

# WISCONSIN'S FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21<sup>ST</sup>-CENTURY ECONOMY

OCTOBER 2009



# ACKNOWLEDGMENTS

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To learn more about the Skills2Compete-Wisconsin campaign, go to [www.Skills2Compete.org/Wisconsin](http://www.Skills2Compete.org/Wisconsin)

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## EXECUTIVE SUMMARY

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Sixty years ago, in an effort to ensure that every returning World War II veteran had a chance at the American Dream, President Franklin Roosevelt signed the original G.I. Bill—giving veterans access to the education and training necessary to become a valued contributor in the nation’s post-war economy. That original GI Bill fostered major technological innovations, built post-war industries, and provided opportunities for millions of Americans to create a new middle class.

But most people only know part of the GI Bill story. Political leaders often tout the fact that the original GI Bill sent over 2 million veterans to college and graduate programs, to become the professionals of the mid 20th century. But most forget that almost three times as many veterans—some 5.6 million people—used the GI Bill to enroll in occupational training, for good skilled jobs that would ultimately drive the engine of post-war industrial growth, and bring countless American families into the new middle class.

That original GI Bill was about investing broadly in the skills of workers at *all* levels of the labor market—across a variety of occupations, firms and industries. It was also about the largest portion of jobs that sit in the forgotten middle of the skilled labor market—that is, those jobs requiring more than a high school diploma, but less than a four-year degree. **Today, middle-skill jobs still represent the largest share of jobs in Wisconsin—some 54 percent—and the largest share of job openings into the next decade.**

It is these jobs that *Skills2Compete-Wisconsin* wants to lift up in the state’s and nation’s policy debates to ensure that Wisconsin has the workforce to compete in a 21st-century economy. When newly trained medical researchers find cures for illnesses, we need an even larger number of laboratory technicians, pharmacy technicians, and nurses to produce and administer those remedies. When newly trained computer engineers develop advanced means to produce goods, we need an even larger number of engineering and manufacturing technicians to harness and maintain this technology on evolving production and logistics platforms. Middle-skill workers are highly skilled technical and trade workers at the heart of the state’s economy. The term “middle-skill” does not describe their competency or capacity, but rather the amount of formal education and training typically required to enter their occupations.

In so many ways, Wisconsin is already positioned to thrive in the 21st-century economy. The state boasts a number of strong industries, including healthcare, construction, and transportation and logistics. Newer fields like biotechnology are growing in importance. And the state recently became the national leader in manufacturing. These industries, and many others in Wisconsin, require a skilled workforce. What’s more, Wisconsin is home to some of the nation’s preeminent public educational institutions—including the University of Wisconsin system and the Wisconsin Technical College system—that are critical to building its workforce. However, there are gaps in the skills of the workforce that indicate the state can further strengthen its training and education policies.

Prior to the national recession, Wisconsin was already experiencing shortages of middle-skill workers in crucial industries. Now, as the American Recovery and Reinvestment Act invests in new job creation to get the nation’s economy back on track, most of those newly created positions in Wisconsin will be in middle-skill jobs: in construction, manufacturing, and transportation, and in “green jobs” across a broad range of occupations and industries. Developing the skills of Wisconsin’s workforce to meet this new demand will help the economy recover more quickly and prepare the state for better times ahead.

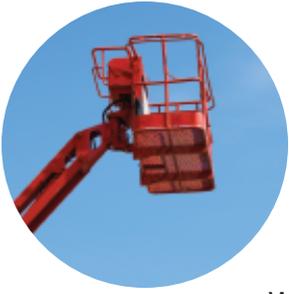
But it doesn't end there. The retirement of large numbers of baby boomers will keep demand for middle-skill workers high for years to come. As with most states in the country, filling those vacated positions will require attention not only to educational opportunities for young people, but also for those already in the workforce. **Sixty-seven percent of the people who will be in Wisconsin's workforce in the year 2020 were already working adults in 2005—long past the traditional high school-to-college pipeline.** This trend is consistent across most states and in the nation as a whole.

Wisconsin already has made significant investments in education and training for its workforce. The state must continue to align workforce and education resources to best meet labor market demand, and bolster its investments to train even more residents—laid off workers, workers in low-wage jobs, potential workers with low basic skills—for the plentiful middle-skill jobs and careers that will be the bedrock of Wisconsin's 21st-century economy.

The following vision can shape the state's workforce and education policies and investments to meet these 21st-century realities:

*Every Wisconsinite should have access to education or training past high school leading to a technical college degree or diploma, occupational credential, industry certification, or one's first two years of a four-year degree—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person who lacks basic skills must also have access to the basic education needed to pursue middle-skill occupational training.*

*Skills2Compete-Wisconsin* is a call to action, to continue and build on our state's commitment to ensuring that all workers have the skills they need to participate in economic recovery and in a 21st-century global economy. State agencies, businesses, labor, educators, community-based organizations, foundations and others must work together on this ambitious goal. State policymakers and leaders must work together to ensure that Wisconsin has the middle-skill workforce needed to recover and thrive.



## INTRODUCTION

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Wisconsin is a state rich in natural resources, and much of its early economic strength derived from agriculture. But as the nation industrialized, so did Wisconsin, which became a national leader in manufacturing and of course, beer brewing and cheese production.

Despite its fame as a dairy state, Wisconsin's economy is shaped by a diverse set of industries. Nearly sixteen percent of the state's labor force is employed in manufacturing, a higher share than any other state in the nation.<sup>1</sup> Transportation/logistics, construction, and healthcare also dominate Wisconsin's employment landscape, with new fields like biotechnology growing in strength.<sup>2</sup> The state's natural resources can support an emerging bio-economy. The water industry is also growing in economic importance—including public water works, waste water treatment and water infrastructure construction.

Wisconsin has made significant investments in training and developing its workforce to address the changing skill demands of its traditional and emerging industries. Wisconsin is home to some of the nation's preeminent higher education institutions, including the University of Wisconsin System. The sixteen colleges of the Wisconsin Technical College System are uniquely

### HIGHLIGHT 1

#### **Growing Wisconsin, Shifting Gears**

Growing Wisconsin's economy and investing in education and the workforce have been top priorities in Governor Jim Doyle's Grow Wisconsin Agenda. A key element of this agenda, the Wisconsin Covenant, works with eighth graders to plan for high school completion and entrance to post-secondary education. Eighth grade students pledge to graduate from high school, take core classes, maintain a "B" average and be a good citizen. In return, they can earn a spot in either the University of Wisconsin System, the Wisconsin Technical College System or at one of the state's twenty private, nonprofit and independent colleges, along with financial aid.

Another critical part of the Grow Wisconsin Agenda has been investments in grants to grow regional industry partnerships, target training resources and invest in emerging and green industries.

Wisconsin has other important policies in place to address the state's shortage of middle-skill workers. In March 2009, Governor Doyle announced \$5.89 million for Wisconsin Sector Strategies Initiatives. The program reflects a change in the way the state and its partners will train workers for jobs of the future and meet the needs of employers in growing, emerging sectors. The effort will provide \$3 million in local grants to regional partnerships of industry, labor, education, economic development and workforce development groups to identify the workforce needs of high-growth sectors, develop strategies to meet those needs and fund the training of workers for jobs in high-demand industries.

