

**SKILLS REQUIRED: Examining King County  
Middle-Wage Opportunities in STEM**

**EXECUTIVE SUMMARY**

MAY 2010



## **Executive Summary**

As a workforce intermediary seeking to better connect low-income individuals to living wage jobs, Seattle Jobs Initiative (SJI) has focused its labor market research on identifying middle-wage jobs in our local economy. These jobs provide an opportunity to meet the greatest skills shortage facing local employers while helping low-income and low-skill individuals advance into good paying careers. SJI's March 2008 report "Skills Required: Preparing Puget Sound for Tomorrow's Middle-Wage Jobs" showed that middle-skill jobs — those requiring some education and training beyond high school but less than a bachelor's degree — are and will continue to be abundant, making up roughly half of currently available jobs in the U.S.<sup>1</sup> and in Washington State.<sup>2</sup> This report drilled deeper to consider those middle-skill opportunities that can provide a middle-class income - what we term "middle-wage" jobs – while supporting Puget Sound economic growth in key industry sectors. SJI's findings confirmed that middle-wage jobs are a vital part of a healthy labor market, comprising 20 to 25 percent of all jobs in the Puget Sound region and providing opportunities for many low-income and low- to middle-skilled workers to find employment and a pathway to a livable wage.

At the same time, significant attention has been directed recently towards the areas of Science, Technology, Engineering and Mathematics (STEM) as a foundation for economic recovery and industry growth in the wake of the Great Recession. At a variety of levels, education, economic and workforce policy and legislation have been focused on ensuring that the future workforce is properly equipped with the significant technical and mathematical skills required by employers in an increasingly knowledge-based economy. With all of this attention on growing STEM industries and skills, SJI was determined to gain a better understanding of local STEM occupations and industries, as well as the current and future workforce needs for these occupations and industries. Moreover, with our interest in middle-wage jobs, we wanted to learn the potential for middle-wage jobs within STEM and identify training opportunities for these jobs. This is the purpose of our research.

SJI's analyses reveal that, while both STEM occupations and middle-wage occupations are important areas for discussion, examination and action, their intersection is surprisingly weak. Only a handful of occupations exist that fit the middle-wage job

<sup>1</sup> Harry Holzer & Robert Lerman. November 2007. "America's Forgotten Middle-Skill Jobs: Education and Training Requirements in the Next Decade and Beyond". The Workforce Alliance: Washington DC.

<sup>2</sup> October 2009. "Washington's Forgotten Middle-Skill Jobs: 2009 – An Updated Look at Employment and Education Patterns in Washington." The Workforce Alliance: Washington DC.

definition within STEM. These are technology-related occupations, such as drafters and engineering technicians of various types. In all cases, these few occupations are slated for long-term growth, though they currently witnessing declines, in part due to the current economic downturn. The empirical findings suggest that middle-wage STEM jobs, though potentially fruitful in the long-term, do not present the best opportunity for low-income and low-skill adults to access immediate trajectories to self-sufficiency.

Despite these findings on middle-wage STEM jobs, our research reveals a vibrant conversation continuing around STEM occupations in general—including opportunities to make them more available to low-income and low-skill adults—that should prove useful to practitioners to better understand the industries and occupations supported by STEM skills. The research highlights some of the challenges facing industries with significant STEM workforce needs, including serious shortages of necessary math and science skills in the existing workforce, a lack of sufficient interest, diversity and access to employment and training in the STEM workforce, and a looming loss of current skills within STEM industries due to the aging out of the baby boomer workforce.

