

NEW YORK'S FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21ST-CENTURY ECONOMY



March 2011

ACKNOWLEDGMENTS

New York's Forgotten Middle-Skill Jobs was written for the Skills2Compete-New York campaign by National Skills Coalition, Washington, DC, as part of its national Skills2Compete Campaign. The national version of this report, *America's Forgotten Middle-Skill Jobs*, is available at www.nationalskillscoalition.org.

The state and national efforts of the Skills2Compete campaign are made possible, in part, by general support from National Skills Coalition's national funders, including the Joyce Foundation, Annie E. Casey Foundation, Charles Stewart Mott Foundation, and Surdna Foundation.

We gratefully acknowledge support for this report by

Writing: Michelle Wilczynski

Data analysis: Andrea Mayo

Design: Axie Breen

To learn more about the Skills2Compete-New York campaign, go to www.nationalskillscoalition.org/NewYork

Skills2Compete-New York Campaign

State Leads

David Fischer
New York City Department of
Small Business Services

John Twomey
New York Association of Training
and Employment Professionals

Core Advisors

Plinio Ayala
Per Scholas

Jonathan Bowles
Center for an Urban Future

Cesar Cardenas
New York City Workforce Investment Board

Pat Costello
International Brotherhood of Electrical Workers

Tim Driscoll
Greater Southern Tier BOCES

Lesley Hirsch
New York City Labor Market Information Services
Center for Urban Research

Lisa McKeel
St. Lawrence-Lewis BOCES

Stephen Mitchell
Sullivan County Community College

Ed Murphy
Workforce Development Institute

Jeanette Nigro
Brooklyn Chamber of Commerce

Randy Peers
Opportunities for a Better Tomorrow

Karen Springmeier
Finger Lakes Workforce Investment Board

Joe Vargo
Manufacturers Association of Central New York

Bill Wahlig
Long Island Forum for Technology (LIFT)

Sandy Watson
LaGuardia Community College

Faith Wiggins
1199SEIU Training and Employment Funds

CONTENTS

4	Executive Summary
6	Introduction
9	New York's Forgotten Middle-Skill Jobs
13	The Face of New York's Middle-Skill Jobs
16	New York's Middle-Skill Gap Past and Future
17	Greater Pain in High Demand Industries
17	New York Educational Projections: A Continuing Middle-Skill Challenge
20	The Middle-Skill Gap and New York's Future Workforce
21	An Even Greater Basic Skills Crisis?
22	Closing the Gap
22	The Face of Middle-Skill Education and Training
24	A 21st-Century Skill Guarantee
26	The Benefits and Returns of a 21st-Century Skill Guarantee
27	Conclusion
28	Appendix: Methodology



FIGURES AND TABLES

10	<i>Demand for Middle-Skill Jobs is Strong, Will Remain Strong in New York</i>
10	Figure 1. New York Jobs by Skill Level, 2009
10	Table 1. New York Jobs by Skill Level, 2009
11	Figure 2. New York's Total Job Openings by Skill Level, 2008-2018
11	Table 2. New York Jobs and Total Job Openings by Skill Level, 2008-2018
14	<i>Thirty Middle-Skill Jobs New York Can't Live Without</i>
14	Table 3. Projected New York Demand for 30 Middle-Skill Occupations, 2008-2018
15	<i>Green Jobs are Middle-Skill Jobs</i>
15	Figure 3. U.S. Employment in Green Industries by Skill Level, 2004
16	<i>New York's Skills Mismatch: A Middle-Skill Gap</i>
16	Figure 4. New York's Jobs and Workers by Skill Level, 2009
19	<i>New York's Future Middle-Skill Gap: Educational Attainment Past and Future</i>
19	Figure 5. Percentage Change in High-Skill New York Workers, 1995-2025
19	Figure 6. Percentage Change in Middle-Skill New York Workers, 1995-2025
19	Figure 7. Percentage Change in Low-Skill New York Workers, 1995-2025
20	Table 4. Actual and Projected Change in New York Workers' Educational Attainment, 1995-2025
20	<i>New York's Workforce of Tomorrow is in the Workforce Today</i>
20	Figure 8. Working New York Adults Age 20-64 in the Current and Projected Population, 2010-2025
22	<i>There are Many Different Pathways to Middle-Skill Jobs</i>
22	Table 5: Types of Training Programs for Middle-Skill Jobs

HIGHLIGHTS

6	Highlight 1. What is a middle-skill job?
12	Highlight 2. Middle-Skill Jobs in Science, Technology, Engineering and Math (STEM)
13	Highlight 3. Do all middle-skill jobs pay high wages?
15	Highlight 4. The Middle of the Green Revolution



EXECUTIVE SUMMARY

As New York continues its economic transition from the manufacturing base that helped drive growth in the Empire State over the last hundred years to new sectors like health care and technology that hold similar promise in the new century, the state is in many ways positioned to thrive. Gaps in the skills of the workforce and in New York's training and education policies, however, threaten to undermine these opportunities—constraining overall economic growth and ensuring that its benefits are not spread equitably.

Middle-skill jobs—those that require more than a high school diploma but not a four-year degree—account for nearly half of all current jobs in New York, and a substantial share of future job openings. Prior to the recession New York was experiencing shortages of middle-skill workers in crucial industries, like health care and information technology. Although the state has lost jobs across most skill levels during the economic downturn, this has not fundamentally changed the structure of New York's labor market: the majority of all jobs still require more than a high school diploma. As recovery takes hold in New York and across the nation, a large share of the new jobs created will require middle-skill credentials. With high unemployment in the state, now is precisely the time to ensure that New York is training its residents for the middle-skill job opportunities that will be critical to the state's recovery and long-term economic success.

Addressing the need for middle-skill workers will require attention not only to educational opportunities for young people, but also for those already in the workforce. **Close to two-thirds of the people who will be in New York's workforce in the year 2025 were already working adults in 2010—long past the reach of the traditional high school-to-college pipeline.**

Who are middle-skill workers? They are the construction workers who build and repair New York homes, bridges, and roads; the high-tech manufacturing workers who keep the state competitive in an increasingly global industry; the nurses and health care technicians who care for New York residents and their loved ones. They are truckers who maintain needed supplies in stores and hospitals across the state and police and firefighters who keep New York communities safe.

Federal investments that flowed into New York in response to the economic downturn saved old jobs and created new ones in industries dominated by middle-skill jobs, notably construction, advanced manufacturing, and transportation. Matching the skills of New York's workforce to meet immediate demand will accelerate the state's economic recovery and prepare the state for better times ahead. But it does not end there. Retirements of large numbers of baby boomers, although delayed by economic conditions, will nonetheless impact the need for middle-skills workers for years to come.

While New York has made significant investments in education and training for its workforce, those investments have not kept up with demand for middle-skill workers. In 2009, about 46 percent of all jobs were classified as middle-skill, but only 39 percent of New York workers had the required education and training to fill those positions. New York must be proactive in aligning its workforce and education resources with current and projected labor market demand. Investments in programs to train residents who are laid off or working in low-wage jobs for better, more plentiful middle-skill jobs and careers will more than pay for themselves in public revenue and stronger communities.

If New York is to realize its full economic potential, state policies must support educational access commensurate with the demands of a 21st-century economy and the realities of the 21st-century workforce. The following vision can shape New York's workforce and education policies and investments to match the state's current and future labor market needs:

Every New York resident should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, or one's first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.

Businesses, labor, educators, community-based organizations, and others must work together on this ambitious goal. Policymakers must provide strong political leadership and commitment to ensure that New York has the middle-skill workforce it needs to recover and thrive.



INTRODUCTION

Historically regarded as a manufacturing powerhouse, New York's economic future looks dramatically different from its past. Whereas manufacturing employed over two million New Yorkers during World War II, employment in that sector began a steady decline in the 1960s, with the state hemorrhaging large numbers of manufacturing jobs throughout the late 1980s and early 1990s.¹ The impacts of this transition were not felt equally across the state. While growth in the financial, media, and professional services sectors balanced job losses in manufacturing in the New York City region, many upstate communities felt those losses much more acutely. Though pockets of manufacturing remain across the state, technology is driving and changing the face of that industry. This combined with continued growth in the financial, health care, and professional services sectors is driving New York's current and future economic expansion. To take advantage of this growth, New York must continue to ensure its residents have the skills and education needed to succeed in this changing landscape.

