Sustaining Greater Boston's Life Science Leadership

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Greater Boston Chamber
The Hub of Business

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Executive Summary

Greater Boston has the potential for sustained leadership in the life sciences. But its preeminence is not assured, and countless other regions seek the same role. To ensure Greater Boston's position as a world leader in the life sciences for decades to come, steps must be taken in five areas:

Bioinformatics and Leading-Edge Life Science Research

Greater Boston is uniquely positioned to be a world leader in bioinformatics, which combines cutting-edge computer technologies with the search for genetic therapies and cures. A strong bioinformatics sector will enhance leading-edge life science research sectors in Greater Boston, including stem cell research and translational research.

The Chamber will work with leaders in the life science, high technology, and government sectors to achieve this goal through the pursuit of federal bioinformatics funding, the development of refundable R&D and investment tax credits for bioinformatics, and targeted proactive marketing to bioinformatics leaders around the world.

Visas and Foreign Workforce Recruitment

Greater Boston needs to attract and retain talent from around the world to remain competitive with other life science centers around the U.S. and the world.

The Chamber will advocate for an increased number of H-1B visas to be issued annually, monitor the Visas Mantis system to ensure that the recent changes produce improved visa processing, and promote the provisions of the ACTION Act of 2005 related to strategic marketing that will bring foreign-born life science students to the United States.

Higher Education Worker Training

Greater Boston needs a continuous pipeline of trained and educated entry-level life science workers to respond to the industry's employment needs and potential.

The Chamber will work with industry leaders, as well as public and private higher education leaders, to increase the supply of trained life science workers by: (a) strengthening connections between the industry and the region's students, (b) expanding community college job training programs through a job training incentive authorized under state law, and (c) extending the community college job training incentive to state colleges and universities.

Streamlining the Permitting Process

Slow, confusing permitting processes are major obstacles to the life science industry's growth in Greater Boston. With speed-to-market a major issue for biotechnology, pharmaceutical and other life science firms, timely review processes are critical.

The Chamber will work with government and industry leaders to advance permitting reforms at the State House, including the Chamber's local option special permit bill and the adoption of clear fixed-length permit review schedules, and to encourage preplanning of prime life science development sites.

Housing for Workforce Retention

Greater Boston needs to keep the region attractive and affordable to a large and critical concentration of graduates and workers by providing appropriate workforce housing options.

The Chamber will work to expand the supply of housing by working for state assistance to municipalities whose new housing produces a net increase in school costs, and for the expanded use of District Improvement Financing and Tax Increment Financing in support of housing development.

The Chamber will work with leaders in government, the life sciences, and the broader business community, as well as with leaders in other advocacy organizations, to implement these recommendations and make Greater Boston an unparalleled location for the growth of the life science industry in the years ahead.

Introduction

Greater Boston has long been recognized as a leader in scientific research, medical technology, and health care. It has four essential elements that have positioned it as a life science super cluster:

(a) an extensive network of world-renowned research and educational institutions, universities, and companies;

(b) a wealth of talent in those institutions and in a highly-skilled regional workforce;

(c) significant federal research funding and venture capital; and

(d) civic leadership in both the private and public sectors dedicated to the growth of the life sciences and the region's overall economy.

As evidenced by the recent stem cell research breakthroughs achieved by a South Korean laboratory, Greater Boston's future leadership in the life sciences is not guaranteed. The competition from other recognized life science clusters and emerging markets across the globe is intensifying. More needs to be done by leaders in the government, business and advocacy sectors to ensure that Greater Boston and Massachusetts are life science world leaders for decades to come.

This report, *Sustaining Greater Boston's Life Science Leadership,* is written with the dual objectives of:

(a) identifying critical issues that will impact Greater Boston's ability to sustain and build upon its leadership position in the life sciences, and