Our research further reveals that STEM industries are important to regional and national economic health in both the short- and long-term. While STEM occupations represent a small portion of overall employment both nationally and locally – just 5% - their share of the labor market has remained relatively steady. Not only are STEM-based industries strong, but occupations requiring STEM-based knowledge and training - such as scientists, technicians, engineers and analysts – support growth in almost every industry category, and are predicted to grow 70 percent faster than the overall employment growth for the nation.<sup>3</sup> While many STEM occupations require formal training associated with a 4-year degree, roughly one-third of all STEM jobs created between 2003 and 2008 do not require a BA.<sup>4</sup> STEM occupations are good paying jobs, averaging about 70% more than the national average.<sup>5</sup>

Washington State continues to forge ahead in these high-demand STEM industries, increasingly positioning itself as a leader in promoting business expansion and job opportunities in these fields. Regionally, innovations in science, technology and information systems have made Puget Sound a focal point for these fields moving forward. Evidence of innovation can be seen in the new technologies, new scientific breakthroughs, and new innovations in engineering, to name a few. Compared to the national average for these occupations, King County employment is roughly 15% STEM occupations - three times the rate of STEM-related occupations nationwide. The largest portion of these occupations is in Technology, a thriving industry base for the region, with major IT employers such as Microsoft, Amazon, RealNetworks, and others calling King County home. Wages for these occupations can range from \$12.98/hr for tax preparers to \$62.51/hr for natural science managers. The median hourly wage for King County STEM occupations is \$31.38, an amount about equal to the national wage rate for comparable STEM industry employment. Strong growth potential is slated for computer and network software engineers, analysts and programmers. Long-term growth for STEM industries and related occupations looks strong for the region. The

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<sup>3</sup> Nicholas Terrell. Spring 2007. "STEM Occupations: High-tech jobs for a high-tech economy." Occupation Outlook Quarterly, Bureau of Labor Statistics.

<sup>4</sup> Kenneth Poole. Fall 2008. Preparing Low-Skilled Workers for the Jobs of Tomorrow. The Working Poor Families Project.

<sup>5</sup> Nicholas Terrell. Spring 2007. "STEM Occupations: High-tech jobs for a high-tech economy." Occupation Outlook Quarterly, Bureau of Labor Statistics.

number of STEM workers in King County will grow 17% between 2007 and 2017, with Science and Technology occupations estimated to significantly outpace total STEM occupation growth.

The above-mentioned STEM industrial and occupational demand is confronted by supply issues and challenges, both in terms of quantity and quality of skilled workers. By the numbers, industries supported by STEM occupations will see the effects of an aging boomer workforce: more than 50% of the current science and engineering workforce is nearing retirement age; 25% will reach it by 2010.<sup>6</sup> On the other end, between 2004 and 2014, employers are expected to hire about 2.5 million STEM workers nationally who are entering their occupation for the first time.<sup>7</sup> In terms of quality, a continuing shortage of workers equipped with the skills required – specifically science and math – presents a major supply shortage issue for business growth and innovation.

Legislative and educational initiatives in Washington and around the nation are being undertaken to strengthen the skills associated with these growing STEM industries and occupations. The America COMPETES Act of 2007, the STEM Education Coordination Act of 2009, and the American Graduation Initiative show continued momentum to grow an educated and skilled workforce in these fields. Washington State initiatives like the Transition Mathematics Project and Washington MESA are working to improve access to STEM education and opportunities through math assistance, improved materials and instructional approaches. These many efforts continue to move and support the expansion of STEM educational opportunities at all levels, and are important to the success of a more knowledge-based economy.

STEM occupations are and continue to be at the core of productivity and prosperity in the region and in the U.S., and can help both employers and individuals weather the ups and downs of these uncertain economic times. While opportunities in the middle are scarce, opportunities to provide and foster skills that feed STEM occupations at all levels are being investigated, created and fostered. Workforce training and education development efforts are aimed at all levels at increasing the current and future workforce capacity for STEM skills, creating opportunities for individuals to obtain living-wage jobs that are essential to the health and development of a competitive economy both locally and nationally.

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<sup>6</sup> Cheryl R. Sturko Grossman. 2008. "Preparing WIA Youth for the STEM Workforce." LearningWork Youthwork Information Brief. Ohio Department of Job and Family Services, Office of Workforce Development, Bureau of Workforce Services.

<sup>7</sup> Terrell, Nicholas. Spring 2007. "STEM Occupations: High-tech jobs for a high-tech economy." Occupation Outlook Quarterly, Bureau of Labor Statistics.