Today, New York benefits from a number of diverse, often regionally-based, industries. From Wall Street's financial services sector to nanotechnology in Albany, from life sciences in Western New York to green technology in the Hudson Valley, New York is well positioned to thrive in the 21st-century economy.² With a gross state product of more than one trillion dollars in 2009, New York has the third largest state economy in the nation.³ More than fifty companies ranked in the Fortune 500.⁴

High educational attainment in the state has cushioned New York in its shift from a production to an information economy, and left the state increasingly well situated to succeed going forward. In the Kaufman Foundation's ranking of states best positioned to succeed in the new economy, New York has risen from number sixteen in 1999, to eleventh in 2002, to ninth in 2008.⁵ Just over 84 percent of New York residents have at least a high school degree, equal to the national average, and close to 32 percent have a college degree or more, almost 5 percentage points higher than the national average.⁶

This well-educated workforce played a key role in driving the state's economic diversification and expansion in recent years. As the economy continues to recover from the Great Recession, the large majority of new employment opportunities will require postsecondary education and training. To take full advantage of those opportunities, New York must ensure that all workers have access to the education and training they need to succeed in the labor market and are able to develop the skills to support New York's long-term economic competitiveness.

HIGHLIGHT 1

What is a middle-skill job?

Some 39 percent of all job openings in New York between now and 2018 will be in middle-skill jobs.

What is a middle-skill job?

One that requires more than a high school diploma but not a four-year college degree.

Who provides middle-skill training?

Employers, community colleges, Boards of Cooperative Educational Services (BOCES), apprenticeship programs, nonprofit community-based training organizations, and private career schools.

How can we meet the demand for middle-skill and high-skill jobs?

Every New York resident should have access to the equivalent of at least two years of education or training past high school and the basic skills needed to enter that training.

Research on projected job openings and retirement trends in the workforce shows that middle-skill jobs—those that require more than a high school diploma but not a four-year degree—comprise the largest share of jobs in New York today. The data further indicate that middle-skill jobs will continue to make up the largest segment of New York’s total labor market into the foreseeable future.

Despite the state’s strong record of postsecondary education and workforce training, New York is at risk of facing shortages of the middle-skill workers critical to its economic recovery and long-term success. Prior to the recession, businesses across the state were reporting the negative impact of skilled worker shortages on their productivity and growth. To maintain its edge and ensure that the state can take advantage of job creation as the economy begins to recover, New York must invest in both high- and middle-skill education and training to ensure that businesses have the talent they need. At the same time New York must also make investments to improve the basic skills of its low-skill workers.

New York has some important policies in place to address the state’s shortage of middle-skill workers. In 2007, the New York State Department of Labor launched its 13N Transformational Sectors Strategies initiative, a program to help local Workforce Investment Boards (WIBs) create and support regional sectoral initiatives throughout the state.⁷ By focusing on the workforce and education needs of industry sectors, these grants are helping to develop pipelines of workers with the middle-skill credentials needed to drive regional growth and competitiveness. For example, the Western New York Regional WIBs are using these grants to expand the growth of high-wage jobs in the advanced manufacturing and life sciences industries in the region, combining education, workforce and economic development strategies to create an educational pipeline to ensure these businesses have the skilled workforce they need to expand and compete.⁸ By creating demand-driven training on a regionalized, but statewide basis, this innovative model is one example of how New York is taking initial steps toward creating more demand-driven education and training opportunities for its workers.

While this is an important first step towards addressing the state’s need for middle-skill workers, more must be done to increase the overall skills and education of New York’s adult workers.

New York needs a bold and broad vision to address the educational and economic challenges facing the state during these tough economic times and beyond. Those challenges demand **a truly transformative long-term vision that allows every worker to be a part of economic recovery: guaranteed access to two years of postsecondary education or training.** Every New York resident must have the educational foundation and economic opportunity to earn the equivalent of at least two years of education or training past high school that leads to a vocational credential, industry certification, or one’s first two years of college. It must be available at whatever point and pace makes sense for individual workers and industries. We must further ensure that every New York resident has access to the basic skills needed to pursue such education.

America has done this successfully before. There are precedents for resetting and raising the bar for educational attainment, and there is strong evidence that such broad human capital investments yield substantial dividends for both workers and businesses.

New York’s need for qualified middle-skill workers today is greater than ever before. As the economic recovery gathers momentum, existing and emerging job vacancies will need to be filled. While job creation is currently sluggish, recovery investments in industries projected to grow, such as green technology, advanced manufacturing and transportation, will fully pay off only if a base

of middle-skilled talent is in place to meet projected demand. Matching the skills of the state's workforce with this demand will help New Yorkers take advantage of the resulting job creation, and prepare the state for better times ahead.

Investing in workers so that they can fill middle-skill jobs makes sense for New York, and for the nation as a whole.



NEW YORK'S FORGOTTEN MIDDLE-SKILL JOBS

Conventional wisdom holds that the nation has evolved into an “hourglass” or “dumbbell” economy: a bifurcated labor market with a small number of highly skilled, highly paid workers and a much larger number of low-skill, low-paid workers.

Many people believe that a four-year college education is the only pathway to economic competitiveness and success. Within such a model, middle-skill occupations—the jobs that fueled the expansion of the world’s largest economy in the 1950s and 1960s and provided the foundation for a robust American middle class—are on the verge of extinction.

It’s a bleak picture, to be sure. It’s also a myth.

The truth is that **middle-skill jobs, which require more than a high school education but not a four-year degree, currently make up the largest segment of jobs in the U.S. economy, and will continue to do so for years to come.**

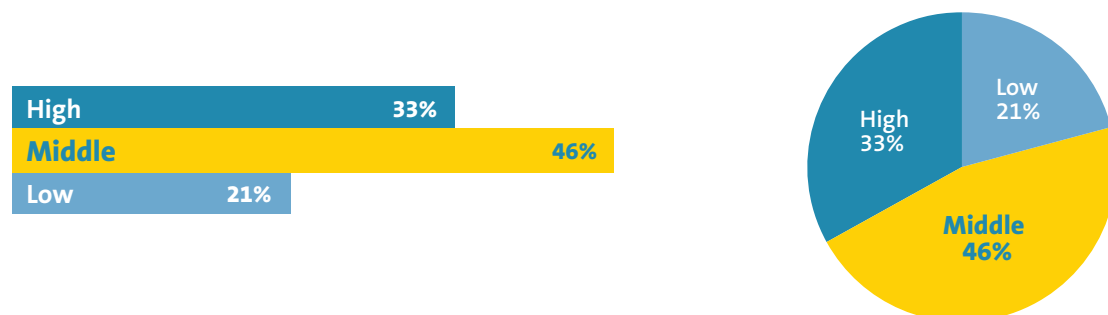
While middle-skill jobs have declined slightly as a portion of total employment nationwide, roughly half of all employment today is still in middle-skill occupations.⁹ Among job openings between 2008 and 2018, the fastest growth is projected for occupations requiring an associate’s degree.¹⁰

The national picture holds true in New York as well. Nearly half of all New York jobs in 2009—46 percent—were middle-skill jobs, representing more than 3.8 million workers (Fig. 1, Table 1). The demand for middle-skill workers in the state is projected to remain high through 2018, with 39 percent of all job openings requiring a middle-skill credential. This compares with 34 percent of job openings in high-skill occupational categories and 27 percent in occupations requiring no more than a high school diploma (Fig. 2, Table 2). The numbers make a powerful case for investing in a pipeline of trained middle-skill workers to meet New York’s long-term needs as workers retire, including strategies that help retrain workers in new technologies and innovations.

Despite these numbers, policymakers at both the federal and state levels have focused primarily on access to higher education, promoting a “college for all” approach. While this is an admirable goal, failure to provide adequate support for college persistence and completion has left many individuals burdened with high student loan debt without acquiring a bachelor’s degree. Additionally, failure to appreciate that many of today’s growing occupations require skills more closely aligned to vocational credentials or an associate’s degree rather than to a four-year college degree has led to a skills mismatch. Devoting proportionate attention to middle-skill jobs, and the education and training investments needed to ensure that workers have the skills they need to succeed in these vital occupations, will help support New York’s economy, both in its immediate recovery and its long-term growth.