Also, as part of this new package, an additional \$2.89 million is funding such innovations as Opportunity Grants and Skills Jump Start Grants to help workers with limited training and education build their skills and access the postsecondary education that will allow them to take advantage of middle-skill career opportunities.

In addition, Wisconsin was awarded a Shifting Gears grant from the Joyce Foundation in 2007 to establish career pathways and related bridge programs as important strategies for meeting employer skill needs and worker career advancement needs. As a result, Wisconsin developed the Regional Industry Skills Education (RISE) initiative that is working to build capacity and access to middle-skill training.

positioned to provide postsecondary career and technical education and respond to the training needs of businesses across the state. The technical colleges offer more than 300 occupational programs leading to applied associate degrees or technical diplomas, as well as apprentice related instruction.<sup>3</sup>

Wisconsin has the oldest registered apprenticeship program in the country—a robust, demand-driven skills-training system that has served as a national model for nearly a century. Wisconsin is the only state, for example, that requires employers to pay apprentices’ wages not only while on the job, but also during related classroom instruction.

Wisconsin has made significant investments to ensure pathways into apprenticeships and other occupational training for the state’s young people. As a result of these investments, the state boasts strong school-to-work, Tech Prep, and youth apprenticeship programs, important components of the state’s middle-skill job preparation.

Wisconsin’s strong education and training system is reflected in the educational attainment of its residents. Eighty-nine percent of Wisconsinites have at least a high school degree, above the national average of 85 percent. Twenty five percent have a four-year college degree or more, slightly below the national average of 28 percent.<sup>4</sup> Furthermore, the share of working Wisconsinites holding an associate degree significantly exceeds the national average.<sup>5</sup>

Wisconsin’s diverse industries require a range of skills and education levels. However, this report reveals that more than half of all jobs in Wisconsin today—54 percent—are **middle-skill jobs** (Figure 1). Middle-skill jobs are those that require more than a high school diploma but less than a four-year degree.

Middle-skill jobs will continue to comprise a significant portion of the Wisconsin labor market in the immediate and foreseeable future. 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 the state and nationwide. Middle-skill jobs will make up almost half of Wisconsin’s job openings into the next decade.

Despite a strong system of postsecondary education and workforce training, Wisconsin, like most states, will experience shortages of the middle-skill workers critical to recovery and long-term economic growth. Prior to the recession, businesses across the state were reporting strong concerns about the impact of skilled worker shortages on their productivity and growth. To

## HIGHLIGHT 2

### What is a middle-skill job?

Some 46 percent of all job openings in Wisconsin between 2006 and 2016 will be in middle-skill jobs. (See Appendix for explanation of the methodology used to calculate 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. The term middle-skill refers to the level of education and training required by a particular job. It should not be confused with the actual competence and capacity of workers and occupations — many middle-skill occupations require highly skilled trade and technical workers.

#### Who provides middle-skill training?

Technical colleges, apprenticeship programs, nonprofit community-based training organizations, and private career schools.

#### How can Wisconsin meet the demand for middle-skill jobs?

Every working Wisconsinite should have access to education or training past high school that produces job related credentials or progress toward a college degree and, if needed, the basic skills education required to enter that training.

maintain its edge and ensure the state can take advantage of the job creation generated by the economic recovery, Wisconsin must continue to invest in both high- and middle-skill education and training to ensure businesses have the talent they need. At the same time the state must also make investments to improve the basic literacy and numeracy skills that prevent too many adult workers from entering the postsecondary education programs that could help them advance.

Governor Doyle's *Grow Wisconsin Agenda* and related state- and foundation-initiated efforts (see Highlight 1) have made great strides toward not only addressing the educational and economic challenges facing the state during our country's current tough economic times, but also in inspiring a vision for the skilled workforce of Wisconsin's future. The challenges will be great, but **the state can respond with a truly transformative vision that will allow every worker in Wisconsin to be a part of economic recovery, including increasing access to postsecondary education or training for residents.** Every Wisconsinite should have the opportunity to complete education or training past high school that leads to a technical college degree or diploma, occupational credential, industry certification, or one's first two years of a four-year degree. It should be available at whatever point and pace makes sense for individual workers and industries. Wisconsin must further ensure that every person has access to the basic skills training needed to pursue such education.

America has done this successfully before. As discussed later in this report, 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.

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

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



## WISCONSIN'S OFTEN FORGOTTEN MIDDLE-SKILL JOBS

Conventional wisdom holds that the nation has evolved into an “hourglass” or “dumbbell” economy: a bifurcated labor market with a number of highly skilled, highly paid workers at the top, a much larger number of low-skill, low-paid workers at the bottom, and very little in the middle. This belief leads to the assumption that 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. As a result, many people believe that high-skill jobs requiring a college education are the only key to economic competitiveness and success.

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%) of all US job openings into the next decade 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.<sup>6</sup>

Middle-skill jobs are even more important in Wisconsin. In 2008 almost 54 percent of all Wisconsin jobs were middle-skill jobs, representing nearly 1.5 million 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 more than 426,000 middle-skill job openings expected during this time. This compares to low-skill jobs and high-skill jobs, which will account for 25 percent and 29 percent of openings respectively (Fig. 2, Table 2).

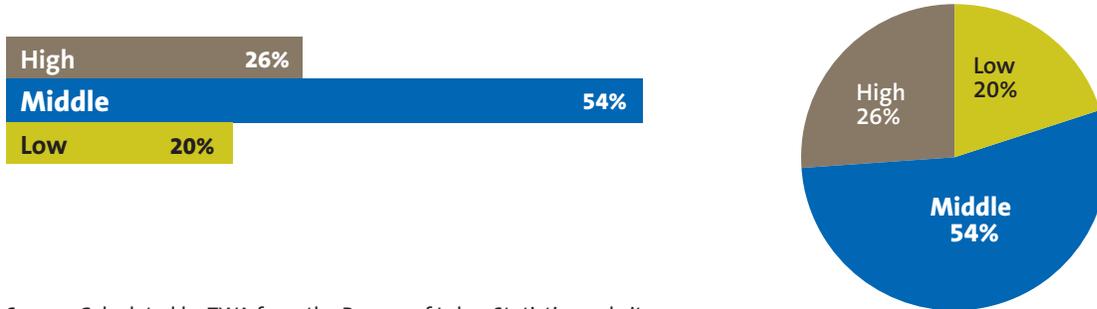
Certain middle-skill jobs are projected to see particularly high demand in the coming decade. For example, according to Wisconsin’s Department of Workforce Development, between 2006 and 2016 the number of jobs for industrial and commercial electronic equipment repair and installation technicians will grow by 9 percent. Auto service technicians and mechanics jobs will increase by 8 percent. Bus and diesel engine specialist jobs will increase by 11 percent.<sup>7</sup>

What’s more, *as federal economic recovery funds are invested, a large share of the jobs that these funds create will be middle-skill jobs* in building and repairing roads, manufacturing renewable energy products and caring for the aging population. Mark Zandi, Chief Economist at Moody’s, projects that by the fourth quarter of 2012, recovery 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).<sup>8</sup>

Despite these numbers, too many policymakers at both the federal and state levels have increasingly focused on four-year and advanced degree attainment, without proportionate attention to middle-skill jobs or the education and training investments needed to ensure that workers have the skills they need to succeed in these vital occupations. This represents a lost opportunity to invest in the economy, both for the immediate recovery and long-term economic future.

