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MASSACHUSETTS' FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21ST-CENTURY ECONOMY

July 2010

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ACKNOWLEDGMENTS

Massachusetts' Forgotten Middle-Skill Jobs was written for the Skills2Compete-Massachusetts 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 Ford Foundation, Joyce Foundation, W.K. Kellogg Foundation, Charles Stewart Mott Foundation, and Annie E. Casey Foundation.

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EXECUTIVE SUMMARY

With an innovation-driven economy backed by a strong history of manufacturing and more recent growth in the health care, education and professional services sectors, Massachusetts is well positioned to thrive in the 21st-century economy. However, gaps in the skills of the workforce and in the Commonwealth's training and education policies threaten to undermine these opportunities.

Middle-skill jobs represent the largest share of jobs in Massachusetts—some 44 percent—and a substantial share of future job openings. Middle-skill jobs are those that require more than a high school diploma but not a four-year degree. Prior to the recession, Massachusetts was experiencing shortages of middle-skill workers in crucial industries. Although the state has lost jobs across all skill levels due to the economic downturn, this has not fundamentally changed the structure of Massachusetts' labor market—the majority of all jobs still require more than a high school level of education. As the country and Massachusetts enter into recovery, new jobs will be created, many requiring middle-skill credentials. With high unemployment in the Commonwealth, now is precisely the time to ensure Massachusetts is training its residents for these 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 Massachusetts' workforce in the year 2020 were already working adults in 2005—long past the traditional high school-to-college pipeline.

Who are middle-skill workers? They are the construction workers who build and repair Massachusetts' homes, bridges, and roads. The high-tech manufacturing workers keeping the state competitive in an increasingly global industry. The nurses and health care technicians who care for Massachusetts' residents and their loved ones. Truckers who keep stores and hospitals in the Commonwealth supplied. IT professionals who keep the state's financial and professional services up and running. EMTs and paramedics who provide care and assistance in times of crises. Computer support specialists that help keep data systems running. Biotech workers that help manufacture critical new drugs.

Federal recovery efforts are investing in current and new industries, saving and creating new jobs. Much of this funding is being targeted at industries dominated by middle-skill jobs, especially green technology, construction, advanced manufacturing, and transportation. Matching the skills of Massachusetts' workforce to meet immediate demand will help the state's economy recover more quickly and prepare the Commonwealth for better times ahead. But it does not end there. As the economy recovers, retirement of large numbers of baby boomers will keep demand for middle-skill workers high for years to come.

Massachusetts has made significant investments in education and training for its workforce, especially in K-12 education, basic skills, and incumbent worker training. However, the Commonwealth has under-invested in public higher education and vocational/technical training—two critical components of the state's training infrastructure that must be better aligned to meet industry demand for middle-skill workers. Massachusetts must develop affordable pathways to postsecondary education and training for all residents, including those with very low skills and incomes, and address the gaps that often exist between adult basic education, postsecondary training, and industry-specific skills training. Massachusetts must also

make significant investments in programs that will train many more residents who are laid off, or working in low-skill jobs, for better middle-skill jobs and careers.

While there is currently a labor surplus, it is undeniable that the Commonwealth's knowledge economy, when it recovers from the recession, will be built and sustained by workers who have at least some postsecondary education and training. In addition, with Massachusetts' high cost of living, workers will increasingly need these skills to earn a livable wage to support themselves and their families.

Massachusetts must do everything in its power to grow and sustain the businesses that create middle-skill jobs and prepare its workers to fill these jobs. Training more middle-skill workers is a cost effective, attainable goal, and the states that are first to accomplish this will jumpstart their economies more quickly.

If Massachusetts is to realize its full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. The following vision can shape Massachusetts' workforce and education policies and investments to meet these 21st-century realities:

> ***Every Massachusetts 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 and support needed to pursue such education.*

Guaranteeing up to two years of postsecondary education and training for all Massachusetts workers will benefit the individuals who get that training and strengthen the productivity and health of the state economy, as more workers means more revenue and reduced expenses in the long run. Nationally, a 10 percent increase in the number of adults with middle-skill credentials would increase federal tax revenue by $14 billion[1] and save taxpayers up to $2,500 per person in reduced reliance on public assistance programs.[2]

Businesses, labor, educators, community-based organizations and others must work together on this ambitious goal. Policymakers must step in with strong political leadership and commitment to ensure that Massachusetts has the middle-skill workforce needed to recover and thrive.

INTRODUCTION

Massachusetts' economy changed dramatically over the last several decades, shifting from a predominantly manufacturing-driven to a more diversified knowledge-based economy. With the loss of over one-third of the Commonwealth's historically strong manufacturing base since 1990, a structural shift has taken place in the labor market, with professional, education and health services now representing the sectors with the strongest job growth.[3]

Massachusetts is well positioned to thrive in the 21st-century economy. With a gross state product of $365 billion in 2008, Massachusetts has the thirteenth largest state economy in the nation,[4] with twelve companies ranked in the Fortune 500.[5] The Commonwealth has made significant investments in education and training for its workforce, and as a result 88 percent of Massachusetts residents have at least a high school diploma, and 38 percent have a bachelor's degree or more, both above the national average.[6]

This workforce played a key role in driving the technological innovation that transformed the Commonwealth's economy and contributed to Massachusetts' economic expansion and success in recent years. Although job growth has lessened across all skill levels during the economic downturn, demand will increase as the economy improves and federal and state job creation measures are implemented and take hold. Massachusetts must ensure that its workforce, the key factor in transforming the state into an innovation-driven economy, now has the skills to drive Massachusetts' immediate recovery and long-term economic competitiveness.

Massachusetts is well known for its high-profile, private colleges and universities. These institutions have contributed greatly to the Commonwealth's overall economic success and reputation as a well-educated state, but their strong history of achievement has also overshadowed other essential pathways to postsecondary education for state residents, like community colleges and workforce training. As a result, state policies and investments have not prioritized these pathways. Massachusetts is currently ranked 47th in the nation in per capita state spending on public higher education.[7] Underinvestment in community colleges, public four-year institutions, vocational education, and technical training has left the Commonwealth challenged to prepare its workforce with the skills needed to take advantage of Massachusetts' developing industries, including those in sectors that may be first to benefit from national job creation investments.

HIGHLIGHT 1

What is a middle-skill job?

Some 40 percent all job openings in Massachusetts between now and 2016 will be 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, 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 Massachusetts 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.

