

National Perceptions Make Case for New England Cooperation

By Douglas G. Fisher

New England is proud to be the home of rugged American individualism and fierce local rule. Little wonder, then, that regional thinking is still a revolutionary concept in this land of Yankee tradition.

But as anemic population and economic growth have strapped state budgets and crippled individual marketing efforts, New England states are relenting in their drive to compete against each other and exploring creative ways to pool precious resources to regain a competitive edge.

Evident of this new thinking, a group of state-level government and nonprofit economic development professionals (visit www.TeamNewEngland.com) have collaborated since 1999 to market the region under the banner, "Discover New England for Business." Primary targets include corporate real estate executives and national site selection consultants. The group is led by the economic development arm of Northeast Utilities, the region's largest utility company.

These joint marketing efforts center on an assumption that there is, in fact, a New England "brand," and that this brand is largely positive—otherwise, why bother? Until this year, however, no one had tested this theory.

Perceptions of New England

Twenty state and regional New England organizations joined forces in late 2003 to fund the first-ever national surveys

(conducted by the Center for Survey Research and Analysis at the University of Connecticut) of people and business executives who live *outside* the region, asking their perceptions of the region as a place to live, work, travel and do business. Among the questions:

- How is New England perceived by people who do not currently live or do business here?
- How do these perceptions square with New Englanders' perceptions of themselves; and
- What are the region's chief strengths and vulnerabilities?

Four surveys were commissioned. The first asked 1,000 Americans aged 18 and older their opinions of the area as individuals and tourists. The second queried 400 U.S. business executives outside of New England on a range of competitiveness issues. The same survey was used to gauge the perceptions of 100 international business executives from England, Germany and Canada; plus 50 national site selection consultants, professionals who specialize in advising corporations on where to locate or expand business operations. The surveys were conducted between December 2003 and May 2004.

Key Findings

Notably, New England is perceived as a slightly above average location, but monolithic. Respondents saw little difference among the six states as business locations, tourist destinations or as places

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The New England Futures Project

By George Hamilton

The words "New England" conjure up distinctive images among Americans and many people around the globe, as do New England's economic advantages—its history of Yankee ingenuity, its preeminence in great research and teaching universities, its famed hospitals, academics, inventors, patents, money management skills and venture capital. What region of the globe should be more ideally positioned to prosper in a 21st Century economy rooted in research and development, intellectual activity, capital market strength, and medical ingenuity?

Within New England, however, the image is more blurry. Neither media attention nor public awareness is sufficiently focused on issues that could galvanize regional interest, such as the New England Council's work to influence congressional legislation, or the efforts of the New England Board of Higher Education to strengthen and advance the region's universities and colleges. Complacency about the region's future and a lack of cooperation among the region's political jurisdictions converge to discourage broad and inventive thinking.

As a result, insufficient attention is paid to serious divides in the region. While some communities are thriving, many towns and cities, indeed whole sections of states, are struggling with economic and population declines. A major wave of immigration is occurring with little shared discussion of how to smooth tensions and

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**Northeast
Utilities System**

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to live, rating all six only 0.5 to 1.25 apart on a scale of 1 to 10. Of similar significance, New England as a region consistently polled better than most or all of its individual states, underscoring the apparent positive influence of the collective region's "brand."

Costly But Innovative

New England is perceived by business executives and site consultants as very costly (by 66 percent) and highly regulated (72 percent). These views are counterbalanced by their acknowledgment of New England's highly educated, innovative workforce and superior recreational amenities. The workforce is a key point for site selectors, who ranked an educated, quality labor pool as far and away the top concern of their clientele, while 42 percent agreed with a statement that people and businesses in New England are more innovative than those in other parts of the country.

Market Not a Magnet

Corporate executives said their primary reason to locate in New England would be to pursue a specific business opportunity or market demand, but one quarter of the respondents expressed concern about New England's market size. Even worse, fully 27 percent stated they simply would not locate in the region for *any* reason. Primary concerns for business leaders were tax levels, the need for a growing workforce, updated transportation and telecommunications infrastructure, housing and energy—none of them areas in which the region shines. The respondents made that clear by assessing the region's performance poorly on these items relative to the rest of the United States. Site selection professionals also touted the importance of location incentives, and knocked the New England states for not typically sweetening the pot to attract companies.