Demand for Middle-Skill Jobs is Strong, Will Remain Strong in New York

FIGURE 1. New York Jobs by Skill Level, 2009



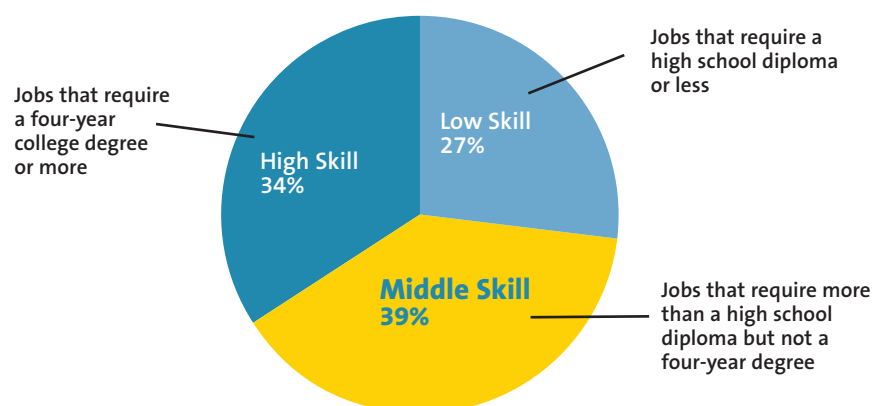
Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

TABLE 1. New York Jobs by Skill Level, 2009

	Employment	Percent
Total, All Occupations	8,487,020	100.0%
Management	407,020	4.8%
Business and Financial	418,190	4.9%
Professional and Related	2,010,540	23.7%
Total, High Skill	2,835,750	33.4%
Sales and Related	848,300	10.0%
Office and Administrative Support	1,591,890	18.8%
Construction	321,710	3.8%
Installation and Repair	299,280	3.5%
Production	375,280	4.4%
Transportation and Material Moving	431,860	5.1%
Total, Middle Skill	3,868,320	45.6%
Service Occupations	1,778,180	21.0%
Farming, Fishing, and Forestry Occupations	4,760	0.1%
Total, Low Skill	1,782,940	21.0%

Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

FIGURE 2. New York’s Total Job Openings by Skill Level, 2008–2018



Source: Calculated by National Skills Coalition from the New York State Department of Labor. Total number of job openings over the ten year period, including new jobs and replacement jobs created by retirement and turnover.

TABLE 2. New York Jobs and Total Job Openings by Skill Level, 2008–2018

	Employment		Job Openings	
	2008	2018	Number	%
Total, All Occupations	9,317,650	9,892,050	2,607,700	100.0%
Management	474,640	494,840	120,200	4.6%
Business and Financial	434,820	471,660	112,400	4.3%
Professional and Related	2,151,300	2,377,250	655,700	25.1%
Total, High Skill	3,060,760	3,343,750	888,300	34.1%
Sales and Related	989,140	1,030,050	332,300	12.7%
Office and Administrative Support	1,690,600	1,708,230	369,800	14.2%
Construction	374,330	424,970	116,000	4.4%
Installation and Repair	328,960	341,200	62,800	2.4%
Production	437,490	380,550	8,590	0.3%
Transportation and Material Moving	482,990	478,750	106,700	4.1%
Total, Middle Skill	4,303,510	4,363,750	996,190	38.2%
Service Occupations	1,905,380	2,135,860	695,300	26.7%
Farming/Fishing/Forestry Occupations	48,010	48,710	11,900	0.5%
Total, Low Skill	1,953,390	2,184,570	707,200	27.1%

Source: Calculated by National Skills Coalition from the New York State Department of Labor.

HIGHLIGHT 2

Middle-Skill Jobs in Science, Technology, Engineering and Math (STEM)

Policymakers have become increasingly concerned about U.S. global competitiveness in recent years, and a broad consensus has developed about the need for a strong science, technology, engineering, and math (STEM) workforce to support innovation industries and emerging technologies. In particular, business and political leaders have called for increasing the number of students receiving bachelor or advanced degrees in these fields.

These highly skilled professionals aren't the only STEM workers in short supply, however. Employers have reported troubling shortages of the technicians and middle-skill workers needed to implement the new technologies developed by highly skilled innovators.

A 2005 National Association of Manufacturers report found that while 35 percent of manufacturers anticipated a shortage of scientists and engineers, more than twice as many respondents anticipated a shortage of skilled production workers, precisely the kind of middle-skill jobs that require more than high school but not a four-year degree.¹¹

In a recent solicitation for grant proposals, the U.S. Department of Labor emphasized the importance of the middle-skill STEM workforce:

"The STEM workforce pipeline challenge is not just about the supply and quality of the baccalaureate and advance degree earners. A large percentage of the workforce in industries and occupations that rely on STEM knowledge and skills are technicians, including others who enter and advance in their field through subbaccalaureate degrees and certificates or through workplace training. Creating interest and preparing more Americans to be productive in STEM-related jobs will require attention to segments of the workforce that are often overlooked in STEM discussions: incumbent workers who need skills upgrading, dislocated workers who are trying to find new jobs in industries with a future, and individuals from groups traditionally underrepresented in STEM fields."¹²

Bureau of Labor Statistics occupational projections from 2008 to 2018 show solid growth in knowledge work and jobs requiring advanced or specialized skills, specifically Information Technology (IT) skills.¹³ Despite this projected growth, New York employers within the IT industry face a unique challenge. Unlike sectors heavy in middle-skill jobs such as health care or construction, IT is not a field in which as many baby boomers are retiring, yet the sector still faces a skills crunch—53 percent of respondents to a New York City industry poll in 2008 identified finding qualified talent as the number one hiring challenge within the IT field.¹⁴ While not all IT jobs require a four-year college degree—entry level positions often only require occupational credentials and offer career advancement opportunities with additional training and education—many New Yorkers do not even have a high school diploma, much less the postsecondary vocational credentials needed to enter and succeed in this field.

If New York is to sustain its increasingly important innovation economy, including its growing IT sector, the state needs a truly comprehensive innovation agenda that addresses the demand for both highly educated innovation professionals and the middle-skill workers needed to implement their innovations. These middle-skill workers are at the roots of a successful STEM strategy, nationally and in New York.



THE FACE OF NEW YORK'S MIDDLE-SKILL JOBS

New York relies on middle-skill workers. They are the Emergency Medical Technicians who keep New Yorkers safe; the nurses and therapists who keep residents healthy; the air traffic controllers, electricians, and mechanics who keep New York's infrastructure up and running. Middle-skill jobs are local, hands-on jobs, meaning they are unlikely to be outsourced to other countries.

Many of these are well-paid jobs, offering New York workers a chance at economic security and prosperity. As illustrated in Table 3, these are jobs with good earning potential. Many offer median earnings that exceed the New York overall median for 2009 of \$38,450.

HIGHLIGHT 3

Do all middle-skill jobs pay high wages?

Skills are only part of the economic success equation. Not all middle-skill occupations pay well or have meaningful advancement opportunities; however, growth in demand for many middle-skill occupations has been fast enough to generate not only strong employment growth, but also rapid growth in wages given the relative scarcity of adequately skilled workers.

New York research supports the connection between many middle-skill jobs and good wages. For example, a 2010 analysis of New York's occupational projections finds that just over 50 percent of jobs within the state require only on-the-job training while less than 25 percent require a bachelor's degree or higher, demonstrating continued demand for middle-skill jobs.¹⁵ Occupations requiring middle-skill training, including moderate- to long-term on-the job training, postsecondary vocational training, or an associate's degree all exceeded New York's median earnings for 2009.