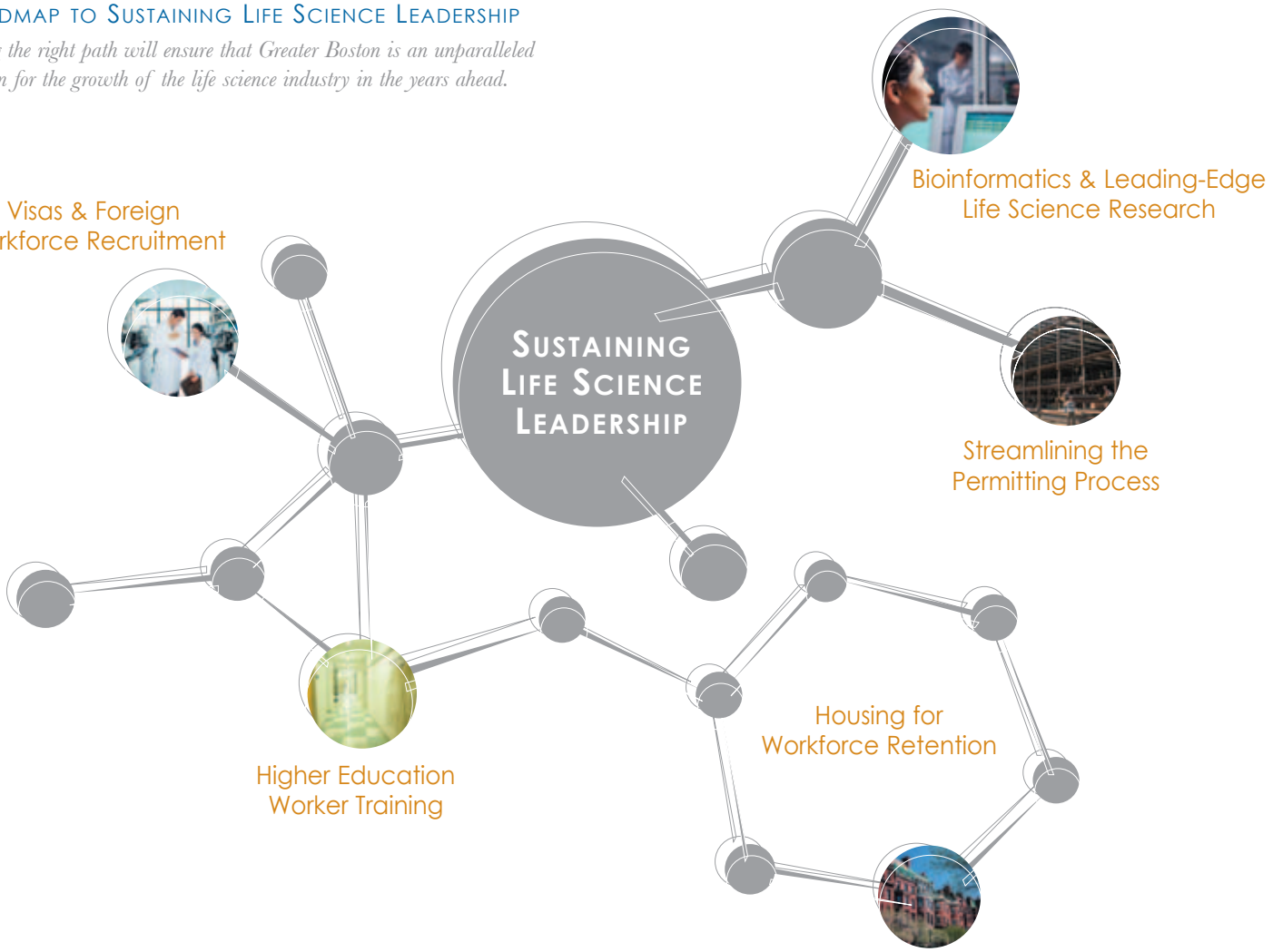
(b) presenting a set of actionable recommendations for each of those issues that will strengthen Greater Boston's ability to attract new technologies, companies and jobs in the life science industry.

To those ends, the report identifies five critical areas where action should be taken. The first area, bioinformatics, is a part of Greater Boston's life science industry that can catalyze growth in cutting-edge disciplines such as stem cell research and translational research. The other four areas are important to the entire life science industry, affecting its ability to hire workers and build facilities.

During the last several years, a number of organizations that support the life science industry throughout the Commonwealth have published reports with recommendations to enhance Massachusetts' competitive position. Much positive action has occurred since the publication of those reports, particularly the Massachusetts Biotechnology Council's *MassBiotech 2010* report. The Greater Boston Chamber of Commerce seeks to complement and extend that action with this report.

Roadmap to Sustaining Life Science Leadership

Taking the right path will ensure that Greater Boston is an unparalleled location for the growth of the life science industry in the years ahead.



The Chamber will work collaboratively to make Greater Boston an unparalleled location for the growth of the life science industry in the years ahead.

Bioinformatics and Leading-Edge Life Science Research

The mapping of the human genome has accelerated the growth of a critical new sector - bioinformatics. As a result of the mapping, immense quantities of genetic data are available for the development of new drugs and therapies. Bioinformatics is the use of computer hardware and software in that process. Computational biology, the analysis of gene sequence information, is one of the most essential tasks in bioinformatics.

Bioinformatics technologies are vital to the development of new life science fields such as stem cell research and translational research. Stem cell research, which holds great promise for the prevention and cure of disease, can now take place in Massachusetts without undue legal barriers in the wake of recently-passed state legislation. Translational research seeks to accelerate the rate at which life science discoveries are turned into therapies, in part by bringing researchers and patient care professionals together in specially-designed facilities equipped with state-of-the-art bioinformatics hardware and software.

Greater Boston is uniquely positioned to be a world leader in bioinformatics. The region's long tradition of leadership in computer software and hardware, coupled with its world-class life science companies, hospitals and universities create the potential for a rapidly growing bioinformatics sector. If such growth is achieved, it will strengthen Greater Boston's leadership in stem cell research and translational research. To realize that potential, progress must be made on several fronts.

