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RB 5368 An Act Concerning No Worker Left Behind and
RB 45 An Act Concerning Higher Education Remediation Programs
Submitted by Dr. Alice Pritchard, Connecticut Women's Education and Legal Fund
March 4, 2010

My name is Alice Pritchard and I am the Executive Director of the Connecticut Women's Education and Legal Fund. Today, I am here on behalf of the Campaign for a Working Connecticut.

The Campaign mission is to promote the state's economic competitiveness through the development of sustainable, effective workforce solutions to increase workers' skills and advance families to self-sufficiency. The Campaign is a unique and diverse state-wide coalition, which includes over forty members consisting of employers, education and training providers, workforce investment boards, advocates, and chambers of commerce.

The Campaign urges your support of *RB 5368 An Act Concerning No Worker Left Behind.*

RB 5368 would provide additional access to training and education for thousands of CT residents. The funding proposed for training programs and 2 and 4 year colleges would provide critical resources to these institutions and allow them to expand their program offerings to greater numbers of interested workers. These institutions are seeing record numbers of enrollees and will need additional resources to make the intent of this bill a reality.

As mentioned in the bill, the emphasis should be on preparing unemployed individuals with training for middle skill jobs that provide good wages and benefits. As part of a national effort, on October 8, 2009, the Campaign released a report documenting the need for middle skill jobs and job training: *Connecticut's Forgotten Middle-Skill Jobs.* The report confirms:

- Middle skill jobs are the backbone of Connecticut's economy. Forty sevent percent (47%) of all jobs in the state require middle skills. These are jobs that require more than a high school diploma but not a four-year university degree. So this includes postsecondary experience such as an associate's degree, an industry credential, apprenticeship or on-the-job training.

- Only 37% of CT's workforce has the education and training required to fill middle skill jobs, in stark contrast to nearly half of all CT jobs requiring these skills.

- And this isn't just a momentary situation. 245,000 openings in the "middle-skill" job market are projected for the state by 2016. While the openings signal new opportunities for Connecticut's workforce to help the state exit the recession, the growing concern is that there will not be an adequate number of skilled Connecticut workers to fill these positions.

And, over the next decade - due to retirement and projected education attainment - the proportion of low-skilled workers in Connecticut's workforce is likely to increase at the same time that the percentage of middle-skill workers is projected to decline. This means the gap will only become deeper if something is not done about it. As a result we are likely to see grave shortages in critical occupations, significantly limiting CT's potential for a full economic recovery.

To illustrate the kind of jobs I'm talking about, they include police officers, fire-fighters, nurses, electricians, and truck drivers. These are local, hands-on jobs, meaning they are unlikely to be outsourced to other countries. Many of these are also good-paying--paying at or above individual median annual earnings for the state. They are also jobs reflective of the new economy, such as careers in advanced manufacturing and clean energy.

Clearly CT – such as the rest of the nation – is in tough economic times. But as the state moves from recession into recovery, employers will likely once again face the challenge of finding quality middle-skill workers, which will slow the pace of economic growth. There are many employers going begging for middle-skill workers even in this economy. Eighty two percent (82%) of employers indicated in a recent CT Business and Industry (CBIA) survey that it was difficult to find qualified workers, especially in these middle skill technical and manufacturing jobs.

With rising unemployment in the state, the recession is precisely the right time to develop a strong middle-skill workforce. Economic downtime in Connecticut should be used to invest in training such as proposed in RB 5368. The provision of free tuition can assist many unemployed individuals in getting retraining to meet the demands of middle skill jobs.

This supports the Skills2Compete-CT vision: that every Connecticut 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.

Connecticut must ensure that its workforce has the necessary education and training to meet not just current but future labor demands. When we talk of "future labor demands", policymakers tend to go straight to K-12 or high school to college conversations. Though these are important discussions, we need to take a hard look at the data on "who is CT's workforce of the future". It turns out – based on population tables –that about 2/3rds of the workforce of 2020 are already in the workforce today--long past the traditional high-school to college pipeline.

If we are to realize CT's full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. A four-year degree is not the *only* ticket to a stable economic future in Connecticut. RB 5368's emphasis on training programs and community colleges, as well as state universities and UCONN recognizes the importance of a range of training opportunities.

The Campaign also urges your support of *RB 45 An Act Concerning Higher Education Remediation Programs.*

We must ensure that every Connecticut resident has access to the basic skills needed to pursue post-secondary education and training. Recent reports have found that while 32,000 individuals are served

through the state's Adult Education system, another 181,000 could be enrolled if resources existed. In addition, 312,000 CT residents with high school diplomas have demonstrated skill deficits in math and English which will limit their ability to pursue middle skill training and employment.

The study proposed in RB 45 can greatly assist the state and its secondary and post-secondary educational institutions in understanding the systemic and individual issues related to remediation. Skill deficits in math and English are major barriers to the pursuit of higher education and career advancement. It is imperative that we identify the causes of these deficits and implement best practices in educational programming to ease the transition to post-secondary education and training. Individuals are languishing in remedial coursework, unable to advance in their academic or professional lives.

A broad range of stakeholder groups should be included in this planning such as secondary and post-secondary educational institutions, training providers, advocates, researchers, employers and state agencies that focus on workforce and economic development. In addition, resources should be allocated to the Department of Higher Education to ensure they can complete the study in a timely manner.

Connecticut's economic success ultimately will depend on its ability to consistently produce a highly skilled workforce with the prerequisite basic and technical skills needed for the 21st century economy. The state must invest in training, education, and skills development programs for those in need of basic and/or technical skill development. Without these skills, many individuals will be unable to meet the growing technological needs of their employers in the knowledge economy.