While demand for college-educated workers will remain strong in Massachusetts, this report finds that the largest share of jobs in the state today is in fact middle-skill jobs. Middle-skill jobs

are those that require more than a high school diploma but not a four-year degree. This report also finds that middle-skill jobs will continue to comprise close to 40 percent of Massachusetts' total labor market in the foreseeable future.

Despite its highly educated workforce, Massachusetts' investment in middle-skill education and training has fallen short. Prior to the recession, businesses across Massachusetts were experiencing the negative impact of skilled worker shortages on their productivity and growth, as many were unable to hire adequate numbers of qualified workers to fill job vacancies. Even during the current recession, select employers in industries like health care and information technology are still experiencing labor shortages in middle-skill areas. Some sectors like construction, manufacturing, transportation and others are currently experiencing labor surpluses, but as the economy improves, jobs will return. A number of those jobs will look different than they did prior to the recession, requiring workers to retrain and upgrade their skills to take advantage of opportunities in new industries like high tech manufacturing and green technology. In order to attract and retain the businesses that create these jobs, Massachusetts must use this downtime as training time. Investments in both high- and middle-skill education and training are necessary to ensure Massachusetts has the talent needed to help fuel an economic recovery and compete in the global economy. At the same time the Commonwealth must also make investments to improve the basic skills of its low-skill workers.

Massachusetts needs a clear vision to guide efforts to address the educational and fiscal challenges facing the Commonwealth 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 Massachusetts resident must have the 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. Massachusetts must further ensure that every 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.

Massachusetts' need for qualified middle-skill workers today is greater than ever before. As the economy begins to recover, existing job vacancies will need to be filled. As a result of private and public recovery investments, industries with predominantly middle-skill jobs, such as clean energy, manufacturing and transportation, are expected to see growth. Matching the skills of the state's workforce to industries experiencing immediate demand will help Massachusetts' economy recover more quickly, take advantage of the resulting job creation, and prepare the state for better times ahead.

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

MASSACHUSETTS' FORGOTTEN MIDDLE-SKILL JOBS

Conventional wisdom holds that our 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 high-skill jobs requiring a college education are the only key 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 60s 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. And nearly half (about 45 percent) of all job openings between 2004 and 2014 will be at the middle-skill level. This compares with one-third of job openings in high-skill occupational categories and 22 percent in occupations requiring no more than a high school degree.[8]

This national picture holds true in Massachusetts. Nearly half of all Massachusetts jobs in 2008 —44 percent—were middle-skill jobs, representing more than 1.4 million workers (Fig. 1, Table 1). In the decade between 2006 and 2016, 38 percent of projected job openings will be middle-skill jobs. This far exceeds low-skill job growth and is comparable with high-skill jobs, which will account for 23 percent and 39 percent of projected openings respectively (Fig. 2, Table 2).

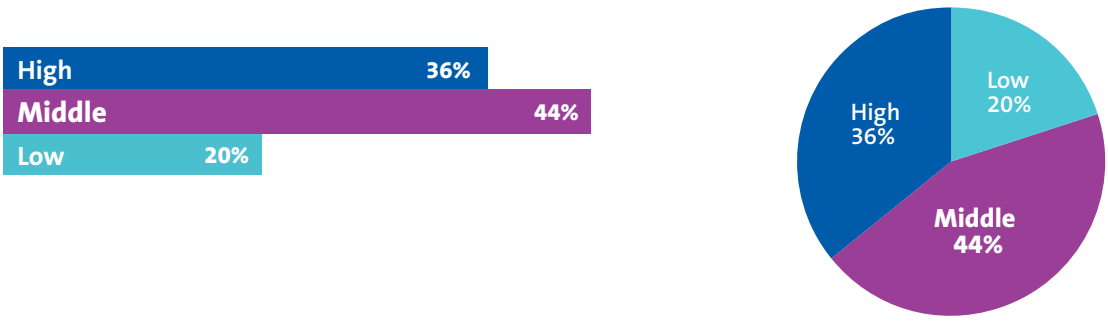
Over the long-term, economic recovery investments and the state's need to make critical infrastructure improvements will likely result in the creation of middle-skill jobs building and repairing roads, bridges, schools and public facilities. These jobs will help put thousands of people back to work, but at the same time, Massachusetts needs to look toward the future. Massachusetts has a population older than more than half the other states in the U.S.[9] Recent studies have also shown that, but for an increase in the population that is 55 and over, Massachusetts' labor force is declining or not growing.[10] The state must invest in a pipeline of trained middle-skill workers to meet the Commonwealth's long-term needs as workers retire, including strategies that help retain older workers and train middle-skill workers to take on new jobs or responsibilities as work is redesigned.

Although over 40 percent of college enrollees are over 25, and similar proportions attend two-year institutions and study part-time, most federal and state education and financial aid policies still focus on traditional student pipelines to four-year degrees without proportionate attention to adults seeking credentials for middle-skill jobs.[11] Massachusetts cannot afford to ignore the education and training investments needed to ensure that workers have the skills to succeed in these vital occupations. And while workforce agencies do focus on middle-skill training, they are often under-resourced and not well integrated with higher education.

This represents a lost opportunity to invest in our economy. Middle-skill job training is more attainable and affordable for many workers and students, and employers are often willing to help foot the bill when the training is directly applicable to an employee's increased productivity and responsibility in the workplace.

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

FIGURE 1. Massachusetts Jobs by Skill Level, 2008



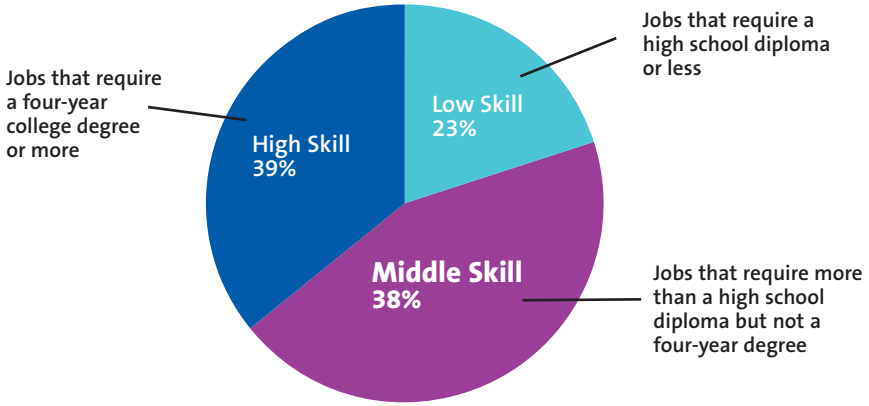
Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

