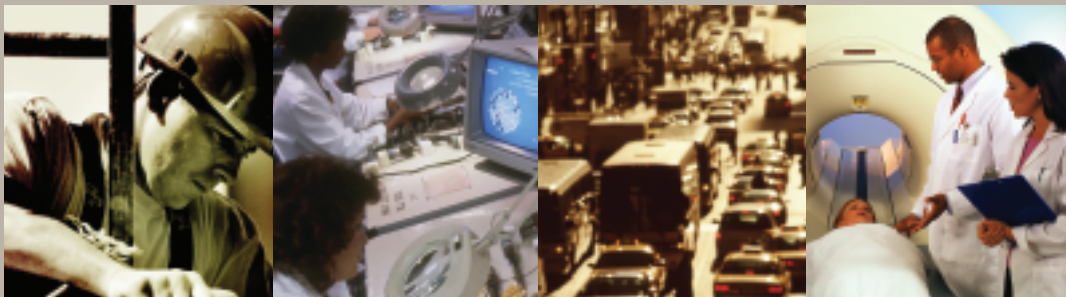


# Ready for the Job: Building Skills and Alliances to Meet Demand in New Jersey's Labor Market

*A Summary Report of the Occupational and Skill Demand Project*

A Report of the New Jersey State Employment and Training Commission



Prepared by the  
John J. Heldrich Center for Workforce Development at Rutgers University

With the Assistance of the Workforce Investment Boards of  
Bergen, Cumberland/Salem, Hudson, Mercer and Passiac Counties,  
and Cumberland County College, Mercer County Community College, and William Paterson University

James E. McGreevey, Governor

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# Preface and Acknowledgements

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# Ready for the Job:

## Building Skills and Alliances to Meet Demand in New Jersey's Labor Market

### *A Summary Report of the Occupational and Skill Demand Project*



### Overview

When making a big decision, whether it is a home purchase, financial investment, health care or education choice, every citizen wants sound research about how the most powerful trends are shaping these markets and opportunities. Yet, it is all too common that jobseekers, students, and faculty and career advisors, lack sound data about skill demand in New Jersey. The ten reports in the *Ready for the Job* initiative comprise the first market research report on New Jersey's workforce—offering more than 200 pages of hard intelligence on the skills and jobs being created now and in the coming decade in the state. Available to everyone, these findings connect the dots between the skills needed by workers in the future and the education and training pathways that link people to those skills.

Each report describes the skill needs and important occupations of a key New Jersey industry, the skills, competencies, and abilities required by these jobs, and the workforce challenges and solutions that are unique to that industry. In providing this research, the *Ready for the Job* initiative will allow jobseekers and students to make better informed decisions about their education and career choices, and help increase the numbers of informed, prepared candidates for jobs in New Jersey's dynamic economy.

In all, the *Ready for the Job* project profiles the skill and occupational requirements of 73 occupations that total more than 1 million jobs in New Jersey's workforce. Of these 73 important occupations, 24 require a bachelor's degree or higher, while a slightly larger number (29) require vocational training, apprenticeship, related on-the-job training, an associate's degree, or a combination of these. Six in ten of these important occupations are projected to increase employment levels in New Jersey by 10% or more between 2000 and 2010; and eighteen of the occupations studied are projected to increase employment levels by more than 25%. In New Jersey's economy as elsewhere in the nation, good jobs at competitive pay levels are being created that do not require a four-year university degree.

The *Ready for the Job* researchers interviewed hundreds of employers, educators, and labor experts to identify growing jobs and demand skills, and to isolate key strategies to overcome the challenges faced by each industry in meeting their employment needs. A crucial finding of the project is that employers across industries prize four advanced skill sets as essential to an individual's success in the emerging and current workforce. These "cross-industry demand skills" are math and technology skills, problem solving and critical skills, communication and teamwork skills, and entrepreneurship and business skills. Jobseekers and students making education choices should value and hone these skills, and industry-education alliances and policy initiatives should aim to foster these skills within education and training settings.

Students, teachers, counselors, and parents can access the findings of the *Ready for the Job* project in a dynamic, user-friendly, and information-rich web site, [www.NJNextStop.org](http://www.NJNextStop.org). ■



## I. Summary

In 2002, the State of New Jersey launched an initiative to inform policymakers, career counselors, educators, and employers about the skills that New Jersey employers expect to be in demand today and in the future. This document summarizes the findings and recommendations of the nine reports in the *Ready for the Job* project, a research initiative led by the New Jersey State Employment and Training Commission and managed by the John J. Heldrich Center for Workforce Development at Rutgers, the State University of New Jersey. Researchers analyzed seventy-three key jobs in eight growth industries as well as emerging skills and jobs in leading-edge horizon industries. Through conferences, press briefings, and a comprehensive Internet site, the partners will make this research widely available to New Jersey's citizens and employers.

The State of New Jersey can now provide accurate, accessible, and reliable information about the occupations and skills required by employers in eight key industries and in areas of emerging skills. The industries included in this effort are: construction, finance, health care, information technology, manufacturing, tourism and hospitality, transportation and logistics, and utilities.<sup>1</sup> Researchers also investigated emerging skills focused on the skills required by the biotechnology, security, e-learning, e-commerce, and food/agribusiness industries.

The New Jersey State Employment and Training Commission led the *Ready for the Job* effort, with funding from the New Jersey State Department of Education. The reports were prepared by

the John J. Heldrich Center for Workforce Development at Rutgers, with the local Workforce Investment Boards of Bergen, Cumberland/Salem, Hudson, Mercer, and Passaic Counties. Research was informed by industry advisory groups, which involved over thirty focus groups and eighty interviews with employers and educators conducted between May and August 2003. Research assistance was provided by William Paterson University, Cumberland County College, and Mercer County Community College.

The Heldrich Center and its research partners identified the skills, knowledge, and educational requirements of seventy-threeselect occupations and eleven cross-industry job groups, and identified strategies for meeting the key workforce challenges of each industry. In addition, researchers conducted an investigation of emerging work and skills that will affect New Jersey's workforce in the next three to five years (2004-2008), focusing on the education and training issues that must be addressed to prepare current and future workers for these opportunities. *Ready for the Job* found five specific areas likely to generate significant new skill demands in the New Jersey labor market within the foreseeable future, including: biotechnology (including medical devices), security (both data and physical), e-learning, e-commerce, and food/agribusiness. By identifying the trends and skill information in these areas, this report provides information that will allow educational institutions and the workforce development system to respond to changes in technology and the marketplace.

