Northeast Pennsylvania’s Green Machine
Career Pathways for the Energy Sector

Lehigh Valley
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Northeast Pennsylvania’s Green Machine
Introduction

The Northeast Pennsylvania’s Green Machine: Career Pathways for the Energy Sector guide was developed to introduce information about the energy sector, particularly green energy. Information within this guide includes career pathways maps, regional high priority occupations, certification information, and Pennsylvania approved training providers for jobs in the energy field.

In The Pennsylvania Green Jobs Report, Part 1, green jobs are defined by the Pennsylvania Department of Labor and Industry (2010a) as:

Jobs that employ workers in producing or offering products or services that:

- promote energy efficiency;
- contribute to the sustainable use of resources;
- prevent pollution;
- clean up the environment; and
- promote the reduction of harmful emissions. (p. 1)

The Pennsylvania Green Jobs Report continues:

Within this broad definition of green jobs, there are three specific types of occupations. Emerging occupations, such as energy auditors, require new skills unique to green industries, and are projected to grow in the near- and long-term future. Evolving occupations, such as electricians and architects, will require workers to learn new skills to master green processes and meet industry demand. And, there are traditional occupations, such as construction laborers working on green building job sites and machinists making parts for wind turbines that will be affected as green industry grows in Pennsylvania. (p. 3)
Section One: Career Pathways Maps
Northeast Pennsylvania’s Green Machine Career Pathway Maps

*Pennsylvania Green Jobs and Occupational Competency Report* explains:

Career pathways help workers match their qualifications to like occupations and suggest what types of training they might need to transition into higher-paying occupations. The pathway is a route or map an individual can follow to navigate the workforce lattice. Career pathways have been successfully used at the federal, state and local levels, and the U.S. Department of Labor’s Employment and Training Administration encourages the active use of pathways to create a more highly skilled workforce. (*Pennsylvania Department of Labor and Industry, 2010b, pp. 9-10*)

Career pathway maps on the following pages depict pathways that individuals may take for employment within the energy field. Each map shows opportunities for advancement that may be achieved through additional education and training and experience on-the-job. The maps also provide information about the salary that employees can expect at entry level with limited experience. Workforce development partners, students, incumbent workers, dislocated workers, and job seekers should use these career pathways maps as a guide, as individual employers may have separate education and training requirements.

As stated in *Manufacturing Career Pathways for the Lehigh Valley* (Lehigh Valley Workforce Investment Board, Inc., 2011):

Employers that use career pathway maps within their organizations can help potential employees see the route to where they want to go and be able to advance. When the path is clear, they are more likely to get there—and less likely to leave.

Mapping tools can also be used by human resource departments to strategize for the identification of vacancies. Mapping tools can be customized to communicate job descriptions, education and skill requirements, and experience to ensure that potential employees are prepared for the jobs for which they may be hired. Maps can also be tailored to include degrees, certifications, permits, licenses, and any other credentials required of particular job titles within a company. These tools can be incorporated into interviewing and orientation practices. Within a company, maps can provide job information that can serve as a basis to better recruit, select, coach, develop, train, and reward staff. Early on, employees can be made aware of opportunities for growth and promotion within the company.

Job seekers and those currently employed are increasingly encouraged to update and expand skills that will improve their potential for success in the workplace. Mapping tools can help to identify skills, build skills, and progress to other jobs within the company. Clearly defined career pathway maps are essential to assist workers on establishing career goals. (p.34)
Carpentry & Construction

Construction Managers
SOC Code 11-9021
Entry Level $60,350
Annual Openings 12

On-the-Job Training
"WorkKeys® Gold Certificate
PA CareerLink®
Lehigh Valley Services

Construction and Building Inspector
SOC Code 47-4011
Entry Level $35,210
Annual Openings 8

On-the-Job Training
Bachelor's Degree
Home Inspection Certification
Postsecondary Education/Training

Construction Carpenters
SOC Code 47-2031
Entry Level $27,600
Annual Openings 49

On-the-Job Training
"WorkKeys® Silver Certificate
PA CareerLink®
Lehigh Valley Services

Construction Laborers
SOC Code 47-2061
Entry Level $21,150
Annual Openings 23

On-the-Job Training
Fork Lift Training
Additional Education/Training

Laborers, Freight and Material Movers
SOC Code 53-7062
Entry Level $16,630
Annual Openings 230

On-the-Job Training
High School Diploma/
Commonwealth Secondary School Diploma/GED®

Helpers, Construction Trades, All Others
SOC Code 47-3019
Entry Level $16,950
Annual Openings 0

On-the-Job Training

Enter Carpenter & Construction Career Pathway


Lehigh Valley Workforce Investment Board, Inc.
Mechanical Design

**Construction Managers**  
SOC Code 11-9021  
Entry Level $59,400  
Annual Openings 12

**Supervisors - Construction Trades**  
SOC Code 49-1011  
Entry Level $46,390  
Annual Openings 17

**Architectural & Civil Drafters**  
SOC Code 17-3011  
Enter Level $34,910  
Annual Openings 12

**Mechanical Drafters**  
SOC Code 17-3013  
Enter Level $33,550  
Annual Openings 9

**Electrical and Electronic Drafters**  
SOC Code 17-3012  
Enter Level $39,480  
Annual Openings

- **Construction Management AAS or Bachelor’s Degree**  
- **Postsecondary Education/Training**
- **On-the-Job Training**

- **Drafting and Design AAS**  
- **Machine Building Certification**  
- **Machine Maintenance, Service, and Repair Certification**  
- **Auto CAD**  
- **WorkKeys® Gold Certificate**

**Enter Mechanical Design Career Pathway**

Adapted from Lehigh Valley Workforce Investment Board, Inc. (2011). Manufacturing career pathways for the Lehigh Valley.

**Sources of Information:**  
- O*NET Online. (2013). Retrieved from [link].

*WorkKeys® Career Readiness Certificate listed is determined by highest score received for identified occupation.
Industrial Maintenance

**Supervisors - Mechanics, Installers, Repairers**
SOC Code 49-1011  
Entry Level $41,960  
Annual Openings 20

**Industrial Machinery Mechanics**
SOC Code 49-9041  
Entry Level $35,680  
Annual Openings 20

**Maintenance Workers, Machinery**
SOC Code 49-9043  
Entry Level $28,100  
Annual Openings 2

**Maintenance and Repair Workers, General**
SOC Code 49-9042  
Entry Level $25,690  
Annual Openings 20

**Helpers - Installation, Maintenance, Repair Workers**
SOC Code 49-9098  
Entry Level $20,380  
Annual Openings 8

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Adapted from Lehigh Valley Workforce Investment Board, Inc. (2011). Manufacturing career pathways for the Lehigh Valley.

Lehigh Valley Workforce Investment Board, Inc.
Solar Energy

Solar Energy System Engineers
SOC Code 17-2129
Entry Level $60,520
Annual Openings N/A

On-the-Job Training
Bachelor's Degree
Postsecondary Education/Training

Solar Energy Installation Manager
SOC Code 47-1011
Entry Level $46,390
Annual Openings N/A

On-the-Job Training

Solar Photovoltaic Installers
SOC Code 47-2231
Entry Level N/A
Annual Openings N/A

On-the-Job Training

Solar Photovoltaic Electrical Certificate
Additional Education/training

Solar Thermal Installers and Technicians
SOC Code 47-4099
Entry Level N/A
Annual Openings N/A

On-the-Job Training

Electricians
SOC Code 47-2111
Entry Level $31,660
Annual Openings 36

On-the-Job Training

 Plumbers
SOC Code 47-2152
Entry Level $41,940
Annual Openings 14

On-the-Job Training

Helpers - Installation, Maintenance, Repair Workers
SOC Code 49-8038
Entry Level $20,380
Annual Openings 8

On-the-Job Training

*WorkKeys® Gold Certificate
Postsecondary Education/Training

Enter Solar Energy Career Pathway

Adapted from Lehigh Valley Workforce Investment Board, Inc. (2012), manufacturing career pathways for the Lehigh Valley.

Sources of information:
- Pennsylvania Department of Labor & Industry, Center for Workforce Research Information and Analysis, (2012), 'Occupational supply/demand forecast for Pennsylvania. Retrieved from:
  - Pennsylvania Department of Labor & Industry, Center for Workforce Research Information and Analysis, (2012), 'Occupational supply/demand forecast for Pennsylvania. Retrieved from:
  - Pennsylvania Department of Labor & Industry, Center for Workforce Research Information and Analysis, (2012), 'Occupational supply/demand forecast for Pennsylvania. Retrieved from:
  - Pennsylvania Department of Labor & Industry, Center for Workforce Research Information and Analysis, (2012), 'Occupational supply/demand forecast for Pennsylvania. Retrieved from:

*WorkKeys® Career Readiness Certificate levels are determined by highest score received for identified occupation.

Lehigh Valley Workforce Investment Board, Inc.
Solar Energy - Electricians

Solar Energy System Engineers
SOC Code 17-2199
Entry Level $60,920
Annual Openings N/A

Solar Energy Installation Manager
SOC Code 47-1011
Entry Level $46,390
Annual Openings N/A

Solar Photovoltaic Installers
SOC Code 47-2221
Entry Level N/A
Annual Openings N/A

Electricians
SOC Code 47-2111
Entry Level $31,660
Annual Openings 36

Helpers - Installation, Maintenance, Repair Workers
SOC Code 49-9098
Entry Level $20,380
Annual Openings 8

Enter Solar Energy Career Pathway

Adapted from Lehigh Valley Workforce Investment Board, Inc. (2011): Manufacturing career pathways for the Lehigh Valley.

Sources of information:
Section Two: High Priority Occupations
Northeast Pennsylvania’s Green Machine
High Priority Occupations

The Pennsylvania Department of Labor and Industry, Center for Workforce Information and Analysis (2012a) has identified the following Energy-related High Priority Occupations, SOC Codes, and the required educational attainment levels.

**Construction Manager**, 11-9021, Bachelor’s Degree  
**Electrical Engineers**, 17-2071, Bachelor’s Degree  
**Environmental Engineers**, 17-2081, Bachelor’s Degree  
**Nuclear Engineers**, 17-2161, Bachelor’s Degree  
**Energy Engineers**, 17-2199, Bachelor’s Degree  
**Electro-Mechanical Engineers**, 17-3074, Associate’s Degree  
**Supervisors-Construction Trades & Extraction Workers**, 47-1011, Work experience  
**Brickmasons & Blockmasons**, 47-2012, Long-term OJT  
**Carpenters**, 47-2031, Long-term OJT  
**Cement Mason & Concrete Finishers**, 47-2051, Long-term OJT  
**Construction Laborers**, 47-2061, Moderate-term OJT  
**Operating Engineers**, 47-2073, Moderate-term OJT  
**Electricians**, 47-2111, Long-term OJT  
**Insulation Workers, Mechanical**, 47-2141, Moderate-term OJT  
**Painters, Construction & Maintenance**, 47-2141, Moderate-term OJT  
**Plumbers, Pipefitters, & Steamfitters**, 47-2152, Long-term OJT  
**Roofers**, 47-2181, Moderate-term OJT  
**Electrical Repairers, Powerhouse and Substation**, 49-2095, Postsecondary Vocational  
**Automotive Service Technicians and Mechanics**, 49-3023, Postsecondary Vocational  
**Bus, Truck, and Diesel Engine Mechanics**, 49-3031, Postsecondary Vocational  
**Heating, A/C & Refrigeration Mechanics & Installers**, 49-9021, Long-term OJT  
**Electrical Power-Line Installers & Repairers**, 49-9051, Long-term OJT  
**Renewable Energy Technicians**, 49-9099, Long-term OJT  
**Water & Liquid Waste Treatment Plant & System Operators**, 51-8031, Long-term OJT  
**Excavating and Loading Machine & Dragline Operators**, 53-7032, Moderate-term OJT  
**Refuse & Recyclable Material Collectors**, 53-7081, Short-term OJT
**Construction Manager**

Construction Managers’ job duties include the following:

*Plan, direct, or coordinate, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields, such as carpentry or plumbing.* (U.S. Department of Labor, O*NET, Construction Manager, 2011g)

**Electrical Engineers**

Electrical Engineers’ job duties include the following:

*Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.* (U.S. Department of Labor, O*NET, Electrical Engineer, 2011h)

**Environmental Engineers**

Environmental Engineers’ job duties include the following:

*Research, design, plan, or perform engineering duties in the prevention, control, and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology.* (U.S. Department of Labor, O*NET, Environmental Engineer, 2011n)

**Nuclear Engineers**

Nuclear Engineers’ job duties include the following:

*Conduct research on nuclear engineering projects or apply principles and theory of nuclear science to problems concerned with release, control, and use of nuclear energy and nuclear waste disposal.* (U.S. Department of Labor, O*NET, Nuclear Engineer, 2011r)