Research Funding and Research Centers

Federal research funding can help accelerate the development of bioinformatics, as it has done for countless other technology-based industries. The National Institutes of Health (NIH) Roadmap, the agency's strategic blueprint, identifies bioinformatics and computational biology as critical priorities. To this end, the NIH is funding a series of National Centers for Biomedical Computing (NCBC). They will create innovative software programs and other tools that enable the biomedical community to integrate, analyze, model, simulate, and share data on human health and disease. Four Centers were designated in 2004, one of which is based at Boston's Brigham and Women's Hospital and one of which is a partnership between Partners HealthCare and Boston's Children's Hospital. More NCBCs will follow in the near future.

The competition for future NCBC funding, and other federal funding that supports bioinformatics, will have a major impact on the geographical location of bioinformatics companies. Massachusetts has several tools that can be used to help secure such funding, including the following grants awarded through the Massachusetts Technology Collaborative:

Research Center Matching Grants - *grants to increase the likelihood of securing funding for a federal research center and increase economic benefits. Up to 20% of the federal center award, up to a maximum of $2 million, is available.*

Centers of Excellence Grants - *major awards to build new research capacity and establish world-class Centers of Excellence in specific technology sectors geared towards business formation and job growth. $3 to $5 million is available.*

Research Center Development Grants - *awards to support the initial activities of universities to plan and establish a new research center. Up to $150,000 with 1/1 match is available.*

Research and Investment Refundable Tax Incentives

Massachusetts currently provides an R&D Tax Credit and an Investment Tax Credit (ITC) designed to promote research and investment by in-state companies. The R&D credit is set at 10% of incremental qualified expenses occurring in Massachusetts; the ITC is set at 3% of qualifying tangible property that is depreciable and used in Massachusetts.

Marketing

Greater Boston's strengths in high technology, life sciences, and research do not guarantee that the region will become a world leader in bioinformatics. They must be communicated to key decision makers worldwide through a focused marketing effort to ensure that Boston captures more than its fair share of bioinformatics investment, companies, and jobs in the years ahead.

The region's long tradition of leadership in computer software and hardware, coupled with its world-class life science companies, hospitals and universities create the potential for a rapidly growing bioinformatics sector.

While these credits provide strong incentives for companies that are or expect to soon make a profit, they provide no immediate benefit to companies that are not yet profitable. Both offer multi-year carry-forward provisions, but neither defrays the up-front cost of R&D or capital investment for such companies.

For companies developing bioinformatics hardware or software, as well as those conducting bioinformatics research, the initial costs of research and capital equipment can be extremely high. When those companies are not making a profit, the lack of an immediate benefit from the R&D or investment credits can block them from launching a bioinformatics initiative. This obstacle could be eliminated by making the credits refundable for bioinformatics R&D and capital investment. If they were refundable, unprofitable companies would receive a payment equal to the value of the R&D or investment credits for which they were eligible, thereby lowering the cost of entry into bioinformatics.

The Commonwealth of Massachusetts, the City of Boston, the City of Cambridge, and regional economic development organizations work together to promote Greater Boston and the Commonwealth to the life science industry. When pharmaceutical or biotechnology companies consider a Massachusetts location for their expansion, representatives of those offices work as a team to try to secure a commitment. They travel together each year to BIO, the Biotechnology Industry Organization's international convention, where a Massachusetts Pavilion highlights the Commonwealth's advantages.

These efforts can be complemented by targeted marketing initiatives directed at bioinformatics leaders and companies. While there are many segments of the life science industry that could increase their presence in Greater Boston, few are a better fit than bioinformatics. A coordinated effort to recruit bioinformatics companies to Greater Boston would increase awareness, locally and abroad, of the potential that the region offers for bioinformatics innovation. Its successes would provide a powerful long-term boost to the region's life science industry.

Recommendation(s):

Strengthen Greater Boston's bioinformatics sector through federal funding, state tax policy and proactive marketing

The Chamber will work with leaders in state and local government, the life science industry, and advocacy organizations to strengthen the bioinformatics sector in Greater Boston, so that the region's potential as a world leader in bioinformatics can be realized. These efforts will include:

- Pursuit of federal bioinformatics funding from the NIH and other federal agencies and utilizing state matching funds geared towards the development of university based research centers. Both types of funding can be used to stimulate the growth of fields dependent on bioinformatics, such as stem cell research and translational research.
- Advocacy for the development of refundable R&D and investment tax credits for bioinformatics, within appropriate fiscal boundaries. If the credits are implemented for bioinformatics, and provide a strong stimulus to the sector's growth, they could be expanded to other technology or manufacturing sectors.
- Targeted, proactive marketing designed to attract bioinformatics investment, companies, and jobs to Greater Boston. This initiative will complement and be carried out in conjunction with the life science marketing efforts currently being done by state, local and regional leaders. It will include dissemination of information about the abundance of economic incentives and financing programs available in Massachusetts (see Appendix).

BIOINFORMATICS AND LEADING-EDGE LIFE SCIENCE RESEARCH GREATER BOSTON

Visas & Foreign Workforce Recruitment

Greater Boston needs to attract and retain talent from around the world to remain competitive with other life science centers in the U.S. and in foreign countries. As of 2000, foreigners accounted for 23% of all life scientists, 38% of all Ph.D. scientists and engineers, and 29% of scientists and engineers with a master's degree in the United States. Additionally, foreigners hold 51% of all Ph.D.s among life scientists, physical scientists, and mathematical and computer scientists.