The New Jersey State Employment and Training Commission led the *Ready for the Job* effort, with funding from the New Jersey State Department of Education. The reports were prepared by the John J. Heldrich Center for Workforce Development at Rutgers, with the local Workforce Investment Boards of Bergen, Cumberland/Salem, Hudson, Mercer, and Passaic Counties. Research was informed by industry advisory groups, which involved over thirty focus groups and eighty interviews with employers and educators conducted between May and August 2003. Research assistance was provided by William Paterson University, Cumberland County College, and Mercer County Community College.

<sup>1</sup> Individual reports are available for each industry as well as for the investigation of emerging skills. A full list of available reports is included in Appendix A.



*Ready for the Job* is the first market research report on New Jersey's workforce-offering more than 200 pages of hard intelligence on the skills and jobs being created now and in the coming decade. Available to everyone, these findings connect the dots between the skills needed by workers in the future and the education and training pathways that link people to those skills. Each report describes the skill needs of the industry, key occupations, the skills, competencies, and abilities required by these jobs, and the workforce challenges and solutions that are unique to that industry. All in all, the *Ready for the Job* project profiles the skill and occupational requirements of 73 occupations that total more than 1 million jobs in New Jersey's workforce. Of these 73 important occupations, 24 require a bachelor's degree or higher, while a slightly higher number (29) require vocational training, apprenticeship, related on-the-job training, or an associate's degree, or a combination of these.

This summary report captures top-line findings from the nine reports, including the recommendations of the entire project, providing readers with a users' guide to the *Ready for the Job* project. It will:

- describe the leading skill areas required by New Jersey employers;
- outline the most important challenges facing educators and employers;
- provide a detailed plan of recommendations for a demand-driven workforce development and education system.

## Four Demand Skills for the 21st Century

*Ready for the Job* highlights four cross-industry skill areas identified by employers, educators, economic forecasters, and industry experts as critical in the labor market of today and tomorrow. The report finds that the following skills groups are critical to New Jersey's current and emerging labor market:

**Math and technology skills:** all industries are adopting new technologies and incorporating computers into more and more work processes, and many jobs required individuals to perform basic mathematical tasks.

**Communication and teamwork skills:** industries now require workers to interact with a variety of people from different disciplines, backgrounds, and jobs, and industries place a premium on writing and verbal expression;

**Problem solving and critical thinking skills:** industries now and will require workers to make independent decisions, employ critical thinking to solve problems, and do this independently;

**Entrepreneurship and business skills:** industries report that workers need to respond creatively to customer needs, apply basic business skills, and in many technology and emerging industries, possess strong project and business management skills.

The report shows that these skills are critical to many of the hottest occupations and career paths that will be in demand in New Jersey's economy in the years ahead. Time and again, employers not only reported that these skills will be critical to good jobs in an array of industries. They also know these skills are key to a worker's ability to navigate the new economy labor market, move from job to job, and make effective career decisions.

## Job Groups

The seventy-three selected occupations analyzed by *Ready for the Job* fall into eleven 'job groups' that cut across industries and typical educational disciplines. The occupations within each job group share a common continuum of skills and competencies. In a dynamic and fluid economy, the definitions and requirements of occupational titles change often and can vary from one employer to another.

### Profiled Occupations Fall Into Eleven 'Job Groups'

Cross Industry Job Groups	Number of Occupations Included in this Study	Number of Industries Represented
Administration	2	3
Analytical Work	2	3
Computer Science Application	8	3
Customer Service/Support	9	3
Labor and Skilled Trade Work	20	5
Management/Supervision	9	6
Patient Care	7	1
Safety and Security Work	3	2
Sales/Relationship Management	4	2
Science & Technology Application	7	3
Vehicle Operation	2	1

Note: The job groups were developed through an analysis of the skill and educational requirements of the selected occupations and were validated by industry representatives.

## Challenges and Solutions

Looking across all eight industries, *Ready for the Job* identified four primary workforce challenges that underlie a variety of trends:

- preparing skilled, qualified entry-level workers,
- better aligning education and training programs with employer needs,
- attracting and recruiting workers to occupations that are experiencing shortages of workers, and
- upgrading the skills of current workers.

These findings are based on an analysis of employer views and key research findings regarding worker preparedness for high skills and other jobs. Throughout the reports, researchers cite examples of local and regional partnerships that point the way to demand-driven strategies for regional and economic development. Reports note a number of initiatives that are worth building upon, including:

- The statewide School Counts! initiative sponsored by the Business Coalition for Educational Excellence of the New Jersey Chamber of Commerce, which enables students participating in the program an actual credential verifying desirable workplace skills;
- A PSE&G partnership with Mercer County Community College (MCCC), that includes a career academy at Trenton Center High School (TCHS), places students in courses at a laboratory paid for by PSE&G, supports other experiential learning, and links students to MCCC credit courses and degrees;
- A partnership among casino-hotels, the Atlantic Cape Community College, and the State of New Jersey, now developing a state-of-the-art technology laboratory at Caesars Casino for the training of workers;
- The Jersey City Business Alliance Program, which unites the Jersey City School system with various financial companies to offer high school students a series of one-day internships at participating companies.

## Recommendations

At the heart of the project is a blueprint of policy recommendations for creating a demand-driven workforce development and education system in the State of New Jersey. These recommendations are based on thorough analysis of employer and educator feedback and of practices in other states. The *Ready for the Job* recommendations include:

- Better integrating career information and knowledge into high school curricula;
- Supporting and expanding career academies and related industry/cluster based education models;
- Encouraging union-industry partnerships to develop training programs and apprenticeship opportunities;
- Increasing awareness of careers among high school students through new information tools, professional development for guidance counselors, and internships;
- Using innovative methods to recruit workers from untapped labor pools;
- In severe labor shortage cases, tapping and providing funding to students for training in target occupations;
- Encouraging individuals to practice lifelong learning through expanded financial assistance, career education, and demand-side online information tools;
- Using funds from customized training programs to support the development of new industry/education partnerships;
- Developing high-skills institutes in vocational schools, high schools, and post-secondary colleges and universities to foster and develop curricula offerings in partnership with leading industry sector and educators;
- Providing college and high school students and job-seekers with accurate, updated career and skills information.

Through these powerful information tools and education-industry alliances, *Ready for the Job* will foster more efficient relationships between the skills and credentials jobseekers acquire and the jobs that are available, better decisions by students and jobseekers, a more effective use of resources by educational and training institutions, and improved public and educational services and relationships for New Jersey's employers.

### ***Ready for the Job analyzes skill demand in these industries:***

construction; finance; manufacturing; utilities/infrastructure; transportation and logistics; information technology; health care; tourism; and emerging industries.