Chilly Reception

To outsiders, New England's weather is a liability. Cold and snow topped the list when both the general population and business executives were asked their top of mind impressions of the area. Fully 54 percent of business executives called the region's weather a competitive disadvan-

tage, although site selection consultants and international executives were less troubled. (An interesting side note: New Englanders themselves are divided on this issue: 50 percent reported they most liked the region's distinct seasons and weather; yet another 44 percent said the weather is what they most *disliked* about the region.) People nationwide chose autumn as their favorite New England season, with winter the least appealing (21 percent).

Other things respondents say characterize the region include: foliage, natural beauty, the New England Patriots football team and clam chowder, the region's food classic. A distinct lack of business attributes, however, was evident.

View Better From Overseas

International firms, used to Europe's high-cost, regulated environments, were not as put off by New England's costs, which, by comparison, are a bargain. Key issues for the foreign executives were an educated workforce, access to institutions of higher education, transportation and utility infrastructure; and taxes. Overall, though less informed about the region, the international group rated New England higher than did other respondents as a place to live and work. Their responses underscore the potential for New England to build upon the already substantial foreign investment in the region.

New England's Call to Action

These survey findings beg a range of future marketing and public policy efforts. Of particular concern for New England's economic development leaders are the region's lackluster economy, manufacturing losses and population decline, which reinforce the area's fading image. With aging populations and iffy weather, the six states are perceived as "old and cold," with too many businesses and people looking elsewhere. In sum, New England is no longer viewed as a bona fide competitive threat by other parts of the United States.

New England is badly in need of a marketing breakthrough, but long-standing barriers stand in the way. Chief among them is an historic aversion to promo-

tion. Much of the area's leadership has not seen the need to aggressively market; as a result, during difficult financial times, economic development promotion expenses are often the first to go. Combine this reality with the area's palpable resistance to development and its tax and regulatory climates, which often run counter to state marketing messages, and you begin to understand the challenge.

Efforts such as Team New England, however modest, point to what the region can accomplish if it applies some of its legendary innovation to the traditional marketing task of selling the region to key parts of the United States and abroad. The very same assets that once made New England an economic powerhouse are still largely in place, despite intense global competition and campaigns by other states to attract the region's companies and workers. The key for New England is to marshal its resources in ways it never has before, enabling it to mass market together, even as each state niche markets separately.

One final, unifying note: Another recent UConn poll found that 87 percent of the region's residents consider themselves "New Englanders," and 89 percent consider the area an excellent or good place to live. As we seek to promote our region, it looks as if we have a significant pool of potential ambassadors! ■

Doug Fisher is director of economic and business development for Northeast Utilities. He facilitates the six-state Team New England business attraction effort.

New England Developments is published quarterly by the Economic & Community Development Department of Northeast Utilities. It is intended to foster dialogue on economic and quality of life issues in the region.

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Comments about New England Developments or requests for copies are encouraged. Please contact the editor by e-mail at levin44@comcast.net or telephone at 860-673-6382. This newsletter paid for by NU System customers.

Guest COLUMN

Vermont Microtechnology Initiative Proves that Small Is Indeed Beautiful

By Lance Matteson

Economic developers in southwestern Vermont, in close collaboration with university, industry and government partners, are proving that small is as beautiful in high tech as it is in low tech. Meet the Bennington Microtechnology Center (BMC), a newly established not-for-profit corporation, which bills itself as a “one stop micropackaging boutique.”

Despite treacherously icy weather, community and state leaders announced the BMC's formation and initial funding at a crowded press conference in North Bennington last December.

Vermont's U.S. Sen. Patrick Leahy was able to secure \$3.5 million in fiscal year 2004 for the U.S. Office of Naval Research to develop high-tech microsystem technologies for Navy use. The appropriation allows the Navy to be the BMC's first client. The state of Vermont, with the leadership of Gov. Jim Douglas, and state Sens. Mark Shepard and Dick Sears, is contributing another \$500,000 toward the BMC's startup costs. These leaders, and others among their colleagues, illustrate the project's solid bipartisan political support.

Typical of community economic development organizations, the Bennington County Industrial Corporation (BCIC) had been searching for a way to stimulate job growth in the advanced technology sector.