Over the past four years, the United States' openness to foreign-born professionals and students has fluctuated greatly. The September 11 attacks were a major reason; immigration controls tightened significantly after the attacks. Although the tightest restrictions have been moderated, and worker visa slots were recently increased, it remains considerably harder for foreign workers and students with expertise or interest in the life sciences to come to the United States than it was in the late 1990s.

The 65,000 H-1B visas approved by Congress for the fiscal year that began in October 1, 2003 were completely taken during the first day of the fiscal year.

H-1B (Foreign-Born Worker) Visa Limitations

Foreigners seeking to enter the United States to work in the life science industry (and other technology-based industries) are required to file for an H-1B non-immigrant worker visa. The H-1B visa is issued to professionals working in a specialized field that requires at least a bachelor's degree or the equivalent in work experience. A worker is only eligible for an H-1B visa if a U.S. employer has sponsored and petitioned their visa. These visas are valid for three years with an option of extending for an additional three years. After that time, the foreign worker must remain outside the U.S. for one year prior to the approval of another H-1B visa.

The number of H-1B temporary worker visas permitted under federal law dropped to 65,000 annually on October 1, 2003, down from 195,000 during the prior three years, seriously constraining a valuable source of labor for the nation's life science companies and hospitals. The 65,000 H-1B visas approved by Congress for the fiscal year that began in October 1, 2003 were completely taken during the first day of the fiscal year.

Some relief was provided by the 2004 H-1B Visa Reform Act that was implemented in May of 2005. It enables the U.S. Citizenship and Immigration Services (USCIS) agency to issue additional 20,000 H-1B visas to foreign applicants who have received a master's degree or higher from a United States academic institution. These visas will be exempted from and issued in addition to the Congressionally-mandated annual cap of 65,000 H-1B visas. These changes, although positive, still leave the number of available H-1B visas far below their past highs.

Improving the Visas Mantis System

The Visas Mantis system governs security clearances for foreigners working in fields that the government considers sensitive, including chemistry, engineering, pharmacology, and a host of other scientific disciplines. It was created in 1998 by the U.S. Department of State in order to prevent persons who might try to illegally export sensitive technology from entering the U.S. In recent years, there have been widespread concern that this system had become overly restrictive after September 11, 2001.

In February 2005, the State Department extended the duration of Visas Mantis security clearances from one year to up to four years for students and two years for working scientists, making it easier to remain in the U.S. for the duration of work or study programs. The State Department estimates that this change alone will reduce the number of Visas Mantis clearances being handled each year by 50%. Additional changes to Visas Mantis, including increasing the number of dedicated staff, developing an improved tracking system, providing more guidance to consular officers, improving inter-agency coordination, and more effective data sharing, should make the process easier for foreign science students. But monitoring and evaluation of these changes is needed to ensure that their goals are achieved.

Declining International Graduate Student Applications and Enrollment

Chamber-member colleges and universities report significant drops in foreign student interest in the years since September 11, 2001. This trend is not limited to Greater Boston; foreign student applications have declined nationwide in recent years. A survey by the Council of Graduate Schools indicates that international graduate student applications declined by 28% from 2003 to 2004 and by an additional 5% from 2004 to 2005. Of the Council of Graduate Schools' 450 member schools, 60% of the responding graduate schools reported a decline in applications in both 2004 and 2005. In 2005, student applications from China and India declined by 13% and 9%, respectively. The 28% decline in applications in 2004 resulted in an 18% decline in international student admissions and a 6% decline in enrollment. In 2004, nearly all fields of study saw decreased enrollment, but the 10% decline in life science-related programs was one of the largest and the result of a 24% decrease in international graduate student application to these programs.

Foreigners seeking to enter the United States to study at a college or university need a visa - most commonly an F-1 student visa - to do so. The F-1 visa is valid as long as the recipient continues to be enrolled as a full-time student.

While graduate schools, the Department of State, and the Department of Homeland Security have taken steps to improve the process by which international students apply for admissions, the post-September 11 tightened environment and application process has made European and Asian countries attractive alternatives to American institutions. European and Asian countries are expanding their capabilities at the graduate level through major government investments and the recruitment of foreign students, as well as the retention of their own students, and have instituted aggressive strategies for attracting foreign students and scientists.

ACTION Act of 2005

In February 2005, Senator Coleman of Minnesota and Senator Bingaman of New Mexico introduced the American Competitiveness Through International Openness (ACTION) Act of 2005 that would work to reverse the decline in the number of international students studying in U.S. institutions. The bill calls for several measures to restore the United States' position as the top destination for international students and scientists, including a strategic marketing campaign to attract foreign students and scientists to the U.S. Australia, the United Kingdom and the European Union have already implemented marketing plans and have seen significant increase in their international student enrollment. Other proposed changes include better management of the SEVIS database used to track foreign students, better communication between government agencies through the use of inter-operable databases, and new standards for a timelier student visa process.