**Energy Engineers**

Energy Engineers’ job duties include the following:

*Design, develop, or evaluate energy-related projects or programs to reduce energy costs or improve energy efficiency during the designing, building, or remodeling stages of construction. May specialize in electrical systems; heating, ventilation, and air-conditioning (HVAC) systems; green buildings; lighting; air quality; or energy procurement.* (U.S. Department of Labor, O*NET, Energy Engineer, 2011m)

**Electro-mechanical Engineers**

Electro-mechanical Engineers’ job duties include the following:

*Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of
equipment such as centralized heat, gas, water, and steam systems. (U.S. Department of Labor, O*NET, Electro-mechanical Engineer, 2011)

**Supervisors-Construction Trades & Extraction Workers**

Supervisors’ job duties include the following:

Directly supervise and coordinate activities of construction or extraction workers. (U.S. Department of Labor, O*NET, Supervisors-Construction Trades and Extraction Workers, 2011)

**Brickmasons & Blockmasons**

Brickmasons’ and Blockmasons’ job duties include the following:

Lay and bind building materials, such as brick, structural tile, concrete block, cinder block, glass block, and terra-cotta block, with mortar and other substances to construct or repair walls, partitions, arches, sewers, and other structures. (U.S. Department of Labor, O*NET, Brickmasons & Blockmasons, 2011)

**Carpenters**

Carpenters’ job duties include the following:

Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms; building frameworks, including partitions, joists, studding, and rafters; and wood stairways, window and door frames, and hardwood floors. May also install cabinets, siding, drywall and batt or roll insulation. Includes brattice builders who build doors or brattices (ventilation walls or partitions) in underground passageways. (U.S. Department of Labor, O*NET, Carpenters, 2011)

**Cement Mason & Concrete Finishers**

Cement Masons’ and Concrete Finishers’ job duties include the following:

Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, roads, or curbs using a variety of hand and power tools. Align forms for sidewalks, curbs, or gutters; patch voids; and use saws to cut expansion joints. (U.S. Department of Labor, O*NET, Cement Masons & Concrete Finishers, 2011)

**Construction Laborers**

Construction Laborers’ job duties include the following:

Perform tasks involving physical labor at construction sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, and clean up rubble, debris and other waste materials. May assist other craft workers. (U.S. Department of Labor, O*NET, Construction Laborers, 2011)
Operating Engineers

Operating Engineers’ job duties include the following:

Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. May repair and maintain equipment in addition to other duties. (U.S. Department of Labor, O*NET, Operating Engineers, 2011s)

Electricians

Electricians’ job duties include the following:

Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems. (U.S. Department of Labor, O*NET, Electricians, 2011k)

Insulation Workers, Mechanical

Mechanical Insulation Workers’ job duties include the following:

Apply insulating materials to pipes or ductwork, or other mechanical systems in order to help control and maintain temperature. (U.S. Department of Labor, O*NET, Insulation Workers, 2011q)

Painters, Construction & Maintenance

Construction and Maintenance Painters’ job duties include the following:

Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. May remove old paint to prepare surface prior to painting. May mix colors or oils to obtain desired color or consistency. (U.S. Department of Labor, O*NET, Painters, Construction & Maintenance, 2011t)

Plumbers, Pipefitters, & Steamfitters

Plumbers’, Pipefitters’ and Steamfitters’ job duties include the following:

Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinkler fitters. (U.S. Department of Labor, O*NET, Plumbers, Pipefitters & Steamfitters, 2011u)

Roofers

Roofers’ job duties include the following:

Cover roofs of structures with shingles, slate, asphalt, aluminum, wood, or related materials. May spray roofs, sidings, and walls with material to bind, seal, insulate, or soundproof sections of structures. (U.S. Department of Labor, O*NET, Roofers, 2011x)
**Electrical Repairers, Powerhouse and Substation**
Powerhouse and Substation Electrical Repairers’ job duties include the following:

*Inspect, test, repair, or maintain electrical equipment in generating stations, substations, and in-service relays.* (U.S. Department of Labor, O*NET, Electrical Repairers, 2011j)

**Automotive Service Technicians and Mechanics**
Automotive Service Technicians and Mechanics’ job duties include the following:

*Diagnose, adjust, repair, or overhaul automotive vehicles.* (U.S. Department of Labor, O*NET, Automotive Service Technicians, 2011a)

**Bus, Truck, and Diesel Engine Mechanics**
Bus, Truck, and Diesel Engine Mechanics’ job duties include the following:

*Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines.* (U.S. Department of Labor, O*NET, Bus, Truck, and Diesel Mechanic, 2011c)

**Heating, A/C & Refrigeration Mechanics & Installers**
Heating, A/C and Refrigeration Mechanics and Installers’ job duties include the following:

*Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.* U.S. Department of Labor, O*NET, Heating, A/C, & Refrigeration Mechanics, 2011p)

**Electrical Power-Line Installers & Repairers**
Electrical Power-Line Installers and Repairers’ job duties include the following:

*Install or repair cables or wires used in electrical power or distribution systems. May erect poles and light or heavy duty transmission towers.* (U.S. Department of Labor, O*NET, Electrical Power-Line Installer, 2011i)

**Renewable Energy Technicians**
Renewable Energy Technicians’ job duties include the following:

*Design, develop, or evaluate energy-related projects or programs to reduce energy costs or improve energy efficiency during the designing, building, or remodeling stages of construction. May specialize in electrical systems; heating, ventilation, and air-conditioning (HVAC) systems; green buildings; lighting; air quality; or energy procurement.* (U.S. Department of Labor, O*NET, Renewable Energy Technician, 2011w)
Water & Liquid Waste Treatment Plant & System Operators
Water and Liquid Waste Treatment Plant and System Operators’ job duties include the following:
Operate or control an entire process or system of machines, often through the use of control boards, to transfer or treat water or wastewater. (U.S. Department of Labor, O*NET, Water & Liquid Waste Treatment & System Operator, 2011z)

Excavating and Loading Machine & Dragline Operators
Excavating and Loading Machine and Dragline Operators’ job duties include the following:
Operate or tend machinery equipped with scoops, shovels, or buckets, to excavate and load loose materials. (U.S. Department of Labor, O*NET, Excavating and Loading Machine & Dragline Operators, 2011o)

Refuse & Recyclable Material Collectors
Refuse and Recyclable Material Collectors’ job duties include the following:
Collect and dump refuse or recyclable materials from containers into truck. May drive truck. (U.S. Department of Labor, O*NET, Refuse & Recyclable Material Collectors, 2011v)
Northeast Pennsylvania’s Green Machine
Additional Occupations

The following jobs, although not specifically high priority occupations were identified by Brian Baker, LEED AP BD+C, Homes, Master CGP Owner and Vice President of Marketing & Design at studio 26 homes through an employer focus group that met on May 1, 2012 at the Lehigh Valley Workforce Investment Board.

Energy Auditors

Trained specialists who conduct an on-site inspection, survey and analysis of energy flows for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). When the object of study is an occupied building then reducing energy consumption while maintaining or improving human comfort, health and safety are of primary concern. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost effective opportunities for energy savings.

Energy Analysts

Trained specialists charged with studying the uses and costs of energy in buildings, manufacturing processes usually with the goal of improving efficiencies. One important tool used would be energy modeling, or simulation, which is the practice of using computer-based programs to model the energy performance of an entire building or the systems within a building. This whole-building modeling provides valuable information about the building and system energy use as well as operating costs.

Commissioning Agents

Trained specialists who employ the process of verifying, in new construction or even retrofits, that all the subsystems for HVAC, plumbing, electrical, fire/life safety, building envelopes, interior systems (example laboratory units), cogeneration, utility plants, sustainable systems, lighting, wastewater, controls, and building security achieve the owner’s project requirements as intended by the building owner and as designed by the building architects and engineers. They are typically responsible for leading and managing the project commission process (design and/or construction) and work closely with the design, construction, and operation teams in a co-operative work environment that focuses on teamwork throughout the building’s design, construction, and post construction.

Green Focused Real Estate Agents

Trained real estate agents that help clients market properties with green features and ultimately save money and live/work comfortably through energy efficiency, renewable energy and environmentally-sensitive choices. Green real estate is altering fundamental market dynamics. Nearly 40% of home buyers consider high-efficiency heating and cooling features to be "very
important,"; and two-thirds of state governments have currently implemented and often mandated green building policies.

**Green Focused Building Appraisers**

Trained appraisers who are able to appropriately incorporate the financial value of green measures found in a given building. As governmental mandates continue to filter down to all local communities, and buyers, sellers, developers and financiers of real estate market assess the importance of energy efficiency and sustainability, it is imperative that appraisers become familiar with the concepts of green building. Residentially, the appraisal of the high-performance ‘green’ house offers a challenge to appraisers because this type of construction is new in most markets. Mandated requirements affecting the construction of residential properties is and will continue to affect all building markets in important ways; and current valuation techniques have the capacity to reflect sustainability features. (Brian Baker, personal communication, May 2, 2012)
Northeast Pennsylvania’s Green Machine
Energy Competencies and Certifications

On May 1, 2012, the Lehigh Valley Workforce Investment Board convened a focus group of representatives from local energy-related businesses and industries. These industry experts emphasized the importance of soft skill development along with industry-recognized certifications and trainings as essential components of successful employees. The focus group suggested the Building Blocks for Competency Models, described on the U.S. Department of Labor’s (2011d) CareerOneStop website, as an ideal representation of skill development. The Model and description follows:

The Building Blocks for Competency Models consist of a set of “building blocks” for competency model development. These “building blocks” are arranged in nine tiers with each tier containing a set of related competencies. The arrangement of the tiers in a pyramidal shape represents the increasing level of specificity and specialization of content. As a user moves up through the various tiers of the model, the competencies become specific to certain industries and/or occupations. The nine tiers are grouped into three categories:

**Occupation-Related Competencies**
- Tier 9 – Management Competencies
- Tier 8 – Occupation-Specific Requirements
- Tier 7 – Occupation-Specific Technical Competencies
- Tier 6 – Occupation-Specific Knowledge Competencies

**Industry-Related Competencies**
- Tier 5 – Industry-Sector Technical Competencies
- Tier 4 – Industry-Wide Technical Competencies

**Foundational Competencies**
- Tier 3 – Workplace Competencies
- Tier 2 – Academic Competencies
- Tier 1 – Personal Effectiveness Competencies

**Foundational Competencies**
At the base of the model, Tiers 1 through 3 represent competencies that provide the foundation for success in school and in the world of work. Foundational competencies are essential to a large number of occupations and industries. Employers have identified a link between foundational competencies and job performance and have also discovered that foundational competencies are a prerequisite for workers to learn industry-specific skills.
**Industry-Related Competencies**
The competencies shown on Tiers 4 and 5 are referred to as Industry Competencies and are specific to an industry or industry sector. Industry-wide technical competencies cut across industry sub-sectors making it possible to create career lattices where a worker can move easily across industry sub-sectors. Rather than narrowly following a single occupational career ladder, this model supports the development of an agile workforce.

**Occupation-Related Competencies**
The competencies on Tiers 6, 7, 8, and 9 are referred to as Occupational Competencies. Occupational competency models are frequently developed to define performance in a workplace, to design competency-based curriculum, or to articulate the requirements for an occupational credential such as a license or certification. (para. 2-8)

Focus group participant Brian Baker provided additional information about certifications that may be required for particular jobs within the energy sector:

**Construction Manager**

**Engineers** (in general, certifications are attained with slight variations in each state)
Renewable Energy Technicians


Energy Auditors


Commissioning Agents


Green Focused Real Estate Agents

- GRES (Green Real Estate Specialist) – [http://www.porterworks.com/node/540](http://www.porterworks.com/node/540)

Green Focused Building Appraisers

  (Brian Baker, personal communication, May 2, 2012)
Section Three: Commonwealth Workforce Development System Training Providers
Northeast Pennsylvania Green Machine
Commonwealth Workforce Development System

The Commonwealth Workforce Development System (CWDS) is an online tool available to job seekers and employers through the PA CareerLink® system. According to the Pennsylvania Department of Labor and Industry (2012) website:

The Commonwealth Workforce Development System (CWDS) is an Internet-based system of services for use by customers and potential customers of the PA CareerLink® offices. CWDS provides online access to job openings; information about employers; services and training opportunities for job seekers; and labor market information. All of this is available by enrolling on-line with CWDS.

For job seekers, the system is a gateway available 24 hours a day to seek employment opportunities and social services. For employers, it is a means of searching for qualified workers and accessing many services targeted to employers. In addition to direct access to information, CWDS links to websites of many other agencies and service and information providers, such as the PA Work Stats.