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

**FIGURE 1. Wisconsin Jobs by Skill Level, 2008**



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

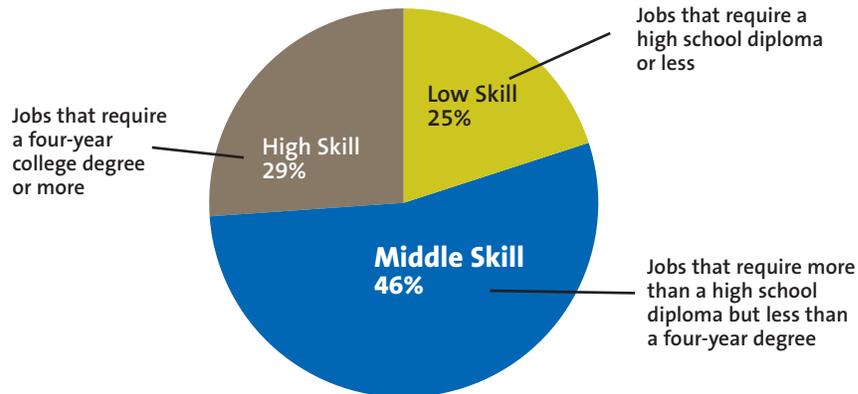
**TABLE 1. Wisconsin Jobs by Skill Level, 2008**

	Employment	Percent
<b>Total, All Occupations*</b>	<b>2,776,690</b>	<b>100.0%</b>
Management	106,670	3.8%
Business and Financial	113,040	4.1%
Professional and Related	510,140	18.4%
<b>Total, High Skill</b>	<b>729,850</b>	<b>26.3%</b>
Sales and Related	283,310	10.2%
Office and Administrative Support	437,780	15.8%
Construction	108,600	3.9%
Installation and Repair	105,580	3.8%
Production	341,170	12.3%
Transportation and Material Moving	217,210	7.8%
<b>Total, Middle Skill</b>	<b>1,493,650</b>	<b>53.8%</b>
Service Occupations	548,290	19.7%
Farming/Fishing/Forestry Occupations	4,880	0.2%
<b>Total, Low Skill</b>	<b>553,170</b>	<b>19.9%</b>

\*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. Wisconsin's Total Job Openings by Skill Level, 2006-2016**



Source: Calculated by TWA from Wisconsin Department of Workforce Development data.

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

	Employment		Job Openings	
	2006	2016	Number	%
<b>Total, All Occupations</b>	<b>3,079,470</b>	<b>3,325,840</b>	<b>926,600</b>	<b>100.0%</b>
Management	124,200	130,080	33,900	3.7%
Business & Financial	123,970	139,690	37,100	4.0%
Professional and Related	602,100	677,360	197,200	21.3%
<b>Total, High Skill</b>	<b>850,270</b>	<b>947,130</b>	<b>268,200</b>	<b>28.9%</b>
Sales and Related	298,790	311,650	103,200	11.1%
Office and Administrative Support	478,940	500,960	124,100	13.4%
Construction	138,220	150,130	36,700	4.0%
Installation and Repair	115,930	123,380	26,200	2.8%
Production	357,070	363,580	77,300	8.3%
Transportation and Material Moving	234,890	242,010	58,500	6.3%
<b>Total, Middle Skill</b>	<b>1,623,840</b>	<b>1,691,710</b>	<b>426,000</b>	<b>46.0%</b>
Service Occupations	600,300	681,480	230,800	24.9%
Farming/Fishing/Forestry Occupations	5,080	5,550	1,700	0.2%
<b>Total, Low Skill</b>	<b>605,380</b>	<b>687,030</b>	<b>232,500</b>	<b>25.1%</b>

Source: Calculated by TWA from Wisconsin Department of Workforce Development data.

### HIGHLIGHT 3

## 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.

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.<sup>9</sup>

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."<sup>10</sup>*

Wisconsin technical colleges are actively involved in preparing students for middle-skill STEM jobs. About one-third of Wisconsin technical colleges' postsecondary programs are STEM related and are spread out across a number of career clusters. The technical college system estimates STEM-related instruction accounts for thirty percent of total enrollments.

Three of Wisconsin's technical colleges became the first two-year institution participants in the nationwide Louis Stokes Alliances for Minority Participation effort. Under this National Science Foundation funded program, colleges and universities collaborate to increase the number of underrepresented minorities in STEM disciplines.

Wisconsin is one of the first five states to engage in the STEM Equity Pipeline Project, a national project developed by the National Alliance for Partnerships in Equity, to attract more girls, students of color, and students with disabilities to STEM fields.

In addition, an online portal is being developed as a centralized meeting spot for Wisconsin educators, students, businesses, career facilitators, citizens, and policymakers to connect STEM needs with educational and career opportunities in their communities. This site ([www.wistem.org](http://www.wistem.org)) is designed both for young people and working adults.

In Wisconsin, a truly comprehensive innovation agenda must address the demand for both highly educated professionals and the middle-skill workers needed to implement their strategies. These middle-skill workers are at the roots of a successful STEM strategy, nationally and in Wisconsin.



## **THE FACE OF WISCONSIN'S MIDDLE-SKILL JOBS**

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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, Wisconsin's communities rely on middle-skill jobs. Middle-skill workers are the medical technicians and therapists who keep communities healthy. They are the telecommunications specialists, electronic technicians, engineering technicians, and industrial mechanics who keep Wisconsin's infrastructure up and running. They are the machine tool operators, fabricators, and mechanical designers who build products that keep the economy humming. They are the water treatment plant operators and water quality inspectors that provide safe drinking water to Wisconsin residents. They are the police officers, fire fighters, and paramedics who keep Wisconsin safe. Many are local, hands-on jobs that are unlikely to be outsourced to other countries.

Many of these are well-paid jobs, offering Wisconsin workers a chance at economic security and prosperity. As illustrated in Table 3, many middle-skill jobs that are projected to have significant openings into the future offer entry-level pay of at least \$10 per hour and experienced hourly wages of \$20-30 an hour, well above the 2008 Wisconsin median hourly wage of \$15.48.<sup>11</sup>

### **HIGHLIGHT 4**

#### **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.<sup>12</sup>

In Wisconsin, as in the nation as a whole, on average, those with middle-skill education levels command higher wages than those with only a high school diploma. The Center on Wisconsin Strategy reports that, on average, Wisconsin adults with some college but no degree earn \$3.63 per hour more than high school dropouts. Those who complete a two-year occupational/vocational associate degree earn \$3.72 more per hour compared to those who complete some college but receive no degree.<sup>13</sup>

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.<sup>14</sup>

## Key Middle-Skill Opportunities in Wisconsin

This table highlights middle-skill jobs that are projected to have significant numbers of openings in the near future, and that pay an entry-level wage of at least \$10/hour.