At the national level, the data tell a similar story. Between 1997 and 2005, American workers on the whole saw an overall real wage increase of just 5 percent (adjusting for inflation). Over the same period, many middle-skill occupations saw significantly higher wage increases.¹⁶

Thirty Middle-Skill Jobs New York Can't Live Without

TABLE 3. Projected New York Demand for 30 Middle-Skill Occupations, 2008–2018

	Employment		Net Change		Job Openings	Median Earnings 2009
	2008	2018	Number	%		
Computers						
Support Specialists	34,180	36,910	2,730	8.0%	13,300	\$49,450
Specialists, Other	3,360	3,560	200	6.0%	1,100	\$76,620
Construction						
Carpenters	69,260	79,810	10,550	15.2%	20,000	\$48,150
Electricians	40,000	45,520	5,520	13.8%	15,800	\$61,430
Painters	20,260	22,510	2,250	11.1%	5,900	\$44,330
Operating Engineers	15,070	16,540	1,470	9.8%	4,400	\$56,140
Plumbers	28,040	32,960	4,920	17.5%	1,070	\$55,690
Healthcare						
Dental Hygienists	9,390	11,760	2,370	25.2%	4,200	\$65,160
Diagnostic Medical Sonographers	3,670	4,240	570	15.5%	1,100	\$63,970
Licensed Practical Nurses	49,820	54,830	5,010	10.1%	18,600	\$41,490
Medical Lab Technicians	9,930	10,760	830	8.4%	2,300	\$42,360
Physical Therapist Assistants	3,220	3,970	750	23.3%	1,200	\$44,560
Radiation Therapists	740	850	110	14.9%	200	
Radiology Technicians	11,100	12,110	1,010	9.1%	2,500	\$61,040
Respiratory Therapists	5,310	5,950	640	12.1%	1,400	\$62,900
Surgical Technologists	5,120	5,800	680	13.3%	2,300	\$42,520
Installation, Maintenance, and Repair						
Aircraft Mechanics	4,320	4,550	230	5.3%	600	\$56,900
Auto Mechanics	41,620	43,940	2,320	5.6%	10,700	\$33,640
Bus/Truck Mechanics	13,730	14,250	520	3.8%	3,500	\$47,030
Heating and AC Installers	18,390	19,690	1,300	7.1%	4,500	\$47,590
Heavy Equipment Mechanics	3,600	3,830	230	6.4%	900	\$47,340
Motorboat Mechanics	1,350	1,550	200	14.8%	500	\$78,270
Public Safety						
Emergency Medical Technicians	12,750	14,460	1,710	13.4%	3,200	\$37,790
Fire Fighting and Prevention Workers	15,480	16,060	580	3.7%	6,100	\$62,010
Detectives	10,190	11,300	1,110	10.9%	3,300	\$64,820
Transportation						
Air Traffic Controllers	1,220	1,290	70	5.7%	400	\$138,360
Heavy Truck Drivers	60,650	60,970	320	0.5%	11,100	\$41,360
Other						
Architectural Drafters	5,900	6,040	140	2.4%	1,800	\$50,520
Civil Engineering Technicians	2,080	2,270	190	9.1%	600	\$48,920
Legal Secretaries	27,810	29,320	1,510	5.4%	5,900	\$44,520
Paralegals	25,580	29,760	4,180	16.3%	7,600	\$58,960

* 2009 median annual earnings for all occupations in New York = \$38,450

Source: Projections data tabulated using data from the New York State Department of Labor. Median Earnings data from the Bureau of Labor Statistics.

HIGHLIGHT 4

The Middle of the Green Revolution

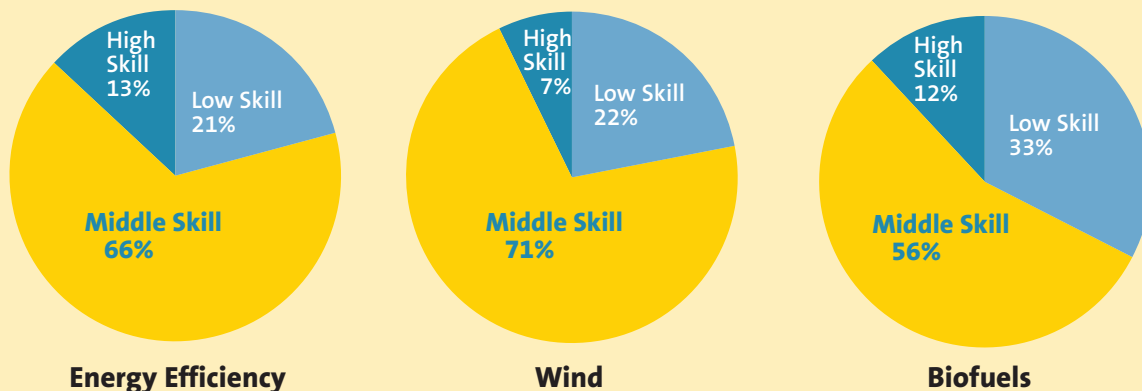
More than ever before, policymakers and business leaders are paying attention to clean energy industries and technologies, which promise profound environmental and economic benefits for all Americans. One of the highest priorities in federal and state economic recovery policies has been strong investment in creation of a “green economy” and “green jobs.”

But what are those jobs?

A 2008 report by the Center on Wisconsin Strategy, the Apollo Alliance, and National Skills Coalition found that the skills needed in the green economy closely mirror the middle-skill demands of the labor market as a whole. *Greener Pathways* examines emerging opportunities in the energy efficiency, wind, and biofuels sectors, and urges stakeholders to scale up green job training by leveraging existing state and local workforce development systems.¹⁷ Middle-skill jobs within the construction and manufacturing sectors are also becoming greener according to a 2010 report by the Center on Wisconsin Strategy and the Apollo Alliance, which finds that 55 percent of new jobs within the growing efficiency and renewable energy industries are projected to occur within those two sectors.¹⁸

Green Jobs are Middle-Skill Jobs

FIGURE 3. U.S. Employment in Green Industries by Skill Level, 2004



Source: Tabulated by National Skills Coalition from the Bureau of Labor Statistics website.

In 2009, the New York State legislature passed Green Jobs - Green New York, a landmark job creation program that uses revenue from the sale of carbon emission credits to train workers to weatherize homes, help cut monthly energy bills, and defray capital improvement costs for residents and businesses throughout the state.¹⁹

The program is administered by the New York State Energy Research and Development Authority (NYSERDA), who in partnership with the New York State Department of Labor, established workforce training programs throughout the state to ensure that the state’s workforce had the skills needed to handle mass-scale retrofitting.

NYSERDA currently provides two different training opportunities for New York residents interested in a career in the clean energy sector. The Energy Efficiency Training Program teaches participants building science techniques for energy efficiency in a hands-on learning environment, while the Renewable Energy Training Program offers courses on installing, maintaining and operating renewable energy systems such as solar electric, solar hot water, wind, and geothermal.²⁰ In addition, the New York City Labor Market Information Service at the City University of New York (CUNY) Graduate Center is working with its Green Jobs Study partners (University of Albany’s E2TAC, Stony Brook University’s AERTC, and the New York State Department of Labor) to compile a statewide list of education and training providers for green-related skills.

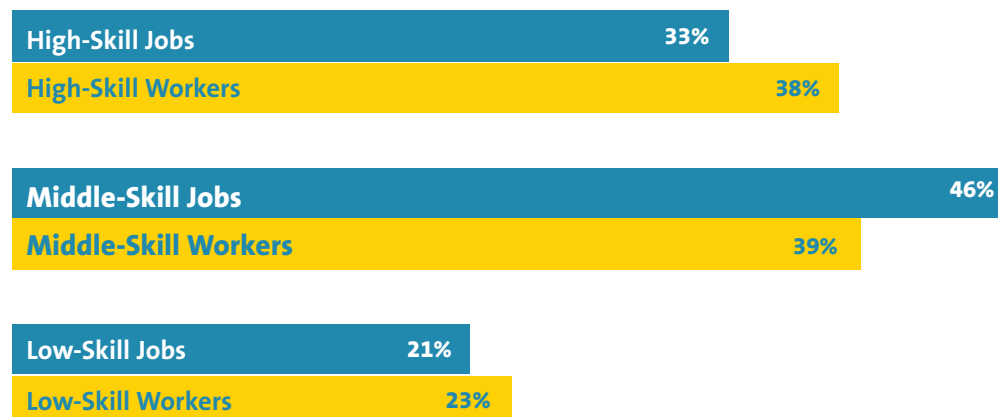


NEW YORK'S MIDDLE-SKILL GAP PAST AND FUTURE

New York has been experiencing a structural shortage of middle-skill workers (Fig. 4). **In 2009, about 46 percent of all jobs were classified as middle-skill, but only 39 percent of New York workers had the education and training required to fill those positions.** In reality, the gap was likely even greater in certain industries because many workers trained to the middle-skill level—and even those with bachelor's degrees—did not have the specific technical skills needed. This means that thousands of well-paid and rewarding jobs were going unfilled in the state, in industries that are and will be essential to New York's economic portfolio.

