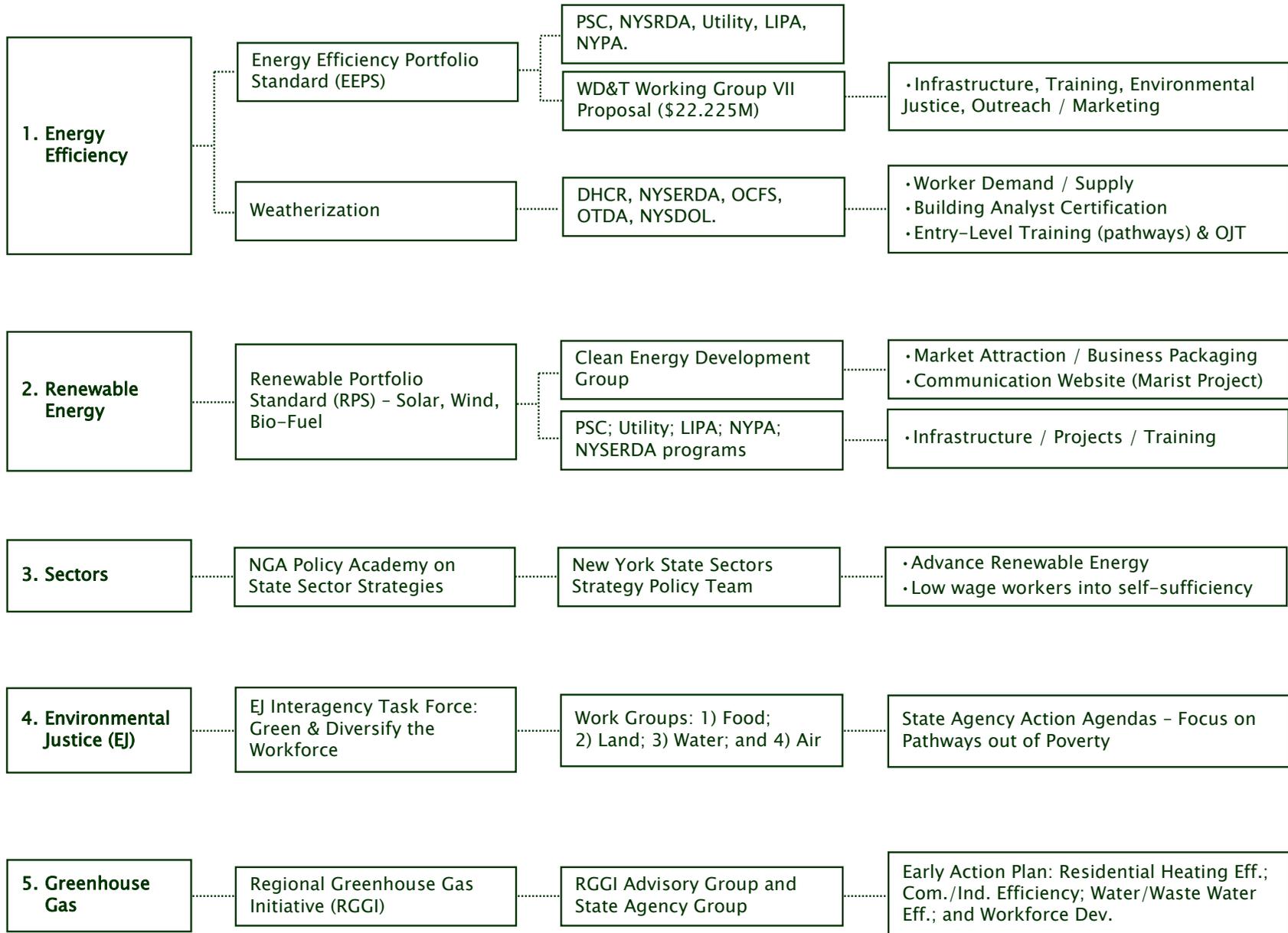
ARRA funding is channeled to states through existing funding streams administered by different state agencies. This is the most expeditious and efficient way to advance implementation. However, each funding stream has legislative and/or regulatory restrictions which preclude a single agency from providing the full-range of activities necessary to support these objectives.

Therefore, state agencies must continue to collaborate, align and leverage their resources to assure that job creation, workforce development and pathways out of poverty are being addressed comprehensively, such that each agency’s funding is being leveraged in the most effective and optimal manner.

Figure 6 presents a chart of clean energy job state level collaboration under the following five initiatives:

1. Energy Efficiency – Energy Efficiency Portfolio Standard (EEPS);
2. Renewable Energy – Renewable Energy Portfolio Standard (RPS);
3. Sectors – National Governor’s Association (NGA) Policy Academy on State Sectors Strategies;
4. Environmental Justice – Environmental Justice Interagency Task Force; and
5. Greenhouse Gas – Regional Greenhouse Gas Initiative.

Figure 6 – Clean Energy Jobs: New York State Level Collaborations



SUMMARIES / RECOMMENDATIONS

This report addresses key aspects of clean energy jobs in New York State in order to help inform decisions and utilize public investments in the most optimal manner. The perspective focuses on three primary objectives of public investment in clean energy jobs.

- ♦ Stimulate Job Creation / Job Retention – provide capital investment in manufacture, installation, production and maintenance across the entire supply chain that supports the clean energy industry.
- ♦ Support Workforce Development – provide workers with the requisite knowledge, skills and abilities to allow business productivity to be competitive in a global economy and to assure business output achieves quality and efficiency expectations.
- ♦ Advance Pathways Out of Poverty.

This section provides summaries and recommendations for the following topics:

- ♦ Clean Energy Occupations;
- ♦ State Agency Collaboration and Program Alignment;
- ♦ Training Inventory;
- ♦ Barriers to Training;
- ♦ Labor Market Intelligence; and
- ♦ New York State Green Jobs Portal.

Clean Energy Occupations

The current economic landscape is too dynamic and evolving to accurately estimate the number of jobs in New York State’s clean energy industry. However, the results of this report indicate that the clean energy industry largely employs workers with the same skills as other related businesses; compete in the same labor markets; and are affected by the same labor supply/demand relationships.

So while new occupational titles will emerge for the clean energy industry, the skills for the vast majority of these occupations will be very similar to existing job titles, with incremental skill enhancements specific to the industry. This intelligence is sufficient to immediately advance clean energy jobs in New York State. In addition, the American Recovery and Reinvestment Act of 2009 (ARRA) provides substantial funding to support job creation and workforce development in the state’s clean energy industry.

State Agency Collaboration and Program Alignment

Relevant to this report are the ongoing, transparent, genuinely willing, and often passionate state level collaborations on renewable energy. The collaboration extends across members of the following state level initiatives: the Workforce Development and Training Working Group established under the state’s Energy Efficiency Portfolio Standard; the Interagency Environmental Justice Task Force; the Renewable Energy Portfolio Standard; the Regional Greenhouse Gas Initiative; the state’s participation on the National Governor’s Association

(NGA) Policy Academy on State Sectors Strategies; and most recently strategies on the ARRA. These efforts have prepared the state to immediately and successfully understand, respond to, nurture and grow the clean energy sectors identified by the Task Force and the ARRA.

ARRA funding is channeled to states through existing funding streams administered by different state agencies. This is the most expeditious and efficient way to advance implementation. However, each funding stream has legislative and/or regulatory restrictions which preclude a single agency from providing the full-range of activities necessary to support these objectives.

Therefore, state agencies must continue to collaborate, align and leverage their resources to assure that job creation, workforce development and pathways out of poverty are being addressed comprehensively, such that each agencies funding is being leveraged in the most effective and optimal manner.

Weatherization Assistance Program (WAP) Collaboration

The WAP is ideal for collaboration because the state is able to directly impact the three objectives. This is possible because both the demand for labor and the supply of labor are controlled by public funding.

- ♦ New York State Division of Housing and Community Renewal (DHCR), NYSERDA, New York State Office of Children and Family Services (OCFS), New York State Office of Temporary and Disability Assistance (OTDA) and NYSDOL shall continue to collaborate on implementing the states weatherization assistance programs administered by DHCR and NYSERDA, where OTDA and NYSDOL assist with recruiting and training entry-level workers.
- ♦ State agency collaborations to support the WAP should also advance interest and awareness in environmental justice communities about the benefits of weatherization.

State Workforce Investment Board Collaboration

The New York State Workforce Investment Board is also an ideal forum for collaboration on workforce development to support clean energy jobs.

- ♦ The State Workforce Investment Board should establish a Green Jobs Subcommittee to advance the work of the New York State Sectors Strategy Policy Team, and address the workforce needs of the clean energy industry. NYSERDA, DHCR, OTDA and the New York State Education Department (NYSED) should be designated as subcommittee members.

Training Inventory

In identifying the state's clean energy training programs, it became evident that a disconnect exists between the 70-plus clean energy training programs identified in this report, and the Workforce New York Training Inventory used by the state's One-Stop system to fund training (administered by NYSDOL under the Workforce Investment Act Title 1B program). For example, the Workforce New York Training Inventory contains about 12,000 course offerings and 1,500 locations, and only a handful of the 70-plus clean energy training programs identified in this report also appear on the state training inventory. The main reasons for this include:

- ♦ Most of the clean energy training programs identified in this report have been created in response to NYSERDA funding to create infrastructure to facilitate NABCEP and BPI accreditation and certification.
- ♦ Most of the Workforce New York Training Inventory is in response to schools seeking eligibility to participate in WIA funded training.
- ♦ The Workforce New York Training Inventory contains many offerings regulated by the NYSED Bureau of Proprietary School Supervision, whereas the clean energy training inventory contains programs recognized by NABCEP and BPI.

Recommendations

- ♦ Workforce development investments to support clean energy jobs should advance the use of training programs maintained by NYSERDA and training programs maintained on the Workforce New York Training Inventory.
- ♦ NYSERDA and NYSDOL should continue to collaborate to assure the Workforce New York Training Inventory is comprehensive.
- ♦ All training providers and programs supported by NYSERDA funding should be granted initial eligibility (local and state) upon applying for eligibility on the Workforce New York Training Inventory.
- ♦ NYSERDA and NYSDOL should collaborate with NYSED Bureau of Proprietary School Supervision to address expedited approval of proprietary schools and courses that support clean energy jobs.

Barriers to Training

Program Outcomes

- ♦ Outcomes to measure the effectiveness of workforce development investment should be based upon worker proficiency in the knowledge, skills and abilities required to manufacture, install, operate and maintain the technology advances in clean energy.

Income Supports

- ♦ Workforce development investments should include needs-related payments to encourage individuals to participate in training.
- ♦ Individuals approved for Unemployment Insurance (UI) benefits should be allowed to receive these benefits while attending a clean energy training program being advanced by the state.

Work Experience / On-the-Job-Training

- ♦ Workforce development investments should include the cost to business associated with work experience / on-the-job-training.

Pathways Out of Poverty: Need for Employment-related Supports

- ♦ Workforce development investments targeted at the entry-level position of a career ladder should include supports to the individual upon obtaining a job, to help them retain the job and progress along the career ladder for that entry level occupation. Employment related supports are essential to pathways out of poverty.

Tuition and Related Costs

- ♦ Workforce development investments should help pay for the cost of tuition and related course books and materials.

Training Infrastructure

- ♦ Workforce development investments should create a training infrastructure to advance skills proficiency (including certification) in installation work, operation work and maintenance work in the clean energy industry.

Outreach and Marketing

- ♦ Workforce development investments should promote clean energy training initiatives and opportunities. These efforts should initially focus on low income residential building performance and urban ecology.

Labor Market Intelligence

The labor market analysis of this report represents a starting benchmark for research activities of critical importance in developing the rapidly evolving clean energy sectors.

- ♦ NYSERDA and NYSDOL both have strong capacity to assess the clean energy industry; NYSERDA on economic modeling and NYSDOL on occupational analysis. Both functions are of critical importance in projecting job growth and implementing workforce development. NYSERDA and NYSDOL should align the work being done under these functions to improve the states capacity to address clean energy jobs.
- ♦ NYSDOL should continue to refine the labor market characteristics prepared for this report. This includes tracking business trends in the clean energy industry, and establishing direct communication with businesses to identify their labor profile.
- ♦ NYSDOL should expand the analysis to include bio-fuels, biomass, indoor air quality, green building products, battery products, fuel cells and other clean technology industries with growth potential in New York State.

New York State Green Jobs Portal

NYSDOL is developing a New York State Green Jobs Portal, intended to coordinate information and services on clean energy jobs desired by three target customer groups:

- ♦ Individuals looking for jobs and wanting to explore careers;
- ♦ Businesses looking for talent/job bank services, tax credits and incentives; and
- ♦ Workforce professionals seeking policies and funding opportunities.

The NYS Green Jobs Portal will direct these customers to information relevant to them, and relevant to advancing New York State's green economy. The types of information to be provided would include:

- ♦ Career Information – Provide a link to Career Zone and/or Job Zone for information on career planning and skills training for occupations available in the individual's location.
- ♦ Business Information – Provide a link to information regarding tax credits and incentives for businesses. It would also provide information on available talent banks and training available for incumbent workers.
- ♦ Policy and Funding – Provide a link to funding opportunities available for training and project development, and provide information about policies and issues.

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APPENDIX A – BUSINESS AND EMPLOYMENT IN NEW YORK STATE

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Alternative Fuel Vehicles						
AltFuels Advisor	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
eVionyx	6 Skyline Dr.	Hawthorne	NY	10532	(914) 345-0321	Manufacturer
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Hybrid & Electric Vehicle Progress	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Rao Services	2937 41 Ave., 2nd Floor-Suite 1	Long Island City	NY	11101	(718) 726-0411	Consulting; project development; import/export
Alternative Homes and Buildings						
Alternative Environmental Energy Technologies, Inc.	PO Box 283 Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; wholesaler; builder; contractor
Alternative Traxx	PO Box 63	New Berlin	NY	12411	(607) 764-8229	Retailer
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave. Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Bert Echt: Designer/Craftsman	63 Strong Rd.	Ferndale	NY	12734	(914) 295-9221	Construction; installation; service
Business Arts	311 South Albany St.	Ithaca	NY	14850	(607) 351-7351	Architecture
Eco-Built, Inc.	PO Box 149 - 10 Main St.	Summit	NY	12175	(518) 287-1845	Retailer; design
Firm Foundation Consultants	Sessions Rd.	Sauquoit	NY	13456	(315) 525-5092	Consulting
ETS Energy Store	445 Hamilton Ave., Suite 1102	White Plains	NY	10601	(866) 343-5551	Retailer; wholesaler; consulting
GreenStreet Construction and Consulting	630 9th Ave., Suite 213	New York	NY	10036	(212) 265-5179	Construction; consulting
Ikan Consulting Services	235 Burt Rd.	Cuba	NY	14727	(585) 899-9606	Engineering; project management
Kiss + Cathcart, Architects	44 Court St., Tower C	Brooklyn	NY	11201	(718) 237-2025	Consulting; design; engineering; architecture
Alternative Home and Building Construction Materials						
Alternative Environmental Energy Technologies, Inc.	PO Box 283 Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; wholesaler; builder; contractor
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave. Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Bert Echt: Designer/Craftsman	63 Strong Rd.	Ferndale	NY	12734	(914) 295-9221	Construction; installation; service
Duce Construction Corp.	412 West 127th St.	New York	NY	10027	(212) 316-2400	Construction; installation
Eagle Mountain Inc.	4353 Bristol Valley Rd.	Canandaigua	NY	14424	(800) 572-7831	Manufacturer; retailer; wholesaler
EBM Consulting Services	PO Box 911	Millbrook	NY	12545	(845) 877-6030	Consulting; design; installation; construction
Eco-Built, Inc.	PO Box 149 - 10 Main St.	Summit	NY	12175	(518) 287-1845	Retailer; design
Kiss + Cathcart, Architects	44 Court St., Tower C	Brooklyn	NY	11201	(718) 237-2025	Consulting; design; engineering; architecture
Panda Bamboo Products	15-15 119th St.	College Point	NY	11356	(718) 353-0700	Manufacturer; retailer; wholesaler

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Appliances						
Ameritechtoys, Corp.	2302 Ave T	Brooklyn	NY	11229	(866) 988-3247	Retailer; wholesaler
Appliances Unlimited	59 Boulevard	Queensbury	NY	12804	(518) 761-9501	Retailer; wholesaler; exporter
Best Appliance Buys	94 Smith Ave.	Mount Kisco	NY	10549	(914) 666-3232	Retailer
Creative Energy Technologies Inc.	2872 State Rt 10	Summit	NY	12175	(518) 287-1428	Retailer
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Stoneworks Inc.	135 West 96th St., Apt.-5	New York	NY	10025	(212) 222-8743	Retailer; service; importer
Sun Mountain	PO Box 1364	Olivebridge	NY	12461	(845) 657-8096	Retailer
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
Tech-Quipment International	560 West 43rd St., Suite 10J	New York	NY	10036	(860) 796-7989	Wholesaler; exporter
Backup Power Systems						
Alternative Energy Solutions, LLC	163 North Main St., Suite 202	Port Chester	NY	10573	(914) 937-0608	Construction; installation
Creative Energy Technologies Inc.	2872 State Rt 10	Summit	NY	12175	(518) 287-1428	Retailer
eVionyx	6 Skyline Dr.	Hawthorne	NY	10532	(914) 345-0321	Manufacturer
Freedom Energy Solutions	33 Yale St.	Port Jefferson	NY	11776	(631) 404-9718	Construction; installation; design; consulting
GreenStreet Construction and Consulting	630 9th Ave., Suite 213	New York	NY	10036	(212) 265-5179	Construction; consulting
Logic Box Industries	60 Industrial Parkway, Unit 491	Buffalo	NY	14227	(866) 577-3628	Wholesaler; exporter
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
MDS Technical Service	3530 Rt 34B	Scipio Center	NY	13147	(315) 364-5270	Consulting; design; installation
New York Wind & Sun, LLC	127 Hunter Dr.	Baldwinsville	NY	13027	(315) 433-6058	Construction; installation
Nextek Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer
Pacific Power Systems	234 Lake Dr.	Copiague	NY	11726	(631) 264-0130	Manufacturer
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
Prime Energy Technologies, Inc.	590 New York Ave.	Huntington	NY	11743	(800) 799-5005	Construction; installation; project development
Rao Services	2937 41 Ave., 2nd Floor-Suite 1	Long Island City	NY	11101	(718) 726-0411	Consulting; project development; import/export
Renewable Resources, LLC	22 Pleasant Ridge Rd.	Valhalla	NY	10595	(914) 345-6100	Retailer; wholesaler
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Stabylex Electronics Corp.	2 Trade Dr.	Massena	NY	13622	(315) 769-5453	Manufacturer
Steven B Dietrich	151 Northern Blvd., Suite 1	St. James	NY	11780	(631) 584-6433	Manufacturer
Sun Mountain	PO Box 1364	Olivebridge	NY	12461	(845) 657-8096	Retailer
UPSforLESS	2215 Kenmore Ave., Suite 100	Buffalo	NY	14207	(866) 577-3628	Reseller; distributor