TABLE 1. Massachusetts Jobs by Skill Level, 2008

	Employment	Percent
Total, All Occupations	3,234,860	100.0%
Management	185,940	5.7%
Business and Financial	171,590	5.3%
Professional and Related	820,170	25.4%
Total, High Skill	*1,177,700*	*36.4%*
Sales and Related	334,150	10.3%
Office and Administrative Support	547,620	16.9%
Construction	108,160	3.3%
Installation and Repair	103,220	3.2%
Production	173,110	5.4%
Transportation and Material Moving	161,800	5.0%
Total, Middle Skill	*1,428,060*	*44.1%*
Service Occupations	626,390	19.4%
Farming, Fishing, and Forestry Occupations	2,700	0.1%
Total, Low Skill	*629,090*	*19.5%*

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

FIGURE 2. Massachusetts' Total Job Openings by Skill Level, 2006-2016



Source: Calculated by National Skills Coalition from the Massachusetts Executive Office of Labor and Workforce Development. Total number of job openings over the ten year period, including new jobs and replacement jobs created by retirement and turnover.

TABLE 2. Massachusetts Jobs and Total Job Openings by Skill Level, 2006-2016

	Employment		Job Openings	
	2006	2016	Number	%
Total, All Occupations	3,454,420	3,671,070	1,047,980	100.0%
Management	223,810	230,800	59,510	5.7%
Business and Financial	188,950	209,010	53,640	5.1%
Professional and Related	856,160	975,160	293,630	28.0%
Total, High Skill	*1,268,920*	*1,414,970*	*406,780*	*38.8%*
Sales and Related	361,890	369,880	122,280	11.7%
Office and Administrative Support	567,950	575,580	148,010	14.1%
Construction	136,110	135,240	24,820	2.4%
Installation and Repair	109,260	110,670	21,060	2.0%
Production	181,530	162,480	37,010	3.5%
Transportation and Material Moving	173,300	172,360	42,890	4.1%
Total, Middle Skill	*1,530,040*	*1,526,210*	*396,070*	*37.8%*
Service Occupations	653,130	727,440	244,510	23.3%
Farming/Fishing/Forestry Occupations	2,330	2,470	640	0.1%
Total, Low Skill	*655,460*	*729,910*	*245,150*	*23.4%*

Source: Calculated by National Skills Coalition from the Massachusetts Executive Office of Labor and Workforce Development.

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.

However, these highly skilled professionals aren't the only STEM workers in short supply. Employers have indicated there is a significant shortage 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 less than a four-year degree.[12]

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."[13]

The story is similar in Massachusetts. A 2009 report notes a mismatch between labor market demand and associate's degrees awarded, exacerbating the Commonwealth's existing skills gap. Despite steady job growth in the STEM and health services sectors, degrees conferred in these fields have decreased while degrees in low-demand industries have grown.[14] Steps have been taken to address this issue within the PreK-16 education system though the Department of Higher Education's STEM Pipeline Fund, but there is no equivalent program targeted toward those already in the workforce in need of skills training to take advantage of STEM-related careers.

Employers in the information technology, bio-pharmaceutical, and life sciences sectors have all noted the difficulty of finding qualified workers.[15] If Massachusetts is to sustain its increasingly important innovation economy, including these sectors, 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 Massachusetts.

THE FACE OF MASSACHUSETTS' MIDDLE-SKILL JOBS

Massachusetts relies on middle-skill jobs. Middle-skill workers are the EMTs who keep the Commonwealth safe. They are the precision manufacturers in Western Massachusetts who keep the state's manufacturing industry competitive. They are the registered nurses keeping North Shore residents healthy. They are the early childhood educators preparing Hampden County children for future educational success. They are the IT specialists and computer programmers supporting Boston's financial sector. They are the air traffic controllers, electricians, and mechanics who keep the Commonwealth's infrastructure up and running. They are local, hands-on jobs, meaning they are unlikely to be outsourced to other countries.

Many of these are well-paid jobs, offering Massachusetts 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 Massachusetts' overall median for 2008 of $39,700.

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.

Massachusetts research supports the connection between many middle-skill jobs and good wages. The 2010 Hot Jobs reports lists eleven "hot jobs" throughout the Commonwealth in areas such as computer and data systems, health care, protective services and sales. These are careers that require two years of postsecondary education or less and have a high vacancy rate. All of these middle-skill jobs pay a family-sustaining wage, which according to the Massachusetts Economic Independence Index is, on average, $61,618 for a single-parent household of three, well above the state's median income of $39,700.[16]

At the national level, the data tell a similar story about the connection between middle-skill jobs and good wages. Between 1997 and 2005, American workers on the whole saw an overall real wage increase of just 5 percent (adjusting for inflation). At the same time, many middle-skill occupations saw significantly higher wage increases.[17]

TABLE 3. Projected Massachusetts Demand for 30 Middle-Skill Occupations, 2006-2016

	Employment		Net Change		Job Openings	Median Earnings
	2006	2016	Number	%		2008
Computers and Engineering						
Civil Engineering Technicians	780	840	60	7.7%	220	$51,570
Computer Support Specialists	17,360	18,420	1,060	6.1%	6,420	$54,810
Computer Specialists, Other	2,670	2,800	130	4.9%	840	$76,000
Industrial Engineering Technicians	2,070	2,210	140	6.8%	540	$49,130
Construction						
Building Inspectors	2,790	3,060	270	9.7%	790	$49,270
Carpenters	29,140	29,220	80	0.3%	4,020	$51,210
Painters	7,050	7,170	120	1.7%	1,370	$36,920
Healthcare						
Dental Hygienists	5,530	6,680	1,150	20.8%	2,200	$75,800
Diagnostic Medical Sonographers	1,140	1,280	140	12.3%	300	$72,870
Licensed Practical Nurses	17,450	19,500	2,050	11.7%	6,800	$49,490
Medical Lab Technicians	7,220	8,180	960	13.3%	2,050	$37,170
Physical Therapist Assistants	2,000	2,530	530	26.5%	790	$47,750
Radiation Therapists	540	660	120	22.2%	200	$82,200
Radiology Technicians	5,980	6,690	710	11.9%	1,520	$66,690
Surgical Technologists	1,870	2,290	420	22.5%	990	$42,350
Installation, Maintenance, and Repair						
Auto Body Repairers	4,570	4,690	120	2.6%	1,200	$43,110
Auto Mechanics	16,640	17,120	480	2.9%	3,810	$38,730
Boat Mechanics	920	1,010	90	9.8%	280	$44,010
Bus/Truck Mechanics	4,280	4,520	240	5.6%	1,180	$44,930
Industrial Machinery Mechanics	3,550	3,690	140	3.9%	730	$47,230
Mobile Heavy Equipment Mechanics	1,700	1,740	40	2.4%	370	$46,240
Public Safety						
Detectives	1,400	1,570	170	12.1%	480	$70,440
Emergency Medical Technicians	4,950	5,730	780	15.8%	1,350	$34,200
Fire Fighters	12,710	13,240	530	4.2%	5,160	$49,210
Police Officers	16,480	17,080	600	3.6%	5,000	$53,680
Other						
Chemical Technicians	2,180	2,480	300	13.8%	1,030	$43,370
Claims Adjusters	8,280	8,400	120	1.4%	2,230	$58,990
Heavy Truck Drivers	27,190	28,200	1,010	3.7%	5,830	$41,070
Legal Secretaries	7,150	7,770	620	8.7%	1,750	$47,770
Paralegals	8,140	9,720	1,580	19.4%	2,660	$49,250