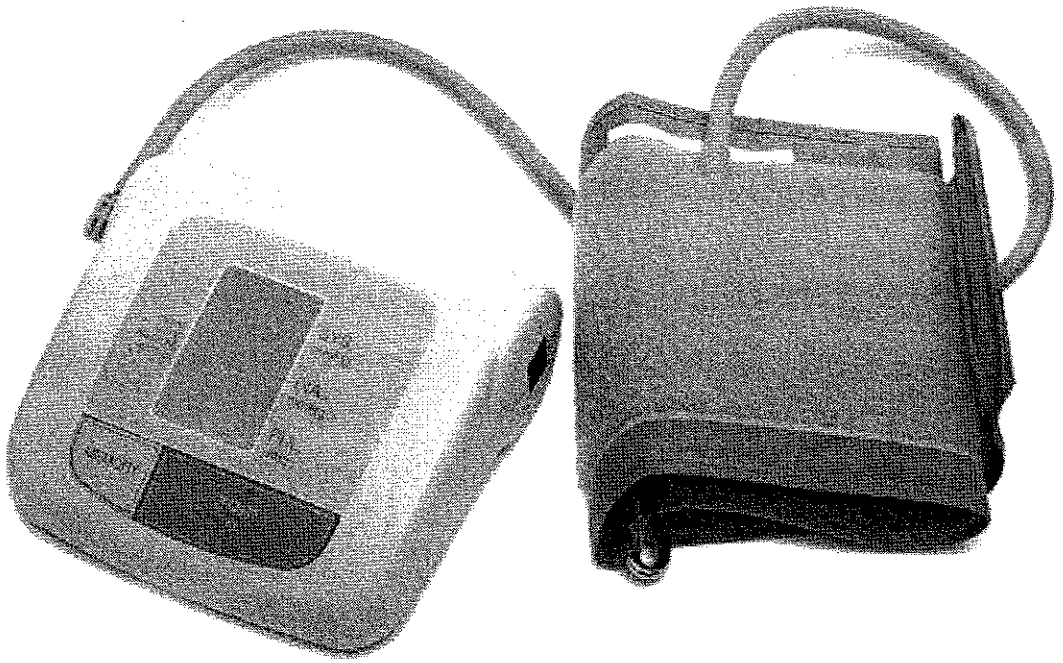
Raised Bills 5386 and 45 are two important initiatives to address the state's need for a skilled workforce.

I have attached a copy of *Connecticut's Forgotten Middle-Skill Jobs* Report for your information. Please feel free to contact me with any questions about the report or the work of the Campaign for a Working CT.

CONNECTICUT'S FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21ST-CENTURY ECONOMY

OCTOBER 2009



Skills2Compete

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To learn more about the Skills2Compete-Connecticut campaign, go to www.Skills2Compete.org/Connecticut

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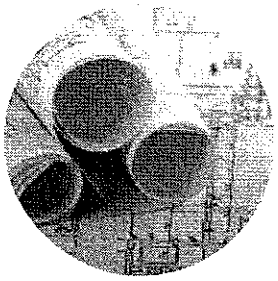


EXECUTIVE SUMMARY

Connecticut is a small state with a dynamic, diverse economy. Known to many as a center of the insurance industry, it is also home to one of the country's most prestigious institutions of higher learning, Yale University. It has a strong maritime tradition and a manufacturing base that includes a well-developed aircraft industry. Health care and retail dominate the state's economy today. Per capita income in the state is the second highest in the country, and completion of high school and secondary education is above the national average.

In other words, Connecticut is in many ways positioned to thrive in the 21st century economy. We have the economic base and creativity to innovate, two key drivers required for economic growth, but is our talent prepared? The data suggests there are troubling gaps in the skills of our workforce and in our training and education policies that threaten to undermine our strengths.

Middle-skill jobs represent the largest share of jobs in Connecticut—some 47 percent—and the largest share of future job openings. Middle-skill jobs are those that require more than a high school diploma but less than a four-year degree. Prior to the recession, Connecticut was already experiencing shortages of middle-skill workers in crucial industries. Much of the job creation fostered by the American Recovery and Reinvestment Act will be in middle-skill jobs. With rising unemployment in the state, this is precisely the time to ensure we are training the middle-skill workforce that will be critical to our economic recovery and long-term 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. **Sixty-five percent of the people who will be in Connecticut's 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 our homes, bridges, and roads. The health care technicians who care for us and our loved ones. Truckers who keep our stores supplied. Police and firefighters who keep us safe.

Federal funds from the stimulus bill are expected to create millions of new jobs and many of these will be middle-skill, especially in green jobs, construction, manufacturing and transportation. Matching the skills of our workforce to meet this demand will help our economy recover more quickly and prepare us for better times ahead. But it doesn't end there. Retirement of large numbers of baby boomers will keep demand for middle-skill workers high for years to come.

What's more, the data show that a gap in the high-skill workforce that has troubled Connecticut businesses in recent years appears to be correcting itself over the next few years. At the same time, though, the middle-skill workforce will not grow to keep pace with demand.

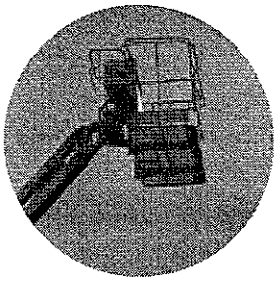
Connecticut has made significant investments in education and training for our workforce. However, those investments have not kept up with demand for middle-skill workers. We must take proactive policy actions to align our workforce and education resources to better meet the state's labor market demand. We must also make significant investments in training programs that will train many more Connecticut residents—laid off workers, workers in low-wage jobs, potential workers with low basic skills—for better, more plentiful middle-skill jobs and careers.

If we are to realize our state's 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 our state's workforce and education policies and investments to meet these 21st-century realities:

> ***Every Connecticut 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, advocates, 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 Connecticut has the middle-skill workforce we need to recover and thrive.



INTRODUCTION

Connecticut is a small state with a dynamic, diverse economy. Known to many as a center of the insurance industry, it is also home to one of the country's most prestigious institutions of higher learning, Yale University. It has a strong maritime tradition, a manufacturing base that includes a well-developed aircraft industry. Health care and retail dominate the state's economy today. It is also the fourth most densely populated state in the country.

The Constitution State's per capita gross state product in 2008 was second in the nation at nearly $52,000.[1] A recent Kauffman Foundation report ranked Connecticut as sixth in the nation among states poised to succeed in the new economy, second in the nation in the value added in its manufacturing sector, and fifth in the nation in use of the internet in its agricultural sector.[2] Connecticut ranks first among all U.S. states on the Human Development Index.[3] In addition, Connecticut was one of only two states to earn an A from CFED (Corporation for Enterprise Development) in all three areas of its *2007 Development Report Card for the States.*[4]

Eighty-eight percent of us have at least a high school degree and 35 percent have a college degree or more, both above the national average.[5] The Kauffman report ranks Connecticut fourth in the country in workforce education.[6] That workforce has played a key role in our state's success in recent years, and will help us rebuild and thrive when the economy turns around.