Employers use the CWDS to find suitable workers. Employers may place job openings directly into the CWDS and elect to use the screening services of the PA CareerLink® staff or they may choose to perform their own screening through direct access by job applicants. Human resource managers worldwide can use the CWDS right on their desk to identify job seekers in Pennsylvania. PA CareerLink® employers may have their company logo placed on a CWDS page along with logos of other employers. The employers may list a description and important facts and figures regarding the business so that job seekers can perform research about the company.

The site is linked to the Business Resource Network, an Internet based information system for business and economic development professionals. Economic developers may use the system to find information to help in their work. And school guidance counselors may use the system as a gateway for a student deciding on career options. (para. 1-4)
NOTE: All the information on pages 42-78 of this guide is taken verbatim from the Commonwealth Workforce Development System (2012) website https://www.cwds.state.pa.us/.

The following training providers and training opportunities have been approved for PA CareerLink® customers:

**Pennsylvania Approved Training and Training Providers in the Lackawanna County Workforce Investment Area**

<table>
<thead>
<tr>
<th>Provider</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson College</td>
<td>2001 Rosanna Avenue, Scranton, PA 18509-1675</td>
<td>570-702-8900</td>
</tr>
<tr>
<td>Lackawanna College</td>
<td>501 Vine St Address, Scranton, PA 18509-3206</td>
<td>570-504-1586</td>
</tr>
<tr>
<td>Trans American Technical Institute</td>
<td>109 Trans Amer Road, Jermyn, PA 18433-3513</td>
<td>570-222-4884</td>
</tr>
<tr>
<td>Career Technology Center</td>
<td>3201 Rockwell Avenue, Scranton, PA 18508-1475</td>
<td>570-346-8471 Ext-135</td>
</tr>
</tbody>
</table>

- **Basic Cutting and Welding** - Johnson College
  - **Expected Outcome:** Certificate of Completion
  - **Description:** The basic welding course will focus on Shielded Metal Arc Welding “Stick” with 7018 and 6010 electrodes. Students will perform welds in all positions and various joint configurations on carbon steel plate. Students will learn basic welding theory, proper electrode selection, machine set up and proper welding and cutting safety. The course will also include an introduction to Gas Metal Arc Welding “MIG”, Flux Cored Arc Welding (Gas Shielded), Gas Tungsten Arc Welding “TIG” and open root joints with 6010 electrodes for pipe welding.

- **Carpentry & Cabinetmaking Technology** - Johnson College
  - **Expected Outcome:** Associates Degree
  - **Description:** Program prepares students as entry-level trades people in layout, estimation, construction, erection of residential construction including installation of trim, furniture, stairs and cabinets. Graduates work as rough and finish carpenters, cabinetmakers, mill workers, building product representatives and custom woodworkers.

- **CDL Class A Preparatory Program** - Lackawanna College
  - **Expected Outcome:** Licensing
Description: This course prepares each trainee to safely and effectively drive a CDL Class A commercial vehicle commonly referred to as a “tractor-trailer or combination vehicle.” Perspective trainees should be 21 years of age, have an acceptable driving record, a valid driver’s license, the ability to pass a DOT (Department of Transportation) Physical and Drug Screen, and the ability to read and understand English. The class will consist of fifty (50) hours of classroom training along with one-hundred twenty (120) “behind the wheel” hours followed by a two (2) hour CDL Test. Along with all the skills required to pass the CDL Written and Driving Exam each trainee will receive training in the areas of hours of service, load securement, trip planning, and customer relations. Upon successful completion of the program each participant will possess a Commercial Driver’s License Class A. This will allow the trainee to drive commercially for but not limited to: trucking companies, oil and gas companies, public and private utilities, excavators, landscapers, construction companies, and private carriers. Due to the increasing demand in Northeastern Pennsylvania for CDL Class A drivers created by Marcellus Shale, we strongly anticipate a high placement rate for graduates of this program.

CDL Class A Tractor Trailer Driver-240 Hours- Trans American Technical Institute
- Expected Outcome: Diploma
- Description: Our Tractor Trailer Driver 240 Hour course involves classroom, maintenance, range and road operation according to Professional Truck Driver Institute standards. Class B bus passenger endorsement optional. Diploma and PTDI certificate awarded at completion of the course.

CDL Class A with Passenger Bus Endorsement - 250 Hours- Trans American Technical Institute
- Expected Outcome: Diploma
- Description: Our CDL-A with Passenger Bus Endorsement 250 Hour course involves classroom, maintenance, range and road operation according to Professional Truck Driver Institute standards. Also included is training for a Passenger Bus Endorsement. Diploma and PTDI certificate awarded at completion of the course.

CDL Truck Driving Class B- Trans American Technical Institute
- Expected Outcome: Diploma
- Description: Training provided to operate a CDL Class B vehicle: basic operating skills, safe operating practices, advanced operating procedures, maintenance, CDL knowledge, cargo, hours of service, accident procedures, personal health and safety, trip planning,
public and employer relations. A diploma will be issued after the completion of the 80 hour course.

➤ **Diesel Mechanic / CDL Class B 640-Trans American Technical Institute**
  - **Expected Outcome:** Diploma
  - **Description:** This 640 hour, 16 week program prepares the individual to develop the skills necessary to become a medium truck driver (CDL Class B) and diesel mechanic technician. The individual will complete 80 hours of classroom, range and road skills training. Learning the basic driver instruments and controls, hours of service regulations, inspecting the truck, understanding the truck systems and controls, operating and controlling the truck forward and reverse, managing speed and space, understanding your surrounding and communicating with others. The student will gain an understanding of hazards, driving in extreme conditions, handling and documenting cargo, planning trips, employer relations and public relations. The diesel technician portion of the program (560 hours) combines classroom theory and shop practicum. Individuals will be guided through the theory, practice the theory in the diesel shop and evaluated for performance skills. The students will learn safety practices, tools of the technician, cylinder block assembly, cylinder head and valve assembly, lubrication systems, cooling systems, air induction and exhaust systems, diesel fuel systems, electronics and diagnostic strategies.

➤ **Diesel Preventative Maintenance Technology-Johnson College**
  - **Expected Outcome:** Associates Degree
  - **Description:** The Diesel Truck Technology program prepares students as entry-level technicians with the latest information on diagnosis, repair procedures, preventative maintenance, and necessary safety applications in diesel technology. The course prepares students to take the voluntary mechanic certification test (ASE) in heavy-duty trucks.

➤ **Diesel Truck Technology-Johnson College**
  - **Expected Outcome:** Associates Degree
  - **Description:** The Diesel Truck Technology program prepares students as entry-level technicians with the latest information on diagnosis, repair procedures, preventative maintenance, and necessary safety applications in diesel technology. The course prepares students to take the voluntary mechanic certification test (ASE) in heavy-duty trucks.

➤ **Electrical Construction & Maintenance Technology-Johnson College**
  - **Expected Outcome:** Associates Degree
  - **Description:** Prepares students to enter the workforce as entry-level technicians. This program incorporates hands-on experience, safe work practices, proper workmanship skills, troubleshooting skills, and theory. Students receive instruction in basic AC/DC circuit theory, blue print reading, residential, commercial and industrial electrical construction theory and practices according to the National Electrical Code, motor control fundamentals, electrical test procedures, single and three phase power systems,
programmable logic controllers, industrial maintenance procedures, and industrial mechanics.

- **Electricity-Career Technology Center**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Residential Electricity, course #407 54 hour course. Provides students with overview of residential electrical systems and basic troubleshooting. Provides introduction to basic circuits, receptacles, switches, lighting, romex wire installation. Cost $495 Commercial and Industrial Electricity course # 408 54 hour course Cost $495 Includes introduction to commercial electrical applications, including conduit installation, basic motor controls, etc.

- **Electronics Technology-Johnson College**
  - **Expected Outcome:** Associates Degree
  - **Description:** The Electronic Technology program prepares graduates as entry-level technicians. Students will become proficient in the theoretical and practical applications associated with electronic instrumentation and controls, and electrical machinery. They learn and understand the physics of electricity and how to apply those principles in industry.

- **Forklift Operation and Safety 120-Trans American Technical Institute**
  - **Expected Outcome:** Diploma
  - **Description:** The student will learn to operate a forklift and electric pallet jack. The course will train the student to load, unload, receive and stock inventory, pallet configuration, common blocking, stock rotation, work within parameters, and operational safety and practices. The student will learn to tabulate and calculate products using the necessary bills of lading, shipper s receiving and export declaration, and freight forms. The student will understand the terms and conditions of a shipper, receiver and traffic clerk positions.

- **Heating Ventilation & Air Conditioning Technology-Johnson College**
  - **Expected Outcome:** Associates Degree
  - **Description:** The goal of the Heating Ventilation & Air Conditioning program is to provide students with the skills needed for entry-level positions in the installing, repairing and troubleshooting various heating and cooling equipment.

- **Heavy Equipment 240 Hour-Trans American Technical Institute**
  - **Expected Outcome:** Diploma
  - **Description:** The Heavy Equipment course is designed to offer students the skills, field operating procedures, maintenance, and job analysis necessary to operate a dozer, backhoe, transit to obtain employment on a construction site.
 **Heavy Equipment CDL Class B 320-Trans American Technical Institute**
  o **Expected Outcome:** Diploma
  o **Description:** The Heavy Equipment / CDL Class B 320 program is designed to provide an individual with limited or no experience to develop the basic skills necessary to operate equipment in a safe and constructive manner. The program consists of classroom instruction and field operating experience. The classroom content utilizes a textbook of specific courses of study that parallels the learning principles of the extensive line of available equipment. The curriculum includes training in Class B -Commercial driver’s license to prepare for light tractor trailer and /or dump truck occupations.

 **HVAC-Career Technology Center**
  o **Expected Outcome:** Certificate of Completion
  o **Description:** This program instructs students in basic heating, ventilation, and air conditioning installation, and begins with pipe preparation including soldering, and threading of various piping applications. You will learn basic to advanced concepts of HVAC installation and troubleshooting.

 **Maintenance and Repair Technician Certificate-Johnson College**
  o **Expected Outcome:** Certificate of Completion
  o **Description:** The maintenance and repair technician certificate will provide the participant with basic knowledge and skill training to perform maintenance and repair on machines, mechanical equipment or buildings. After course completion, an individual will have the basic skills needed to secure entry level employment as a maintenance technician.

 **Professional Welder-Johnson College**
  o **Expected Outcome:** Certificate of Completion
  o **Description:** The professional welder course will focus on Shielded Metal Arc Welding “Stick” with 7018 and 6010 electrodes in all positions and various joint configurations on carbon steel plate and pipe. Students will also learn Gas Metal Arc Welding “MIG” and Flux Cored Arc Welding (gas shielded) on carbon steel plate as well as Gas Tungsten Arc Welding “TIG” on steel and aluminum on plate and pipe. Students will learn basic welding theory, proper electrode, wire and gas selection, machine set up and welding/cutting safety. Upon successful completion of the professional welder course students should have the ability to pass an American Welding Society weld test in any of the welding processes taught and be able to gain entry level employment as a welder.
- **Tractor Trailer / Heavy Equipment / Forklift 600**-Trans American Technical Institute
  - **Expected Outcome**: Diploma
  - **Description**: Student will learn to safely operate a tractor trailer involving classroom time, backing skills, maneuvers, and actual driving time. The heavy equipment portion involves loading and unloading equipment, and safely operating dozer, backhoe, and excavator. Also in the forklift training portion the student will learn to load, unload, receive and stock inventory, pallet configuration, common blocking, stock rotation, work within parameters, and occupational safety practices.

- **Tractor Trailer / Heavy Equipment 480**-Trans American Technical Institute
  - **Expected Outcome**: Diploma
  - **Description**: The Tractor Trailer/Heavy Equipment 480 program is developed for people wishing to enter the tractor trailer industry with basic equipment skills to load, transport and operate equipment. It provides a sound foundation of entry level knowledge and skills for those individuals seeking to enter this profession. The student will acquire the skills to operate a tractor trailer and pass a commercial drivers exam in accordance with the Department of Transportation rules and regulations. Upon completion the student will be able to operate a dozer, backhoe and excavator with the skills necessary to accomplish tasks intelligently, safely and precisely.