* 2008 median annual earnings for all occupations in Massachusetts = $39,700
Source: Projections data tabulated using data from the Massachusetts Executive Office of Labor and Workforce Development. Median Earnings data from the Bureau of Labor Statistics.

HIGHLIGHT 4

The Middle of the Green Revolution

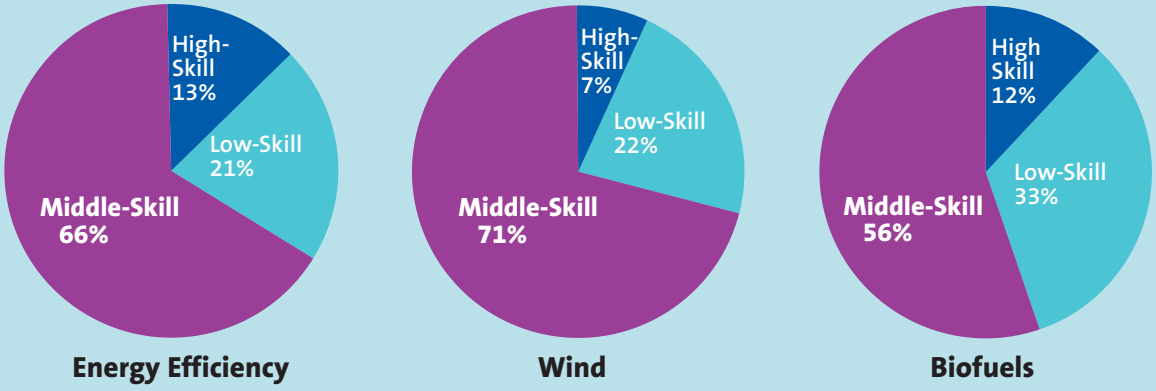
More than ever before, policymakers and business leaders are paying attention to clean energy industries and technologies, which promise profound environmental and economic benefits for all Americans. One of the highest priorities in federal and state economic recovery policies has been strong investment in creation of a "green economy" and "green jobs." Energy efficiency, solar, and energy storage are clean technology areas that have been identified as places where Massachusetts has the opportunity to play a leadership role and there is job growth potential.[18]

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.[19]

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 US Bureau of Labor Statistics website.

With a statewide clean energy policy—the 2008 Green Jobs Act—driving investment and job creation in the clean and green sectors, Massachusetts is on the leading edge of the green revolution. In fact, the 2009 Clean Tech Job Trends report ranked Massachusetts' Boston-Worcester-Lawrence-Lowell-Brockton metro area fourth in the nation for clean technology job activity.[20]

Many of the openings in top clean technology sectors are middle-skill jobs, requiring education and training beyond high school, but not a four-year degree. In particular, growth in clean-tech manufacturing is providing new opportunities to communities suffering the loss of traditional manufacturing jobs.

The 2008 Green Jobs Act is a statewide effort to encourage the growth of the clean energy industry, create green jobs and to provide job training opportunities. The Pathways out of Poverty Green Collar Job Training Grants authorized under the Green Jobs Act support job training initiatives intended to create career pathways in the clean energy industry for low- and moderate-income individuals that lead towards economic self-sufficiency.

The Massachusetts Clean Energy Center (CEC), also created by this legislation, is now leading efforts to support business and job growth in renewable energy and energy efficiency. In 2009,

the CEC supported the creation of MassGREEN, a coalition of community colleges building out a set of standardized curriculum across all fifteen college campuses and seeding career pathways. The CEC has also made grants to increase the capacity of training programs in the sector and is working with the Executive Office of Labor and Workforce Development on the U.S. Department of Labor funded State Energy Sector Partnership grant.

In January 2010, Massachusetts adopted three-year electric and gas energy efficiency plans under the Green Communities Act of 2008. The intent of these plans is to improve commercial and residential energy efficiency. A report by the Apollo Alliance estimates that this three-year, $1.4 billion investment by the Commonwealth has the potential to create more than 23,300 jobs, many in the middle-skill construction sector.[21]

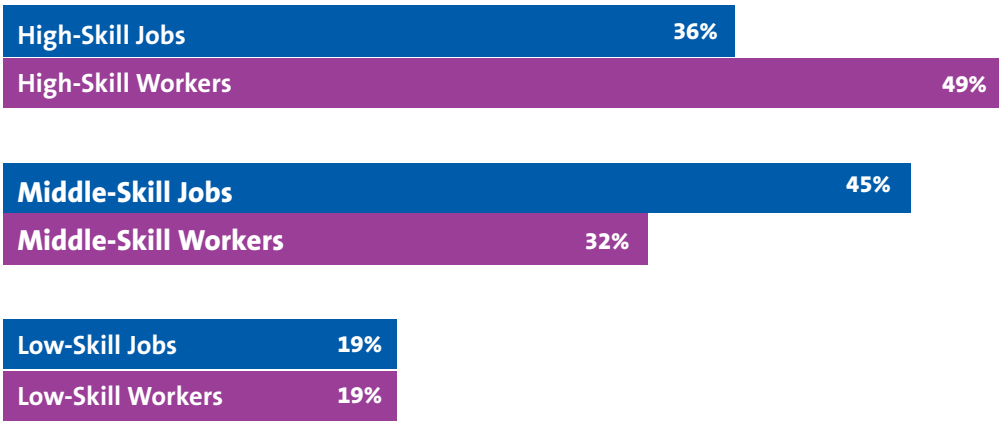
MASSACHUSETTS' MIDDLE-SKILL GAP PAST AND FUTURE

Massachusetts' economic recovery and long-term future depend in part on creating more middle-skill jobs, retaining businesses that employ middle-skill workers, and training low-skill workers and youth to fill middle-skill jobs. Those middle-skill jobs are going to comprise the largest portion of employment and worker-generated economic activity in the Commonwealth.