Innovation and talent are key drivers of economic growth. Clearly, in Connecticut, we have the potential for both, but the data suggest we must pay closer attention to the human side of that equation.

New research on projected job openings and on retirement trends in the workforce shows that the largest share of jobs in Connecticut today is in fact **middle-skill** jobs. On top of that, funds from the American Recovery and Reinvestment Act (ARRA, also known as the Recovery Act) are expected to increase the number of middle-skill jobs in our state and nationwide. Middle-skill jobs are those that require more than a high school diploma but less than a four-year degree. The data further show that middle-skill jobs will make up the largest segment of Connecticut's total labor market in the foreseeable future.

HIGHLIGHT 1

What is a middle-skill job?

Some 43 percent of all job openings in Connecticut between now and 2016 will be in middle-skill jobs.

What is a middle-skill job?
One that requires more than a high school diploma but less than a four-year college degree.

Who provides middle-skill training?
Community and two year 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 working Connecticut 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.

What's more, the data show that a gap in the high-skill workforce that has troubled Connecticut businesses in recent years appears to be correcting itself over the next few years. At the same time, though, the middle-skill workforce will not grow to keep pace with demand.

Despite our strong record of postsecondary education and workforce training, Connecticut will experience shortages of the middle-skill workers critical to economic recovery and long-term success. Prior to the recession, businesses across the state were reporting the negative impact of skilled worker shortages. A 2007 survey of Connecticut businesses found that the tight labor supply was affecting businesses' growth potential.[7] Employers reported it created higher overtime costs, decreased production capacity, hampered efforts to exploit new market opportunities and increased the outsourcing of work.

To maintain our edge and ensure we can take advantage of the job creation generated by the economic recovery, Connecticut must invest in both high- and middle-skill education and training to ensure our businesses have the talent they need. At the same time we must also make investments to improve the basic skills of our low-skill workers.

Connecticut has some important policies in place to address the state's shortage of middle-skill workers. As early as 2003, the Connecticut legislature passed legislation requiring establishment of a five-year plan to create or enhance career ladder programs for occupations with projected workforce shortages, particularly in health care and technology where there are a variety of middle-skill occupations. The 21st Century Skills Training Program, administered by the Connecticut Department of Labor's Business Services Unit, provides demand-driven skill training resources for businesses and their current or future employees, with the goal of developing technical skills training for new and expanding businesses. The Hartford Jobs Funnel run by Capital Workforce Partners and funded by public contracts and private grants prepares people with limited training for careers in construction.

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

Connecticut needs a bold and broad vision to address the educational and economic challenges facing our state during these tough economic times and beyond. Those challenges demand **a truly transformative vision that allows every worker to be a part of economic recovery: guaranteed access to two years of postsecondary education or training.** Every Connecticut 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. We must further ensure that every Connecticut 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.

Our need for qualified middle-skill workers today is greater than ever before. Federal investments from the Recovery Act will create a boom in industries with predominantly middle-skill jobs, such as construction, manufacturing and transportation. Matching the skills of our workforce with this demand will help our economy recover more quickly, take advantage of the resulting job creation, and prepare us for better times ahead.

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

CONNECTICUT'S 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 less than 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]

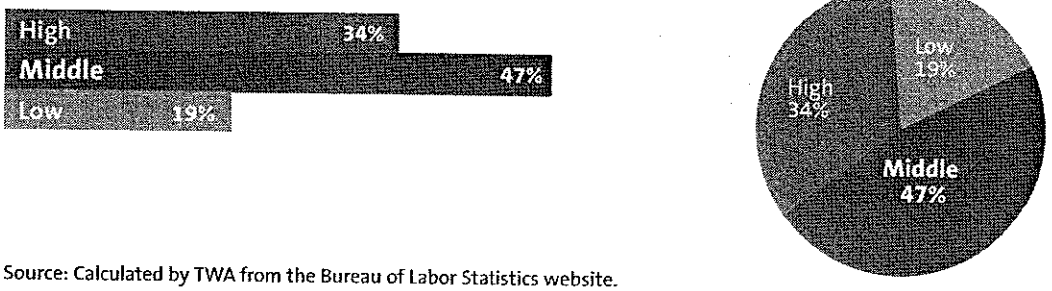
The national picture holds true in Connecticut as well. In 2008, some 47 percent of all jobs were middle-skill jobs, representing more than 794,000 workers (Fig. 1, Table 1). The demand for middle-skill workers in the state will remain high in the decade between 2006 and 2016, with almost 245,000 middle-skill job openings—43 percent of all job openings—expected during this time. This compares to low-skill jobs and high-skill jobs, which will account for 24 percent and 33 percent of openings respectively (Fig. 2, Table 2).

What's more, *as federal economic recovery funds are invested, a large share of the jobs they create will be middle-skill jobs* building and repairing roads, manufacturing renewable energy products and caring for our aging population. Mark Zandi, Chief Economist at Moody's, projects that by the fourth quarter of 2012, stimulus spending from ARRA will substantially improve employment nationwide in several industries dominated by middle-skill jobs, including construction (802,800 jobs), manufacturing (589,700) and transportation and warehousing (129,600).[9]

Despite these numbers, policymakers at both the federal and state levels have increasingly focused on college and university education, without proportionate attention to middle-skill jobs, and the education and training investments needed to ensure that workers have both the basic and technical skills they need to succeed in these vital occupations. This represents a lost opportunity to invest in our economy, both the immediate recovery and our long-term economic future.

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

FIGURE 1. Connecticut Jobs by Skill Level, 2008



Source: Calculated by TWA from the Bureau of Labor Statistics website.