Data from the reports, skill and job listings, and new content on career guidance and preparation, as well as full copies of the reports themselves, and other profiles and findings can be found at [www.NJNextStop.org](http://www.NJNextStop.org).

## Reader's Note

### ***Ready for the Job* Identifies Four Skill Types**

The *Ready for the Job* project identifies four types of skills that are required by or important to employers. Employers require basic skills and workplace readiness skills for nearly all jobs. Cross-industry demand skills, identified through the focus groups and interviews with employers, are important in a variety of occupations in many industries. Finally, employers require advanced technical and professional skills for many jobs. These skills are job-specific and are typically obtained through post-secondary education and training either provided by educational institutions or by employers.

Type of Skill	Definition	Level of Importance
Basic Skills	Ability to read, write, and perform basic mathematical calculations.	Criteria for most entry level or low-level or low-skilled types of jobs.
Workplace Readiness Skills	Minimum expectations for functioning in the workplace, that include meeting standards for attendance and promptness, reliability and integrity, as well as dress and decorum.	Criteria for all jobs in the workforce.
Cross-Industry Demand Skills	Broader skills sets that are in the highest demand among employers in today's economy, and indicative of success in the workforce.	Strength in these skill areas can lead to expanded employment opportunities and career success across industries.
Advanced Technical/ Professional Skills	Skills acquired through education and training needed to perform specific tasks and succeed in specific jobs.	Criteria for performance in specific jobs. Education and training is provided by post-secondary education institutions and /or employers.





## II. Essential Skills for the 21st Century Workforce

The *Ready for the Job* project reflects the public policy imperative to better understand the fluid and unpredictable changes in the new economy labor market as they bear upon education and training institutions. Much of New Jersey's and the nation's economic well-being depends upon the continued high performance and relevance of our nation's schools, colleges, and career education centers. When jobseekers, students, and parents are better informed about workforce and skill demand, they can make smarter choices about the investment of their time and money in education and career preparation. Among the powerful demographic and economic trends affecting our education and job training systems are:

1. Education and training activities now account for about 10 percent of our gross national product, but public investments in the United States lag behind those of other western nations. Federal support for education and training is not likely to increase in the coming years.
2. Over a fifth of New Jersey's adults read at the lowest literacy level, and nearly 40% function at a level of literacy beneath that required by the labor market.
3. A Heldrich Center/Fund for New Jersey survey of high school students found that while most students want to attend four-year colleges, more than 40% believe they are not at all prepared to do so.
4. The need for higher education in New Jersey is expected to grow by 25% over the next ten years, yet our state ranks 44th in the number of available seats it provides at its four-year colleges per 1,000 state residents.
5. In New Jersey, as in other states, a substantial gap looms between the hopes of high school graduates to enter a two or four-year college degree program, and those that earn one. In 2000, for example, 52% of New Jersey's high school graduates planned to earn a bachelor's degree. But studies from New Jersey's Commission of Higher Education and other sources show that forty to fifty percent of New Jersey college students will drop out before they earn this four-year degree, although completion rates differ for private and public institutions.
6. As the rate of change in technology increases, so too will changes take place in the labor market. The telephone took fifty years to reach 70 million users; the computer took twenty years to reach that number; the Internet took just four years to reach that number.

*Ready for the Job* will give New Jerseyans new and accessible research about careers and education in the 21st century, available through websites, reports, and other media; thereby expanding the good choices available to students and jobseekers. Employers and educators will now be able to plan and create curricula and school-to-work initiatives based on a common pool of data. *Ready for the Job* finds that four cross-

### ***Cross-Industry Demand Skills Required by Employers***

Math & Technology Skills  
Problem Solving & Critical Thinking Skills  
Communication & Teamwork Skills  
Entrepreneurship & Business Skills

industry skills are critical to developing better jobs and generating economic opportunity in New Jersey's changing workforce, and should be reflected in all manner of workforce and education initiatives. These four cross- industry demand skills—math and technology skills, problem solving, communication and teamwork, and entrepreneurship and business skills—are important in each of the eight industries and in areas of emerging skills. While these skills are not important to every job and every industry, each was mentioned by a variety of employers, educators, economic forecasters, and industry experts in discussions of the skill needs of numerous industries. The following discussion addresses each of these skills in greater depth.

### **Cross-Industry Demand Skill One: Strong Math and Technology Skills**

Employers in all eight industries included in this study stressed the need for workers to have a strong base of math and technology skills. In addition, experts agree that emerging occupational areas will require workers to have a strong math and technology base.

### ***Selected Job Groups That Require Strong Math & Technology Base***

Labor & Skilled Trades  
Vehicle Operators  
Computer Science  
Sales & Relationship Management

### ***Selected Occupations***

Carpenter  
Tractor-Trailer Truck Drivers  
Software Engineer  
Financial Planner

All industries in this report are adopting new technologies and incorporating computers into more and more work processes. For example, vehicle operators, such as tractor-trailer truck drivers, now use computers to track their cargo and their location. Employers in all eight industries also reported that a wide variety of jobs require individuals to be able to perform basic mathematical calculations and simple algebra. This skill need extends to occupations across the spectrum. For example, in the construction industry, workers in the labor and skilled trades, such as carpenters, must be able to perform “shop math”, using measurements to make decisions and to trouble shoot and address problems. In the finance industry, workers in Sales/ Relationship Management occupations—personal financial advisors, for example—routinely use math skills as they analyze a customer’s financial situation and develop recommendations for investments and money management.

## Cross-Industry Demand Skill Two: Teamwork and Communication Skills

Employers in a variety of industries report that teamwork and communication skills are also essential skills for a variety of occupations, confirming the findings of an array of data by academic researchers. Workers increasingly interact with a variety of people, often from different disciplines and cultures, and often from different jobs. They must be able to communicate effectively, both in writing and verbally. In addition, many employers rely on teams of employees to work together.

Teamwork and communication skills also are essential for work in high-tech and cutting-edge industries. In these industries, the use of project teams, consisting of individuals from a variety of disciplines, is an integral part of work processes. For

### ***Selected Job Groups That Require Strong Teamwork & Communication Skills***

Patient Care

Management/Supervision

Sales & Relationship Management

### ***Selected Occupations***

Physical Therapist

First Line Supervisor

Insurance Sales Representatives

example, e-commerce is an emerging integrated approach to marketing, communications, strategy, and business consulting. Both the marketing and information technology (IT) professionals in firms and their partners in ad agencies must work together to produce the best result for the client.

## Cross-Industry Demand Skill Three: Problem-Solving and Critical Thinking Skills

The project’s findings show that workers in nearly all occupations are expected to make independent decisions based on critical thinking and to find the best solution to problems.