Massachusetts has been experiencing a shortage of middle-skill workers (Fig. 4). **In 2007, about 45 percent of all jobs were classified as middle-skill, but only 32 percent of Massachusetts 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 Commonwealth, and that those businesses were unable to commit to deliver a new product, secure the contract on a new pharmaceutical trial, or expand the dental office to serve more patients. Middle-skill workers provide the fuel for industries that are and will be essential to keeping businesses in Massachusetts and enhancing the state's economic portfolio.

Massachusetts' Skills Mismatch: A Middle-Skill Gap

FIGURE 4. Massachusetts' Jobs and Workers by Skill Level, 2007



Sources: Massachusetts Department of Workforce Solutions and US Census Bureau.

Massachusetts, like the nation, is experiencing high levels of unemployment due to the current economic downturn. As the Commonwealth moves into recovery, 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. Massachusetts needs to use this recessionary time 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 Recovery Act dollars flow to projects

throughout the state, a major portion of the resulting job growth is projected to 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 right now to ensure Massachusetts' workforce will be trained and ready to be part of the economic recovery.

Massachusetts' middle-skill challenge is exacerbated by problems at 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, even as demand for those workers rises. At the low end Massachusetts has a growing number of residents who lack the basic reading, math and other skills needed to qualify for middle-skill training programs.

Greater Pain in High Demand Industries

State and regional data underscore the challenges facing Massachusetts. In addition to an overall mismatch between labor market demand and supply, particular sectors are experiencing greater shortages. Massachusetts' health services and information technologies industries, two of the state's growing sectors, show robust demand for middle-skill workers.

According to Massachusetts' job vacancy report for the fourth quarter of 2009, the health care and social services industry posted more jobs in 2009 than any other industry in the Commonwealth.[22] Accounting for 23 percent of all open-for-hire positions in the state in 2009, this industry continues to show demand despite the current economic climate.

Several occupations within the health care sector also made the 2010 Hot Jobs Report. Registered nurses, radiologic techs and diagnostic medical sonographers were all listed as in-demand middle-skill jobs with high vacancy rates.[23] These jobs pay wages well above the state's median income and offer opportunities for career advancement with additional education and training.

The information technology industry in Massachusetts employs 5.5 percent of the state's workers.[24] While many jobs in this industry do require a bachelor's degree or more, an estimated 60,000 Massachusetts workers currently in this field have an associate's degree or less.[25] With twelve out of the thirteen information technology occupations expected to see job growth between 2006 and 2016, entry level jobs in this industry can provide a ladder to career advancement with additional training and education.

A recent report by the University of Massachusetts Donahue Institute for Economic and Public Policy Research found that many jobs in the information technology sector fared better during the economic downturn, with unemployment rates for workers in this industry to be half the rate of other occupations in the state. State investments in training to prepare workers for these jobs will be critical to ensuring this sector has the steady pipeline of workers needed to continue to grow.

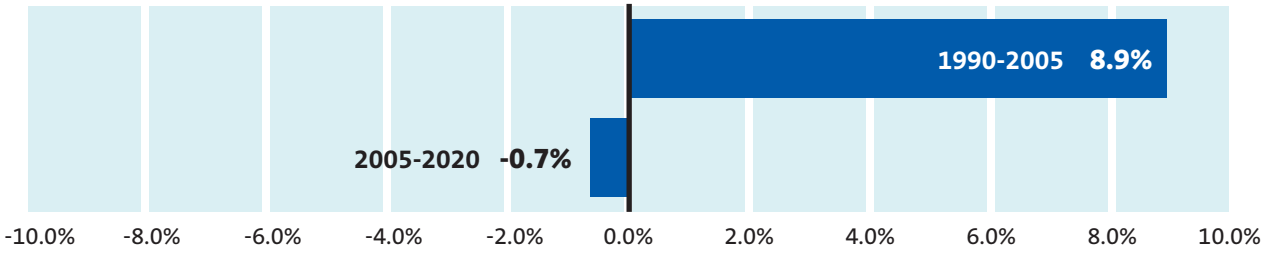
Massachusetts Educational Projections: A Continuing Middle-Skill Challenge

Massachusetts educational projections (Figs. 5, 6 and 7) suggest that the Commonwealth is likely to see a shortage of middle-skill workers in the future. During the fifteen years between 1990 and 2005, the Commonwealth saw an increase in residents with educational attainment at the high-skill level and a decrease in those at the low-skill level. Residents with middle-skill education also fell. **Massachusetts' projected education trends for the subsequent fifteen years suggest that middle-skill worker shortages will continue.** The proportion of high-skill workers in Massachusetts' workforce is likely to fall somewhat, and while the percentage of middle-skill workers is projected to increase slightly, it will not be enough to keep pace with increased demand for middle-skill credentials in the labor market.

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, because of the physical demands of their jobs. While this trend like other retirement trends was slowed during the recession it is also expected to pick up as the economy rebounds. Immigration trends are likely to do little to offset this loss of middle-skill workers, as most workforce growth in the Commonwealth due to immigration will likely occur at the low-end of the skill spectrum or at the high-end of the skill spectrum (for example, engineers brought in from overseas through H-1B visas).

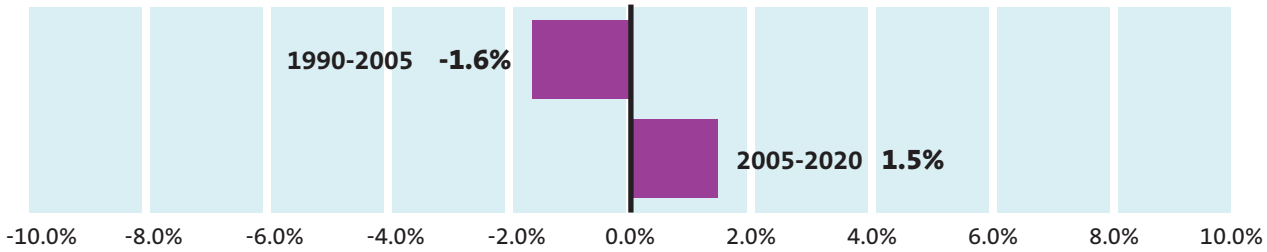
If not addressed, these educational trends will only make it harder for Massachusetts businesses to meet their needs from the Commonwealth's available workforce, stifling economic recovery and growth, while limiting opportunity for thousands of Massachusetts workers to advance within the Commonwealth's economy.