New York's Skills Mismatch: A Middle-Skill Gap

FIGURE 4. New York's Jobs and Workers by Skill Level, 2009



Sources: New York Department of Labor and US Bureau of the Census.

New York, like the nation, is experiencing high levels of unemployment in the aftermath of the economic downturn. In 2007, New York's overall unemployment rate was 6.2 percent. That rate climbed to 9.1 percent in 2009 during the height of the Great Recession. But not all New Yorkers were equally impacted by the economic decline. In 2007, the unemployment rate for New York residents without a high school diploma was 13.4 percent, rising to 16.5 percent in 2009. High school graduates saw their unemployment rate rise from 7.3 percent in 2007 to 10.4 percent in 2009. New Yorkers with some college or an associate's degree fared somewhat better with unemployment rates increasing from 5.9 percent in 2007 to 9.1 percent in 2009.²¹

As New York's economy continues to recover, the state needs to focus not only on re-employing those currently out of work but also helping those who are disconnected from the labor market find work in an economy that increasingly requires some postsecondary education. New York needs to use this time of slack labor markets to invest in its human capital, or the state will once again have employers who cannot find the qualified middle-skill workers they need to grow and be competitive. Moreover, as federal and state recovery efforts continue, a major portion of the

resulting job growth will be at the middle-skill level, making middle-skill training a key piece of the recovery puzzle. Guaranteed access to two years of postsecondary education or training is a crucial investment New York can make right now to ensure its workforce will be trained and ready to be part of the economic recovery.

New York's middle-skill challenge is exacerbated by problems at both the high and low ends of the skills spectrum. At the high end, education policies that focus exclusively on four-year college degrees mean that as baby boomers retire and younger workers get older, the share of middle-skill workers available will fall well below demand for those workers. At the low end New York has a growing number of residents who lack the basic reading, math and other basic skills needed to qualify for middle-skill training programs.

Greater Pain in High Demand Industries

State and regional data underscore the challenges facing New York. In addition to an overall mismatch between labor market demand and supply, particular sectors are experiencing greater shortages.

Prior to the recession, New York's health care industry reported shortages, as did national experts: a July 2002 report from the U.S. Department of Health and Human Services projected that by 2020, the state would face a gap of more than 23 percent between supply and demand of nurses, putting New York among the states hardest hit by shortages.²² A 2008 report by the Hospital Association of New York State found that the state did experience some short-term relief from workforce shortages during the recession, as many health care staff delayed retirement. The report goes on to cite, however, that the State University of New York Center for Health Workforce Studies predicts that once the economy recovers and the health care sector sees more job creation, there is the potential for a bigger gap between the supply and demand for many types of health care professionals, including those that require middle-skills training.²³

Age-out is also an issue impacting worker shortages in a number of sectors in New York, particularly those with a strong physical labor component. Both the transportation and maintenance and repairs sectors face a potential future shortage of workers due to an aging labor force close to retirement.²⁴ For example, the New York City Labor Market Information Service found that within the transportation industry, three subsectors—air, truck, and transit/ground passenger transport—had a high percentage of older workers close to retirement. Similarly, the maintenance and repair industry could likewise experience shortages due to the same retirement problem. A 2010 report found that between 20 to 30 percent of the New York City workers in a range of maintenance and repair jobs had been over the age of 50 as of the 2000 Census.²⁵ State investments to prepare more New York residents to fill these jobs will be critical to ensuring this sector has a steady pipeline of workers it needs to keep New York's transportation and infrastructure up and running.

New York Educational Projections: A Continuing Middle-Skill Challenge

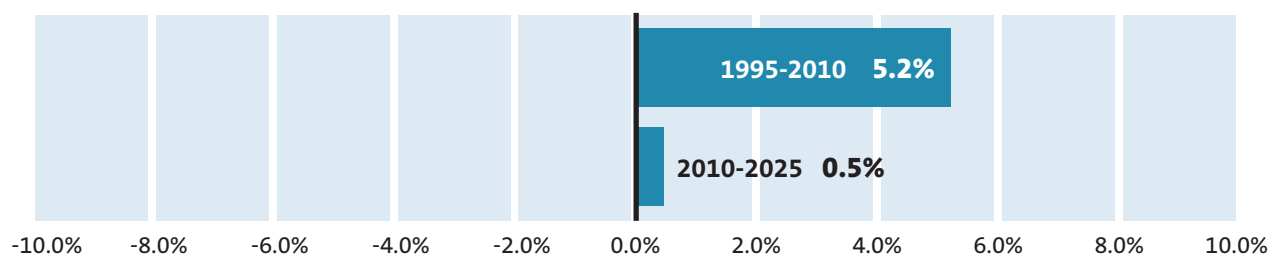
New York educational projections (Figs. 5, 6 and 7) suggest that the state is likely to face a continued shortage of middle-skill workers in the future. During the fifteen years between 1995 and 2010, New York saw a substantial increase in residents with educational attainment at the high-skill level, while the number of residents with middle- and low-skill education levels decreased. **New York's projected education trends for the subsequent fifteen years suggest that middle-skill worker shortages will continue.**

This trend is due in part to retirements and the aging workforce. Middle-skill, blue-collar workers are less likely to delay retirement than high-skill, white-collar workers. Retirement age, however, often varies by occupation and some industries will be impacted greater than others. Immigration is unlikely to offset this loss of middle-skill workers, as most immigrants tend to cluster at either end of the skill spectrum (for example, engineers brought in from overseas through H-1B visas).

Without greater emphasis on ensuring an adequate supply of middle-skill workers, New York businesses will struggle to meet their needs from the state's available workforce, stifling economic recovery and growth and limiting opportunity for thousands of New York workers to advance within the state's economy.

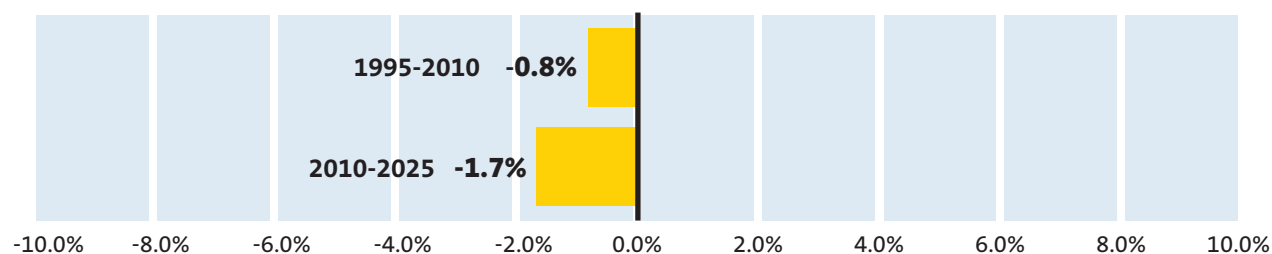
New York's Future Middle-Skill Gap: Educational Attainment Past and Future

FIGURE 5. Percentage Change in High-Skill New York Workers, 1995–2025



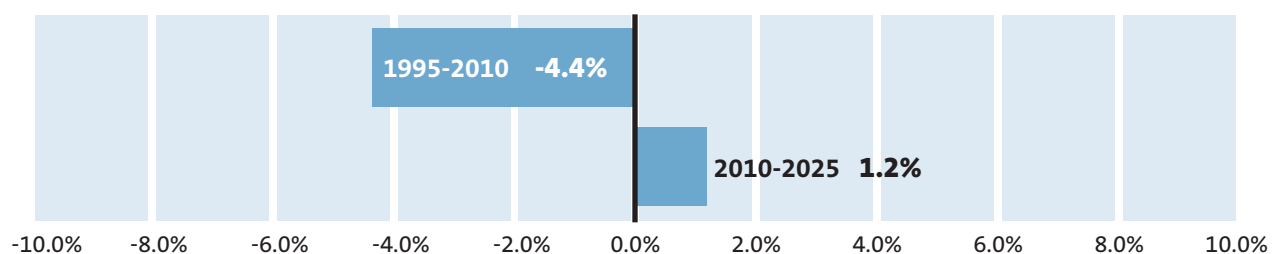
The number of workers prepared for high-skill jobs rose by over 5 percent between 1995 and 2010. However, their ranks are expected to rise by only 0.5 percent by the year 2025 (Fig 5, Table 4).