Certainly the political appeal of “high tech” is high universal. But the challenge in such cases is to find a focus—to prevent a technology initiative from drowning in a sea of buzzwords and generalities. BCIC

sought a niche more specific, and more feasible, than “biomedical” or “microelectronics” or “information technology.” BCIC was looking for a niche in a growth market not already targeted by everyone else.

After an extended dialogue with regional political leaders, businesses, educators, and researchers, BCIC found the ingredients it sought in the *microsystems* niche. Microsystems are tiny—sometimes barely visible—sensors, valves, pumps, robots, and assorted “micro-electro-mechanical systems (MEMS).” The specific impetus for the BMC came from discussions with Sen. Leahy and the Center for Automation Technologies (CAT) at Rensselaer Polytechnic Institute. Dr. Harry Stephanou, CAT's director, saw an opportunity to leverage R&D for the Navy project in areas in which his researchers had world class expertise and industrial experience. The BMC was created to fill a gap in the commercialization of microsystems, with an initial emphasis on meeting the Navy's specific need.

Vermont and the Bennington region have a long history of innovation and manufacture of machine and tool technologies. Microsystems, and the micro scale tools and processes needed to manufacture them efficiently, were seen as a continuation of this authentic Yankee tradition. The Bennington area already hosts firms manufacturing fiber optic cable and components, automated industrial machines, tantalum capacitors, microbatteries, carbon fiber products, and injection molding on a variety of scales.

Emerging Growth

The microsystems industry is an emerging sector growing at annual rate of about 25 percent. It is expected to reach a global sales volume of more than \$100 billion by the year 2010. The pervasive deployment of miniaturized sensors and actuators is expected by some to trigger the second half of the information revolution, with a magnitude greater than the first half, which was prompted by the miniaturization of electronic devices some 40 years ago. One of the widely recognized obstacles to the commercialization of microsystems is the

lack of standard processes for the assembly and packaging of microparts into commercial microsystems. These engineering oriented operations account for around 85 percent of the cost in many commercial products. Yet, they have received very modest attention and funding in the research community, compared to more science oriented, and glamorous fields, such as MEMS fabrication.

Considerable investment in micro-manufacturing infrastructure is needed, a challenge in view of the fragmented nature of the microsystems market, which is characterized by relatively large numbers of narrow product niches. This infrastructure includes the creation of new process knowledge as well as the design of new equipment. Much of the basic science underlying such developments is well known, and its many fragments largely reside at major academic research centers.

The BMC was created to address the need to bridge this gap. Its primary mission is to accelerate the commercialization of microsystems by providing a state-of-the-art facility for back-end assembly and packaging. The present focus is on the development of a set of micropackaging tools and their application to the manufacturability of MEMS safe and arm fusing systems for the United States Navy. The one-of-a-kind tool kit will lower manufacturing costs, decrease time to deployment, and increase product dependability. The facility's infrastructure will be available to commercial clients: end users in search of turnkey manufacturing solutions, and equipment suppliers in search of new applications and next generation product enhancements.

Microsystems packaging is currently limited by a lack of readily available processes and standards. Cost-effective manufacturing of integrated microsystems is a BMC major goal, and the design of modular system architectures a key element of the technical approach. The CAT is providing R&D support to BMC. Current expertise and capabilities include micro-robotic assembly, modular microfluidics, wafer level bonding, hermetic sealing, glass

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integrate these newcomers into the region's society. People fail to see the alliances possible between such environmental goals as Northern Forest protection, peoples' access to coastlines, smart growth, and "green" developments. There is little discussion about how the region as a whole can prosper in the global economy, while maintaining the unique qualities that set New England apart.

New England appears to be drifting into this new century without a broadly shared strategy on issues—economic, social, environmental, and global—that are critical to its future.

Ensuring Regional Prosperity

The Partnership for New England—which includes the Institute for Sustainable Communities (ISC) in Montpelier, Vermont; the Citistates Group; the New England Initiative (housed at the University of Massachusetts-Lowell); the New England Council, and Mt. Auburn Associates, with an advisory group of strategic partners from throughout the region—recently launched the New England Futures project.