FIGURE 5. Percentage Change in High-Skill Massachusetts Workers, 1990-2020



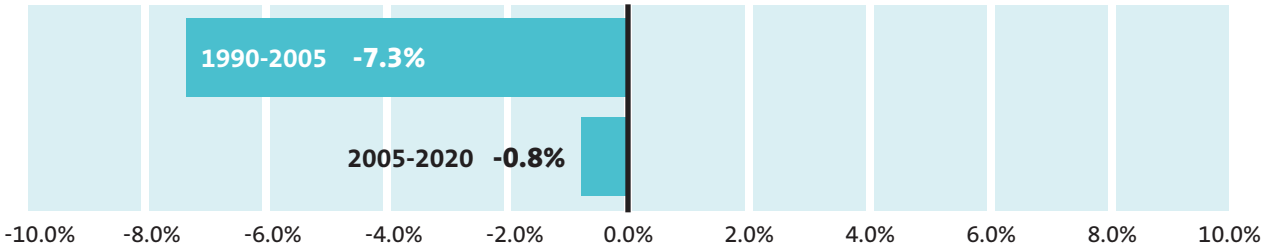
The number of workers prepared for high-skill jobs rose by nearly 9 percent between 1990 and 2005. However, their ranks are expected to fall by close to one percent by the year 2020 (Fig 5, Table 4).

FIGURE 6. Percentage Change in Middle-Skill Massachusetts Workers, 1990-2020



The number of workers prepared for what is the largest share of jobs in the Commonwealth—middle-skill jobs—fell by 1.6 percent from 1990 to 2005. Their ranks are projected to rise only slightly, by 1.5 percent, by the year 2020 (Fig 6, Table 4).

FIGURE 7. Percentage Change in Low-Skill Massachusetts Workers, 1990-2020



After falling by over 7 percent since 1990, the number of workers educated at the low-skill level is expected to level off, falling by less than one percent by the year 2020 (Fig 7, Table 4).

Sources, Figures 5-7: 1990-2005 attainment calculated by National Skills Coalition using December 1990 and 2005 CPS data. Current attainment calculated by National Skills Coalition using December 2005 CPS data. 2020 attainment projected by National Skills Coalition using demographic data from the December 2005 CPS and population projections calculated by RAND California Statistics.

TABLE 4. Actual and Projected Change in Massachusetts Workers across Skill Levels, 1990 - 2020

	1990	2005	2020	Change 1990-2005	Change 2005-2020
Low-Skill	26.5%	19.2%	18.5%	-7.3%	-0.7%
Middle-Skill	36.4%	34.7%	36.2%	-1.7%	1.5%
High-Skill	37.1%	46.1%	45.3%	9.0%	-0.8%
Low-Skill	855,102	648,557	613,918	-206,545	-34,639
Middle-Skill	1,174,555	1,172,131	1,201,288	-2,424	29,157
High-Skill	1,197,143	1,557,212	1,503,269	360,069	-53,943
Total	**3,226,800**	**3,377,900**	**3,318,475**	**151,100**	**-59,425**

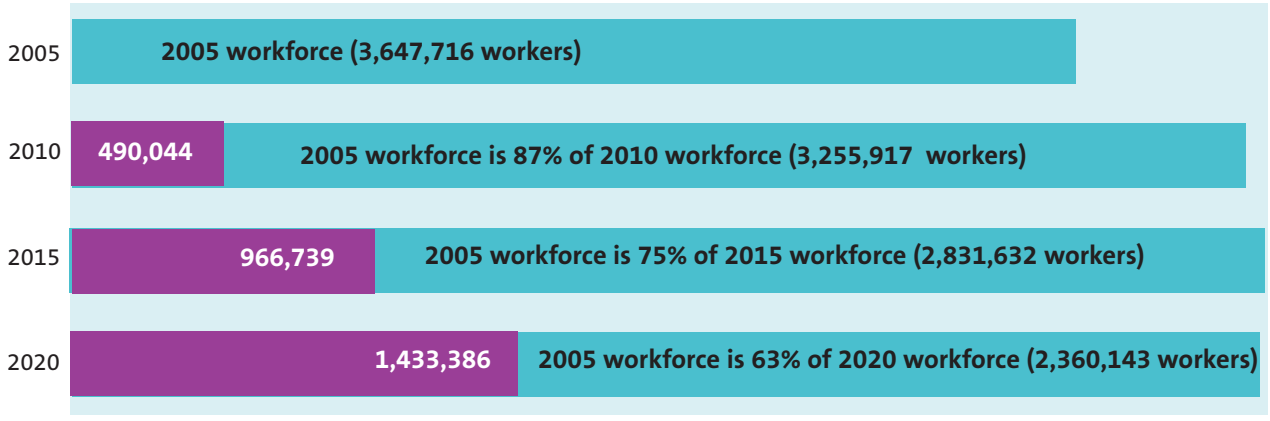
Source: Current and past attainment calculated by National Skills Coalition using December 1990 and 2005 CPS data. Current and past total labor force estimated by the Massachusetts Executive Office of Labor and Workforce Development. 2020 attainment projected by National Skills Coalition using demographic data from the December 2005 CPS and population projections calculated by RAND California Statistics.

The Middle-Skill Gap and Massachusetts' Future Workforce

Massachusetts cannot address its middle-skill challenges by focusing its education and training dollars solely on the next generation of workers who are coming out of high school. The fact is that **nearly two-thirds of the people who will be in Massachusetts' workforce in the year 2020 were already working adults in 2005-long past the traditional high school-to-college pipeline** (Fig. 8).

Massachusetts' Workforce of Tomorrow is in the Workforce Today

FIGURE 8. Working Massachusetts Adults Age 20-64 in the Current and Projected Population, 2005-2020



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

Massachusetts should take proactive policy action to realign its workforce and educational resources to better meet the Commonwealth'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 Massachusetts 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 Commonwealth's economy.

An Even Greater Basic Skills Crisis?