**TABLE 3. Projected Wisconsin Demand for 30 Middle-Skill Occupations, 2006-2016<sup>15</sup>**

Occupational Title	Average Annual Openings	Typical Education and Training Path	Average Annual Salary	Entry Level Wage	Experienced Hourly Wage
<b>Construction and Utilities</b>					
Carpenters	700	Long-term on-the-job training, apprenticeship	\$38,760	\$12.54	\$21.68
Electricians	490	Long-term on-the-job training, apprenticeship	\$47,831	\$16.36	\$26.31
Plumbers, Pipefitters, Steamfitters	340	Long-term on-the-job training, apprenticeship	\$54,268	\$17.86	\$30.21
Construction Laborers	250	Moderate-term on-the-job training	\$35,212	\$11.22	\$19.78
Operating Engineers and Other Construction Equipment Operators	240	Moderate-term on-the-job training	\$45,693	\$15.68	\$25.11
<b>Manufacturing</b>					
Welders, Cutters, Solderers, Brazers	360	Postsecondary vocational training	\$33,933	\$12.56	\$18.19
Machinists	300	Postsecondary voc. training, apprenticeship	\$36,697	\$12.81	\$20.06
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	270	Moderate-term on-the-job training	\$29,377	\$10.20	\$16.08
Industrial Machinery Mechanics	250	Postsecondary voc. training, apprenticeship	\$43,525	\$15.40	\$23.69
Printing Machine Operators	250	Moderate-term on-the-job training	\$34,716	\$10.88	\$19.59
Maintenance and Repair Workers, General	240	Postsecondary voc. training, apprenticeship	\$35,045	\$11.62	\$19.46
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	220	Moderate-term on-the-job training	\$29,078	\$10.19	\$15.87
<b>Healthcare</b>					
Registered Nurses	2,180	Associate or Bachelor's degree*	\$57,376	\$22.15	\$30.30
Licensed Practical and Licensed Vocational Nurses	430	Postsecondary vocational training	\$37,618	\$15.20	\$19.53
Medical Assistants	350	Moderate-term on-the-job training	\$27,632	\$10.88	\$14.49
Dental Assistants	250	Moderate-term on-the-job training	\$29,454	\$11.24	\$15.62
Dental Hygienists	210	Associate degree	\$55,069	\$22.77	\$28.33
<b>Clerical/Sales</b>					
Customer Service Representatives	2,100	Moderate-term on-the-job training	\$31,243	\$10.53	\$17.27
Bookkeeping, Accounting, and Auditing Clerks	1,200	Moderate-term on-the-job training	\$29,988	\$10.17	\$16.54
Secretaries, Except Legal, Medical, and Executive	720	Postsecondary vocational training	\$28,122	\$10.22	\$15.17
Computer Support Specialists	360	Associate degree	\$40,400	\$13.88	\$22.20
Social and Human Service Assistants	300	Moderate-term on-the-job training	\$29,355	\$10.06	\$16.14
Production, Planning, and Expediting Clerks	250	Moderate-term on-the-job training	\$40,119	\$13.89	\$21.99
Bill and Account Collectors	220	Short-term on-the-job training	\$29,219	\$10.80	\$15.67

\* Depending upon the specific position and employer either an Associate or Bachelor's degree are most common.

**TABLE 3. Projected Wisconsin Demand for 30 Middle-Skill Occupations, 2006-2016<sup>15</sup>**

continued from previous page

Occupational Title	Average Annual Openings	Typical Education and Training Path	Average Annual Salary	Entry Level Wage	Experienced Hourly Wage
<b>Logistics</b>					
Truck Drivers, Heavy and Tractor-Trailer	1,520	Moderate-term on-the-job training	\$38,070	\$12.82	\$21.04
Automotive Service Technicians and Mechanics	420	Postsecondary vocational training	\$34,887	\$10.69	\$19.81
Industrial Truck and Tractor Operators	390	Short-term on-the-job training	\$29,931	\$10.80	\$16.18
<b>Other</b>					
Police and Sheriff's Patrol Officers	340	Long-term on-the-job training	\$45,269	\$15.16	\$25.07
Correctional Officers and Jailers	270	Moderate-term on-the-job training	\$36,920	\$14.83	\$19.21
Postal Service Mail Carriers	220	Short-term on-the-job training	\$43,449	\$17.07	\$22.80

For a complete list of Key Middle-Skill Opportunities in Wisconsin, see <http://www.cows.org/pdf/ds-middleskillopportunities.pdf>.

Source: Center on Wisconsin Strategy, Key Middle-Skill Opportunities in Wisconsin, 2009.

## HIGHLIGHT 5

### The Middle of the Green Revolution

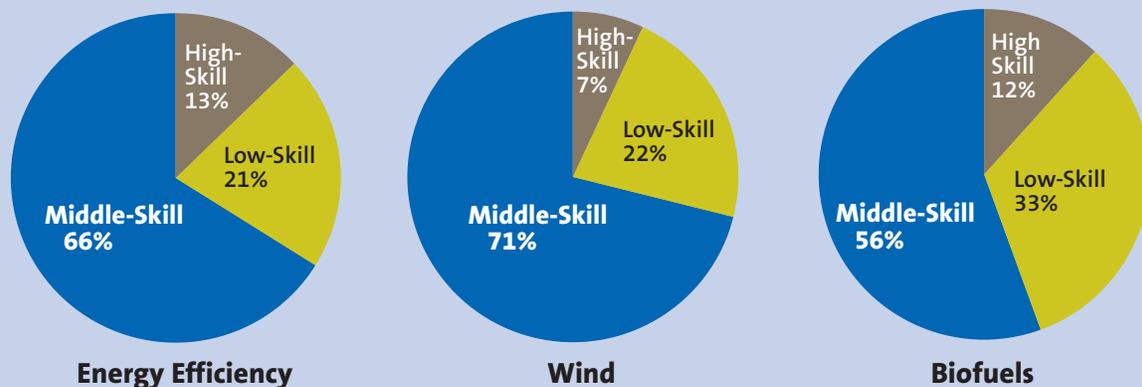
More than ever, policymakers and business leaders are paying attention to clean energy industries and technologies, which promise profound environmental and economic benefits for all Americans. One of the highest priorities in federal and state economic recovery policies has been strong investment in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

But what are those jobs?