- **Tractor Trailer Driver Refresher 160 Hour**-Trans American Technical Institute
  - **Expected Outcome**: Diploma
  - **Description**: Our 160 hour Tractor Trailer Driver Refresher Training Program is designed to offer a person of documented experience the opportunity to refresh his/her skills as a tractor trailer operator. After interview and instructor observation to analyze experience the student will be refreshed in the maintenance, operation, practice, duties, and responsibilities of tractor trailer operation

- **Welder/Welding Technologist**-Career Technology Center
  - **Expected Outcome**: Certificate of Completion
  - **Description**: Provides student with basic technical understanding of arc welding, welding safety, and arc welding power sources, electrode classifications and selection. (Commonwealth Workforce Development System, Find Training, Lackawanna County, 2012)
### Pennsylvania Approved Training and Training Providers in the Lehigh Valley Workforce Investment Area

**Lehigh County**

<table>
<thead>
<tr>
<th><strong>Lehigh Career &amp; Technical Institute</strong></th>
<th><strong>Welder Training &amp; Testing Institute</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4500 Education Park Drive</td>
<td>729 East Highland Street</td>
</tr>
<tr>
<td>Schnecksville, Pennsylvania Zip 18078-2501</td>
<td>Allentown, Pennsylvania 18109-3253</td>
</tr>
<tr>
<td>610-799-1372</td>
<td>610-437-9720 Ext-211</td>
</tr>
<tr>
<td><strong>Triangle Tech</strong></td>
<td><strong>Lehigh Carbon Community College</strong></td>
</tr>
<tr>
<td>3184 Airport Road</td>
<td>4525 Education Park Drive</td>
</tr>
<tr>
<td>Bethlehem, Pennsylvania 18017-2140</td>
<td>Schnecksville, Pennsylvania 18078</td>
</tr>
<tr>
<td>610-266-2910</td>
<td>610-799-1575</td>
</tr>
<tr>
<td><strong>Muhlenberg College</strong></td>
<td></td>
</tr>
<tr>
<td>2400 Chew Street</td>
<td></td>
</tr>
<tr>
<td>Allentown, Pennsylvania 18104</td>
<td></td>
</tr>
<tr>
<td>484-664-3300</td>
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</table>

- **Advanced Welder Qualification** - Pipe Welder Training & Testing Institute
  - **Expected Outcome**: Diploma
  - **Description**: Course is designed for the welder who is seeking to develop or improve pipe welding skills utilizing the Shielded Metal Arc or Gas Tungsten welding process. The course will prepare the student for Pipe Welding Qualification testing in all positions.

- **Bachelors in Business Administration w/Supply Chain Management** - Muhlenberg College
  - **Expected Outcome**: Bachelor’s Degree
  - **Description**: The concentration in Supply Chain Management complements the solid grounding in management and leadership provided in our established accelerated Business Administration curriculum. Six new industry specific modules deliver in-depth application to the challenges of the supply chain environment, giving students an effective foundation in managing the supply chain and a clear understanding of the strategic importance of a well-functioning supply chain. Because supply chains span the globe, the program explores issues of risk and sustainability. Various Lean Manufacturing philosophies are examined within the framework of improving quality, reducing costs and providing the customer with value. In addition, the concentration addresses the unique systems required for the successful management of the supply chain and how the demand side of the value chain must be integrated with the supply side. The structure of classes reinforces the importance of experiential and team-based learning. Students are teamed and work together on projects and presentations both inside and outside the classroom. Students are encouraged and expected to voice their opinions and reflect on their learning. Classes take many forms but generally consist of some lecture with real life application of theory, class discussions, review of assignments and presentations.
- **Carpentry and Construction Technology**: Triangle Tech
  - **Expected Outcome**: Associates Degree
  - **Description**: The Carpentry and Construction Technology curriculum is designed to present classroom theory and laboratory experiments relating to the carpentry and construction industry. Emphasis has been placed on residential and light commercial construction techniques inclusive of each stage of building construction from site layout, foundations, form work, and framing through interior and exterior finishing techniques.

- **CDL A & Heavy Equip Ops/Environmental Sustainability Work**: Lehigh Career & Technical Institute
  - **Expected Outcome**: Licensing
  - **Description**: This innovative 454 hour program combines the Transportation Services CDL A & Heavy Equipment Operations program with environmental sustainability work practices. Land clearing, repair and reclamation processes are discussed and students will observe live work sites during field trips to dam projects, mine reclamation sites and Marcellus Shale operations. The core 404 hour program combines tractor trailer driving and heavy equipment operations together in a course that will make students highly marketable within the industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state certified examiners. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training to prepare for a wide variety of career opportunities.

- **CDL A and Dump Truck Operator Training Program**: Lehigh Career & Technical Institute
  - **Expected Outcome**: Licensing
  - **Description**: This 200 hour combination course will prepare the student for the state written exam and skills test for CDL A which is administered on site by LCTI state licenses examiners. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. After successful examination for CDL A, students will prepare to operate dump bodied haul trucks. Training will be conducted on 3 types of dump/hauling units: an articulating dump truck, a 10 wheel dump truck, and tri-axle dump truck. Topics covered include safety, maintenance, proper securement of loads, distribution of weight and placement of loads while loading, transporting and dumping. A Dump Truck Operator certificate and State CDL A License will be issued upon successful completion of this specialized training course.
CDL A Refresher Course-Lehigh Career & Technical Institute
- **Expected Outcome**: Certificate of Completion
- **Description**: This refresher course provides an excellent opportunity for those who have their CDL, but need to improve driving skills through focused, hands-on driver training. The course consists of 20 hours of classroom instruction and 20 hours of one-to-one driving instruction in late model equipment that meets or exceeds industry standards.

CDL A Tractor Trailer Driver Training Program-Lehigh Career & Technical Institute
- **Expected Outcome**: Licensing
- **Description**: This 150 hour course is divided into 104 hours of classroom and lab instruction, 46 hours of one-to-one driver instruction, and a skills exam in equipment comparable to what is used in the industry. Preparation for the written and skills test is administered on site by experienced drivers from the industry. LCTI is a third party examination site certified by the PA Department of Transportation, and the students are given their skills exam on site by LCTI state certified examiners. LCTI CDL curriculum is nationally certified by the Professional Truck Drivers Institute, PTDI. LCTI is also accredited by the PA Department of Education Bureau of Career & Technical Education. Upon successful completion of the course the student will receive a certificate from LCTI and a CDL A license.

CDL A Tractor Trailer Driving & Logistics/Forklift Safety-Lehigh Career & Technical Institute
- **Expected Outcome**: Licensing
- **Description**: The LCTI truck driver training department has joined forces with our Forklift/Material Handling team to offer a combined course that is highly recognized by many distribution centers in the Lehigh Valley. The student will receive a certificate from the LCTI Truck Driving School along with a PA CDL/A License. The student will also receive a Forklift Safety/Material Handling Certificate.

CDL B & Dump Truck Operator Training-Lehigh Career & Technical Institute
- **Expected Outcome**: Licensing
- **Description**: This 90 hour combination course will prepare the student for the state written and skills test for a CDL B which is administered on site by LCTI state licensed examiners. Driver training is conducted one-to-one, in a late model dump bodied truck that meets or exceeds industry standards. After, successful examination for a CDL B, students will train on the following topics: safety, maintenance, proper securement of loads, distribution of weight and placement of loads while loading, hauling, transporting, and dumping. Training will be conducted on 3 types of dump/hauling units: an articulating dump truck, a 10-wheel dump truck & tri-axle dump truck. A Dump Truck Operator Certificate and State CDL B License will be issued upon successful completion of this specialized training course.
CDL B Truck Driver & Logistics/Forklift Safety Training-Lehigh Career & Technical Institute
- **Expected Outcome**: Licensing
- **Description**: The LCTI truck driver training department has joined forces with our Forklift/Material Handling team to offer a combined course that is highly recognized by many distribution centers in the Lehigh Valley. The student will receive a certificate from the LCTI Truck Driving School along with a PA CDL/B License. The student will also receive a Forklift Safety/Material Handling Certificate.

CDL B Truck Driver Training Program-Lehigh Career & Technical Institute
- **Expected Outcome**: Licensing
- **Description**: This 50 hour course will prepare the student for the state written and skills test. The skills test is administered on site by LCTI state certified examiners. All driver training is one-on-one, in late model equipment comparable to what is used in the industry. Upon completion of the course the student will receive a certificate from LCTI and a CDL B license.

CDL Class A Tractor-Trailer Training-Lehigh Carbon Community College
- **Expected Outcome**: Licensing: CDL Class A - Commercial Driver’s License and National Safety Council Certification
- **Description**: This program provides participants with the skills and knowledge needed to become a professional tractor trailer driver. Successful candidates will have passed their CDL skills and knowledge tests as part of the program.

CDL Class B Passenger Training-Lehigh Carbon Community College
- **Expected Outcome**: Certificate of Completion
- **Description**: This program provides participants with the skills and knowledge needed to become a professional straight truck driver. Successful candidates will have passed their CDL skills and knowledge tests as part of the program. Passenger Endorsement Training/Testing is also available.

Construction Management (AAS)-Lehigh Carbon Community College
- **Expected Outcome**: Associates Degree
- **Description**: Prepares graduates to be employed in the building construction field. Upon completion of this program, graduates can obtain positions including contractor, subcontractor, building inspector, project coordinator, construction supervisor, construction manager, and estimator.

Construction Technology Certificate-Lehigh Carbon Community College
- **Expected Outcome**: Certificate of Completion
- **Description**: Prepares graduates to be employed in the building construction field. Graduates can obtain positions including contractor, subcontractor, building inspector,
project coordinator, or estimator. The courses in this program are specialized and may be applied toward the Construction Technology Associate in Applied Science Degree.

➢ **Diesel/Heavy & Medium Truck Technology-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** This course prepares students for careers in the trucking industry. Students learn bumper-to-taillight maintenance on Class 6, 7, and 8 trucks. Students also learn to use computerized diagnostic equipment on electronically controlled engines in a newly enlarged state-of-the-art shop. This program is certified by National Automotive Technicians Education Foundation (NATEF) and the instructor is certified with Automotive Service Excellence (ASE). Upon completion of the course the student will receive a certificate.

➢ **Dump Truck Operator Training-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** This 50 hour course will prepare the student for operation of a dump bodied haul truck. Training will be conducted on 3 types of dump/hauling units: an articulating dump truck, a 10-wheel dump truck and tri-axle dump truck. Students will be trained on equipment comparable to industry standards. Topics covered include safety, maintenance, proper securement of loads, distribution of weight and placement of loads while loading, transporting and dumping.

➢ **Electrical Technology-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** This program prepares students for careers as electricians, beginning as an electrical apprentice or production worker. The curriculum includes experience with residential and commercial wiring and motor controls. This program is certified by the National Center of Construction Education and Research and the ABC Apprenticeship program. Upon completion of the course, the student will receive a certificate of training.

➢ **Heating, AC and Refrigeration Tech. Certificate-Lehigh Carbon Community College**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Provides students with an in-depth study of heating, air conditioning, and refrigeration servicing, as well as plant maintenance of electrical and mechanical control systems. All courses in the certificate program can be applied to the HVACR A.A.S. degree program. Employment opportunities include installation and service technician for all facets of HVACR equipment, HVACR counter and outside salespersons, and factory service representatives.

➢ **Heating, AC and Refrigeration Technology (AAS)-Lehigh Carbon Community College**
  - **Expected Outcome:** Associates Degree
  - **Description:** The HVACR Technology program offers hands-on experiences to complement the technical training in the areas of heating, air conditioning, and refrigeration, as well as piping skills, residential and commercial wiring, interpreting
construction drawings, industrial maintenance, and motor control for residential, commercial, and light industrial settings. Typical operating sequences and troubleshooting are stressed. The program culminates with the entry-level certifications offered by the Air Conditioning and Refrigeration Institute (ARI) and the Environmental Protection Agency (EPA) Certification for refrigerant handling. Employment opportunities include installation and service technician for all facets of HVAC equipment, HVACR counter and outside salespersons, industrial maintenance mechanics, factory service representatives, estimators, and system designers.

- **Heavy Equipment Operations**- Lehigh Career & Technical Institute
  - **Expected Outcome**: Certificate of Completion
  - **Description**: This 184 hour hands on course will cover safety, maintenance and basic operating procedures and techniques for major types of heavy equipment. Students will operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid-steer loader and earth compactor. Other topics covered include OSHA construction regulations, PennDOT flagger training, basic surveying skills, establishing grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. An LCTI's Heavy Equipment Operator's certificate and an OSHA 500 safety training document will be awarded to students who successfully complete the program.

- **Heavy Equipment Operations & Dump Truck Operator Training**- Lehigh Career & Technical Institute
  - **Expected Outcome**: Certificate of Completion
  - **Description**: This 234 hour combination course combines the Heavy Equipment Operation and Dump Truck Operator Training for the student that currently possesses a valid CDL A or B license. Training will be conducted on 3 different types of dump/haul units to include an articulating dump truck, a 10-wheel dump truck, and a tri-axle dump truck which are equivalent to industry standards. The Heavy Equipment Operation portion of this training includes the 184 hour core program with hands on training in safety, maintenance and basic operating procedures and techniques for major types of heavy equipment. Students will receive training on backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, establishing grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment.