The national data supporting education demand projections probably underplays the need for more broadly based basic skills education.[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, Massachusetts faces substantial challenges when it comes to basic skills. In 2003, 10 percent of Massachusetts residents lacked basic prose literacy skills.[28] Over 400,000 Massachusetts residents do not have a high school diploma; and with much of the only population growth occurring via foreign-born residents, over 150,000 have limited or no English speaking ability.[29] Only 5 percent of Massachusetts adults with less than a high school diploma are enrolled in adult basic education, and only 6 percent of residents with limited English proficiency are enrolled in English as a Second Language (ESL) classes.[30]

This evidence suggests that Massachusetts faces severe challenges in meeting the basic skill levels needed to grow its middle-skill workforce. By better aligning adult basic education with industry-focused training, many more Massachusetts residents could prepare to enter and succeed in middle-skill jobs and businesses would have a pipeline of workers to help meet immediate demand. A recent experimental study by Public/Private Ventures on the effectiveness of industry-sector focused training programs found that participants in these programs earned 18 percent more on average, worked more hours more consistently, and were more likely to be employed in jobs with benefits than their control group peers.[31]

Unfortunately, the state's inflation-adjusted spending on basic skills education has fallen by 25 percent over the last decade,[32] and Massachusetts' state-administered adult education programs serves English Language Learners and adults without a high school diploma at much lower rates than the U.S. average.[33]

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 and can be found in many different settings, such as community and technical colleges (including non-credit workforce courses), community-based training organizations, and workplaces.

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 mechanics 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 licensed practical nurse, 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. New apprenticeship programs are also being developed for jobs in the green economy.

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 at a level that allows them to enter these types of education and training, there are program options that teach English, basic reading, and math skills in the context of occupational skills. These programs often connect to a specific job that is on a defined career ladder or to further education that results in a middle-skill credential.

Closing the skills gap in Massachusetts, however, will take more than supporting a list of different training options. The Commonwealth needs to implement an overall strategy and develop pathways to link basic skills, technical/industry-specific training, public higher education programs, and family-sustaining jobs. As part of this strategy the Commonwealth needs to target significantly more resources toward a variety of middle-skill and basic skill training programs based on identified industry needs. Massachusetts must create more flexible, demand-driven systems that provide multiple points of entry for working adults to return to training and education in order to upgrade their skills and earn additional certifications and degrees.

In addition, the Commonwealth should invest in job creation strategies that provide opportunities for the long-term unemployed to go back to work. Massachusetts should take advantage of federal funding for subsidized employment and on-the-job training (OJT) targeting adults and youth that meet income guidelines and should fund transitional jobs programs and summer jobs programs, especially for harder to serve populations like youth, ex-offenders and people with disabilities. Moreover, the state should tie all of these strategies to a goal of increasing the number of workers that can fill middle-skill jobs in the economy.

Massachusetts is making progress toward addressing the Commonwealth's shortage of middle skill workers in some important areas:

Providing education to adult students through a variety of pathways.

- The Educational Rewards Grant for Working Adults, established in 2006, provides low-income working and unemployed adults access to education and training that leads to jobs in high-demand occupations, many of which require middle-skill credentials. A recommendation of the Reach Higher Initiative, the program is unique in that it allows participants to use a portion of the grant to cover living expenses, making it ideal for working and parenting students.[34] In a report released in 2010, the Educational Rewards grants were shown to have helped working adults stay in and complete their educations. As of 2010, 78 percent of grant recipients had either completed a course of study or were still enrolled in classes.[35] Unfortunately, this successful effort has been a victim of state budget cuts and is currently slated to end. Without a base level of support the program network and apparatus will disappear.

- The Extended Care Career Ladder Initiative (ECCLI) addresses the recruitment and retention of nursing staff employed by long-term care providers by providing them with flexible educational opportunities and incentives. ECCLI improves the quality of care for patients while creating career ladders for nursing staff. Since 2000, ECCLI has helped more than 172 nursing homes and home health agencies train over 9,000 individuals. ECCLI sites report improved worker retention rates and reductions in the cost of doing business, while also improving the quality of patient care. Direct-care workers who completed at least one training module have received a wage increase at an average of $0.53 per hour.

- The Commonwealth's Workforce Training Fund (WTF), which businesses pay into through a surcharge on their state unemployment insurance contributions, matches employer contributions to provide grants to businesses to train employees with the skills they need to

keep their workforce competitive. Any employer that pays into the fund is eligible to apply for a grant, and successful applicants must match any WTF grant received dollar for dollar.

Providing resources for training in high growth sectors and critical industries.

- The Workforce Competitiveness Trust Fund (WCTF), which has served over 6,000 people to date, was built on the successes of BayStateWorks and the BEST initiative and seeks to improve the Commonwealth's competitiveness by funding sector/industry partnerships. The Innovative Post-Secondary Education Models grant program under the WCTF seeded postsecondary program models designed to improve the skill level of current and future workers, particularly those experiencing "structural, social, and educational barriers to employment success."[36]

- Other investments include Skill*Works*: Partners for a Productive Workforce, which pools public and private investments to support Workforce Partnerships that focus on specific industry sectors, including partnerships in four of Boston's most important, growing job sectors, including health care, hospitality, property services, and automotive services. These Workforce Partnerships bring together diverse partners to provide effective training to those entering the workforce as well as to workers stuck in jobs with little opportunity for advancement. The partnerships also work to ensure that businesses have employees who meet their needs.

Investing in occupational and workplace-based basic skills education and ESOL.

- Massachusetts has taken steps to ensure that underemployed workers who do not have the necessary basic skills to enter postsecondary education and training can access an educational pathway to a skilled job. Through the Commonwealth's Adult Basic Education/English for Speakers of Other Languages (ABE/ESOL) program, the state is working to increase the capacity of the Commonwealth's workforce system to help low-skilled and low-English proficient adults achieve success in the labor market. Specifically, the Learn@Work program blends workforce and education dollars in an innovative grant program that allows employers to apply for grants to provide ESOL classes at the work place.

These are important pieces of a strategy to address the Commonwealth's need for middle-skill workers, but more must be done.

HIGHLIGHT 5

Exemplary Middle-Skill Education and Training Programs in Massachusetts

These are just a few examples:

Faced with a growing skills gap between demand for workers in the health services sector and the supply of qualified workers, the Healthcare Training Institute offers a collaborative model designed to increase educational opportunities for low-wage adults in the health care and research industry. The program provides on-site career entry and career ladder opportunities in addition to support services to help participants overcome employment barriers.

For young adults interested in developing the skills needed to enter into full-time employment or high education, Year Up Boston provides a one-year, intensive training program for high school graduates and GED recipients ages 18 to 24 years old from the Greater Boston area. Combining technical and professional skills, college credits, an educational stipend and corporate internship, this unique program has achieved a high success rate in placing graduates in full-time employment in the financial services and information technology industries.

