

*Metro Southwest Regional Labor Market Review*

***The Knowledge Innovation Economy***

***Metro South/West  
Regional Employment Board, Inc.***

## Foreword

This report was produced in the late winter and spring of 2008 and major changes in the economy have taken place since that time. Although we believe that the basic economic structure of the region remains the same, jobs, job vacancy rates and unemployment figures have clearly been affected by the current recession. An amended version will be released in early summer to reflect the impact of the downturn on Metro Southwest.

We would like to recognize the two people who were instrumental in the production of this document. The first is Navjeet Singh of the Commonwealth Corporation, whose ability to simplify complex economic analysis for the layman was outstanding. The second is Andrea Infantino, who tirelessly searched the Internet for additional information and who shaped the format that elicited so many positive comments from the readers.

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## Metro Southwest... “Technology Heartland” of Massachusetts

The Metro Southwest (MSW) region contains communities that are defined by high-growth, high-paying knowledge and innovation industries, exceptional educational attainment, outstanding research and education institutions, and high rates of job vacancies in key industry sectors.

Covering the area between Routes 128/I495, and serving 43 communities, Metro Southwest is the largest of the sixteen workforce investment regions in Massachusetts.

871,047 or 14% of the people in the Commonwealth lived in Metro Southwest in 2006, an increase of 3.9% between 2000 and 2006. In 2006, 666,909 or 13.5% of the people 16 years of age or older lived in Metro Southwest.

Metro Southwest has 16.3% of the 3,253,970 jobs in the state. By the second quarter of 2008, the number of jobs in the region had grown from 520,757 (Q2/2006) to 528,802, a 1.5% increase.<sup>1</sup>

MSW employs 30% of all technology workers in MA and has the largest number of technology intensive jobs. It has the 2<sup>nd</sup> highest number of health care jobs and 19.7% of all manufacturing jobs in the state, more than twice as many as in other workforce regions.<sup>2</sup>

### Key industry sectors<sup>3</sup> – MSW

**STEM**—106,000 jobs  
(Science, Technology, Engineering, Math)  
**HEALTHCARE**—102,000 jobs  
**MANUFACTURING**—59,000 jobs  
**RETAIL**—56,000 jobs

### Small employers dominate the region.<sup>4</sup>

Among the 33,003 establishments reporting employment in March 2006, 86.3% had fewer than twenty employees. These firms accounted for just 22.9% (116,840) of the total number of jobs (509,478) in the region.

Companies with 100+ employees (864 establishments) were responsible for 48.7% (244,832) of all jobs in Metro Southwest, nearly identical to the statewide share.

Companies with 21–99 employees (11.1%) account for the balance of employees.

### Twelve of the 50 largest companies in MA have facilities in Metro Southwest

Raytheon...Defense/aircraft  
CVS Caremark Corp...Retail pharmacy  
EMC Corporation...High-tech storage systems  
National Grid...Utility  
Walgreens...Retail pharmacy  
Harvard Vanguard Medical Associates...Health care  
Papa Gino's Holdings Corporation...Restaurant chain  
Analog Devices Inc ...Digital signal processing/ Radio frequency/ Micro- electromechanical systems  
Medical Information Technology Inc...Software applications for health care information systems  
Siemens...Electronics/Electrical engineering  
Sun Life Financial... US Insurance/ Financial services  
Intel Massachusetts Inc...Semiconductors/ Microprocessors

### Critical and persistent vacancy rates

The continuing large and persistent vacancy rates for critical jobs in the region jeopardizes the continued growth of the innovation economy in Massachusetts.

#### Jobs with highest vacancy rates<sup>5</sup>

Healthcare practitioners & technical workers  
Management  
Healthcare support  
Computer and mathematical  
Life, physical sciences  
Architecture and engineering  
Registered nurses  
Nurses aides, orderlies, attendants  
Computer software engineers

### MSW jobs command high wages<sup>6</sup>

Average wages for the knowledge/innovation occupations of the region exceed by 30-40% the state mean wage of \$52,396.