Recommendation(s):

Reduce obstacles to entry of foreign-born skilled workers and students into the United States

The Chamber, together with industry leaders and state government, will work to reduce obstacles to the entry of foreign-born skilled workers and students to the United States, without compromising national security needs. This effort will focus on:

- Advocating for increases in the number of H-1B visas issued annually to levels closer to their recent highs of 195,000 in FY2003.
- Monitoring the Visas Mantis system to ensure that the recent changes produce improved visa processing.
- Supporting provisions of the ACTION Act of 2005 that will increase foreign student interest in, and enrollment at, U.S. institutions of higher education. The Act's international marketing provisions hold particular promise in this regard.

Visas & Foreign Workforce Recruitment GREATER BOSTON

Higher Education Worker Training

While life science companies rely on Ph.D. scientists to oversee and drive their firms' research, a strong life science industry depends on a solid support infrastructure made up of technicians and other lab personnel who account for 30% of biotechnology employment nationally. As a result, Greater Boston needs a continuous pipeline of trained and educated entry-level life science workers to support the industry's growth. Strategies to expand the supply of entry-level workers, and to connect students with life science companies, will yield long-term benefits.

A Labor Shortage

According to the U.S. Bureau of Labor Statistics, between now and 2010, 12,400 graduates will be needed annually to staff the nation's clinical laboratories. Nationwide, less than half of the necessary laboratory personnel are graduating. There are currently 4,200 graduates per year, indicating a shortage of over 8,000 laboratory professionals per year if this trend continues.

In Greater Boston, competition for entry-level life science workers has intensified as biotechnology firms, pharmaceutical companies, and hospitals all draw from the same labor pool of laboratory/medical technicians. As of August 2004, Massachusetts had 3,000 allied medical technician vacancies as well as 7,000 nurse vacancies. In 2003, Massachusetts hospitals had a vacancy rate of 11.7% for ultrasound technicians, 10.5% for radiology technicians, 10.7% for licensed practical nurses, and 7% for pharmacy technicians. Over the past few years, the shortage of these laborers has become even more acute as technicians from the baby boom generation began to retire.

Community College Training Programs

Community colleges educate and train the industry's entry-level employees, particularly laboratory/medical/biomanufacturing technicians. Although medical and clinical laboratory technologists usually have a bachelor's degree with a major in medical technology or in one of the life sciences, the aforementioned technicians usually only need an associate's degree or a certificate.

Currently, eight out of the 15 Massachusetts community colleges offer programs that train laboratory technicians for the life science industry. They are:

- Bristol Community College
- Bunker Hill Community College
- North Shore Community College
- MassBay Community College
- Middlesex Community College
- Roxbury Community College
- Springfield Technical Community College
- Quinsigamond Community College

In addition, some Massachusetts community colleges offer training programs for hospital staff and other academic programs that are designed for students looking to transfer into a baccalaureate program for medical technologists. BIOTRAIN, a partnership between MassBioEd, Middlesex Community College and Bunker Hill Community College, recruits and trains technicians for biomanufacturing and quality control positions.

Nationwide, less than half of the necessary laboratory personnel are graduating.

These training and collaborative internship programs are impressive, and the institutions that have launched these offerings are making a significant contribution. However, such options need to be expanded in order to meet the growing industry demand for trained workers.

Workforce Training Incentives

The Chamber works to expand community college job training programs through a Chamber-crafted job training incentive. The incentive, authorized under state law, provides a 20% state match of tuition paid to community colleges by area businesses for job training courses. Current funding levels allow more companies to use the incentive than are doing so today. In addition, the Chamber has filed legislation to extend the incentive to state colleges and universities, many of which offer life science-related courses and degree programs.

Connecting Industry with College and University Students

A related and underutilized talent pool for area life science companies is the students who complete a four-year or graduate degree at a local institution of higher education. *Preventing a Brain Drain: Talent Retention in Greater Boston, a* 2003 study done by the Chamber and the Boston Foundation, found that 50% of these students leave Greater Boston after graduation, and that 80% of those departures are avoidable. The study found that job opportunities were the largest factor driving student location decisions, and that many felt unconnected to the Boston area while in school.

Since the report's publication, the Chamber has worked with area employers to increase student retention. This effort has included a job fair and two "Hub Crawl" events, one of which featured the life science industry. The latter brought students from Greater Boston colleges and universities to area biotechnology, hospital, pharmaceutical and managed care companies for meetings and presentations. It developed relationships between students and companies, educated the students regarding potential life science career paths available to them, and planted the seeds for future internships and job opportunities.

Recommendation(s):

Increase the availability of higher education-based worker training, and strengthen connections between the life science industry and higher education.

The Chamber will work with life science and public higher education leaders to increase the supply of trained life science workers through the following strategies:

- Promoting the state's community college job training incentive to life science firms. This will ensure that more firms who would benefit from the incentive know of it, and will strengthen relationships between life science firms and area community colleges.
- Working for enactment of its legislation that would extend the state's job training incentive to state colleges and universities, broadening the geographic coverage of the incentive and increasing the number of students who might benefit from it.
- Continue strengthening connections between area life science companies and students at local colleges and universities, through events and related communications vehicles, to expand the talent pool for Greater Boston's life science industry.