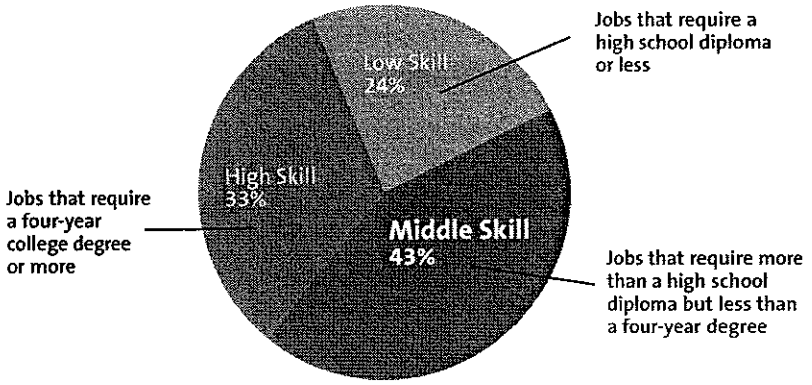
TABLE 1. Connecticut Jobs by Skill Level, 2008

	Employment	Percent
Total, All Occupations*	1,697,810	100.0%
Management	111,970	6.6%
Business and Financial	84,630	5.0%
Professional and Related	385,650	22.7%
Total, High Skill	*582,250*	*34.3%*
Sales and Related	176,790	10.4%
Office and Administrative Support	289,700	17.1%
Construction	56,830	3.3%
Installation and Repair	56,460	3.3%
Production	112,010	6.6%
Transportation and Material Moving	94,360	5.6%
Total, Middle Skill	*786,150*	*46.3%*
Service Occupations	328,300	19.3%
Farming/Fishing/Forestry Occupations	990	0.1%
Total, Low Skill	*329,290*	*19.4%*

*All Occupations also includes "non-classifiable" occupations which do not fit into standard occupational categories.

Source: Calculated by TWA from the Bureau of Labor Statistics website

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



Source: Calculated by TWA from Connecticut Department of Labor data.

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

	Employment		Job Openings	
	2006	2016	Number	%
Total, All Occupations	1,789,910	1,938,090	562,180	100.0%
Management	94,760	100,640	26,600	4.7%
Business & Financial	94,050	105,280	27,800	4.9%
Professional and Related	399,070	447,220	130,670	23.2%
Total, High Skill	*587,880*	*653,140*	*185,070*	*32.9%*
Sales and Related	200,200	214,140	75,540	13.4%
Office and Administrative Support	307,300	318,600	83,930	14.9%
Construction	69,410	75,120	18,210	3.2%
Installation and Repair	59,260	63,850	14,540	2.6%
Production	118,500	116,140	25,360	4.5%
Transportation and Material Moving	99,030	103,050	27,200	4.8%
Total, Middle Skill	*853,700*	*890,900*	*244,780*	*43.5%*
Service Occupations	343,510	389,030	131,050	23.3%
Farming/Fishing/Forestry Occupations	4,840	5,030	1360	0.2%
Total, Low Skill	*348,350*	*394,060*	*132,410*	*23.6%*

Source: Calculated by TWA from Connecticut Department of Labor data.

HIGHLIGHT 2

Missing the Roots in the 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.[10]

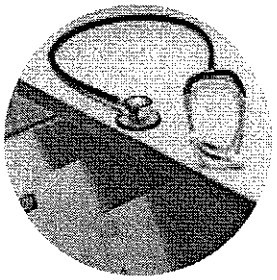
In a recent solicitation for grant proposals, the U.S. Department of Labor emphasized the importance of the middle-skill STEM workforce:

"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."[11]

In Connecticut, the STEM Careers Partnership is addressing this shortage by creating a statewide, virtual STEM Center to replicate successful models that prepare Connecticut's disadvantaged youth and dislocated workers for careers in advanced manufacturing, engineering, computer science, and other STEM-related fields. The STEM Center serves as an entry point, resource and knowledge-sharing hub, meeting place, and classroom for the STEM-related activities of the One Stop System and its partners, providing information and service access to thousands of workers and hundreds of employers through a user-friendly web portal. Managing this project is the community-based organization Connecticut Women's Education and Legal Fund.

Small STEM companies in the state have access to a unique resource, Connecticut Innovations. CI helps small Connecticut technology companies compete for and win grants and awards from eleven different federal agencies for research and development, through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. These funds are available for small businesses in fields like energy, biotechnology, information technology, and photonics.

A truly comprehensive innovation agenda must address 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 Connecticut.



THE FACE OF CONNECTICUT'S MIDDLE-SKILL JOBS

What is a middle-skill job? It requires education or training past high school, but not a four year degree. You may not know it, but you probably see people working in middle-skill jobs every day.

In fact, our communities and state rely on middle-skill jobs. **Middle-skill workers are the police officers and fire fighters who keep us safe. They are the medical technicians and therapists who keep us healthy. They are the air traffic controllers, electricians, and mechanics who keep our 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 Connecticut workers a chance at economic security and prosperity. As illustrated in Table 3, these are jobs with good earning potential. Many offer earnings that exceed the Connecticut overall median for 2008 of $39,330.

HIGHLIGHT 3

Do all middle-skill jobs pay high wages?

Of course, not all middle-skill occupations pay well or have meaningful advancement opportunities. Skills are only part of the economic success equation. But nationally, 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.

Regional research supports the connection between many middle-skill jobs and good wages. For example, Connecticut women with an associate's degree will earn $9,000 per year more than women with only a high school degree. For men, the increase in earnings is more than $11,000.[7]

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). At the same time, many middle-skill occupations saw significantly higher wage increases.

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

	Employment		Net Change		Job Openings	Median Earnings
	2006	2016	Number	%		2008
Computers						
Support Specialists	7,630	8,340	710	9.3%	3,070	$49,060
Specialists, Other	1,170	1,310	140	12.0%	450	$66,650
Construction						
Carpenters	12,550	13,440	890	7.1%	2,590	$48,340
Electricians	8,330	9,020	690	8.3%	2,830	$52,670
Painters	4,170	4,470	300	7.2%	1,050	$37,820
Operating Engineers	2,770	3,020	250	9.0%	790	$53,300
Plumbers	6,040	6,650	610	10.1%	1,870	$57,220
Healthcare						
Dental Hygienists	3,160	3,790	630	19.9%	1,230	$74,680
Diagnostic Medical Sonographers	700	850	150	21.4%	240	$74,580
Licensed Practical Nurses	8,020	9,070	1,050	13.1%	3,240	$52,040
Medical Lab Technicians	1,530	1,690	160	10.5%	390	$46,450
Radiology Technicians	780	1,040	260	33.3%	380	$58,710
Respiratory Therapists	1,250	1,470	220	17.6%	400	$60,130
Surgical Technologists	1,060	1,250	190	17.9%	500	$44,580
Installation, Maintenance, and Repair						
Aircraft Mechanics	770	970	200	26.0%	280	$55,430
Auto Mechanics	10,370	11,190	820	7.9%	2,900	$40,240
Bus/Truck Mechanics	2,460	2,660	200	8.1%	740	$46,840
Heating and AC Installers	4,540	4,810	270	5.9%	1,070	$50,390
Heavy Equipment Mechanics	660	760	100	15.2%	230	$47,460
Industrial Machinery Mechanics	1,600	1,790	190	11.9%	460	$47,250
Transportation						
Air Traffic Controllers	160	200	40	25.0%	70	$67,110
Heavy Truck Drivers	14,660	16,010	1,350	9.2%	3,950	$42,390
Public Safety						
Emergency Medical Technicians	2,800	3,150	350	12.5%	670	$36,630
Fire Fighters	3,970	4,310	340	8.6%	1,800	$53,180
Police Officers	7,410	7,970	560	7.6%	2,540	$58,140
Other						
Claims Adjusters	5,270	5,610	340	6.5%	1,680	$59,870
Civil Engineering Technicians	450	470	20	4.4%	120	$51,890
Legal Secretaries	2,960	3,070	110	3.7%	580	$46,820
Machinists	8,240	8,580	340	4.1%	1,610	$38,670
Paralegals	4,680	5,350	670	14.3%	1,290	$48,210