### Venture capital...an economic essential

Eleven of the twenty-five largest venture capital/private equity firms (2007) were in the Metro Southwest region. Total investments ranged from \$298 billion at Battery Ventures LP to \$56.8 billion at Commonwealth Capital Ventures. <sup>7</sup>

### College-educated labor market

The Metro Southwest region is home to 44 school districts and sixteen colleges and universities. It has the largest number (1/6) of K12 students and 66% of all METCO students. The high school graduation rate of 92.5% in Metro Southwest is the highest of all sixteen work force areas. Marlborough, Assabet Valley, and Dedham have drop out rates of 5.1%, 3.5%, and 3.4% respectively.<sup>8</sup> 6.5% of Metro Southwest labor force participants have an associates degree; in Massachusetts, 8.1%; United States, 8.1%. 29.2% of Metro Southwest labor force participants have a bachelors degree; in Massachusetts, 27.7%; United States 18.2%. 27.7% have a masters degree or more compared to 16.1% in Massachusetts and 10% in the nation.

### Venture capital and private equity firms (MSW)

Battery Ventures LP, Waltham  
Highland Capital Partners, Lexington  
Polaris Ventures Partners, Waltham  
North Bridge Venture Partners, Waltham  
Atlas Venture, Waltham  
Ampersand Ventures, Wellesley  
Charles Rivers Ventures, Waltham  
Advance Technology Ventures, Waltham  
Prism Venture Partners, Needham  
Kodiak Venture Partners, Waltham  
Commonwealth Capital Ventures, Waltham

### **An older labor force**

Almost 14% of the Massachusetts labor force or 468,418 people worked in Metro Southwest in 2006. 88% of the workers in MSW were white, non-Hispanic compared to 81.2% in Massachusetts. 12% were minorities, an increase of approximately 5% over the past decade. The majority were between the ages of 35-64, with 26.9% between the ages of 55 and 64. In Massachusetts 14% were in the 55-64 age group, in the United States, 12.9%. 18.2% of labor force participants in Metro Southwest were born abroad, close to 18.7% for the Commonwealth, but higher than the 15.9% in the United States.

### **Low unemployment**

In November 2007, the unemployment rate in MSW dropped from 4.3% (2<sup>nd</sup> Qtr, 2006) to 3.8%, with 4,794 people collecting unemployment insurance:<sup>9</sup>

- Benefits paid for 15 weeks or more—38.1%
- Approximately 48% made \$1,000 a week at their previous jobs versus the state at 11.5%
- Four or more years of college—47.3% (twice the state total)

### **Not all residents share in the prosperity**

One in four families in the urban centers, Framingham, Marlborough, Norwood, Waltham, do not earn enough to cover food, rent, health care, transportation, child care and other essential expenses.<sup>10</sup>

### **Decreasing employment rates for young adults and teens**

In 2006 79,084 young people between the ages of 16 and 24 lived in Metro Southwest, a group that grew 22% between 2000 and 2006. They made up 9.7% of the total labor force—45,655 workers.

Only one in three MSW 16 to 19 year olds was employed in the period 2005 to 2007, compared to one in four in Boston and one in two in Bristol County. This parallels the national picture. Between 2000 and 2008, the national employment rate for teens ages 16-19 dropped 11.8%. For young adults ages 20-24, the drop in employment was 4.8%.<sup>11</sup>

## **STEM Industry Sector SCIENCE, TECHNOLOGY, ENGINEERING, MATH \***

Known as the “Technology Heartland” of Massachusetts, the Metro Southwest region has the largest concentration of high paying science, technology, engineering and math-related industries and occupations in Massachusetts.

STEM workers earned about 70% more than the national average of \$37,870 in 2005. The annual average salary was \$64,560 for all STEM workers. Engineers were at the top of the distribution earning \$74,670.<sup>12</sup>

Six of the top 20 industries in Massachusetts projected to be the fastest growing between 2004 and 2014 are major MSW industries.<sup>13</sup>

### **Projected job increases of 50%**

- Software publishing and management
- Technical consulting services

### **Projected job increases of 25%**

- Professional and technical
- Scientific research and development
- Computer systems design and related
- Internet and other information services

## **STEM industries dominate the region**

### **Professional and business services**

The professional and business services industry is composed of computer, engineering, and science occupations. It makes up 20% of the Metro Southwest labor market, compared to 15% in the state as a whole. This sector has recaptured the jobs lost during the downturn at the beginning of the century, rebounding to 106,000 jobs in 2006.<sup>14</sup>

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\* This section draws upon national, state and Greater Boston data because data is not available for the MSW region. However, the data and conclusions drawn here are supported by the conversations with regional industry leaders.

## **Professional and business services jobs<sup>15</sup>**

- Professional and technical—9,545 jobs
- Architectural and engineering—11,643 jobs
- Computer system design—16,686 jobs
- Management and technical consulting—9,435 jobs
- Scientific research and development—8,972 jobs
- Management of companies/enterprises—20,562 jobs

### **Information technology**

Information technology jobs include software publishing, ISPs, telecommunications, search portals, data processing and related occupations.