The project seeks to embolden existing and emerging leaders from around the region to think expansively and creatively about how to protect New England's remarkable quality of life while enhancing its global competitiveness. The process will begin with a first-ever invitation to print and broadcast media outlets across New England to engage in time-coordinated coverage of critical, region-wide issues. Based on hundreds of interviews across the six states, a series of major articles will be prepared for publi-

cation by the nationally seasoned editorial team from the Citistates Group. The coverage will highlight critical challenges facing the region, focusing on issues that lend themselves to greater regional collaboration and innovative solutions. State and local forums will provide opportunity for public discussion and debate.

Following this awareness-building phase, leaders from across the six states will be invited to come together to develop a strategy to advance a new regional agenda. ISC is particularly committed to follow-on activities that will help New England leaders identify and implement plans of action that will secure the region's future in the coming years.

The question of region-wide issues was posed by the Citistates Group in a Spring 2002 report, "A Strategic New England: A Citistates Reconnaissance Report," sponsored by the New England Council, the Metropolitan Area Planning Council of Boston, and the Boston Foundation. Citing New England's intellectual and financial resources, the report suggested four focus areas for initial consideration:

- **Higher Education:** how to foster the region's universities and colleges, research laboratories, and think tanks—its "industry of the mind"—as the economic base for 21st-Century growth.
- **Smart Growth:** how to preserve New England's traditional character to attract and retain the mobile professional workers essential to the region's economy and to keep tourism strong.
- **Transportation:** how to create a modern, multi-modal transportation system with coordinated airports and

rail networks to relieve overtaxed roadways and keep the region from becoming a "continental cul de sac."

- **State and Local Governance:** how to promote collaborative relationships that might help offset the New England hallmark of strong home rule.

Since their initial reconnaissance was completed last year, the Citistates team has spent considerable time crisscrossing the region, and has completed a major new report for the Boston metro area that was released in May. Additional issues and challenges have surfaced including affordable housing, engaging the region's youth, and identifying the connecting strands between growth and environment issues on the one hand and human development issues (children, schools, lifelong education) on the other.

As the Citistates New England Reconnaissance Report suggests, "True prosperity will only be reached by regions which grasp the new reality that goals of sustainable metropolitan-wide growth, an educated and skilled workforce, a clean environment, good physical planning, and progress toward social equity, aren't contradictory, but profoundly interdependent."

In coming months, the first phase of the New England Futures project will explore that interdependence and give us all an opportunity to look at these important issues from a region-wide perspective. ■

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micromachining, and their respective commercial applications.

Vermont's Norwich University has also been an early BMC partner and is represented on the board of directors. And the Vermont Technical College is also in active discussions with the BMC and the Southwest Vermont Career Development Center—a secondary tech-

nical education center—about formation of a satellite microtechnology education program with both high school and college level components.

This initiative has the potential to transform the larger regional and even national economy, as the BMC is the first of its kind in the country. Five hundred jobs are projected in Vermont alone

within the next five years. These jobs will pay well and perhaps offer one of the nation's best hopes for building future U.S. manufacturing competitiveness in the world. ■

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Power POINTS

New England Gains in “New Economy”

Massachusetts ranked No. 1 in the biennial National State Technology & Science Index for 2004 produced by the Milken Institute, the same standing as in 2002. The index is compiled from scores on 75 factors focusing on R&D spending, venture capital investment, entrepreneurial infrastructure, and technology- and science-oriented workforce. Rhode Island climbed from 21st to 11th in the latest index, New Hampshire from 13th to 12th, Vermont from 31st to 22nd, and Maine from 36th to 33rd. Connecticut was the only New England state to slip in 2004, dropping to 10th from 8th place in 2002.

New Hampshire “Most Livable State”

New Hampshire was ranked the nation’s “Most Livable State” for 2004 by the research firm Morgan Quitno, which annually compares states on 43 factors both positive (such as per capita GSP, job growth and educational attainment) and negative (including crime rates, cost of living). In taking over first place, New Hampshire finally displaced Minnesota, which occupied the top spot for the previous seven years. All New England states finished in the top half of the ranking, including Vermont (3), Connecticut (9), Maine (12), Massachusetts (16) and Rhode Island (24).