- **Heavy Equipment Operations & Logistics Forklift Safety**- Lehigh Career & Technical Institute
  - **Expected Outcome**: Certificate of Completion
  - **Description**: The LCTI Heavy Equipment department has joined forces with our Forklift/Material Handling team to offer a combined course, consisting of 244 hours. Operator's certificate will be presented to students who successfully complete the HEO program. Students will also receive a Forklift Safety/Material Handling certificate.
Heavy Equipment Operations - Class A-Lehigh Career & Technical Institute
- **Expected Outcome:** Licensing
- **Description:** This program combines tractor trailer driving and heavy equipment operations in a 334 hour course that will make students highly marketable within the industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state certified examiners. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures and techniques for all major types of heavy equipment. Students will operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with use of transits and lasers, erosion control methods, and loading and securement techniques for hauling equipment.

HVAC & EPA/R410A Certification-Lehigh Career & Technical Institute
- **Expected Outcome:** Certificate of Completion
- **Description:** This program will cover the core skills needed for entry level employment in the HVAC-R field. Courses include safety instruction, use of hand and power tools and hands-on learning with state-of-the-art equipment in a complete lab environment. Instruction includes gas, oil, electric, heat pump systems, air conditioning, and refrigeration along with learning troubleshooting skills and techniques. The systems covered will be R410A and R-22 heat pumps and A/C systems, condensing and natural draft propane furnaces, oil fired systems, UV lights, condensation pumps, electronic air cleaners, humidifiers, registers, and ductwork types. Instruction in customer service skills as it applies to the industry will be taught. Students will have the opportunity to earn industry certifications including OSHA 10 Safety Certification, EPA, and R410A Certifications.

Industrial Automation Technician-Lehigh Carbon Community College
- **Expected Outcome:** Certificate of Completion
- **Description:** This entry level course provides the student with a combined knowledge of electrical control circuits, pneumatics, hydraulics and mechanical systems to promote a thorough understanding of the principals and applications in the manufacturing environment.

Industrial Electrical/Electronics Technician-Lehigh Carbon Community College
- **Expected Outcome:** Certificate of Completion
- **Description:** This entry level course provides the student with knowledge of the principles and applications used in industries. The student will cover electrical wiring practices to troubleshooting and maintenance of electronic motor drives, as used in the industry.
Industrial Mechanical Technician-Lehigh Carbon Community College

- **Expected Outcome:** Certificate of Completion
- **Description:** This entry level course provides the student with mechanical drive components in an industrial manufacturing environment. The student will learn to apply basic safety rules for working with mechanical equipment, understand drive types and configurations, learn the use of shafts, bearings, keys and couplings and learn the ability to maintain and troubleshoot procedures for V-Belt Drive systems.

- **Logistics & Forklift Safety Training-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Lehigh Career & Technical Institute provides a 60 hour hands on practical training which includes 36 hours in forklift safety certification, loading and unloading, double stacking, obstacle courses, National Safety Council test and theory (equipment used-propane lift truck, narrow aisle truck, electric pallet truck, slip sheet truck, clamp truck and order selector truck. Training also includes 24 hours of inventory control which consists of bar coding, picking and packing, shipping, hand held computer, RF system and signature pads.

- **Logistics/Transportation Technology Class A-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Licensing
  - **Description:** This course features the latest technology and will prepare students to stage and load orders, set up and dispatch runs through a Transportation Management System (TMS), learn to properly navigate to locations, track and deliver products to consumers. Integrated technology including bar coding, radio frequency and track pads will prepare students for employment. Students will also have the opportunity to earn a CDL A and have the advantage of learning on a world-class truck driving simulator before driving on the road. On road driver training is conducted one-to-one, in late model equipment comparable to what is used in the industry.

- **Logistics/Transportation Technology Class B-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Licensing
  - **Description:** This course features the latest technology and will prepare students to stage and load orders, set up and dispatch runs through a Transportation Management System (TMS), learn to efficiently navigate to locations, track and deliver products to consumers. Integrated technology including bar coding, radio frequency and track pads will prepare students for employment. Students will also have the opportunity to earn a CDL B and have the advantage of learning on a world-class truck driving simulator before driving on the road. On road driver training is conducted one-to-one, in late model equipment comparable to what is used in the industry.
**Plumbing & Heating**-Lehigh Career & Technical Institute

- **Expected Outcome:** Certificate of Completion
- **Description:** This program prepares students for careers in installation and repair of plumbing and heating systems including hydronic heating systems. They may become welders, plumbers, or heating technicians. The curriculum includes instruction in oil burner services, solder and lead work, and service repair. Upon completion of the course the student will receive a certificate.

**Solar Technology**-Lehigh Career & Technical Institute

- **Expected Outcome:** Certificate of Completion
- **Description:** This program includes an innovative blended learning curriculum with theory-based instruction, practical hands-on training on state-of-the-art equipment and software, multi-media integration and e-Learning components. The program provides a solid background for entry-level employment as a solar thermal or solar PV (photovoltaic) installer. Courses include industrial safety, core electrical skills and power distribution, solar concepts, solar photovoltaic installation, solar thermal open and closed loop installation and troubleshooting skills for all systems. Hoisting and rigging for safe installation of panels and OSHA 10-Hour Career Safe Certification is included.

**Structural Welding**-Lehigh Carbon Community College

- **Expected Outcome:** Certificate of Completion
- **Description:** This course is designed to prepare students for entry level jobs in the SMA (Stick), GMA (Mig), or FCA (Flux Cored Arc) welding process. The course will also provide instruction in Oxy-fuel and Carbon Arc cutting. Students will learn the proper techniques used to accomplish sound welds on low carbon steel plate in the flat, horizontal and vertical positions.

**Sustainable Building Advisor Course**-Lehigh Carbon Community College

- **Expected Outcome:** Other: Skills and Competencies taught: fundamentals of sustainable building and design; the importance of place: site, transportation and land use issues; energy efficient design; "green" materials selection; indoor environmental quality and health; water and site design; sustainable job site operations; and building operations and maintenance
- **Description:** This specialized training course and certification exam was developed for students in a variety of building industries to gain an understanding of current sustainability performance standards.

**Transportation Services CDL A & Heavy Equipment Operations**-Lehigh Career & Technical Institute

- **Expected Outcome:** Licensing
- **Description:** This program combines tractor trailer driving and heavy equipment operation in a 404 hour course that will make students highly marketable within the
industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state licensed examiners: LCTI CDL is nationally certified by the Professional Truck Drivers Institute, PTDI. Driver training is conducted one-on-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 180 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Students will operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training to prepare for a wide variety of career opportunities.

- **Transportation Services CDL A, HEO, Logistics Forklift Safety**-Lehigh Career & Technical Institute
  - **Expected Outcome**: Licensing
  - **Description**: This program combines tractor trailer driving and heavy equipment operation in a 404 hour course that will make students highly marketable within the industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state licensed examiners: LCTI CDL is nationally certified by the Professional Truck Drivers Institute, PTDI. Driver training is conducted one-on-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 180 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Students will operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training to prepare for a wide variety of career opportunities.

- **Transportation Services Class B & Heavy Equipment Operations**-Lehigh Career & Technical Institute
  - **Expected Outcome**: Licensing
  - **Description**: This program combines CDL Class B dump truck driving and heavy equipment operations in a 274 hour course that will make students highly marketable within the industry. Training will be conducted on 3 types of dump/hauling units: an articulated dump truck, a 10-wheel dump truck, and a tri-axle dump truck. Students will be prepared for the state written and skills test for a CDL class B which is administered on site by LCTI state certified examiners. Driver training is conducted one-to-one in equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures and techniques for major types of heavy
equipment. Students will operate a backhoe/loader, dozers, hydraulic excavator, track loader, rubber tire loader, skid-steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods, and loading and securement techniques.

- **Welder Fitter-Welder Training & Testing Institute**
  - **Expected Outcome:** Diploma
  - **Description:** A career level course for individuals with little or no welding experience. Training is primarily hands-on. Instruction is provided in the five major welding processes: Stick, MIG, TIG, Flux Cored, and Oxyacetylene welding on both pipe and structural shapes on a variety of materials including steel, stainless steel, and aluminum. Three major cutting processes are taught: Oxyacetylene, Plasma, and Carbon Arc. Course theory covers Blueprint Reading, Layout, and Fitting. Students who successfully complete all course requirements receive a diploma. At the completion of the course graduates should be prepared to enter the field as an entry-level welder or welder-fitter. American Welding Society (AWS) certification testing is available.

- **Welding & Fabrication Technology-Triangle Tech**
  - **Expected Outcome:** Associates Degree
  - **Description:** Associate in Specialized Technology Degree-Provides theory and lab experiments. Emphasis has been placed on plate and pipe welding including TIG, MIG, and Core Wire production processes. Also includes study of architectural and structural steel drawings, pipe drawings, shop detailing and layout work. Students will take the AWS D1.1 and ASME 6G certifications as part of the training program.

- **Welding Technology-Lehigh Career & Technical Institute**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** This program prepares students for the American Welding Society Entry Level and Advanced Level Welder Certifications. The nine performance tests required for the Entry Level Welder are Shielded Metal Arc Welding 2G and 3G position on Mild Steel, Gas Metal Arc Welding Short Circuit Transfer Mode on Mild Steel and Spray Transfer Mode on Mild Steel, Flux Cored Arc Welding Self Shielded and Gas Shielded on Mild Steel, Gas Tungsten Arc Welding Plain Carbon Steel, Stainless Steel and Aluminum. Students are also taught Oxyfuel Gas Cutting Principals and Practices (Manual and Machine), Arc Cutting Principals and Practices (Air Carbon Arc Cutting and Plasma Arc Cutting), Welding Inspection and Testing Principles. This program is certified by the American Welding Society. Upon completion of the course, the student will receive a certificate of training. (Commonwealth Workforce Development System, Find Training, Lehigh County, 2012)
Northampton County

<table>
<thead>
<tr>
<th>Career Institute of Technology</th>
<th>Northampton Community College</th>
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<tbody>
<tr>
<td>5335 Kesslersville Road</td>
<td>3835 Green Pond Road</td>
</tr>
<tr>
<td>Easton, Pennsylvania 18040</td>
<td>Bethlehem, Pennsylvania 18020-7568</td>
</tr>
<tr>
<td>610-258-2448 Ext-3304</td>
<td>610-861-5500</td>
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</tbody>
</table>

Bethlehem Area Vocational Technical School
3300 Chester Avenue
Bethlehem, Pennsylvania 18020-2870
610-866-8013 Ext-111

- **Air Conditioning - Refrigeration Technician** - Career Institute of Technology
  - **Expected Outcome**: Certificate of Completion
  - **Description**: Students will be prepared for employment in Residential and Commercial Air Conditioning and Refrigeration trades. This course covers the theory of refrigeration, cycle, components, testing and maintenance. Hands-on lab time is included. Students use hands-on experience to build an air conditioning system, to wire and repair electrical controls and to diagnose problems. Students are taught the use of tools and test instruments and how to cost jobs and estimate materials. Blueprint reading and building codes are covered. The theory portion of the course will consist of tapes and slides, lectures with question and answer periods. Certification is available for EPA Refrigerant Containment, R410a Refrigerant Safety and Green Awareness Certification. Students successfully completing this program and passing the certification exams can expect to obtain immediate employment in one of the many related occupations.

- **Air Conditioning/Refrigeration Technician I Specialized Diploma** - Northampton Community College
  - **Expected Outcome**: Certificate of Completion
  - **Description**: Students will be prepared for employment in Residential and Commercial Air Conditioning and Refrigeration trades. This program covers the theory of refrigeration, cycle, components, testing and maintenance. Hands-on lab time is an important component of the program. Students use hands-on experience to build an air conditioning system, to wire and repair electrical controls and to diagnose problems. Students are taught how to use the tools and test instruments and how to cost jobs and estimate materials. Blueprint reading and building codes are covered. The theory portion of the program may consist of tapes and slides, lectures with question and answer periods. Certification exams are available for EPA Refrigerant Containments and R-410a Refrigerant Safety.

- **Automatic Heating - Ventilation - Oil and Gas** - Career Institute of Technology
  - **Expected Outcome**: Certificate of Completion
  - **Description**: This full time program will prepare students for employment in Residential and Commercial Heating trades. Covered during the program will be oil burners, controls, combustion testing and installing a boiler as well as gas burners. Students study
the theory, construction and repair of gas and oil burners, component parts, water and air systems. Plumbing basics are included as they relate to the heating and ventilation occupations.

- **Automatic Heating - Ventilation - Oil/Gas - Career Institute of Technology**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** The program is scheduled full time during the Fall Session. Students will be prepared for employment in the Residential and Commercial Heating trades. This program covers oil burners, controls, combustion testing and installing a boiler as well as gas burners. Students study the theory, construction and repair of gas and oil burners, component parts, water and air systems. Plumbing basics are taught as it relates to heating and ventilation occupations. Included in instruction are the use of tools and test instruments, how to cost job and material estimating. Blueprint reading and building codes are covered. Hands-on lab time is included daily to permit students to put into use the theory provided. National certification for Automatic Oil and Gas Heating are available for those passing exams. Employment outlook for successful students are generally good in any one of the related occupations.