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Battery Products						
Acolyte Systems Inc.	251 West 30th St.	New York	NY	10001	(212) 629-3239	Manufacturer; retailer; wholesaler
Alternative Traxx	PO Box 63	New Berlin	NY	12411	(607) 764-8229	Retailer
Batteries Express, Inc.	7174 Boston State Rd.	Hamburg	NY	14075	(716) 649-3264	Retailer; wholesaler
Creative Global Network Services	200 Parkway Dr. South	Hauppauge	NY	14564	(585) 924-2176	Installation; consulting; retailer
Curtis Instruments, Inc.	200 Kisco Ave.	Mount Kisco	NY	10549	(914) 666-2971	Manufacturer; distributor; service; design
DC AC Power Inverters	100 Walnut St.	Champlain	NY	12919	(212) 685-4065	Manufacturer; retailer; wholesaler
ePowerlinks Consultant	50-33 101 St.	Flushing	NY	11368	(718) 606-0321	Manufacturer; wholesaler
eVionyx	6 Skyline Dr.	Hawthorne	NY	10532	(914) 345-0321	Manufacturer
Freedom Energy Solutions	33 Yale St.	Port Jefferson	NY	11776	(631) 404-9718	Construction; installation; design; consulting
Giant Battery Co.	57th St. & Fifth Ave.	New York	NY	10013	(718) 775-3972	Manufacturer; design; installation; consulting
McDowell Research	2000 Technology park	Newark	NY	14513	(315) 332-7100	Manufacturing; design
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Nextek Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer
Pacific Power Systems	234 Lake Dr.	Copiague	NY	11726	(631) 264-0130	Manufacturer
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
Power^Up Manufacturing, Inc.	750 Ensminger Rd., Suite 106	Tonawanda	NY	14150	(800) 960-0411	Manufacturer; distributor
RefurbUPS.com Inc.	379 Spook Rock Industrial Park	Suffern	NY	10901	(845) 357-6911	Wholesaler; retailer
Renewable Energy Works!	290 Genesee St.	Avon	NY	14414	(585) 226-2920	Biodiesel workshops
Renewable Resources, LLC	22 Pleasant Ridge Rd.	Valhalla	NY	10595	(914) 345-6100	Retailer; wholesaler
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Silicon Solar	16 Winkler Rd.	Sidney	NY	13838	(607) 563-7865	Manufacturer; retailer; wholesaler
Steven B Dietrich	151 Northern Blvd., Suite 1	St. James	NY	11780	(631) 584-6433	Manufacturer
Sun Power Systems	1217 Montauk Highway	Oakdale	NY	11769	(631) 750-9454	Retailer
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2224	Construction; installation; design; consulting
Tadiran Electronic Industries, Inc.	2 Seaview Blvd.	Port Washington	NY	11050	(516) 621-4980	Manufacturer
Ultralife Batteries	2000 Technology Park	Newark	NY	14513	(315) 332-7100	Manufacturer; testing services
VDC Electronics, Inc.	147D Woodbury Rd.	Huntington	NY	11743	(800) 379-5579	Manufacturer; wholesaler
Wilson Greatbatch Ltd.	10,000 Wehrle Dr.	Clarence	NY	14031	(716) 759-6901	Manufacturer
Xellerion	6 Skyline Dr.	Hawthorne	NY	10532	(914) 345-0321	Manufacturer
Biomass Energy						
Alternative American Energy	PO Box 585	Skaneateles	NY	13152	(315) 345-4901	Retailer; wholesaler
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Applied Thermodynamics	891 South Lake Rd.	Middlesex	NY	14507	(585) 554-4192	Engineering; design; consulting
Broms Power LLC	215 East 79th St.	New York	NY	10021	(212) 988-9460	Investment and financial services
Corn Comfort Heat	3364 Co. Rt. 49	Norfolk	NY	13667	(315) 384-4582	Consulting; retailer
GE Energy	1 River Rd.	Schenectady	NY	12345	(518) 385-2231	Consulting
Ikan Consulting Services	235 Burt Rd.	Cuba	NY	14727	(585) 899-9606	Engineering; project management
Luce Creative, Inc.	1393 Veterans Memorial Highway	Hauppauge	NY	11788	(631) 366-2705	Consulting
NYS Foundation for Science, Technology & Innovation	30 S. Pearl St.	Albany	NY	12207	(518) 292-4700	Biomass
New York International Log & Lumber Co.	91 Tanyard La.	Huntington	NY	11743	(631) 421-5747	Wholesaler; exporter
Oswego Falls Alternative Heat	306 Sharp Rd.	Fulton	NY	13069	(315) 598-5655	Retailer
Renewable NRG LLC	PO Box 1117	Woodstock	NY	12498	(845) 657-6655	Manufacturer
Smart Building Products and Services	1180 Route 32	Wallkill	NY	12589	(845) 566-9329	Engineering services
Westchester Community College	75 Grassland Road	Valhalla	NY	10595	(914) 606-6789	Weatherization
Cathodic Protection Systems						
Valenti Technological Services	PO Box 216	Fayetteville	NY	13066	(315) 637-2812	Management consulting services
Solar Electric Charge Controllers						
Bishop Enterprises	131 Hickok Ave.	Syracuse	NY	13206	(315) 463-9017	Consulting; installation; retailer
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Cogeneration Systems						
Alternative Energy Solutions, LLC	163 North Main St., Suite 202	Port Chester	NY	10573	(914) 937-0608	Construction; installation
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave., Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Applied Thermodynamics	891 South Lake Rd.	Middlesex	NY	14507	(585) 554-4192	Engineering; design; consulting
Broms Power LLC	215 East 79th St.	New York	NY	10021	(212) 988-9460	Investment and financial services
Coast Intelligen, Inc.	55 Ediston Ave.	West Babylon	NY	11704	(212) 750-0371	Manufacturer
Ecopac Equipment, Inc.	306 South Salina St.	Syracuse	NY	13202	(315) 475-1580	Reseller; wholesaler; retailer
Renewable NRG LLC	PO Box 1117	Woodstock	NY	12498	(845) 657-6655	Manufacturer
Smart Building Products and Services	1180 Route 32	Wallkill	NY	12589	(845) 566-9329	Engineering services
Cogeneration System Components						
AET Solar	50 Patten Rd.	Newburgh	NY	12550	(845) 728-3881	Consulting services
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave., Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Stork H&E Turbo Blading, Inc.	334 Comfort Rd.	Ithaca	NY	14850	(607) 277-4968	Manufacturer
Composting Systems						
Tinkertown, Inc.	833 Route 244 Tinkertown Rd.	Alfred Station	NY	14803	(866) 845-5462	Installation; retailer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Computer and Electronic Components						
Exquisite Heat	172 Foshay Ave.	Pleasantville	NY	10570	(914) 588-4791	Manufacturer
Fanour Electronics	243 West 123rd St., Suite 1	New York	NY	10027	(212) 932-9865	Consulting services; exporter
QualityBatteries.com		Brooklyn	NY	11219	(718) 437-2558	Retailer; wholesaler
World Power Components	147 Highland Ave.	New York	NY	11768	(866) 878-0026	Manufacturer; wholesaler
Computer Software						
Ameritechtoys, Corp.	2302 Ave T	Brooklyn	NY	11229	(866) 988-3247	Retailer; wholesaler
Marsland Renewable Energy	62 Birdsall St.	Greene	NY	13778	(607) 656-7584	Retailer
Prism Visual Software, Inc.	1 Sagamore Hill Dr.	Port Washington	NY	11050	(516) 944-5920	Software designer
DC To DC Power Converters						
Stabylex Electronics Corp.	2 Trade Dr.	Massena	NY	13622	(315) 769-5453	Manufacturer; design; engineering
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
DC To AC Power Inverters						
Advanced Solar	22 Fairway Dr.	Port Jefferson	NY	11776	(631) 642-7435	Retailer
Bishop Enterprises	131 Hickok Ave.	Syracuse	NY	13206	(315) 463-9017	Consulting; installation; retailer
CKC Power	23 Graywood Dr.	Orangeburg	NY	10962	(914) 359-6633	Wholesaler
Creative Energy Technologies Inc.	2872 State Rt 10	Summit	NY	12175	(518) 287-1428	Retailer
DC AC Power Inverters	100 Walnut St.	Champlain	NY	12919	(212) 685-4065	Manufacturer; retailer; wholesaler
Empire Clean Energy Supply	1520 Ocean Ave.	Bohemia	NY	11716	(631) 589-4340	Manufacturer; wholesaler
Fanour Electronics	243 West 123rd St., Suite 1	New York	NY	10027	(212) 932-9865	Consulting services; exporter
Marsland Renewable Energy	62 Birdsall St.	Greene	NY	13778	(607) 656-7584	Retailer
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
Renewable Energy Works!	290 Genesee St.	Avon	NY	14414	(585) 226-2920	Biodiesel workshops
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Stabylex Electronics Corp.	2 Trade Dr.	Massena	NY	13622	(315) 769-5453	Manufacturer; design; engineering
Earth Sheltered Homes and Buildings						
Environmental Technologies & Solutions, Inc.	PO Box 283, Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; wholesaler
Electric Vehicles						
Advanced Drive Development Corp.	PO Box 1440	New York	NY	10023	(212) 769-2457	Manufacturer; engineering; exporter
Alternate Propulsion Motor Co.	63-61 77th Place	Middle Village	NY	11379	(646) 207-9584	Manufacturer; engineering; installation
Convergence Tech, Inc.	19 Tioga Lane	Pleasantville	NY	10570	(914) 773-6749	Manufacturer; consulting

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
DIDIK	GPO	New York	NY	10116	(718) 843-6839	Manufacturer; design; wholesaler; retailer
ePowerlinks Consultant	50-33 101 St.	Flushing	NY	11368	(718) 606-0321	Manufacturer; wholesaler
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Hybrid & Electric Vehicle Progress	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Lacey Manufacturing Inc.	PO Box 2024	Albany	NY	12220	(877) 276-0640	Manufacturer; project development
Luce Creative, Inc.	1393 Veterans Memorial Highway	Hauppauge	NY	11788	(631) 366-2705	Consulting
Megawatt Motorworks, Inc.	249 Midline Rd.	Slaterville Springs	NY	14881	(607) 539-9968	Publisher
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2224	Construction; installation; design; consulting
Energy Efficient Homes and Buildings						
Alternative Environmental Energy Technologies, Inc.	PO Box 283, Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; construction; wholesaler
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave. Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Eco-Built, Inc.	PO Box 149 - 10 Main St.	Summit	NY	12175	(518) 287-1845	Design; retailer; exporter
Environmental Technologies & Solutions, Inc.	PO Box 283, Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; wholesaler
Fanour Electronics	243 West 123rd St., Suite 1	New York	NY	10027	(212) 932-9865	Consulting services; exporter
GreenStreet Construction and Consulting	630 9th Ave., Suite 213	New York	NY	10036	(212) 265-5179	Construction; consulting
Kiss + Cathcart, Architects	44 Court St., Tower C	Brooklyn	NY	11201	(718) 237-2025	Consulting; design; engineering; architecture
MDS Technical Service	3530 Rt 34B	Scipio Center	NY	13147	(315) 364-5270	Consulting; design; installation
Prime Energy Technologies, Inc.	590 New York Ave.	Huntington	NY	11743	(800) 799-5005	Construction; installation; project development
Savant Solar LLC	144 Crescent Dr.	Albertson	NY	11507	(516) 974-7600	Installation; design; consulting; maintenance
Fuel Cell Systems						
Electric Transportation Solutions, LLC	100 South Bedford Rd., Suite 340	Mount Kisco	NY	10549	(866) 895-2238	Wholesaler; retailer; exporter
Freedom Energy Solutions	33 Yale St.	Port Jefferson	NY	11776	(631) 404-9718	Construction; installation; design; consulting
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Hybrid & Electric Vehicle Progress	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Lacey Manufacturing, Inc.	PO Box 2024	Albany	NY	12220	(877) 276-0640	Manufacturer; project development; research
Luce Creative, Inc.	1393 Veterans Memorial Highway	Hauppauge	NY	11788	(631) 366-2705	Consulting
Plug Power	968 Albany-Shaker Rd.	Latham	NY	12110	(518) 782-7700	Manufacturer; research services
Precision Design Systems	100 Elmgrove Park	Rochester	NY	14624	(585) 426-4500	Manufacturer
The Hydrogen & Fuel Cell Letter	69 Grinnell St.	Rhinecliff	NY	12574	(914) 876-5988	Publisher
ZIRCAR Ceramics, Inc.	100 North Main St.	Florida	NY	10921	(845) 651-6600	Manufacturer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Fuel Cell System Components						
eVionyx	6 Skyline Dr.	Hawthorne	NY	10532	(914) 345-0321	Manufacturer
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
ZIRCAR Ceramics, Inc.	100 North Main St.	Florida	NY	10921	(845) 651-6600	Manufacturer
Fuel Powered Electric Generators						
Applied Thermodynamics	891 South Lake Rd.	Middlesex	NY	14507	(585) 554-4192	Engineering; design; consulting
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Lacey Manufacturing, Inc.	PO Box 2024	Albany	NY	12220	(877) 276-0640	Manufacturing; project development; research
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Tech-Quipment International	560 West 43rd St., Suite 10J	New York	NY	10036	(860) 796-7989	Wholesaler; exporter
Toko Asia Wind Energy	198-11 47th Ave., FL1	Flushing	NY	11358	(718) 767-3168	Manufacturer
Gas Turbine Electric Generators						
Gas Turbine Controls Corp.	466 Saw Mill River Rd.	Ardsley	NY	10502	(914) 693-0830	Wholesaler
Gas Turbine Parts & Service, Inc.	1 Old Route 146	Clifton Park	NY	12065	(518) 383-3227	Manufacturer; wholesaler
Innovative Control Systems, Inc.	26 Corporate Dr.	Clifton Park	NY	12065	(518) 383-8078	Installation; engineering
Jasco Tools	1390 Mnt.Read Blvd.	Rochester	NY	14606	(585) 254-7000	Manufacturer; design; engineering
Lacey Manufacturing, Inc.	PO Box 2024	Albany	NY	12220	(877) 276-0640	Manufacturer; project development; research
Mars Tech	216 Strawtown Rd.	New City	NY	10956	(845) 638-3100	Manufacturer; wholesaler
Power Equipment Sales Intl.	3333 Henry Hudson Pkwy.	Riverdale	NY	10463	(201) 805-1441	Wholesaler
Stork H&E Turbo Blading, Inc.	334 Comfort Rd.	Ithaca	NY	14850	(607) 277-4968	Manufacturer
Tech-Quipment International	560 West 43rd St., Suite 10J	New York	NY	10036	(860) 796-7989	Wholesaler; exporter
Geothermal Energy Systems						
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave., Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Caster Well Drilling	5363 Stow Rd.	Ashville	NY	14710	(716) 789-2230	Installation; consulting; distributor; service
Earth Sensitive Solutions	PO Box 3	Skaneateles	NY	13152	(315) 253-3779	Consulting; design
e-vanhee	700 Hollenbeck St.	Rochester	NY	14621	(585) 266-1382	Installation; design; engineering; service
GE Energy	1 River Rd.	Schenectady	NY	12345	(518) 385-2231	Consulting
GeoTherm International, LLC	493 Route 281	Tully	NY	13159	(315) 696-6100	Installation; design; maintenance
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
GreenStreet Construction and Consulting	630 9th Ave., Suite 213	New York	NY	10036	(212) 265-5179	Construction; consulting
Ikan Consulting Services	235 Burt Rd.	Cuba	NY	14727	(585) 899-9606	Consulting; engineering; design
Interior Environments	854 Mclean Ave.	Yonkers	NY	10704	(914) 237-7200	Retailer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Luce Creative, Inc.	1393 Veterans Memorial Highway	Hauppauge	NY	11788	(631) 366-2705	Consulting
Phoenix Geothermal Services	7523 County House Rd.	Auburn	NY	13021	(315) 253-3720	Design; engineering; consulting
Renovus Energy Systems	102 Cherry St.	Ithaca	NY	14850	(607) 277-1777	Installation; design; reseller
Savant Solar LLC	144 Crescent Dr.	Albertson	NY	11507	(516) 974-7600	Installation; design; engineering; consulting
Smart Energy, Inc.	86 Donald Dr.	New Rochelle	NY	10804	(914) 960-1424	Installation
Sun Power Systems	1217 Montauk Highway	Oakdale	NY	11769	(631) 750-9454	Retailer
Sun Stream USA	1764 County Rd. 39	Southampton	NY	11968	(631) 283-0057	Installation
Geothermal Thermal Energy System Components						
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave. Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Cal Research, Inc.	4271 Dickersonville Rd.	Ransomville	NY	14131	(716) 791-4206	Manufacturer; on-site testing; wholesaler
Caster Well Drilling	5363 Stow Rd.	Ashville	NY	14710	(716) 789-2230	Installation; consulting; service; distribution
Earth Sensitive Solutions	PO Box 3	Skaneateles	NY	13152	(315) 253-3779	Consulting; design
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
Phoenix Geothermal Services	7523 County Rd.	Auburn	NY	13021	(315) 253-3720	Engineering; consulting; design; training
Stork H&E Turbo Blading, Inc.	334 Comfort Rd.	Ithaca	NY	14850	(607) 277-4968	Manufacturer
Heating, Ventilation and Air Conditioning						
Conserval Systems, Inc.	4254 Ridge Lea Rd.	Buffalo	NY	14226	(716) 835-4903	Manufacturer
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2244	Consulting; design; maintenance; wholesaler
Interior Environments	854 Mclean Ave.	Yonkers	NY	10704	(914) 237-7200	Retailer
Heat Pumps						
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
Atlantis Custom Pools	171 Huber Ave.	Holbrook	NY	11741	(631) 445-4508	Retailer
Eagle Mountain, Inc.	4353 Bristol Valley Rd.	Canandaigua	NY	14424	(800) 572-7831	Manufacturer; wholesaler; retailer
ECR International, Inc.	2210 Dwyer Ave.	Utica	NY	13504	(315) 797-1310	Manufacturer; wholesaler; exporter
Enviro-Tech	1800 Route 9G	Staatsburg	NY	12580	(845) 224-4704	Installation; design; testing
Interior Environments	854 Mclean Ave.	Yonkers	NY	10704	(914) 237-7200	Retailer
Tech-Quipment International	560 West 43rd St., Suite 10J	New York	NY	10036	(860) 796-7989	Wholesaler; exporter
Home Automation						
Smart Home Systems	127 East Main St.	Smithtown	NY	11787	(631) 361-3600	Engineering; wholesaler; retailer
Vertex Security & Technology	205 Hudson St.	New York	NY	10013	(212) 586-3234	Wholesaler; retailer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Hybrid Power Systems						
AltFuels Advisor	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Hybrid & Electric Vehicle Progress	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
Ikan Consulting Services	235 Burt Rd.	Cuba	NY	14727	(585) 899-9606	Consulting; engineering; design
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Steven B Dietrich	151 Northern Blvd., Suite 1	St. James	NY	11780	(631) 584-6433	Manufacturer; power quality solutions
Hydro Energy						
Alternative Energy Solutions, LLC	163 North Main St., Suite 202	Port Chester	NY	10573	(914) 937-0608	Construction; installation
EBM Consulting Services	PO Box 911	Millbrook	NY	12545	(845) 877-6030	Installation; design; consulting; maintenance
GE Energy	1 River Rd.	Schenectady	NY	12345	(518) 385-2231	Consulting
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
Interior Environments	854 Mclean Ave.	Yonkers	NY	10704	(914) 237-7200	Retailer
Jasco Tools	1390 Mnt. Read Blvd.	Rochester	NY	14606	(585) 254-7000	Manufacturer; design; engineering
Rao Services	2937 41 Ave., 2nd Floor-Suite 1	Long Island City	NY	11101	(718) 726-0411	Consulting; project development; import/export
Renewable NRG LLC	PO Box 1117	Woodstock	NY	12498	(845) 657-6655	Manufacturer
Renovus Energy Systems	102 Cherry St.	Ithaca	NY	14850	(607) 277-1777	Installation; design; reseller
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
The Louis Berger Group, Inc	One Seaport Plaza - 23rd Floor	New York	NY	10038	(212) 612-4341	Consulting; project development
Toko Asia Wind Energy	198-11 47th Ave., FL1	Flushing	NY	11358	(718) 767-3168	Manufacturer
Hydrogen Energy						
The Hydrogen & Fuel Cell Letter	69 Grinnell St.	Rhinecliff	NY	12574	(914) 876-5988	Publisher
Lighting						
Acolyte Systems Inc.	251 West 30th St.	New York	NY	10001	(212) 629-3239	Manufacturer; wholesaler; retailer
ASL, Energy Efficient Lighting	25 Twelfth St.	Brooklyn	NY	11215	(800) 369-1101	Manufacturer; wholesaler; retailer
Creative Energy Technologies Inc.	2872 State Rt 10	Summit	NY	12175	(518) 287-1428	Retailer
ETS Energy Store	445 Hamilton Ave., Suite 1102	White Plains	NY	10601	(866) 343-5551	Retailer; wholesaler; consulting
GoodMart.com	45 Main St.	Brooklyn	NY	11201	(877) 402-6100	Wholesaler; retailer
Henderson Wholesale lamps	1427 Milton Ave.	Syracuse	NY	13209	(315) 299-7072	Wholesaler
Lamp Technology Inc.	1645 Sycamore Ave.	Bohemia	NY	11716	(631) 567-1800	Wholesaler; retailer; service
LED Consulting	PO Box 510	Nassau	NY	12123	(518) 331-7236	Consulting; design; research
LED Waves	33 35th St.	Brooklyn	NY	11232	(800) 670-8137	Manufacturer; design
Marsland Renewable Energy	62 Birdsall St.	Greene	NY	13778	(607) 656-7584	Retailer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Meng Meng USA	396 Broadway, Suite 301A	New York	NY	10013	(212) 625-1401	Manufacturer; wholesaler; importer
Milena Lighting Design	1223 Peoples Ave.	Troy	NY	12180	(518) 276-3303	Consulting; research
National Energy Services	2374 Motor Parkway	Ronkonkoma	NY	11779	(631) 588-6698	Installation; consulting; service
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
O'Connell Electric Company, Inc.	830 Phillips Rd.	Victor	NY	14564	(585) 924-4973	Installation; design; engineering; consulting
Oprans Universal Corporation	One Mustang Dr.	Cohoes	NY	12047	(518) 782-2332	Manufacturer
Quality Solar Concepts Inc.	47 Tearose Meadow Lane	Brockport	NY	14420	(585) 278-3773	Installation; design; engineering; consulting
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Rv Solar Shop	2917 State HW 7	Bainbridge	NY	13733	(800) 653-8540	Manufacturer
Savant Solar LLC	144 Crescent Dr.	Albertson	NY	11507	(516) 974-7600	Installation; design; engineering; consulting
Smart Building Products and Services	1180 Route 32	Wallkill	NY	12589	(845) 566-9329	Engineering services
SolarSmart	224 West 30th St., 4th Floor	New York	NY	10001	(212) 564-4400	Manufacturing; consulting; installation
Stoneworks Inc.	135 West 96th St., Apt. 5-D	New York	NY	10025	(212) 222-8743	Retailer; service; importer
Sun Power Systems	1217 Montauk Highway	Oakdale	NY	11769	(631) 750-9454	Retailer
The Lighting Co.	PO Box 283	Summit	NY	12175	(518) 287-1934	Manufacturer; wholesaler
Marine Power Systems						
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Power Equipment Sales Intl.	3333 Henry Hudson Pkwy.	Riverdale	NY	10463	(201) 805-1441	Wholesaler
Stork H&E Turbo Blading, Inc.	334 Comfort Rd.	Ithaca	NY	14850	(607) 277-4968	Manufacturer
Wastecorp.	PO Box 70	Grand Island	NY	14072	(888) 829-2783	Manufacturer
Meters and Measuring Equipment						
Advanced Solar	22 Fairway Dr.	Port Jefferson	NY	11776	(631) 642-7435	Retailer
Cal Research, Inc.	4271 Dickersonville Rd.	Ransomville	NY	14131	(716) 791-4206	Manufacturer; on-site testing; wholesaler
Kipp and Zonen	125 Wilbur Place	Bohemia	NY	11716	(516) 589-2065	Manufacturer; retailer; maintenance; repair
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Pacific Power Systems	234 Lake Dr.	Copiapague	NY	11726	(631) 264-0130	Manufacturer
Sustainable Energy Developments, Inc.	317 Route 104	Ontario	NY	14519	(877) 946-3674	Project development; construction; maintenance
Ocean Energy Systems						
Renewable NRG LLC	PO Box 1117	Woodstock	NY	12498	(845) 657-6655	Manufacturer
Toko Asia Wind Energy	198-11 47th Ave., FL1	Flushing	NY	11358	(718) 767-3168	Manufacturer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Packaged Power Systems						
Canrom Photovoltaics	1654 Ontario Ave.	Niagara Falls	NY	14305	(716) 282-2975	Manufacturer; installation; design
MDS Technical Service	3530 Rt 34B	Scipio Center	NY	13147	(315) 364-5270	Consulting; design; installation
National Solar Technologies	166 Taylor Dr.	Depew	NY	14043	(800) 310-7413	Manufacturer
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
Power Equipment Sales Intl.	3333 Henry Hudson Pkwy.	Riverdale	NY	10463	(201) 805-1441	Wholesaler
Self-Reliant Systems	414 Barton Hill Rd.	Schoharie	NY	12157	(518) 295-8256	Installation; design; construction; retailer
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
TerraSolar	44 Court St., Tower B	Brooklyn	NY	11201	(718) 422-0100	System design; wholesaler; retailer; service
Portable Power Systems						
Alternative Traxx	PO Box 63	New Berlin	NY	12411	(607) 764-8229	Retailer
Altpower, Inc.	125 Maiden Lane, Suite 307	New York	NY	10038	(212) 206-0022	Construction; service; retailer
Canrom Photovoltaics	1654 Ontario Ave.	Niagara Falls	NY	14305	(716) 282-2975	Manufacturer; installation; design
Fuel Cell Industry Report	28 West 25th St., 8th Floor	New York	NY	10010	(212) 228-0246	Publisher
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
Renewable Resources, LLC	22 Pleasant Ridge Rd.	Valhalla	NY	10595	(914) 345-6100	Retailer; wholesaler
Radiant Heating Systems						
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
Aaron Becker Solar	PO Box 563	Poughquag	NY	12570	(845) 724-3994	Installation
Duce Construction Corp.	412 West 127th St.	New York	NY	10027	(212) 316-2400	Construction; installation
Eagle Mountain, Inc.	4353 Bristol Valley Rd.	Canandaigua	NY	14424	(800) 572-7831	Manufacturer; wholesaler; retailer
Radiant Floor Heating	85 West Ave.	Hamburg	NY	14075	(716) 649-5723	Wholesaler
Recreational Vehicle Power Systems						
Advanced Solar	22 Fairway Dr.	Port Jefferson	NY	11776	(631) 642-7435	Retailer
Four Winds Renewable Energy	8902 Route 46	Arkport	NY	14807	(607) 324-9747	System design; installation; service; retailer
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2244	Consulting; design; maintenance; wholesaler