Metro Southwest has a greater share of the information technology jobs than any other region of the state—five percent compared to three percent in the state—but at 24,000 jobs in 2006 it remains below its 2001 peak of 30,000.<sup>16</sup>

In Massachusetts, four of the occupations generating nearly half of the projected new jobs by 2014 are information technology jobs.<sup>17</sup>

- Computer software application engineers—8,760
- Computer software systems engineers—7,420
- Computer systems analysts—4,030
- Network systems/data communications analysts—3,540

### **Demand for STEM occupations will increase**

In 2010, as Baby Boomers begin to retire, the national STEM worker retirement rate will be almost double the 2000 retirement rate, increasing from 3.7% to 7.3%.

Between 2004 and 2014, the demand for engineers in the United States is projected to increase by 13% from 1,448,871 to 1,643,500 jobs. If replacement jobs are included, the total demand for engineers in 2014 will be 507,000.<sup>18</sup>

## Ten of the twenty fastest growing occupations in Massachusetts are in STEM<sup>19</sup>

### Growth Rates

- Network systems/data communications analysts (43%)
- Computer and systems software engineers (39%)
- Computer software engineers (39%)
- Biomedical engineers (34%)
- Biochemists and biophysicists (32%);
- Medical scientists except epidemiologists (32%)
- Database administrators (30%)
- Atmospheric and space scientists (30%)
- Network and computer systems administrators (29%)
- Environmental engineers (24%)

### High critical and persistent vacancy rates<sup>20</sup>

- **Professional and technical services**  
3.9% state rate versus 4.6% in Greater Boston.
- **Information technology**  
3.3% state rate versus 3.8% in Greater Boston

### STEM jobs with persistent vacancies<sup>21</sup>

Medical scientists–15.74%  
Natural sciences managers–11.83%  
Network systems/data communications analysts–9.1%  
Computer software engineers –8.07%  
Environmental engineers–7.16%  
Chemists–5.37%  
Environmental scientists–5.23%

### STEM workforce predominantly white<sup>22</sup>

People employed in STEM in the state were predominantly white (89%). Blacks, Hispanics, and Asians make up the remainder. The share of Asian workers, at six percent of the total jobs, exceeded their incidence in the population.

Given projected demographic changes, both Massachusetts and the country have not addressed the under-representation of minority and female students in STEM careers.

### Too few STEM graduates to meet demand

In the US, with the exception of computer and information sciences bachelors degrees, the number of degrees awarded in STEM related college majors was flat between 1994 and 2004. The decline in master's degrees in engineering was reversed with an increase to 35,000 degrees awarded in 2004.<sup>23</sup>

### STEM degrees in Massachusetts

The trend line for Massachusetts high school students choosing post-secondary STEM majors has been essentially flat for the last ten years.