Computer systems analysts, for example, make countless independent decisions as they review user requirements, procedures and problems in order to automate, or improve, the data processing system. In the labor and skilled trade career competency, electricians must be able to think critically and solve problems as they install, maintain, and repair electrical systems. Problem solving and critical thinking skills are also essential in areas of emerging work. This is particularly true among security professionals who analyze data and decide actions to deal with crises and among clinical professionals who design trials for new biotechnology products.

### ***Selected Job Groups That Require Strong Problem Solving & Critical Thinking Skills***

Safety and Security

Computer Science Application

Analytical Work

Labor & Skilled Trades

### ***Selected Occupations***

Transit Inspectors

Computer Systems Analysts

Logistics Professionals

Electricians

## Cross-Industry Demand Skill Four: Entrepreneurship and Business Skills

Entrepreneurship and business skills are important in many of the occupations included in the current industry study. Workers, from bank tellers to personal financial advisors, who interact with customers must be able to respond creatively to customer needs. Individuals in management, supervision, and to a lesser degree, administrative jobs, must be able to apply basic business skills as they are often responsible for the financial well being of their organization.

### ***Selected Job Groups That Require Strong Entrepreneurship & Business Skills***

Customer Service/Support

Sales & Relationship  
Management

Management/Supervision

### ***Selected Occupations***

Bank Teller

Personal Finance Advisor

Construction Manager

Emerging industries need workers who have strong entrepreneurship and business skills. In the biotechnology industry, researchers involved in the increasingly competitive area of new product development must possess both strong technical skills and strong project management and business development skills. Similarly, rapidly emerging security areas require professionals with both the technical background to understand and create new technology and the entrepreneurial and management skills to make a cutting-edge sector thrive.

Employers in some industries also report that significant numbers of new employees lack basic workplace readiness skills. These skills, essential for any worker, include punctuality, flexibility, perseverance, and ability to get along with others. This problem is most pronounced in industries such as construction, manufacturing, and transportation that hire large numbers of workers with a high school degree or less.

The four cross-industry demand skills identified through this research—math and technology, problem solving and critical thinking, communication and teamwork and entrepreneurship and business skills—are important skills for many jobs. However, employers in all industries report that many entry-level workers do not possess these skills.

## **Challenge 2: Better Aligning Education and Training Programs with Employer Needs**

Due to the fast pace of technological change and increased competitive pressures, employers are constantly adjusting the skill requirements of many jobs. In order to keep pace with these changes, educational institutions and training providers need current data from multiple sources to help meet high demand in industries, particularly those in which complex skill sets and technology evolve rapidly. Educational institutions and training providers must then use this data to modify curricula and programs to ensure that they are teaching the skills demanded by employers.

## **Challenge 3: Attracting and Recruiting Workers**

Employers note that many young people and jobseekers do not have an accurate understanding of the nature of work, nor do they understand which career opportunities exist and the education and training they need to obtain. Employers in some industries, such as construction and health care, are experiencing a severe labor shortage in some occupations. In the construction, manufacturing, transportation, and utilities industries, employers report that they have difficulty in attracting applicants because many students and jobseekers today are either unaware of or uninterested in career and education opportunities in these industries.

## **Challenge 4: Upgrading the Skills of Current Workers**

As a result of the increasing use of technology and constantly changing nature of work, existing employees must frequently upgrade their skills to even perform their current job. Employers report that the skills of some of their employees have not kept pace with the skill needs. In addition, employers report that some workers lack the skills needed for advancement. While employers recognize that the training of current

## **III. Four Workforce Challenges Facing New Jersey's Employers**

Through the eight industry reports and the emerging skills report completed for this study, researchers discovered four primary workforce challenges facing employers and workers in the state of New Jersey. It is important to note that employer and educator views of these challenges underscore the findings of dozens of major reports and books about America's new economy and workforce. These are: preparing skilled, qualified entry-level workers, better aligning education and training programs with employer needs, attracting and recruiting workers to occupations that are experiencing shortages of workers, and upgrading the skills of current workers.

### **Challenge 1: Preparing Skilled, Qualified Entry-Level Workers**

Employers in all industries were, to varying degrees, concerned about the skill levels of entry-level workers. While employers recognized the importance of core competencies that are specific to job groups and professional and technical skills that are specific to each occupation, most of their concerns centered on basic academic skills, workplace readiness skills, and cross-industry demand skills.

Employers in many industries report that many entry-level workers lack the basic academic skills to perform well in available jobs or to advance within the company to more highly skilled positions. For example, employers report that many entry-level employees lack basic skills, such as high school-level math, reading, writing, and English skills.

workers is their responsibility, many, particularly small employers without human resource departments and large training budgets, are unable to provide the necessary training to their employees.

## IV. Overall Recommendations

In order to address these challenges, the State of New Jersey, educational institutions, and employers must form creative partnerships to build a workforce development system that is responsive to the needs of employers. These recommendations are rooted in extensive, in-depth discussions with employers in focus groups, interviews and Industry Advisory Group meetings, an assessment of New Jersey's existing policy commitments and strategies in the areas of workforce and education policy, and current analysis of public programs already in operation and likely to receive further support.

The first group of recommendations addresses *the need to expand public and private sector efforts to better prepare skilled, qualified entry-level workers to meet the needs of New Jersey's workforce:*

### 1. Strengthen Secondary Education Through Enhancements to Curricula

The skills required by today's jobs should be incorporated into high school curricula to ensure that students have the educational foundation they need for work and for further education and training. In addition, by strengthening vocational education and expanding career-to-work programs, New Jersey students will have more educational options and will be better prepared for work and for higher education.

**Incorporate Workplace Readiness and Cross-Industry Demand Skills Needed in the Workplace into School Curricula:** Employers in many industries reported that many entry-level workers lack workplace readiness skills and cross-industry demand skills that are necessary to succeed in nearly all jobs. High schools should work to incorporate these key skills into the curriculum. Since cross-industry demand skills, such as teamwork and communication, problem-solving skills, and critical thinking can be applied in any discipline, these skills can be incorporated into existing curricula. Workplace readiness skills should also be integrated into the high school experience as well.

**Implement Interdisciplinary Studies at the Secondary Level:** Many employers expressed the need for workers who are flexible, intellectually curious, and who possess knowledge of more than one professional discipline. While this need can be filled by work experience or multiple majors in

higher education, exposing students to the "real life" connections which exist between related bodies of knowledge would provide better occupational preparation, make secondary learning more relevant, and complement career exploration efforts in high school.