Region Lags in Small Town Growth

While New England emphasizes “livability,” other regions do better when it comes to old-fashioned economic growth. In a recent issue, *Site Selection* magazine ranked Traverse City, Michigan, as the best small town in American for new and expanding companies, producing 12 industrial plants in 2003 and 34 from 2001 to 2003. The highest ranking New England town was Taunton, Mass., tied

for 21st with 10 new and expanded facilities. No New England state had more than one town on the *Site Selection* state count of 100 top towns (Illinois alone had 15). With the exception of New York, most of the states with dynamic small towns were in the Midwest and South. Keys to success for these communities are a nurturing climate for entrepreneurs, lower operating costs, and strong civic leaders that embrace change.

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Brain Drain

According to *Connection* magazine (Spring 2004), published by the New England Board of Higher Education, five of the New England states have experienced a net outflow of adults with a bachelor’s degree. Massachusetts had the worst outflow in the nation in 2000, losing more than 16,000 bachelor’s degree holders. Rhode Island lost 3,674 degree holders, ranking 41st, while Vermont ranked 36th with a net loss of 2,276. Connecticut and Maine also lost more bachelor’s degree holders than they took in. Only New Hampshire bucked the trend with a slight increase. States with the greatest net inflows included Florida and Georgia, indicating that these states are increasing their skilled workforces and not just adding retirees.

Employment Engines

New England employment was down again in 2003 according to an overview by the Boston Fed, with only two major industry sectors showing gains. These were education & health services, which

had job growth of 1.5 percent over 2002 (annual averages), and leisure & hospitality, which added 1.3 percent more jobs. Job losses were especially severe in the information sector (-6.2%) and in manufacturing (-6.1%). December 2002 to December 2003 employment increases in four New England states were not able to offset continuing losses in the region’s two biggest economies, Massachusetts and Connecticut.

Offshoring (Part 1)

The great media bugaboo of offshoring (not outsourcing as it is sometimes mistakenly called) is affecting Europe as well. *BusinessWeek* reports that by 2008, Western Europe may lose more than 800,000 white-collar jobs in customer services, software development, and data operations to India, Latin America, Eastern Europe and elsewhere. Part of the job shifting is to better compete with American multinationals like Citigroup that have already moved large operations to lower-wage locations, ironic given the outcry over offshoring in the U.S. Ireland and England, beneficiaries of the first wave of U.S. offshoring, are being hit hardest now, although the trend is moving rapidly across the continent.

Offshoring (Part 2)

A backlash over the offshoring backlash may be forming. Efforts to ban state contracting (in claims processing, for example) with other countries are meeting with a notable lack of success as the interconnections of the global economy surface, and in the face of concerted opposition from business groups. New information is helping to put the issue in perspective: Datamonitor, a London consulting firm, reports that U.S. companies currently employ 18,000 computer support personnel in India and the Philippines compared with 240,000 in the U.S. Also weakening the offshoring case is strong U.S. job growth of 300,000 in both March and April, led by a large increase in professional and business services employment, including management and technical consulting services, and a small gain in manufacturing. ■

From the New England Board of Higher Education

How Undergraduate College Completions Shape Labor Supply

By Neeta P. Fogg and Paul E. Harrington

Perhaps more than any other measure of higher education, college completions provide a clear indication of the contributions of this important sector to the economy and to society at large. Degree completions, particularly, allow for the assessment of a wide variety of issues pertaining to higher education, ranging from minority access and gender equity to the role of higher education in supplying the highly educated and skilled workers needed to sustain economic growth.

The number of undergraduate degrees awarded annually in the United States has increased considerably since 1990. The number of associate degrees rose from 469,100 in 1990 to 608,400 in 2002, an increase of nearly 30 percent in just 12 years. The number of bachelor's degrees awarded also grew by about 23 percent over the 12-year period.

The increase in the number of degrees awarded nationally is the product of a variety of factors. These include growth in the "traditional" college-age population since the mid-1990s, a continued increase in enrollment rates of new high school graduates over much of the 1990s (though with some leveling off at the end of the decade) and continued growth in the labor market advantages—namely increased wages—that accrue to individuals with college degrees.

The forces that led to sizable increases in college completions nationally seem to have had widely different impacts in different places. Higher education institutions in New England lagged far behind their counterparts in increasing the number of undergraduate degrees granted despite a strong regional economy that, by the end of the 1990s, had produced widespread labor shortages in many occupations that require college degrees.