HIGHER EDUCATION WORKER TRAINING

GREATER BOSTON

Streamlining the Permitting Process

For the life science industry, few current concerns rank as high as the regulatory obstacles that stand in the way of growth. Since each municipality in Greater Boston has its own planning and review process, permitting can add months and years to a project's development. While projects in many other life science markets can navigate permits and approvals within 12 to 18 months, projects in Greater Boston typically take a minimum of 2-3 years to go from idea to approval. This is particularly challenging to the life science industry for three basic reasons:

- Speed to market is a critical factor for many in the industry. In particular, biotechnology companies that are venture-funded and often have negative cash flow are racing to discover new medicines and deliver drugs to market. The risk of spending 4-5 years for planning, permitting and construction of new facilities can be prohibitive to the industry's expansion.

- Growth in Greater Boston's life science industry is by nature concentrated in locations where planning issues are complicated, numerous, and closely monitored by towns and communities. Life science companies and institutions wish to locate near sources of research, funding, or talent. As a result, they often seek to build in well-developed areas that present issues related to environmental impacts, transportation, parking, height and density.

- The activities that take place in life science facilities are not widely understood. Contrary to popular belief, many of the regulatory issues raised by life science and laboratory facilities are the same as those raised by an office building or other commercial development. But common misconceptions, along with biological processes unique to a limited number of facilities, can pose a problem for planners and review boards at the town level in host and neighboring communities.

For the continued growth of Greater Boston's life science industry, the ability of companies to identify acceptable sites and move them through clear, timely review and appeal processes is critical.

2004 Legislation - A First Step

The State took a step in the right direction with Chapter 43D, a law passed in July 2004. Chapter 43D is intended to promote a more efficient and expedited review and permitting process for commercial development throughout the Commonwealth. The new law gives cities and towns the ability to "opt-in" by majority vote to a streamlined and expedited permitting process.

While Chapter 43D has created a basis for positive change, much more has to be done by state and local governments to "get the ball rolling." No towns have yet opted in to the new law, and not all cities and towns are aware of it or have a dedicated economic development or planning staff to implement it. In order to affect meaningful change in the region's permitting and planning processes, more proactive approaches are being proposed by business and government leaders. These proposals seek to provide training, technical support, targeted incentives, and additional legislative tools directly to Massachusetts cities and towns wishing to attract life science investment and jobs.

Local Option Special Permits Proposal

Existing zoning ordinances and by-laws have prevented many communities from recruiting the types of scientific companies and facilities that are driving the region's economic engine. The Chamber has filed House Bill 3598, *An Act Relative to Scientific Research and Development Special Permits,* which seeks to facilitate development of R&D and related production operations in a range of life science and technology sectors.

House Bill 3598 allows cities and towns, if they so choose, to issue a special permit to companies wishing to build and operate an R&D facility in their community. This bill also allows for a limited scope of manufacturing operations if such operations adhere to strict siting restrictions and are directly related to the research being done within the company's facility. The manufacturing component is important in terms of future economic expansion, as it allows communities

to accrue a greater portion of the overall scientific R&D value chain and to continue adding to their employment base.

Additional Reform Proposals

In recent months, state government leaders have highlighted the importance of permitting reform to the life science industry and the Commonwealth's economic climate. Leaders in both the legislative and executive branches have expressed interest in passing economic stimulus legislation this year, legislation that could include permitting reform measures.

Governor Mitt Romney has filed a comprehensive permitting reform bill that addresses perceived shortcomings in the Chapter 43D statute. The Governor's proposal, included in the "Jobs Expressways Program", provides state incentives for municipalities to adopt clear, fixed-length review schedules. It also provides a consolidated, fixed-length permit appeal schedule, and technical assistance for municipalities that take part in a streamlined process.

Proactive Preplanning at the Municipal Level

Life science development projects can sometimes present unique regulatory issues - but they are almost always assumed to do so. To address those issues and to help mitigate the uncertainty residents may feel when a life science development is proposed, preplanning of life science review processes and/or sites at the local level can be extremely helpful.

A set of standard planning principles for life science developments, including principles addressing health and biosafety issues related to the life science industry, can be a significant asset for municipalities seeking life science jobs. The process by which a municipality develops those principles can increase local understanding of the life sciences, and develop a local consensus about the best way to attract life science jobs.

Pre-permitted sites can send a powerful positive signal to life science companies seeking to expand their operations. To encourage growth, cities and towns can identify prime areas for life science growth, and begin a process by which the sites are preplanned - not necessarily rezoned "as of right", but rather discussed and analyzed to the point where sites can be marketed to potential companies with some assurance that the municipality would be ready to review and approve projects that are proposed. This proactive preplanning process, including basic decisions regarding height, density, parking, etc., will help encourage growth and shave critical time off the delivery of new life science developments.