Incumbent construction workers and those in need of basic and English language skills (ESOL) can look to Greenfield Community College for green technology training opportunities. The college is partnering with labor, employers, environmental groups and others to offer a one-year certificate in Renewable Energy/Energy Efficiency and eligibility to sit for industry-based exams such as the North American Board of Certified Energy Practitioners (NABCEP) Photovoltaic Basic Knowledge exam. This credentialing gives workers in the currently competitive construction industry a leg-up, and helps Massachusetts employers to meet the growing demand for renewable production and services.

A 21st-Century Skill Guarantee

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

> ***Every Massachusetts 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 and support needed to pursue such education.***

This is an ambitious goal, but not an unprecedented one. Throughout the nation's history, federal and state policymakers have elevated educational guarantees to meet the changing skill requirements brought on by economic and technological change. And, indeed, leaders in Massachusetts have already taken some steps to address similar challenges in the 21st century. Governor Deval Patrick's proposal to provide two years of community college free to every

Commonwealth resident was one bold step, though budget realities have challenged this vision.[37] Nevertheless, more can and should be done to better prepare a middle-skill workforce.

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 high school education is now understood as one of the fundamental guarantees the United States makes to its citizens.

By the middle of the 20th century, society realized that postsecondary education and training would allow the United States to flourish. 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.** As such, a broad-based investment in middle skills was a major part of America's post-war prosperity.

State Skill Guarantees

Unfortunately, more recent federal investments in postsecondary education and job training have been in decline. While the Recovery Act 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 dramatically downward.

However, some forward-thinking states and policymakers have been making vital commitments to the skills and economic security of their citizens, recognizing that a new minimum level of skills and education should be made available to state residents.

For example, earlier this year, 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.[38] Additionally, the separate Michigan Promise program

guarantees every new high school graduate a $4,000 scholarship for completing two years of postsecondary education at an eligible state institution.

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. Opportunity Grants can be used 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 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 who get that training, strengthen the productivity of the state economy, and could increase public resources.

Simply put, more education means greater participation in the workforce and higher lifetime earnings. A recent examination of Massachusetts adult learners found that about 84 percent of adults with an associate's degree and 82 percent of adults with some college (but not a degree) participated in the workforce, compared to only 79 percent of adults with a high school education and 61 percent of adults with less than a high school education.[39] **In addition to higher work participation rates, adults with some college averaged about $148,000 more in lifetime earnings than those with only a high school education, and adults with an associate's degree averaged about $367,000 more in lifetime earnings.**[40]

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 earn about 62 percent more than workers with only a high school degree.[41] 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 March 2010 unemployment for workers with less than a high school diploma was 14.5 percent. For those with a high school diploma it was 10.8 percent, while for those who had completed high school plus some college—or middle-skill level—the unemployment rate was 8.2 percent.[42]

A guarantee of access to at least two years of postsecondary education for all workers would increase productivity and earnings in Massachusetts. 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.[43] 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.[44] 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.[45]

A 21st-century skill guarantee for all Massachusetts workers would benefit both the individual and the state. The return on state investments in postsecondary education and training would be sizeable. For example, the Massachusetts Reach Higher Initiative estimates that a Licensed Practical Nurse program with a cost per student of $7,676 would yield a 300% return on investment to the state through increased tax revenue.[46] Washington State's tipping point research shows that the earnings for adults who complete one year of college and obtain a credential are significantly higher than for those who complete a few college courses without a credential, bolstering the case for focusing on middle-skill credentials.[47] Nationally, increasing the number of U.S. adults with middle-skill credentials by 10 percent would increase federal tax revenue by $14 billion[48] and save taxpayers up to $2,500 per person in reduced reliance on public assistance programs.[49]

CONCLUSION

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

As state and federal policymakers debate job creation strategies, training must be seen as a vital component. In the short term, Massachusetts' 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, to maintain economic productivity, Massachusetts must provide training and education needed to meet demand for the greatest portion of jobs in its economy.

Massachusetts 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.

As Massachusetts continues to invest its Recovery Act funding and consider additional job creation tactics, there is a unique opportunity to take a closer look at the Commonwealth's economy and the importance of middle-skill jobs in it. What will Massachusetts do to ensure its education and training policies reflect the reality of the job market?

While Massachusetts has taken some important steps to address the growing shortage of middle-skill workers, **, it is time for a bold, visionary step that will ensure all Massachusetts workers can be a part of economic recovery and secure the Commonwealth's place in a 21st-century economy.** At various times in the nation's history, visionary leaders have adjusted the basic level of education guaranteed to all Americans as a way to adapt to a changing economy and remain competitive. Universal high school and the GI Bill are examples of when we did this with great success in the past.

It is time to do it again by guaranteeing that all Massachusetts residents have access to at least two years of postsecondary education or training. This should be the guiding vision for Massachusetts' economic and education policy. It would provide the Commonwealth'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 Massachusetts 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 Massachusetts 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 Massachusetts 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 (BLS).[50] Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.[51]

Table 2 and Figure 2: Based on occupational projections for 2006-2016 by the Massachusetts Executive Office of Labor and Workforce Development.[52] 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).[53] 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 2006-16 by the Massachusetts Executive Office of Labor and Workforce Development using a recategorization of occupations according to BLS Education and Training Categories.[54] Jobs requiring at least moderate-term on-the-job training, related work experience, a postsecondary vocational award, or an associate's degree were classified as middle-skill.

Figure 4: Based on occupational estimates for 2007 by the Bureau of Labor Statistics, and December 2007 Current Population Survey (CPS) data on educational attainment by state.[55] 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 1990 and 2005[56] along with population projection data[57] by RAND California Statistics and labor force estimates[58] by the Bureau of Labor Statistics.

1989, 2005 and 2020 Educational Attainment: Past years educational attainment data reported only for workers in labor force and aged 25 and over, using CPS data. 2020 projections calculated using static educational attainment model presented in Hanak and Baldasarre, 2005.[59] In that model, educational attainment figures are calculated for the state's current workers (workers aged 25-49 in 2005) for each of 8 different race, ethnicity, gender and age cohorts. Educational attainment for these cohorts is assumed to be static over the ensuing 15 years (2020), and educational attainment for new cohorts of workers (i.e., younger than 25 years in 2005) 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.

Creating Skill Categories Using Educational Attainment Data: Skill attainment categories (high, middle, low) for 1990 created using a reclassification of CPS-reported "grades completed" that parallels the educational attainment categories later used by CPS, and reclassified in this table for current and future years using the same method as in Figure 4, p. 16.

Figure 8: Data from long-term population projections (2000 to 2020) by age cohorts, as calculated by RAND California Statistics.[60] 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.

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