



North Shore Workforce Investment Board

# Labor Market Blueprint



September 2007

by O. Steven Quimby, Economic Development Consultant

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**WIB**  
WORKFORCE  
INVESTMENT BOARD



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# Greetings:

On behalf of the North Shore Workforce Investment Board (NSWIB), we are pleased to present this Labor Market Blueprint for the North Shore region.

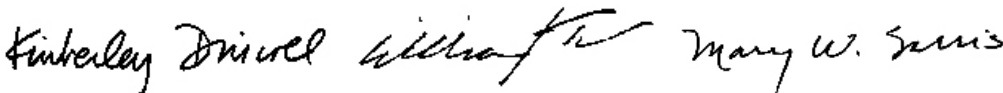
This regional labor market report capitalizes on two prior reports completed in 2000 and 2002 and helps us to continually examine the ever changing and dynamic world of work. This blueprint is but a snapshot of our labor market, its strengths, needs and challenges. Our challenge and mission is to be alert to the needs of businesses and individual job seekers and address them in a mutually beneficial and efficient manner.

The NSWIB is charged under the Workforce Investment Act with overseeing the workforce development system and investing the region's federal and state workforce funds by forging partnerships that bring together the varied workforce development entities in our region. The Blueprint will provide accurate labor market information to all the partners in the workforce development system and most importantly to our business and individual customers utilizing the One-Stop Career Centers in our area. Our current economy demands a high skilled, continuously improving labor force. Research such as this Blueprint will help us build this labor force and ensure a vibrant quality of life for our entire North Shore community.

Business, educators, and community leaders from all over the North Shore and the state were generous with their time and insights during the development of this blueprint. The NSWIB is grateful to them for their commitment to making the North Shore a better place to live and work. In addition, we would like to thank O. Steven Quimby and his research team for the quality of work performed in developing this blue print and his attention to our thoughts and perspectives.

We invite you to become more involved in the development of our workforce on the North Shore and welcome your feedback as we move forward. For more labor market information as well as information on our programs be sure to visit our website [www.northshorewib.com](http://www.northshorewib.com).

Sincerely,



Kimberley Driscoll  
Mayor of Salem  
Chief Elected Official

William J. Tinti  
Chairman

Mary W. Sarris  
Executive Director

# Acknowledgements

The author would like to thank the many people who were generous with their time and expertise in the process of completing this report. The staff and members of the North Shore Workforce Investment Board provided leadership to the research process and brought a number of useful insights to bear that improved the early drafts of the Blueprint. I would particularly like to thank all of the staff and owners of the businesses interviewed in the research for lending their time and expertise to this effort. Without them, this Blueprint would not have been possible. Finally Thomas Merrill provided outstanding research assistance.

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# Executive Summary

The North Shore Workforce Investment Board commissioned this Labor Force Blueprint to develop a strategic overview of the region's labor market and provide information to a wide variety of labor market stakeholders. This information serves to improve the capacity of all system partners to work more effectively.

- The WIB and other system funders will have access to information on the best opportunities to make investments that will benefit both workers and businesses.
- Career Center staff can hear from employers about the types of skills (both “soft” and “hard” skills), education, and experience that successful candidates need to have.
- Training providers will have access to detailed information on the skill and education requirements of the region's businesses that are looking to hire, so the providers' programs can be tailored to meet the needs of those businesses.

## LABOR MARKET DEMAND

The selection of critical industries was based on the following factors:

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

Based on these criteria, four industries stood out as critical drivers of labor market demand, providers of employment paying sustainable wages, and offering career ladder opportunities on the North Shore.

- Construction
- Financial Services
- Health Care
- Durable Goods Manufacturing

Among these four industries, there are high levels of current employment and a history of relatively high levels of employment in the region. There is a consistent demand for replacement jobs in each of these four industries.

There are differences in the number of new jobs in the four critical industries. Health Care employment has been growing consistently and is projected to grow for the foreseeable future. Construction employment varies seasonally but over the past five years its annual employment has been consistent. While Manufacturing employment has declined from its peaks, it still employs a very significant portion of the private sector workforce on the North Shore. Financial Services industry employment has rebounded over the past two years, after a period of decline.

The Construction industry on the North Shore is facing an aging workforce with too few younger workers interested in entering employment in the industry. The skills and education requirements of the industry are also increasing, requiring new entrants to have stronger levels of math skills than ever before. The greatest human resources challenge in Construction is lack of workers who want to be in the industry over the long term on the North Shore.

The Financial Services industry has reemerged as a critical industry based on its increasing levels of employment, particularly in the banking sector, the good accessibility of

employment for people without a bachelor's degree, and strong advancement opportunities. Many banks on the North Shore are currently opening new branches and creating many new employment opportunities, although this situation may not last. The industry's greatest challenge is the retention of highly skilled and experienced workers. This is particularly important in a customer-focused service industry such as banking.

Health Care businesses face serious challenges finding the workers they need in occupations such as Registered Nurses, Radiology, Mammography, X-Ray Technicians, and Medical Records Technicians. Hospitals are competing for the same limited pool of workers with the skills and experience needed. Many workers who want to enter the industry underestimate the difficulty of the work.

The Manufacturing industry has experienced a significant loss of employment over the past five years. However, it is still one of the largest industries on the North Shore and employment in Durable Goods Manufacturing seems to have stabilized over the past year. The main human resource challenge in the industry is that jobs are requiring greater levels of skills and creativity. What used to be entry-level production jobs are now "engineering associate" positions, requiring problem-solving ability in addition to the usual manufacturing equipment knowledge. Additional education, particularly at the community college level, will be required to meet these new demands.

Across the critical industries, several common themes emerge. First, in each of the industries entry-level and advanced positions require higher levels of skills and education than ever before. Second, the aging workforce is a challenge these industries are facing, particularly the Construction and Manufacturing industries. Third, the need to instill stronger work ethics in entry-level workers was mentioned by businesses in each of the critical industries. Finally, each of the critical industries has occupations with strong career ladder advancement opportunities. These opportunities require education, training, and experience for workers to successfully advance.

The only selected emerging industry is Biotechnology. Emerging industries are those with small bases of current employment that are poised to grow rapidly in the future and that offer strong wages and career options. Massachusetts is the number two state in the country in terms of Biotechnology employment. The North Shore has a number of Biotechnology companies and a significant cluster for Biotechnology is located at the Cummings Center in Beverly. The largest Biotechnology occupations are Biological, Chemical, and Pharmaceutical Researchers. Almost all of these positions require at least a master's degree, and most require a PhD. As the industry matures on the North Shore and more companies move into manufacturing biotechnology products, more jobs are likely to be available that do not require Master's degrees or Ph.D.s.

The Creative Economy is a concept that has gained a lot of currency in economic development circles over the past five years. Leaders on the North Shore have been heavily involved in highlighting both the presence of the Creative Economy on the North Shore and its importance for the economic health of the region. A study by the Eagle Tribune Publishing Company found that the Creative Economy is more densely concentrated on the North Shore than in the United States as a whole. The report also estimated Creative Economy sales in the region to the north of Boston region at \$1.258 billion. The workforce development system should engage with the Creative Economy to further identify and meet its workforce needs in the future.

## RECOMMENDATIONS

The general recommendations of the Blueprint are:

- Continue to work on the development of interviewing skills. In every industry, businesses mentioned that they continually see people who do not come to the interviews on time, are not appropriately dressed, and don't know appropriate etiquette for the business.
- Incorporate components for Adult Basic Education (ABE) and English for Speakers of Other Languages (ESOL) into occupational skills training programs, and work with education partners to incorporate occupational skills training into ABE and ESOL classes to ensure that workers are able to get the English they need to enter and advance in the workplace as quickly as possible.
- Work closely with community colleges to ensure that they consistently make available associate's degree training that meets the needs of workers and businesses in the region, because this type of training is projected to be required for the largest number of new jobs over the next 10 years.
- Focus on state investments in the Alternative Energy industry for opportunities to utilize the skills of the North Shore workforce in this emerging industry sector.
- Ensure that training for youth, and interactions with businesses that employ youth, address the generational differences in career expectations and their implications for how to succeed as a young worker or as a company that relies on a younger workforce.
- Work closely with businesses—in all of the critical and emerging industries—to develop and implement training for low-skilled incumbent workers.
- Ensure that the Career Center Business Service Unit develops an enhanced focus on meeting the needs of businesses in the critical and emerging industries.

*Recommendations are also provided for each of the critical and emerging industries.*

# Chapter 1 | Introduction

## PURPOSE

The North Shore Workforce Investment Board (NSWIB) is one of 16 WIBs in Massachusetts. The NSWIB is responsible for setting policy and overseeing all federal- and state-funded workforce development programs across the 19 cities and towns in the North Shore area. The mission of the NSWIB is to meet the workforce needs of both individuals and employers in the region. Through partnerships with schools, colleges, training providers, public organizations, and businesses, the NSWIB builds and supports a workforce development system that serves all members of the North Shore community at any point where work-related services are needed.

One of the critical roles of all Workforce Investment Boards is to serve as a gatherer and disseminator of labor market information. This information serves to improve the capacity of all system partners to work more effectively.

- The WIB and other system funders have access to information on the best opportunities to make investments that will pay for both workers and businesses.
- Career Center staff can hear from employers about the types of skills (both “soft” and “hard” skills), education, and experience that successful candidates need to have.
- Training providers have access to detailed information on the skill and education requirements of the region’s businesses that are looking to hire, so the providers’ programs can be tailored to meet the needs of those businesses.

This report is a key component of the NSWIB’s efforts to provide objective, timely, and relevant labor force information to all partners in the regional workforce system.

## HISTORY

The North Shore Workforce Investment Board has a long history of conducting labor market research and utilizing the research in its work. In 2000, the NSWIB produced its first Labor Force Blueprint. Conducted by the Center for Community Economic Development (CCED) at the University of Massachusetts Boston, the Labor Force Blueprint identified eight industries to focus on:

### 2000 Critical Industries

Construction  
Health Care  
Manufacturing  
Personnel Supply Services  
Retail Trade

### 2000 Emerging Industries

Computer and Data Processing  
Financial Services, Web-based Banking  
Telecommunications

In 2002, the NSWIB worked with the CCED to update the original Labor Force Blueprint. This effort focused on an examination of the changes that occurred in the critical industries and the development of a set of case studies of exemplary career ladder programs serving the manufacturing, telecommunications, and construction industries.<sup>1</sup>

Between 2004 and 2006, NSWIB staff developed a number of labor force reports. These include annual overviews of the North Shore regional labor market and sector-specific reports on critical North Shore industries. These analyses have contributed greatly to this report.

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<sup>1</sup> All NSWIB labor force reports can be found at <http://www.northshorewib.com/resources.htm>.

This report represents the first comprehensive update of the North Shore Labor Force Blueprint in the last five years. As such, this effort was a comprehensive, bottom-up look at the entire labor force in the region.

## METHODOLOGY

The analysis for this report focuses on regional labor force demand. Both quantitative and qualitative research tools were employed, in an iterative fashion, to (1) select industries most relevant to the communities' employment needs and (2) analyze these industries for entry requirements, wages offered, and promise of advancement opportunities. Selection of critical and emerging industries was based on the following factors:

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

These factors were assessed through analysis of quantitative data on industry employment and through interviews with important stakeholders in the region, including staff members of Chambers of Commerce, economic development leaders, and key workforce staff in the region. Based on these data, the following critical and emerging industries were selected:

### 2007 Critical Industries

Construction  
Financial Services  
Health Care  
Durable Goods Manufacturing

### 2007 Emerging Industry

Biotechnology

Following selection of the industries, a series of interviews were conducted in each industry to identify the critical human resource needs of the industry and the most important skills and educational requirements for workers in the critical occupations.<sup>2</sup> Information from these interviews was aggregated to ensure confidentiality and is reported in the industry report sections.

Quantitative data on employment in the region was provided by the Massachusetts Department of Workforce Development (DWD), through the Covered Employment and Wages (ES-202) data series. This data series covers all employment, in both the public and private sectors and in every industry, for the North Shore Workforce Investment Area.

A note of caution is in order when comparing the data from this report with those used in the previous Labor Force Blueprints. In March 2003, the Bureau of Labor Statistics transitioned industry classifications from the Standard Industrial Classification (SIC) system, which had been in place since the 1930s, to the North American Industrial Classification System (NAICS), which better describes the current industrial structure of the United States due to a greater emphasis on services and high-tech industry sectors that did not exist in the first half of the twentieth century.<sup>3</sup> DWD has converted ES-202 data to the NAICS codes going back to 2001. Earlier data are not specifically comparable. Also, the biotechnology industry is no longer defined as a discrete industry, so no quantitative data are provided for biotechnology.

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<sup>2</sup> The survey protocol is provided in Appendix A.

<sup>3</sup> For more information on the NAICS codes, see <http://www.bls.gov/bls/naics.htm>.

As final step to the quantitative labor market data, occupational matrices were constructed for the critical industry sectors (see Appendix B) using the methodology developed in the 2000 Labor Force Blueprint. The occupational matrices include information on numbers of workers in each occupation, the projected growth rate of the occupation between 2004 and 2014, and the career ladder level of the occupation. This analysis method serves three critical purposes. First, an examination of the wages paid by the most important occupations in an industry gives an indication of whether or not investment in training programs for these occupations is likely to provide a payoff to workers. Second, the examination of the occupational mix in an industry allows one to focus on the largest- and/or fastest-growing occupations when developing programs to meet employer needs. Third, an analysis of the mix of jobs at different skills and training levels provides information on the likelihood of career ladder potential.

Career ladder potential is defined as having a mixture of Level I, II, and III jobs in the occupational matrix. The determination of the number of jobs designated Level I, II, and III is based on the differentiation of jobs into levels—which is, of necessity, partially subjective. All jobs in the three levels included in the matrix generally do not require a bachelor's degree as a condition of hiring, although some incumbent workers in these jobs may have a bachelor's degree. Where this is the case for a particular industry, it is noted in the analysis. The differences between the levels are based on factors that include increasing educational requirements, increasing the length of training required to enter the job, and generally increasing wage levels. Employer interviews and focus groups as well as the Bureau of Labor Statistics' Occupational Employment Statistics provided the information on educational requirements and wages.<sup>4</sup> It is important to note that, due to market forces, wages across different occupations are not strictly comparable. The wages provided in the appendices are averages, and the wages paid by specific employers will vary.

The remainder of the report proceeds as follows. The next chapter provides a broad overview of the North Shore labor market along with an analysis of the changes that have taken place over the past five years. Chapter 3 reviews the critical industries and describes the results of the interviews with businesses in each of the critical industries. Chapter 4 focuses on the North Shore's emerging biotechnology industry. Chapter 5 discusses an emerging force in the North Shore labor market, the Creative Economy, and Chapter 6 concludes with recommendations for the North Shore workforce investment system.

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<sup>4</sup> This method of employment-level determination carries with it some potential biases. One potential bias is the understatement or overstatement of the numbers of Level 1, 2, or 3 jobs in the study area. It seems likely, given the large numbers of jobs we are reporting on, that any differences caused by the data issues described above are likely to be small. The other main issue that arises from this problem is the over-reporting or under-reporting of particular jobs in the North Shore. This problem cannot be directly resolved through analysis of the quantitative data. Therefore, the NSWIB and the programs it funds are advised to work closely with specific employers to determine their occupational mix as part of the program development process.



# Chapter 2 | North Shore Labor Market

## INDUSTRIES

The North Shore labor market has been notable for its consistency over the past five years. Total employment has grown by fewer than 1,000 jobs, while private sector employment has decreased by about 2,700 jobs. As shown in Figure 2.1, most private industry sectors in the North Shore lost employment between 2001 and 2006.