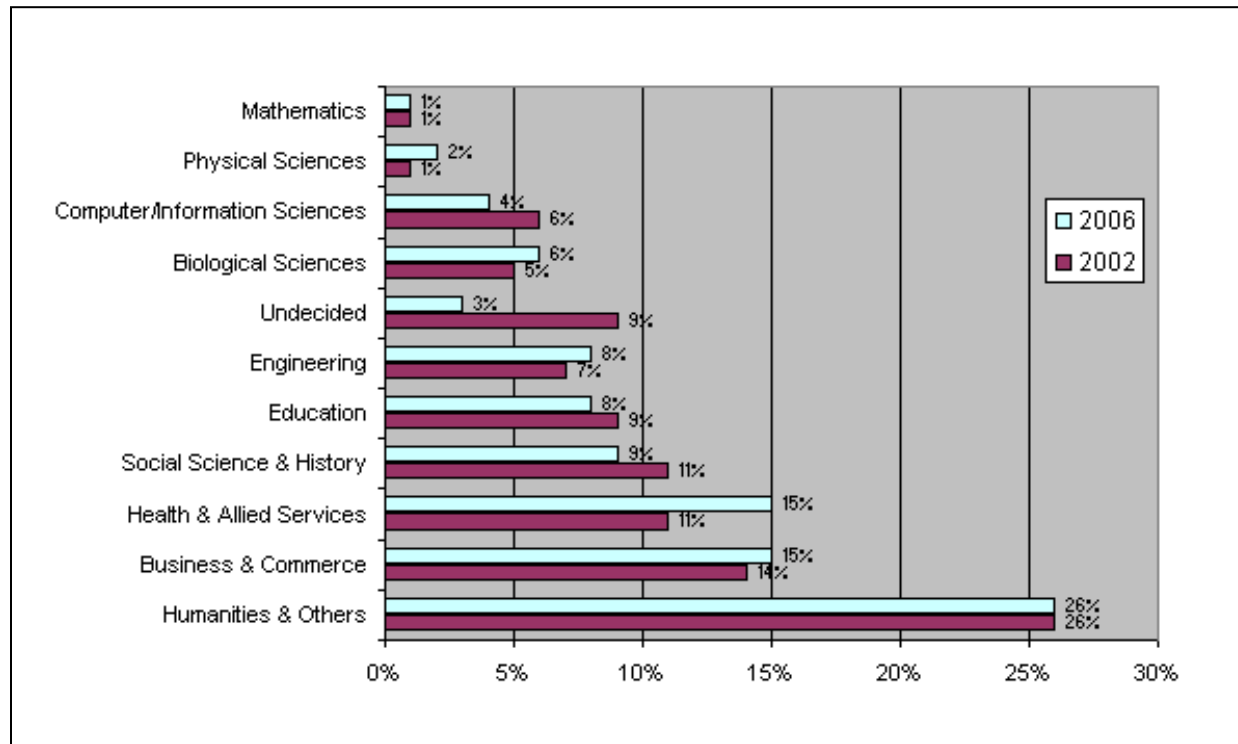
### Associate degrees

- Engineering technologists and technicians declined 24%, from 835 in 1996 to 633 in 2006.<sup>24</sup>

### Bachelor degrees<sup>25</sup>

- Engineering—declined 2.1% from 2,395 in 1996 to 2,344 in 2006
- Computer and information services and support services—rose 61.1% from 763 in 1996 to 1,229 in 2006
- Mathematics and statistics—rose 19.2% from 542 in 1996 to 646 in 2006
- Life sciences—declined 3% from 2,213 in 1996 to 2,146 in 2006

### Intended college majors of Massachusetts students (2006)<sup>26</sup>



## HEALTH CARE INDUSTRY SECTOR<sup>27</sup> —abundant and diverse opportunity

The health care industry in Metro Southwest offers an abundance and diversity of opportunity for career entry points that require little or no education. With on-the-job-training and additional education, workers can move up through several levels of health care jobs to professional positions.

In 2005, the number of people employed in Massachusetts in health care was 458,965, nearly 15% of the workforce and more than either manufacturing, education, or retail trade.

Employment in health care continues to grow and accounts for 10.2% of the jobs in Metro Southwest. Between 2001 and 2006, the health care industry in MSW added 16,197 jobs.

### MSW health care employment

#### Hospitals

11,000 jobs = 2.2% of total jobs

#### Nursing and residential care facilities

13,200 jobs = 2.5% of total jobs

#### Ambulatory care

19,000 jobs = 3.7% of total jobs

### The occupational profile of each sector within health care varies dramatically

- Fifty percent of hospital employment is professional health care workers
- Only 19% of the workers in nursing and residential care facilities are classified as “professionals.”

Registered nurses are the largest segment (76,350) of professional health care jobs, followed by therapists at 17,330.

Nursing aides are the largest segment (40,330) of health care support occupational groups, followed by home health aides at 16,750.

### Health care employment growing<sup>28</sup>

Of the 20 occupations projected to be the fastest growing between 2004 and 2014, eight are in health care.

- Home health aides—38%
- Medical assistants—32%
- Personal and home care aides—30%
- Physician assistants—29%
- Physical therapist assistants—26%
- Diagnostic medical sonographers—25%
- Dental hygienists—24%.

### Occupations generating nearly half of projected new jobs in Massachusetts by 2014.<sup>29</sup>

Registered nurses—16,860 jobs

Nursing aides, orderlies and attendants—6,430

Home health aides—5,290

Fifty percent (50%) of the health care workforce is direct care workers with health care professionals making up 34% and health care support workers accounting for 16%.

Administrative support at 17% is the second largest category of workers in the health care workforce.

### Major health care firms (MSW)

Metrowest Medical Center

Newton Wellesley Hospital

Caritas Norwood Hospital

Marlborough Hospital

Emerson Hospital

### Persistent and critical vacancies

Health care accounts for more than 20% of all job vacancies in the state. Health care practitioner positions comprise about half the total number of health care industry vacancies with a vacancy rate of 4.8%.