**Expand Career Academies and Related School to Career Programs in High Schools:** Career Academies and other school-to-career programs have proven to be effective in helping young people achieve success in the workforce while meeting the needs of businesses for well-qualified workers. Funds could be set aside to create additional incentives for schools/industry sector partnerships that support stronger connections between high schools and post-secondary educational institutions and employers.

**Strengthen and Reward Occupational Education:** The public education system and the State of New Jersey must strengthen the vocational technical (voc-tech) education system and acknowledge its value in preparing students for careers. The State of New Jersey must reward achievement in the voc-tech system. For example, the State Report Cards on schools provide statistics on the number of college-bound students, student SAT scores, and other academic information. It should also include statistics on the number of students accepted into unions, apprenticeships, and training programs. Currently, these statistics just fall into the "Other" category. Student vocational education achievements should be considered as equal to academic and college achievements.

### 2. Strengthen and Expand Post Secondary Education and Training

Nearly two-thirds of the seventy-three jobs profiled in this effort require some form of education and training after high school. Post-secondary education and training in community colleges, four-year colleges and universities, for-profit training providers, adult vocational schools, and labor unions must teach the skills required by employers.

**Encourage Industry/Education Partnerships:** Employers, individuals, and educational institutions all benefit from the development of industry/education partnerships. In such partnerships, employers and educational leaders work together to ensure that the skills needed by employers are taught in the classroom. A variety of successful partnerships exist in the state and efforts should be made to publicize these as models that could be expanded and replicated.

Statewide conferences in key industries could provide a forum for employers and educators to share information, form partnerships and replicate promising practices. An information-sharing website could also be developed to act as an information clearinghouse regarding evolving employer skill needs and promising responses being developed within the industry, as well as in the education and workforce development communities.



**Expand Apprenticeships Programs:** The apprenticeship model has a long tradition of successfully preparing young people for careers in a variety of occupations. Funds should be allocated to strengthen existing apprenticeship programs by tying them more closely to opportunities for post-secondary credentials. Moreover, these funds could be used to expand the apprenticeship model to additional jobs in the knowledge-driven economy.

The second set of recommendations addresses the importance of public leaders and policy-makers to *better align education and training programs with the needs of employers*. The State of New Jersey can do this through continued systemic efforts to determine the skill needs of key industries on a regular basis. The State of New Jersey must also develop institutions that allow employers and educational institutions to collaborate.

## 1. Build Stronger Partnerships Between Employers and Educators

The State of New Jersey must step forward to encourage effective partnerships between educational institutions and private industry. These new relationships and partnerships must be informed by well-documented research about the changing skill needs for particular occupations and industries.

**Establish High Skills Partnership Institutes in Higher Education Institutions and Vocational Schools:** Stronger connections must be made between the needs of employers and the educational offerings of post-secondary and career-oriented vocational schools. Funds could be allocated for the infrastructure costs of creating new capacity to prepare jobseekers and incumbent workers with the education and skills needed for New Jersey's competitive economy.

Working through New Jersey's community and four-year colleges and other educational institutions, local training centers based on industry-accepted credentials would be created. These centers would target the workforce skill needs of key economic sectors and would work with those sectors to develop appropriate curriculum and training initiatives. These centers would also form the hub of new articulation agreements among educational providers. By emphasizing industry-based credentials, this initiative would create a substantive connection between the higher education and employer communities.

**Development of Associates' Degree and Certificate Programs by Community Colleges and Employers:** With their capacity and statewide reach, community colleges in New Jersey are well positioned to play an important role in providing the necessary skills to individuals interested in employment in the many industries. Existing models of industry/education collaboration, such as the partnership

between PSE&G and Mercer County Community College to train individuals for the utilities industry, should be replicated in other industries and at other community colleges.

**Maintain and Expand the Industry Advisory Groups Created for This Effort:** The Industry Advisory Groups created for this effort by local Workforce Investment Boards proved to be an effective forum for collaboration and should be continued and expanded. In some cases, the existing Industry Advisory Groups can serve as the WIBs coordinating body for implementing the recommendations contained in the individual industry reports.

Other WIBs that did not participate in this study should establish Industry Advisory Groups in key industries, allowing them to both provide input on the skill needs of employers and to assist in the development and implementation of strategies to address workforce challenges.

## 2. Continue to Collect and Disseminate Information about the Education and Skills Demanded by the Knowledge-driven Economy

Funds should be provided to support the ongoing collection and dissemination of information on the education and skill needs of New Jersey's key economic sectors. This information will provide a vital link between innovations occurring in the workplace and the curriculum of the education community. The state Department of Education and the Commission on Higher Education, working with the SETC, should develop a comprehensive and coordinated secondary and post-secondary career guidance system to empower students to make fully informed career and academic choices in New Jersey and the nation's new economy labor market.

The third set of recommendations *addresses the need to improve worker recruitment into key industries*. These recommendations are:

### 1. Increase Awareness of Careers Among High School Students and Jobseekers

Employers note that many young people do not have an accurate understanding of the nature of work, nor do they understand what career opportunities exist. In addition, in an April 2003 telephone survey of 880 high school juniors and seniors in New Jersey, only 10% of students said that they were extremely familiar with the types of jobs available in the field in which they express an interest.<sup>2</sup> Slightly more than one-third (36%) said they were very familiar with jobs in these fields. Many adult jobseekers also lack the information they need to make informed career and training decisions.

<sup>2</sup> "Taking the Next Step: High School Students, College, and Careers." John J. Heldrich Center for Workforce Development, Rutgers, The State University of New Jersey, October 2003.



Providing high school students, their parents, and adult job-seekers with more information on jobs, including those that are in demand, will allow them to make informed career and education decisions. Schools, higher education institutions, and the workforce development system must provide better career guidance to empower individuals to make wise choices. In order to accomplish this, the state should continue to invest in improving information about skills needed by employers and in various methods of providing that information to students, parents, teachers, career and guidance counselors, and adult jobseekers.

***A strategy to increase the awareness of careers could include the following:***

**Development of Tools to Inform Career Decisions:** The NJ Next Stop...Your Career website ([www.njnextstop.org](http://www.njnextstop.org)) is being developed to provide an online resource for skills, career, and occupational knowledge serving high school students, school counselors, teachers, and parents. The website provides detailed information on the skill and educational requirements of seventy-three occupations and eleven job groups. The website should be expanded to include information on more key industries and occupations. A similar tool should be developed for adult jobseekers.