**Figure 2.1 North Shore Private Sector Employment: 2001-2006**

	2001	2002	2003	2004	2005	2006
Agriculture, Forestry, Fishing & Hunting	509	510	506	525	528	481
Construction	5,998	6,560	6,903	6,619	6,688	6,989
Durable Goods Manufacturing	17,778	15,892	15,458	15,145	15,378	14,983
Non-Durable Goods Manufacturing	6,484	5,983	5,732	5,436	5,246	5,063
Retail Trade	27,097	26,652	26,248	26,789	26,866	26,347
Transportation and Warehousing	2,312	2,191	2,187	2,232	2,236	2,134
Information	3,782	3,881	3,435	2,962	2,891	2,554
Finance and Insurance	5,498	6,026	6,523	5,646	5,659	6,406
Professional and Technical Services	7,125	7,004	7,220	7,581	7,780	8,064
Administrative and Waste Services	8,345	7,518	7,301	7,526	6,937	8,227
Educational Services	2,623	2,622	2,669	2,728	2,821	2,827
Health Care and Social Assistance	23,746	24,031	24,101	24,478	24,531	25,704
Arts, Entertainment, and Recreation	3,181	3,535	3,776	3,786	3,507	3,406
Accommodation and Food Services	15,719	16,083	15,435	15,258	15,349	14,856
Other Services, Ex. Public Admin	6,463	6,891	6,787	6,839	6,797	6,942
<b>Total All Private Sector Employment</b>	<b>147,862</b>	<b>146,011</b>	<b>144,601</b>	<b>144,211</b>	<b>143,853</b>	<b>145,076</b>

Source: Massachusetts Department of Workforce Development ES-202 data.<sup>5</sup>

Of the major industry groups, only Construction, Finance and Insurance, and Professional and Technical Services have demonstrated employment growth of more than 10% over the past five years.

Since the overall employment growth in the region is stable and few industries are growing their employment bases significantly, other methods of analyzing the workforce must be considered. One commonly used measure of regional industrial importance is the location quotient. The location quotient measures the relative employment of an industry in one geographical area compared to another.

<sup>5</sup> Data in Figure 2.1 is for September of each year and is not seasonally adjusted.

**Figure 2.2 Location Quotients by Major Industries: 2005**

Industry	MA	North Shore
Agriculture, Forestry, Fishing, and Hunting	0.24	1.47
Construction	0.77	0.93
Manufacturing	0.86	1.29
Utilities	0.70	0.81
Wholesale Trade	0.95	0.86
Retail Trade	0.93	1.47
Transportation and Warehousing	0.68	0.61
Information	1.14	0.62
Finance and Insurance	1.20	0.62
Real Estate and Rental and Leasing	0.85	0.95
Professional and Technical Services	1.32	0.65
Management of Companies and Enterprises	1.51	0.60
Administrative and Waste Services	0.81	0.79
Educational Services	2.18	0.46
Health Care and Social Assistance	1.23	1.08
Arts, Entertainment, and Recreation	0.99	1.33
Accommodation and Food Services	0.91	1.16
Other Services, Ex. Public Administration	1.11	1.09

Source: Massachusetts Department of Workforce Development calculations of ES-202 data.

In Figure 2.2, the Massachusetts location quotients compare the state to the nation as a whole, and the North Shore location quotients compare North Shore employment to Massachusetts state employment as a whole. Values over 1.0 indicate an overconcentration of employment in that industry, and numbers below 1.0 indicate a lower concentration of employment compared to the reference geography.

Compared to the United States as a whole, the state of Massachusetts has strong employment concentrations in the Information, Finance and Insurance, Professional and Technical Services, Management of Companies and Enterprises, Educational Services, and Health Care and Social Assistance industries. Given the state's overall employment concentration in Boston, it will come as little surprise that these industries are historically strong in Boston. Educational Services, Health Care, and Professional and Technical Services (including legal services, accounting, architecture, and engineering firms), create and/or utilize the knowledge economy for which Massachusetts is best known.

The North Shore region has employment concentrations in a quite different set of industries. Compared to Massachusetts as a whole, the North Shore has heavy employment concentrations in Retail Trade; Agriculture, Forestry, Fishing, and Hunting; Manufacturing;<sup>6</sup> and Arts, Entertainment, and Recreation.

- ♦ The North Shore's concentration in **Retail Trade** is almost entirely due to the presence of the North Shore and Liberty Tree malls. Regions with shopping centers tend to have high location quotients, and those without do not. States generally have Retail Trade location quotients close to 1.0.
- ♦ The region's **Fishing** industry is responsible for the high location quotient in Agriculture, Forestry, Fishing, and Hunting. Even though total employment in this

<sup>6</sup> Manufacturing includes both Durable and Non-Durable Goods Manufacturing.

industry is small, on a percentage basis it is considerably larger than the percentage of the state as a whole.

- ♦ While **Manufacturing** employment in Massachusetts trails the country as a whole, North Shore manufacturing continues to be a critical industry, with 29% greater concentration of manufacturing employment than in the state as a whole. The skills of the workforce and the manufacturing infrastructure in the region are not easily reproducible elsewhere in the state, lending credence to the importance of manufacturing in the North Shore labor market.
- ♦ The **Arts, Entertainment, and Recreation** industry has a high degree of concentration in the North Shore and is part of the region's important and growing Creative Economy, discussed in detail in Chapter 5.

## OCCUPATIONS

Projected occupational demand is only available at the statewide level. As shown in Figure 2.3, the 30 fastest-growing occupations are spread across a number of industries. Fully half of the fastest-growing occupations are in the Health Care industry; positions (such as Biomedical Engineers) requiring high levels of education and positions (such as Home Health Aides) requiring relatively modest levels of certificate training are included in the top five fastest-growing occupations.

High-tech occupations—such as Computer Software Engineers, Database Administrators, and Computer Systems Analysts—make up the next largest grouping of projected fast-growing occupations. However, it is worth noting that these projections were made in 2004 and may overestimate the employment opportunities presented by this industry because consolidation and offshoring have hit the high-tech industry harder than most.

**Figure 2.3 Fastest Growing Occupations: 2004-2014**

Rank	Occupation	Projected Growth
1	Network Systems and Data Communications Analysts	43%
2	Computer Software Engineers, Systems Software	39%
3	Computer Software Engineers, Applications	39%
4	Home Health Aides	38%
5	Biomedical Engineers	34%
6	Biochemists and Biophysicists	32%
7	Medical Scientists, except Epidemiologists	32%
8	Medical Assistants	32%
9	Database Administrators	30%
10	Hazardous Materials Removal Workers	30%
11	Veterinary Technicians and Technologists	30%
12	Atmospheric and Space Scientists	30%
13	Personal and Home Care Aides	30%
14	Physician Assistants	29%
15	Network and Computer System Administrators	29%
16	Physical Therapists Assistants	26%
17	Diagnostic Medical Sonographers	25%
18	Preschool Teachers, except Special Education	25%
19	Environmental Engineers	24%
20	Dental Hygienists	24%
21	Paralegals and Legal Assistants	23%
22	Dental Assistants	23%
23	Amusement and Recreation Attendants	23%
24	Computer Systems Analysts	22%
25	Registered Nurses	22%
26	Respiratory Therapists	22%
27	Employment, Recruitment, and Placement Specialists	22%
28	Cardiovascular Technologists and Technicians	21%
29	Surgical Technologists	21%
30	Physical Therapists	21%

Source: Massachusetts Department of Workforce Development: Massachusetts Employment Projections Through 2014.

Looking at the occupations that are projected to produce the most new jobs<sup>7</sup>, Figure 2.4 shows that, of the occupations projected to generate almost 50% of all new jobs between 2004 and 2014, Registered Nurses is far and away the largest occupation in terms of new jobs generated.

<sup>7</sup> Figure 2.3 discusses projected job growth on a percentage basis while Figure 2.4 shows the projection of raw numbers of new jobs. For example, Atmospheric and Space Scientists may grow rapidly on a percentage basis and appear prominently in Figure 2.3 but since they start with so few jobs at the present, they will not show up in Figure 2.4.

**Figure 2.4 Occupations Generating Nearly Half of All New Jobs:  
2004-2014**

Occupation	Number of New Jobs
Registered Nurses	16,860
Retail Salespersons	10,390
Computer Software Engineers, Applications	8,760
Postsecondary Teachers	8,550
Janitors and Cleaners	7,650
Computer Software Engineers, Systems	7,420
Customer Service Representatives	6,470
Nursing Aides, Orderlies, and Attendants	6,430
Waiters and Waitresses	6,190
Combined Food Preparation and Service Workers, Including Fast Food	5,610
Home Health Aides	5,290
General and Operations Managers	5,210
Management Analysts	4,550
Accountants and Auditors	4,310
Computer Systems Analysts	4,030
Food Preparation Workers	3,850
Landscaping and Groundskeeping Workers	3,820
Network Systems & Data Communications Analysts	3,540
Preschool Teachers, except Special Education	3,370
Sales Representatives, Wholesale and Manufacturing	3,050

Source: Massachusetts Department of Workforce Development: Massachusetts Employment Projections Through 2014.

Again, occupations in health care and high-tech are prominently represented. Service occupations are also increasingly represented in Figure 2.4, through occupations such as Retail Salespersons, Food Preparation Workers, and Landscaping and Groundskeeping Workers. These occupations, while discussed for the entire state, are reflective of the nature of employment on the North Shore, which is at least equally focused on residential services.

Finally, from a strategic investment in training perspective, it is important to consider what types of training are projected to be most relevant to the fastest growing occupations and industries.

**Figure 2.5 Job Growth By Education and Training Requirements: 2004-2014**

Associate's Degree	18%
Bachelor's Degree or Higher	14%
Postsecondary Vocational Training	11%
Short Term on-the-job Training (1-4 weeks)	5%
Work Experience in a Related Occupation	5%
Long-term on-the-job Training (1 or more years)	3%
Moderate-term on-the-job Training (1 to 12 months)	3%
Total, All Level of Education and Training	8%

Source: Massachusetts Department of Workforce Development: Massachusetts Employment Projections Through 2014

Interestingly, Associate's Degree training will be required for the largest percentage of growing jobs in Massachusetts through 2014, followed by Bachelor's Degree or Higher and Postsecondary Vocational Training. These projections point out the importance of working closely with employers and community colleges to ensure that enough appropriate training for these jobs is available throughout the region. Jobs that require only Short-term On-the-Job Training or Work Experience in a Related Occupation are projected to grow more slowly than the labor market as a whole. The overall message here is that the occupations that will continue to grow and provide employment are those that require significant levels of education and training.

## UNEMPLOYMENT AND LABOR FORCE PARTICIPATION

According to a recent MassINC study (Sum et al., 2006), the labor force in Massachusetts remained basically unchanged between 2000 and 2005. Massachusetts ranked 48th out of the 50 states in labor force growth. Furthermore, if the impact of immigration were removed, Massachusetts's labor force would actually have declined. If this pattern were to continue, it could easily result in making Massachusetts less competitive to businesses that rely on a skilled and stable workforce. This study also found a dramatic decline in labor force participation rates in Massachusetts residents, including those with bachelor's degrees or above in formal education. The North Shore's labor force has generally followed this pattern as well. The North Shore's labor force was 213,137 people in January 2000. By April 2007, the North Shore labor force had increased to only 214,070, an increase of fewer than 1,000 workers.<sup>8</sup>

Unemployment rates in the North Shore Workforce Investment Area have remained fairly consistent over the past several years and have tracked the statewide averages fairly consistently. Over the past year, the North Shore unemployment rate has ranged from 4.3% to 5.7%, while the state unemployment rate has ranged from 4.4% to 6.0%.<sup>9</sup> A comparison between the state and the North Shore on characteristics of the unemployed reveals some important differences.

In November 2006, 3,709 North Shore residents were unemployment insurance claimants.<sup>10</sup> Compared to the statewide averages, North Shore unemployment insurance recipients were more likely to receive benefits for 15 or more weeks, be older, and have four or more years of college education. The top four occupations for North Shore unemployment insurance claimants were Office and Administrative Support (14.1%), Sales (12.8%),

<sup>8</sup> Source: Massachusetts Department of Workforce Development ES-202 data. Analysis by the author.

<sup>9</sup> Source: Massachusetts Department of Workforce Development LAUS data. Analysis by the author.

<sup>10</sup> Data for this section are from the Massachusetts Department of Workforce Development, *Annual Profile for the North Shore Workforce Area*, March 2007.

Construction (11.0%), and Computer and Mathematics (9.6%). When compared to the state as whole, the North Shore had higher percentages of unemployment claimants in Office and Administrative Support, Sales, and Computer and Mathematics and a smaller percentage of claimants in Construction occupations. Interestingly, the North Shore had more than 50% fewer claimants from production occupations than the state as a whole, providing further support for the viability of the region's manufacturing sectors.

# Chapter 3 | Critical Industries

## INTRODUCTION

The selection of the North Shore region's critical industries builds on past Blueprint efforts, with the additional consideration of the data outlined in the previous chapter. The critical and emerging industries selected by the North Shore Workforce Investment Board in 2000 were:

### 2000 Critical Industries

Construction  
Health Care  
Manufacturing  
Personnel Supply Services  
Retail Trade<sup>11</sup>

The 2002 Blueprint (Quimby and Green, 2002) provided additional discussion of program options for the Construction, Manufacturing, and Telecommunications industries without an additional assessment of the critical and emerging industries. While the basic selection criteria for critical and emerging industries have remained the same, the business mix in the region has changed significantly.

Critical industries are selected based on the following factors:

- Number of jobs
- Skill and education requirements
- Wage levels of critical occupations
- Career ladder opportunities
- Projections of future employment opportunities

From the 2000 Blueprint list of critical industries, Construction, Health Care, and Manufacturing continue to rate highly on all or most of these criteria, meriting their continued inclusion as critical industries. All three continue to be large employers on the North Shore. Construction and Health Care have shown steady employment growth over the past five years. While Manufacturing has lost jobs over the past five years, there is still a substantial amount of manufacturing employment in the region.

Personnel Supply Services is now in the category called Employment Services. In September 2006, there were 3,714 workers employed in this industry on the North Shore. While this is a substantial number of workers, this industry currently fails to meet all of the other criteria for selection as a critical industry. The skill and education requirements and the wage levels for this industry are quite low. There are few career ladder opportunities within the industry, and, in many cases, transition into another industry from Employment Services is not easy because employers see this industry as an employer of last resort. Many of these low-level occupations are also not projected to grow much over the next 10 years. Finally, in a high cost-of-living area such as the North Shore, it is difficult to see how workers in the low-paying jobs that characterize much of Employment Services can manage to meet their family self-sufficiency needs, which are quite high. One positive point to note with regard to Employment Services is that some employers in other industries use Employment Services firms to provide a pool of temporary employees to “try out” and then hire those who work out the best. However, this is likely to be an option for only a small number of this region's employees in this industry.

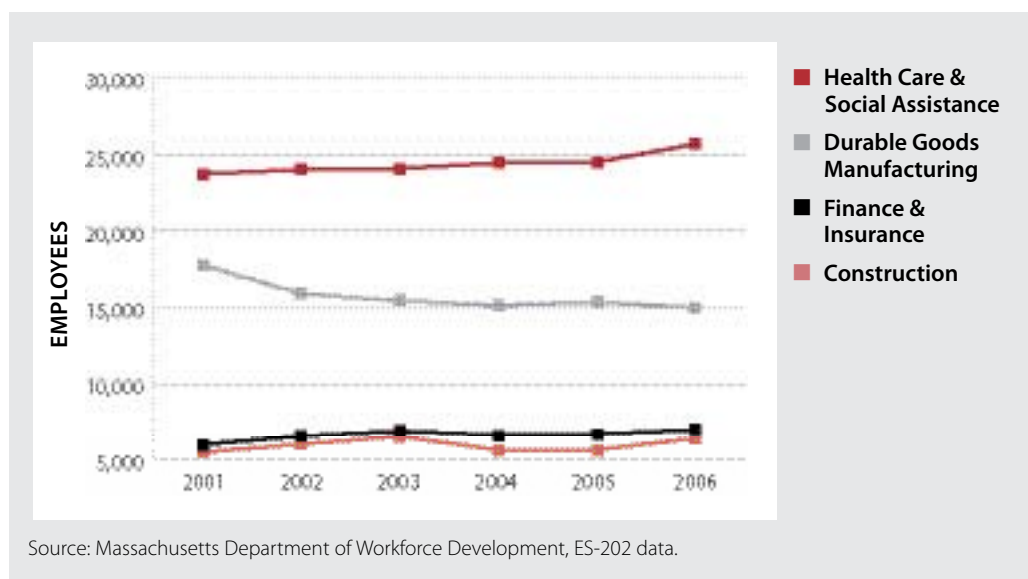
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<sup>11</sup>Green, et. al., 2000.