At the bachelor's level, New England was able to increase the number of degrees granted by only 2 percent—less than one-tenth the national rate. Of the total increase of nearly 243,000 bachelor's degrees granted nationwide between 1990 and 2002, New England colleges conferred

fewer than 1,700—a meager 0.7 percent of the total increase. As a result of this, New England employers began seeing a sharp shift in college-educated labor supply to other parts of the nation.

During the 1990s, U.S. policymakers and educators placed renewed emphasis on associate degree programs. Some elected officials began to talk about the associate degree as the new minimum educational credential for success in the labor market. Most regions substantially expanded the number of associate degrees they granted. The major exception was New England, where the number of associate degrees granted actually declined by nearly 9 percent between 1990 and 2002. Meanwhile, colleges in the Rocky Mountain and Pacific regions increased the number of two-year degrees they granted by more than 60 percent from 1990 to 2002.

Women and Minorities

In New England, the entire increase in bachelor's degrees granted occurred among women. In fact, the number of bachelor's degrees awarded to men declined by 4 percent. As a result, between 1990 and 2002, women accounted for 187 percent of the net increase in bachelor's degrees granted in New England, and the region's young men now lag far behind women in average educational attainment. Lower basic skills, higher high school dropout rates, lower college-going rates and lower college retention rates all contribute to growing educational disparity between young men and women in New England and the nation.

During the second half of the 1990s, some shift in the racial and ethnic composition of college degree recipients did occur in New England, but the absolute overall size of the shift was quite small. The number of white, non-Hispanic students receiving associate degrees declined by nearly 4,800, or about one-fifth, between 1995 and 2002, accounting for the entire decline in the number of two-year degrees granted in the region.

Partially offsetting the large declines

in associate degrees granted to white students was a rapid increase in degrees awarded to black and Hispanic students at the two-year level. Between 1995 and 2002, the number of associate degrees awarded increased by 35 percent among black students and 41 percent among Hispanic students. While these growth rates appear very large, the total number of associate degrees granted to either group was small. Only 1,900 associate degrees were awarded to black students in 2002, while fewer than 1,100 were awarded to Hispanics (almost 19,000 were awarded to whites). The same trends—increases in degrees awarded to minorities compared to a decline for whites but a relatively small number of degrees awarded to minorities—hold for bachelor's degrees.

Extraordinarily large numbers of New England's black and Hispanic young adults have low levels of educational attainment and are "disconnected" from education and the labor market. Data from the 2000 decennial census reveal that nearly 53,000 Hispanic and black young adults in the region were disconnected—jobless and not enrolled in school. These numbers represent enormous social and economic costs for the region, and they have likely grown since 2000 due to continuing immigration and a recession that has caused substantial job losses.

New England educational leaders should be asking tough questions about the role of higher education in serving New England's large and growing "disconnected youth" population. While the rhetoric of diversity is commonplace on New England's college campuses, the reality is that a large and growing number of black and Hispanic young adults—especially young men—are being closed out of the opportunities that a college degree provides. ■

Neeta P. Fogg is a senior economist at Northeastern University's Center for Labor Market Studies. Paul E. Harrington is associate director of the center. This is an edited version of a story that appeared originally in the Spring 2004 issue of Connection: The Journal of the New England Board of Higher Education. For more information on Connection visit www.nebhe.org/connection.

Regional Economic **TRENDS**

New England's Medical Device Manufacturing Industry: Beyond Boston

By Loren Walker

Long recognized as a bastion of health care services excellence, New England is also a hotbed for the medical device industry. In a recently released study of America's health care economy, the Milken Institute reported that New England has the highest concentration of medical device and supply manufacturing employment of any region in the nation.

New England's world-class universities, state-of-the-art medical centers, and high-precision manufacturing facilities are ideally suited to meet the research, testing and production needs of the modern medical device industry. However, New England's medical device leadership position will not go unchallenged. Other regions are vying for a share of this ascending sector. Through effective interstate collaboration, New England can leverage its vast biomedical research capabilities and industrial resources to ensure retention of medical device manufacturing jobs and foster the industry's growth.

The United States is the global leader of the medical device and medical technology industry, which has been growing at an average annual rate of 9 percent for the past decade. Financial analysts describe the industry as "robust" and "healthy" with "strong top-line growth across the board." The estimated \$43 billion medical device industry adds more than \$6 billion to U.S. trade accounts each year. Additionally, this tech-intensive industry requires an educated workforce, which means that medical device employees earn more

on average than their counterparts in other manufacturing sectors.