- **Building Construction - Career Institute of Technology**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Addressed are the technological advances in the construction industry. Instruction is accomplished in up-to-date equipment, methods and materials used in residential and light commercial construction. Included within the program are permit requirements, blueprint reading, site clearing, site layout, foundations, framing (steel and wood), insulation, sheathing, roofing, windows and doors, exterior and interior finish and cabinet construction and installation. Safety is high stressed.

- **Carpentry - Bethlehem Area Vocational Technical School**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Course includes instruction and practice in all aspects of general carpentry and cabinetmaking with heavy emphasis on safety.

- **Construction Management - Northampton Community College**
  - **Expected Outcome:** Associates Degree
  - **Description:** Large-scale construction requires well-trained managers whose role it is to stay on top of every detail of the job. Construction managers must be familiar with all aspects of the building process, but they also need to be strong leaders. Because of this, our program not only covers essentials such as codes and blue print reading, but also
includes business law, ethics, planning and scheduling and other important management tools. This comprehensive approach results in graduates who are ready to be effective managers and administrators within the construction industry. Through our balanced mix of liberal arts, specialized courses and hands-on training, Northampton offers you tremendous opportunity for success and professional growth. Our required practicum provides essential real world experience. During the practicum you will have the opportunity to perform various construction management functions, gain insight into the challenges of managing a site, and enhance your critical thinking, problem solving and communication skills. Students are required to secure a workplace sponsor for the practicum.

- **Electrical Construction Technology AAS**- Northampton Community College
  - **Expected Outcome:** Associates Degree
  - **Description:** Electrical construction involves the installation, wiring and testing of electrical equipment in residential, commercial and industrial buildings. The work itself is both physically demanding and rewarding. It requires a strong working knowledge of wiring practices and The National Electrical Code, a basic knowledge of the equipment used in commercial applications, industrial processes, environmental control as well as a journeyman license. The program provides an in-depth study of electrical fundamentals, wiring techniques, and the National Electrical Code that is applicable to residential, commercial and industrial installations. We prepare our students to sit for municipal (PA) and state (NJ) electrician’s license exams. The program also provides fundamental knowledge of a broad range of related technologies including electricity, HVAC, fiber optics, motor controls, and PLCs. This breadth of technical knowledge enables graduates to work on a variety of projects in construction, utility and manufacturing industries. Required general education courses round out the degree requirements to provide graduates with the ability to effectively communicate and interface with other employees, customers, suppliers and other organizations.

- **Electrical Technology Specialized Diploma**- Northampton Community College
  - **Expected Outcome:** Diploma
  - **Description:** Northampton’s specialized diploma is a convenient, fast-track program that can qualify you for immediate employment in the electrical field. Experienced electrical students may also take tests to gain credit for their work experience, reducing the amount of class time needed to earn the diploma even further. Our program provides the latest skills and knowledge needed to install, wire, repair and troubleshoot standard and programmable controller systems used in manufacturing. Graduates are qualified to work as an electrical maintenance technician, electrician or assistant both in manufacturing and in the electrical construction industry. The program begins by familiarizing students with the theory of electricity and its AC and DC characteristics, working safely with electricity, and basic circuit wiring. You will then gain practical knowledge and skills in working with industrial applications of motors, motor controls, and transformers. At the same time, you’ll also be studying the various types of sensors and solid-state devices used in process control and becoming acquainted with the computer workstation used to program and debug today’s process control systems. The program is rounded out with two hands-on courses in programmable logic controllers
(PLCs). These classes cover the skills you need to install, operate, program, network and troubleshoot the most popular types of PLCs.

- **Electronics Technology AAS-Northampton Community College**
  - **Expected Outcome:** Associates Degree
  - **Description:** Today’s high technology companies want to hire well-rounded electronics technicians who can help their businesses grow profitably. Northampton’s Electronics Technology program integrates comprehensive electronic circuit theory with practical hands-on lab work. Students develop solid troubleshooting skills using modern industry-quality instruments. Northampton graduates are employed in areas such as manufacturing, installation, repair, operation, and product design. Other graduates choose power generation, industrial control, or sales. Employers value Northampton graduates because they are well-trained and can step right in to resolve many design and application problems. Our program is based on continuous industry input and evaluation of electronics programs nationwide. The result is a practical curriculum that emphasizes a strong foundation in electronics fundamentals while developing skills critical to success in the field. Upon graduation, you will be well prepared to enter and advance in the workforce, or you may choose to continue your education toward a four-year bachelor of science degree in electronics technology.

- **Heating, Ventilation and Air Conditioning Technician – HVAC-Career Institute of Technology**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Students are prepared for employment in residential and commercial air conditioning, refrigeration and heating trades. Students study the theory, construction and repair of gas and oil burners, component parts, water and air systems. Students are taught plumbing basics as they relate to heating, ventilation and refrigeration occupations, using tools and test instruments, forming sheet metal and materials, job and material estimating, blueprint reading and building codes are learned. Certifications are available throughout the program for: EPA Refrigeration Containment Certification - Stationary Equipment; Automatic Heating Oil and Automatic Heating Gas; R410a Refrigerant Safety Certification and Green Awareness Certification.

- **HVAC-Bethlehem Area Vocational Technical School**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Course will cover soldering, brazing, flaring, swaging, threading of black pipe; basic electricity, routine maintenance, cleaning and service skills; sheet metal skills, and oil burner servicing. HVAC II: Covers advanced electricity, schematics, motor troubleshooting, control operations, refrigerant uses & types, hydronics; unit sizing and selection procedures. Includes training and testing for EPA 608 Refrigerant Handling Certification. HVAC Advanced Troubleshooting: Installation and servicing of condensing gas furnace, 410a split system, UV light, condensate pump, electronic air cleaner, grills, draft inducers and bathroom fans.
- **Indoor Environmental Control (HVAC)- Specialized Diploma- Northampton Community College**
  - **Expected Outcome:** Diploma
  - **Description:** Our program offers the unique opportunity to learn the concepts and practices on components and equipment used in actual HVAC/R (heating, ventilating, air conditioning/refrigeration) systems. The program’s curriculum includes electrical theory, heating and cooling concepts, refrigeration cycle theory, equipment operation, component specification, whole system operation, system calculations, and diagnostic approaches. Depending on your choice of electives, you can gain many additional skills related to oil and gas-fired and electric heating systems, heat pumps, air conditioning, ventilation systems and unitary refrigeration systems such as icemakers and coolers. You can also learn the proper EPA-approved method of recovery and handling of refrigerants. Our technical electives allow the student to specialize in certain areas of HVAC/R to meet the needs of a variety of employers.

- **Introduction To Electrical Construction- Northampton Community College**
  - **Expected Outcome:** Diploma
  - **Description:** Northampton’s Introduction to Electrical Construction Specialized Diploma Program is available to participants who are interested in pursuing a career in electrical construction. This program provides a pathway to complete Northampton’s Industrial Maintenance Specialized Diploma or an Associate in Applied Science Degree in Electrical Construction Technology; both are targeted to green occupations.

- **Maintenance Welding Program- Career Institute of Technology**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** This program is designed for overall welding knowledge. Students will be introduced to Oxyfuel Cutting, Shielded Metal Arc, Gas Metal Arc, Gas Tungsten, Flux Core, and Plasm Arc Welding. The program is 85% hands-on welding.

- **Masonry- Career Institute of Technology**
  - **Expected Outcome:** Certificate of Completion
  - **Description:** Students in the masonry program learn seven different trade areas: bricklaying, block laying, concrete work, tile work, plastering, stone work and laboring. The program is taught utilizing hands-on experience through the use of lab projects and live work for the school and the local community. Upon completion of the program, students can acquire employment in one or more of the various areas taught.
- **Plumbing**-Bethlehem Area Vocational Technical School
  - Expected Outcome: Certificate of Completion
  - Description: Program prepares students for entry in the residential plumbing trades. Installation, repair and maintenance of residential plumbing fixtures, piping, drains and water heaters included in curriculum.

- **Residential Electrician**-Bethlehem Area Vocational Technical School
  - Expected Outcome: Certificate of Completion
  - Description: The Residential Electrician certificate program, a 192 hour hands-on offering, includes residential wiring, electrical troubleshooting, service calculations, installation procedures, an in-depth study of the 2008 national electrical code and the application to 1 and 2 family dwellings.

- **Welding**-Bethlehem Area Vocational Technical School
  - Expected Outcome: Certificate of Completion
  - Description: Certificate program covering basic and intermediate level welding skills, including MIG & TIG welds.

- **Welding Technology Specialized Diploma**-Northampton Community College
  - Expected Outcome: Diploma
  - Description: Northampton’s Welding program is noted for being a strong quality-oriented welding and materials program. We are proud that we have produced some of the finest welders and weld joint analyzers in the regional industry. Northampton’s program emphasizes problem solving and material and joint analysis rather than simply rote welding exercises. As a result, we’ve earned a strong reputation and the respect of employers throughout the region. This program will be of benefit to those who are seeking a career re-training, advancement to a supervisory position, or a career in weld inspection. It is also useful for welders in need of updated skills and certification. As a student in Northampton’s Welding program you will gain key welding and problem solving skills. You’ll also benefit from proven instructional techniques focused on analysis, gain individualized hands-on instruction, achieve a competency-based academic certification, and obtain preparation for AWS welder certification. (Commonwealth Workforce Development System, Find Training, Northampton County, 2012)
Pennsylvania Approved Training and Training Providers in the Luzerne Schuylkill Workforce Investment Area

Luzerne County

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<th>Lehigh Career &amp; Technical Institute</th>
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<tr>
<td>1333 South Prospect Street</td>
<td>1451 West 23rd Street</td>
</tr>
<tr>
<td>Nanticoke, Pennsylvania 18634-3814</td>
<td>Hazelton, Pennsylvania 18202-1542</td>
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<tr>
<th>Smith &amp; Solomon</th>
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<tr>
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<tr>
<td>DuPont, Pennsylvania 18641-2228</td>
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<tr>
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- **Building Maintenance Technology**-Luzerne County Community College
  - **Expected Outcome:** Associates Degree
  - **Description:** An Associate in Applied Science Degree designed to provide academic and applied knowledge to the student interested in acquiring basic and intermediate skills in building maintenance for positions in building and industrial maintenance.

- **Building Maintenance**-Certificate-Luzerne County Community College
  - **Expected Outcome:** Certificate of Completion
  - **Description:** The Building Maintenance Certificate Program is designed for the student who wants a diversified knowledge in the technical trade skills. The student will acquire an understanding in theory and laboratory skills for electrical, plumbing, heating and air conditioning systems. Qualified students may gain entry level positions in a variety of technical occupations such as maintenance electricians, maintenance plumbers.

- **CDL A & Heavy Equip Ops/Environmental Sustainability Work Prac**-Lehigh Career & Technical Institute
  - **Expected Outcome:** Licensing
  - **Description:** This innovative 454 hour program combines the Transportation Services CDL A & Heavy Equipment Operations program with environmental sustainability work practices. Land clearing, repair and reclamation processes are discussed and students will observe live work sites during field trips to dam projects, mine reclamation sites and Marcellus Shale operations. The core 404 hour program combines tractor trailer driving and heavy equipment operations together in a course that will make students highly marketable within the industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state certified examiners. Driver
training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training to prepare for a wide variety of career opportunities.

- **CDL A & Logistics Forklift Safety Training** - Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: The LCTI truck driver training department has joined forces with our Forklift/Material Handling team to offer a combined course that is highly recognized by many distribution centers in the Lehigh Valley. The student will receive a certificate from the LCTI Truck Driving School along with a PA CDL/A License. The student will also receive a Forklift Safety/Material Handling Certificate. CDL classroom, driver training, and final skills exam are held at Hazleton Area Career Center. Logistics/Forklift Safety Training is held at LCTI’s Schnecksville campus.

- **CDL A plus Bus** - Smith & Solomon
  - Expected Outcome: Licensing
  - Description: Student will receive instruction on the operation of a tractor trailer and bus. Upon completion of the training they will receive a CDL Class A license with a passenger endorsement for the operation of a bus as well.

- **CDL A Refresher Course** - Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: This refresher course provides an excellent opportunity for those who have their CDL, but need to improve driving skills through focused, hands on driver training. The course consists of 20 hours of classroom instruction and 20 hours of one-to-one driving instruction in late model equipment that meets or exceeds industry standards.