* 2008 median annual earnings for all occupations in Connecticut = $39,330

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

HIGHLIGHT 4

The Middle of the Green Revolution

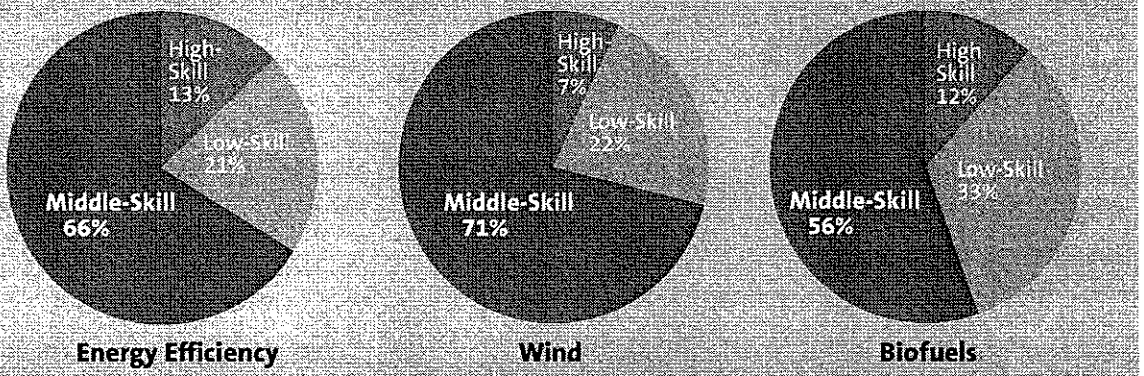
More than ever before, policymakers and business leaders are paying attention to clean energy industries and technologies, which promise profound environmental and economic benefits for all Americans. One of the highest priorities in federal and state economic recovery policies has been strong investment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

But what are those jobs?

A recent report by the Center on Wisconsin Strategy, the Apollo Alliance, and The Workforce Alliance 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.[13]

Green Jobs are Middle-Skill Jobs

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



Source: Tabulated by TWA from the US Bureau of Labor Statistics website.

The Connecticut Department of Labor has calculated that green jobs in the state will rise 12 percent by 2016.[14] Aware of how greening the economy can impact demand for middle-skill workers, in 2009 Governor Jodi Rell signed an executive order creating a Green Collar Jobs Council where state agencies will plan for growth of green industries. The order also gives priority to green energy projects over other economic development projects when awarding grants from the Small Manufacturers Competitiveness Fund, and sets in motion plans to create a green transportation corridor.

Connecticut also has secured a Community-Based Job Training Grant from the U.S. Department of Labor for the Sustainable Operations: Alternative and Renewable Energy Initiative (SOAR). The SOAR Energy Initiative will create up to eight sustainable operations credit programs to train workers to work in green energy jobs. The certificates will include a common set of sustainable operations core courses. SOAR brings together Connecticuts WIBs and One-Stops, clean energy companies, adult education and technical high schools, with faith- and community-based organizations serving adult education learners, veterans, ethnic minorities, recent immigrants and ex-offenders.

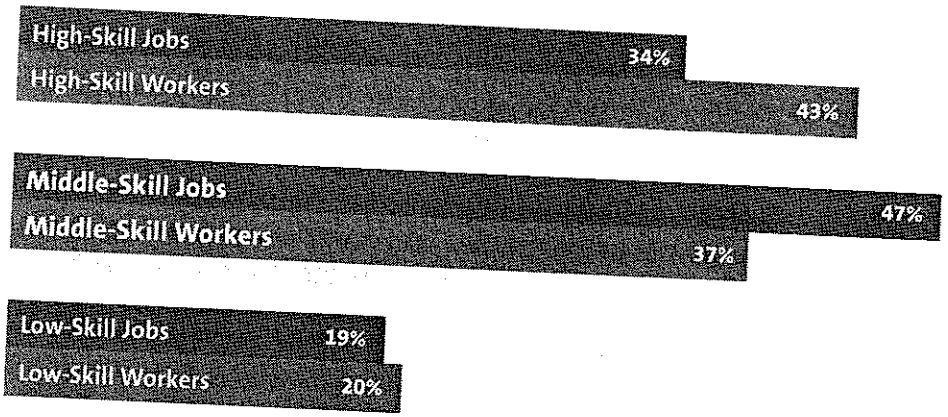
CONNECTICUT'S MIDDLE-SKILL GAP PAST AND FUTURE

Our state's economic recovery and long-term future depend in part on ensuring an adequate source of skilled workers to fill middle-skill jobs. Those middle-skill jobs are going to comprise the main portion of employment and worker-generated economic activity in our state.

Connecticut has been experiencing a shortage of middle-skill workers (Fig. 4). In 2008, 47 percent of all jobs were classified as middle-skill, but only 37 percent of Connecticut 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 Connecticut's economic portfolio.

Connecticut's Skills Mismatch: A Middle-Skill Gap

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



Sources: Connecticut Department of Labor & US Bureau of the Census

While Connecticut, like the nation, is experiencing high levels of unemployment due to the current economic downturn, as the state moves into recovery employers will once again face the challenge of finding qualified middle-skill workers. This could inhibit economic growth. What's more, as federal Recovery Act dollars flow to the states, 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 right now to ensure our state's workforce will be trained and ready to be part of the economic recovery.