A 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.<sup>16</sup>

#### 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.

Clearly, there are specific energy efficiency and clean energy industries with a high demand for middle-skill workers. But the Center on Wisconsin Strategy’s “Greening Wisconsin’s Workforce” report finds that a green economy, and specifically a clean energy economy, will generate middle-skill jobs across sectors and industries.<sup>17</sup>

Wisconsin is putting pieces in place to respond to the middle-skill job opportunities that could be created in the movement toward a green economy. Even before the Recovery Act created the potential for a new wave of green jobs, Wisconsin was already investing in green energy training. Wisconsin has at least thirteen certificate or associate degree training programs in wind, solar, biofuels and renewable energy at its technical colleges, requiring anywhere from 12 to 68 credits to complete.<sup>18</sup>



## WISCONSIN'S MIDDLE-SKILL GAP PAST AND FUTURE

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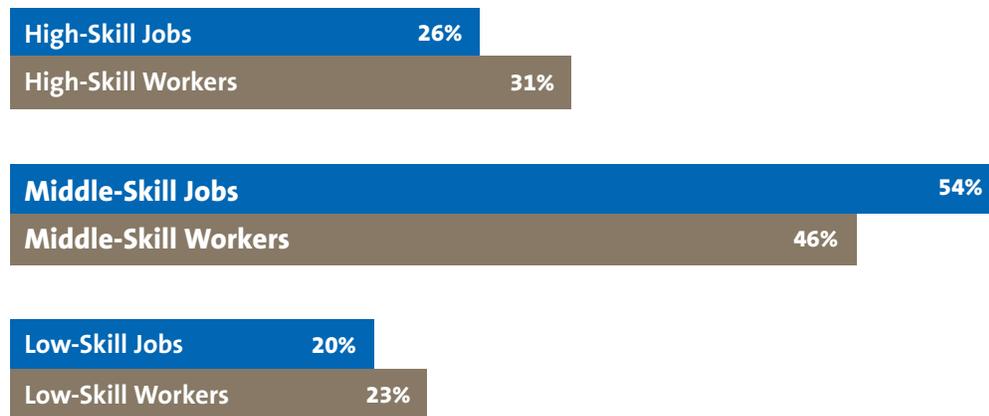
Wisconsin's economic recovery and long-term future depend in part on ensuring an adequate source of skilled workers to fill middle-skill jobs. Those middle-skill jobs are going to comprise the main portion of employment and worker-generated economic activity in the state.

Wisconsin, like most states, has been experiencing a shortage of middle-skill workers (Fig. 4). In 2007, about 54 percent of all jobs were estimated as middle-skill, but only 46 percent of Wisconsin workers had the education and training specific to those positions. Industries from manufacturing to health care struggled to find the skilled workers they needed.

### *Wisconsin's Skills Mismatch: A Middle-Skill Gap*

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

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Sources: Wisconsin Department of Workforce Development & US Bureau of the Census

Right now, unfortunately, Wisconsin and the rest of the nation are experiencing high unemployment. But as the state moves from recession into recovery, Wisconsin employers will likely once again face the challenge of finding qualified middle-skill workers for thousands of well-paid and rewarding jobs that are essential to Wisconsin's economic portfolio. This could be particularly true for the new middle-skill jobs created in Wisconsin as federal Recovery Act dollars take hold in the state. Any resulting skill shortages could slow the pace of economic growth, as well as the state's strategy of moving toward a skill- and knowledge-based economy.

### **Greater Pain in High Demand Industries**

State and regional data underscore that like other states, Wisconsin likely faces challenges, particularly when the recession ends, in industries with many good middle-skill jobs.

In a 2007 survey by Wisconsin Manufacturers and Commerce, 58 percent of chief executives at Wisconsin manufacturers reported that they were unable to find workers for skilled production

jobs.<sup>19</sup> Such shortages will likely return and deepen with baby boom retirements of skilled manufacturing workers.

Similarly, as in the rest of the country, retirements in Wisconsin are expected to deepen skill shortages in the healthcare industry. The 2008 *Health Care Retirement and Departure Intention Survey* for Central Wisconsin predicts significant retirement rates in the region's healthcare workforce, including in a number of middle-skill medical occupations. Of the 10,217 people who responded to the survey, just over 25 percent plan to retire within the next ten years. Close to 28 percent of this group are nurses who are planning to retire in ten years. Fifteen percent of medical technologists plan to retire in the next five years, 32 percent within ten years, and over half in fifteen years. Around ten percent of people in imaging and therapist occupations will retire in the next five years. A similar, employer-based survey conducted in South Central and Southwest Wisconsin projects significant regional need for registered nurses, nursing aides, and medical technologists in the next five years.<sup>20</sup> The report also identifies LPNs, medical transcriptionists, and medical technologists as occupations where a significant percentage of the regional workforce is age 55 or older, suggesting that there will be a considerable hole to fill in the near-term future as these workers retire.<sup>21</sup>

## **Wisconsin's Educational Projections Mirror the Nation's: A Growing Middle-Skill Challenge**

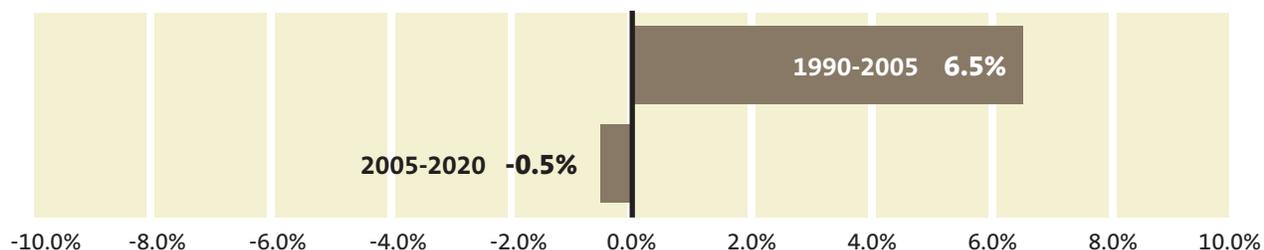
Like many states, Wisconsin's educational projections (Figs. 5, 6 and 7) suggest that the shortage of workers to fill middle-skill jobs before the economic downturn is likely to deepen. During the fifteen years between 1990 and 2005, Wisconsin saw an increase in residents with educational attainment at the high-skill level and middle-skill level. Residents with low-skill education levels fell. **But these trends will change over the subsequent fifteen years, when the proportion of low- and high-skill workers is projected to fall, and the rise in the percentage of middleskill workers is projected to slow.**

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 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 Wisconsin's businesses to meet their needs from the state's available workforce, stifling economic recovery and growth, while limiting opportunity for thousands of Wisconsin workers to advance within the state's economy.

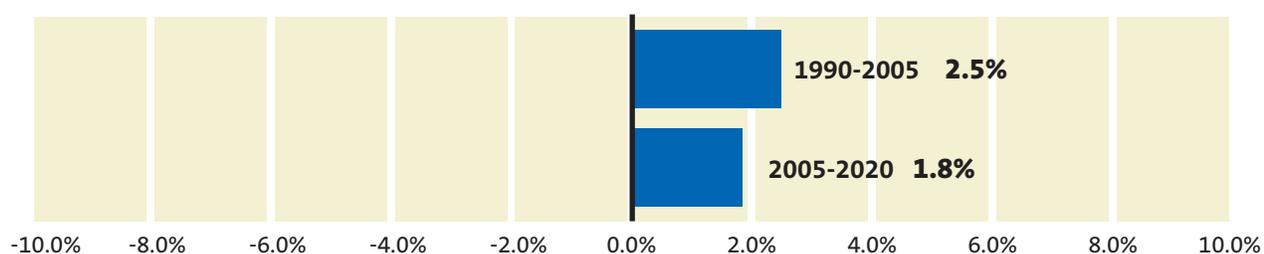
## Wisconsin's Future Middle-Skill Gap: Educational Attainment Past and Future