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Remote Home Power Systems						
ETM Solar Works	PO Box 67	Endicott	NY	13760	(607) 785-6499	Consulting; design; installation; construction
New York Solar Authority	65-69 Parsons Blvd.	Flushing	NY	11365	(888) 479-9163	Construction; installation
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
Rao Services	2937 41 Ave., 2nd Floor-Suite 1	Long Island City	NY	11101	(718) 726-0411	Consulting; project development; import/export
Self-Reliant Systems	414 Barton Hill Rd.	Schoharie	NY	12157	(518) 295-8256	Construction; installation; maintenance; repair
Sun Mountain	PO Box 1364	Olivebridge	NY	12461	(845) 657-8096	Retailer
Renewable Energy Investment/Financial Services						
New Alternatives Fund	150 Broadhollow Rd.	Melville	NY	11747	(800) 423-8383	Mutual Fund
Broms Power LLC	215 East 79th St.	New York	NY	10021	(212) 988-9460	Investment and financial services
Renewable Energy Publications						
Megawatt Motorworks	249 Midline Rd.	Slaterville Springs	NY	14881	(607) 539-9968	Publisher
The Hydrogen & Fuel Cell Letter	69 Grinnell St.	Rhinecliff	NY	12574	(914) 876-5988	Publisher
Solar Energy						
Aaron Becker Solar	PO Box 563	Poughquag	NY	12570	(845) 724-3994	Installation
Abundant Energy, Inc.	PO Box 307	Pine Island	NY	10969	(800) 426-4859	Manufacturer
Accord Electric, LLC	PO Box 44	Schuyler Falls	NY	12524	(518) 314-6336	Installation
Adirondack Solar	1004 New Scotland Rd.	Albany	NY	12208	(877) 407-3356	Installation
Advanced Energy Design, LLC	9 Nursery Rd.	Melville	NY	11747	(631) 379-9810	Installation
Advanced Solar	22 Fairway Dr.	Port Jefferson	NY	11776	(631) 642-7435	Retailer
AeonSolar	266 E. 95th St. #104	New York	NY	10128	(917) 496-4439	Installation
AET Solar	50 Patten Rd.	Newburgh	NY	12550	(845) 728-3881	Consulting services
Alternative Power and Light	PO Box 220	Port Jefferson	NY	11776	(631) 331-7643	Installation
Alternative Power Systems	PO Box 106	Harrisville	NY	13648	(315) 543-7011	Installation
Altpower, Inc.	125 Maiden Lane, Suite 307	New York	NY	10038	(212) 206-0022	Construction; service; retailer
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave., Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
APEX Thermal Services	27 Blossom Grove Court	Highland	NY	12528	(845) 883-6066	Installation; system design; retailer
Aquasolar Corp.	465 East 10th St.	New York	NY	10009	(212) 673-6222	Manufacturer; installation; design; distributor
Atlantis Custom Pools	171 Huber Ave.	Holbrook	NY	11741	(631) 445-4508	Retailer
AY Solar	509 Alpine Dr.	Vestal	NY	13850	(607) 760-8176	Installation

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Best Energy Power	375 Pearsall Ave.	Cedarhurst	NY	11516	(516) 568-7785	Installation
Bishop Enterprises	131 Hickok Ave.	Syracuse	NY	13206	(315) 463-9017	Consulting; installation; retailer
Brunswick Electric, Inc.	290 Hoosick St.	Troy	NY	12180	(518) 270-3695	Installation
Canrom Photovoltaics	1654 Ontario Ave.	Niagara Falls	NY	14305	(716) 282-2975	Manufacturer; installation; design; distributor
Conserval Systems, Inc.	4254 Ridge Lea Rd.	Buffalo	NY	14226	(716) 835-4903	Manufacturer
Creative Energy Technologies Inc.	2872 State Rt. 10	Summit	NY	12175	(518) 287-1428	Retailer
Crest Solar Power Solutions	160 Brinton Rd.	Keeseville	NY	12944	(518) 578-1487	Installation
Damiani and Sun, Inc.	109 Steven Court	Monroe	NY	10950	(845) 783-6020	Installation
DAYSTAR Energy Systems, Inc.	Five Cliffordale Park	Rochester	NY	14609	(585) 224-9105	Installation; maintenance; retailer
Daystar Technologies	13 Corporate Dr.	Halfmoon	NY	12065	(518) 383-4600	Manufacturer
Direct Global Power Inc.	1462 Erie Blvd.	Schenectady	NY	12305	(518) 346-2478	Manufacturer; project development; consulting
Divine Renewable Energy LLC	2569 Rolling Hills Rd.	Camillus	NY	13031	(315) 672-5244	Installation
Dovetail Builders, LLC	53 McGrath Rd.	Berkshire	NY	13736	(607) 951-0738	Installation
Duce Construction Corp.	412 West 127th St.	New York	NY	10027	(212) 316-2400	Construction; installation
EarthKind Energy, Inc.	110 Long Pond Rd.	Rhinebeck	NY	12572	(845) 266-3723	Consulting; project development
EBM Consulting Services	PO Box 911	Millbrook	NY	12545	(845) 877-6030	Installation; design; consulting; maintenance
Electric Transportation Solutions	100 South Bedford Rd.	Mount Kisco	NY	10549	(866) 895-2238	Wholesaler; retailer; importer/exporter
Empire Clean Energy Supply	1520 Ocean Ave.	Bohemia	NY	11716	(631) 589-4340	Manufacturer; wholesaler
EmPower CES, LLC	223 Long Beach Rd.	Island Park	NY	11558	(516) 837-3459	Installation
Energy By Choice, Ltd.	4 Ridley Court	Greenlawn	NY	11740	(631) 757-6984	Installation
Environmental Technologies & Solutions, Inc.	PO Box 283, Route 55	Lagrangeville	NY	12540	(845) 240-0843	Manufacturer; wholesaler
ETM Solar Works	PO Box 67	Endicott	NY	13760	(607) 785-6499	Consulting; design; installation; construction
ETS Energy Store	445 Hamilton Ave., Suite 1102	White Plains	NY	10601	(866) 343-5551	Retailer; wholesaler; consulting
e-vanhee	700 Hollenbeck St.	Rochester	NY	14621	(585) 266-1382	Installation; design; engineering; service
Fala Technologies	430 Old Neighborhood Rd.	Kingston	NY	12401	(845) 336-4000	Manufacturer; engineering
Fanour Electronics	243 West 123rd St., Suite 1	New York	NY	10027	(212) 932-9865	Consulting services; exporter
Finger Lakes Renewable Energy, LLC	192 S. Van Dorn Rd.	Ithaca	NY	14850	(607) 327-0053	Installation
Finlo Renewable Energy	236A Duriee Hill Rd.	Ithaca	NY	14850	(607) 227-9759	Installation
Four Winds Renewable Energy	8902 Route 46	Arkport	NY	14807	(607) 324-9747	System design; installation; service; retailer
Gallagher Solar Thermal	57 West St.	Warwick	NY	10990	(845) 258-0749	Installation
Genersys Plc	165 West 91st St., Suite 2G	New York	NY	10024	(609) 933-6826	Manufacturer
Go Solar	272 Main Rd.	Riverhead	NY	11901	(631) 727-2224	Installation; service
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
Greenlogic, LLC	34 Squires Path	East Hampton	NY	11937	(631) 771-5152	Installation

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
GreenStreet Construction and Consulting	630 9th Ave., Suite 213	New York	NY	10036	(212) 265-5179	Construction; consulting
Heliocol New York	304 Mulberry St	New York	NY	10012	(646) 246-6522	Retailer
High Power Construction	51-20 35th St.	Long Island City	NY	11101	(212) 288-0436	Installation
HOTBOX SOLAR	PO Box 2220	Elmira Heights	NY	14903	(607) 731-2741	Manufacturer
Hudson Valley Clean Energy	13 Hook Rd.	Rhinebeck	NY	12572	(845) 876-3767	Installation; design; service
Hudson Valley Clean Energy	PO Box 1221	New Paltz	NY	12561	(877) 876-4823	Installation
Interior Environments	854 Mclean Ave.	Yonkers	NY	10704	(914) 237-7200	Retailer
ISI Solar	PO Box 636	Nyack	NY	10960	(845) 348-4708	Installation
Kiss + Cathcart, Architects	44 Court St., Tower C	Brooklyn	NY	11201	(718) 237-2025	Consulting; design; engineering; architecture
Luce Creative, Inc.	1393 Veterans Memorial Highway	Hauppauge	NY	11788	(631) 366-2705	Consulting
Marsland Renewable Energy	62 Birdsall St.	Greene	NY	13778	(607) 656-7584	Retailer
Mattergy Solar	766 Main St.	New Rochelle	NY	10805	(914) 633-1192	Installation; consulting; design; engineering
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Mercury Solar System	15 Colligni Ave.	New Rochelle	NY	10801	(914) 637-9700	Installation; design; project development
National Solar Technologies	166 Taylor Dr.	Depew	NY	14043	(800) 310-7413	Manufacturer
New West Technologies	414 Trenton Ave.	Utica	NY	13502	(315) 507-4771	Engineering; consulting; design
New York Solar Authority	65-69 Parsons Blvd.	Flushing	NY	11365	(888) 479-9163	Construction; installation
New York State Solar Energy Industries Association	PO Box 67	Endicott	NY	13760	(607) 785-6499	Trade association
New York Wind & Sun, LLC	127 Hunter Dr.	Baldwinsville	NY	13027	(315) 433-1803	Construction; installation
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
Northeast Emergency Power	3602 Stetson Rd.	Bloomfield	NY	14469	(585) 657-4294	Installation
O'Connell Electric Company	830 Phillips Rd.	Victor	NY	14564	(585) 924-4973	Installation; consulting; design; maintenance
Performance Systems Contracting	124 Brindley St., Suite 4	Ithaca	NY	14850	(607) 277-1472	Installation
Plattsburgh Electric	206 Tom Miller Rd	Plattsburgh	NY	12901	(518) 562-1058	Installation
Power2020	160 West 73rd St., Suite 2H	New York	NY	10023	(212) 362-4332	Installation; consulting; project development
Prism Solar Technologies	23 Coxing Rd.	Cottkill	NY	12419	(845) 943-5377	Manufacturer
Quality Solar Concepts Inc.	47 Tearose Meadow	Brockport	NY	14420	(585) 278-3773	Installation; consulting; design; maintenance
Quixotic Systems, Inc.	90 Bedford St., Suite A	New York	NY	10014	(212) 367-9161	Installation
RDS Industries, Inc.	43-01 162nd St.	Flushing	NY	11358	(718) 321-9000	Installation
Renewable Energy Works!	290 Genesee St.	Avon	NY	14414	(585) 226-2920	Workshops
Renewable Power Systems, LLC	PO Box 967	Averill Park	NY	12018	(518) 674-5808	Installation
Renovus Energy Systems	102 Cherry St.	Ithaca	NY	14850	(607) 277-1777	Installation; design; reseller
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Rv Solar Shop	2917 State HW 7	Bainbridge	NY	13733	(800) 653-8540	Manufacturer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Savant Solar LLC	144 Crescent Dr.	Albertson	NY	11507	(516) 974-7600	Installation; consulting; project design; research
Sea Bright Solar	465 45th St., Suite 1	Brooklyn	NY	11220	(914) 588-7739	Installation
Self-Reliant Systems	414 Barton Hill Rd.	Schoharie	NY	12157	(518) 295-8256	Installation; design; maintenance; repair
Shine International Corp.	110 East 59th St.	New York	NY	10022	(212) 688-3636	Business development
Silicon Solar	2917 State HW 7	Bainbridge	NY	13733	(607) 563-7865	Manufacturer; wholesaler; retailer
SolarSmart	224 West 30th St., 4th Floor	New York	NY	10001	(212) 564-4400	Manufacturer; consulting; installation
Solar and Wind FX	5515 South Hill Rd.	Canandaigua	NY	14424	(585) 229-2083	Installation
Solar Electric Systems	13951 Groth Rd.	Springville	NY	14141	(716) 592-8414	Installation; service; retailer
Solar Energy Management Inc.	75 Rustic Hills Rd.	Westbrookville	NY	12785	(845) 549-5370	Installation
Solar Energy Systems	1205 Manhattan Ave.	Brooklyn	NY	11222	(718) 389-1545	Retailer
Solar Energy Systems, LLC	245 Saw Mill Rd., Suite #106	Hawthorne	NY	10532	(914) 623-0390	Installation
Solar Generation, Inc.	43 Mill Hill Rd.	Woodstock	NY	12498	(845) 417-6853	Installation
Solar Liberty Energy Systems	6225 Sheridan Dr., Suite 102	Williamsville	NY	14221	(716) 634-3780	Installation; system design; distributor
Solar Power New York Inc.	PO Box 44	Orchard Park	NY	14127	(877) 765-2769	Installation; system design
Solar Thin Films*	25 Highland Ave.	Dix Hills	NY	11746	(516) 417-8454	Manufacturer; project management
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Solar Works Inc.	48 Elm St.	Albany	NY	12202	(413) 441-0682	Installation
Solar Works, Inc.	31 Pearl St.	Kerhonkson	NY	12446	(845) 392-3370	Installation
Solar Wrights, Inc	45 Pinewood Ave.	Saratoga Springs	NY	12866	(518) 580-8601	Installation
Solarias, Inc.	111 Railroad Ave.	Middletown	NY	10940	(845) 699-5543	Installation
Sun Mountain	PO Box 1364	Olivebridge	NY	12461	(845) 657-8096	Retailer
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
SunDog Solar	PO Box 348	Chatham	NY	12037	(518) 392-4000	Installation
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2244	Consulting; design; maintenance; wholesaler
Sun Stream USA	1764 County Rd. 39	Southampton	NY	11968	(631) 283-0057	Installation
Sunrise Energy Products	26 Laurel Ave.	East Islip	NY	11757	(631) 226-7846	Design; project development
Sunshine Solar Technologies	471 N. Broadway	Jericho	NY	11753	(631) 615-4440	Installation; design; retailer
Sunwise Technologies	1155 Flatbush Rd.	Kingston	NY	12401	(800) 817-6527	Manufacturer; wholesaler
T-KAR Smart Energy Systems	12 Birch St.	Fishkill	NY	12524	(845) 225-8892	Installation
TerraSolar	44 Court St., Tower B	Brooklyn	NY	11201	(718) 422-0100	System design; wholesaler; retailer; service
The Lighting Co.	PO Box 283, Route 55	Summit	NY	12175	(518) 287-1934	Manufacturer; wholesaler
Triangle Electrical Systems	126 Idaho Ave.	Plattsburgh	NY	12903	(518) 562-5425	Installation
Upstate Energy Solutions	4316 State Route 414	Burdett	NY	14817	(607) 229-4176	Installation
Wayne Thomas Electric Corp.	183 Jerusalem Ave.	Massapequa	NY	11758	(516) 845-0316	Installation
Wiley Electronics, LLC*	PO Box 361	Saugerties	NY	12477	(845) 247-2875	Installation

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
World Power Components	147 Highland Ave.	New York	NY	11768	(866) 878-0026	Manufacturer; wholesaler
2K Solar Contracting*	492 Bart Bull Rd.	Middletown	NY	10941	(845) 673-5463	Installation
24 Hour Back Up Power Co.	PO Box 21	Baldwinsville	NY	13027	(315) 433-6058	Installation
Steam Turbine Electric Generators						
Ecopac Equipment, Inc.	306 South Salina St.	Syracuse	NY	13202	(315) 475-1580	Reseller; wholesaler; retailer
Innovative Control Systems, Inc.	26 Corporate Dr.	Clifton Park	NY	12065	(518) 383-8078	Installation; engineering; training
Stork H&E Turbo Blading, Inc.	334 Comfort Rd.	Ithaca	NY	14850	(607) 277-4968	Manufacturer
Tankless Water Heating Systems						
Creative Energy Technologies	2872 State Rd.	Summit	NY	12175	(518) 287-1428	Retailer
Telecommunications Power Systems						
Logic Box Industries, Inc.	60 Industrial Parkway, Unit 491	Buffalo	NY	14227	(866) 577-3628	Wholesaler; exporter
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
Uninterruptible Power Supply UPS Systems						
Advanced Solar	22 Fairway Dr.	Port Jefferson	NY	11776	(631) 642-7435	Retailer
Creative Global Network Services	200 Parkway Dr. South	Hauppauge	NY	11788	(866) 577-3628	Retailer
Logic Box Industries, Inc.	60 Industrial Parkway, Unit 491	Buffalo	NY	14227	(866) 577-3628	Wholesaler; exporter
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
New York Solar Authority	65-69 Parsons Blvd.	Flushing	NY	11365	(888) 479-9163	Construction; installation
Nextec Power Systems, Inc.	89 Cabot Court	Hauppauge	NY	11788	(631) 750-1000	Manufacturer; system design
Pacific Power Systems	234 Lake Dr.	Copiague	NY	11726	(631) 264-0130	Manufacturer
Peak Energy Systems, Inc.	309 Ralph Ave.	Copiague	NY	11726	(631) 789-1100	Installation; maintenance
RefurbUPS.com Inc.	379 Spook Rock Industrial Park	Suffern	NY	10901	(845) 357-6911	Wholesaler; retailer
Renewable Resources, LLC	22 Pleasant Ridge Rd.	Valhalla	NY	10595	(914) 345-6100	Retailer; wholesaler
Steven B Dietrich	151 Northern Blvd., Suite 1	St. James	NY	11780	(631) 584-6433	Manufacturer; power quality solutions
Sutton Design, Inc.	215 North Cayuga St.	Ithaca	NY	14850	(607) 277-4301	Manufacturer; wholesaler; retailer
UPSforLESS	2215 Kenmore Ave., Suite 100	Buffalo	NY	14207	(866) 577-3628	Reseller; distributor
Waste Treatment Systems						
Ecopac Equipment, Inc.	306 South Salina St.	Syracuse	NY	13202	(315) 475-1580	Reseller; wholesaler; retailer
Mars Tech	216 Strawtown Rd.	New City	NY	10956	(845) 638-3100	Manufacturer; wholesaler
Precision Process Equipment	2221 Niagara Falls Blvd.	Niagara Falls	NY	14304	(716) 731-1587	Manufacturer; engineering; product development