**Professional Development for Counselors, Teachers, and Workforce Development Professionals:** New Jersey high school counselors and teachers can be a significant source of information for high school students and their parents about career and education options. In addition, workforce development professionals can provide important information to adults who are in need of training or assistance in finding a job. Training for counselors, teachers, and workforce development professionals should be expanded and include information on employer skill requirements and the effective use of career decision tools and labor market data. In addition, the number of counselors in New Jersey's high schools may need to be expanded to ensure that they have the available time to provide career guidance to students while performing their other responsibilities.

**Internships:** One of the most useful tools for students to experience the "real world" of work and to gain valuable work skills is to do an apprenticeship or an internship, both involving a mentor/mentee relationship. However, in an April 2003 telephone survey of 880 high school juniors and seniors in New Jersey, 46% reported that they work but only 10% reported that they are involved in a formal internship program.

## **2. Develop Industry-Specific Marketing Campaigns**

Some industries, such as construction and health care, are experiencing a severe shortage of workers. Other industries, such as manufacturing and transportation, have difficulty attracting entry-level workers due to a negative perception of the industry by high school students. In both cases, industry associations—working in partnership with educators and state government—should develop a comprehensive strategy that provides high school students, guidance and career counselors, and the workforce development system with information on careers in the particular industry. Such a strategy should build on the current efforts of trade unions, the New Jersey Department of Labor, and local business groups to educate potential workers about careers in construction, health care and manufacturing. It should also be coordinated with the state's community colleges, particularly those with programs and curricula already in place.

## **3. Provide Funding for Skill Training**

In cases of severe labor shortages, the state should consider providing funding to students for training in particular occupations. Such efforts could include the provision of direct financial assistance to students and the targeting of state training resources. The state should consider developing a tuition reimbursement program for students interested in receiving training for occupations experiencing a severe labor shortage. Governor McGreevey has proposed such a program for students attending nursing school in New Jersey.

The State of New Jersey provides funding for training in demand occupations for qualified dislocated and disadvantaged workers through the Workforce Investment Act, the TANF program, the Workforce Development Partnership Program, and other programs. The state should consider increasing the maximum amount available to qualified individuals who wish to obtain training for occupations with a severe shortage.

## **4. Develop Stronger Strategies to Recruit Workers from Untapped Labor Pools**

The state, labor unions, and employers should continue and expand efforts to attract women and minorities to non-traditional fields such as construction and transportation and to attract men and minorities to jobs in the health care industry. In addition, the state of New Jersey should inform job seekers transitioning off welfare, people collecting Unemployment Insurance, individuals with disabilities and users of the One-Stop Career Center system about opportunities in these industries. The State should also consider providing funding for training for these individuals to assist them to obtain the skills required for these jobs.

The fourth set of recommendations addresses the importance of *training, retraining, and retaining current workers*. Employers should take concrete steps to encourage lifelong learning from their employees and begin to work together to develop collaborative efforts to train their employees. In addition, the state of New Jersey should take concrete steps to support these efforts.

## 1. Encourage and Support Life-Long Learning

In this era of rapidly changing skill and knowledge requirements, all individuals must continually seek opportunities to upgrade their skills. Government and employers should take concrete steps to encourage such efforts.

**Create a Statewide Distance Learning Network:** Distance learning methods, especially through the Internet, can be a powerful tool to help new and incumbent workers get the skills they need while balancing work and family responsibilities. The state needs to develop a coordinated and comprehensive strategy for bringing the best of distance learning opportunities to its citizens, especially those who have traditionally not taken advantage of them, including incumbent workers, displaced homemakers, dropouts, and welfare recipients. The Department of Labor is currently completing a path-breaking pilot program on distance learning targeting working mothers who earn less than 200% of poverty wages. The Distance Learning Network would build on these lessons and become the framework for a wide range of distance learning initiatives. Employers should base curriculum developed for the Distance Learning Network on the information provided by the ongoing analysis of the future skills required. This will create a learning system that anticipates change, rather than one that simply reacts to it.

**Expand Financial Assistance for Training:** Employers should consider offering tuition reimbursement programs and other forms of financial assistance to employees who are interested in obtaining additional skills. In addition, the Tuition Assistance Grants program should be expanded to include part-time students, as has been proposed by the Commission on Higher Education.

**Provide Technical Assistance to Employers to Support Life Long Learning:** The state should work closely with employers and industry associations to encourage the formation of industry consortia for incumbent worker training. Such consortia could develop solutions to meeting the industry's training needs and could strategize on how to leverage resources across a variety of firms to support the training. The state should also assist employers to educate their employees about career advancement and training opportunities so that employees can maximize benefits such as tuition reimbursement plans and company-provided professional development.

**Provide Better Information About Lifelong Learning Opportunities;** The NJ Next Stop...Your Career website ([www.njnextstop.org](http://www.njnextstop.org)), currently being developed to disseminate the results of this study to high school students, school counselors, teachers and parents, should be expanded to provide similar information to adults. The website, which provides detailed information on the skill and educational requirements of occupations and occupational groups or areas of work, should be directly linked to information on training programs available through the New Jersey Consumer Report Card ([www.njtrainingsources.org](http://www.njtrainingsources.org)).

In addition, efforts should be made to inform individuals about the Life Long Learning Tax Credit and the Hope Tax Credit programs that provide federal tax incentives to individuals to pursue education and training. Few individuals know about these programs and even fewer take advantage of them.

## 2. Use Funds from New Jersey's Customized Training Program of the Workforce Development Partnership Program to Support the Development of New Industry/Education Partnerships

The customized training program of the New Jersey Department of Labor provides matching grants to businesses and groups of businesses to provide training to their employees. A portion of the funds from the program should be used to strategically support industry / education partnerships to upgrade the skills of current workers in growth sectors of manufacturing. Such funding could be used by community colleges in partnership with groups of employers with similar skill needs to develop curricula and programs that could be used even after the Customized Training grant ends.

## V. Conclusion

The findings and recommendations outlined in the *Ready for the Job* report were based on over thirty focus groups and eighty interviews with business owners and executives, union leaders, and educators that were guided by Industry Advisory Groups and local Workforce Investment Boards. This report outlines the cross-industry demand skills that are in the highest demand among employers in today's economy, identifies key challenges facing educators and employers and provides a blueprint for the creation of demand-driven workforce development and education system.

The State Employment and Training Commission looks forward to working with educators, employers, labor unions, and state and local government leaders to develop specific budgets and timeframes for the implementation of these recommendations.