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



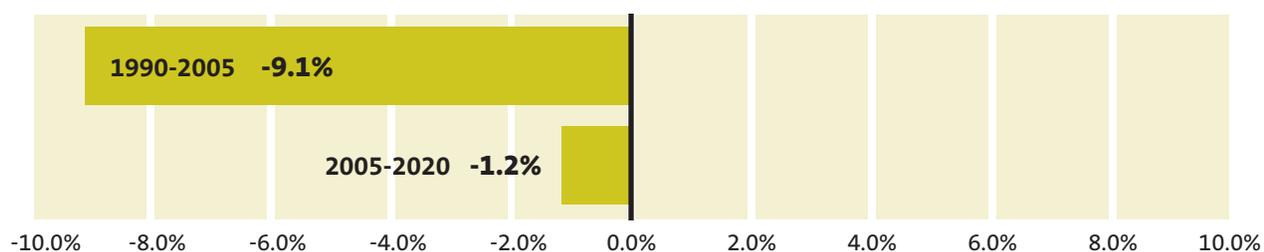
The number of workers prepared for high-skill jobs rose by 6.5 percent between 1990 and 2005. However, their ranks are expected to fall by half a percent by the year 2020 (Fig 5, Table 4).

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



By comparison, the number of workers prepared for what is the largest share of jobs in the state—middle-skill jobs—grew by less than three percent from 1990 to 2005. Their ranks are projected to rise by even less—not quite two percent—by the year 2020 (Fig 6, Table 4).

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



After falling by nine percent since 1990, the number of workers educated at the low-skill level is expected to fall by little more than one percent 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 Wisconsin Workers Across Skill Levels, 1990 - 2020**

	1990	2005	2020	Change 1990-2005	Change 2005-2020
Low-Skill	32.7%	23.6%	22.4%	-9.1%	-1.2%
Middle-Skill	44.5%	47.0%	48.8%	2.5%	1.8%
High-Skill	22.8%	29.4%	28.8%	6.5%	-0.5%
Low-Skill	849,512	715,884	622,236	-133,628	-93,648
Middle-Skill	1,156,056	1,424,600	1,355,684	268,544	-68,916
High-Skill	593,329	890,486	801,624	297,157	-88,863
<b>Total</b>	<b>2,598,898</b>	<b>3,030,971</b>	<b>2,779,544</b>	<b>432,073</b>	<b>-251,427</b>

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.

### The Middle-Skill Gap and Wisconsin’s Future Workforce

Wisconsin cannot address this growing middle-skill challenge by focusing education and training dollars solely on the next generation of workers who are coming out of high school. The fact is that **nearly 67 percent of the people who will be in Wisconsin’s workforce in the year 2020 were already working adults, over the age of 20, in 2005—beyond the traditional high school-to-college pipeline** (Fig. 8).

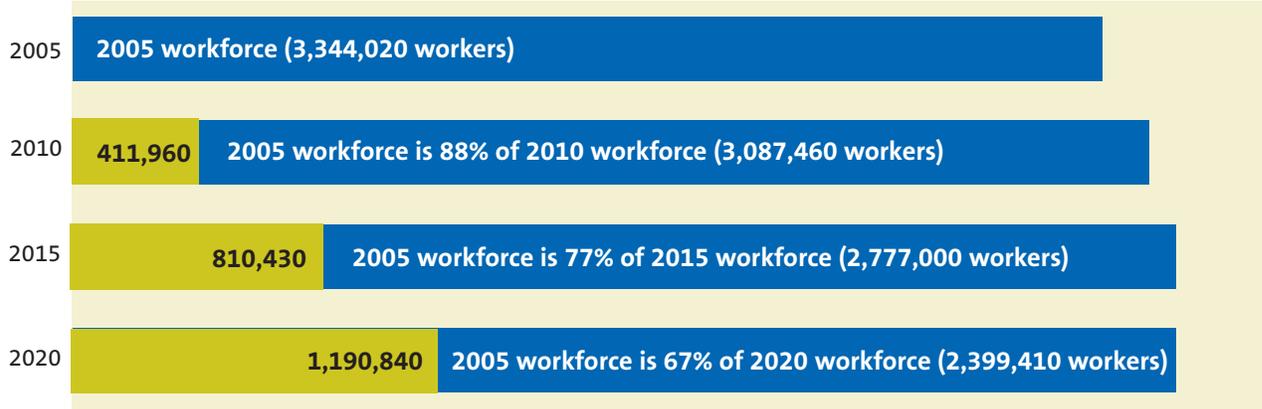
For that reason, to meet the demand for middle-skill workers Wisconsin must target training and education to people who are working or could be working today. But right now, the majority of public postsecondary education and training resources are devoted to a comparatively small number of young people. These are crucial investments, but they must be accompanied by significant investments in the adult workforce.

Wisconsin is engaged in efforts that target adults who could benefit from post-secondary education. The Regional Industry Skills Education (RISE) Partnership is a joint initiative of the Wisconsin Technical College System and the Wisconsin Department of Workforce Development that draws on local, state and national expertise to make “career pathways” a central part of Wisconsin’s education and job training systems, while engaging the business community at both the state and regional levels to address the skill needs of major industry sectors.

It is clear that Wisconsin’s attention to education opportunities for its adult workers is sound economic policy. In the long-term, Wisconsin can take additional, bold steps to realign its workforce and education resources to best meet the state’s labor market demand. This must include significant investments in training programs to prepare many more Wisconsin residents who are now at the low-skill level for middle-skill jobs and careers.

*Wisconsin's Workforce of Tomorrow is in the Workforce Today*

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



Source: Calculated by TWA using population projections from the Wisconsin Department of Administration.

**An Even Greater Basic Skills Crisis?**

The data supporting education demand projections probably underplays the need for more broadly based basic skills education nationally.<sup>22</sup>

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, and/or do not have a high school education.

Even for those who enter postsecondary education, basic skills can be a barrier to success. Nationally, nearly two-thirds of students entering two year college must take at least one remedial course.<sup>23</sup>

Like the nation as a whole, Wisconsin faces substantial challenges when it comes to basic skills. In 2003, seven percent of Wisconsinites lacked basic prose literacy skills.<sup>24</sup> Nine percent of Wisconsinites do not have a high school diploma, and two percent speak English poorly or not at all.<sup>25</sup> Both figures are less than the national average, which is good news. Nevertheless there are still 1.4 million adults in the state who have no two- or four- year degree and/or have limited English proficiency.<sup>26</sup>

Moreover, only about eight percent of working-age Wisconsinites without high school degrees are enrolled in adult basic education programs, and only ten percent of those with limited English skills are enrolled in English as a Second Language programs.<sup>27</sup>

An equally important part of the basic skills equation in Wisconsin is workers who did graduate from high school but have basic skills that are too limited for success in education for middle-skill jobs. It is hard to estimate how many of these Wisconsinites there are, but more than half of the individuals enrolled in technical college adult basic education programs have completed high school. This suggests an even larger number of people without the basic skills to succeed in education for middle-skill jobs in the population as a whole.<sup>28</sup>

**This evidence suggests that Wisconsin, like the nation, faces challenges in meeting the basic skill attainment levels needed to grow its middle-skill workforce.**

With the right basic skills training, many more Wisconsinites could prepare to enter and succeed in middle-skill training and middle-skill jobs.