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Water Filtering/Purification Systems						
Ace Pump Corp.	57 West 21st St.	New York	NY	10010	(212) 242-1787	Wholesaler; retailer; service
Atlantis Custom Pools Inc.	171 Huber Ave.	Holbrook	NY	11741	(631) 445-4508	Retailer
Ecopac Equipment, Inc.	306 South Salina St.	Syracuse	NY	13202	(315) 475-1580	Reseller; wholesaler; retailer
Mars Tech	216 Strawtown Rd.	New City	NY	10956	(845) 638-3100	Manufacturer; wholesaler
Tinkertown, Inc.	833 Route 244 Tinkertown Rd.	Alfred Station	NY	14803	(866) 845-5462	Installation; retailer
Water Heating Systems						
Aaron Becker Solar	PO Box 563	Poughquag	NY	12570	(845) 724-3994	Installation
AET Solar	50 Patten Rd.	Newburgh	NY	12550	(845) 728-3881	Consulting services
Ambrose Mechanical Services Corp.	71 Lake Meadow Dr.	Rochester	NY	14612	(585) 663-7826	Construction; installation; design
American Photovoltaics & Homes, Ltd.	5951 Riverside Ave., Suite 1199	Riverdale	NY	10471	(718) 548-0428	Manufacturer; wholesaler; retailer
Canrom Photovoltaics	1654 Ontario Ave.	Niagara Falls	NY	14305	(716) 282-2975	Manufacturer; installation; design; distributor
Creative Energy Technologies	2872 State Rd.	Summit	NY	12175	(518) 287-1428	Retailer
EBM Consulting Services	PO Box 911	Millbrook	NY	12545	(845) 877-6030	Installation; design; consulting; maintenance
ETM Solar Works	PO Box 67	Endicott	NY	13760	(607) 785-6499	Consulting; design; installation; construction
e-vanhee	700 Hollenbeck St.	Rochester	NY	14621	(585) 266-1382	Installation; design; engineering; service
Genersys Plc	165 West 91st St., Suite 2G	New York	NY	10024	(609) 933-6826	Manufacturer
Go Solar	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2224	Installation; service
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
New York Wind & Sun, LLC	127 Hunter Dr.	Baldwinsville	NY	13027	(315) 433-1803	Construction; installation
Quality Solar Concepts Inc.	47 Tearose Meadow	Brockport	NY	14420	(585) 278-3773	Installation; consulting; design; maintenance
Radiant Floor Heating	85 West Ave.	Hamburg	NY	14075	(716) 649-5723	Wholesaler
Renovus Energy Systems	102 Cherry St.	Ithaca	NY	14850	(607) 277-1777	Installation; design; reseller
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Savant Solar LLC	144 Crescent Dr.	Albertson	NY	11507	(516) 974-7600	Installation; consulting; project design; research
Self-Reliant Systems	414 Barton Hill Rd.	Schoharie	NY	12157	(518) 295-8256	Installation; design; maintenance; repair
Solar Power New York Inc.	PO Box 44	Orchard Park	NY	14127	(877) 765-2769	Installation; system design
Solar Energy Management Inc.	75 Rustic Hills Rd.	Westbrookville	NY	12785	(845) 549-5370	Installation
Solar Works Inc.	87 Delafield St. #2	Poughkeepsie	NY	12601	(800) 223-8980	Engineering; design; project management
Sun Stream USA	1764 County Rd. 39	Southampton	NY	11968	(631) 283-0057	Installation
Wastecorp.	PO Box 70	Grand Island	NY	14072	(888) 829-2783	Manufacturer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Water Pumps						
Tech-Quipment International	560 West 43rd St., Suite 10J	New York	NY	10036	(860) 796-7989	Wholesaler; exporter
Wastecorp.	PO Box 70	Grand Island	NY	14072	(888) 829-2783	Manufacturer
Water Pumping Windmills						
US Wind Energy Corporation	4230 East Lake Rd.	Wilson	NY	14172	NA	Installation; consulting; project development
WINDTech International, LLC	PO Box 27	Bedford	NY	10506	(914) 232-2354	Manufacturer; retailer; service
Water Storage Tanks						
Wastecorp.	PO Box 70	Grand Island	NY	14072	(888) 829-2783	Manufacturer
Wind Energy						
AeroCity	22 Rte. 23	Claverack	NY	12513	(518) 697-0633	Manufacturer
Alternative Energy Solutions, LLC	163 North Main St., Suite 202	Port Chester	NY	10573	(914) 937-0608	Construction; installation
Alternative Traxx	PO Box 63	New Berlin	NY	12411	(607) 764-8229	Retailer
Altpower, Inc.	125 Maiden Lane, Suite 307	New York	NY	10038	(212) 206-0022	Construction; service; retailer
Aura: Custom Wind Energy Solutions	449 Rt 25A, Suite 105	Mount Sinai	NY	11766	(631) 681-2866	Installation; maintenance; repair; site survey
AWS Truewind, LLC	255 Fuller Rd., Suite 274	Albany	NY	12203	(518) 437-8660	Wind forecasting/mapping; feasibility studies
Bishop Enterprises	131 Hickok Ave.	Syracuse	NY	13206	(315) 463-9017	Consulting; installation; retailer
BlueSkyWind, LLC	10 New King St.	White Plains	NY	10604	(914) 949-2292	Manufacturer; project development
Broms Power LLC	215 East 79th St.	New York	NY	10021	(212) 988-9460	Investment and financial services
DAYSTAR Energy Systems, Inc.	Five Cliffordale Park	Rochester	NY	14609	(585) 224-9105	Installation; maintenance; retailer
EBM Consulting Services	PO Box 911	Millbrook	NY	12545	(845) 877-6030	Installation; design; consulting; maintenance
Electric Transportation Solutions	100 South Bedford Rd.	Mount Kisco	NY	10549	(866) 895-2238	Wholesaler; retailer; importer/exporter
ETM Solar Works	533 Woodford Ave	Endicott	NY	13760	(607) 785-6499	Installation
Fala Technologies	430 Old Neighborhood Rd.	Kingston	NY	12401	(845) 336-4000	Manufacturer; engineering
Fortis America, LLC	102 Cherry St.	Ithaca	NY	14850	(607) 277-1277	Manufacturer; consulting; design
Four Winds Renewable Energy	8902 Route 46	Arkport	NY	14807	(607) 324-9747	System design; installation; service; retailer
GE Energy	1 River Rd.	Schenectady	NY	12345	(518) 385-7343	Manufacturer; system design; consulting
Go Solar	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2224	Installation; service
Great Brook Renewable Energy	819 County Road 28	South New Berlin	NY	13843	(607) 847-6366	Installation; service
Green Arc Energy	6519 Townpath Rd.	East Syracuse	NY	13057	(607) 351-2730	Installation
Hailo LLC Professional	6080 Jericho Turnpike #302	Commack	NY	11725	(877) 504-2456	Manufacturer; wholesaler
Hitachi America Ltd.	50 Prospect Ave.	Tarrytown	NY	10591	(914) 524-6640	Manufacturer

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
Innovative Metal Products	PO Box 278	Kenoza Lake	NY	12750	(845) 794-5113	Manufacturer
MDS Power Inc.	PO Box 532	Champlain	NY	12919	(514) 369-4919	Distributor
MDS Technical Service	3530 Rt 34B	Scipio Center	NY	13147	(315) 364-5270	Consulting; design; installation
New West Technologies*	414 Trenton Ave.	Utica	NY	13502	(315) 507-4771	Engineering; consulting; design
New York Wind & Sun, LLC	127 Hunter Dr.	Baldwinsville	NY	13027	(315) 433-1803	Construction; installation
Northeast Emergency Power Systems, Inc.	3602 Stetson Rd.	Bloomfield	NY	14469	(587) 657-8279	Installation
O'Connell Electric Company	830 Phillips Rd.	Victor	NY	14564	(585) 924-4973	Installation; consulting; design; maintenance
Power2020	160 West 73rd St., Suite 2H	New York	NY	10023	(212) 362-4332	Installation; consulting; project development
Prime Energy Technologies, Inc.	590 New York Ave.	Huntington	NY	11743	(800) 799-5005	Construction; installation; project development
Quality Solar Concepts Inc.	47 Tearose Meadow	Brockport	NY	14420	(585) 278-3773	Installation; consulting; design; maintenance
Renewable Energy Works!	290 Genesee St.	Avon	NY	14414	(585) 226-2920	Workshops
Renewable NRG LLC	PO Box 1117	Woodstock	NY	12498	(845) 657-6655	Manufacturer
Renovus Energy Systems	102 Cherry St.	Ithaca	NY	14850	(607) 277-1777	Installation; design; reseller
Rochester Solar Technologies	830 Phillips Rd.	Victor	NY	14564	(585) 924-2176	Installation; consulting; retailer
Rv Solar Shop	2917 State HW 7	Bainbridge	NY	13733	(800) 653-8540	Manufacturer
Sands Brothers & Co., Ltd.	90 Park Ave.	New York	NY	10016	(212) 953-4964	Project development; financial services
Self-Reliant Systems	414 Barton Hill Rd.	Schoharie	NY	12157	(518) 295-8256	Installation; design; maintenance; repair
Shine International Corp.	110 East 59th St.	New York	NY	10022	(212) 688-3636	Business development
Solar Energy Systems	1205 Manhattan Ave.	Brooklyn	NY	11222	(718) 389-1545	Retailer
Solar Rythms	10 Canaan Rd.	New Paltz	NY	12561	(845) 255-3454	Retailer
Stabylex Electronics Corp.	2 Trade Dr.	Massena	NY	13622	(315) 769-5453	Manufacturer; design; engineering
Sun Products	PO Box 806	Lindenhurst	NY	11757	(631) 226-7846	Design; project development; retailer; wholesaler
Sun Shack	63 Laurel Ave.	Riverhead	NY	11901	(631) 727-2244	Consulting; design; maintenance; wholesaler
Sun Stream USA	1764 County Rd. 39	Southampton	NY	11968	(631) 283-0057	Installation
Sustainable Energy Developments, Inc.	317 Route 104	Ontario	NY	14519	(877) 946-3674	Project development; construction; maintenance
TechnoSpin Inc.	601 W 26th St., Room 1260	New York	NY	10001	(212) 751-8336	Manufacturer; engineering; project development
The Delaney Group	2736 Rte. 30	Gloversville	NY	12078	(518) 661-5304	Installation; construction
The Louis Berger Group, Inc	One Seaport Plaza - 23rd Floor	New York	NY	10038	(212) 612-4341	Consulting; project development
Toko Asia Wind Energy	198-11 47th Ave., FL1	Flushing	NY	11358	(718) 767-3168	Manufacturer
Urban Green Energy	160 West End Ave. - 12J	New York	NY	10023	(917) 512-9777	Manufacturer; design; engineering; research
US Wind Energy Corporation	4230 East Lake Rd.	Wilson	NY	14172	NA	Installation; consulting; project development

Table A-1: Directory of New York State Clean Energy Businesses by Product Line and Business Type

Business Name/Product Line	Street Address	Municipality	State	Zip Code	Phone Number	Business Type
WINDTech International, LLC	PO Box 27	Bedford	NY	10506	(914) 232-2354	Manufacturer; retailer; service
Source: Source Guides Renewable Energy Business Directory (http://energy.sourceguides.com); NYSERDA's Solar/Wind Installer Directory (www.powernaturally.org).						
Adapted By: New York State Department of Labor.						

Table A-2: Employment Activity in Industries Associated With Renewable & Energy Efficiency, New York State - 2007

NAICS	Industry	Firms	Employment	Job Trend: 2002 - 2007		Average Wage Per Worker - 2007	
				Net	Percent	Annual	Weekly
Solar Installers							
238160	Solar Reflecting Coating/Roof Application	779	6,311	-28	-0.4%	\$43,989	\$846
238220	Solar Heating Equipment Installation	6,149	52,518	8,219	18.6%	\$55,714	\$1,071
	Total	6,928	58,829	8,191	16.2%	\$54,456	\$1,047
Wind Installers							
237130	Wind Power Structure Construction	190	3,456	457	15.2%	\$79,708	\$1,533
Solar Manufacturing							
333414	Solar Heating Systems	19	840	-92	-9.9%	\$52,416	\$1,008
334413	Solar Cells/Photovoltaic Devices	82	9,557	-283	-2.9%	\$87,541	\$1,683
334519	Solarimeters	59	2,832	302	11.9%	\$62,393	\$1,200
335121	Solar Lighting Fixtures (Residential)	45	1,069	-489	-31.4%	\$47,490	\$913
335122	Solar Lighting Fixtures (Commercial)	38	1,588	-223	-12.3%	\$45,757	\$880
	Total	243	15,886	-785	-4.7%	\$74,424	\$1,431
Wind Manufacturing							
333611	Wind Turbines/Generators/Mills	10	3,221	-1,370	-29.8%	\$85,638	\$1,647
Weatherization							
238220	Plumbing, Heating, AC Contractors	6,149	52,518	8,219	18.6%	\$55,714	\$1,071
238310	Insulation Contractors	1,083	13,920	2,392	20.7%	\$60,947	\$1,173
238350	Window and Door Installation	2,975	13,354	1,453	12.2%	\$46,402	\$892
238290	Boiler and Pipe Insulation Installation	537	8,704	1,581	22.2%	\$71,848	\$1,382
238390	Foundation Damp proofing	442	3,968	-98	-2.4%	\$49,154	\$945
	Total	11,186	92,464	13,647	17.2%	\$56,398	\$1,085
Energy Service Companies (ESCOs)							
221119	Wind and Solar Power Generation	24	482	-171	-35.6%	\$81,610	\$1,569
541330	Engineering Services	2,252	32,358	2,123	7.0%	\$81,314	\$1,564
541690	Energy Consulting Services	964	3,453	1,035	42.8%	\$77,120	\$1,483
	Total	3,240	36,293	2,987	9.0%	\$80,919	\$1,556
All Associated RE/EE Industries (Unduplicated)		15,648	157,611	14,908	10.4%	\$64,480	\$1,240

Note: The industry titles listed are only a component of the entire NAICS classification. For example, solar heating equipment installation includes all HVAC businesses.

Source: New York State Department of Labor.

APPENDIX B – SOLAR INSTALLATION SECTOR: NEW YORK STATE

Table B1 -- Solar Installation: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
47-3013	Electrician Helpers	5%	\$ 30,910	\$ 22,560	\$ 37,340	Short-term OJT	HS
47-3015	Plumber Helpers	3%	\$ 29,420	\$ 21,210	\$ 37,230	Short-term OJT	HS
49-9098	Installation, Maintenance, and Repair Helpers	1%	\$ 29,150	\$ 19,330	\$ 37,300	Short-term OJT	HS/SC
53-7062	Laborers and Material Movers	1%	\$ 23,900	\$ 17,760	\$ 30,390	Short-term OJT	HS/SC
53-3033	Light Truck Drivers	1%	\$ 30,360	\$ 19,160	\$ 40,250	Short-term OJT	HS/SC
	Middle-Skill						
47-2061	Construction Laborers	2%	\$ 42,690	\$ 25,980	\$ 56,110	Moderate-term OJT	HS
41-4012	Sales Representatives	1%	\$ 57,350	\$ 32,790	\$ 87,010	Moderate-term OJT	HS/SC/C
49-9042	Maintenance and Repair Workers	1%	\$ 36,160	\$ 24,390	\$ 44,010	Moderate-term OJT	HS/SC
	High-Skill						
47-1011	First-Line Supervisors/Managers of Construction Trades	4%	\$ 70,950	\$ 47,610	\$ 88,580	Work Exp. Related Occupation	HS/SC
13-1051	Cost Estimators	2%	\$ 60,730	\$ 39,010	\$ 78,990	Work Exp. Related Occupation	HS/SC/C
47-2111	Electricians	22%	\$ 61,010	\$ 37,280	\$ 79,050	Long-term OJT	HS/SC
47-2152	Plumbers, Pipefitters, and Steamfitters	16%	\$ 57,180	\$ 35,360	\$ 72,440	Long-term OJT	HS/SC
49-9021	Heating, Air Conditioning, Refrigeration Mechanics/Installers	8%	\$ 45,490	\$ 29,420	\$ 55,880	Long-term OJT	HS/SC
47-2211	Sheet Metal Workers	4%	\$ 57,550	\$ 30,750	\$ 72,040	Long-term OJT	HS/SC
51-4121	Welders, Cutters, Solderers, and Brazers	1%	\$ 34,670	\$ 24,960	\$ 43,400	Long-term OJT	HS/SC
11-9021	Construction Managers	1%	\$ 113,290	\$ 67,870	\$ 156,030	Bachelor degree	HS/SC/C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor degree	C
11-1021	General and Operations Managers	2%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table B2 -- Solar Installation Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
Electrician Helpers	Apprentice Electrician, Electrician Assistant	Solar Energy System Installer Helper
Plumber Helpers	Plumber Assistant	Solar Energy System Installer Helper
Installation, Maintenance, and Repair Helpers	Solar Energy System Installer Helper, Electrical Assistant	Solar Energy System Installer Helper
Laborers and Material Movers	Material Handler, Warehouse Worker, Laborer, Loader	
Light Truck Drivers	Truck Driver	
Middle-Skill		
Construction Laborers	Construction Worker	
Sales Representatives	Contracts Specialist, Marketing Associate	Residential/Commercial Solar Sales Consultant
Maintenance and Repair Workers	Maintenance Electrician	Building Maintenance Engineer
High-Skill		
First-Line Supervisors/Managers of Const. Trades	Construction Foreman, Insulation Supervisor	Solar Installation Electrician Foreman, Weatherization Operations Manager
Cost Estimators	Construction Job Cost Estimator	
Electricians	Electric Wirer	Solar Energy System Installer, Solar Installation Electrician, Electrical System Installer
Plumbers, Pipefitters, and Steamfitters	Hot Water Heater Installer	Solar Energy System Installer, Green Plumber and Pipefitter
Heating, Air Cond., Refrigeration Mech./Installers	Solar Panel Technician, Solar Energy System Installer	Solar Energy System Installer
Sheet Metal Workers	HVAC Sheet Metal Specialist	Solar Energy System Installer, Wind Turbine Sheet Metal Worker
Welders, Cutters, Solderers, and Brazers	Welder, Electrical Solderer	Welder
Construction Managers	Construction Foreman, Roofing Contractor	
Accountants and Auditors	Accountant, Data Processing Auditor, Financial Auditor	
General and Operations Managers	Installation Superintendent, Site Operations Manager	

Table B3 -- Solar Installation Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
47-3013	Electrician Helpers	3,720	140	67	0.5	Tight
47-3015	Plumber Helpers	3,290	150	236	1.6	Tight
49-9098	Installation, Maintenance, and Repair Helpers	9,470	290	1,431	4.9	Adequate
53-7062	Laborers and Material Movers	96,430	3,090	5,281	1.7	Tight
53-3033	Light Truck Drivers	58,260	1,160	355	0.3	Tight
	Middle-Skill					
47-2061	Construction Laborers	54,770	1,190	193	0.2	Tight
41-4012	Sales Representatives	119,850	2,670	142	0.1	Tight
49-9042	General Maintenance and Repair Workers	94,990	780	203	0.3	Tight
	High-Skill					
47-1011	First-Line Supervisors/Mang. of Construction Trades	33,510	900	512	0.6	Tight
13-1051	Cost Estimators	10,090	390	66	0.2	Tight
47-2111	Electricians	40,000	1,580	191	0.1	Tight
47-2152	Plumbers, Pipefitters, and Steamfitters	28,040	1,070	1,241	1.2	Tight
49-9021	Heating, Air Cond., Refrig. Mechanics/Installers	18,390	450	249	0.6	Tight
47-2211	Sheet Metal Workers	6,490	240	370	1.5	Tight
51-4121	Welders, Cutters, Solderers, and Brazers	10,530	220	629	2.9	Tight
11-9021	Construction Managers	27,080	760	205	0.3	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX C – SOLAR MANUFACTURING SECTOR: NEW YORK STATE