Analysts predict that the "graying of America" coupled with the rapid pace of scientific and technological innovation is positioning the medical device industry for "double-digit growth for years to come." Furthermore, the aging population's demand for ever-better and safer health care products favors medical devices made in the U.S. because the stringent FDA-approval process is internationally recognized as the "gold standard" of product quality and effectiveness.

Medical device manufacturing businesses are distributed throughout the country. However, 45 percent of the industry's total workforce is based in California and in the northeastern U.S. from Maryland to Maine. The eleven Mid-Atlantic and New England states, which cover an area comparable to California, employ approximately 28 percent of the nation's medical device and supply manufacturing industry workers. The hub of New England's medical device industry is the eastern Massachusetts' I-495 Beltway of metro areas with Boston at its center.

Although it accounts for less than 6 percent of Massachusetts' total manufacturing workforce, the medical device industry is an important contributor to the state's economy, according to a report produced for the Massachusetts Medical Device Industry Council (MassMEDIC).

The report concluded that the industry has a "ripple effect" on the state's economy beyond the employment and earnings of medical-device workers, primarily because of the important linkages that exist between medical device manufacturers and other industry sectors. To produce medical devices, companies purchase components from Original Equipment Manufacturer (OEM) suppliers and outsource jobs to a variety of service providers. As a result of these linkages with other sectors, 79 additional jobs are associated with every 100 medical-device jobs and for every dollar of medical device industry output, 22 cents comes from materials and services purchased from other industries in the state. An estimated 36,000 jobs in Massachusetts are related directly or indirectly to medical device manufacturing, according to the MassMEDIC report.

Regional Strength

The epicenter of New England's medical device industry is the greater Boston metro area, but that is only half the story. Beyond Boston, other New England metro areas support more than 50 percent of the region's approximately 36,000 medical device manufacturing jobs. If the economic ripple effect from medical device manufacturing observed in Massachusetts is consistent throughout the region then as many as 65,000 New Englanders may be employed directly or indirectly in the production of medical devices.

Medical Device Manufacturing Employment Distribution in New England

Eastern Massachusetts I-495 Beltway, Greater Boston	47%
I-91 Corridor, New Haven, Hartford, Springfield	15%
Rhode Island & Southeastern Massachusetts	10%
Eastern New Hampshire & Southeastern Maine	9%
Southeastern Connecticut	7%
Worcester, Massachusetts Metro Area	5%
Other areas	7%

Source: Dun & Bradstreet Marketplace Data, 2004.

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Regional Economic Trends, cont'd. from page 7

The design, development and production of modern medical devices require inputs from researchers, physicians, engineers and precision manufacturers of metal, plastic and electronic components. In addition to the I-495 Beltway, other parts of New England with a combination of teaching hospitals, research-driven universities and precision manufacturing capabilities, are uniquely positioned to increase their share of the burgeoning medical device industry. Southern New England's I-91 Corridor is one such area.

The I-91 Corridor extending from the Pioneer Valley of western Massachusetts to the Connecticut coastline has great medical device industry growth potential. The New Haven, Hartford and Springfield metro areas support a large research community and nationally-ranked medical centers that provide accessible venues for device testing and evaluation. Additionally, many of the corridor's manufacturers have had years

of experience producing components for the aerospace industry, which requires a level of precision and quality control that is compatible with the rigorous standards the FDA has set for medical device manufacturing. In fact, there are already as many FDA-registered medical device contract manufacturers operating in the I-91 Corridor as there are in the entire state of New Jersey, where medical device industry employment exceeds 20,000.

The combined strengths and potential of New England's metro areas suggest a bright future for the region's medical device manufacturing industry. Nationally, the industry is predicted to experience strong and sustained growth over the coming years and decades, creating more good jobs at above-average wages. Because this growth potential has not gone undetected by other states and regions, New England faces stiff competition for medical device industry jobs.

Through interstate collaboration that effectively leverages the region's strengths and resources, New England can maintain its leadership position in medical device manufacturing and medical technology development. In this way, the region will benefit economically and people around the world will benefit from the life-saving devices produced here. ■

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