While projects in many other life science markets can navigate permits and approvals within 12 to 18 months, projects in Greater Boston typically take a minimum of 2-3 years to go from idea to approval.

Calling the Massachusetts permitting process "a nightmare", House Speaker Sal DiMasi has also proposed significant reforms designed to boost job creation and economic development while affording municipalities greater autonomy in the process. His plan calls for state agencies to identify, pre-permit and license surplus state-owned land for proposed business development, in addition to providing essential infrastructure. Senate President Robert Travaglini is a strong champion for the life science industry, and has consistently expressed interest in removing roadblocks to its growth.

Recommendation(s):

Promote streamlined permitting processes and preplanning for life science development

The Chamber will work with state government, local government, and industry leaders for the streamlining of life science permitting processes by:

- Advocating enactment of the Chamber's R&D Special Permit legislation, House Bill 3598, as a stand-alone bill or as part of a larger economic stimulus bill.
- Advocating enactment of structural permit process reforms, including clear and timely review schedules and incentives for municipalities to streamline their own review process, and better coordination between local and state review processes.
- Advocating and encouraging proactive preplanning of review processes and sites related to life science development. This process will benefit from the analysis of the experience of municipalities that host life science developments, and the development of sample guidelines based on their experience.

Housing for Workforce Retention

For the past several years, Chamber members have cited high housing costs as an obstacle to growth. They are an especially large obstacle for industries that recruit workers from other regions and other countries, or from area colleges and universities, as the life science industry does. Hospital, university, and company leaders in the life sciences frequently report that negotiations for a highly talented worker get derailed when the cost of housing in Greater Boston is put on the table. The 2003 study by the Chamber and the Boston Foundation found that area college and university students cited affordability as a major issue affecting their decision to live in Greater Boston after graduation.

A primary reason for the region's housing costs is slow growth in the supply of housing. Scarce land and densely-built communities combine to make it difficult to build new units. But if the Commonwealth is to encourage economic expansion and job growth, new housing units must be built. Two mechanisms present potential solutions to this challenge.

Smart Growth Housing Incentives

In 2004, a new Chamber-supported housing incentive was written into state law. Chapter 40R, crafted by the Commonwealth Housing Task Force, provides state payments to communities that create "smart growth" zoning districts. The state defines smart growth as "a principle of land development that emphasizes mixing land uses, increases the availability of affordable housing by creating a range of housing opportunities in neighborhoods, takes advantage of compact design, fosters distinctive and attractive communities, preserves open space, farmland, natural beauty and critical environmental areas, strengthens existing communities, provides a variety of transportation choices, makes development decisions predictable, fair and cost effective, and encourages community and stakeholder collaboration in development decisions."

Cities and towns in Massachusetts become eligible for incentive payments based on the housing they zone for in the state-approved smart growth district. These payments range from $10,000 for 20 units or less and up to $600,000 for 501 or more units. Although Chapter 40R has just recently taken effect, the town of Lunenburg has already submitted an application and a number of other towns are considering the same.

However, more needs to be done in order to provide municipalities with the necessary incentives that will spur production and moderate escalating housing costs. A chief barrier to widespread adoption of Chapter 40R smart growth zoning districts is the often-heard claim that new housing production can pose financial hardship for public school systems.

In response, the Commonwealth Housing Task Force has drafted Chapter 40S. It will hold harmless communities with demonstrably higher net school costs resulting from new housing production in Chapter 40R Smart Growth Zoning districts. By eliminating the school cost issue as a reason to oppose new production, it is estimated that many more municipalities will take advantage of the financial benefits provided by Chapter 40R. The cost of implementing Chapter 40S is expected to be modest, and none of its costs are anticipated before FY 2008.

Hospital, university, and company leaders in the life sciences frequently report that negotiations for a highly talented worker get derailed when the cost of housing in Greater Boston is put on the table.

District Improvement Financing (DIF) and Urban Center Housing Tax Increment Financing (UCH-TIF)

Massachusetts cities and towns have the opportunity to develop workforce housing in and around life science clusters using District Improvement Financing (DIF). DIF is a public financing mechanism that allows municipalities to fund infrastructure and development projects by distributing future, incremental tax revenues collected from a predefined district to pay project costs. According to the Massachusetts Office of Business Development, "DIF is locally driven and approved by the Economic Assistance Coordinating Council (EACC). The municipality must define the district and document a development program describing how the DIF will encourage increased residential, commercial and industrial activity within the district."

Another tool available to municipalities is the newly finalized Urban Center Housing Tax Increment Financing (UCH-TIF) plan. Municipalities working alone or in conjunction with one or more other cities or towns may adopt and implement UCH-TIF plans intended to encourage increased residential growth, affordable housing and commercial growth in designated Urban Center Housing zones. According to the Department of Housing and Community Development, "Urban Center Housing-TIF zones are defined as commercial centers characterized by a predominance of commercial land uses, a high daytime or business population, a high concentration of daytime traffic and parking, and a need for multi-unit residential properties." Municipalities may approve tax increment exemptions from property taxes located in the UCH-TIF zone after an agreement between the property owner and city/town has been executed. In addition, 25% of all residential development must be considered "affordable."