Retail Trade remains a strong employer in the region. Wages are relatively low for the industry as a whole, although there are likely some employers with higher wages and better benefits. Overall, there are few opportunities for advancement in Retail Trade, and most projected job opportunities are for replacement jobs rather than newly created positions, adding relatively little to the economic growth of the region.

**Figure 3.1 North Shore Critical Industry Employment: Q3 2001-2006**



The new critical industry for the North Shore is Finance and Insurance. This industry shows a stable overall employment history, with the banking sector demonstrating strong recent growth in employment. Finance and Insurance offers a number of entry-level positions that do not require bachelor's degrees.<sup>12</sup> Wage levels in these positions are fairly strong compared to entry-level positions in other industries. Finance and Insurance has strong career advancement pathways for workers who obtain entry-level positions, and future opportunities are projected to be created from both new positions and replacement jobs.

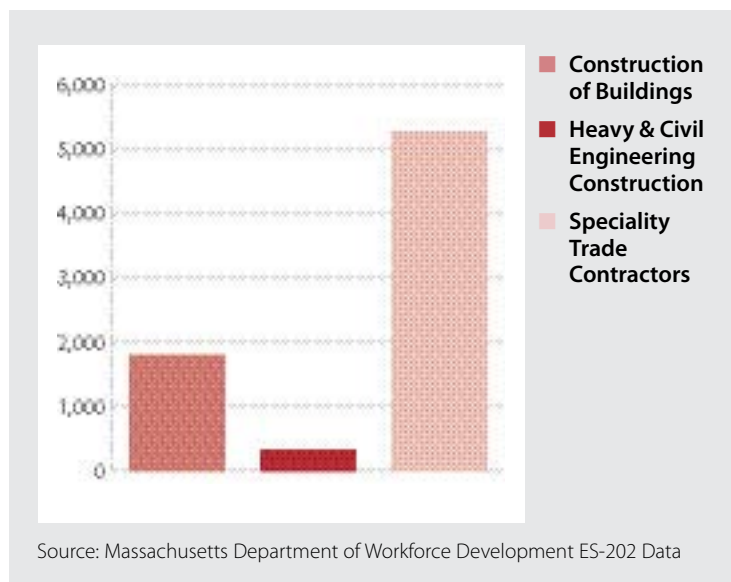
The remainder of this chapter will discuss each of the four critical industries in detail, with a review of the critical occupations and advancement opportunities in each.

## CONSTRUCTION

Construction has long been a steady employer of North Shore residents. Between 2001 and 2006, construction employment in the North Shore Workforce Investment Area has increased by 17%, from 6,301 to 7,382 workers, as shown in Figure 3.1.

<sup>12</sup> While most firms do not require bachelor's degrees for advancement, many people who advance do in fact have them, and this trend is growing in the industry.

**Figure 3.2 North Shore Construction Employment by Sector: September 2006**



## SPECIALTY TRADE CONTRACTORS

Construction employment on the North Shore is heavily concentrated in the Specialty Trade Contractors sector. This has remained consistent since the 2000 Blueprint. Specialty Trade Contractors are building trades companies that specialize in one or more aspect of construction, repair, or maintenance. These range from plumbing, heating and air conditioning, to electrical work, roofing, painting, and carpentry. On larger projects, such firms function as subcontractors that are hired by a general building contractor.

The common denominator for occupations in this field is mastery of a specialized craft. Typically this knowledge is gained through a combination of trade schools, apprenticeship training, licensure, and on-the-job experience. The predominance of craft knowledge makes the organization of specialty trade labor markets distinctive. Unions (through apprenticeship programs and hiring halls) govern much of the recruitment, training, and placement process. The line between employers and employees can sometimes blur, as craft workers—both union and nonunion—sometimes establish independent contracting businesses.

Jobs in special trades are generally highly skilled, with the exception of laborers. Even some laboring tasks—such as environmental remediation of lead, asbestos, and other potentially hazardous substances—have become relatively more skilled. Typical trades positions include painting, paper hanging, sheet rocking, carpentry, bricklaying, and electrical installation and repair. Within each trade, each such position (within the unionized sector) is further divided among apprentices, journeymen, and foremen.

The other feature that distinguishes trades work (and makes it similar to the temporary services industry) is the contingent, project-specific nature of the work. Tradesmen and tradeswomen only work as long as there are projects to work on. Thus the unionized segment of the industry has sought and attained notably high wages, often \$20–30 per hour, and generous benefits. The project-contingent nature of the work notwithstanding, a large number of people who are skilled in their Construction sector trades stay at their jobs for a long time, making careers out of it, either for another small company or for themselves.

**Critical Occupations:** The majority of occupations in the Specialty Trade Contractors sector do not require a bachelor's degree, including both entry-level and advancement positions. One of the important benefits of this sector from a workforce development perspective is the clear career advancement opportunities that are available. Figure 3.3 shows the employment opportunities for advancement in occupations that do not require a bachelor's degree. While the majority of positions are in Level 3, there appear to be a sufficient number of Level 1 and Level 2 positions to allow motivated workers to enter the Specialty Trade Contractor workforce and work their way up. This is consistent with what business owners and human resources people described in the interviews.

### Laborers

**Duties:** Unloading, carrying, and distributing tools and materials; cleaning up job site.

**Critical Degrees, Credentials, Skills:** No degree required. Need common sense, physical fitness, and strength. More skilled laborers associated within specific trades may need ability to read blueprints, set up lasers for pipe laying, or attain licensing for lead, asbestos, or other hazardous material abatement. High school degree, math and reading skills needed to enter apprenticeship program.

**Advancement Pathways:** Apprentice Laborer ♦ Journeyman Carpenter Tender, Cement Mason Tender, Environmental Remediation Worker, etc.

**Requirements for Advancement:** Successful completion of 4,000-hour trade apprenticeships in many of skilled crafts (usually two to five years), positive work history during apprenticeship. Some fields require licensing.

**Historical and Projected Demand:** Growth is generally projected to be flat to slightly negative.

### Electricians

**Duties:** Installing, testing, and repairing electrical power, communication, and security systems.

**Critical Degrees, Credentials, Skills:** High school degree required for apprenticeship; demonstrated math and reading aptitude; completion of apprenticeship; ability to read and execute blueprints and plans; use of hand and power tools; knowledge of electrical theory, circuitry, and National Electrical Code; attainment of electrician's license.

**Advancement Pathways:** Apprentice Electrician ♦ Journeyman Electrician ♦ Master Electrician Foreman ♦ General Foreman

**Requirements for Advancement:** 10,000 hours of on-the-job training (over five years of apprenticeship) and about 1,000 hours of classroom and job site coursework.

**Historical and Projected Demand:** Generally flat in terms of new jobs, but plenty of replacement openings.

### Carpenters

**Duties:** Framing, constructing, and repairing buildings; in dry walling, applying drywall and performing rough carpentry. Foremen oversee layout/construction and perform paperwork for jobs.

**Critical Degrees, Credentials, Skills:** On union jobs, serve four-year apprenticeship and pass union-administered test (including English aptitude).

**Advancement Pathways:** Apprentice Carpenter ♦ Journeyman Carpenter ♦ Carpenter Foreman

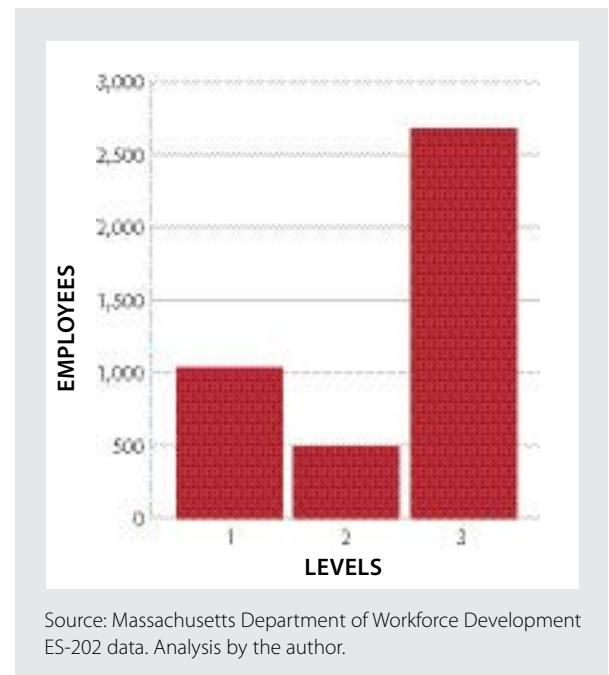
**Requirements for Advancement:** Complete apprenticeship (on the job) as well as two to three weeks of classroom training per year to attain journeyman status. Contractors select foremen on the basis of demonstrated skill and reliability.

**Historical and Projected Demand:** Generally flat, but with a modest amount of replacement openings.

**Career Ladder Opportunities:** The basic career ladders in the industry are clearly laid out, with very transparent requirements for advancement. The steps from apprentice to journeyman to master electrician or plumber, for example, are explicitly stated and covered by state licensing requirements as well as, in many cases, union work rules. The earliest steps for advancement are generally based on successful work experience and on-the-job training. Universally, respondents from the industry told us that what determines whether or not an individual will advance is the drive and motivation of the worker to do what it takes, both on the job and in obtaining the necessary training. Formal training courses are available to meet licensing requirements.

**Human Resources Challenges:** The most significant human resources challenge cited by business owners and human resources staff interviewed for this report was the lack of

**Figure 3.3 North Shore Construction Employment by Level: September 2006**



workers who want to be in the industry over the long term. It was generally felt that there is not a large pool of skilled labor to hire, especially in the North Shore, where living expenses are high. While the skill requirements for entry-level positions are not high, one respondent said, “You don’t need to know how to read to be good with your hands.” It is hard to find people who want to work and stick with the job for a length of time. Many workers start out with a construction company and move to doing maintenance work for a factory or building management company.

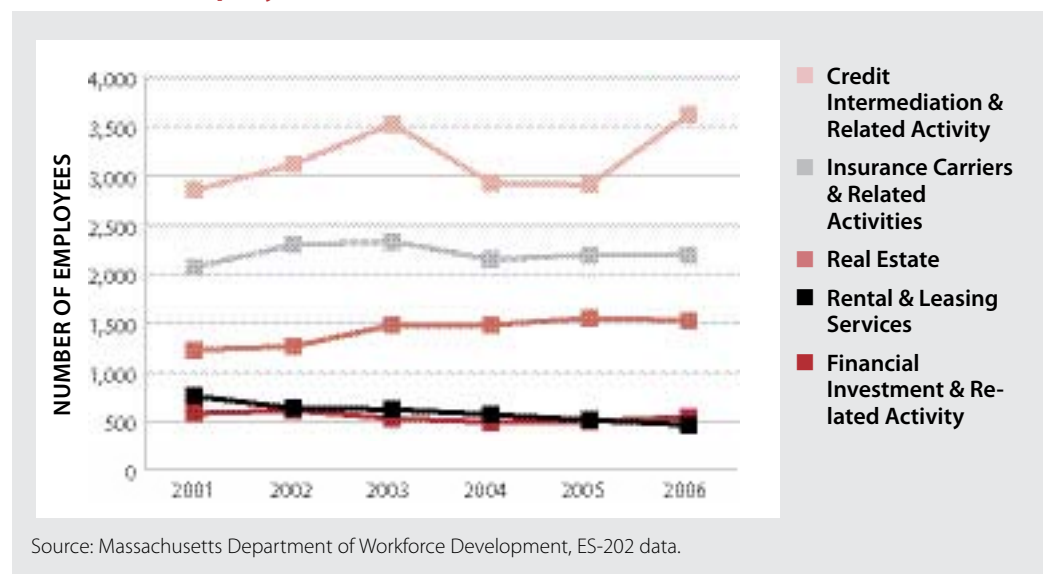
Other human resources challenges cited were the need for workers who can work during the day and take the required courses for licensing in the evening, the need for workers with good math skills to be able to qualify for advanced training, the need for workers to have reliable transportation to get from job site to job site, and the ability to find people with good communications skills.

## FINANCIAL SERVICES

Financial Services is a significant employer in the North Shore, employing 8,601 people in 2006. This is an increase from 2001, when the industry employed 7,764 workers in the region. The Financial Services industry is divided between Finance and Insurance, employing 6,392 people in 2006, and Real Estate and Rental and Leasing, which employed 2,210 workers in 2006.

The vast majority of financial services employment is concentrated in Financial Activities, which includes Credit Intermediation; Financial Investment; Insurance Carriers; and Funds, Trusts, and Other Financial Vehicles. The only significantly growing subsector is Credit Intermediation, which includes primarily banking institutions and credit unions. Financial Services employment in the North Shore is over-represented in this sector compared to the state of Massachusetts; 39% of all North Shore Financial Services employment is in Credit Intermediation, compared to only 29% of Massachusetts employment (Sinatra, 2006). Given its recent employment growth, this concentration of Financial Services employment in the subsector that includes banking may constitute a strategic advantage for the North Shore labor market.

**Figure 3.4 North Shore Finance and Insurance Sub-Sectors Employment: 2001-2006**



The recent rebound in banking employment and the fact that banking is the largest employer on the North Shore led to a focus on this sector.

### Banking Sector

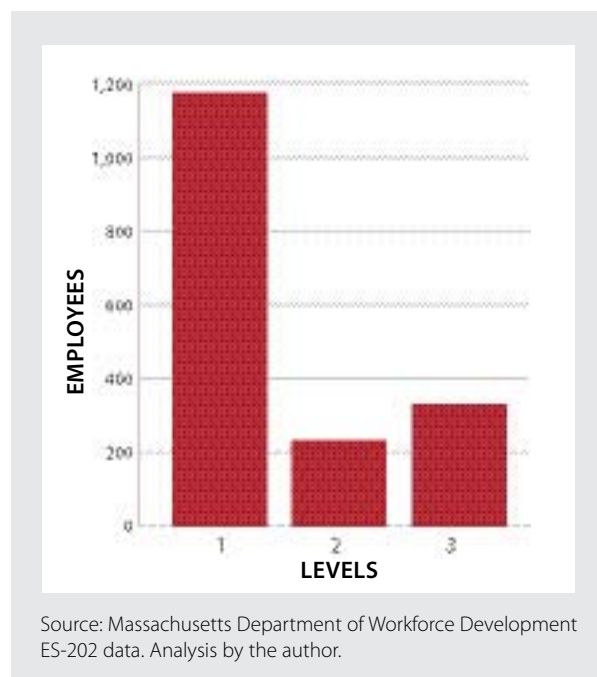
The Banking sector was included as an emerging industry in the 2000 Blueprint, with a focus on web-based banking. At the time, many of the human resources staff and other industry stakeholders interviewed told us that consolidation in Banking would lead to decreasing regional employment in the industry. Their projection was that consolidation would result in closing duplicative branches and losing back-office jobs through the efficiency gains that would be sought. Due to these projections, it was thought at the time that Financial Services, although still a large employer in 2000, would not continue to be a critical North Shore industry. However, web-based banking was thought to be an area of banking employment that would continue to be important into the future. While web-based banking has grown immensely, relatively few jobs have been created by that growth. Nevertheless, total employment in the Banking sector on the North Shore has grown significantly since 2001.