- **CDL B & Dump Truck Operator Training** - Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offers this 90 hour combination course that will prepare the student for the state written and skills test for a CDL B which is administered on site by LCTI state licensed examiner. Driver training is conducted one-to-one, in a late model dump bodied truck that meets or exceeds industry standards. After successful examination for CDL B, students will train on the following topics: safety, maintenance, proper securement of loads, distribution of weight and placement of loads while loading, hauling, transporting, and dumping. Training will be conducted on 3 types of dump/hauling units: an articulating dump truck, a 10-wheel dump truck & tri-axle dump truck. A Dump Truck Operator Certificate and state CDL B License will be issued upon successful completion of
this specialized training course. CDL classroom, driver training, and final skills exam are held at Hazleton Area Career Center. All other training will be held at LCTI's Schnecksville campus.

- **CDL B & Logistics Forklift Safety Training**-Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: The LCTI truck driver training department has joined forces with our Forklift/Material Handling team to offer a combined course that is highly recognized by many distribution centers in the Lehigh Valley. The student upon successful completion will receive a certificate from the LCTI Truck Driving School along with a CDL B license. The student will also receive a Logistics Forklift Safety Training certificate. CDL classroom, driver training, and final skills exam are held at Hazleton Area Career Center. Logistics/Forklift Safety Training is held at LCTI's Schnecksville campus.

- **CDL B Passenger**-Smith & Solomon
  - Expected Outcome: Licensing
  - Description: Student will be trained how to operate a bus effectively and safely so that they can gain employment as a bus driver. Upon completion students will receive a valid Commercial Driver’s License which will enable them to drive a bus.

- **CDL B Truck Driver Training**-Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offers this 50 hour course that will prepare the student for the state written and skills test. The skills test is administered on site by LCTI state certified examiners. All driver training is one-to-one, in late model equipment comparable to what is used in the industry. Upon completion of the course the student will receive a certificate from LCTI and a CDL B license.

- **CDL A & Dump Truck Operations Training**-Lehigh Career & Technical Institute
  - Expected Outcome: Licensing
  - Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offers a 200 hour combination course that will prepare the student for the state written exam and skills test for CDL A which is administered on site by LCTI state licenses examiners. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. After successful examination for CDL A, students will prepare to operate dump bodied haul trucks. Training will be conducted on 3 types of dump/hauling units: an articulating dump truck, a 10 wheel dump truck, and tri-axle dump truck. Topics covered include safety, maintenance, proper securement of loads, distribution of weight and placement of loads while loading, transporting and dumping. A Dump Truck Operator certificate and State CDL A License will be issued upon successful completion of this specialized training course. CDL classroom, driver training, and final skills exam will be held at Hazleton Area Career Center. All other training will be held at LCTI's Schnecksville campus.
➢ **Commercial Driver Refresher Course**-Smith & Solomon
  o **Expected Outcome:** Diploma
  o **Description:** One week refresher course for CDL holders that have not driven commercially for some time.

➢ **Commercial Driver’s License A (CDL A)**-Smith & Solomon
  o **Expected Outcome:** Licensing
  o **Description:** Commercial Driver’s License with various endorsements.

➢ **Commercial Driver’s License Class B (CDL B)**-Smith & Solomon
  o **Expected Outcome:** Licensing
  o **Description:** Student will learn all the basic skills needed to operate a Class B truck and obtain a license from the State. Upon completion students will receive a valid Commercial Driver’s License with various endorsements.

➢ **Diesel Mechanic Technician Training Program**-Luzerne County Community College
  o **Expected Outcome:** Certificate of Completion
  o **Description:** The Diesel Mechanic Technician Training Program is designed to assist those workers who are already employed in the field as Diesel Mechanics but who need to advance their technical skills or those who possess mechanical skills and are looking to learn the basic skills and competencies necessary to become a diesel mechanic.

➢ **Electrical Construction Technology-A.A.S.**-Luzerne County Community College
  o **Expected Outcome:** Associates Degree
  o **Description:** An Associate’s Degree Program that offers theories of electricity, household and industrial electrical maintenance and the use of hand and power tools. Practical training on various types of electrical services and repair and installation work are included. Training will include electrical motors, transformers, large motor controllers, commercial and industrial power systems, multi-dwellings, multi-meter services, and national electric code.

➢ **Electrical Construction-Certificate**-Luzerne County Community College
  o **Expected Outcome:** Certificate of Completion
  o **Description:** Designed to provide basic theories of electrical, household and industrial electrical maintenance along with the use of hand and power tools. Practical training on various types of electrical devices and repair and installation work are also included.

➢ **Electrical Trades**- Fortis Institute
  o **Expected Outcome:** Diploma
  o **Description:** The NEC will be covered during the course of instruction, with great emphasis on the Code’s guidelines and the importance of following guideline. Students will start the electrical program with simple atom and magnetic theory, the basis of electricity, and continually progress to knowledge of how electricity is produced for everyday use. Core classes in Electrical trades as Alternating Current Theory, A.C. motors and controls, and the Three Phase Power and Transformers will provide the fundamental
content knowledge. Lab class instruction will offer the hands on knowledge to develop
skills necessary for the graduate to enter the workforce as an entry level electrician,
electrical apprentice, or electrical helper.

➤ **Forklift Training**-Luzerne County Community College
  o Expected Outcome: Certificate of Completion
  o Description: 8 hour forklift training includes classroom and practical instruction on
    forklift safety and operation.

➤ **Heating, Ventilation, Air-Cond. & Refrigeration**-Fortis Institute
  o Expected Outcome: Diploma
  o Description: AMTI’s program is designed to provide the student with knowledge and
    skills necessary for entry-level employment in the field. With the introduction of
    computer controlled heating, ventilation, air conditioning, and refrigeration systems,
    increasingly advanced technology is required.

➤ **Heavy Equipment Operations - Class A**-Lehigh Career & Technical Institute
  o Expected Outcome: Licensing
  o Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical
    Institute offers a program combining tractor trailer driving and heavy equipment
    operations in a 334 hour course that will make students highly marketable within the
    industry. Students will be prepared for the state written and skills test for CDL A which
    is administered on site by LCTI state certified examiners. Driver training is conducted one-
    to-one, in late model equipment that meets or exceeds industry standards. The heavy
    equipment operations training includes the 184 hour core program with hands on
    instruction in safety, maintenance and basic operating procedures and techniques for all
    major types of heavy equipment. Students will operate a backhoe/loader, dozer,
    hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth
    compactor. Other topics covered include OSHA construction regulations, basic surveying
    skills, established grades with use of transits and lasers, erosion control methods, and
    loading and securement techniques for hauling equipment. CDL classroom, driver
    training, and final skills exam are held at Hazleton Area Career Center. All other training
    is held at LCTI’s Schnecksville campus.

➤ **Logistics & Supply Chain Management Certificate Program**-Penn State
  o Expected Outcome: Certificate of Completion
  o Description: Courses cover such key concept areas as systems analysis, trade-off analysis,
    transport systems, procurement, inventory management and supply chain integration
    and strategy. The implications of e-commerce in relation to supply chain management
    are also explored. The courses provide a broad overview of logistics and supply chain
    management and address the needs and perspectives of individuals from a wide range
    of areas, including manufacturers, wholesalers and retailers, merchandisers,
    transportation and warehousing firms, and government agencies. (1) Business Logistics
    Management is a 3 credit course that costs $495 per credit for FA11/SP12. This course
    covers management of logistics_supply chain processes. (2) Transport Systems is a 3
credit course that costs $495 per credit for FA11/SP12. This course covers the strategic role of freight transportation systems and services in supply chain networks. (3) Warehousing and Terminal Management is a 3 credit course that costs $495 per credit for FA11/SP12. This course covers administration of warehouse and terminal functions in logistics systems, with an analysis of customer services, forecasting, inventory, investment, design, and operation. (4) Purchasing and Materials Management is a 3 credit course that costs $495 per credit for FA11/SP12. This course covers purchasing policies, procedures, order specifications and agreements, supplier selection and the role of purchasing in production planning & inventory management.

- **Logistics Transportation Technology Class A-Lehigh Career & Technical Institute**
  - Expected Outcome: Licensing
  - Description: This course features the latest technology and will prepare students to stage and load orders, set up and dispatch runs through a Transportation Management System (TMS), learn to efficiently navigate to locations, properly track and deliver products to consumers. Integrated technology including bar coding, radio frequency and track pads will prepare students for employment. Students will also have the opportunity to earn a CDL A and have the advantage of learning on a world-class truck driving simulator before driving on the road. On road driver training is conducted one-to-one, in late model equipment comparable to what is used in the industry.

- **Logistics Transportation Technology Class B-Lehigh Career & Technical Institute**
  - Expected Outcome: Licensing
  - Description: This course features the latest technology and will prepare students to stage and load orders, set up and dispatch runs through a Transportation Management System (TMS), learn to efficiently navigate to locations, properly track and deliver products to consumers. Integrated technology including bar coding, radio frequency and track pads will prepare students for employment. Students will also have the opportunity to earn a CDL B and have the advantage of learning on a world-class truck driving simulator before driving on the road. On road driver training is conducted one-to-one, in late model equipment comparable to what is used in the industry.

- **Plumbing & Heating Technology-Certificate-Luzerne County Community College**
  - Expected Outcome: Certificate of Completion
  - Description: Designed to provide basic theories of plumbing and heating, household and industrial maintenance, sewage systems and the use of hand and power tools, with practical training in various types of plumbing and heating repairs, installation work, heat loss calculations, etc.

- **Plumbing, Heating, Air Conditioning Tech-A.A.S.-Luzerne County Community College**
  - Expected Outcome: Associates Degree
  - Description: An Associate in Applied Science Degree designed to provide academic and applied knowledge to the student interested in acquiring basic and intermediate skills in plumbing, heating and air conditioning for positions such as a journeyman-level tradesman, estimator, systems designer or control trouble shooting technician.
Professional Truck Driver Program-Luzerne County Community College
- Expected Outcome: Certificate of Completion
- Description: The program emphasizes safety and driver courtesy as well as the skills needed to operate the equipment successfully.

Professional Truck Driver Refresher Course-Luzerne County Community College
- Expected Outcome: Certificate of Completion
- Description: Re-familiarizes former students or drivers to all aspects of driving a tractor trailer. Shifting, turning, double clutching, backing and docking are taught. Rules and regulations of the trucking industry are reviewed.

Sustainable Energy Technology-Luzerne County Community College
- Expected Outcome: Certificate of Completion
- Description: Because the common thread in most energy companies is electrical distribution, the emphasis of this program has as its basis courses that are in the discipline of electrical engineering technology. In order to address the specific needs of the employers in this sector, the program will include an overview course in sustainable energy and an internship within the specific industry that the student plans on pursuing.

Transportation Services - CDL A & Heavy Equipment Operations-Lehigh Career & Technical Institute
- Expected Outcome: Licensing
- Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offer a program that combines tractor trailer driving and heavy equipment operation in a 404 hour course that will make students highly marketable within the industry. Students will be prepared for the state written and skills test for CDL A which is administered on site by LCTI state licensed examiners. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Students will operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods and loading and securement techniques for hauling equipment. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training to prepare for a wide variety of career opportunities. CDL classroom, driver training, and final skills exam are held at Hazleton Area Career Center. All other training is held at LCTI’s Schnecksville campus.

Transportation Services - CDL B & Heavy Equipment Operations-Lehigh Career & Technical Institute
- Expected Outcome: Licensing
- Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offers a program that combines CDL class B dump truck driving and heavy
equipment operations in a 274 hour course that will make students highly marketable within the industry. Training will be conducted on 3 types of dump/hauling units: an articulated dump truck, a 10-wheel dump truck, and a tri-axle dump truck. Students will be prepared for the state written and skills test for a CDL class B which is administered on site by LCTI state certified examiners. Driver training is conducted one-to-one in equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures and techniques for major types of heavy equipment. Students will operate a backhoe/loader, dozers, hydraulic excavator, track loader, rubber tire loader, skid-steer loader and earth compactor. Other topics covered include OSHA construction regulations, basic surveying skills, established grades with the use of transits and lasers, erosion control methods, and loading and securement techniques. CDL classroom is held at Hazleton Area Career Center. All other training is held at LCTI’s Schnecksville campus.