Recognizing these challenges and opportunities, Wisconsin has established programs to help those with only limited education and training get the basic skills they need to qualify for middle-skill training programs (see page 24).



## CLOSING THE GAP

### The Face of Middle-Skill Education and Training

Who provides training and education for middle-skill jobs? The good news for Wisconsinites 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 Wisconsin’s technical colleges, but middle-skill education and job training programs leading to industry recognized credentials can also be found in other settings, such as community based training organizations and workplaces.

Applied associate degrees, technical diplomas, and other training yielding occupational credentials allow students to enter the workforce immediately, equipped with the knowledge and skills demanded by industry and in some cases required by state or national regulatory standards. Applied associate degrees build occupational skill sets that are backed by a balanced core of general academic skills, whereas technical diplomas and occupational certificates concentrate more on technical competencies. In Wisconsin, applied associate degrees are available for a wide variety of occupations such as radiation therapist, electromechanical technician, mechanical design, and network and computer support specialists. Examples of jobs where a technical diploma is valuable include dental assistants, automotive service technician, machine tool operators, and welders.

Wisconsin is a strong apprenticeship state. Apprenticeships are supervised employment programs that combine classroom instruction and on-the-job training under the supervision of experienced journey workers. Generally offered through labor/management partnerships or directly by employers, apprenticeships can be found in such high-demand careers as electrician, industrial maintenance 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
<b>Time to complete</b>	Two years, full time	From less than a year to two years	Two to five years
<b>Availability</b>	Technical college	Technical college, community-based organization, workplace	Apprenticeship program (local trade committees, labor unions, employers, technical colleges)
<b>Examples of types of jobs</b>	Radiation therapist, registered nurse, laboratory technician, network specialist	Dental assistant, auto service technician, welder industrial mechanic	Electrician, plumber, millwright, machinist

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 pathway and/or to further education that results in a middle-skill credential.

Wisconsin's RISE initiative has created multiple bridge initiatives that deliver adult basic education and occupational skills training concurrently. The current bridge programs focus on high demand occupations such as welding, industrial maintenance, machine tool operator, and health care. Skills Jump Start Grants will help individuals who lack a high school diploma complete their basic education while getting job training at technical colleges for employment in high-demand sectors, such as manufacturing and health care.

In order to develop the state's middle-skill workforce to meet demands in the economic recovery and beyond, Wisconsin must focus more resources toward a variety of middle-skill and basic skill training programs. The state must support additional 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.

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

- ◆ The Wisconsin Regional Training Partnership (WRTP) is a nonprofit organization that serves the needs of Milwaukee-area employers, unions, and community residents. Its purpose is three-fold: to help local companies modernize plants and adopt new workplace practices; to upgrade the skills of current workers; and to recruit, train, and mentor new employees. In Milwaukee, 150 employers participate, including 80 manufacturing companies. WRTP was created by the Wisconsin AFL-CIO and its affiliated unions in cooperation with an employer group the Greater Milwaukee Committee.
- ◆ A group of manufacturers, educational institutions, workforce development boards, chambers of commerce and state organizations created the Northeast Wisconsin (NEW) Manufacturing Alliance to promote manufacturing in the region. It sponsors scholarships for manufacturing related training at area technical colleges and is developing career pathway information on its website.
- ◆ Technical colleges design programming for specific audiences in a number of ways. As just a few among many examples, Northcentral Technical College worked with area health care organizations to integrate English language instruction into the nursing assistant curriculum to help Hmong students meet industry standards and state licensing requirements. Western Technical College created a one-year technical diploma program in Electronics Maintenance specially designed to help dislocated workers overcome problem areas, like mathematics, and prepare them both for new careers and further occupational preparation at the associate degree level. Mid-State Technical College secured a state Workforce Advancement Training grant to upgrade the skills of workers at Ocean Spray's local cranberry processing plant so that the company would realize the benefits of its multi-million dollar capital improvement production efforts.

## A Vision of 21st-Century Skills for all Wisconsinites

To realize Wisconsin'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 Wisconsin jobs are at the middle-skill level, and that the majority of Wisconsin' future workers are already in the workforce today, the Skills2Compete-Wisconsin campaign supports the following vision:

*Every Wisconsinite should have access to education or training past high school leading to a technical college degree or diploma, occupational credential, industry certification, or one's first two years of a four-year degree—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person who lacks basic skills must also have access to the basic education needed to pursue middle-skill occupational training.*

It's an ambitious goal, but not an unprecedented one. Throughout the nation's history, federal and state policymakers have guaranteed new educational opportunities to different groups of Americans to meet the changing skill requirements brought on by economic and technological change. Indeed, leaders in Wisconsin have already taken important 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 nine 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 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 eight 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—six 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 Precedents**

Unfortunately, for the last twenty-five years, 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.

A number of national models—like those in Wisconsin—offer additional strategies for making new investments in the skills and education of state residents, and moving toward a new baseline level of skills and education for all.

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, and it was officially launched in August 2007. The program 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 Washington 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 I-BEST 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 Skilled Workforce**

The potential benefits and returns of postsecondary education and training for our state's workers are widespread. Broadened access to 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 Wisconsin adult learners found that about 88 percent of adults with an associate degree and 84 percent of adults with some college (but not a degree) participated in the workforce, compared to 80 percent of adults with a high school education and only 64 percent of adults with less than a high school education.<sup>29</sup> **In addition to higher work participation rates, adults with some college averaged about \$128,000 more in lifetime earnings than those with only a high school education, and adults with an associate degree averaged about \$387,000 more in lifetime earnings than those with only a high school education.**<sup>20</sup>

These findings are consistent with national findings that the median worker with an associate's degree earned about 33 percent more than those with only a high school degree, while those with a bachelor's degree and no graduate degree earned 62 percent more.<sup>31</sup> 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 July 2009 the unemployment rate was 9.4 percent. However, for workers with less than a high school diploma it was nearly 15.4 percent. For those with a high school diploma it was 9.4 percent, while for those who'd completed high school plus some college the unemployment rate was 7.9 percent.<sup>32</sup>

Access to postsecondary education and training for all workers would increase productivity and earnings in the United States. According to the Organization for Economic Cooperation and Development (OECD), each year of postsecondary education leads to an increased per capita output of between four and seven percent.<sup>33</sup> Increasing the average total schooling of a city's population by two years increases the wages of all workers by about six percent, regardless of individual educational attainment.<sup>34</sup> 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.<sup>35</sup>

Access to postsecondary education and training for all workers could increase the number of U.S. adults with middle-skill credentials by 10 percent, increasing federal tax revenue by an estimated \$14 billion,<sup>36</sup> and saving the federal government up to \$2,500 per person in reduced reliance on public assistance programs.<sup>37</sup>



## CONCLUSION

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

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

Wisconsin will thrive if it trains people for middle-skill jobs.