Since 2001, employment in the Banking sector of the Financial Services industry has increased by more than 25%. Most of this growth, as shown in Figure 3.4, has come in the last year. This indicates a possible change in banking strategy in the North Shore region. Specific changes indicated by respondents on the North Shore included the following:

- ♦ New bank branch locations were opened on the North Shore by local banks trying to compete with regional and national banks and also by regional and national banks seeking to grow their presence in the area.<sup>13</sup>
- ♦ Banks are branching out into new lines of business, including insurance, brokerage services, and other financial services activities. These new lines of business have resulted in the demand for additional employees with the requisite skills for these new fields.
- ♦ It appears that banks that choose to move their back office operations to other states or offshore did so prior to 2005. Therefore, there have been fewer job losses from this cause in the last two years than previously.

Of course, the trends that are shown in terms of the gaining of banking employment in the region are just that—trends. There is nothing to say that banking employment might not decline at some point in the future. While the majority of respondents did not suggest that this is likely to be the case over the next two to three years, one respondent was less optimistic about the prospects for future growth. However, even without the creation of large numbers of new jobs, the Financial Services sector generally, and the Banking sector specifically, are certainly large enough to warrant their inclusion as a critical industry for the North Shore region. The replacement jobs they provide, particularly in the Teller occupation, will continue to be important to the region's employment and workforce development efforts for the foreseeable future.

**Figure 3.5 North Shore Credit Intermediation Employment by Levels: September 2006**



<sup>13</sup> Bill Kirk, "Location, location, location: Banks branch out to lure convenience-minded customers," *Eagle Tribune*, June 3, 2007.



**Critical Occupations:** An analysis of Banking sector employment by levels demonstrates that the majority of positions do not require a bachelor's degree<sup>14</sup> or above in formal education. The entry-level (Level 1) positions are dominated by Tellers, which account for more than 20% of all Banking employment.<sup>15</sup>

### **Teller**

**Duties:** Processing transactions, interacting with customers person-to-person, adhering to individual company procedures for handling and recording transactions, balancing at the end of the day.

**Critical Degrees, Credentials, Skills:** High school diploma or GED, prior experience with cash handling and/or customer service generally preferred, excellent communication skills, attention to detail.

### **Advancement Pathways:**

Teller ♦ Senior Teller ♦ Teller Manager ♦ Assistant Branch Manager

Teller ♦ Customer Service Representative ♦ Sales

Teller ♦ Operations Clerk ♦ Analyst

**Requirements for Advancement:** Positive work experience, company-sponsored training. Some positions prefer associate's or bachelor's degree.

**Historical and Projected Demand:** Modest growth in the total number of positions, but replacement jobs regularly become available.

The job of the Teller has become more complex over time. In addition to basic Teller functions such as cash handling and customer service, the position now requires sales ability, with some banks measuring Teller job performance in part through their ability to sell other banking products to customers.

**Career Ladder Opportunities:** There is a great deal of potential mobility from the Teller occupation to other opportunities within the industry. The basic divide is whether one chooses to pursue customer-facing positions or back-office operations positions. Both types of jobs have advancement pathways that are open to those who start out as Tellers. In fact, many of the senior management in this industry started their careers as Tellers. The industry generally provides a high level of in-house training to all employees and works with new hires to help them identify where their interests lie in the industry. Most firms offer tuition reimbursement, and many tellers are hired while they are in college, giving them a leg up on advancement in the industry.

**Human Resources Challenges:** The greatest human resources challenge cited by Banking industry people who were interviewed for this report is retention of qualified and experienced staff. At the Teller level, Banking is still a human resources-intensive industry, and customers want to have a connection with the person who is serving them. If there is a new Teller serving the customer every week, it is difficult for the company to keep that strong connection. For higher-level positions such as Commercial Lenders and Business Analysts, there is heavy competition for the relatively few people in the region who have the necessary qualifications and skills.

Another human resources challenge that has changed over the years is the work ethic of entry-level workers. Most people in the industry reported that finding applicants is not currently a problem, but finding applicants and workers with a strong work ethic *is* a prob

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<sup>14</sup> The requirement for a bachelor's degree comes from the Bureau of Labor Statistics Occupational Employment Survey (OES) data. In some cases, interview respondents indicated that people without bachelor's degrees could fill higher-level positions with relevant experience, even when a bachelor's degree was a preferred qualification.

<sup>15</sup> Source: Massachusetts Department of Workforce Development, *Massachusetts Industry Staffing Patterns*, September 2005.

lem, particularly for entry-level positions. One respondent reported, “People think we owe them a job... it’s happening more than ever.” To successfully enter this industry, people need good communications skills, the ability to demonstrate positive people skills in the interview process, a good work ethic on the job, and, increasingly, the ability to sell. With these skills, there are a lot of possibilities for career advancement in the Banking sector.

## HEALTH CARE

Health Care is the second-largest employer in the North Shore, trailing only Retail Trade. Health Care overall has grown significantly over the past five years, as shown in Figure 3.1, from 23,746 in September 2001 to 25,704 in September 2006. Job growth in the Health Care industry has primarily been driven by two factors: increased demand for technical skills and the aging of the population. Counteracting these factors has been a trend toward financial control, driven by consolidation and payer policies.

Nationally, 8 of the top 20 occupations projected to be the fastest growing are in the Health Care field. Between 2004 and 2014, employment of Home Health Aides is projected to increase by 56%, Medical Assistants by 52%, Physician Assistants by 50%, and Physical Therapist Assistants by 44% (Bureau of Labor Statistics, 2007). In addition, occupations requiring technical certification—such as Radiological, X-ray, Mammography, and MRI Technicians—are projected to have both high demand and high wages over the next 10 years.

The aging and increasing longevity of the population, and the ever-increasing medical capacity to cure human ills, are creating additional demand for all subsectors of the Health Care industry. As the population ages, more demand is placed on the Nursing Home and Rehabilitation Hospital sector. As longevity increases, the adult children of elders are themselves more likely to be elders, placing an increased demand on the system (Health Resources and Services Administration, 2003).

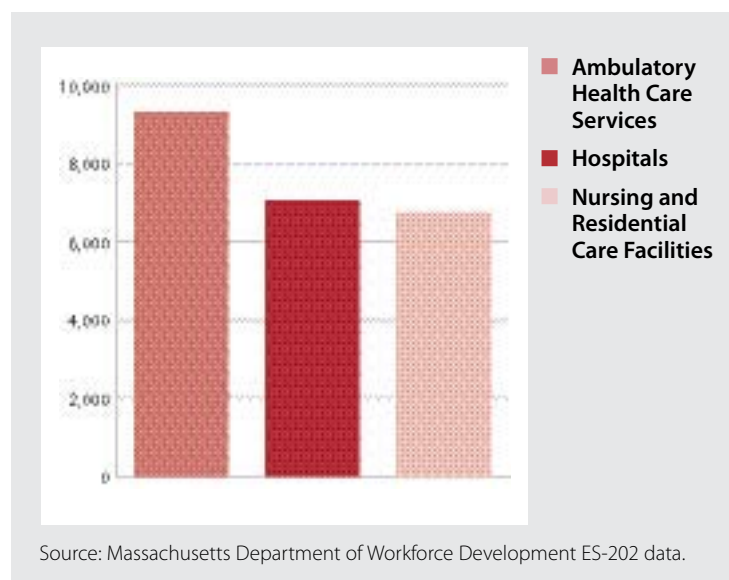
From the late 1990s to the present, Health Care industry consolidation activity has been brisk. Estimates on its effect on industry employment at the national level have been mixed. The most recent studies suggest that consolidation has placed a higher premium on skilled workers in technician and nursing positions, resulting in higher wages for these positions. Simultaneously, consolidations at the local level have brought about layoffs for some workers, particularly those at the entry level, who may lack higher levels of education and certifications that remain in high demand.

In the North Shore, Health Care employment is concentrated in three sectors, as shown in Figure 3.2: Ambulatory Services (primarily offices of physicians and dentists), Hospitals, and Nursing and Residential Care Facilities. Due to historical engagement with the workforce system and clearly identified sets of hiring and training needs, interviews were conducted with Hospitals and Nursing and Residential Care Facilities only. A brief discussion of Ambulatory Services, based on published data, is included for comparison purposes.

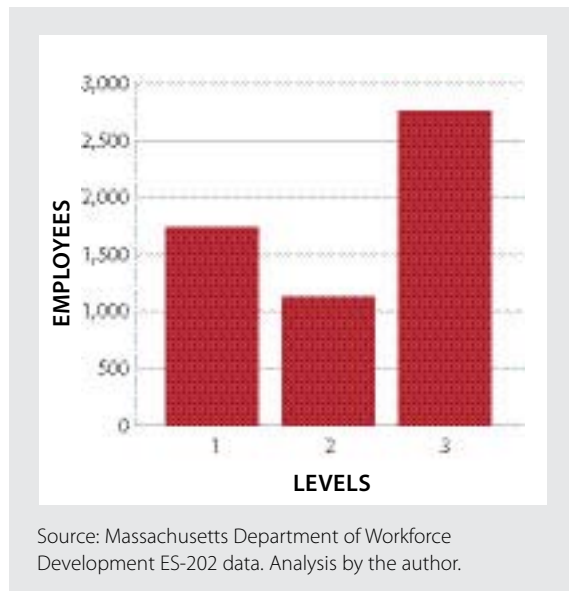
### Ambulatory Services

Ambulatory Services has the largest number of employees, but also the largest number of individual firms. In September 2006, there were 706 Ambulatory Services firms in the North Shore region, with an average of

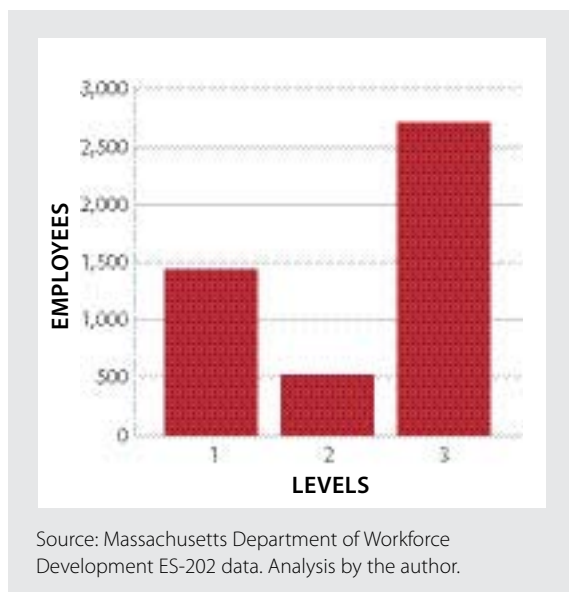
**Figure 3.6 North Shore Health Care Employment by Sector: September 2006**



**Figure 3.7 North Shore Ambulatory Health Care Services Employment by Levels: September 2006**



**Figure 3.8 North Shore Hospital Employment by Levels: September 2006**



13.2 employees per firm. The median weekly wage for employees in Ambulatory Services was \$962 per week in September 2006.<sup>16</sup>

While Ambulatory Services has the largest number of employees, it had the fewest job openings in the Health Care sector. Also, the large number of firms makes it difficult for the workforce system to engage this subsector as a group, unlike the Hospital sector, which has only a few firms, making sector engagement a more direct proposition.

Finally, the vast majority of positions in the Ambulatory Services sector of Health Care are the direct caregiving professions, which require a bachelor's degree or above in formal education. Even those positions that do not require a bachelor's degree generally require significant amounts of formal training. Examples of such occupations include Registered Nurses, Radiological Technicians, and Medical Technologists.

### Hospitals

Hospitals and community health centers are large and stable employers in the North Shore region. In September 2006, there were 16 firms employing 7,061 people for an average of 441 employees per firm.<sup>17</sup> The median weekly wage for the Hospital sector was \$894 per week.<sup>18</sup>

Overall, approximately 63% of the total Hospital employment is in occupations that do not require a bachelor's degree or above in formal education. Hospitals have a significant number of entry-level jobs and an even larger number of jobs, such as nursing and technologist positions, which require education and licensing below the bachelor's degree level.<sup>19</sup> This diverse occupational mix provides substantial opportunities for interaction with the workforce development system to meet businesses' training needs and provide career ladder opportunities for workers.

In comparing Figure 3.8 to its counterpart in the 2000 Blueprint, it is interesting to note that Hospital employment in occupations that do not require a bachelor's degree has shifted from a majority of Level 1 jobs in 2000 to a majority of Level 3 jobs in this report. Employment in the Hospital sector increasingly requires high levels of skills and training. On a percentage basis, there are fewer assistant and aide positions and more Registered Nurses and technicians. Workers seeking to enter this industry and the training providers who prepare them should take note of this change.

The vast majority of occupations in the Hospital employment matrix are projected to grow through 2014. For example, employment of Registered Nurses is expected to grow by 21.9%, employment of Radiological Technicians is expected to grow by 18.3%, and employment of Medical Assistants is expected to grow by 31.3%.<sup>20</sup> These projections are for new jobs only and do not include replacement jobs.

<sup>16</sup> Source: Massachusetts Department of Workforce Development, ES-202 data.

<sup>17</sup> Since this category includes both traditional hospitals and community health centers, it is important to note that employment at some hospitals in the region greatly exceeds the average.

<sup>18</sup> Source: Massachusetts Department of Workforce Development ES-202 data.

<sup>19</sup> See the Occupational Matrices in Appendix B for details.

<sup>20</sup> The occupational growth projections are for the occupation across all industry sectors.



## Critical Occupations:

### Medical Assistant (MA)

**Duties:** Taking medical histories, recording vital signs, processing records, collecting and preparing laboratory specimens.

**Critical Degrees, Credentials, Skills:** Certificate and/or on-the-job training, interpersonal skills.

#### Advancement Pathways:

MA ♦ Licensed Practical Nurse ♦ Registered Nurse

MA ♦ Medical Technician ♦ Medical Technologist

MA ♦ Radiological Technician

**Requirements for Advancement:** Two-year degrees must be obtained for LPN, RN, Medical Technician, and Medical Technologist.

**Historical and Projected Demand:** High levels of current demand; projected increasing demand through 2014.

### Housekeepers (Environmental Service, Unit Service)

**Duties:** Changing beds and rooms; cleaning floors, walls, and other surfaces; and performing other maintenance tasks as needed. In some cases (Unit Service Aides), these duties are combined with feeding patients and obtaining supplies, among other tasks. In one hospital, these positions were provided by an outside service company on a contractual basis.

**Critical Degrees, Credentials, Skills:** None; some hospitals do not require English skills for these positions, while others require basic fluency to communicate with patients and family members and read instructions.

#### Advancement Pathways:

Housekeeper ♦ Certified Nursing Assistant

**Requirements for Advancement:** Complete CNA training (75 hours); English as a Second or Other Language. Obtain skills through in-house courses (computers, medical terminology) or college programs.

**Historical and Projected Demand:** Relatively modest current demand. Most new positions are for replacement jobs. Not projected to grow dramatically.

**Career Ladder Opportunities:** There are significant opportunities for advancement from most entry-level jobs in the Hospital sector. However, accessing these opportunities requires a strong commitment from the worker because advancement generally requires at least a two-year training program. For example, there are high demands for Registered Nurses and all sorts of technicians (i.e., Radiological, X-ray, Mammography, and MRI Technicians), but these positions require extensive training and often state licensing. The training programs for these positions have as prerequisites a math and science background, which many entry-level workers may not have. This results in additional courses that must be taken prior to being accepted into the training program. All of the hospitals interviewed for this report offered tuition reimbursement and various other forms of employee assistance for career development, but the road to advancement from the entry level can still be a long and difficult one.

**Human Resources Challenges:** The number-one human resources challenge in the Hospital sector is the competition for trained, certified, and experienced workers. One human resources staffer told us: "Hospitals must compete for skilled certified workers. All are looking for the same thing at the same time. There just aren't enough clinical people trained in the workforce to fill all the vacancies." This viewpoint was shared by all of the hospitals interviewed.