Connecticut'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, even as demand for those workers rises. At the low end we have 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 Connecticut. In a 2007 survey of Connecticut employers, 82 percent of those surveyed said they have had difficulty finding qualified workers in their industry.[15] The types of positions employers reported the greatest difficulty filling include many middle-skills jobs: skilled professional/technician (24 percent), skilled machinists and other manufactures (20 percent), engineering (9 percent), sales (8 percent), and customer service (5 percent).

This is likely to have significant impact on Connecticut's ability to attract good jobs and strong employers. More than two-thirds of survey respondents said the availability of qualified workers is somewhat to very important in determining whether or not to expand or relocate to a new area.

In a more recent survey, employers in the Hartford-Springfield region ranked the skilled workforce shortage as their third greatest barrier to success, after the cost of doing business and the economic downturn.[16] More than 19 percent of respondents said the skilled workforce shortage will be their greatest challenge over the next five years. While most employers reported they are not having trouble attracting workers during this period of high unemployment, those businesses that have experienced problems, they say that lack of requisite skills and education is the primary reason for their workforce shortage.

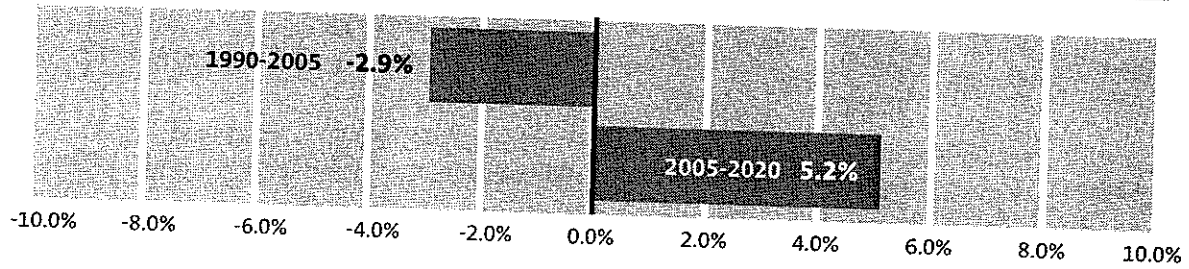
Connecticut Educational Projections: A Growing Middle-Skill Challenge

Connecticut educational projections (Figs. 5, 6 and 7) suggest that the shortage of workers to fill middle-skill jobs that our state saw in 2007 is likely to worsen. During the fifteen years between 1990 and 2005, Connecticut saw a decrease in residents with educational attainment at the high-skill level and only a slight increase at the middle-skill level. Residents with low-skill education levels also rose slightly. **Over the next fifteen years, our state will see a only slight increase in the number of middle-skill workers that is unlikely to keep up with demand.**

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. Immigration trends are likely to do little to offset this loss of middle-skill workers, as most workforce growth in the state due to in-migration will likely occur at the low-end of the skill spectrum including individuals with low literacy in their native language as well as English, or at the high-end of the skill spectrum with highly trained individuals (for example, engineers brought in from overseas through H-1B visas).

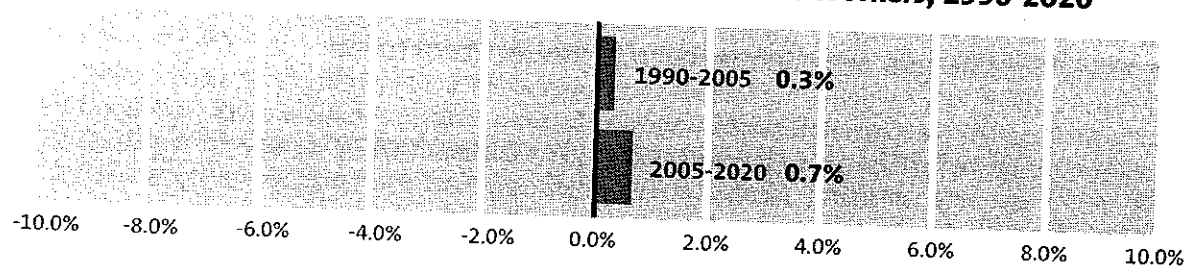
If not addressed, these educational trends will only make it harder for Connecticut businesses to meet their needs from the state's available workforce, stifling economic recovery and growth, while limiting opportunity for thousands of Connecticut workers to advance within the state's economy.

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



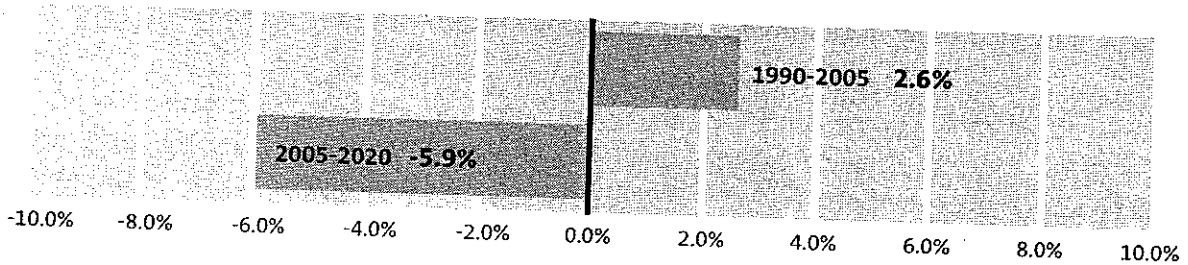
While Connecticut saw a drop of nearly three percent in the number of high-skill workers in recent years, this trend is expected to reverse itself through the year 2020. In that time, their ranks will rise by more than five percent (Fig 5, Table 4).

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



While an earlier gap in the high-skill workforce looks to be correcting itself, the gap in the middle-skill workforce is not expected to. The number of middle-skill workers rose by only 0.3 percent from 1990 to 2005, and their ranks are projected to increase only slightly more–but still less than one percent–by the year 2020 (Fig 6, Table 4), even as demand for those jobs increases at a higher rate.

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



After rising by nearly three percent since 1990, the number of workers educated at the low-skill level is expected to fall by nearly twice that rate by the year 2020 (Fig 7, Table 4).