## Appendix A: All Reports Included in This Project

### The *Ready for the Job* Reports

1. *Ready for the Job: Building Skills and Alliances to Meet Demand in New Jersey's Labor Market: A Summary Report of the Occupational and Skill Demand Project*
2. *Ready for Tomorrow: Demand-Side Emerging Skills for the 21st Century*

### The Industry Reports

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Construction Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Finance Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Health Care Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Information Technology Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Manufacturing Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Tourism and Hospitality Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Transportation and Logistics Industry*

*Ready for the Job: Understanding Occupational and Skill Demand in New Jersey's Utilities Industry*

## Appendix B. A Sample of Emerging Work and Skills

### **BIOTECHNOLOGY/PHARMACEUTICALS**

#### **Emerging Work**

##### **Scientists/Researchers**

Chemists (medicinal, combinatorial, analytical, computational)  
Molecular biologists  
Chemical engineers  
Pharmacists  
Biostatisticians

##### **IT support**

Regulatory  
Bioinformatics

##### **Support occupations**

Building maintenance/facilities management  
Planners  
Glass washers

#### **Emerging Skills**

Advanced Laboratory  
Project Management/Business Development  
Clinical  
Cross-disciplinary Skills in Science and Technology  
Entrepreneurship  
Computer

### **SECURITY**

##### **Logisticians**

Structural Designers  
Structural Engineers

##### **Infrastructure managers**

Researchers/Statisticians

##### **IT support**

Systems development  
Sensor development  
Sensor readers  
Field testers  
Support workers (i.e. guards, call center operators)  
Forensic investigators  
Disaster recovery

Analyzing Structures for Fire, Impact, Blast  
Simulation and Testing  
Statistics  
Data Integration/fusion  
Platform IT Skills  
Pattern Recognition  
Math  
Physics  
Versatility  
Multidisciplinary  
Entrepreneurial

### **FOOD/AGRIBUSINESS**

Domestic/international logisticians  
Food chemists  
Packaging materials engineers  
Developers of food supplements  
Developers of nutraceuticals  
Planning/Design of Web-based Services  
Bio-engineers  
Dietary/medical training for food industry

Environmental Health & Safety Regulations  
Automated Plant Operation  
Packaging Technology/Design  
Web-based Marketing and Delivery  
HACCP (Hazard Analysis-Critical Control Points)  
Food Handling/Safety (esp. prepared foods)  
Food Industry Management

### **E-COMMERCE**

Program/Project Managers  
Web Programmers/Content Developers  
E-Business Marketing Teams  
Web Service Architects  
E-Branding  
Turnkey Software Application Providers  
Global Workforce Management  
Outsourced Contract Management  
Negotiation/Conflict Resolution Collaboration  
Web-based marketing, fulfillment and back office solutions  
Privacy/Intellectual Property Law  
Data Security Applications

XML (Extensible Mark-up Language)  
SOAP (Simple Object Access Protocol)  
WSDL (Web Services Descriptive Language)  
HTTP and TCP/IP (Transmission Protocols)  
Activity Based Costing  
Project Management Software Tools

### **E-LEARNING**

Content developers  
Software developers  
Network managers  
Database managers  
Industry specialists  
Education specialists  
Trained instructors

Computer skills for instructors  
Teamwork  
Curriculum coordination  
Monitoring and evaluation of e-learning  
Logistics

## Appendix C: Profile of Job Groups

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
Administration	Work that involves the daily organization and management of business affairs.	Medical Coders Office Clerks	HS Diploma/GED Work Experience	<p>Use keen and consistent attention to detail in order to file, code, and communicate industry records for billing, tracking and research purposes</p> <p>Communicate confidently and effectively with members of the industry, relying on strong familiarity with industry terminology</p>	<p>Communication and Teamwork</p> <p>Attention to Detail</p> <p>Research skills</p> <p>Computer skills</p>
Analytical Work	Work that involves mathematical, statistical, and systems analysis and planning.	Cost Estimators Logisticians	B.A./B.S. preferred Specialized certificates and/or licenses specific to job may be necessary.	<p>Apply knowledge of financial, math, statistics, and technology systems concepts routinely and accurately.</p> <p>Demonstrate understanding of the various components of a system, project layout, or business practices and an ability to quantify those components in terms of time, resources, and labor.</p> <p>Communicate goals and resource needs effectively with various types of project partners.</p> <p>Identify problems, inconsistencies or inefficiencies within systems, sets of information, or business practices.</p> <p>Initiate innovation in technical problem solving.</p> <p>Develop and implement effective solutions to address problems identified.</p> <p>Use technology effectively to complete tasks. Demonstrate thorough capabilities in using specialized software.</p>	<p>Problem Solving and Critical Thinking</p> <p>Mathematics</p> <p>Systems Evaluation</p> <p>Reading Comprehension</p> <p>Interdisciplinary Knowledge</p> <p>Writing</p> <p>Communication and Teamwork</p> <p>Organization</p>

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## Appendix C: continued

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
<b>Computer Science Application</b>	Working with computer networking and data software systems.	Computer and Information Scientists, Research Computer Programmers Computer Software Engineers, Applications Computer Software Engineers, Systems Software Computer Systems Analysts Network Systems and Data Communication Analysts Computer Security Specialist Database Administrators	HS Diploma/GED Bachelor's degree preferred Often technical certification required	Maintains and applies knowledge of current technology, demonstrating ability to troubleshoot malfunctions and resolve them quickly.  Initiate innovation in implementing projects or solving technical problems.  Ability to secure data competently and with the most advanced technology/methods available.  Demonstrate a concrete understanding of the industry and how technology fits into the operations of the firm.	Math and Technology Problem Solving and Critical Thinking Operations Analysis Reading Comprehension Programming
<b>Customer Service/Support</b>	Work that involves interacting with customers on the front-line. Workers may perform different technical tasks, depending on the business they work within, but generally includes fielding customer concerns and inquiries. Increasingly, workers in these positions must market and sell company products or services.	Administrative/ Customer Services Manager Amusement and Recreation Attendants Bank Tellers Computer Support Specialist Gaming Dealers Hotel, Motel and Resort Desk Clerks Sales Representative, Wholesale and Manufacturing, Technical and Scientific Products Underwriter Assistant/Insurance Policy Processing Clerk Waiters and Waitresses	HS diploma /GED	Demonstrate emotional maturity when interacting with employers, colleagues, and clients.  Identify customer needs quickly and accurately and take appropriate actions to address those needs.  Introduce and market products persuasively, relying on strong product and firm-specific knowledge.  Make referrals appropriately and quickly, relying on strong knowledge of others' roles within the firm.  Apply math and finance concepts routinely and accurately.  Use technology effectively to complete tasks.  Demonstrate a thorough and consistent awareness to "red flags" in order to prevent fraud.	Coordination Communication and Teamwork Problem Solving and Critical Thinking Service Orientation Social Perceptiveness