Without those investments, Wisconsin 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, businesses and communities will face shortages of qualified workers. Economic recovery will be slowed.

As Wisconsin receives Recovery Act funding, there is a unique opportunity to take a closer look at the economy and the importance of middle-skill jobs in it.

While Wisconsin has taken some important steps to address the growing shortage of middle-skill workers, **it is time for additional bold, visionary steps that will ensure all Wisconsin workers can be a part of economic recovery and secure the state's place in a 21st-century economy.** At various times in the nation's history, visionary leaders have adjusted their commitment to education in response to a changing economy. Universal high school and the GI Bill are examples of when America did this with great success in the past.

It's time to do it again by working toward a day when all Wisconsin residents can pursue postsecondary education or training that results in job related credentials or progress toward a college degree. This should be the guiding vision for Wisconsin economic and education policy. It would provide the state's workers and businesses with the skills they need not only to rebuild and recover, but to compete in an increasingly competitive global marketplace.

How will Wisconsin do this? Leaders from government and business, labor, and training communities must roll up their sleeves and make it happen. It is time for Wisconsin policymakers, educators, unions and businesses to unite with others around the country around this need for expanded investment, to champion the policies and strategies necessary to ensure that Wisconsin recovers and thrives, and that its workforce is at the forefront of the innovation economy.

## APPENDIX: METHODOLOGY

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The methodology in this report for classifying occupations into skill level is based on that used in Holzer and Lerman, 2007. The following explains that methodology.

“Classifying occupations into a few skill categories is awkward, given the many elements of skill required for most jobs. Under an approach that classifies jobs based on education and training levels, ‘middle-skill’ jobs are those that generally require some education and training beyond high school but less than a bachelor’s degree. These postsecondary education or training requirements can include associate degrees, vocational certificates, significant on-the-job training, previous work experience, or some college, but less than a bachelor’s degree. We divide the broad occupational groups into high-skill, middle-skill, and low-skill categories based on BLS estimates of the educational attainment and training of people in those jobs. Using this information, we define:

- ◆ High-skill occupations as those in the professional/technical and managerial categories.
- ◆ Low-skill occupations as those in the service and agricultural categories.
- ◆ Middle-skill occupations as all the others, including clerical, sales, construction, installation/repair, production, and transportation/material moving.

This definition is clearly imperfect, since there are many professional/technical and service jobs that are clearly middle-skill while there are jobs in the clerical, sales and other categories that are not; but, on average, these discrepancies tend to cancel out, and trends in these categories roughly capture the ones we want to measure.

These skill categories reflect only average skill demands within broad occupational categories. Some occupations within the technical and managerial categories actually require less than a bachelor’s degree, while some in the middle categories might require only high school, and some in the service category may require more than high school. Therefore, whenever possible, we supplement our analysis of broad categories with those of detailed occupations.”

**Table 1 and Figure 1:** Data from the Bureau of Labor Statistics.<sup>39</sup> Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.<sup>40</sup>

**Table 2 and Figure 2:** Based on occupational projections for 2006-2016 by the Wisconsin Department of Workforce Development.<sup>41</sup> 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).<sup>42</sup> Occupations divided into skill levels (high, middle, low) based on educational attainment requirements as defined by BLS. Jobs requiring at least moderate-term on-the-job training, related work experience, a post-secondary vocational award, or an associate degree were classified as middle-skill. 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 Wisconsin Department of Workforce Development, screened for jobs that have more than 200 projected openings per year (2006-2016), an entry hourly wage of at least \$10, and do not typically require a 4-year college degree or experience in a related occupation (excluding almost all supervisory and managerial positions).

**Total openings** are the sum of new jobs and replacements, and indicate how many new people are needed to enter a given occupation.

**Replacements** are an estimate of the number of job openings expected because people have permanently left a given occupation. Permanent exits occur if someone dies, retires, or otherwise leaves the labor force. Openings resulting from people changing employers, but people staying in the same occupation are not included. Permanent exits also include openings resulting from someone permanently changing occupations. For example, a person leaves their job as a cashier and becomes a truck driver.

**Typical Education and Training Path** gives a general indication of the education or training typically needed in a given occupation. There may be other pathways into the occupation, as well as additional educational, training, or licensing requirements. In those set off by italics, the Wisconsin case differs from the standard BLS description by including post-secondary vocational training and/or apprenticeship.

- ◆ **Short-Term On-the-Job Training:** These occupations require no more than one month of on-the-job training and the training usually happens at the workplace.
- ◆ **Moderate-Term On-the-Job Training:** Training for these occupations usually occurs at the workplace and lasts from one to twelve months.
- ◆ **Long-Term On-the-Job Training:** These occupations require more than one year of on-the-job training, or combined work experience and classroom instruction.
- ◆ **Postsecondary Vocational Training:** These formal training programs last from a few weeks to more than a year, and are offered at technical colleges or private vocational schools.
- ◆ **Associate Degree:** This degree requires two years of full-time academic work beyond high school.

**Average Annual Salary.** An occupation's average hourly wage is calculated by summing the wages of all employees in a given occupation and then dividing by the total number of employees in that occupation. In most cases, the annual average salary is equal to the average hourly wage multiplied by 2,080.

**Entry Level Hourly Wage** is the average of the lower third of wages that are paid in a given occupation.

**Experienced Hourly Wage** is the average of the upper two-thirds of wages that are paid in a given occupation.

**Figure 4:** Based on occupational estimates for 2007 by the Wisconsin Department of Workforce Development, and May 2007 Current Population Survey (CPS) data on educational attainment by state.<sup>43</sup> 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. Educational attainment is reclassified into skill attainment using the following: Low-skill includes less than high school and half of the population of people with high school credentials. Middle-skill includes half of the population of people with high school credentials as well as some college. Because there is no measure of on-the-job-training, apprenticeship, or other vocational training outside of college, we assume that some of those classified as high school grads received this training. High skills includes bachelor degree and above.

**Figures 5, 6 and 7, and Table 4:** Based on Current Population Survey (CPS) data for 1990 and 2005<sup>44</sup> along with population projection data<sup>45</sup> by RAND California Statistics and labor force estimates<sup>46</sup> by the Bureau of Labor Statistics.

- ◆ **1990, 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 Baldassarre, 2005<sup>47</sup>. 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 described in Figure 4, p. 17.

**Figure 8:** Data from long-term population projections (2005 to 2020) by age and gender cohorts, as calculated by the Wisconsin Department of Administration.<sup>48</sup> Each cohort was either classified as a "current working age adult" or "not a current working age adult" based solely on age. Current working age was defined as ages 20 to 64.

## ENDNOTES

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- 1 In May 2009, Wisconsin surpassed Indiana as the state with the highest percentage of its workforce in manufacturing (15.6% in Wisconsin compared to 15.4% in Indiana). Source: Dresang, Joel. "Wisconsin takes lead in share of manufacturing jobs," *Milwaukee Journal-Sentinel Online*. Available at <http://www.jsonline.com/business/48813152.html>. (Milwaukee, June 22, 2009).
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