These tools are beginning to be utilized by area municipalities. In Framingham, the town's mixed-use Arcade project finalized a TIF agreement in order to move forward with construction. In Mansfield, the town has created an overlay district to specifically attract life science companies. And in Attleboro, the Texas Instruments site has been acquired by Preferred Real Estate Investments, Inc. This 264-acre site, including 21 vacant buildings, will be redeveloped into a mixed-use development now called the Attleboro Corporate Campus, and will be marketed toward technology-based companies. The goal is to replace the outflow of jobs with smaller companies and help create a new industrial base.

Recommendation(s):

Expand housing supply and promote workforce housing opportunities

The Chamber will work with state and local government, as well as business and non-profit community leaders, to increase housing supply and make workforce housing opportunities available to life science employees. This effort will include:

- Working with the Commonwealth Housing Task Force for enactment of the Chapter 40S public school cost funding provision, to provide cities and towns with a strong set of incentives to zone for and develop new housing.
- Reaching out to Greater Boston municipalities to promote the use of DIF districts and Urban Center Housing-TIF opportunities, which have the potential to spur the development of "live-work-play" life science communities.

HOUSING FOR WORKFORCE RETENTION

GREATER BOSTON

Greater Boston's current leadership in the life sciences did not happen by accident, and its future leadership is not guaranteed. Both depend on proactive, forward-looking strategies that make the region more competitive. To advance the strategies outlined in this report, the Chamber will work with leaders in government, economic development, the life science industry, and the broader business community in the years ahead.

Strengthening bioinformatics and leading-edge life science research in Greater Boston, improving access to visas for qualified foreign workers, expanding higher education job training for the life sciences, streamlining permitting, and increasing the supply of housing will dramatically increase the region's competitiveness for life science companies, institutions and jobs. The more that is done to achieve that goal, the greater the benefits for Greater Boston's life science industry and its entire regional economy.

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Appendix

Development Incentives & Financing in Massachusetts

Tax Incentives

Investment Tax Credit (ITC)
Massachusetts offers a 3% ITC to all manufacturers in the state for investments in tangible depreciable assets.

Economic Development Incentive Program (EDIP)
A state and local government program, the EDIP makes potential job creation projects within Economic Target Areas (ETA) eligible to receive tax benefits.

Tax Incremental Financing (TIF)
Offered by an Economic Targeted Area (ETA), a TIF provides an exemption on property taxes on the additional value added to the property by the participating company. The exemptions can be from 1 to 100% of the added value of the property for a period of 5 to 20 years, or 100% of the value of any personal property.

Abandoned Building Renovation Deduction
Businesses can deduct up to 10% of the costs incurred in renovating buildings that have been 75% vacant for two or more years in ETA communities.

Research and Development Tax Credit
As the most favorable R&D tax incentive in the nation, it allows any costs which would qualify for the Federal R&D tax credit to be eligible for a 10% Massachusetts R&D Tax Credit which can be used in addition to the Investment Tax Credit. A 15% R&D Tax Credit is also available for costs related to donations and contributions made to research organizations such as hospitals and universities.

New Worker Tax Rebate
Companies hiring 25 or more new workers are eligible for a rebate of 50% of the payroll withholding taxes paid by the new employees to the state.

Massachusetts and Boston offer a broad array of incentives and financing programs for life science firms. For more information, contact the Massachusetts Business Resource Team at 877-BIZ-TEAM or the Boston Redevelopment Authority at 617-722-4300.

Financing

Emerging Technologies Fund (ETF)

A recently created fund of $25 million aimed at stimulating increased financing for new manufacturing, R&D and related facilities, expansion and improvements of such facilities, and acquisition of specialized equipment. It is available to technology-based and life science companies that meet funding, product and investment criteria, but are not necessarily generating positive cash flow. Recently, MassDevelopment issued its first loan under the ETF, worth $2 million, to Acusphere to renovate and equip a new manufacturing facility in Tewksbury.

Research Center Matching Fund

A new fund of $20 million provides matching funds to institutions of higher education and other nonprofit research institutions for application to scientific or engineering research funding from federal government or other sources. The fund also supports the formation of Centers of Excellence in emerging technologies that facilitate collaboration with local industry, enhancing development of new technologies and providing workforce training and education opportunities.

LifeTech Boston

Offers innovative sources of financing, including:

- Boston's Federal Empowerment Zone allows companies to access substantial tax credits and opportunities to accelerate depreciation on equipment. Also offers access to low-interest tax-exempt bond funding to companies that are not yet profitable but are anticipating expensive build-out or development costs.

- Boston Local Development Corporation (BLDC) provides loans of up to $250,000 to businesses in or relocating to the City of Boston. These loans can be used to purchase a new business property, equipment and machinery; construct an addition to an existing plant; making leasehold improvements; or providing working capital.

- Boston Marine Industrial Park Build-out Financing Loan Program is available to companies with a manufacturing component that locate in Boston Marine Industrial Park facilities.

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