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## Appendix C: continued

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
<b>Labor and Skilled Trade Work</b>	Work that involves building, repairing, installing, controlling, or operating equipment and materials. Also includes work such as cleaning buildings, landscaping grounds, and preparing foods.	Bus and Truck Diesel Mechanics Communication Equipment Mechanics, Installers and Repairers Construction Carpenters Construction Laborers Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders Cutters and Trimmers, Hand Electrical and Electronics Repairers, Commercial and Industrial Equipment Electrical and Electronics Installers and Repairers, Transportation Equipment Electricians Food Preparation Workers Machinists Maids and Housekeeping Cleaners Masons Operating Engineers Packers and Packagers Plumbers Production Laborers Stationary Engineers Structural Iron and Steel Workers Water and Liquid Waste Treatment Plant and System Operators	Union workers: HS diploma/GED and Apprenticeship, which includes classroom and on-the-job (OJT) training. Non-union workers: OJT	Select and use tools and materials with precision to meet task specifications. Apply knowledge of math concepts relevant to industry. Understand and adhere to safety precautions with consistency. Apply knowledge of technology concepts relevant to industry. Demonstrate initiative and an ability to think critically and solve problems in a time and cost efficient manner. Demonstrate ability to work cooperatively as a team member towards organizational goals, relying on strong knowledge of roles of colleagues and oneself. Some positions in this job group require workers to conduct quality control analysis, relying on thorough knowledge of product and service delivery specifications.	Mathematics Problem Solving and Critical Thinking Equipment Selection and Maintenance Operation and Control Installation and Repairing Reading Comprehension

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## Appendix C: continued

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
<b>Management/Supervision</b>	Work that involves supervising, coordinating, and planning work of site and staff.	Computer and Information Systems Managers Construction Managers First-Line Supervisors/Managers - Construction Trade and Extraction Workers First-Line Supervisors/Managers - Production and Operating Workers First-Line Supervisors/Managers - Mechanics, Installers, and Repairers First-Line Supervisors/Managers - Food Preparation and Serving Workers Food Service Managers Gaming Supervisors Storage and Distribution Managers	HS Diploma/GED Work Experience Bachelor's degree preferred for managers, especially among those applicants who do not have past experiences with the hiring company Associate's degree typically preferred for supervisors	Use effective judgment and decision making to allocate resources and personnel to meet project budget and deadline. Communicate and coordinate the efforts of multiple project partners, vendors and workers to share common organizational goals. Understand and adhere to safety precautions with consistency. Provide technical leadership across projects/disciplines.	Problem Solving and Critical Thinking Entrepreneurship and Business Skills Coordination Communication and Teamwork Monitoring Time Management Management of Personnel Resources
<b>Patient Care</b>	Work that involves the direct provision of patient care including diagnostic, therapeutic and personal care.	Certified Nursing Assistant Home Health Aide Licensed Practical Nurse Mental Health and Substance Abuse Social Worker Pharmacist Physical Therapist Registered Nurse	Certifications required for all Many positions in this work area require a post-secondary degree	Interact and communicate effectively with members of the health care team (patient, family, other health care workers) Ability to apply appropriate health care technology Anticipate, identify and solve problems, relying on strong observation skills, medical knowledge, and the exchange of information with colleagues Ability to react quickly and professionally to emergency situations Demonstrate patience and a willingness to address patient concerns and inquiries Demonstrate thorough and consistent adherence to industry and employer protocols, including those pertaining to occupational health and safety	Service Orientation Problem Solving and Critical Thinking Communication and Teamwork Judgement and Decision Making Monitoring

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## Appendix C: continued

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
<b>Safety and Security Work</b>	Work that involves investigating suspicious activity and/or accidents, enforcing laws and regulations, interacting with the public to	Security Guards Transit and Railroad Police Transportation Inspectors	At least 2 years of college education or military experience generally required.  Inspectors require state approved engineer's license.	Communicate effectively with the public, co-workers and others.  Identify and investigate suspicious activities and/or accidents effectively.  Demonstrated ability in speaking other languages, especially Spanish, is highly desirable.	Problem Solving and Critical Thinking Communication Monitoring Social Perceptiveness
<b>Sales/Relationship Management</b>	Developing/managing customer relationships, marketing and selling, and analyzing finances and needs.	Personal Financial Advisors Sales Agent, Business Services Sales Agent, Financial Services Sales Agent, Insurance	B.A., B.S.  Specialized certificates and/or licenses specific to job may be necessary.	Provide superior customer service and use effective organization skills to provide the appropriate follow through.  Develop new customers through networking.  Identify customer needs quickly and accurately and take actions to address those needs.  Target the appropriate products/services to market to a potential customer.  Apply advanced math, statistics, financial and regulatory knowledge routinely and accurately.  Use technology effectively to complete tasks.	Service Orientation Communication and Teamwork Systems Evaluation Problem Solving and Critical Thinking Reading Comprehension
<b>Science and Technology Application</b>	Work that involves the application and evaluation of technological and scientific processes.	Chemical Plant and System Operators Chemists Food Science Technicians Industrial Health & Safety Engineers Inspectors, testers, Graders, Sorters, Samplers and Weighers Nuclear Medicine Technologists Radiologic Technicians	Varies. Many positions in this work area require a post-secondary degree and/or substantial on-the-job training.	Apply knowledge of technology and science relevant to industry practices  Use tremendous attention to detail while working to identify and assess system flaws  Demonstrate an understanding of and a consistent adherence to safety precautions	Operation Monitoring Mathematics and Technology Equipment Selection Analysis Reading Comprehension Writing

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## Appendix C: continued

Job Groups	Description of Job Group	Occupations Included in Job Group	Education/Training Required or Preferred by Employers	Core Competencies <sup>3</sup>	Sample Occupational Skills
<b>Vehicle Operation</b>	Work that involves driving, controlling or otherwise operating moving vehicles.	Tractor-Trailer Truck Drivers Transit and Intercity Bus Drivers	H.S. diploma/G.E.D. Commercial driver's license (CDL). Other training might be required if working with hazardous materials.	Operate and navigate the vehicle effectively. Apply knowledge of math concepts relevant to loading vehicle, if applicable. Understand and adhere to safety precautions and relevant regulations with consistency. Apply knowledge of technology concepts relevant to operating the vehicle effectively. Represent the company to customers and handle conflict effectively. Demonstrate ability to lift at least fifty pounds.	Operation and Control Operation Monitoring Reading Comprehension Judgement and Decision Making

<sup>3</sup> Core competencies are a set of skills, knowledge, and abilities a worker needs to master to perform this job.