Table C1 -- Solar Manufacturing: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
51-9198	Production Helpers	1%	\$ 20,500	\$ 16,570	\$ 25,820	Short-term OJT	HS
53-7062	Laborers and Material Movers	1%	\$ 23,900	\$ 17,760	\$ 30,390	Short-term OJT	HS/SC
53-7051	Industrial Truck and Tractor Operators	1%	\$ 32,020	\$ 22,780	\$ 39,130	Short-term OJT	HS
43-5071	Shipping, Receiving, and Traffic Clerks	1%	\$ 27,530	\$ 19,270	\$ 34,510	Short-term OJT	HS/SC
51-2022	Electrical and Electronic Equipment Assemblers	8%	\$ 27,200	\$ 18,880	\$ 35,090	Short-term OJT	HS/SC
43-5061	Production, Planning, and Expediting Clerks	1%	\$ 44,480	\$ 31,090	\$ 53,130	Short-term OJT	HS/SC/C
53-7064	Packers and Packagers, Hand	1%	\$ 19,100	\$ 16,120	\$ 24,700	Short-term OJT	HS
43-5081	Stock Clerks and Order Fillers	1%	\$ 19,920	\$ 16,690	\$ 26,100	Short-term OJT	HS/SC
	Middle-Skill						
51-9061	Inspectors and Testers	3%	\$ 31,260	\$ 20,230	\$ 40,680	Moderate-term OJT	HS/SC
51-2041	Structural Metal Fabricators and Fitters	1%	\$ 32,940	\$ 21,240	\$ 45,520	Moderate-term OJT	HS/SC
49-9042	General Maintenance and Repair Workers	1%	\$ 36,160	\$ 24,390	\$ 44,010	Moderate-term OJT	HS/SC
51-9121	Coat, Paint & Spray Machine Setters, Oper./ Tenders	1%	\$ 30,330	\$ 21,590	\$ 37,340	Moderate-term OJT	HS
51-4011	Computer-Controlled Machine Tool Operators	1%	\$ 31,660	\$ 22,560	\$ 37,450	Moderate-term OJT	HS/SC
	High-Skill						
51-1011	First-Line Supervisors/Mang. of Production Workers	3%	\$ 52,860	\$ 36,180	\$ 65,240	Work Exp. Related Occupation	HS/SC
13-1023	Purchasing Agents	1%	\$ 57,640	\$ 39,850	\$ 71,000	Work Exp. Related Occupation	HS/SC/C
11-3051	Industrial Production Managers	1%	\$ 91,060	\$ 62,810	\$ 112,840	Work Exp. Related Occupation	HS/SC/C
43-1011	First-Line Supervisors/Managers of Office Workers	1%	\$ 51,650	\$ 36,910	\$ 63,540	Work Exp. Related Occupation	HS/SC/C
51-4121	Welders, Cutters, Solderers, and Brazers	1%	\$ 34,670	\$ 24,960	\$ 43,400	Long-term OJT	HS/SC
47-2211	Sheet Metal Workers	1%	\$ 57,550	\$ 30,750	\$ 72,040	Long-term OJT	HS/SC
51-4041	Machinists	1%	\$ 36,930	\$ 24,330	\$ 45,020	Long-term OJT	HS/SC
49-9021	Heating, Air Cond., & Refrig. Mechanics and Installers	1%	\$ 45,490	\$ 29,420	\$ 55,880	Long-term OJT	HS/SC
49-9041	Industrial Machinery Mechanics	1%	\$ 44,790	\$ 32,470	\$ 54,160	Long-term OJT	HS/SC
51-4111	Tool and Die Makers	1%	\$ 44,540	\$ 27,820	\$ 53,990	Long-term OJT	HS/SC
17-3026	Industrial Engineering Technicians	1%	\$ 50,570	\$ 33,920	\$ 67,230	Associate degree	HS/SC
17-2141	Mechanical Engineers	2%	\$ 73,060	\$ 53,090	\$ 88,360	Bachelor degree	C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor degree	C
11-1021	General and Operations Managers	1%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C
11-9041	Engineering Managers	2%	\$ 122,820	\$ 87,840	\$ 152,840	Bach. or higher + Work Exp.	C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table C2 -- Solar Manufacturing Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
Production Helpers	Machinist Helper, Manufacturing Helper	
Laborers and Material Movers	Material Handler, Warehouse Worker, Laborer, Loader	
Industrial Truck and Tractor Operators	Truck Driver, Forklift Operator	
Shipping, Receiving, and Traffic Clerks	Warehouseman, Receiving Mgr., Shipper, Ship/Rec. Clerk	
Electrical and Electronic Equipment Assemblers	Electrical Assembler, Factory Worker, Wirer	Solar Fabrication Technician
Production, Planning, and Expediting Clerks	Production Scheduler, Production Planner	
Packers and Packagers, Hand	Packer, Bagger, Packager, Shipping Clerk	
Stock Clerks and Order Fillers	Packer, Sales Representative, Stockroom Attendant	
Middle-Skill		
Inspectors and Testers	Elec. Tester, Semicond. Wafer Insp., Semicond. Packgs. Tester	
Structural Metal Fabricators and Fitters	Steelworker, Fabricator	
General Maintenance and Repair Workers	Electrical Mechanical Technician, Instrument & Controls Tech.	Building Maintenance Engineer
Coat, Paint & Spray Mach. Setters, Oper./ Tenders	Painter, Hand Sprayer, Industrial Painter, Powder Coater	
Computer-Controlled Machine Tool Operators	Computer Num. Control Mach., Auto.Cutting Machine Operator	
High-Skill		
First-Line Supervisors/Mang. of Prod. Workers	Production Supervisor, Manufacturing Supervisor	
Purchasing Agents	Contracts Manager, Purchasing Agent, Merchandiser	
Industrial Production Managers	Supervisor, Manager, Plant Superintendent	Solar Thermoelectric Plant Manager, Wind Field Operations Manager
First-Line Supervisors/Managers of Office Workers	Office Manager, Office Supervisor, Director, Admin. Supervisor	Weatherization Operations Manager
Welders, Cutters, Solderers, and Brazers	Electric Arc Welder, Electric Spot Welder	Welder
Sheet Metal Workers	HVAC Sheet Metal Specialist, Metal Worker	Solar Energy System Installer, Wind Turbine Sheet Metal Worker
Machinists	Electrical Instrument Maker	Wind Turbine Machinist
Heating, Air Cond., & Refrig. Mechanics and Installers	Heating Sys. Installer, Renewable Energy Technician	Solar Energy System Installer, Field Tech., HVAC Service Tech.
Industrial Machinery Mechanics	Water/Power Generation Plant Mach. Maint. Mech., Ind. Elec.	Wind Field Tech., Wind Generating Installer, Wind Field Service Tech.
Tool and Die Makers	Toolsmith, Electronic Die Maker	
Industrial Engineering Technicians	Industrial Engineer, Manufacturing Engineer	
Mechanical Engineers	Solar Energy Systems Designer, Solar Engineer	Wind Turbine Mechanical Engineer
Accountants and Auditors	Accountant, Data Processing Auditor, Financial Auditor	
General and Operations Managers	District Plant Superintend., Elec. Superintend., Oper. Supervisor	
Engineering Managers	Chief Engineer, Electrical Engineering Director, Plant Engineer	Director of Wind Development

Table C3 -- Solar Manufacturing Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
51-9198	Production Helpers	17,870	440	3,463	7.9	Surplus
53-7062	Laborers and Material Movers	96,430	3,090	5,281	1.7	Tight
53-7051	Industrial Truck and Tractor Operators	19,450	490	393	0.8	Tight
43-5071	Shipping, Receiving, and Traffic Clerks	41,490	990	883	0.9	Tight
51-2022	Electrical and Electronic Equipment Assemblers	13,020	220	127	0.6	Tight
43-5061	Production, Planning, and Expediting Clerks	16,320	440	1,381	3.1	Adequate
53-7064	Packers and Packagers, Hand	31,640	390	213	0.5	Tight
43-5081	Stock Clerks and Order Fillers	104,850	2,490	5,493	2.2	Tight
	Middle-Skill					
51-9061	Inspectors and Testers	19,920	300	1,025	3.4	Adequate
51-2041	Structural Metal Fabricators and Fitters	3,060	50	180	3.6	Adequate
49-9042	General Maintenance and Repair Workers	94,990	780	203	0.3	Tight
51-9121	Coating, Painting & Spraying Setters, Oper./Tenders	2,720	50	80	1.6	Tight
51-4011	Computer-Controlled Machine Tool Operators	4,090	50	73	1.5	Tight
	High-Skill					
51-1011	First-Line Supervisors/Mang. of Production Workers	28,470	480	129	0.3	Tight
13-1023	Purchasing Agents	14,360	310	137	0.4	Tight
11-3051	Industrial Production Managers	6,200	210	275	1.3	Tight
43-1011	First-Line Supervisors/Managers of Office Workers	106,400	2,230	2,034	0.9	Tight
51-4121	Welders, Cutters, Solderers, and Brazers	10,530	220	629	2.9	Tight
47-2211	Sheet Metal Workers	6,490	240	370	1.5	Tight
51-4041	Machinists	14,480	220	81	0.4	Tight
49-9021	Heating, Air Cond. & Refrig. Mechanics and Installers	18,390	450	249	0.6	Tight
49-9041	Industrial Machinery Mechanics	9,770	160	2,983	18.6	Surplus
51-4111	Tool and Die Makers	4,020	50	172	3.4	Adequate
17-3026	Industrial Engineering Technicians	2,750	50	297	5.9	Adequate
17-2141	Mechanical Engineers	9,480	210	404	1.9	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight
11-9041	Engineering Managers	7,910	160	1,157	7.2	Surplus

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX D – WIND INSTALLATION SECTOR: NEW YORK STATE

Table D1 -- Wind Installation: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
53-7062	Laborers and Material Movers	1%	\$ 23,900	\$ 17,760	\$ 30,390	Short-term OJT	HS/SC
49-9098	Installation, Maintenance, and Repair Helpers	1%	\$ 29,150	\$ 19,330	\$ 37,300	Short-term OJT	HS/SC
	Middle-Skill						
47-2061	Construction Laborers	20%	\$ 42,690	\$ 25,980	\$ 56,110	Moderate-term OJT	HS
47-2073	Operating Eng. & Other Const. Equip. Operators	11%	\$ 57,020	\$ 36,690	\$ 74,110	Moderate-term OJT	HS/SC
53-3032	Truck Drivers, Heavy and Tractor-Trailer	3%	\$ 40,090	\$ 28,130	\$ 49,550	Moderate-term OJT	HS/SC
47-2051	Cement Masons and Concrete Finishers	1%	\$ 50,540	\$ 31,350	\$ 65,280	Moderate-term OJT	HS
49-9042	General Maintenance and Repair Workers	1%	\$ 36,160	\$ 24,390	\$ 44,010	Moderate-term OJT	HS/SC
	High-Skill						
49-3042	Mobile Heavy Equipment Mechanics	1%	\$ 45,150	\$ 31,140	\$ 53,410	Post Secondary Voc. Training	HS/SC
13-1051	Cost Estimators	1%	\$ 60,730	\$ 39,010	\$ 78,990	Work Exp. Related Occupation	HS/SC/C
47-1011	First-Line Supervisors of Construction Trades	6%	\$ 70,950	\$ 47,610	\$ 88,580	Work Exp. Related Occupation	HS/SC
49-1011	First-Line Supervisors of Mechanics/Installers	2%	\$ 64,650	\$ 44,540	\$ 77,670	Work Exp. Related Occupation	HS/SC
49-9051	Electrical Power-Line Installers and Repairers	6%	\$ 69,910	\$ 47,420	\$ 75,590	Long-term OJT	HS/SC
47-2031	Carpenters	2%	\$ 47,350	\$ 30,270	\$ 63,340	Long-term OJT	HS/SC
51-4121	Welders, Cutters, Solderers, and Brazers	1%	\$ 34,670	\$ 24,960	\$ 43,400	Long-term OJT	HS/SC
47-2111	Electricians	1%	\$ 61,010	\$ 37,280	\$ 79,050	Long-term OJT	HS/SC
47-2221	Structural Iron and Steel Workers	1%	\$ 75,300	\$ 40,890	\$ 88,120	Long-term OJT	HS/SC
11-9021	Construction Managers	2%	\$ 113,290	\$ 67,870	\$ 156,030	Bachelor degree	HS/SC/C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor degree	C
11-1021	General and Operations Managers	2%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table D2 -- Wind Installation Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
Laborers and Material Movers	Material Handler, Warehouse Worker, Laborer	
Installation, Maintenance, and Repair Helpers	Electrical Assistant	
Middle-Skill		
Construction Laborers	Construction Worker	
Oper. Engineers & Other Const. Equip. Operators	Heavy Machinery Operator	
Truck Drivers, Heavy and Tractor-Trailer	Heavy Truck Driver	
Cement Masons and Concrete Finishers	Mason	
General Maintenance and Repair Workers	Industrial Mechanic	Building Maintenance Engineer
High-Skill		
Mobile Heavy Equipment Mechanics	Construction Equipment Mechanic	
Cost Estimators	Construction Job Cost Estimator	
First-Line Supervisors of Construction Trades	Construction Foreman, Field Assembly Supervisor	Solar Installation Electrician Foreman, Weatherization Operations Mgr.
First-Line Supervisors of Mechanics/Installers	Equipment Maintenance Supervisor	Weatherization Operations Manager
Electrical Power-Line Installers and Repairers	Lineman	
Carpenters	Form Builder, Carpenter	Carpenters
Welders, Cutters, Solderers, and Brazers	Welder, Brazer	Welder
Electricians	Electric Wire	Solar Energy System Installer, Solar Installation Elect., Elec. Sys. Installer
Structural Iron and Steel Workers	Steel Construction Worker, Structural Steel Fitter	
Construction Managers	Construction Foreman	
Accountants and Auditors	Accountant, Data Processing Auditor, Financial Auditor	
General and Operations Managers	Installation Superintendent, Site Operations Manager	

Table D3 -- Wind Installation Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
53-7062	Laborers and Material Movers	96,430	3,090	5,281	1.7	Tight
49-9098	Installation, Maintenance, and Repair Helpers	9,470	290	1,431	4.9	Adequate
	Middle-Skill					
47-2061	Construction Laborers	54,770	1,190	193	0.2	Tight
47-2073	Operating Engineers & Other Const. Equip. Operators	15,070	440	288	0.7	Tight
53-3032	Truck Drivers, Heavy and Tractor-Trailer	60,650	1,110	3,762	3.4	Adequate
47-2051	Cement Masons and Concrete Finishers	5,930	290	2,535	8.7	Surplus
49-9042	General Maintenance and Repair Workers	94,990	780	203	0.3	Tight
	High-Skill					
49-3042	Mobile Heavy Equipment Mechanics	3,600	90	70	0.8	Tight
13-1051	Cost Estimators	10,090	390	66	0.2	Tight
47-1011	First-Line Supervisors of Construction Trades	33,510	900	512	0.6	Tight
49-1011	First-Line Supervisors of Mechanics/Installers	23,450	560	88	0.2	Tight
49-9051	Electrical Power-Line Installers and Repairers	4,680	170	189	1.1	Tight
47-2031	Carpenters	69,260	2,000	2,840	1.4	Tight
51-4121	Welders, Cutters, Solderers, and Brazers	10,530	220	629	2.9	Tight
47-2111	Electricians	40,000	1,580	191	0.1	Tight
47-2221	Structural Iron and Steel Workers	4,620	190	146	0.8	Tight
11-9021	Construction Managers	27,080	760	205	0.3	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX E – WIND MANUFACTURING SECTOR: NEW YORK STATE

Table E1 -- Wind Manufacturing: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
53-7062	Laborers and Material Movers	1%	\$ 23,900	\$ 17,760	\$ 30,390	Short-term OJT	HS/SC
43-5061	Production, Planning, and Expediting Clerks	1%	\$ 44,480	\$ 31,090	\$ 53,130	Short-term OJT	HS/SC/C
43-5081	Stock Clerks and Order Fillers	1%	\$ 19,920	\$ 16,690	\$ 26,100	Short-term OJT	HS/SC
43-5071	Shipping, Receiving, and Traffic Clerks	1%	\$ 27,530	\$ 19,270	\$ 34,510	Short-term OJT	HS/SC
51-9198	Production Helpers	1%	\$ 20,500	\$ 16,570	\$ 25,820	Short-term OJT	HS
53-7051	Industrial Truck and Tractor Operators	1%	\$ 32,020	\$ 22,780	\$ 39,130	Short-term OJT	HS
	Middle-Skill						
51-9061	Inspectors and Testers	3%	\$ 31,260	\$ 20,230	\$ 40,680	Moderate-term OJT	HS/SC
51-4011	Computer-Controlled Machine Tool Operators	3%	\$ 31,660	\$ 22,560	\$ 37,450	Moderate-term OJT	HS/SC
49-9042	General Maintenance and Repair Workers	3%	\$ 36,160	\$ 24,390	\$ 44,010	Moderate-term OJT	HS/SC
51-4081	Multiple Machine Tool Setters, Operators/Tenders	2%	\$ 30,900	\$ 19,830	\$ 39,040	Moderate-term OJT	HS/SC
51-4033	Grind & Buff Machine Tool Setters, Operators/Tenders	2%	\$ 29,390	\$ 20,460	\$ 36,790	Moderate-term OJT	HS
51-4031	Cut, Punch & Press Mach. Setters, Operators/Tenders	1%	\$ 27,270	\$ 19,790	\$ 34,060	Moderate-term OJT	HS/SC
	High-Skill						
51-1011	First-Line Supervisors of Production Workers	4%	\$ 52,860	\$ 36,180	\$ 65,240	Work Exp. Related Occupation	HS/SC
13-1023	Purchasing Agents	1%	\$ 57,640	\$ 39,850	\$ 71,000	Work Exp. Related Occupation	HS/SC/C
11-3051	Industrial Production Managers	1%	\$ 91,060	\$ 62,810	\$ 112,840	Work Exp. Related Occupation	HS/SC/C
51-4041	Machinists	7%	\$ 36,930	\$ 24,330	\$ 45,020	Long-term OJT	HS/SC
51-4121	Welders, Cutters, Solderers, and Brazers	1%	\$ 34,670	\$ 24,960	\$ 43,400	Long-term OJT	HS/SC
49-9041	Industrial Machinery Mechanics	1%	\$ 44,790	\$ 32,470	\$ 54,160	Long-term OJT	HS/SC
47-2111	Electricians	1%	\$ 61,010	\$ 37,280	\$ 79,050	Long-term OJT	HS/SC
51-4111	Tool and Die Makers	1%	\$ 44,540	\$ 27,820	\$ 53,990	Long-term OJT	HS/SC
17-2141	Mechanical Engineers	3%	\$ 73,060	\$ 53,090	\$ 88,360	Bachelor degree	C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor degree	C
11-1021	General and Operations Managers	1%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C
11-9041	Engineering Managers	1%	\$ 122,820	\$ 87,840	\$ 152,840	Bach. or higher + Work Exp.	C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table E2 -- Wind Manufacturing Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
Laborers and Material Movers	Material Handler, Warehouse Worker, Laborer, Loader	
Production, Planning, and Expediting Clerks	Production Scheduler, Production Planner	
Stock Clerks and Order Fillers	Packer, Sales Representative, Stockroom Attendant	
Shipping, Receiving, and Traffic Clerks	Warehouseman, Receiving Mgr., Shipper, Shipping/Receiving Clerk	
Production Helpers	Machinist Helper, Manufacturing Helper	
Industrial Truck and Tractor Operators	Truck Driver, Forklift Operator	
Middle-Skill		
Inspectors and Testers	Turbine Attendant, Electric Motor Tester	
Computer-Controlled Machine Tool Operators	Computer Num. Control Mach., Automated Cutting Mach. Operator	
General Maintenance and Repair Workers	Electrical Mechanical Technician, Industrial Maintenance Mechanic	Building Maintenance Engineer
Multiple Machine Tool Setters, Oper., and Tenders	Computer Numerically Controlled Mach., Prod. Machine Tender	
Grind & Buff Machine Tool Setters/ Oper./Tenders	Blade Grinder, Axle Polisher	
Cut, Punch & Press Mach. Setters, Oper./Tenders	Punch Press Operator	
High-Skill		
First-Line Supervisors of Production Workers	Manufacturing Supervisor, Production Manager, Plant Manager	
Purchasing Agents	Contracts Manager, Purchasing Agent, Merchandiser	
Industrial Production Managers	Supervisor, Manager, Plant Superintendent	Solar Thermoelectric Plant Manager, Wind Field Operations Manager
Machinists	Machinist, Gear Machinist, Millwright	Wind Turbine Machinist
Welders, Cutters, Solderers, and Brazers	Blade Worker, Steel Cutter	Welder
Industrial Machinery Mechanics	Turbine Mechanic, Industrial Mechanic	Wind Field Technician, Wind Generating Installer, Wind Field Service Tech.
Electricians	Industrial Electrician, Electrical Wirer	Solar Energy System Installer, Solar Installation Elec., Elec. System Installer
Tool and Die Makers	Toolsmith, Electronic Die Maker	
Mechanical Engineers	Sheet Metal Engineer, Plant Equipment Engineer	Wind Turbine Mechanical Engineer
Accountants and Auditors	Accountant, Data Processing Auditor, Financial Auditor	
General and Operations Managers	District Plant Superintendent, Elec. Superintendent, Oper. Supervisor	
Engineering Managers	Chief Engineer, Electrical Engineering Director, Plant Engineer	Director of Wind Development