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

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

	1990	2005	2020	Change 1990-2005	Change 2005-2020
Low-Skill	27.1%	21.2%	23.9%	-5.9%	2.6%
Middle-Skill	37.5%	38.2%	38.5%	0.7%	0.3%
High-Skill	35.4%	40.6%	37.7%	5.2%	-2.9%
Low-Skill	493,189	385,480	457,327	-107,708	71,847
Middle-Skill	681,734	693,494	737,781	11,760	44,287
High-Skill	643,869	737,317	722,388	93,448	-14,929
Total	**1,818,792**	**1,816,290**	**1,917,496**	**-2,501**	**101,205**

Source: Current and past attainment calculated by TWA using December 1990 and 2005 CPS data. Current and past total labor market estimated by Bureau of Labor Statistics. 2020 attainment projected by TWA using demographic data from the December 2005 CPS and population projections calculated by RAND California Statistics and the University of Connecticut, Connecticut State Data Center..

The Middle-Skill Gap and Connecticut's Future Workforce

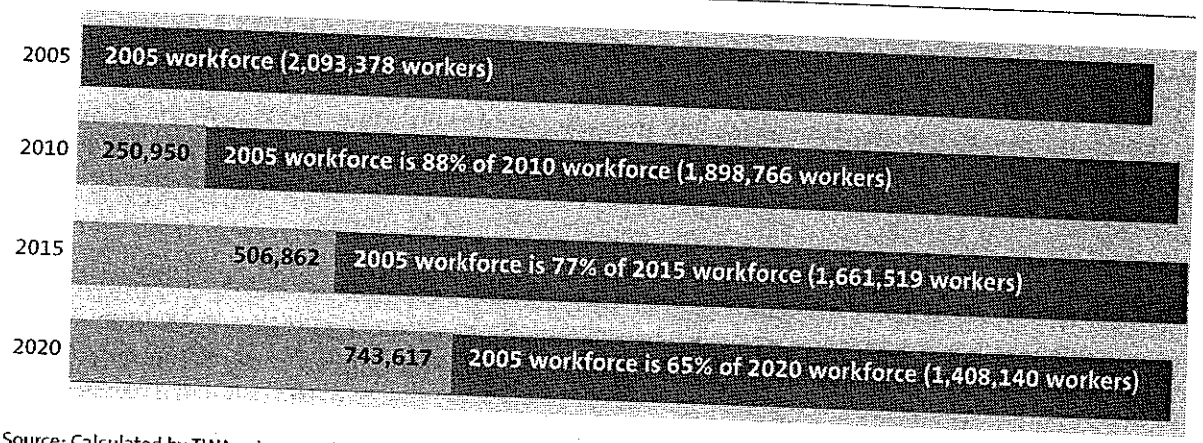
We cannot address this growing middle-skill challenge by focusing our education and training dollars solely on the next generation of workers who are coming out of high school. The fact is that **nearly 65 percent of the people who will be in Connecticut's workforce in the year 2020 were already working adults in 2005—long past the traditional high school-to college pipeline** (Fig. 8).

For that reason, to meet the demand for middle-skill workers we must target training and education to people who are working or could be working today. But 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.

This disconnect between postsecondary education investments and employment opportunities must be addressed. Connecticut should take proactive policy actions to realign its workforce and education resources to better meet the state's labor market demand. This also must include major investments in training programs that will prepare many more Connecticut residents who are now at the low-skill level for middle-skill jobs and careers.

FIGURE 8.

Working Connecticut Adults Age 20-64 in the Current and Projected Population, 2005-2020



Source: Calculated by TWA using population projections from RAND California Statistics.

An Even Greater Basic Skills Crisis?

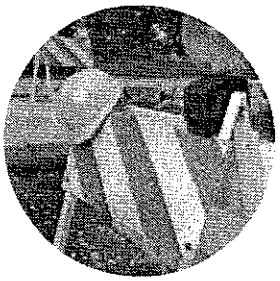
The data supporting education demand projections probably underplays the need for more broadly based basic skills education nationally.[17]

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.

We see this same problem in Connecticut. While some 32,000 adult learners are being served by Connecticut's adult education system, the Office of Program Review for the state General Assembly estimates that at least 181,000 more adults would participate if services were available to meet their needs.[18] The Office further estimates 207,846 working age residents between the ages of 18 and 64 lack a high school diploma, and another 83,508 working age residents have a high school diploma but limited English-speaking skills. Another 316,222 working age Connecticut residents graduated from high school with prose and math skills below the basic level.

This evidence suggests that Connecticut faces challenges in meeting the basic skill attainment levels needed to grow its middle-skill workforce. With the right basic skills training, many more Connecticut residents could prepare to enter and succeed in middle-skill training and middle-skill jobs. This includes native-born residents who require basic education combined with skills training, and skilled immigrant workers who need language training combined with certificates to transfer skills from their home countries.

Recognizing these challenges and opportunities, Connecticut created the College Transition Initiative which funds partnerships between adult education and postsecondary institutions to ensure better alignment between noncredit programs and postsecondary education and training, funded in part with Workforce Investment Act Title II funds. In 2008 the state Assembly passed legislation creating the 17-member state Adult Literacy Board as a standing committee of the Connecticut Employment and Training Commission. In signing the bill, Governor Rell said, "To grow jobs here in Connecticut, we must have skilled employees who can read, write and communicate effectively. We must ensure that all state residents can fully participate in our workforce."



CLOSING THE GAP

The Face of Middle-Skill Education and Training

Who provides training and education for middle-skill jobs? The good news for Connecticut residents 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). The most commonly-known setting is community colleges, but they are not the only place. Middle-skill education and job training programs include occupational certificates, associate's degrees, apprenticeship programs—and can be found in many different settings, including community colleges, community based training organizations, labor councils and workplaces.

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 physical therapy assistant, radiation therapist, and computer specialists. 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, fire fighters, and air-duct or insulation installers.

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, carpenter, 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, computer specialist	Dental assistant, legal assistant, auto mechanic, fire fighter	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 programs, 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 else to further education that results in a middle-skill credential.

In order to develop our state's middle-skill workforce to meet demands in the economic recovery and beyond, we must target significantly more resources toward a variety of middle-skill and basic skill training programs. We must create more flexible, demand-driven systems that allow working adults to return to training and education from time to time, to upgrade their skills and to earn additional certifications and degrees.