Another well-known human resources issue that cuts across the entire Health Care industry is the aging of the nursing workforce. In an environment where many facilities cannot currently find enough Registered Nurses to meet their needs, the prospect of a wave of retirements coming in the next 10 to 15 years is daunting indeed. Training capacity for RN programs is currently constrained, making it difficult for the region or the state training system, as it is currently constructed, to produce enough new RNs to meet the upcoming demand for both new and replacement positions. Clearly, additional training capacity is needed.

### Nursing and Residential Care Facilities

Nursing and Residential Care Facilities employed 6,734 workers at 124 facilities on the North Shore in September 2006. The average employees per facility was 54, slotting in directly between Ambulatory Health Care Services and Hospitals. The median weekly wage for the sector was \$550, considerably below the median wage for all other Health Care sectors in the region.<sup>21</sup>

The majority of this sector's workers in positions that do not require a bachelor's degree are in Level 1 jobs, as shown in Figure 3.9, requiring the lowest levels of education and generally providing the lowest pay rates. With many Level 1 jobs and relatively fewer Level 2 and 3 positions, career ladder opportunities are harder to come by in this sector than in other Health Care sectors.

However, two factors override this concern. First, the basic education and skill requirements of workers in this sector varied by the size of the company. The smaller nursing homes and rehabilitation centers have higher proportions of workers with high school diplomas or equivalent, while larger facilities were more like hospitals and community health centers, with higher proportions of workers with associate's or bachelor's degrees. Several respondents indicated that it was common for workers to transition from smaller to larger facilities in this sector as they gained education and experience. This is a different method of advancement than a traditional career ladder, but it still offers advancement opportunities for self-motivated workers. Second, a number of current career ladder programs have been developed in this industry, and several respondents indicated that they had participated and successfully advanced a number of workers through their participation.<sup>22</sup>

Nursing and Residential Care is likely to be a strong employer in the region for the foreseeable future. The aging of the population, existing facilities, and the region's close proximity to world-class medical care

facilities—both in the region and in Boston—combine to make this sector one that should experience consistent employment growth.

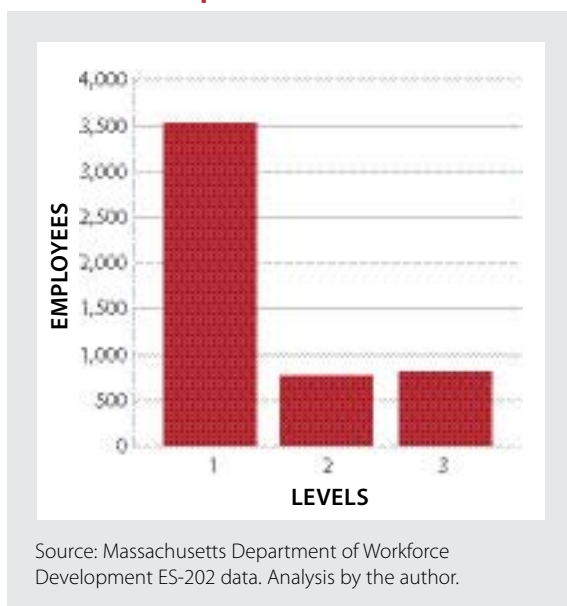
### Critical Occupations:<sup>23</sup>

#### Certified Nursing Assistant (CNA)

**Duties:** Dressing, cleaning, and feeding patients, drawing blood.

**Critical Degrees, Credentials, Skills:** Certificate (75 hours of outside training); fluency in English; interpersonal skills.

**Figure 3.9 North Shore Nursing and Residential Care Facilities: Employment by Levels: September 2006**



<sup>21</sup> Source: Massachusetts Department of Workforce Development ES-202 data.

<sup>22</sup> Notable in this regard is the Extended Care Career Ladder Initiative (ECCLI). See <http://www.commcop.org/eccli/index.html>.

<sup>23</sup> For information on the nursing professions, see Hospital Critical Occupations.

**Advancement Pathways:**

CNA ♦ Licensed Practical Nurse ♦ Registered Nurse

CNA ♦ Medical Technician ♦ Medical Technologist

CNA ♦ Receptionist ♦ Medical Records Clerk

**Requirements for Advancement:** Two- to four-year degrees must be obtained for LPN, RN, Medical Technician, and Medical Technologist.

**Historical and Projected Demand:** Rapidly growing demand over the past two years; expected to continue over the next two years.

**Food Service Worker**

**Duties:** Preparing and serving meals, cleaning food preparation areas.

**Critical Degrees, Credentials, Skills:** Fluency in English, multilingual ability often preferred; interpersonal skills.

**Advancement Pathways:**

Food Service Worker ♦ Assistant Cook ♦ Cook

**Requirements for Advancement:** On-the-job training, positive work history.

**Historical and Projected Demand:** Rapidly growing demand over the past two years; expected to continue over the next two years.

**Career Ladder Opportunities:** CNAs have the greatest opportunity for career advancement in this sector. An entry-level CNA can move through three different positions: CNA1 to CNA2 (restorative rehabilitation) to CNA3 (team leader on the floor). Advancing through these levels brings with it more responsibility, but also better compensation. Companies interviewed for this report are eager to support CNAs who are interested in becoming RNs or LPNs as there is high demand for these occupations. Most companies interviewed provide tuition reimbursement, provide assistance in finding an appropriate training program, and are willing to provide flexible work schedules to accommodate course schedules for workers who are training for advancement opportunities. This has the dual benefit of increasing the worker's education level, job status, and pay rate along with benefiting the employer with a more skilled worker who is already familiar with the company and may be more likely to stay with that company.

**Human Resources Challenges:** The three largest human resources issues cited by businesses in this sector were: finding applicants with the necessary training and certification, finding workers with the right work ethic and commitment, and employee retention. To fill a clinical aide position, for example, the individual must be a certified CNA. Companies generally prefer to hire workers with two to three years of experience, but these workers are hard to find. One respondent mentioned hiring anyone with the correct letters (indicating proper certification) after their names. Other positions requiring higher educational attainment are also becoming harder to fill. Fields such as physical therapy are not pursued by many workers, partially thanks to new degree requirements that can take up to eight years to meet. There is a shortage of applications in both the physical therapy and occupational therapy areas. Registered Nurses are also a hot commodity in the industry, and with 35% of RNs estimated to retire in the next 5 to 10 years, there will be even more of a shortage. Nurses are particularly tough to find, especially those who have experience with a diverse patient population. Multilingual workers are in very high demand.

The challenge that businesses in this sector face to find employees with a strong work ethic is summed up nicely by a quote from one of the interview respondents: "There is a real struggle to find people who are committed to coming to work every day when they are supposed to come to work. The health care industry involves providing quality and reliable care to people who need it. Probably [the] biggest problem is finding people to take it seriously." A different respondent worded the same issue as "recruiting good, qualified, and

especially committed help as opposed to people just looking for the paycheck.”

Another interviewee suggested that there is a generational trend in finding employees with a good work ethic, and that different generations of people behave differently. When there are baby boomers and teenagers working together, it is hard to make sure that they are able to interact and communicate with one another. Their values and needs are very different. It is difficult to match experienced individuals with the newly hired (making mentors out of baby boomers for the younger folks)—with such differences in values and appreciations—while still trying to maintain quality service. Baby boomers stay for many years and build careers with one corporation, but businesses in this industry feel that the younger generation seems to move on more frequently. This is perhaps from seeing their own parents laid off from large corporations. Avoiding loyalty to one large corporation is a means to avoid the same fate. It was further suggested that younger generations should build work ethic through first jobs (starting back in high school) before being successful in such a serious industry. In general, though, worker turnover and lack of commitment is a problem in all occupations, not just the lower positions.

The most frequently hired workers are CNAs. However, the reason for this is not because CNAs are all seeking more advanced training and receiving promotions with their employers, but because CNAs so frequently leave their employers—either for another company or to leave the industry completely. Insights from respondents suggest that many new CNAs have a lack of understanding about what the position really entails. It is hard, important work, and it can be rewarding, but it is not an easy job to care for patients and elderly residents. Many people come in for interviews having never before been nursing assistants, but they are willing and/or want to take care of the ill or elderly. This causes a high turnover rate of nursing assistants. Respondents suggested that CNA training programs need to better prepare people for the routine tasks of the job that a CNA will be doing every day. New CNAs should come into the industry with a clear understanding of how difficult the work can be, both physically and emotionally.

## MANUFACTURING

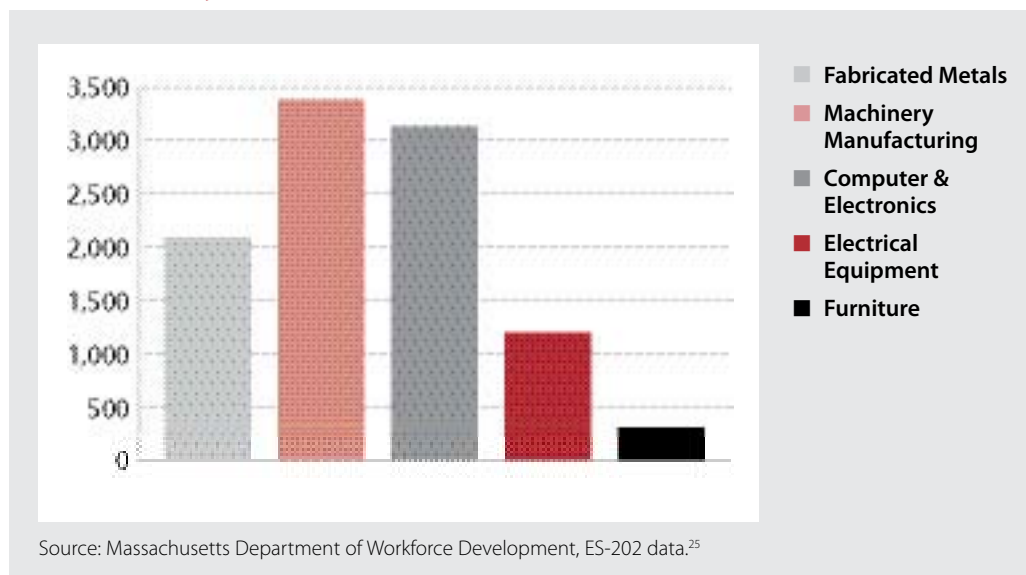
Manufacturing is probably the most controversial selection as a critical industry. Since 2001, the Manufacturing industry overall has lost 3,616 jobs. However, the region still employs more than 20,000 workers, nearly 15,000 in the Durable Goods Manufacturing portion of the industry; this meets the size criterion for critical industry employment. The region’s historically largest manufacturing employer, General Electric in Lynn, has laid off workers off and on over the past 15 years. This fact has tainted many people’s perceptions regarding the entire industry. However, there are many positive factors to be considered regarding the Manufacturing industry, including the following:

- ♦ The rate of decline in Manufacturing jobs seems to have leveled out. There are significant numbers of vacant jobs in Manufacturing, and the loss rate over the past year is not very large. Therefore, one can make the case that employment in the sector is stabilizing, which justifies a workforce investment.
- ♦ Wage rates. The median weekly wage rate in Manufacturing is nearly 50% higher than the region’s median weekly wage rate for all private industry. If one is serious about promoting jobs that lead to self-sufficiency, investments in Manufacturing can clearly meet that standard.
- ♦ A related issue is the pricing out of families from the housing market. Families that don’t have jobs that can support a home purchase have a hard time staying in the area. If that happens to enough families, the housing market can come under pressure. Support for Manufacturing is support for the overall regional economy, which is a critical economic and political issue in the region.

- ♦ Location Quotient – Durable Goods Manufacturing has a location quotient of 1.45, tied for the highest of any industry. The current and historical concentration of Manufacturing in the North Shore is a further argument for working with this industry. There are 347 establishments in the Durable Goods Manufacturing industry, indicating that an investment in this area need not require relying on the fortunes of any single company.
- ♦ The link between manufacturing and innovation remains clear. While most of the Commodity Product Manufacturing can be offshored without significant damage to the potential of U.S. companies to innovate, it remains necessary to have some manufacturing capacity within the U.S. to keep it near companies' innovation centers.
- ♦ Depending on the specific firms, there may be a Homeland Security/Defense case for keeping Manufacturing firms in the U.S. Essex County is particularly strong in this area, with the second-highest level of military prime contracts in Massachusetts—nearly \$1 billion in FY2004.<sup>24</sup>

These factors lead to a concentration in Durable Goods Manufacturing. North Shore employment in Durable Goods Manufacturing is concentrated in Fabricated Metals Manufacturing, Machinery Manufacturing, and Computer and Electronics Manufacturing.

**Figure 3.10 North Shore Durable Goods Manufacturing Employment by Sector: September 2006**



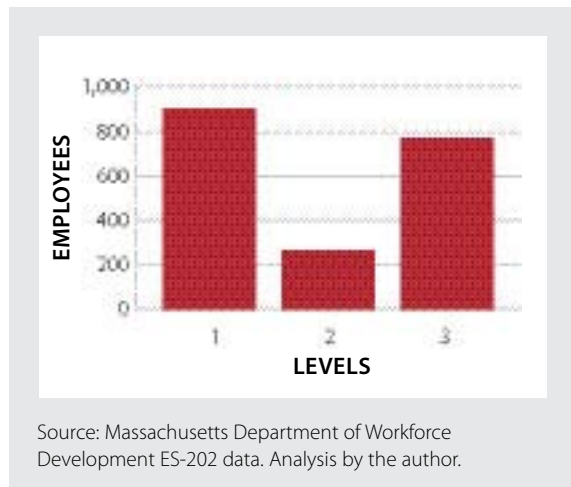
Another important benefit of the Manufacturing industry from a workforce development perspective is that, within the various sectors of Manufacturing, there are a number of career ladder opportunities. Figure 3.11 demonstrates the career ladder opportunities that exist in the Machine Manufacturing sector. For workers with less than a bachelor's degree, there are opportunities at all three levels of employment, with the greatest opportunities at the lowest and highest levels of prebaccalaureate employment. Compared to 2000, there are more entry-level opportunities and fewer Level 2 jobs, making the development of career ladder programs more difficult. However, the presence of a large number of Level 3

<sup>24</sup> Source: Massachusetts Department of Workforce Development, *Levels of Defense Expenditures in Massachusetts*, 2005.

<sup>25</sup> Data for Transportation Equipment Manufacturing is not reported for the North Shore due to the concentration of employment in this sector in one firm. The total manufacturing employment number does include this sector.



**Figure 3.11 North Shore Machinery Manufacturing Employment by Levels: September 2006**



jobs makes the effort to develop such programs likely to pay off for both companies and workers.

### Critical Occupations

#### Team Assembler

**Duties:** Assembling mechanical, electromechanical, and/or electronic equipment; using hand tools, soldering irons, and sometimes microscopes. May involve some testing and troubleshooting of components.

**Critical Degrees, Credentials, Skills:** High school degree; mechanical ability; familiarity with blueprints and schematics; assembly experience preferred. Associate's degrees and/or equivalent experience, such as military electronics, required for more complex assembly positions.

#### Advancement Pathways:

Assembler 1 ♦ Assembler 2 ♦ Assembler 3 (involves more electromechanical assembly and precision work)

Assembler ♦ Technician ♦ Senior Technician ♦ Engineer

Assembler ♦ Lead/Foreman ♦ Supervisor

**Requirements for Advancement:** Demonstrated performance and initiative. For technician positions and above, acquisition of trade school certificate, associate's degree, bachelor's degree, or equivalent training.

**Historical and Projected Demand:** Flat to slightly decreased demand regionwide. Future projections of relatively few new jobs, but significant numbers of replacement jobs.