FIGURE 6. Percentage Change in Middle-Skill New York Workers, 1995–2025



The number of workers whose educational attainment suggests readiness for what is the largest share of jobs in the state—middle-skill jobs—declined by 0.8 percent from 1995 to 2010. Their ranks are projected to fall even more, by 1.7 percent, by the year 2025 (Fig 6, Table 4), even as demand for those jobs increases at a higher rate.

FIGURE 7. Percentage Change in Low-Skill New York Workers, 1995–2025



After falling by 4.4 percent since 1995, the number of workers educated at the low-skill level is expected to rise by 1.2 percent by the year 2025 (Fig 7, Table 4).

Sources, Figures 5-7: 1995-2010 attainment calculated by National Skills Coalition using June 1995 and 2010 CPS data. Current attainment calculated by National Skills Coalition using June 2010 CPS data. 2025 attainment projected by National Skills Coalition using demographic data from the June 2010 CPS and population projections calculated by RAND California Statistics.

TABLE 4. Actual and Projected Change in New York Workers across Skill Levels, 1995–2025

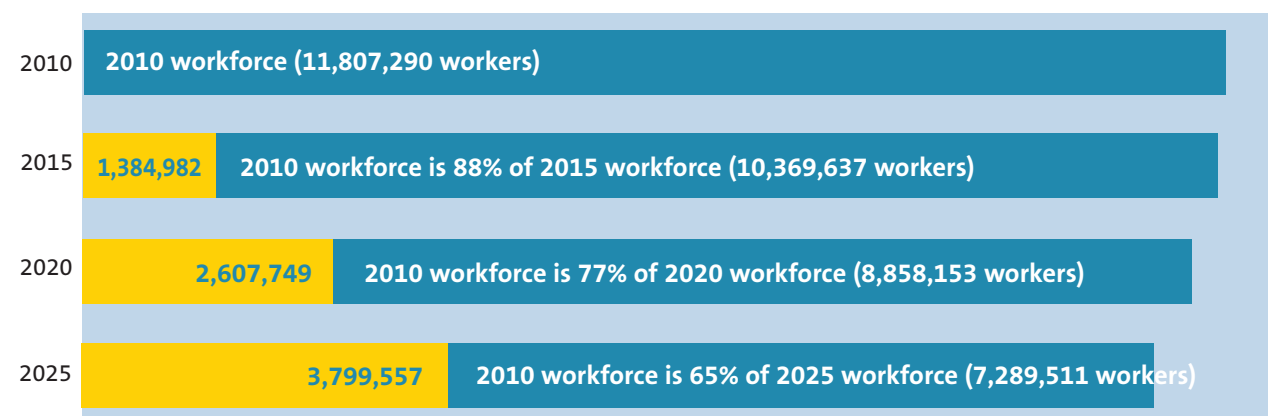
	1995	2010	2025	Change 1995-2010	Change 2010-2025
Low-Skill	27.5%	23.1%	24.3%	-4.4%	1.2%
Middle-Skill	39.7%	38.8%	37.1%	-0.9%	-1.7%
High-Skill	32.9%	38.1%	38.6%	5.2%	0.5%
Low-Skill	2,383,149	2,231,415	2,695,218	-151,734	463,803
Middle-Skill	3,441,643	3,753,531	4,115,667	311,888	362,136
High-Skill	2,852,008	3,681,286	4,278,183	829,278	596,897
Total	8,676,800	9,666,233	11,089,068		

Source: Current and past attainment calculated by National Skills Coalition using June 1995 and 2010 CPS data. Past total labor force estimated by the New York State Department of Labor. 2010 labor force estimated by National Skills Coalition using New York State Department of Labor Data. 2025 attainment projected by National Skills Coalition using demographic data from the June 2010 CPS and population projections calculated by RAND California Statistics.

The Middle-Skill Gap and New York’s Future Workforce

New York cannot address its middle-skill challenges by focusing its education and training dollars solely on the next generation of workers coming out of high school. The fact is that **nearly two-thirds of the people who will be in New York’s workforce in the year 2025 were already working adults in 2010—long past the traditional high school-to-college pipeline** (Fig. 8). Absent some shift in public resources to more robustly support raising skills for millions already in the workforce, New York simply will not be able to close its middle-skills gap.

New York’s Workforce of Tomorrow is in the Workforce Today

FIGURE 8. Working New York Adults Age 20-64 in the Current and Projected Population, 2010-2025

Source: Calculated by National Skills Coalition using population projections from RAND California Statistics.

New York should take action to realign its workforce and educational resources to better meet the state's future labor market demand. Right now, the majority of public postsecondary education and training resources are devoted to a comparatively small number of young people under the age of 25. These are crucial investments, but they must be accompanied by significant investments in the adult workforce, including training programs that will prepare many more New York residents who are now at the low-skill level for the middle-skill jobs and careers that have been and will continue to be the core of the state's economy.

An Even Greater Basic Skills Crisis?

The data supporting education demand projections probably underplays the need for more broadly based basic skills education nationally.²⁶

Despite the increases in U.S. educational attainment over the last twenty years, the National Assessment of Adult Literacy (NAAL) indicates only a slight increase in quantitative (math) skills between 1992 and 2003, and no improvement at all for prose and document literacy. Nationally, 93 million adults lack the literacy to participate in postsecondary education and training. This means that tens of millions of Americans cannot access middle-skill education and training programs because they lack basic English and math skills, or do not have a high school education.

Even for those who enter postsecondary education, basic skills can be a barrier to success. Nearly two-thirds of two-year college students must take at least one remedial course.²⁷

Like the nation as a whole, New York faces substantial challenges when it comes to basic skills. In 2003, 22 percent of New York residents lacked basic prose literacy skills.²⁸ Of the over 12 million working-age adults in New York, close to 14 percent have not completed high school (or its equivalent), and close to 6 percent speak little or no English.²⁹ Moreover, less than 10 percent of New York adults with less than a high school diploma are enrolled in adult basic education, and state-run English for Speakers of Other Languages (ESOL) programs serve only about 5 percent of the estimated need in the state.³⁰

This evidence suggests that New York faces challenges in meeting the basic skill attainment levels needed to grow its middle-skill workforce. By better aligning adult basic education with industry-focused training, many more New York residents could prepare to enter and succeed in middle-skill jobs and businesses would have a pipeline of workers to help meet immediate demand.

Recognizing these challenges and opportunities, New York's Literacy Zones, a statewide reform initiative developed by the New York State Board of Regents and the State Education Department, are helping address literacy needs in high-poverty communities and those with high concentrations of residents with limited literacy or English language proficiency.³¹ Serving New York residents from birth through adult, the state's eighteen Literacy Zones are providing pathways out of poverty by offering literacy services, postsecondary transition assistance for out-of-school youth and adults to complete their GED and succeed in postsecondary education, workforce education and training programs, and much more.



CLOSING THE GAP

The Face of Middle-Skill Education and Training

Who provides training and education for middle-skill jobs? The good news is that there are many different options.

While education for high-skill jobs is limited to college or post-graduate degrees, education for middle-skill jobs can come in many different forms (Table 5). Middle-skill education and job training programs include occupational certificates, associate’s degrees, and apprenticeships can be found in many different settings, such as community and technical colleges (including non-credit workforce courses), Boards of Cooperative Educational Services (BOCES), community based-training organizations, and workplaces.

Industry-recognized vocational certificates guarantee certification of the knowledge and skills needed to perform the duties of a given occupation, according to regulations or nationally accredited standards. They generally require less classroom time than associate’s degrees, offering a path for individuals to develop and verify specific skills sets. They are also extremely useful for individuals already in the workplace as a means of reinforcing existing skills sets and acquiring new skills. Examples of jobs where a vocational certificate could be valuable include dental and legal assistants, auto service technicians and fire fighters.