Largest number of persistent health care vacancies in the state:<sup>30</sup>

- Registered nurses-hospitals (3,960 jobs/5.19%)
- Nursing aides, orderlies, attendants-nursing/residential care facilities (1,920 jobs/7.6%).

### Retirements will have a critical impact

Baby-boomer retirement will negatively affect the ranks of experienced professional healthcare workers.

Age	16-39	50-59	60+
Registered/practical nurses	35%	25%	6%
Nursing aides/ home health aides	51%	17%	8%

### Minorities account for only 4% of health care professionals in Metro Southwest<sup>31</sup>

In 2000, the health care workforce was 83% white, 15% Hispanic, and 2% black or Asian.

Statewide, the nursing workforce is overwhelmingly white—92% of registered nurses and 85% of licensed practical nurses.

The nursing aides and home health aides workforce is more diverse with 20% African American, 8% Hispanic and 8% other.

### High educational requirements

Approximately half of all jobs in the healthcare sector are professional and require a college education, or are healthcare support, requiring a certificate or completion of a job training program.

Health professional and clinical sciences degrees declined by 15.7% from 2,910 to 2,452 degrees between 1996 and 2006.

### Highly paid professionals

Median wages (2006, MA)

- Health care professionals—\$60,320
- Health care support—\$27,480

During the period 2001-2006, median wages for health care professionals increased by almost \$20,000 or 6.19% a year. They earn 161% of the Massachusetts median salary of \$37,350.<sup>32</sup>

In the same period, wages for healthcare support workers increased only 1.35% a year. Their earnings were only 74% of the Massachusetts median salary.

**MANUFACTURING INDUSTRY SECTOR<sup>33</sup>  
—not as we once knew it**

Manufacturing in Massachusetts today is not the same as it was one generation ago or even ten years ago. It is more productive employing fewer people. Its STEM workers are highly educated, well paid and work with state-of-the-art technologies.

Despite steep employment declines, MA manufacturing is still a major contributor to the economic health of the state, accounting for 10% of revenues in 2006 and for significant expansions in exports over the last ten years. It involves research and development not easily replicated in other parts of the world.

In 2006, MA manufacturing exports grew to \$24 billion. The industry contributes \$33 billion to the gross domestic product.

**Manufacturing is the third largest sector in the Metro Southwest region**

Massachusetts has 299,477 manufacturing workers. It is the fourth largest industry sector in the state with nine percent (9%) of the jobs.

Manufacturing, in the Metro Southwest region accounts for 11.2% of the region’s jobs and 19.7% of all manufacturing jobs in the state.<sup>34</sup>

In Massachusetts, manufacturing lost 14,000 jobs between 2004 and 2006. The sector is projected to lose another 7,000 between 2006 and 2011. In Metro Southwest, the industry declined by 654 jobs between 2004 and 2006.<sup>35</sup>

**Major manufacturing sectors (MSW)**

- Computer/electronic product manufacturing
- Electronic instruments
- Medical equipment
- Semiconductor/electronic components
- Computers and peripheral equipment.

Three of the major export industries in Massachusetts are key industries in Metro Southwest—

- Electrical machinery (\$5,189 billion)
- Medical/surgical instruments (\$4,999 billion)
- Industrial machines/computers (\$3,329 billion)

**Occupations**

Manufacturers in Metro Southwest employ more professionals—engineers, computer specialists, managers, and financial workers—and require fewer production and material moving jobs than manufacturers across the state.

**Occupations Key MSW Manufacturing Sectors—2005**

% Sector	Mgr	Prof	Service	Sales	Admin	Blue Collar	# Employees
Computer & Electronic Products	10	45	0	4	11	29	72, 570
Fabricated Metal Products	7	8	1	3	12	70	35, 580
Electrical Equip Components	9	22	0	3	13	53	11, 200

## Major manufacturers with offices and plants in Metro Southwest

EMC  
Raytheon  
Analog Devices  
3Com  
Boston Scientific  
Intel

### MSW annual average wage surpasses the state

Metro Southwest manufacturing wages exceed those for the state in all occupational categories. The MSW average annual manufacturing wage in 2006 was \$65,333, 25% more than the state's average of \$52,396.

### Manufacturing requires college degrees

Many manufacturing occupations today require an associates degree or higher (61%) and related experience (84%). Ninety-five (95%) of production occupations in MA require experience and/or on-the-job training.