Table E3 -- Wind Manufacturing Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
53-7062	Laborers and Material Movers	96,430	3,090	5,281	1.7	Tight
43-5061	Production, Planning, and Expediting Clerks	16,320	440	1,381	3.1	Adequate
43-5081	Stock Clerks and Order Fillers	104,850	2,490	5,493	2.2	Tight
43-5071	Shipping, Receiving, and Traffic Clerks	41,490	990	883	0.9	Tight
51-9198	Production Helpers	17,870	440	3,463	7.9	Surplus
53-7051	Industrial Truck and Tractor Operators	19,450	490	393	0.8	Tight
	Middle-Skill					
51-9061	Inspectors and Testers	19,920	300	1,025	3.4	Adequate
51-4011	Computer-Controlled Machine Tool Operators	4,090	50	73	1.5	Tight
49-9042	General Maintenance and Repair Workers	94,990	780	203	0.3	Tight
51-4081	Multiple Machine Tool Setters, Operators, and Tenders	5,650	110	169	1.5	Tight
51-4033	Grinding & Buffing Machine Tool Setters/Oper./Tenders	3,980	40	181	4.5	Adequate
51-4031	Cutting, Punching & Press Mach. Setters, Oper./Tenders	7,560	180	132	0.7	Tight
	High-Skill					
51-1011	First-Line Supervisors of Production Workers	28,470	480	129	0.3	Tight
13-1023	Purchasing Agents	14,360	310	137	0.4	Tight
11-3051	Industrial Production Managers	6,200	210	275	1.3	Tight
51-4041	Machinists	14,480	220	81	0.4	Tight
51-4121	Welders, Cutters, Solderers, and Brazers	10,530	220	629	2.9	Tight
49-9041	Industrial Machinery Mechanics	9,770	160	2,983	18.6	Surplus
47-2111	Electricians	40,000	1,580	191	0.1	Tight
51-4111	Tool and Die Makers	4,020	50	172	3.4	Adequate
17-2141	Mechanical Engineers	9,480	210	404	1.9	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight
11-9041	Engineering Managers	7,910	160	1,157	7.2	Surplus

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX F – WEATHERIZATION SECTOR: NEW YORK STATE

Table F1 -- Weatherization: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
47-3012	Carpenters Helpers	1%	\$ 24,680	\$ 19,070	\$ 30,520	Short-term OJT	HS
47-3013	Electricians Helpers	3%	\$ 30,910	\$ 22,560	\$ 37,340	Short-term OJT	HS
49-9098	Installation, Maintenance, and Repair Helpers	1%	\$ 29,150	\$ 19,330	\$ 37,300	Short-term OJT	HS/SC
53-7062	Laborers and Material Movers	1%	\$ 23,900	\$ 17,760	\$ 30,390	Short-term OJT	HS/SC
	Middle-Skill						
47-2061	Construction Laborers	2%	\$ 42,690	\$ 25,980	\$ 56,110	Moderate-term OJT	HS
47-2131	Insulation Workers, Floor, Ceiling, and Wall	1%	\$ 36,900	\$ 24,610	\$ 55,880	Moderate-term OJT	HS/SC
47-2132	Insulation Workers, Mechanical	1%	\$ 64,940	\$ 50,540	\$ 75,900	Moderate-term OJT	HS/SC
49-9042	General Maintenance and Repair Workers	1%	\$ 36,160	\$ 24,390	\$ 44,010	Moderate-term OJT	HS/SC
	High-Skill						
13-1051	Cost Estimators	2%	\$ 60,730	\$ 39,010	\$ 78,990	Work Exp. Related Occupation	HS/SC/C
47-1011	First-Line Supervisors of Const. Trades Workers	4%	\$ 70,950	\$ 47,610	\$ 88,580	Work Exp. Related Occupation	HS/SC
49-1011	First-Line Supervisors of Mech., Installers, Repairers	1%	\$ 64,650	\$ 44,540	\$ 77,670	Work Exp. Related Occupation	HS/SC
47-2031	Carpenters	4%	\$ 47,350	\$ 30,270	\$ 63,340	Long-term OJT	HS/SC
47-2111	Electricians	16%	\$ 61,010	\$ 37,280	\$ 79,050	Long-term OJT	HS/SC
47-2152	Plumbers, Pipefitters, and Steamfitters	11%	\$ 57,180	\$ 35,360	\$ 72,440	Long-term OJT	HS/SC
47-2211	Sheet Metal Workers	3%	\$ 57,550	\$ 30,750	\$ 72,040	Long-term OJT	HS/SC
49-9021	Heating, Air Cond. & Refrig. Mechanics/ Installers	6%	\$ 45,490	\$ 29,420	\$ 55,880	Long-term OJT	HS/SC
51-4121	Welders, Cutters, Solderers, and Brazers	1%	\$ 34,670	\$ 24,960	\$ 43,400	Long-term OJT	HS/SC
11-9021	Construction Managers	1%	\$ 113,290	\$ 67,870	\$ 156,030	Bachelor degree	HS/SC/C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor degree	C
11-1021	General and Operations Managers	2%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table F2 -- Weatherization Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
Carpenters Helpers	Carpenter Apprentice, Construction Worker	
Electricians Helpers	Apprentice Electrician, Electrician Assistant	
Installation, Maintenance, and Repair Helpers	Heating and Air-Cond. Installer-Servicer Helper, Apprentice/Lineman	
Laborers and Material Movers	Material Handler, Warehouse Worker, Laborer, Loader	
Middle-Skill		
Construction Laborers	Construction Worker	
Insulation Workers, Floor, Ceiling, and Wall	Retrofit Installer, Fiberglass Insulation Installer	Residential Air Sealing Technician
Insulation Workers, Mechanical	Heat and Frost Insulator, Sheet Metal Insulator	Residential Air Sealing Technician
General Maintenance and Repair Workers	HVAC Technician, Mechanical, Plumbing, and Electrical Installer	Building Maintenance Engineer
High-Skill		
Cost Estimators	Construction Job Cost Estimator	
First-Line Supervisors of Const. Trades Workers	Construction Foreman, Insulation Supervisor, Building Superintendent	Solar Installation Electrician Foreman, Weatherization Operations Manager
First-Line Supervisors of Mech., Installers, Repairers	HVAC Supervisor, Apartment Maintenance Supervisor	Weatherization Operations Manager
Carpenters	Building Carpenter, Residential Carpenter	Carpenters
Electricians	Licensed Electrician, Construction Electrician	Solar Energy System Installer, Solar Installation Elec., Elec. System Installer
Plumbers, Pipefitters, and Steamfitters	Hot Water Heater Installer, Master Plumber, Gas Line Servicer	Solar Energy System Installer, Green Plumber and Pipefitter
Sheet Metal Workers	HVAC Sheet Metal Specialist, Ceiling Installer	Solar Energy System Installer, Wind Turbine Sheet Metal Worker
Heating, Air Cond. & Refrig. Mechanics/ Installers	HVAC Tech., Furn. Mech., Heating and Air-Cond. Installer-Servicer	Solar Energy System Installer, Field Technician, HVAC Service Technician
Welders, Cutters, Solderers, and Brazers	Arc Welder, Gas Welder	Welder
Construction Managers	Const. Foreman, Plumbing and Heating Contractor, Roofing Contractor	
Accountants and Auditors	Accountant, Data Processing Auditor, Financial Auditor	
General and Operations Managers	Line Construction Superintendent, Site Operations Manager	

Table F3 -- Weatherization Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
47-3012	Carpenters Helpers	8,090	380	236	0.6	Tight
47-3013	Electricians Helpers	3,720	140	67	0.5	Tight
49-9098	Installation, Maintenance, and Repair Helpers	9,470	290	1,431	4.9	Adequate
53-7062	Laborers and Material Movers	96,430	3,090	5,281	1.7	Tight
	Middle-Skill					
47-2061	Construction Laborers	54,770	1,190	193	0.2	Tight
47-2131	Insulation Workers, Floor, Ceiling, and Wall	1,020	40	326	8.2	Surplus
47-2132	Insulation Workers, Mechanical	680	30	611	20.4	Surplus
49-9042	General Maintenance and Repair Workers	94,990	780	203	0.3	Tight
	High-Skill					
13-1051	Cost Estimators	10,090	390	66	0.2	Tight
47-1011	First-Line Supervisors of Const. Trades Workers	33,510	900	512	0.6	Tight
49-1011	First-Line Supervisors of Mech., Installers, Repairers	23,450	560	88	0.2	Tight
47-2031	Carpenters	69,260	2,000	2,840	1.4	Tight
47-2111	Electricians	40,000	1,580	191	0.1	Tight
47-2152	Plumbers, Pipefitters, and Steamfitters	28,040	1,070	1,241	1.2	Tight
47-2211	Sheet Metal Workers	6,490	240	370	1.5	Tight
49-9021	Heating, Air Conditioning, and Refrig. Mech./Installers	18,390	450	249	0.6	Tight
51-4121	Welders, Cutters, Solderers, and Brazers	10,530	220	629	2.9	Tight
11-9021	Construction Managers	27,080	760	205	0.3	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX G – ENERGY SERVICE COMPANY SECTOR: NEW YORK STATE

Table G1 -- Energy Service Companies: Common Occupations and Associated Skills, New York State

SOC Code	SOC Title	Staffing Pattern	NYS Occupational Wages ¹			Typical Education and Training Requirements ⁴	Education Cluster ⁴
			Median	Entry ²	Experienced ³		
	Entry-Level						
43-9061	General Office Clerks	3%	\$ 26,280	\$ 18,130	\$ 32,190	Short-term OJT	HS/SC
	Middle-Skill						
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2%	\$ 35,540	\$ 25,130	\$ 42,320	Moderate-term OJT	HS/SC
	High-Skill						
47-4011	Construction and Building Inspectors	1%	\$ 51,500	\$ 36,750	\$ 61,620	Work Exp. Related Occupation	HS/SC/C
17-3023	Electrical and Electronic Engineering Tech.	1%	\$ 55,540	\$ 34,180	\$ 64,070	Associate degree	HS/SC
17-3027	Mechanical Engineering Technicians	1%	\$ 48,920	\$ 35,520	\$ 58,910	Associate degree	HS/SC
11-9021	Construction Managers	1%	\$ 113,290	\$ 67,870	\$ 156,030	Bachelor's degree	HS/SC/C
13-2011	Accountants and Auditors	1%	\$ 69,900	\$ 50,050	\$ 92,540	Bachelor's degree	C
13-2051	Financial Analysts	1%	\$ 87,240	\$ 56,430	\$ 127,300	Bachelor's degree	C
15-1021	Computer Programmers	1%	\$ 70,950	\$ 47,790	\$ 89,890	Bachelor's degree	SC/C
17-1011	Architects	3%	\$ 76,890	\$ 50,470	\$ 101,380	Bachelor's degree	C
17-2071	Electrical Engineers	2%	\$ 82,610	\$ 55,620	\$ 101,360	Bachelor's degree	C
17-2072	Electronics Engineers	1%	\$ 85,290	\$ 58,150	\$ 101,530	Bachelor's degree	C
17-2081	Environmental Engineers	1%	\$ 76,570	\$ 50,310	\$ 91,750	Bachelor's degree	C
17-2141	Mechanical Engineers	2%	\$ 73,060	\$ 53,090	\$ 88,360	Bachelor's degree	C
19-3021	Market Research Analysts	1%	\$ 66,050	\$ 41,670	\$ 89,730	Bachelor's degree	C
11-3031	Financial Managers	1%	\$ 132,760	\$ 76,970	\$ 166,400	Bach. or higher + Work Exp.	SC/C
11-9041	Engineering Managers	2%	\$ 122,820	\$ 87,840	\$ 152,840	Bach. or higher + Work Exp.	C
11-1021	General and Operations Managers	2%	\$ 115,530	\$ 63,320	\$ 163,810	Bach. or higher + Work Exp.	HS/SC/C
13-1111	Management Analysts	5%	\$ 77,800	\$ 49,290	\$ 111,240	Bach. or higher + Work Exp.	C
15-2031	Operations Research Analysts	1%	\$ 74,500	\$ 48,380	\$ 101,440	Master's degree	SC/C

Source: New York State Department of Labor.

¹ New York State *Occupational Wages*: 2nd Quarter 2008

² *Entry wage*: The mean (average) of the bottom third of wages in an occupation.

³ *Experienced wage*: The mean (average) of the top two-thirds of wages in an occupation.

⁴ *Typical Education and Training Requirements* and *Education Cluster* descriptions found here - <http://www.bls.gov/emp/optd/optd001.pdf>

Table G2 -- Energy Service Companies Common Occupations: SOC Titles; Lay Titles and Emerging Titles

SOC Title	Lay Titles	Emerging Titles
Entry-Level		
General Office Clerks	Clerical Assistant, Clerk, Secretary, Data Entry Clerk	
Middle-Skill		
Bookkeeping, Accounting, and Auditing Clerks	Administrative Assistant, Executive Assistant	
High-Skill		
Construction and Building Inspectors	HVACR Inspector, Building Code Administrator	
Electrical and Electronic Engineering Tech.	Lighting Specialist	ICE Technician – (Instrumentation/Controls/Electrical Systems), Solar Commercial Installation Engineering Technician
Mechanical Engineering Technicians	Cert. Control Systems Tech., Heat Transfer Tech.	
Construction Managers	Construction Foreman, Site Manager	
Accountants and Auditors	Accountant, Data Processing Auditor, Fin'l. Auditor	
Financial Analysts	Budget Analyst, Corporate Financial Analyst	
Computer Programmers	Computer Programer	
Architects	Architectural Designer, Facilities Planner	
Electrical Engineers	Electrical Systems Engineer, Service Engineer	Solar Comm. Install. Engineer, Solar Oper. Engineer, Solar Energy Engineer, Wind Farm Electrical Systems Designer, Wind Turbine Electrical Engineer
Electronics Engineers	Electronic System Engineer, Controls Engineer	Solar Commercial Installation Engineer
Environmental Engineers	Env. Engineer, Environmental Systems Coord.	
Mechanical Engineers	HVAC Engineer, Air Conditioning Engineer	Wind Turbine Mechanical Engineer
Market Research Analysts	Demographic Analyst, Market Researcher	
Financial Managers	Bookkeeper, Financial Officer	
Engineering Managers	Chief Engineer, Director of Engineering	
General and Operations Managers	Director, Chief Executive Officer	
Management Analysts	Human Resource Analyst, Administrative Analyst	
Operations Research Analysts	Business Operations Analyst, Procedure Analyst	

Table G3 -- Energy Service Companies Common Occupations: Labor Supply and Demand New York State

SOC Code	SOC Title	Employment 2006	Openings Proj. Annual	Applicants NY One Stop System (Feb. 2009)	Ratio Applicants to Openings	Labor Supply Assessment*
	Entry-Level					
43-9061	General Office Clerks	206,100	4,950	1,317	0.3	Tight
	Middle-Skill					
43-3031	Bookkeeping, Accounting, and Auditing Clerks	142,830	3,300	298	0.1	Tight
	High-Skill					
47-4011	Construction and Building Inspectors	6,430	190	143	0.8	Tight
17-3023	Electrical and Electronic Engineering Technicians	8,670	170	187	1.1	Tight
17-3027	Mechanical Engineering Technicians	1,490	30	459	15.3	Surplus
11-9021	Construction Managers	27,080	760	205	0.3	Tight
13-2011	Accountants and Auditors	106,960	3,230	505	0.2	Tight
13-2051	Financial Analysts	33,170	780	422	0.5	Tight
15-1021	Computer Programmers	36,180	760	587	0.8	Tight
17-1011	Architects	11,420	370	60	0.2	Tight
17-2071	Electrical Engineers	8,850	210	81	0.4	Tight
17-2072	Electronics Engineers	5,860	140	58	0.4	Tight
17-2081	Environmental Engineers	4,160	200	38	0.2	Tight
17-2141	Mechanical Engineers	9,480	210	404	1.9	Tight
19-3021	Market Research Analysts	25,830	550	69	0.1	Tight
11-3031	Financial Managers	52,410	1,260	1,618	1.3	Tight
11-9041	Engineering Managers	7,910	160	1,157	7.2	Surplus
11-1021	General and Operations Managers	95,880	2,310	626	0.3	Tight
13-1111	Management Analysts	36,480	1,180	330	0.3	Tight
15-2031	Operations Research Analysts	1,970	50	97	1.9	Tight

* Ratio value -- Tight < 3.0; Adequate = 3.0 to 6.0; Surplus > 6.0.

APPENDIX H – CLEAN ENERGY TRAINING INVENTORY: NEW YORK STATE

Table H-1: New York State Clean Energy Training Providers by Training Type

Provider Name/Training Type	Street Address	City	State	Zip Code	Phone Number
Biomass					
Morrisville State College	107 Brikneel Hall	Morrisville	NY	13408	
SUNY College of Environmental Science and Forestry	1 Forestry Drive	Syracuse	NY	13210	(315) 470-6817
Energy Efficiency (BPI-recognized)					
CUNY: Center for Sustainable Energy at Bronx Community College	West 181st Street & University Ave.	Bronx	NY	10453	
Association for Energy Affordability	505 8th Ave, Suite 1801	New York	NY	10018	(212) 279-3902
Broome County Community College	907 Upper Front Street	Binghamton	NY	13905	
Conservation Services Group, Inc. (Albany Office)	447 New Karner Road	Albany	NY	12205	(518) 207-4500
Conservation Services Group, Inc. (Ronkonkoma Office)	Meridian Plaza 3075 Veterans Memorial Highway Suite 181	Ronkonkoma	NY	11779	(631) 820-3017
Erie County Community College	City Campus, 121 Ellicoot Street	Buffalo	NY	14203	
Hudson Valley Community College	80 Vandenburg Ave	Troy	NY	12180	(518) 429-6111
NYS Weatherization Directors Association	5869 Fisher Road	Syracuse	NY	13057	(315) 701-0440
OCM - BOCES					
Performance Systems Academy	Lee G. Peters Training Center 4500 Crown Road	Liverpool	NY	13090	
The Building Service 32BJ Thomas Shortman Training	124 Brindley Street, Suite 4	Ithaca	NY	14850	
Steven Winter Associates, Inc.	101 Avenue of Americas	New York	NY	10013	
Westchester Community College	307 Seventh Avenue, Ste. 701	New York	NY	10001	
	75 Grasslands Road	Valhalla	NY	10595	(914) 606-6789
Energy Efficiency					
Cattaraugus-Alleghany-Erie-Wyoming BOCES	1825 Windfall Road	Olean	NY	14760	
Community Environmental Center	43-10 11th Street	Long Island City	NY	11101	(718) 784-1444
CUNY: Baruch College, The Steven L Newman Real Estate	137 East 22nd Street	New York	NY	10010	
CUNY: Borough of Manhattan Community College	199 Chambers Street	New York	NY	10007	
CUNY: Building Performance Lab	One Bernard Baruch Way 55 Lexington Avenue	New York	NY	10010	(646) 660-6977
CUNY: New York City College of Technology	300 Jay Street	Brooklyn	NY	11201	
CUNY: NY Designs at LaGuardia Community College	31-10 Thompson Avenue	Long Island City	NY	11101	
Doe Fund	232 East 84th Street	New York	NY	10028	(212) 628-5207
Farmingdale State College	2350 Broadhallow Rd	Farmingdale	NY	11735	(631) 420-2024