#### Technician (Test Technician, Mechanical or Electrical Technician)

**Duties:** Testing, troubleshooting, and, in some cases, repairing components; using microscopes and other precision instruments; working with engineers to rectify problems; in some cases, preparing graphs, charts, and tabulations of data.

**Critical Degrees, Credentials, Skills:** Associate's degrees, particularly in Electrical Engineering (ASEE) in some cases; demonstrated skills, acquired on the job, in testing and maintaining electronic, mechanical, and/or optic equipment. Specialized knowledge may be required in some positions, including experience with vacuum or lighting systems.

#### Advancement Pathways

Technician ♦ Senior Technician ♦ Engineer

Assembly Technician ♦ Senior Technician ♦ Senior Mechanical Technician or Electrical Technician

Technician ♦ Senior Technician ♦ Supervisor

**Requirements for Advancement:** Acquisition and demonstration of technical skills on the job, through on-site courses, or through acquisition of two- or four-year college degrees.

**Historical and Projected Demand:** Relatively flat demand, although the skills required are deepening.

**Career Ladders Opportunities:** While there are some opportunities for direct career ladder development, the greatest opportunity for career advancement in Manufacturing appears to be targeting the top jobs. Occupations such as Tool and Die Makers, Computer Numerical Control (CNC) programmers and operators, and Industrial Engineering Technicians require high levels of skills, on-the-job training, and technical education. These positions offer strong wages and are likely to be in the highest demand in the future.

**Human Resources Challenges:** The aging of the Manufacturing workforce continues to be one of the critical human resources challenges. While there are enough workers to currently support the industry, the pipeline of new workers is narrow. At the same time,

retirements are looming from many of the most-skilled occupations in the next 10 years. Many of the region's Tool and Die Makers and CNC operators, for example, are aging, and few new people have entered these careers. While the number of workers needed in these professions is not overly large, those who are needed are critical to the success of their companies. In some companies, work stops without a skilled Tool and Die Maker to adapt dies to new demands from customers.

While the number of workers in Manufacturing has dropped, skill level requirements for all jobs in the industry have increased. Manufacturing has been faced with the same challenges in finding workers with sufficient basic math skills that every other industry has faced. Strong math skills are foundational for the required training for advancement in the industry.

As the number of workers in the industry has decreased, the required skill levels have increased substantially in response to the evolving nature of work in Manufacturing on the North Shore. In the past, Manufacturing companies worked to close order specifications. The requirement was to turn out multiple products that were exactly the same. Now this type of rote manufacturing has mostly gone to lower-cost locations, both in the United States and overseas. The type of manufacturing that has remained on the North Shore combines a high level of customization with the need to create engineering and manufacturing solutions to meet customer needs. This creates a demand for manufacturing production workers who can solve tricky customer problems. Production workers in this environment should be thought of as "pre-engineering associates" or engineering technicians. Without a supply of these types of workers that meet their needs, Manufacturing companies will not be able to continue to prosper in the region.

## Chapter 4 | Emerging Industry: Biotechnology

**T**he criteria for emerging industries are different than those for critical industries. For critical industries, one looks for high levels of employment, stable employment histories, and some projected employment growth; for emerging industries, one looks for small bases of employment that are poised to grow rapidly in the future. Employment projections from published sources would be one measure of future potential. Another measure of future potential is the presence of economic development efforts supporting the industry. Finally, the presence of new and emerging occupations is another criterion for emerging industries.

The North Shore as a whole has a fairly stable industrial mix. While individual companies or subsectors may rise and fall based on their markets, the industries on the North Shore overall have remained fairly similar over time. This trend of stability makes it difficult to identify emerging industries. When the employment data do not clearly demonstrate any emerging industry candidates, then qualitative data may lead the way.

Two types of qualitative data were gathered to identify emerging industries in the region. First, a series of key informant interviews were conducted with Chambers of Commerce, economic development leaders, educators, and others who have a high-level view of the trends impacting the North Shore region and business development. Second, a review of state and regional economic development efforts identified governmental business development priorities. In both of these analyses, Biotechnology was the leading emerging industry.

### BIOTECHNOLOGY

Biotechnology is an industry that everyone talks about, but one that people define quite differently. The most comprehensive U.S. government report on the Biotech industry uses the following definition: “the application of molecular and cellular processes to solve problems, conduct research, and create goods and services.”<sup>26</sup> While this definition includes only companies that are actively conducting research or producing biological products, it is important to remember that the Biotechnology industry also requires suppliers of scientific equipment and other services that result in additional employment. Many of these suppliers are highly specialized and are located in close proximity to their major customers.

The Biotech industry is a good fit with the North Shore region for several reasons. First, Biotechnology requires a highly educated and skilled workforce; this is a good match with the North Shore’s workforce, particularly in light of the high cost of housing in the region. Second, Biotechnology on the North Shore has the potential to build on the existing research and development in the greater Boston area, which is focused on university research. Finally, the region has available the type of infrastructure that the industry requires in order to develop and grow, including physical facilities—such as the Cummings Center and other locations, as discussed below—that already meet the needs of and host Biotechnology companies.

By most measures, Massachusetts is the number-two state in the country in Biotechnology, trailing only California. More than 600 Biotechnology companies are located in Massachusetts, employing more than 50,000 workers and creating an estimated

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26 U.S. Department of Commerce, 2003, *A Survey of the Use of Biotechnology in U.S. Industry*, p. 3.



77,000 additional indirect jobs due to the Biotechnology industry.<sup>27</sup> The Massachusetts Biotechnology industry has grown rapidly over the past 10 years as the international Biotechnology industry matures. This has led the industry to be the focus of a number of regional and statewide economic development initiatives, including the following:

- ♦ Regional economic development council efforts in central and western Massachusetts to support investment in the property infrastructure (see below) that the biotechnology industry needs, particularly for the transition from research and development to manufacturing
- ♦ The Massachusetts Biotechnology and Medical Device Manufacturing job incentive program, which gives to companies (in these industries) that add at least 10 new jobs in Massachusetts incentive payments of 50% of each employee's state income tax
- ♦ State appropriations to support a nanotechnology and biotechnology manufacturing training facility at the University of Massachusetts Lowell, and competitive grants to support biotechnology production worker training programs at Massachusetts's community colleges

These efforts and others have led to a statewide focus on Biotechnology as critical to the future of the Commonwealth.

On the North Shore, the Biotechnology industry has a historical presence that is rooted in companies such as Cell Signaling, New England Biolabs, and Abiomed, which have been in the region for a number of years and employ significant numbers of workers. Since Biotechnology, like many other high-tech industries, benefits from clustering,<sup>28</sup> many Biotechnology start-ups and suppliers have grown up around these larger companies. All told, these companies have added substantially to the region's Biotechnology employment. Due to the conversion of the occupational data system from the SIC to NAICS (as discussed in Chapter 1), we do not have an exact measure of regional Biotechnology employment. A recent study estimated that North Shore Biotechnology employment in 2005 was between 2,661 and 3,625 workers.<sup>29</sup> Even at the lower number, this is a still a substantial and growing number of workers for an emerging industry.

The Cummings Center in Beverly is a focus of Biotechnology and other life sciences companies and their suppliers. With more than 100 such companies,<sup>30</sup> the Cummings Center offers a base of employment in the industry that can potentially be served by the NSWIB when training needs are identified. The Biotechnology industry continues to grow at the Cummings Center and presents an opportunity for engagement with the workforce development system.

The Biotechnology industry has strict physical infrastructure requirements that must be met, particularly for companies moving into the manufacturing aspect of the product cycle. According to the Massachusetts Biotechnology Council, manufacturing requires facilities of up to 20 feet in height (floor to floor). This precludes many, but not all, existing industrial buildings from being used for Biotechnology. Also, Biotechnology manufacturing requires the ability to handle extremely heavy floor loads, up to 250 pounds per square foot, and vibration sensitivity of 500 to 2,000 micro-inches per second.<sup>31</sup>

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27 Source: Biotechnology Industry Organization, 2007, *The Contributions of Biotechnology and the Biosciences in Massachusetts*.

28 The clustering concept hypothesizes that a critical component of an industry's success in a given location is the opportunity for informal networking among workers from many different companies. For a detailed exposition of this hypothesis, see Saxenian, 1996.

29 Sinatra, 2005, *Biotechnology on the North Shore*.

30 Wiseman, 2006.

31 Source, Massachusetts Biotechnology Council, 2006, *Physical A&E Requirements Applicable to Biopharmaceutical Facilities in Massachusetts*, available online at [http://massbio.org/industry\\_dev/pdf/PhysicalA&Erequirements.pdf](http://massbio.org/industry_dev/pdf/PhysicalA&Erequirements.pdf).

The time may well be right for considering greater investment in Biotechnology infrastructure and workforce. As early as 2002, industry leaders were calling on the state to make investments in the Biotechnology industry to “extend the local biotech industry from its base in research to activities further down the value chain such as development and manufacturing.”<sup>32</sup> There are a number of efforts in place to expand the Biotechnology presence in Massachusetts, and the North Shore region should be a part of those efforts.

**Critical Occupations:** On the North Shore, the largest Biotechnology occupations are Biological, Chemical, and Pharmaceutical Researchers. Almost all of these positions require at least a master’s degree, and most require a PhD. Companies interviewed for this report indicated that there was a high level of competition to hire researchers with the right skills and experience, because there are relatively few of them in the worldwide labor market and many companies are competing to attract them.

Few Biotechnology companies on the North Shore currently employ production workers. For those that do, Testers, Quality Control Workers, and Inspectors were the most commonly cited positions. These positions generally require at least an associate’s degree or certificate training. Many workers in these positions have bachelor’s degrees although it is not always required. The most important criterion for hiring is having similar experience in the industry.

**Career Ladder Opportunities:** The ladder to advanced opportunities in the Biotechnology industry is focused on increasing levels of formal education. There are fewer occupations in Biotechnology that do not require a bachelor’s degree than in most other industries and, particularly, the critical industries described in this report. Therefore, workers who decide on a career in Biotechnology should pursue college degrees, preferably at the master’s or PhD level, to have a long-term career in this industry.

Another way that workers, particularly those without bachelor’s degrees, tend to advance in this industry is by moving to larger companies in the same sector for promotions. Several companies interviewed for this report mentioned that smaller companies have fewer opportunities for advancement but many opportunities to gain broad sets of skills and experience. In many cases, this breadth of experience has a higher value at larger companies, so workers with two to four years’ experience at smaller companies move to larger companies to advance.

**Human Resources Challenges:** The greatest human resources challenge for Biotechnology firms on the North Shore is to attract and retain the top-level talent that makes the difference for all Biotechnology companies. While the attributes of the company are paramount, the positive lifestyle amenities of the North Shore may be of assistance in attracting highly skilled professionals to the region.

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32 Boston Consulting Group, 2002, *MassBiotech 2010: Achieving Global Leadership in the Life Sciences Economy*, p. 6.

## Chapter 5 | Creative Economy

**T**he Creative Economy is a concept that has gained a lot of currency in economic development circles over the past five years. Leaders on the North Shore have been heavily involved in highlighting both the presence of the Creative Economy on the North Shore and its importance for the economic health of the region. However, little work has been done on the role that workforce development can play in the enhancement of the Creative Economy in the region. This chapter can serve as an introductory contribution to that effort.

So what is the Creative Economy? Two main definitions of the Creative Economy are generally in play. Mount Auburn Associates created a definition for their 2000 report, *The Role of the Arts and Culture in New England's Economic Competitiveness*: “those enterprises and individuals that directly and indirectly produce cultural products.”<sup>33</sup> This produces a focus on the most commonly recognized cultural entities—such as museums, theatres, zoos, and concert venues—along with the associated workers. However, the Mount Auburn report is also careful to include creative workers who work outside of the cultural industries, such as a graphic designer or illustrator working for a medical company.<sup>34</sup> The presence of a large number of such workers suggests that the industry cluster or sectoral approach used in most workforce development efforts may not be the most effective way to approach working with the Creative Economy.

The second definition of the Creative Economy, and the one with which more people may be familiar, is from economist Richard Florida, whose seminal books *The Rise of the Creative Class* and *The Flight of the Creative Class* were most responsible for popularizing the concept of the Creative Economy. Florida's concept of the Creative Economy includes all of the components described by the Mount Auburn study, but it also adds a large number of workers in other industries. For example, a software designer at Intel who works on creating the next generation of computer or cell phone chips would be considered part of the Creative Economy, according to Richard Florida's use of the term; but this software designer would not be included in the Creative Economy as defined by the Mount Auburn report. Florida's broader definition of the Creative Economy is particularly relevant to the types of employment that are critical to the economic development of the North Shore region.

So why is the Creative Economy concept important? From the perspective of the North Shore region, there are at least three critical reasons. First, the portion of the Creative Economy that is related to arts and culture produces amenities that are important to many workers and their families. Because the North Shore has a high cost of living, it is critical to provide the services that will encourage those workers and their businesses to locate in the region. Fortunately, the North Shore is very well positioned in this regard, with numerous cultural amenities and a positive reputation for quality of life that is linked, in large part, to the Creative Economy.

The Creative Economy is also a key driver for the tourism industry, which has long been recognized as critical for the financial well-being of the North Shore. People coming into the region are attracted by Salem's cultural heritage, the Peabody Essex Museum, access to the seacoast, and other cultural and recreational amenities.

Most important, however, is the presence of creative firms and workers that Florida describes. These workers and businesses are in all industries and are particularly important for the North Shore because, as a high-cost region, it can only support high-value-

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<sup>33</sup> Mount Auburn Associates, 2000, p. 4.

<sup>34</sup> Mount Auburn Associates, 2000, p. 11.

added sectors of many industries. For example, as described in Chapter 3, the low-value-added components of the Manufacturing industry have, for the most part, already left the region. What remains is higher-value-added work that requires increasing technical capacity. This requisite technical capacity requires the Creative Economy workforce in areas such as engineering, software design, and architecture to drive Manufacturing success on the North Shore. Similar examples can be found in several of the other critical and emerging industries of the North Shore.

The most recent comprehensive study of the North Shore's Creative Economy is Eagle Tribune Publishing's study, *The Creative Economy North of Boston: Challenge, Connection, Opportunity*. This study found that there were more than 900 businesses with nearly 6,000 employees in the Creative Economy north of Boston.<sup>35</sup> The four main drivers of the Creative Economy north of Boston were as follows:

- ♦ **Location** – Being close to Boston's education, culture, and trade opportunities
- ♦ **Connection** – Easy access to national and international travel from airports in Boston and Manchester, New Hampshire
- ♦ **Value** – Mill space and other affordable options for workspace
- ♦ **Environment** – Access to outdoor recreation and the historical and cultural heritage of the region<sup>36</sup>

The Eagle Tribune Publishing Creative Economy report focused on 13 industry sectors: Architecture, Advertising, Performing Arts, Artists, Education, Museums and Cultural Industries, Design, Film, Games, Historic Preservation, New Media, Publishing, and Radio and Television. The study found that the Creative Economy is more densely concentrated on the North Shore than in the United States as a whole. The Eagle Tribune Publishing Creative Economy report estimated Creative Economy sales in the region to the north of Boston region at \$1.258 billion.

There are two subsets of the Creative Economy to which the workforce development system must pay attention. The first subset is made up of specific firms, such as those in the categories described in the Eagle Tribune Creative Economy report. On the North Shore, these types of firms tend to be smaller. Many firms in the Creative Economy start out as sole proprietorships and only gradually take on employees. The majority of these business owners need business training and specific targeted education and technical assistance that are beyond the scope of the workforce development system to provide. This sort of training and technical assistance is readily available from a variety of providers on the North Shore, including the Enterprise Center at Salem State College and North Shore Community College.

Smaller businesses in the Creative Economy have relatively few hiring needs compared to the larger firms in the critical and emerging industries identified in this report. The types of hiring needs that they do have tend to be very specialized in terms of the types of education and skills that are required. Their requirements also tend to vary quite a bit from firm to firm. This high degree of variation makes it difficult for the workforce system to develop a pool of workers that would be consistently available to meet the workforce needs of smaller Creative Economy companies. Therefore, the workforce system may want to consider the following steps:

- ♦ Develop a Creative Economy working group to enable the WIB and the Career Center to have a close and ongoing perspective on the needs of these businesses.