Connecticut has a number of exemplary middle-skill education and training opportunities that can serve diverse populations. These are just a few examples:

- Connecticut's Alternative Trade Adjustment Assistance (ATAA) program provides a wage subsidy of up to $10,000 to workers over the age of 50 who lose their jobs but obtain new lower-wage employment within 26 weeks of their separation.

- The Hartford Jobs Funnel is a coordinated system of outreach, recruitment, assessment, case management, pre-employment preparation, job training and retention services for city residents seeking employment, primarily in construction, and also customer service and hospitality. The program is run by Capital Workforce Partners, a regional workforce investment board in North Central Connecticut.

- In Connecticut, tuition waivers are available for veterans to cover 100 percent of tuition for General Fund course at all public colleges and universities and 50 percent for Extension Fund and summer courses at Connecticut State Universities. To qualify, veterans must be honorably discharged from the U.S. Armed Forces and Connecticut residents at least for one year upon enrolling in college.

- The 1199-New England Training and Upgrading Fund (Service Employees International Union) administers education and training benefits for unionized nursing home employees from the 55 nursing homes throughout Connecticut who currently contribute to the Fund. Several hundred workers each year access the Fund's tuition reimbursement benefits of up to $1,000 per semester.

A 21st-Century Skill Guarantee

If we are to realize our state's 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 Connecticut jobs are at the middle-skill level and the majority of future workers are already in the workforce today, the Skills2Compete-Connecticut campaign supports the following vision for our state:

> *Every Connecticut 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.*

It's an ambitious goal, but not an unprecedented one. Throughout our 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 Connecticut have already taken some steps to address similar challenges in the 21st century. 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, 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. The Recovery Act will make significant contributions to those education and training programs, but it constitutes a one-time, relatively short term investment. The overall long-term trend has been 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, the Georgia HOPE Grant program, funded with lottery proceeds, pays tuition, fees, and up to $300 for books for Georgia residents to earn a certificate approved by the state Department of Technical and Adult Education (or a comparable program of study approved by the Board of Regents) in a public technical college or public college or university. The HOPE Grant program does not have income- or merit-based criteria for eligibility (although recipients must make satisfactory academic progress while receiving it) and allows part-time attendance. According to the state Department of Technical and Adult Education, enrollment in public technical colleges has increased by 110 percent since the HOPE program began.

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. 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 Connecticut's adult learners found that about 86 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 78 percent of adults with a high school education and only 65 percent of adults with less than a high school education.[19] **In addition to higher work participation rates, adults with some college averaged about $256,000 more in lifetime earnings than those with only a high school education, and adults with an associate's degree averaged about $403,000 more in lifetime earnings.**[20]

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.[21] 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.

Research shows that in some fields, middle-skill training can pay off nearly as well as a four-year education. One study found that Connecticut workers with vocational certificates in engineering earned $3,880 per month on average, while workers with associates' degrees in computers earned $3,760 per month.[22]

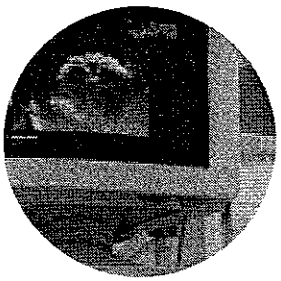
More education also is associated with lower unemployment. Nationally, in May 2009 unemployment for workers with less than a high school diploma was nearly 16 percent. For those with a high school diploma it was ten percent, while for those who'd completed high school plus

some college or an associates degree–our middle-skill level–the unemployment rate was 7.7 percent.[23]

But there are gaps in Connecticut's education funding. Connecticut ranks 47th in state and local spending on all education as a share of total personal income, and 49th in its spending on higher education.[24] We must do more.

A guarantee of access to at least two years of postsecondary education for all workers would increase productivity and earnings in Connecticut. 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.[25] 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.[26] 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.[27]

A 21st-century skill guarantee for all Connecticut workers would also increase public resources. Increasing the number of U.S. adults with middle-skill credentials by 10 percent would increase federal tax revenue by $14 billion,[28] and would save the federal government up to $2,500 per person in reduced reliance on public assistance programs.[29]



CONCLUSION

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

In the short term, our workforce must be ready to meet demand as Recovery Act funds begin creating middle-skill jobs. In the long run, we must provide training and education needed to meet demand for the greatest portion of jobs in our economy.

Right now, our state's funding for training and education is built on the myth of the hourglass economy. We do not invest enough in training people for middle-skill jobs.

Without those investments, we cannot provide adequate resources to allow working adults to seek greater training and education to improve skills and advance in their careers. Without those education and training opportunities, our businesses and communities will suffer from a lack of qualified workers. Our economic recovery will be slowed.

As Connecticut receives Recovery Act funding, we have a unique opportunity to take a closer look at our economy and the importance of middle-skill jobs in it. What will we do to ensure our education and training policies reflect the reality of the job market?

While Connecticut 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 Connecticut workers can be a part of economic recovery and secure our place in a 21st-century economy.** At various times in our nation's history, visionary leaders have adjusted the basic level of education guaranteed to all Americans as a way to adjust 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's time to do it again by guaranteeing that all Connecticut residents have access to at least two years of postsecondary education or training. This should be the guiding vision for Connecticut's economic and education policy. It would provide our 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 we 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 Connecticut 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 Connecticut recovers and thrives, and that our workforce is at the forefront of the innovation economy.

APPENDIX: METHODOLOGY

Table 1 and Figure 1: Data from the Bureau of Labor Statistics.[30] Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.[31]

Table 2 and Figure 2: Based on occupational projections for 2006-2016 by the Connecticut Department of Labor.[32] 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).[33] 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 Connecticut Department of Labor, using recategorization of occupations according to BLS Education and Training Categories.[34] 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 2007 by the Bureau of Labor Statistics, and December 2007 Current Population Survey (CPS) data on educational attainment by state.[35] 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 December 1990, and 2005[36] along with population projection data by RAND California Statistics[37] and University of Connecticut, Connecticut State Data Center,[38] and labor force estimates[39] 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.[40] In that model, educational attainment figures are calculated for the state's current workers (workers aged 25-49 in 2005) 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 (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. 15.

Figure 7: Data from long-term population projections (2000 to 2030) by age and gender cohorts, as calculated by the University of Connecticut, Connecticut State Data Center.[41] 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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