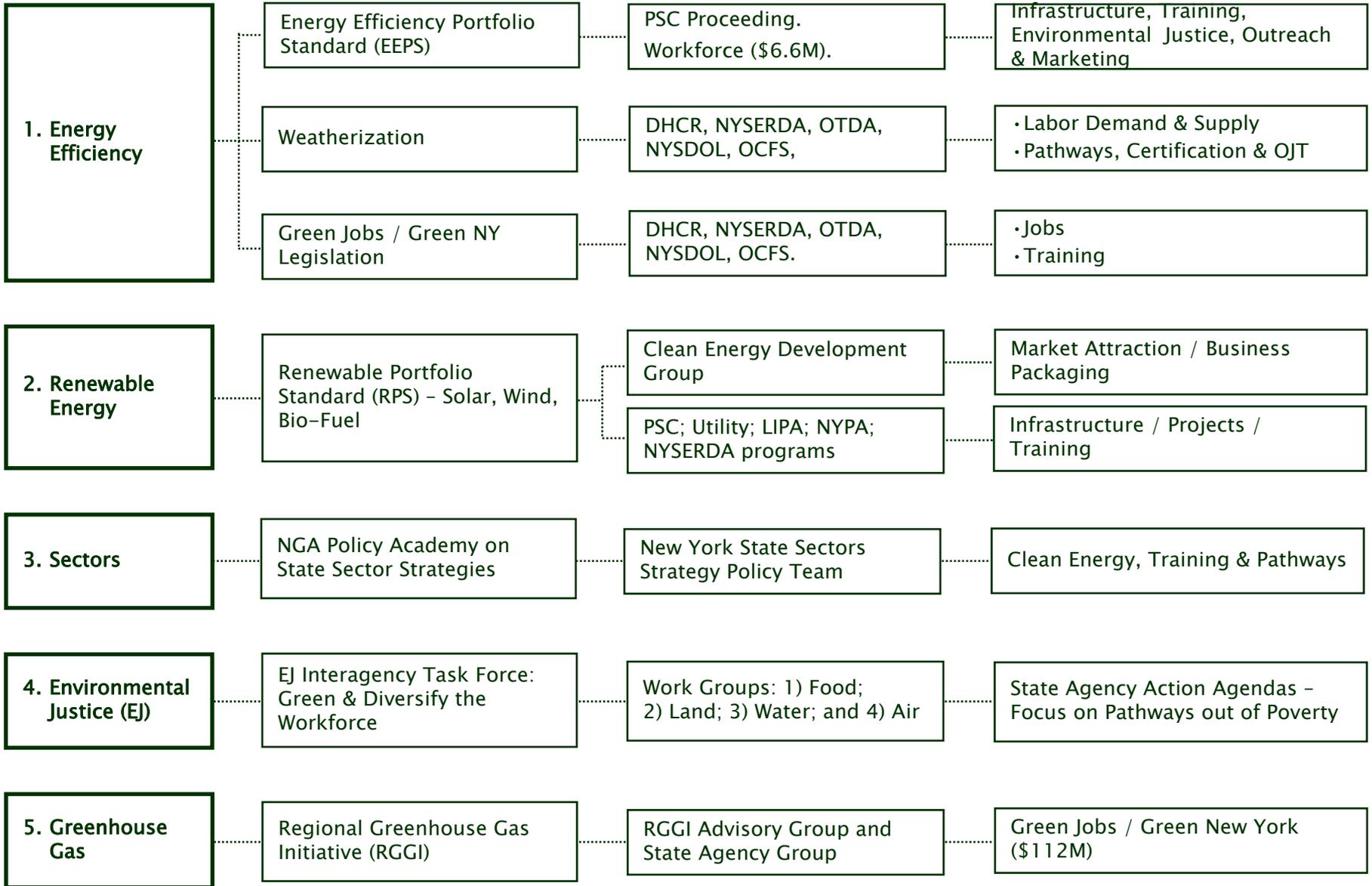
Table H-1: New York State Clean Energy Training Providers by Training Type

Provider Name/Training Type	Street Address	City	State	Zip Code	Phone Number
Fulton-Montgomery Community College	2805 State Highway 67	Johnstown	NY	12095	(518) 762-4651
Greenstreet Construction	68 Est 131 Street, Ste. 600	New York	NY	10037	
International Union of Operating Engineers Local 9	331-337 West 44th Street	New York	NY	10036	
Mohawk Valley Community College	1101 Sherman Drive	Utica	NY	13501	(315) 792-5321
Monroe Community College	Brighton Campus 1000 East Henrietta Road	Rochester	NY	14623	
Morrisville State College	107 Brikneel Hall	Morrisville	NY	13408	
Mount Hope Housing Company	2003-05 Walton Avenue	Bronx	NY	10453	
New York State Weatherization Directors' Association	2 Charles Blvd.	Guilderland	NY	12084	
Nontraditional Employment for Women	243 West 20th Street	New York	NY	10011	(212) 627-6252
North Country Community College	23 Santanoni Ave, PO Box 89	Saranac Lake	NY	12983	(518) 891-2915
Onondaga Community College	4585 West Seneca Turnpike	Syracuse	NY	13215	(315) 498-2171
Solar One	2420 FDR Drive Service Road East	New York	NY	10010	
Southern Westchester BOCES	2 Westchester Plaza	Elmsford	NY	10593	(914) 345-8500
STRIVE International	240 E 123rd St	New York	NY	10035	(212) 360-1100
Suffolk County Community College	533 College Rd.	Selden	NY	11784	(631) 451-4607
Sullivan County Community College	112 College Road	Loch Sheldrake	NY	12759	
SUNY Canton	CSOET, NN105	Canton	NY	13617	
SUNY Ulster Co. Community College	Business Resource Center One Development Center	Kingston	NY	12401	(845) 802-7167
Sustainable South Bronx	890 Garrison Ave # 24	New York	NY	10474	(718) 617-4668
Turner Construction	375 Hudson Street	New York	NY	10014	
Wayne Technical and Career Center	4440 Ridge Road	Williamson	NY	14589	(315) 589-2600
Solar Photovoltaic					
Broome County Community College	907 Upper Front Street	Binghamton	NY	13905	
Clinton Community College	136 Clinton Point Drive	Plattsburgh	NY	12901	(518) 562-4145
CUNY: Borough of Manhattan Community College	199 Chambers Street	New York	NY	10007	
CUNY: Kingsborough Community College	2001 Oriental Blvd.	Brooklyn	NY	11235	(718) 368-6702
CUNY: New York City College of Technology	300 Jay Street	Brooklyn	NY	11201	
Long Island Power Authority	333 Earle Ovington Blvd	Uniondale	NY	11553	
Mohawk Valley Community College	1101 Sherman Drive	Utica	NY	13501	(315) 792-5321
Morrisville State College	107 Brikneel Hall	Morrisville	NY	13408	
Solar One	2420 FDR Drive Service Road East	New York	NY	10010	

Table H-1: New York State Clean Energy Training Providers by Training Type

Provider Name/Training Type	Street Address	City	State	Zip Code	Phone Number
Sullivan County Community College	112 College Road	Loch Sheldrake	NY	12759	
SUNY Delhi	2 Main Street	Delhi	NY	13753	
Wayne Technical and Career Center	4440 Ridge Road	Williamson	NY	14589	(315) 589-2600
Solar Photovoltaic (NABCEP-recognized)					
Cattaraugus-Alleghany-Erie-Wyoming BOCES	1825 Windfall Road	Olean	NY	14760	
CUNY: Center for Sustainable Energy at Bronx Community College	West 181st Street & University Ave.	Bronx	NY	10453	
Farmingdale State College	2350 Broadhallow Rd	Farmingdale	NY	11735	(631) 420-2024
Hudson Valley Community College	80 Vandenburg Ave	Troy	NY	12180	(518) 429-6111
SUNY Canton	CSOET, NN105	Canton	NY	13617	
SUNY College of Environmental Science and Forestry	1 Forestry Drive	Syracuse	NY	13210	(315) 470-6817
SUNY Ulster Co. Community College	Business Resource Center One Development Center	Kingston	NY	12401	(845) 802-7167
Tri-City Joint Apprenticeship Training & Committee	428 Old Niskayuna Road	Latham	NY	12110	
Ulster BOCES	PO Box 601, Route 9W	Port Ewen	NY	12466	
Solar Thermal					
CUNY: New York City College of Technology	300 Jay Street	Brooklyn	NY	11201	
Morrisville State College	107 Brikneel Hall	Morrisville	NY	13408	
SUNY Ulster Co. Community College	Business Resource Center One Development Center	Kingston	NY	12401	(845) 802-7167
Solar Thermal (ISPO-accredited)					
CUNY: Center for Sustainable Energy at Bronx Community College	West 181st Street & University Ave.	Bronx	NY	10453	
Farmingdale State College	2350 Broadhallow Rd	Farmingdale	NY	11735	(631) 420-2024
Wind					
Clinton Community College	136 Clinton Point Drive	Plattsburgh	NY	12901	(518) 562-4145
Morrisville State College	107 Brikneel Hall	Morrisville	NY	13408	
Sullivan County Community College	112 College Road	Loch Sheldrake	NY	12759	
SUNY Ulster Co. Community College	Business Resource Center One Development Center	Kingston	NY	12401	(845) 802-7167
Wayne Technical and Career Center	4440 Ridge Road	Williamson	NY	14589	(315) 589-2600

Attachment 3 – State Level Collaboration



Attachment 4 – NYS Energy Sector Strategy under USDOL’s Green Jobs Training

Green Jobs Labor Exchange (A)

One-Stop Career Centers / Green Jobs NY Portal – Career Planning; Assessment, Job Bank, Burning Glass; JobZone; CareerZone; Training Inventory; Promotion / Business Attraction; Workforce Professionals.

Jobs Worker Demand

- EEPS - \$172M
- RPS – \$98M
- GJ-GNY - \$70M
- WAP - \$500M
- SEP - \$123M
- EECBG - \$175M

Labor Market Information (A)
(Leveraged Resources: State Energy Plan, Clean Energy Report)

Job Projections

- Staffing profile – % of workers in each occupation.
- Wages – Median, Entry and Experienced.
- Typical education and training requirements.
- Career ladder opportunities.
- Occupational projections.
- Supply & demand assessment.

Regional Workforce Sector Strategy (D)
(Leveraged Resources: NYSDOL 13-N Grants \$7.7M)

Workforce Needs

- Pathways Out of Poverty / Entry-level (C)
- Degrees / Licenses / Certificates (B) (D)
- Occupational Skills (B) (D)
- Incumbent Worker (D)
- Job Slots (B) (D)
 - Apprenticeship
 - Job Corp.

Workforce Training (B) (D) (C)
(State Agency Leveraged resources: \$70M)

Worker Supply

- Skilled Union (B) (D)
 - Bench / Hiring Halls
- Skilled Non-Union (D)
 - Emerging - Degrees / Licenses / Certificates
 - Experienced UI / DW
- Non-Skilled Adults (D)
 - Low Income (C)
- Disconnected Youth (C)

Capacity (E)

Curriculum, Classroom Equipment, Accreditation, Certification, Marketing, Outreach, Evaluation

(A) State Labor Market Information Improvement (SGA/DYA PY 08-17)

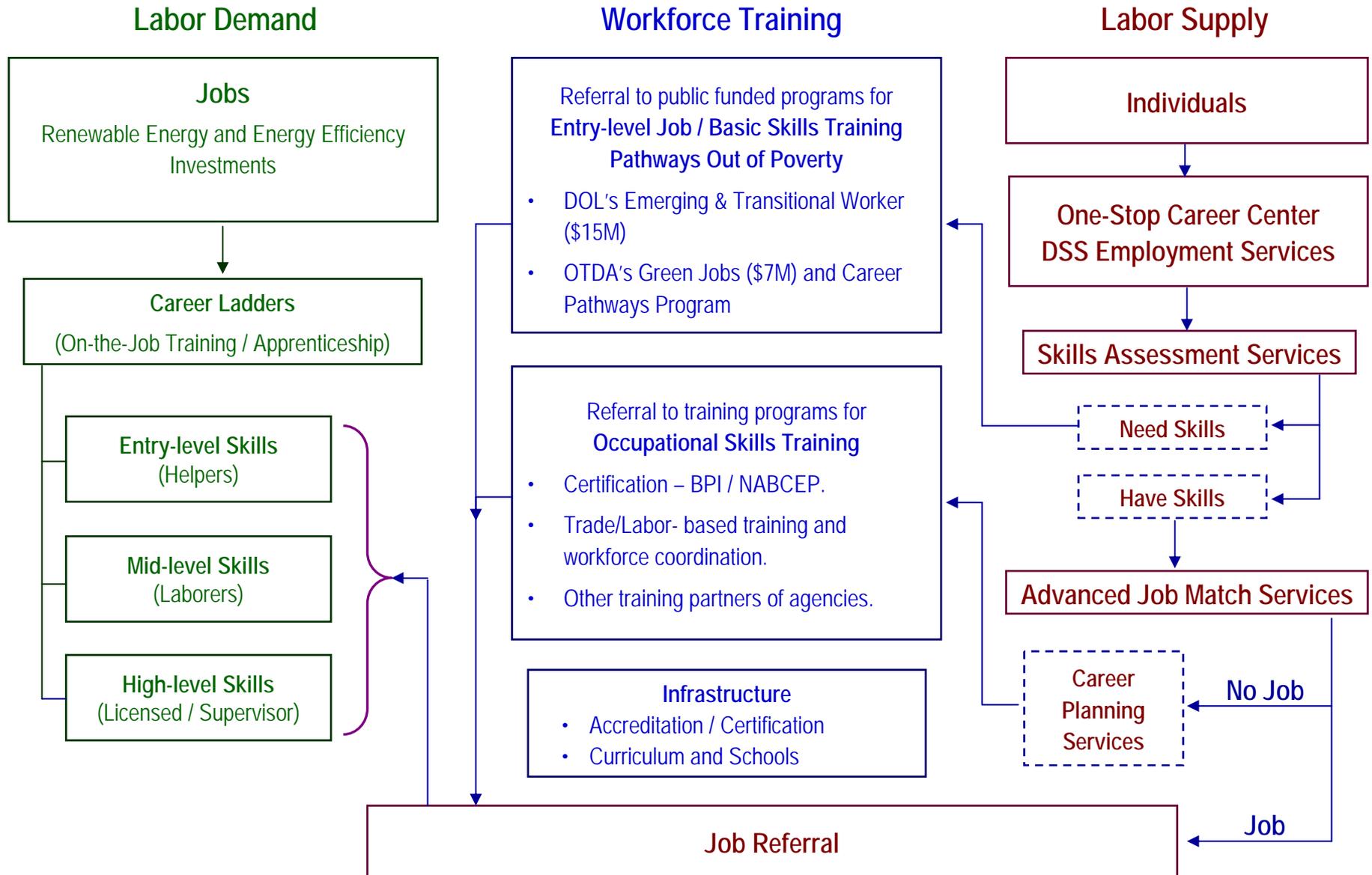
(B) Energy Training Partnerships (SGA/DFA PY 08-18)

(C) Pathways Out of Poverty (SGA/DYA PY 08-19)

(D) State Energy Sector Partnership (SESP) and Training (SGA/DFA PY 08-20)

(E) Capacity Building (SGA/DYA PY 08-21)

Attachment 4 – NYS Energy Sector Strategy under USDOL’s Green Jobs Training



CHARTER
New York State Energy Sector Partnership (SESP)

The State Energy Sector Partnership (SESP) for New York State is hereby established by the State Workforce Investment Board (SWIB) under this Charter. The purpose of the SESP is to facilitate implementation of a State energy sector strategy that leverages public investments in job creation, workforce development and pathways out of poverty in the most effective and optimal manner.

Required members of the SESP include but are not limited to: State Cabinet officials; Energy Efficiency and Renewable Energy business and industries such as public, private, or non-profit business; labor organizations, including labor management training programs; and the State workforce agencies. Encouraged SESP membership includes the State apprenticeship agency and economic development organizations.

The SESP will be co-chaired by the NYS Energy Research & Development Authority and the NYS Department of Labor. The roles and responsibilities of the SESP cover: 1) Labor Market/Industry Data Analysis; 2) Job Training and Education Programs Assessments; and 3) Coordination with Regional Project Teams, as follows.

1) Labor Market/Industry Data Analysis

- a) The SESP shall collect, develop and analyze statewide and regional labor market and industry data which includes workforce data, and identifies existing and emerging businesses in the green economy as well as workforce skills needed to match existing and/or growing demand. In carrying out this duty, the SESP shall consult with relevant public and private stakeholders.

- b) The SESP shall: collect industry data and conduct an inventory of existing job training and educational programs related to clean technology, renewable energy, and energy efficiency; identify gaps in relevant skills and competencies to better match industry demand as well as define types of training and educational programs necessary to fill the gaps; address current barriers and opportunities for participation of targeted populations; and include recommendations for action to promote job training and education programs.

2) Job Training and Education Programs

- a) Based on the results of the labor market/industry data analysis, the SESP shall develop strategies and recommendations for curricula, job training and educational programs that address needs of the State's green economy. The following criteria must be considered in developing strategies and recommendations:
 - i) Involvement of business and labor organizations;
 - ii) Ensuring that prescribed certificates or credentials are industry-recognized;
 - iii) Providing entry-points to targeted populations, including but not limited to:
 - individuals seeking pathways out of poverty into economic self-sufficiency; veterans or past and present members of reserve components of the Armed Forces; formerly incarcerated, adjudicated, non-violent offenders; and workers in need of updated training related to energy efficiency and renewable energy industries;
 - iv) Linking trainees to job openings; and
 - v) Leveraging of public and private funding.

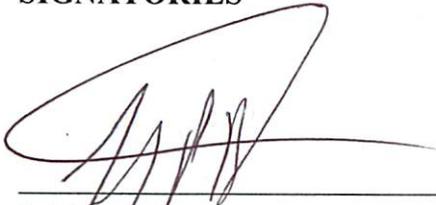
- b) With respect to higher education, the SESP shall help expand and build upon successes of existing education programs at colleges and universities and fill the gaps identified in the workforce data analysis.

3) Regional Project Teams

- a) Nine (9) Regional Project Teams (RPTs) are established under this Charter: Central NY region; Finger Lakes region; Hudson Valley region; Long Island region; Mohawk Valley and Capital region; New York City region; North Country region; Southern Tier region; and Western NY region.
- b) RPT leaders will serve as members of the SESP, to enhance communication between the RPTs and SESP. At the regional level, the RPTs are responsible for coordinating solutions among the Team and will assist with the following functions of the One Stop Career Centers:
 - i) Recruitment and referral of individuals to training programs – work with One Stop Career Centers and business (career fairs, on the job training and customized training); and Regional/local workforce coalitions that serve special populations;
 - ii) Training – Broker occupational skill upgrading and training at qualified institutions for individuals, including on-line learning and basic skills training;
 - iii) Placement – Broker advanced job-match services through the One Stop Career Centers;
 - iv) Retention – Broker services to help individuals retain employment and retain participation in programs which support the goals of this initiative; and

- v) Business Outreach – Communicate with RE and EE businesses in the region on training programs, facilities and skilled workers, to enhance placements outcomes.

SIGNATORIES



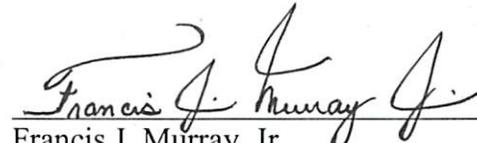
Jeffrey Mans
Deputy Secretary for Labor and Financial
Regulation
Governor's Office



Sarah Osgood
Assistant Secretary for Renewable Energy
Governor's Office



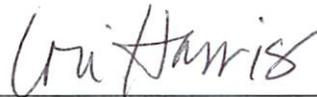
Mario Musolino
Executive Deputy Commissioner
New York State Department of Labor



Francis J. Murray, Jr.,
President and CEO
New York State Energy Research &
Development Authority



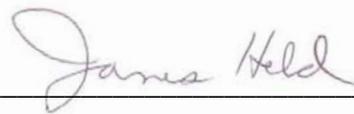
Ed Murphy
Executive Director
Workforce Development Institute



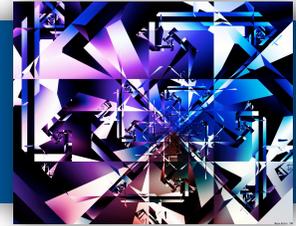
Lori Harris
Assistant Commissioner
New York State Division of Housing and
Community Renewal



Raymond Donnelly
Executive Director
Long Island Forum for Technology (LIFT)



James Held
Director, Center for Policy and Planning
Empire State Development Corporation



David A. Paterson, Governor
M. Patricia Smith, Commissioner

Videoconferencing Solution

Background

NYS DOL's Office of Staff and Organizational Development (OSOD) has managed the operation of a video conference system for the Department for more than nine years. During that time, video conferencing capability has been provided between eleven DOL sites with the objective of increasing staff productivity while reducing travel costs. DOL staff has utilized the equipment with great success for training, meetings, interviews, and administrative proceedings. In 2005 alone, the video conference booking system indicated that the equipment was used a total of 1,463.5 hours statewide. The use of this system resulted in thousands of dollars in travel costs savings and increased productivity because staff could avoid hundreds of hours of comparatively unproductive travel time. Since its purchase in 2000, the equipment has become outdated and maintenance of the system is no longer cost effective. The system can no longer provide reliable, cost effective, video communications for the Department.

The current state of our video conferencing system is negatively affecting the productivity of the entire agency. It inhibits the ability to have timely communication with staff or business contacts that are too far away to communicate with on a face to face basis. Multiple divisions have been impacted, including the Executive Management team, Administrative Adjudication Unit, Labor Standards, Unemployment Insurance Division (UID), Counsel's Office and OSOD; each of these organizations have an immediate business need for this technology.