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<sup>35</sup> The geographic definition used by this study is broader than the North Shore Workforce Investment Area.

<sup>36</sup> Eagle Tribune Publishing, 2004, *The Creative Economy North of Boston: Challenge, Connection, Opportunity*, available online at <http://www.ceans.org/documents/CreativeEconomyCCCfinal2.pdf>.

- ♦ Continue to develop a pool of highly skilled workers with experience in the types of jobs that smaller Creative Economy companies identify as most in demand.
- ♦ Partner with other organizations that serve Creative Economy companies to spread the word about the resources that the workforce development system can provide.

Larger firms in the North Shore's Creative Economy are relatively few at the present time, although one would reasonably expect some firms that are currently small in terms of workforce to grow over time. As these firms grow, their needs come to more closely reflect the workforce needs of their specific industries, and the workforce system has a track record of identifying and meeting the needs of a wide variety of industry sectors.

The second subset of the Creative Economy is made up of firms and individuals working in firms that are not traditionally considered "creative" but that are producing creative work. The North Shore Manufacturing industry is particularly important in this regard. As noted in Chapter 3, much of the work that remains in the North Shore's Manufacturing sector requires high levels of creativity and problem-solving ability. One owner described the common situation that manufacturing was about solving a customer's problem rather than just filling an order for a large number of manufactured parts. This change in the type of work that is being provided by North Shore Manufacturing firms is a critical reason why Creative Economy considerations need to focus on the types of jobs that people do in all industries and not solely on the industry and company. Other industries with many workers who would be considered part of the Creative Economy, under Richard Florida's definition, include Biotechnology, Engineering, and Professional and Technical Services. All businesses and people working in Creative Economy firms and jobs should be taken into account in developing the North Shore's plans for addressing the needs of the Creative Economy.

# Chapter 6 | Recommendations

## CONSTRUCTION

- ♦ Provide information on the benefits of the Construction industry to Career Center customers as well as high schools and other audiences that might not traditionally consider the industry attractive.
- ♦ Ensure that training participants and all others who are looking for Construction employment understand what the work is like and that there is “no free lunch” in the Construction trades
- ♦ Encourage the use of internships and other “hands on” models of training that are recognized by unions and businesses in the Construction industry to help workers get into the trades and other fast-growing occupations.

## FINANCIAL SERVICES

- ♦ Work with businesses in the industry and experienced training providers to develop and implement training programs aimed at filling Teller positions.
- ♦ Include the development of sales skills in training efforts that are aimed at the Financial Services industry.
- ♦ Closely monitor this industry’s employment outlook on the North Shore, because the trend in new branch openings that is driving industry employment may reverse quickly in this cyclical industry.

## HEALTH CARE

- ♦ Develop and implement programs that are focused on addressing the nursing shortage through career ladder training and adding capacity to the region’s nursing training system.
- ♦ Consider the development of cross-sector career pathways to provide opportunities for talented workers to advance and for all types of Health Care businesses to obtain the skilled workers they need.
- ♦ Encourage the presence of internship or job-shadowing components in all Health Care training so that participants will get a better understanding of the nature of the work for which they are training.

## MANUFACTURING

- ♦ Work with local community colleges, universities, and other training providers to develop a curriculum for pre-engineering training for production workers in the Manufacturing industry.
- ♦ Encourage the development and implementation of Manufacturing innovation training to meet the needs of the “Creative Manufacturing” sector that is most appropriate to the skills of the North Shore workforce and the economic imperatives of Manufacturing in Massachusetts.
- ♦ Explore the applicability of the Manufacturing Skill Standards Council’s Production Technician Certification for Manufacturing companies on the North Shore.

## BIOTECHNOLOGY

- ♦ Focus on the importance of the science, technology, engineering, and mathematics (STEM) competencies and all educational pathways for high school and college students.
- ♦ Work with naturally occurring industry clusters—such as the group of life science companies at the Cummings Center—to identify and address emerging workforce needs.

## GENERAL

- ♦ Continue to work on the development of interviewing skills. In every industry, businesses mentioned that they continually see people who do not come to the interviews on time, are not appropriately dressed, and don't know appropriate etiquette for the business.
- ♦ Incorporate components for Adult Basic Education (ABE) and English for Speakers of Other Languages (ESOL) into occupational skills training programs, and work with education partners to incorporate occupational skills training into ABE and ESOL classes to ensure that workers are able to get the English they need to enter and advance in the workplace as quickly as possible.
- ♦ Work closely with community colleges to ensure that they consistently make available associate's degree training that meets the needs of workers and businesses in the region, because this type of training is projected to be required for the largest number of new jobs over the next 10 years.
- ♦ Focus on state investments in the Alternative Energy industry for opportunities to utilize the skills of the North Shore workforce in this emerging industry sector.
- ♦ Ensure that training for youth, and interactions with businesses that employ youth, address the generational differences in career expectations and their implications for how to succeed as a young worker or as a company that relies on a younger workforce.
- ♦ Work closely with businesses—in all of the critical and emerging industries—to develop and implement training for low-skilled incumbent workers.
- ♦ Ensure that the Career Center Business Service Unit develops an enhanced focus on meeting the needs of businesses in the critical and emerging industries.

# Appendix A | Survey Protocol

## North Shore Workforce Investment Board Labor Force Blueprint

### EMPLOYER INTERVIEW PROTOCOL

Date: \_\_ / \_\_ / \_\_ Length of Interview: \_\_\_\_\_ Name of Interviewer: \_\_\_\_\_

Name of Interviewee(s): \_\_\_\_\_ Title(s): \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ e-mail: \_\_\_\_\_

\* \* \* \* \*

1. About how many people are employed in your company today? [if distinct branches or divisions, prompt for employment in the North Shore] \_\_\_\_\_
2. Can you tell me approximately what percentage of all positions at your company are open to candidates with different education levels, from less than a high school degree on up to graduate degrees. I'm going to read you a list of 5 categories. Please tell me what percent of all positions are open to people with these educational levels: (*numbers are ok too, if that's easier*)
  - a. Less than high school degree or GED \_\_\_\_\_
  - b. High school degree or GED only \_\_\_\_\_
  - c. Associates (2 year) degree \_\_\_\_\_
  - d. Bachelors (4 year) degree \_\_\_\_\_
  - e. Masters degree or higher \_\_\_\_\_
3. During the past month, how many position openings would you say you have you had for jobs that require less than the Bachelor's degree? \_\_\_\_\_
4. Now, I'd like know about the *reasons* for these openings. Again, I'm going to read you a list of 5; please estimate how many of the openings you just told me about were due to each set of reasons:
  - a. New business needs: \_\_\_\_\_
  - b. Replacement of employees who retired: \_\_\_\_\_
  - c. Replacement of employees who left for other positions: \_\_\_\_\_
  - d. Replacement of employees who obtained an internal promotion: \_\_\_\_\_
  - e. Other [Please describe]: \_\_\_\_\_



5. Now I want to ask you more specifically about the kinds of positions you’ve had openings for. Again, I’m looking for jobs requiring less than the Bachelor’s degree. Could you please list the occupations and tell me the number of openings for each position in the past month?

5A. POSITION	5B. NUMBER OF OPENINGS

6. What difficulties, if any, do you have in finding workers with particular skills or qualifications? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Prompt, if needed:
- Lack of communication skills \_\_\_\_\_
  - Lack of high school diploma \_\_\_\_\_
  - Lack of industry certification \_\_\_\_\_
  - Lack of related work experience \_\_\_\_\_
  - Lack of applicants altogether \_\_\_\_\_

7. What are the advancement opportunities for workers with less than a Bachelor’s degree at your company?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. Finally, what is the most critical human resource issue facing your industry, and why?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Thank you very much for your time.*

If you’d like, I can request that the WIB send you a copy of the report when we’re done in July. \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

*Thank you again.*

# Appendix B | Occupational Matrices

## CONSTRUCTION: SPECIALTY TRADE CONTRACTORS— NAICS CODE 238

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
47-2031	Carpenters	\$21.08	\$23.35	NS	873	III	3.6%
47-2061	Construction Laborers	\$17.63	\$19.28	NS	484	I	-5.9%
47-1011	First Line Supervisors/Managers of Construction Trades and Extraction Workers	\$34.48	\$36.28	NS	216	III	2.6%
47-2111	Electricians	\$26.87	\$27.66	NS	179	III	0.5%
47-2152	Plumbers, Pipefitters, and Steamfitters	\$31.21	\$30.87	NS	174	III	3.0%
47-2073	Operating Engineers and Other Construction Equipment Operators	\$21.54	\$23.10	NS	168	III	1.6%
47-2221	Structural Iron and Steel Workers	\$27.26	\$27.69	NS	163	III	0.7%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	142	I	0.3%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	116	III	0.6%
47-2021	Brickmasons	N/A	N/A		116	III	3.2%
11-9021	Construction Managers	\$46.32	\$51.65	NS	110	III	5.8%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	105	I	-8.2%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
53-3032	Truck Drivers, Heavy and Tractor-Trailer	\$19.21	\$20.23	NS	105	III	8.5%
13-1051	Cost Estimators	\$35.06	\$34.99	NS	100	III	5.4%
47-3012	Helpers-Carpenters	\$14.42	\$14.63	MA	89	I	-0.7%
47-2211	Sheet Metal Workers	\$24.11	\$23.69	NS	84	II	-0.5%
47-2141	Painters, Construction and Maintenance	\$16.47	\$17.03	NS	79	I	3.8%
53-7032	Excavating and Loading Machine and Dragline Operators	\$22.72	\$23.81	MA	79	III	2.5%
49-9044	Millwrights	\$20.51	\$21.33	NS	68	III	-1.3%
47-2041	Carpet Installers	N/A	N/A		63	II	N/A
47-2171	Reinforcing Iron and Rebar Workers	N/A	N/A		63	II	0.0%
47-2043	Floor Sanders and Finishers	N/A	N/A		53	II	2.4%
47-2151	Pipelayers	\$19.10	\$18.93	NS	53	II	-1.4%
47-3013	Helpers-Electricians	\$14.00	\$14.96	MA	53	I	-10.2%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	42	III	0.3%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	42	III	6.0%
41-4012	Sales Representatives, Wholesale and Manufacturing	\$25.59	\$28.16	NS	37	III	8.7%
47-5021	Earth Drillers, except Oil and Gas	\$19.05	\$20.06	MA	37	III	N/A
47-2051	Cement Masons and Concrete Finishers	\$19.40	\$22.19	MA	32	II	7.0%

**CONSTRUCTION: SPECIALTY TRADE CONTRACTORS—  
NAICS CODE 238 (CONTINUED)**

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
47-2081	Drywall and Ceiling Tile Installers	\$25.19	\$24.05	MA	32	II	-3.8%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$23.93	\$24.08	NS	32	II	7.8%
51-4121	Welders, Cutters, Solderers, and Brazers	\$19.47	\$19.84	NS	32	II	-5.0%
53-3033	Truck Drivers, Light or Delivery Service	\$17.34	\$18.21	NS	32	III	9.8%
37-3011	Landscaping and Groundskeeping Workers	\$11.48	\$12.31	NS	26	I	16.6%
47-4031	Fence Erectors	\$16.78	\$16.71	MA	26	I	3.8%
49-9011	Mechanical Door Repairers	N/A	N/A		26	II	3.7%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	26	II	8.4%
51-7011	Cabinetmakers and Bench Carpenters	\$16.45	\$16.68	NS	26	III	1.6%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$10.82	\$12.17	NS	26	I	1.8%

## CREDIT INTERMEDIATION & RELATED ACTIVITY—NAICS CODE 522

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
43-0371	Tellers	\$12.67	\$13.45	NS	751	I	3.5%
43-4051	Customer Service Representatives	\$13.68	\$15.36	NS	198	I	12.9%
43-9061	Office Clerks, General	\$13.19	\$13.94	NS	97	I	0.3%
43-4131	Loan Interviewers and Clerks	\$18.77	\$19.01	NS	90	II	-5.3%
41-3031	Securities, Commodities, and Financial Services Sales Agents	\$50.99	\$56.05	MA	86	III	8.2%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	83	II	6.0%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	79	III	0.6%
43-3021	Billing and Posting Clerks and Machine Operators	\$14.08	\$14.39	NS	61	I	-4.6%
43-3011	Bill and Account Collectors	\$14.24	\$15.14	NS	36	II	11.4%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	25	I	-8.2%
41-9041	Telemarketers	\$11.68	\$12.75	NS	22	I	-13.9%
43-4141	New Accounts Clerks	\$12.45	\$12.95	NS	22	II	1.4%
43-9021	Data Entry Keyers	\$13.40	\$13.65	NS	22	I	-8.0%
43-1011	First-line Supervisors of Office and Administrative Support Workers	\$23.66	\$25.51	NS	0	III	0.3%

## AMBULATORY HEALTH CARE SERVICES—NAICS CODE 621

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-1111	Registered Nurses	\$30.03	\$29.31	NS	1240	III	21.9%
43-6013	Medical Secretaries	\$14.52	\$15.16		998	III	
29-2012	Medical and Clinical Laboratory Technicians	\$17.74	\$18.62	NS	429	II	17.2%
31-1011	Home Health Aides	\$11.18	\$11.28	NS	429	I	38.3%
29-2061	Licensed Practical Nurses	\$22.48	\$22.74	NS	270	II	9.8%
31-9092	Medical Assistants	\$13.55	\$13.57	NS	270	II	31.7%
43-4171	Receptionists and Information Clerks	\$11.81	\$12.16	NS	261	I	11.6%
31-1012	Nursing Aides, Orderlies, and Attendants	\$12.67	\$12.74	NS	205	I	14.9%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	196	I	-8.2%
43-3021	Billing and Posting Clerks and Machine Operators	\$14.08	\$14.39	NS	187	I	-4.6%
29-2071	Medical Records and Health Information Technicians	\$13.23	\$14.10	NS	159	II	19.3%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	159	I	0.3%
39-9021	Personal and Home Care Aides	\$10.77	\$10.85	NS	140	I	29.6%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	131	III	0.6%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	121	III	0.3%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-2034	Radiologic Technologists and Technicians	\$27.52	\$27.93	NS	112	III	18.3%
29-2011	Medical and Clinical Laboratory Technologists	\$24.59	\$24.28	NS	84	III	15.8%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	75	III	6.0%
43-4071	File Clerks	\$12.35	\$13.18	NS	65	I	-40.0%
37-2012	Maids and Housekeeping Cleaners	\$9.78	\$10.06	NS	56	I	13.0%
37-2011	Janitors and Cleaners	\$11.61	\$13.07	NS	47	I	13.0%

## HOSPITALS—NAICS CODE 622

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-1111	Registered Nurses	\$30.03	\$29.31	NS	1949	III	21.9%
31-1012	Nursing Aides, Orderlies, and Attendants	\$12.67	\$12.74	NS	551	I	14.9%
43-6013	Medical Secretaries	\$14.52	\$15.16	NS	212	III	4.3%
29-2061	Licensed Practical Nurses	\$22.48	\$22.74	NS	148	II	9.8%
29-2011	Medical and Clinical Laboratory Technologists	\$24.59	\$24.28	NS	141	III	15.8%
29-2012	Medical and Clinical Laboratory Technicians	\$17.74	\$18.62	NS	134	II	17.2%
29-2034	Radiologic Technologists and Technicians	\$27.52	\$27.93	NS	134	III	18.3%
37-2012	Maids and Housekeeping Cleaners	\$9.78	\$10.06	NS	134	I	13.0%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	113	I	-8.2%
37-2011	Janitors and Cleaners	\$11.61	\$13.07	NS	99	I	13.0%
43-4111	Interviewers, except Eligibility and Loan	\$13.47	\$13.95	NS	99	I	16.2%
29-2071	Medical Records and Health Information Technicians	\$13.23	\$14.10	NS	78	II	19.3%
31-9092	Medical Assistants	\$13.55	\$13.57	NS	71	II	31.7%
43-3021	Billing and Posting Clerks and Machine Operators	\$14.08	\$14.39	NS	71	I	-4.6%



SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
35-3041	Food Servers, Nonrestaurant	\$10.49	\$11.14	NS	64	I	2.3%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	64	III	6.0%
29-2055	Surgical Technologists	\$21.23	\$21.05	NS	56	III	21.3%
31-1013	Psychiatric Aides	\$13.59	\$13.46	NS	56	I	
33-9032	Security Guards	\$10.64	\$11.15	NS	56	I	4.5%
29-2031	Cardiovascular Technologists and Technicians	\$18.61	\$20.02	NS	49	III	21.6%
29-2052	Pharmacy Technicians	\$10.99	\$11.37	NS	49	II	14.3%
31-9094	Medical Transcriptionists	\$17.05	\$16.63	NS	49	III	16.4%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	49	III	0.3%
35-2021	Food Preparation Workers	\$9.31	\$9.74	NS	42	I	15.4%
43-2011	Switchboard Operators, Including Answering Service	\$11.14	\$11.56	NS	42	I	-16.9%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	42	II	8.4%
31-9013	Medical Equipment Preparers	\$13.25	\$14.44	NS	35	I	16.8%
35-2012	Cooks, Institution and Cafeteria	\$13.23	\$13.45	NS	35	I	1.4%
43-5081	Stock Clerks and Order Fillers	\$10.56	\$11.78	NS	35	I	-12.8%

## NURSING AND RESIDENTIAL CARE FACILITIES—NAICS CODE 623

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
31-1012	Nursing Aides, Orderlies, and Attendants	\$12.67	\$12.74	NS	1859	I	14.9%
29-1111	Registered Nurses	\$30.03	\$29.31	NS	714	III	21.9%
29-2061	Licensed Practical Nurses	\$22.48	22,74	NS	532	II	9.8%
35-2021	Food Preparation Workers	\$9.31	\$9.74	NS	256	I	15.4%
37-2012	Maids and Housekeeping Cleaners	\$9.78	\$10.06	NS	242	I	13.0%
35-2012	Cooks, Institution and Cafeteria	\$13.23	\$13.45	NS	189	I	1.4%
39-9032	Recreation Workers	\$10.72	\$12.52	NS	135	I	13.6%
37-2011	Janitors and Cleaners	\$11.61	\$13.07	NS	121	I	13.0%
31-1011	Home Health Aides	\$11.18	\$11.28	NS	114	I	38.3%
39-9041	Residential Advisors	\$12.59	\$13.32	NS	101	II	15.0%
43-4171	Receptionists and Information Clerks	\$11.81	\$12.16	NS	94	I	11.6%
21-1093	Social and Human Services Assistant	\$13.49	\$13.61	NS	88	I	19.1%
51-6011	Laundry and Dry Cleaning Workers	\$8.78	\$9.30	NS	81	I	6.7%
39-9021	Personal and Home Care Aides	\$10.77	\$10.85	NS	67	I	29.6%
43-6013	Medical Secretaries	\$14.52	\$15.16	NS	61	III	4.3%
35-3031	Waiters and Waitresses	\$11.28	\$11.10	NS	54	I	11.2%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
29-2071	Medical Records and Health Information Technicians	\$13.23	\$14.10	NS	47	II	19.3%
35-9021	Dishwashers	\$8.30	\$8.62	NS	47	I	10.1%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	47	I	0.3%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	47	II	8.4%
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	\$8.16	\$8.55	NS	40	I	11.2%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	40	III	0.6%
31-2021	Physical Therapist Assistants	\$20.77	\$21.46	NS	34	II	25.7%
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	\$10.49	\$11.14	NS	34	I	8.4%
39-9011	Child Care Workers	\$10.05	\$10.44	NS	34	I	14.1%
43-6014	Secretaries, Except Legal, Medical, and Executive	\$16.22	\$16.35	NS	34	I	-8.2%

## FABRICATED METAL PRODUCT MANUFACTURING—NAICS CODE 332

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2092	Team Assemblers	\$15.04	\$15.82	NS	113	I	2.1%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	\$25.82	\$26.86	NS	71	III	-4.3%
51-4121	Welders, Cutters, Solderers, and Brazers	\$19.47	\$19.84	NS	56	II	-5.0%
51-4041	Machinists	\$20.55	\$20.36	NS	54	III	-6.2%
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	\$15.48	\$15.62	MA	54	I	-12.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$22.19	\$21.05	NS	54	II	-10.6%
43-5071	Shipping, Receiving, and Traffic Clerks	\$14.32	\$14.70	NS	46	I	-3.3%
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	\$15.62	\$16.21	MA	38	I	-8.2%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$13.84	\$13.96	NS	38	I	-10.4%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$10.82	\$12.17	NS	38	I	1.8%
47-2211	Sheet Metal Workers	\$24.11	\$23.69	NS	36	II	-0.5%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$22.06	\$22.04	NS	36	I	-18.0%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	33	II	8.4%
51-9198	Helpers-Production Workers	\$10.63	\$11.36	NS	31	I	-2.3%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	29	I	0.3%
41-4012	Sales Representatives, Wholesale and Manufacturing, except Technical and Scientific Products	\$25.59	\$28.16	NS	27	III	8.7%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	27	III	0.6%
51-4111	Tool and Die Makers	\$25.25	\$24.74	NS	27	III	-12.5%
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	\$18.05	\$17.87	NS	27	I	-10.5%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	\$19.52	\$19.88	NS	25	III	-10.3%
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$21.99	\$19.95	NS	25	I	-5.9%
53-7064	Packers and Packagers, Hand	\$9.26	\$10.48	NS	25	I	4.0%
43-4051	Customer Service Representatives	\$13.68	\$15.36	NS	19	I	12.9%
43-5061	Production, Planning, and Expediting Clerks	\$21.42	\$21.99	MA	19	I	1.4%
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$18.31	\$18.57	MA	19	I	-19.5%

**FABRICATED METAL PRODUCT MANUFACTURING—NAICS CODE 332  
(CONTINUED)**

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	\$16.50	\$18.18	NS	19	I	-8.6%
53-7063	Machine Feeders and Offbearers	\$10.49	\$11.09	NS	19	I	-24.0%
17-3013	Mechanical Drafters	\$24.99	\$22.95	NS	15	III	2.3%
43-5081	Stock Clerks and Order Fillers	\$10.56	\$11.78	NS	15	I	-12.8%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	15	III	6.0%
17-3023	Electrical and Electronic Engineering Technicians	\$24.12	\$24.50	NS	13	II	2.6%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	\$31.08	\$33.18	NS	13	III	11.0%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	13	III	0.3%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	13	I	-8.2%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$19.63	\$19.33	MA	13	I	-17.2%
53-3033	Truck Drivers, Light or Delivery Service	\$17.34	\$18.21	NS	13	III	9.8%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
37-2011	Janitors and Cleaners	\$11.61	\$13.07	NS	10	I	13.0%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	\$15.16	\$15.16	MA	10	I	-25.7%
51-4035	Milling and Planing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$17.69	\$18.57	MA	10	I	-11.7%

## MACHINERY MANUFACTURING—NAICS CODE 333

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2092	Team Assemblers	\$15.04	\$15.82	NS	166	I	2.1%
51-4041	Machinists	\$20.55	\$20.36	NS	166	III	-6.2%
51-4111	Tool and Die Makers	\$25.25	\$24.74	NS	142	III	-12.5%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	\$25.82	\$26.86	NS	108	III	-4.3%
51-2023	Electro-mechanical Equipment Assemblers	\$14.74	\$14.75	NS	88	I	-19.5%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	\$19.52	\$19.88	NS	85	III	-10.3%
43-5071	Shipping, Receiving, and Traffic Clerks	\$14.32	\$14.70	NS	71	I	-3.3%
51-2022	Electrical and Electronic Equipment Assemblers	\$16.20	\$16.85	NS	71	I	-11.9%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$22.19	\$21.05	NS	64	II	-10.6%
17-3013	Mechanical Drafters	\$24.99	\$22.95	NS	58	III	2.3%
51-4121	Welders, Cutters, Solderers, and Brazers	\$19.47	\$19.84	NS	54	II	-5.0%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	51	III	0.6%
41-4012	Sales Representatives, Wholesale and Manufacturing, except Technical and Scientific Products	\$25.59	\$28.16	NS	44	III	8.7%



SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	44	I	0.3%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$22.06	\$22.04	NS	44	I	-18.0%
43-5061	Production, Planning, and Expediting Clerks	\$21.42	\$21.99	MA	41	I	1.4%
17-3023	Electrical and Electronic Engineering Technicians	\$24.12	\$24.50	NS	37	II	2.6%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	37	III	6.0%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$20.53	\$20.35	NS	37	I	-24.7%
43-4051	Customer Service Representatives	\$13.68	\$15.36	NS	34	I	12.9%
43-5081	Stock Clerks and Order Fillers	\$10.56	\$11.78	NS	34	I	-12.8%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	34	I	-8.2%
51-2031	Engine and Other Machine Assemblers	\$14.82	\$17.77	MA	34	I	-9.8%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	\$31.08	\$33.18	NS	30	III	11.0%
53-7064	Packers and Packagers, Hand	\$9.26	\$10.48	NS	30	I	4.0%
17-3024	Electro-mechanical Technicians	\$20.57	\$21.17	MA	27	II	9.4%

## FMACHINERY MANUFACTURING—NAICS CODE 333 (CONTINUED)

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$18.31	\$18.57	MA	27	I	-19.5%
17-3026	Industrial Engineering Technicians	\$20.52	\$22.14	NS	24	II	5.9%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	24	III	0.3%
49-9041	Industrial Machinery Mechanics	\$22.72	\$22.06	NS	24	III	-5.7%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	24	II	8.4%
37-2011	Janitors and Cleaners	\$11.61	\$13.07	NS	20	I	13.0%
43-4151	Order Clerks	\$15.20	\$16.15	MA	20	I	-29.2%
51-2041	Structural Metal Fabricators and Fitters	\$19.99	\$20.31	NS	20	II	-4.7%
51-2099	Assemblers and Fabricators, All Others	\$10.89	\$12.18	MA	20	I	-3.6%
17-3027	Mechanical Engineering Technicians	\$23.62	\$24.40	MA	17	II	
51-4035	Milling and Planing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$17.69	\$18.57	MA	17	I	-11.7%
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	\$13.27	\$14.06	MA	17	I	-13.4%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$13.84	\$13.96	NS	17	I	-10.4%
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	\$18.05	\$17.87	NS	17	I	-10.5%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$10.82	\$12.17	NS	17	I	1.8%

## COMPUTER AND ELECTRONIC PRODUCT MANUFACTURING— NAICS CODE 334

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2022	Electrical and Electronic Equipment Assemblers	\$16.20	\$16.85	NS	225	I	-11.9%
17-3023	Electrical and Electronic Engineering Technicians	\$24.12	\$24.50	NS	122	II	2.6%
51-2092	Team Assemblers	\$15.04	\$15.82	NS	94	I	2.1%
51-2023	Electro-mechanical Equipment Assemblers	\$14.74	\$14.75	NS	84	I	-19.5%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$22.19	\$21.05	NS	84	II	-10.6%
51-1011	First Line Supervisors/ Managers of Production and Operating Workers	\$25.82	\$26.86	NS	62	III	-4.3%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	56	III	6.0%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	\$31.08	\$33.18	NS	50	III	11.0%
51-9141	Semiconductor Processors	\$14.94	\$15.27	MA	47	II	N/A
43-4051	Customer Service Representatives	\$13.68	\$15.36	NS	41	I	12.9%
43-5061	Production, Planning, and Expediting Clerks	\$21.42	\$21.99	MA	41	I	1.4%
43-5071	Shipping, Receiving, and Traffic Clerks	\$14.32	\$14.70	NS	37	I	-3.3%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
43-5081	Stock Clerks and Order Fillers	\$10.56	\$11.78	NS	34	I	-12.8%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	31	I	-8.2%
51-4041	Machinists	\$20.55	\$20.36	NS	31	III	-6.2%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	28	III	0.6%
17-3024	Electro-mechanical Technicians	\$20.57	\$21.17	MA	25	II	9.4%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	25	II	8.4%
43-1011	First Line Supervisors/Managers of Office and Administrative Support Workers	\$23.66	\$25.51	NS	19	III	0.3%
51-2099	Assemblers and Fabricators, All Others	\$10.89	\$12.18	MA	19	I	-3.6%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$20.53	\$20.35	NS	19	I	-24.7%
27-3042	Technical Writers	\$32.23	\$32.53	NS	16	III	15.6%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	16	I	0.3%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$20.24	\$21.13	NS	16	III	6.5%
51-2021	Coil Winders, Tapers, and Finishers	\$13.33	\$14.72	MA	16	I	-27.1%
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	\$19.52	\$19.88	NS	16	III	-10.3%

## ELECTRICAL EQUIPMENT AND APPLIANCES MANUFACTURING— NAICS CODE 335

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
51-2022	Electrical and Electronic Equipment Assemblers	\$16.20	\$16.85	NS	140	I	-11.9%
51-2092	Team Assemblers	\$15.04	\$15.82	NS	97	I	2.1%
51-1011	First Line Supervisors/Managers of Production and Operating Workers	\$25.82	\$26.86	NS	48	III	-4.3%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$20.53	\$20.35	NS	42	I	-24.7%
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	\$20.24	\$21.13	NS	36	III	6.5%
49-9042	Maintenance and Repair Workers, General	\$16.99	\$17.84	NS	26	II	8.4%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$22.19	\$21.05	NS	26	II	-10.6%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	\$15.16	\$15.16	MA	25	I	-25.7%
51-9111	Packaging and Filling Machine Operators and Tenders	\$11.81	\$12.25	NS	25	I	-4.4%
17-3023	Electrical and Electronic Engineering Technicians	\$24.12	\$24.50	NS	21	II	2.6%
43-4051	Customer Service Representatives	\$13.68	\$15.36	NS	21	I	12.9%

SOC Code	Occupational Title	Median Wage	Mean Wage	Area for Wage Data	North Shore Employment	Level	Projected Growth
43-5071	Shipping, Receiving, and Traffic Clerks	\$14.32	\$14.70	NS	19	I	-3.3%
51-4111	Tool and Die Makers	\$25.25	\$24.74	NS	18	III	-12.5%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	\$17.56	\$17.63	NS	16	III	0.6%
43-5081	Stock Clerks and Order Fillers	\$10.56	\$11.78	NS	16	I	-12.8%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$22.06	\$22.04	NS	16	I	-18.0%
51-4041	Machinists	\$20.55	\$20.36	NS	16	III	-6.2%
43-5061	Production, Planning, and Expediting Clerks	\$21.42	\$21.99	MA	14	I	1.4%
49-9043	Maintenance Workers, Machinery	\$17.74	\$17.83	NS	14	II	-2.5%
53-7051	Industrial Truck and Tractor Operators	\$17.93	\$16.78	NS	14	III	2.4%
43-9061	Office Clerks, General	\$11.88	\$12.22	NS	12	I	0.3%
43-6011	Executive Secretaries and Administrative Assistants	\$20.96	\$20.98	NS	11	III	6.0%
43-6014	Secretaries, except Legal, Medical, and Executive	\$16.22	\$16.35	NS	11	I	-8.2%

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# North Shore Workforce Investment Board

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70 Washington Street,  
Suite 314  
Salem, MA 01970  
Tel: 978.741.3805  
[www.northshorewib.com](http://www.northshorewib.com)



181 Union Street, Lynn, MA 01902  
Tel: 781.593.0585  
70 Washington Street, Salem, MA 01970  
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