An associate’s degree allows students to enter the workforce immediately upon completion of the degree. Associate’s degrees are generally required for occupations such as dental hygienist, radiation therapist, and computer specialist.

Apprenticeships are supervised employment programs that combine classroom instruction and on-the-job training. Generally offered directly by employers or through labor/management partnerships, apprenticeships can be found in such high-demand careers as electrician, aircraft mechanic, or plumber.

There are Many Different Pathways to Middle-Skill Jobs

TABLE 5: Types of Training Programs for Middle-Skill Jobs

	Associate’s degree	Vocational certificate	Apprenticeship
Time to complete	Two years, full time	Up to a year	Two to four years
Availability	Community college	Community college, community-based organization, technical school, workplace	Partnership between unions and employers
Examples of types of jobs	Radiation therapist, licensed practical nurse, computer specialist	Dental assistant, legal assistant, auto mechanic, firefighter	Electrician, aircraft mechanic, plumber

For workers whose basic skills are not yet adequate to succeed within these types of education and training programs, there are program options that teach English, basic reading and math skills in the context of occupational skills. These contextualized basic education programs often connect to a specific job within a defined career path or else to further education that results in a middle-skill credential.

Closing the skills gap in New York, however, will take more than supporting a list of different training options. The state must implement an overall strategy and develop clearer and broader pathways to link basic skills, technical/industry-specific training, public higher education programs, and family-sustaining jobs. New York must create more flexible, demand-driven systems that provide multiple points of entry for working adults to a variety of middle-skill and basic-skill training programs based on identified industry needs. Ultimately, the state's future prosperity will depend in part upon how many current workers can successfully return to training and education to upgrade their skills and earn additional certifications and degrees.

Fortunately, New York is not starting from scratch in efforts to address the state's shortage of middle-skill workers. A number of exemplary education and training initiatives serve diverse populations, including those noted below:

- ◆ *Per Scholas* Institute for Technology provides workforce development training to chronically unemployed and underemployed youth and adults from high-poverty neighborhoods in New York City seeking to obtain their A+ certification and job placement in the Information Technology sector. For more than a decade now, *Per Scholas* has been recognized as one of the leading providers of sectoral, IT-specific job training designed to benefit both workers and employers. Since its inception in 1995, *Per Scholas* has trained more than 3,100 students, placing on average 80 percent of program graduates into high-wage technology jobs.³²
- ◆ The Finger Lakes Advanced Manufacturers' Enterprise, or FAME, is an initiative of the Finger Lakes Workforce Investment Board and a collaborative public/private partnership of regional stakeholders working to attract and grow the workforce talent in advanced manufacturing in the Finger Lakes region. As a result of their efforts, the Finger Lakes Community College developed the A.A.S. Degree in Instrumentation and Control Technologies. This unique, high-tech, hands-on degree program offers students an opportunity to learn the tools and techniques of emerging technologies which are crucial for designing, testing, manufacturing and quality control in industrial, commercial, medical and other settings.³³
- ◆ For New York City residents interested in health care and seeking career advancement opportunities as a pathway out of poverty, New York City's Workforce1 Healthcare Career Center at La Guardia Community College offers training for individuals in several high-wage, high-growth health care occupations. Providing a full range of training and job placement services to new jobseekers and incumbent workers, the Center is part of a sector-focused approach to career training that leads to higher wages for workers and better outcomes for businesses.
- ◆ Serving the Brooklyn community, Opportunities for a Better Tomorrow helps disadvantaged older youth and young adults advance towards self-sufficiency and financial security through job training, academic reinforcement, improved life skills, job placement, and support services. OBT's youth training model is an intensive twenty-week program that includes GED classes (if needed), business math, business English, office procedures, computer classes, public speaking and communications, and a world-of-work module. With an overall job placement rate of 85 percent annually, OBT has helped over 5,000 young people and 2,500 adults improve their lives and the lives of their families since its founding in 1983.³⁴

- ◆ To meet the Albany region's growing demand for skilled manufacturing workers, the Capital Region BOCES and the Washington-Saratoga-Warren-Hamilton-Essex (WSWHE) BOCES have partnered to develop and implement the Manufacturing Skill Standards Council's (MSSC) Certified Production Technician (CPT) program. This innovative partnership helps adult students earn industry-recognized credentials in manufacturing production while creating a pipeline of workers to meet growing local demand for a skilled, high-tech workforce.
- ◆ Graduates of New York City public high schools interested in careers in construction can look to the Edward J. Malloy Initiative for Construction Skills, which trains and prepares a skilled workforce from diverse communities throughout New York City's five boroughs for careers in the unionized construction industry. Construction Skills offers a pre-apprenticeship program that has earned national recognition for addressing training and employment issues in the industry, has a retention rate of over 80 percent, and has led to a more diverse workforce with African Americans, Hispanics and Asians from all five boroughs representing the majority of new union members in the industry.³⁵

A 21st-Century Skill Guarantee

If New York is to realize its full economic potential, educational access must reflect the demands of the 21st-century economy and the realities of the 21st-century workforce. Given that the largest portion of New York jobs are at the middle-skill level and the majority of future workers are already in the workforce today, the Skills2Compete-New York campaign supports the following vision for the state:

Every New York resident should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, or one's first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.

Given the current fiscal crisis, it is an ambitious goal, but not an unprecedented one. Throughout the nation's history, federal and state policymakers have elevated educational guarantees to keep pace with economic and technological progress. Leaders in New York have already taken some steps to address these challenges, but there is more to be done.

Historical Precedents

As the nation transitioned from an agricultural economy to an industrial economy in the mid-nineteenth century, policymakers across the United States realized that a broader skill set was required from a much greater segment of the population. This was one important factor in the development of the high school movement to provide a free public education to all citizens. Between 1910 and 1930, the proportion of seventeen-year-olds in secondary education increased from less than 9 percent to 30 percent, fueling the expansion of America's great cities and industries. By the late 1990s, nearly 70 percent of U.S. students were graduating with a high school diploma. Universal secondary education is now understood as one of the fundamental guarantees the U.S. makes to its citizens.

By the middle of the 20th century, postsecondary education and training were recognized as vital inputs to American prosperity. This was the atmosphere in which the GI Bill was passed in 1944. Between 1944 and 1956, nearly 8 million returning servicemen and servicewomen used the GI Bill. People pursuing four-year college degrees accounted for about a quarter (2.2 million) of

those benefiting from the program. But **a much larger—and typically forgotten—6 million GIs pursued middle-skill training.** In combination with a number of other political and economic factors, this greatly expanded access to postsecondary education fueled the rise of the biggest middle class the world had ever seen.

State Skill Guarantees

Unfortunately, more recent federal investments in postsecondary education and job training have been in decline. While the American Recovery and Reinvestment Act (ARRA) passed in early 2009 made significant contributions to those education and training programs, it was a one-time, relatively short-term investment. The overall long-term trend has been sharply downward; in constant dollars, federal support for the Workforce Investment Act before ARRA was barely a tenth of what government had spent on the Comprehensive Employment and Training Act, a predecessor law to WIA, in the 1970s.

Despite the gloomy overall trend, some forward-thinking states and policymakers have been making vital commitments to the skills and economic security of their citizens, recognizing that the residents and businesses of their states would greatly benefit from a new minimum level of skills and education.

For example, in early 2010, Maryland Governor Martin O'Malley launched Skills2Compete-Maryland, a new education and training initiative aimed at better aligning Maryland's workforce system to prepare workers with the skills they need to succeed in the 21st-century economy. Although Maryland has a strong record of investing in postsecondary education, many residents lack the necessary basic education and skills training to succeed in the labor market. By encouraging Maryland residents to gain the skills and credentials necessary to obtain good jobs with family supporting wages, Skills2Compete-Maryland hopes to increase the number of Marylanders who have the skills required for many jobs throughout the state that continue to experience shortages of middle- and high-skill workers.