The majority of manufacturing management jobs require a bachelor degree (74%). The balance of management jobs (24%) require only experience and/or on-the-job training.

Sixty-three per cent (63%) of engineering occupations in manufacturing require a bachelors degree; 23% an associates, and 11% a certificate. Only 3% require only experience and/or OJT.

### Highly educated manufacturing workers

In 2000, 15% of workers had less than a high school diploma. In 2006, this figure was 12%.

While the share of workers with a high school diploma remained steady at 30%, those with a bachelor degree or higher increased from 29% to 34%.

Blue collar workers, in 2006, were more highly educated than those in 2000. The share of workers with less than high school declined to 21% from 28%, while those with a high school diploma grew slightly from 43% to 47%. Workers with at least some college grew from 27% to 29% and seven per cent (7%) of workers had a bachelor's degree.

### Persistent and critical vacancies

There were 2,292 manufacturing vacancies in Greater Boston, 2.3% higher than the state as a whole at 1.7%.<sup>36</sup>

### Retirements will have crucial impact

Manufacturing in MSW has an older workforce than the state as a whole. In 2006, 49% of MSW workers in manufacturing were 45 years or older . Less than a quarter of MSW workers are between the ages of 15 and 34; statewide almost a third are in this age group.

**RETAIL INDUSTRY SECTOR**  
**—Corridor 1 mixed use development**

Retail, with 56,000 jobs, represents 10.6% of the region’s jobs and is a significant sector of the Metro South/West regional economy.<sup>37</sup>

Over the next decade, along the Route 1/ Neponset Valley corridor, seven development projects are slated for construction. Together these plans will include building in excess of 2.7 million square feet of retail space, providing significant employment and career growth opportunities in the area.<sup>38</sup>

**Occupations**

Retail Salesperson is one of five occupations expected to generate through 2014 most new jobs (+10, 390), second only to Registered Nurses (+16, 860) and followed by Computer Software Applications Engineers (+8,769), Postsecondary Teachers (+8,550), and Janitors and Cleaners (+7,650)

**Wages**

The average wage in the retail trade sector (\$27, 314) is lower than the overall state average wage of \$52, 435.<sup>39</sup>

**Advancement requires higher education**

Entry-level sales positions require only a high school diploma and on-the-job-training.

Advancement to assistant manager requires a minimum of associate degree, with a bachelor’s degree required for managers and buyer level jobs.

**Major retail employers (MSW)**

BJ’s  
TJX  
Staples  
Natick Mall  
Natick Collection  
Wrentham Outlets

## CONCLUSIONS

### MSW must act to maintain competitive advantage

Metro Southwest is a knowledge and innovation-based high-end economy. STEM industries and manufacturing sectors are strong players in the export market with access to venture capital and research and development via the higher education system. The region's competitive advantage lies in its highly educated labor pool and vibrant STEM, health care, manufacturing and retail industry clusters. State and local policy makers must support continued growth and act to preserve these advantages.

There are challenges that, if ignored, will reduce the ability of the region to compete within the Commonwealth, in the United States, and in the world. Labor force growth is stagnant and persistent vacancy rates exist in key occupations. The participation rates of minorities, women, and youth in STEM jobs are not reflective of the size of their populations. Retirement of older STEM workers, particularly males, will double between 2010 and 2014, seriously reducing the STEM workforce.

### Competitive Advantages

Growing industry clusters in STEM, Health Care, Manufacturing and Retail

Strong players in the manufacturing and STEM export markets

Venture capital

Access to cutting-edge research and development in world-class higher education institutions

Highly educated labor pool

The content and pedagogy in educational institutions at all levels must reflect 21<sup>st</sup> Century skills and practices to match the skill demands of employers. Business and education leaders must build on current reform efforts to insure that students have the 21<sup>st</sup> Century skills required to compete in a global economy and earn a sustainable wage.

There is growing economic inequality in the region. While there are large numbers of well educated, highly paid people in the region, there are also sizeable cadres of people without the education necessary for earning sustainable wages. Strategies must be found to upgrade their academic and occupational skills to meet the requirements for higher paying jobs and career opportunities.

### Challenges

Reducing vacancy rates by increasing the number of minorities and women in STEM jobs, retention of older males, and employment of youth

Aligning skills of current and future workers with employer requirements

Increasing the awareness, interest, and motivation of middle and high school students to pursue STEM and health care post-secondary programs of study

Increasing economic opportunity for all residents

# Metro South/West Regional Employment Board



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