Technology Solution and Pilot Findings

The Planning and Technology Division (P&T) recently operated a pilot project to measure the effectiveness of currently available technology for video conferencing against the business needs identified by a number of DOL organizations. During the pilot, the Administrative Adjudication Unit effectively used video conferencing for hearings and found the capabilities to be appropriate for their needs; they have requested moving from pilot to full im-

plementation of the system as soon as possible. Likewise, the Counsels Office found the system to be satisfactory for hearings, as well as general conferences and witness preparation; they cited a reduction in travel costs and staff travel time as justification for the investment and suggested extending use of the system to the Industrial Board of Appeals. Both organizations suggested the addition of document scanning capability to allow for the introduction of last minute exhibits. OSOD also expressed a favorable experience with the pilot and supports implementation of the system for DOL's training needs. The Unemployment Insurance Appeal Board (UIAB) and several Executive staff also participated in the pilot and gave favorable accounts of using the system as well as moving forward with a permanent implementation.

With the acquisition of video conference technology, the department would be capable of assisting divisions in their everyday service to the citizens of the New York State. We could provide quality training at a lower cost to the employees of the Department of Labor through delivery from a remote site to external regions. There would be the capability to hold effective meetings between division staff and external agencies or businesses throughout New York State without relying on extensive travel.

The Department could ensure specific agency wide operating needs of certain divisions are met in a cost effective manner.

At minimum the anticipated benefits are:

- ▶ Effective communication
- ▶ Effective meetings
- ▶ Thorough hearings
- ▶ Better access to training
- ▶ Lower travel costs associated w/meetings, hearings and training
- ▶ Lower manpower costs associated with travel of those with valuable technological skills
- ▶ Increased productivity
- ▶ More efficient and accessible public contact
- ▶ Increased collaboration with satellite offices
- ▶ Reliable up-to-date technology
- ▶ Lower Carbon Footprint due to travel avoidance

From: Connell, Joan (LABOR)
Sent: Wednesday, May 20, 2009 9:42 AM
To: Tibaldi, Anthony (LABOR)
Cc: Tracy, Jerome (LABOR)
Subject: RE: Video Conference Equipment

Anthony,

I completely agree with Jerome that the picture quality and sound quality of the video system you demonstrated, along with the ability to direct the camera remotely, and the conferencing capability all make it appropriate for hearings and general conferences. Our office would also use the system for witness preparation, which would also save us in travel time and expenses. I agree that we need to add a document scanner to the system to allow for the introduction of last minute exhibits that were not exchanged prior to the hearing.

As noted in a previous email, our office was significantly over our travel budget for last year. We are seeing a significant increase in the number of administrative hearings before the IBA this year and would support any efforts to provide this system to the IBA.

I agree with Jerome that the most cost effective use of this system would be realized by starting in with the most distant offices in Buffalo and Garden City. However, we would like to see this system in all of the areas where we have administrative proceedings. This would also include Rochester, Syracuse, Utica, Binghamton, White Plains, and NYC. I know we have some of this equipment at Varick Street, but we would like to see this system available in other rooms besides the Commissioner's conference room.

Please contact me if you need any additional information.

Joan A. Connell
Deputy Counsel
NYS Department of Labor

From: Tracy, Jerome (LABOR)
Sent: Tuesday, May 19, 2009 9:34 AM
To: Tibaldi, Anthony (LABOR); Connell, Joan (LABOR)
Cc: Gerstein, Terri (LABOR); Troue, Gary P (LABOR);
Scott, John W (LABOR)
Subject: RE: Video Conference Equipment

Anthony,

The video system you demonstrated would meet the needs of the Administrative Adjudications Unit for the uses we have in mind. The picture and

sound quality, the ability to direct the camera remotely, and the conferencing capability all make it appropriate for hearings, compliance conferences, and general conferences. I cannot speak to witness preparation, as that is not a function of this office. The ability to add a document scanner to the system, as indicated at the demonstration, would enhance its usefulness.

I support moving beyond a pilot program to full use of the system and its early expansion to our most distant offices, Buffalo and Garden City, Long Island.

Jerome Tracy
Associate attorney
Administrative Adjudications unit
New York State Department of Labor

From: Tierney, Matthew J (LABOR)
Sent: Tuesday, May 19, 2009 3:21 PM
To: Tibaldi, Anthony (LABOR)
Subject: RE: Video Conference Equipment

Anthony,

Thank you for the demonstration of the Video Conference Equipment. You extended every courtesy and gave me a working knowledge of the equipment and its capabilities.

The equipment is suitable only for use by the UIAB when conducting general staff conferences. However, I would note that there is a geographic barrier preventing our using this equipment on a regular basis as it is physically located in Albany and Manhattan and the closest UIAB offices are in Troy and Brooklyn, respectively.

The videoconferencing concept would be beneficial to the hearing component of the UIAB mission once it becomes more reliable. We would also need to have it available in DOL facilities in population centers such as Poughkeepsie, Binghamton, and Jamestown where we do not now have hearing offices.

Please let me know if any further information is needed.

Matthew Tierney
Acting Principal Administrative Law Judge (UIAB)
518-402-0570

From: Genovese, Andrew (LABOR)
Sent: Tuesday, May 19, 2009 11:07 AM
To: Tibaldi, Anthony (LABOR); Niven, Andrew C (LABOR); Urban, Shawn C (LABOR); Edwards, Sherry (LABOR)
Subject: RE: Video Conference Equipment

As we discussed, from my perspective:

- 1: Training - to be determined
- 2: general staff conferences - OK
- 3: Any other uses not identified above - OK for general video conferencing use

Of course, this is dependent by the quality of the connection.

Costs

Infrastructure cost: \$275,000.00

52" solution: \$34,000.00

42" solution: \$20,000.00

DSL connection: \$100.00 monthly per site.

Desktop solution (Client software License and Webcam): \$250.00

Total cost for 15 sites and 200 desktop solutions: \$700,000.00

Proposed Sites

Planning and Technology proposes to expand the pilot to additional locations and increase the client software to 200 users. We propose to include the following 15 locations.

Building 12 – Room 504 (52" solution)

Building 12 – Room 544 (52" solution)

Building 12 – Room 266 (42" solution) – Hearing room

Building 12 – Training room D (42" solution)

Binghamton – State Office Bldg (42" solution) - 26 employees + 15 at Front St. Bldg

Brooklyn - Bond Street (42" solution) – 155 employees

Buffalo – Main Street Bldg (42" solution) – 86 employees

Endicott/Glendale (42" solution) – 300 employees

Garden City (42" solution) – 40 employees

NYC – Varick Street (52" solution) – 240 employees

Rochester – Union Street Bldg (42" solution) - 60 employees

Syracuse – Salina Street Bldg (42" solution) – 55 employees

Troy (42" solution) – 300 employees

Utica (42" solution) - 67 employees

White Plains (42" solution) – 69 employees

Future sites

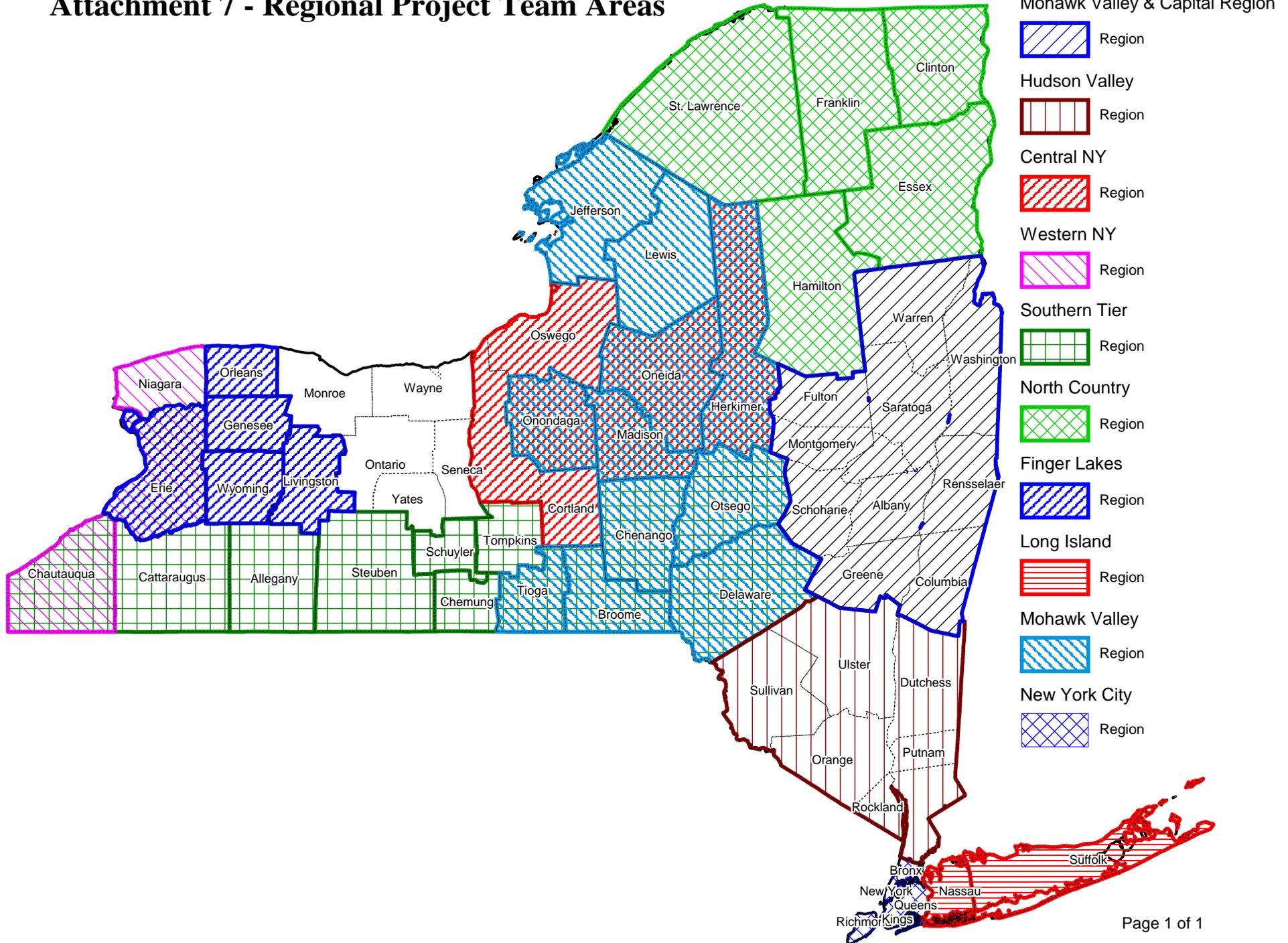
Bronx – 31 employees
Brooklyn – Schermerhorn St Bldg – 110 employees
Buffalo (W J Mahoney Bldg) – 45 employees
Flushing - 52 employees
Hempstead – 20 employees
Hicksville – 57 employees
NYC Broad Street Bldg – 48 employees
NYC – Varick Street (52” solution) – 240 employees (second site)
Islip (Suffolk) – 26 employees
Patchogue – 41 employees
Poughkeepsie – 21 employees
Rochester (Waring Rd Bldg) – 46 employees
Staten Island – 15 employees

Revisions and Communications

Last revision, Monday, June 1, 2009
Original issue, Friday, May 29, 2009

To discuss the Videoconferencing concept and its application within the New York State Department of Labor, contact: Benny M. Thottam, Deputy Chief Information Officer, New York State Labor Department via email at Benny.Thottam@labor.state.ny.us.

Attachment 7 - Regional Project Team Areas



Collaborative Partners on Regional Project Teams

North Country	
Team Lead – Susan Matton, VP for Economic Development, North Country Chamber	
North Country WIB (Clinton, Essex, Franklin, Hamilton Counties)	CV-TEC, Clarkson University
Plattsburgh State University	OneWorkSource
Clinton Community College	
Finger Lakes	
Team Lead – Steven Hyde, President, Genesee County Industrial Development Agency	
Buffalo Niagara Enterprise	Buffalo and Erie County WIB
Batavia City School District	Elba Central School District
Genesee Community College (Math, Science, and Education Departments; The BEST Center workforce training group; Small Business Development Center; College Tech Prep Department)	University at Buffalo (Department of Biotechnical & Clinical Lab Sciences; Division of Continued & Professional Studies; Employment Opportunity Center; NYS Center of Excellence in Bioinformatics & Life Sciences)
Genesee County Business Education Alliance	GLOW Region WIB
Genesee County Economic Development Center	Genesee Valley BOCES
Long Island	
Team Lead – Ray Donnelly, Long Island Forum for Technology (LIFT)	
Town of Hempstead/City of Long Beach WIB	Suffolk County WIB
Oyster Bay/North Hempstead/Glen Cove WIB	Long Island Forum for Technology (LIFT) – project manager and fiscal agent
New York State Department of Labor (Division of Employment Services and Division of Research and Statistics)	New York State Education Department/Long Island – Regional Adult Education Network
Southern Tier	
Team Lead – Daniel Porter, Chemung-Schuyler-Stueben WIB Director	
Chairman of “The Committee for the Future”	Accord Corporation
Tompkins County WIB	Cattaraugus Empire Zone Corporation
Cattaraugus-Allegany WIB	Chautauqua County Chamber of Commerce
Chautauqua Works	Finger Lakes Wine Country
Chemung Schuyler Steuben WIB	Broome/Tioga WIB
Hornell Industrial Development Agency	Tompkins County Area Development
Greater Binghamton Coalition	Cattaraugus Dept of Economic Development Planning and Tourism
SUNY Fredonia	Chautauqua Industrial Development Agency
Advanced Monolithic Ceramics, Inc.	Friendship Empire Zone
ALCAS Corporation	Otsego County Economic Development

Collaborative Partners on Regional Project Teams

Alstom Transport	Pipeline-4-Progress Network
Amphenol Corporation	Schuyler County Partnership for Economic Development
AtWater Estate Vineyards	Small Business Development Center
Audio Sears Corporation	Southern Tier Economic Growth
Bae Systems, Inc	Southern Tier Central Regional Planning and Development Board
Bailey Manufacturing company, LLC	Southern Tier West Regional Planning and Development Board
Barger Farms	Steuben Co. Industrial Development Agency
Cameron Manufacturing & Design	Three Rivers Development Corporation
Creative Orthotics & Prosthetics	Tompkins County Chamber of Commerce
Community Helping Hands	Upstate Venture Association of NY, Inc.
Cummins, Inc.	Alfred State SUNY College of Technology
Custom Electronics	Alfred Technology Resource, Inc.
Dahlstrom Roll Form	Alliance for Manufacturing & Technology
Dresser Rand	Cattaraugus-Allegany-Erie-Wyoming BOCES
Friendship Diaries, Inc.	Cornell University Cooperative Extension Chautauqua
Hanson Sign Companies	Cornell University Office of Human Resources
Jamestown Advanced Products Corp	Corning Community College
Jamestown Furniture Hardware Corp	DCMO BOCES
Hardinge, Inc.	Elmira City School District
Kennedy Valve	Elmira College
Kionix, Inc.	Erie 2 Chautauqua Cattaraugus BOCES
Napoleon Engineering	Greater Southern Tier BOCES
Nucor-Vulcraft of NY	Hornell City School District
Olean Advanced Products	Jamestown Community College
Phoenix Metal Fabricating, Inc.	ONC BOCES
Raymond Corporation	Southwester Independent Living Center
Schuyler Hospital	SUNY Fredonia
Schweizer Aircraft	SUNY Delhi
Seneca Hardwoods	TC3
SiliconCarbide Products	The State Education Department
Smart Systems, Inc.	Chemung County office of the Executive
Superior Grinding, Inc.	Chenango County Board of Supervisors
Swift Glass Company, Inc.	Delaware county Board of Supervisors
Sydia Corporation	Otsego County Board of Representatives
The Arc of Schuyler County	Schuyler County Office of the Administrator

Collaborative Partners on Regional Project Teams

Trayer Products, Inc.	Steuben County Office of the Administrator
Transitair, LLC	Corning Inc. Government Affairs Enterprises
Truck Lite Company, Inc.	City of Dunkirk, Office of the Mayor
TTA Systems, LLC	US Salt, LLC
United Health Services	World Kitchen
Universal Tooling Corporation	
Mohawk Valley/Capital	
Team Leads – Daniel Gentile, Executive Director, Capital Region WIB	Gail Breen, Executive Director, FMS Workforce Development Board
Saratoga-Warren-Washington WIB	The Mechanical Contractor Association of the Capital District/Albany Chapter
Fulton-Montgomery-Schoharie WIB (lead)	IBEW
Albany-Schenectady-Rensselaer WIB	Turner Construction
Columbia-Greene WIB	Adirondack Community College
The Chief Executives Network for Manufacturing	Adirondack Business Incubator
The Peter Young Housing Industries & Treatment Programs	Economic Development Corporation of Warren County
SUNY System Administration	Hudson Valley Community College
Community College Partners	Schenectady Community College
BOCES Nanotechnology Management Group	National Grid
WSHWE and Fulton Montgomery BOCES	General Electric
M. & W. Zander	The Workforce Development Institute
Adirondack Business to School Partnership	Columbia-Greene Community College
Post Star	Fulton Montgomery Community College
Albany High School Academy	Innovator’s Program Network
U Albany College of Nanoscale Science and Engineering	The Chamber of Schenectady County
Albany-Colonie Regional Chamber of Commerce	Capital Region Human Resource Assoc.
Central NY	
Team Lead – Hanah Ehrenreich, Green Sector Project Manager, CNYWorks	
Clear Channel Communications	Family Literacy Alliance of Greater Syracuse
The Manufacturers Association	Institute of the Application of Geospatial Technology
National Grid	LeMoyne College
St. Camillus Health and Rehabilitation Center	Onondaga Community College
Partners for Education and Business	Onondaga-Cortland-Madison BOCES
Cayuga County Legislature	SUNY College of Environmental Science and Forestry
CNY Technology Development Organization	SUNY Education Opportunity Center

Collaborative Partners on Regional Project Teams

Cortland County Business Development Corporation	SUNY Morrisville
Cortland County Industrial Development Agency	SUNY Oswego
Cortland County Legislature	SUNY Upstate Medical Center
Greater Syracuse Chamber of Commerce	Syracuse City School District
Madison County Board of Supervisors	Syracuse University
Madison County Industrial Development Agency	Tompkins-Cortland Community College
Madison County Legislature	Central New York Community Foundation
Metropolitan Development Association of Syracuse and CNY	Educational Foundation
Operation Oswego County	Rosamond Gifford Foundation
Onondaga County/Onondaga County Industrial Development Agency	United Way of Central New York
Oswego County Legislature	Cayuga-Cortland WIB
City of Syracuse/Syracuse Industrial Development Agency	Cayuga Works
Cayuga Community College	Cortland Works
Cayuga-Onondaga BOCES	Workforce Solutions-Madison County
Oswego County WIB	New York State DOL
Upstate NY Laborers Training	Onondaga County WIB/CNY Works
Hudson Valley	
Team Lead – Donovan Beckford, Westchester Putnam WIB Director	
International Union of Operating Engineers	Dutchess County Economic Development Corporation
Building & Construction Trades Council of Westchester & Putnam Counties	HV Economic Development Corp
Dutchess, Rockland, Sullivan, SW & Ulster County BOCES	Orange County
Business Council of Westchester	Putnam Economic Development Corp
HV Economic Development Corp	Rockland Economic Development Corp
NORMET	Ulster County Development Corporation
NYS Solar Energy Consortium	Westchester Economic Development
Small Business Development Center	Yonkers Economic Development
South Eastern Manufactures Association	Westchester County
State of NY Department of Labor	Westchester/Putnam, Orange, Ulster, Sullivan, and Dutchess County WIBs
We Recycle! Inc.	First Community Church of the Nazarene
Westchester County IT/SIMS	City of Yonkers
Westchester County Association	Tomorrows Workplace
Dutchess, Orange, Rockland, Ulster, and Westchester County Community Colleges	Westchester/Putnam One Stop Center
Sustainable Hudson Valley	

Collaborative Partners on Regional Project Teams

Western New York	
Team Lead – Jim Finamore, Executive Director, Buffalo-Erie WIB	
Accellent	Erie-Chautauqua-Cattaraugus BOCES
Chautauqua Works	Insyte Consulting
Buffalo and Erie County WIB (lead agency)	Niagara County WIB
Empire State Development Corporation	Niagara County Community College
Buffalo Public Schools	Orleans-Niagara BOCES
Erie County Community College	ZeptoMetrix Corporation
Canisius College	University at Buffalo (Department of Biotechnical & Clinical Lab Sciences, Division of Continued & Professional Studies, NYS Center of Excellence in Bioinformatics & Life Sciences)
New York City	
Team Lead – Melinda Mulawka-Mack, Senior Vice President, NYC WIB	
NYC Department of Economic Development	Mayor’s Office of Long Term Planning and Sustainability