In 2007, Michigan Governor Jennifer Granholm announced the creation of the No Worker Left Behind program in her State of the State address. The program, officially launched in August 2007, pays tuition of up to \$5,000 per year for two years for 100,000 Michigan workers to pursue a degree or certificate at a community college, university, or other approved training program in a high-demand occupation (determined on a regional basis). The state reprogrammed \$40 million in federal funds—primarily from the Workforce Investment Act and Trade Adjustment Assistance programs—to support the initiative. In October 2009, Governor Granholm made No Worker Left Behind Michigan's permanent workforce policy, and as of January 2010 the program had enrolled close to 117,000 Michiganders in training.

In Washington, the state legislature in 2007 authorized \$11.5 million per year for the Opportunity Grant program, which covers tuition for up to 45 academic credits at any state technical or community college, and up to \$1,000 per year for books and supplies. Any Washington resident student with a family income at or below 200 percent of the federal poverty level is eligible to participate in the program.

The Opportunity Grant model was constructed to help nontraditional students advance into high-demand, high-wage job opportunities. Participants can use Opportunity Grants toward completion of credentials, certificates, and apprenticeship programs in occupations where local and regional employer demand exceeds the supply of qualified applicants. Eligible programs must be linked to educational and career pathways, and colleges must demonstrate that there are jobs available for program graduates that pay at least \$13 per hour. In addition, schools must demonstrate that local businesses, labor groups, and other community stakeholders are active in

supporting the creation or expansion of the program. For adults who cannot take advantage of the Opportunity Grant program because their basic skills are not at a sufficient level to immediately enter a postsecondary program, Washington State's nationally acclaimed IBEST (Integrated Basic Education and Skills Training) initiative allows adults to learn basic skills while earning credentials for high-demand jobs with opportunities for educational and career advancement.

The Benefits and Returns of a 21st-Century Skill Guarantee

The potential benefits and returns of a 21st-century skill guarantee are widespread. Guaranteeing up to two years of postsecondary education and training will benefit the individuals trained and strengthen the state economy, and could increase public resources through larger subsequent tax revenues.

Simply put, more education means greater participation in the workforce and higher lifetime earnings. A recent examination of New York's adult learners found that close to 83 percent of adults with an associate's degree and 78 percent of adults with some college (but not a degree) participated in the workforce, compared to only about 74 percent of adults with a high school education and 57 percent of adults with less than a high school education.³⁶ **In addition to higher work participation rates, adults with some college averaged about \$188,000 more in lifetime earnings than those with only a high school education, and adults with an associate's degree averaged about \$404,000 more in lifetime earnings.**³⁷

These findings are consistent with national findings that the median worker with an associate's degree earns about 33 percent more than a worker with only a high school degree, while workers with a bachelor's degree earns about 62 percent more than workers with only a high school degree.³⁸ These national findings indicate not just that postsecondary education provides a significant earnings advantage for workers, but also that *on a per-year basis*, benefits for workers receiving a two-year degree are comparable to those receiving a four-year degree.

More education also is associated with lower unemployment. Nationally, in November 2010 unemployment for workers with less than a high school diploma was just over 15 percent. For those with a high school diploma it was 10 percent, while for those who'd completed high school plus some college—our middle-skill level—the unemployment rate was 8.7 percent.³⁹

A guarantee of access to at least two years of postsecondary education for all workers would increase productivity and earnings in New York. According to the Organization for Economic Cooperation and Development (OECD), each year of postsecondary education leads to an increased per capita output of between 4 and 7 percent.⁴⁰ Increasing the average total schooling of a city's population by two years increases the wages of all workers by about 6 percent, regardless of individual educational attainment.⁴¹ And one additional year of schooling leads to an 8.5 percent increase in productivity in the manufacturing sector, and more than a 12 percent productivity increase in other industrial sectors.⁴²

A 21st-century skill guarantee for all New York workers would also increase public resources. Researchers estimate that increasing the number of U.S. adults with middle-skill credentials by 10 percent would increase federal tax revenue by \$14 billion,⁴³ and would save the federal government up to \$2,500 per person in reduced reliance on public assistance programs.⁴⁴



CONCLUSION

Middle-skill workers are at the heart of the nation's economic recovery, and they will serve as the backbone of New York's economy for years to come. They will repair the state's roads and bridges, care for the sick and elderly, transport goods, keep New York communities safe, and provide a host of other services residents rely on daily.

As state and federal policymakers debate job creation strategies and continue to invest in the nation's recovery, they must recognize training as a vital component. Training does not directly create jobs, but it ensures that New York's longstanding and emerging industries and workforce have the proper skills for the greatest portion of jobs in its economy. In the short term, New York's workforce must be ready to meet demand as the economic recovery begins to take hold and new middle-skill jobs are created. In the long run, New York must provide training and education needed to maintain economic productivity.

New York needs greater investments and focus on middle-skill education and training as well as the basic skills education needed to achieve that training so that all residents have the opportunity to improve their skills and advance in their careers. Without these education and training opportunities, businesses and communities will suffer from a lack of qualified workers and economic recovery will be slowed.

It is time for a bold, visionary step that will ensure all New York workers can be a part of economic recovery and secure the state's place in a 21st-century economy. At a handful of key moments in the nation's history, visionary leaders have raised the basic level of education guaranteed to all Americans to keep pace with a changing economy and remain competitive. The shift toward universal high school in the early 20th century and the GI Bill a few decades later are past examples that yielded enormous benefits for the country.

New York can do it again by guaranteeing that all its residents have access to at least two years of postsecondary education or training. This should be the guiding vision for New York's economic and education policy. It would provide the state's workers and businesses with the skills they need not only to rebuild and recover, but to compete in an increasingly competitive global marketplace.

How will New York do this? Leaders from the business, labor, and training communities are ready to roll up their sleeves and make it happen, if they are supported by strong political leadership and commitment. It is time for New York policymakers, educators, unions and businesses to unite with others around the country around this new vision, to champion the policies and strategies necessary to ensure that New York recovers and thrives, and that its workforce is at the forefront of the innovation economy.

APPENDIX: METHODOLOGY

Table 1 and Figure 1: Data from the Bureau of Labor Statistics.⁴⁵ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.⁴⁶

Table 2 and Figure 2: Based on occupational projections for 2008-2018 by the New York State Department of Labor.⁴⁷ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.

Figure 3: Data from the Bureau of Labor Statistics (BLS).⁴⁸ Occupations divided into skill levels (high, middle, low) based on educational attainment requirements as defined by BLS. Because BLS does not classify occupations as green jobs or not, this section of the report assumes that the skills distribution in green jobs is the same as the skills distribution that occurs across all related occupations.

Table 3: Based on occupational projections for 2008-2018 by the New York State Department of Labor using a recategorization of occupations according to BLS Education and Training Categories.⁴⁹ Jobs requiring at least moderate-term on-the-job training, related work experience, a post-secondary vocational award, or an associate's degree were classified as middle-skill.

Figure 4: Based on occupational estimates for 2009 by the Bureau of Labor Statistics, and December 2009 Current Population Survey (CPS) data on educational attainment by state.⁵⁰ Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007. Only workers in the labor market and at least 25 years of age (i.e., past traditional school age) are counted.

Figures 5, 6 and 7, and Table 4: Based on Current Population Survey (CPS) data for June 1995 and 2010⁵¹ along with population projection data⁵² by RAND California Statistics and labor force estimates⁵³ by the Bureau of Labor Statistics.

1995, 2010 and 2025 Educational Attainment: Past years educational attainment data reported only for workers in labor force and aged 25 and over, using CPS data. 2025 projections calculated using static educational attainment model presented in Hanak and Baldassarre, 2005.⁵⁴ In that model, educational attainment figures are calculated for the state's current workers (workers aged 25-49 in 2010) for each of 12 different race, ethnicity, gender and age cohorts. Educational attainment for these cohorts is assumed to be static over the ensuing 15 years (2025), and educational attainment for new cohorts of workers (ie, younger than 25 years in 2010) is assumed to mirror that of similar age-race-gender groups today. As such, changing educational attainment throughout the state's population is calculated based on projected demographic changes in the composition of the working population, and does not take into account possible changes in behavior, immigration, et.al.

Figure 8: Data from long-term population projections (2010 to 2025) by age cohorts, as calculated by RAND California Statistics.⁵⁵ Each cohort was either classified as a "current working age adult" or "not a current working age adult" based solely on age. Current working age was defined as ages 20 to 64.

ENDNOTES

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