➢ Transportation Services CDL A, HEO, Logistics Forklift Safety-Lehigh Career & Technical Institute

   o Expected Outcome: Licensing
   o Description: Hazleton Area Career Center in partnership with Lehigh Career & Technical Institute offers a program that combines tractor trailer driving, heavy equipment operations, and logistics/forklift safety training in a 464 hour course that will make students highly marketable within the industry. Students will be prepared for the state written and skills exam for CDL A which is administered on site by LCTI state licensed examiners: LCTI CDL is nationally certified by the Professional Truck Drivers Institute, PTDI. Driver training is conducted one-to-one, in late model equipment that meets or exceeds industry standards. The heavy equipment operations training includes the 184 hour core program with hands on instruction in safety, maintenance and basic operating procedures, and techniques for major types of heavy equipment. Students will learn to operate a backhoe/loader, dozer, hydraulic excavator, track loader, rubber tire loader, skid steer loader, and earth compactor. Additional specialized training will be provided in dump truck operation with tag along and low boy trailer driver training, and loading and securement techniques. The student will also receive 60 hours of hands on practical training which includes 36 hours of forklift safety certification and 24 hours of inventory control. CDL classroom, driver training, and final skills exam are held at Hazleton Area Career Center. All other training is held at LCTI’s Schnecksville campus.(Commonwealth Workforce Development System, Find Training, Luzerne County, 2012)
Schuylkill County

<table>
<thead>
<tr>
<th>Schuylkill Technology Center - North Campus</th>
<th>McCann School of Business and Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 Technology Drive</td>
<td>2650 Woodglen Road</td>
</tr>
<tr>
<td>Frackville, Pennsylvania 17931-2100</td>
<td>Pottsville, Pennsylvania 17901-1335</td>
</tr>
<tr>
<td>570-874-1034 Ext-4880</td>
<td>570-622-7622</td>
</tr>
</tbody>
</table>

- **CDL- Schuylkill Technology Center - North Campus**
  - Expected Outcome: Licensing
  - Description: During the first four weeks, students will learn everything needed to pass the CDL knowledge tests for a Class A License. Included are air brakes, hazardous materials, and tank vehicles. Students will also learn all necessary Federal Motor Carrier Safety Regulations as applicable to drivers of commercial vehicles, vehicle systems, map reading, trip planning and much more. Phase II – Hands-On (6 weeks) During these 6 weeks, students will receive training on late model tractors and trailers. It is here where students will receive training on pre-trip inspections, backing maneuvers, and all types of on road driving. Prior to the end of the training program, students will be given the opportunity to take the CDL skills test. During the training program many trucking company recruiters make presentations to the class, giving students an opportunity to apply for potential employment.

- **Electrical Systems-McCann School of Business and Technology**
  - Expected Outcome:
  - Description: The Electrical Systems program prepares students for entry-level positions in the trade. The program provides the student with the knowledge and skills to work with maintenance of electrical systems. The program emphasizes extensive hands-on experience through lab applications of the various theories and current practices. Studies include tools, equipment, procedures, design, installation, control systems, and troubleshooting hard wired programmable logic controlled automated systems. Students also study electrical applications for an industrial setting along with oral and written communication for business and personal improvement.

- **Electrical Technology-McCann School of Business and Technology**
  - Expected Outcome: Diploma
  - Description: Prepares students for entry level positions as an electrician. The program provides the student with the knowledge and skills to work with residential or commercial installation and maintenance of electrical systems. Through hands on experience students apply the various theories and practices. Studies include tools and equipment, procedures, installation, and programmable controllers.

- **Heating, Ventilation, Air Conditioning & Refrigeration-McCann School of Business and Technology**
  - Expected Outcome: Associates Degree
Description: The HVAC/R program prepares students for entry-level positions in the trade. The program provides the student with the knowledge and skills to work with residential or commercial heating, air conditioning, and refrigeration. The program emphasizes extensive hands-on experience through lab applications of the various HVAC/R theories. Studies include tools, equipment, and procedures, electricity, climate control systems, programmable controllers, and troubleshooting systems. Students are required to take the Environmental Protection Agency's (EPA's) Refrigerant Transition and Recovery Certification examination during their last term.

- Heavy Equipment-Schuylkill Technology Center
  - Expected Outcome: Licensing
  - Description: The Heavy Equipment Program will teach students to safely operate large construction equipment such as backhoes, hydraulic excavators, rubber tire loaders/dozers, vibrating rollers, and more. This training will last for 10 weeks at the Schuylkill County Airport in Minersville. (Commonwealth Workforce Development System, Find Training, Schuylkill County, 2012)
Pennsylvania Approved Training and Training Providers in the Pocono Counties Workforce Investment Area

Monroe County

<table>
<thead>
<tr>
<th>Monroe Career &amp; Technical Institute</th>
<th>Northampton Community College</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO BOX 66</td>
<td>3 Old Mill Road</td>
</tr>
<tr>
<td>194 Laurel Lake Road</td>
<td>Tannersville, Pennsylvania</td>
</tr>
<tr>
<td>Bartonville, Pennsylvania 18321-0066</td>
<td>18372-9137</td>
</tr>
<tr>
<td>570-629-2001 Ext-1115</td>
<td>570-839-2778</td>
</tr>
</tbody>
</table>

- **Building Maintenance I & II**-Monroe Career & Technical Institute
  - Expected Outcome: Certificate of Completion
  - Description: Building Maintenance Program is broken down into several classes -- Part I includes plumbing, heating, electrical wiring, motor control, carpentry, testing tools and basic building and plant maintenance. Part II covers advanced classes on Plant Operations and Building Construction. Items such as hydraulics, pneumatics, process piping, oil burner and HVAC overview as well as basic waste treatment are covered. Other items are paperwork scheduling; job estimating, employee training, plan review, drawing review/blueprint reading and safety and code review.

- **Carpentry & Building Trade Program**-Monroe Career & Technical Institute
  - Expected Outcome: Certificate of Completion
  - Description: Learn the skills needed to become a carpenter. This program will teach the necessary skills to become a carpenter or to take a rough framer to a finished trade’s person. Either a person who is just entering the building trade or is looking to learn additional areas of the wood trade, this program will teach the principles of the how and whys. The student will also gain an understanding of other trades and how to align those with carpentry.

- **CDL Class A Truck Driving**-Northampton Community College
  - Expected Outcome: Diploma
  - Description: Class A CDL training prepares students to obtain a CDL Class A driver’s license through a minimum of 80 hours of classroom and 160 hours of classroom and 160 hours of road/range instruction. This course is PTDI certified. Applicants must be at least 18 years of age and possess a valid PA driver’s license. Pre-requisites include the ability to pass an entrance exam, a DOT physical and drug screen, and the ability to obtain a permit.

- **CDL Class A: Road/Range Refresher**-Northampton Community College
  - Expected Outcome: Diploma
  - Description: Class A CDL refresher training prepares students to obtain a CDL Class A Driver’s license through 160 hours of road/range instruction. Upon successful completion a specialized diploma is awarded. Applicants must be at least 18 years of age and...
possess a valid PA driver's license. Pre-requisites include the ability to pass an entrance exam and a DOT physical and drug screen, obtain a CDL permit with the general knowledge and air brake endorsements tests completed, and the ability to prepare daily logs.

➢ **CDL: Class B Truck Driving**-Northampton Community College
  o **Expected Outcome:** Diploma
  o **Description:** Class B CDL training prepares students to obtain a CDL Class B driver’s license through 40 hours of classroom and 50 hours of road/range instruction. Upon successful completion a specialized diploma is awarded. Applicants must be at least 18 years of age and possess a valid PA driver’s license. Prerequisites include the ability to pass an entrance exam, a DOT physical and drug screen, and the ability to obtain a CDL permit.

➢ **Electronics Technology AAS**-Northampton Community College
  o **Expected Outcome:** Associates Degree
  o **Description:** Our program is based on continuous industry input and evaluation of electronics programs nationwide. The result is a practical curriculum that emphasizes a strong foundation in electronics fundamentals while developing skills critical to success in the field. Your studies will include: Core Coursework: Two semesters of DC/AC circuit analysis, digital electronics, and solid state devices; one semester of linear integrated circuits and microprocessors. Mechanical Skills: Courses include Electronics Manufacturing, Mechanical Skills, and Team Projects. Computer Skills: We emphasize applications such as Multi SIM, MS Word, Excel, PowerPoint, and AutoCAD. Communication Skills: Your reading, writing, and presentation skills, as applied to technical topics, will be developed over the course of the program. Project Work: Integrated into all semesters. Upon graduation, you will be well prepared to enter and advance in the workforce, or you may choose to continue your education toward a four-year Bachelor of Science degree in electronics technology. We have relationships that can create a smooth transition at institutions such as Bloomsburg University (BS in Electrical and Electronic Technology), Pennsylvania State University (Harrisburg Campus), Pennsylvania College of Technology (Williamsport), New Jersey Institute of Technology (Newark, NJ), Rochester Institute of Technology (Rochester, NY), or at many other colleges and universities.

➢ **Electronics Technology Specialized Diploma**-Northampton Community College
  o **Expected Outcome:** Diploma
  o **Description:** Electronics Technology Specialized Diploma Program Provider Service Description: The Specialized Diploma consists of eight core courses in basic electronics. It designed to prepare a student for an entry level position in electronics. A student with Specialized Diploma could enter a company as an intern and would be expected to complete the A.A.S. to become a technician. It is recommended only as a starting point and not as an end in itself. It provides a solid foundation in the basics of analog, digital, and solid state electronics. All electronics courses have a lab component where students learn to interpret schematics, wire and test circuits, use test equipment, and record and report data.
➢ **HVAC Program-Monroe Career & Technical Institute**
  
  o **Expected Outcome:** Diploma
  
  o **Description:** This program consists of a basic and intermediate HVAC/R classes. In the basic course students will learn the background and history of HVAC/R industry, physical and chemical properties of materials, terminologies in energies (heating, cooling, thermal dynamics, electrical and light), refrigerant cycle, refrigerants and refrigeration systems and will develop their HVAC/R toolbox and HVAC/R measuring devices. In the Intermediate Class students will learn the proper use of a four-valve refrigerant manifold and maintenance and proper use of a vacuum pump system. Students will also learn the practice of refrigerant and copper tubing braising with oxyacetylene torch and destructive joint testing and inspection. Students will receive hands-on practice using high-pressure nitrogen cylinders, various regulators (pressure and purge) and proper use of the nitrogen system in HVAC/R technology as well as other hands on practice in other HVAC/R methods. EPA 608 Universal Training is included in the Intermediate Course Safety procedures are also taught throughout the course.

➢ **Welding Certification Program-Monroe Career & Technical Institute**
  
  o **Expected Outcome:** Certificate of Completion
  
  o **Description:** The Welding Program consists of 4 classes: Shielded Metal Arc I, II, Gas Metal Arc Welding MIG and Tungsten Arc Welding (TIG) including a Welding Certification Workshop in preparation for the American Welding Society through the Welders Institute. (Commonwealth Workforce Development System, Find Training, Monroe County, 2012)
Air Conditioning/Refrigeration-Carbon Career & Technical Institute
  - Expected Outcome: Licensing Skills and Competencies taught: EPA certification in refrigerant handling, reclaim, recover, recycle and repairs/installation
  - Description: EPA certification in refrigerant handling, reclaim, recover, recycle and repairs/installation.

Building Construction-Carbon Career & Technical Institute
  - Expected Outcome: Certificate of Completion
  - Description: Safety practices, use of hand and power tools, building materials. Basic math/measuring, estimating building materials and costs. Floor, wall and roof layout and framing. Job site equipment.

Welding Technology-Carbon Career & Technical Institute
  - Expected Outcome: Certificate of Completion
  - Description: This 200-hour comprehensive program is designed for all levels of welders—beginners through intermediate. Basic Stick, oxyacetylene, and MIG welding will be covered. Students will participate in classroom theory as well as extensive hands-on training in cutting and welding steel and aluminum. Successful completers are eligible for various American Welding Society (AWS) Certification Testing. (Commonwealth Workforce Development System, Find Training, Carbon County, 2012)
Additional Postsecondary Providers

Additional education and training programs, particularly for advanced degrees, may be available at four-year institutions throughout the region. The following postsecondary institutions are located within the region:

- Cedar Crest College (in Allentown, Lehigh Valley WIB)
- DeSales University (in Center Valley, Lehigh Valley WIB)
- King’s College (in Wilkes-Barre, Luzerne Schuylkill WIB)
- Lackawanna College (in Scranton, Lackawanna County WIB)
- Lafayette College (in Easton, Lehigh Valley WIB)
- Lehigh University (in Bethlehem, Lehigh Valley WIB)
- Marywood University (in Dunmore, Lackawanna WIB)
- Misericordia University (in Dallas Township, Lackawanna County)
- Moravian College (in Bethlehem, Lehigh Valley WIB)
- Muhlenberg College (in Allentown, Lehigh Valley WIB)
- Penn State Hazleton (in Hazleton, Luzerne Schuylkill WIB)
- Penn State Schuylkill (in North Manheim Township, Schuylkill County)
- Penn State Lehigh Valley (in Center Valley, Lehigh Valley WIB)
- Penn State Wilkes-Barre (in Lehman Township, Luzerne Schuylkill WIB)
- University of Scranton (in Scranton, Lackawanna County WIB)
- Wilkes University (in Wilkes-Barre, Luzerne Schuylkill WIB)

(Wikipedia, List of colleges and universities in Pennsylvania, 2012)
References


