




REGIONAL RESOURCE ASSESSMENTS

Merrimack Valley Region

Massachusetts Alliance for Economic Development

April 2008

Moran, Stahl & Boyer

Connecting Companies With Communities™

E.M. Pemrick & Company

Topics for Discussion

- Economic development resource assessment process
- Target industries by region
- Life cycles of businesses and impact on resource needs
- Regional assessment
- Quality of life: cost of living and housing
- University R&D that supports target industries
- College and university enrollment as a labor source
- Transportation resources
- Real estate and utilities

Economic Development Resource Assessment Approach

Identify Target Industries:
- Biotechnology/Health Science
- Institutional Health/Education
- Computers/Electronics
- Plastics
- Fabricated Metals
- Financial Services
- Marine Science
- Renewable Energy
- Tourism

EXAMPLES

Select Life Cycle Stages:
- Initial Product Development (R&D)
- Business Incubator (Start-ups)
- Product/Business Expansion

Determine Types of Operations:
- Headquarters
- Shared Services/Consultants
- R&D/Labs
- Manufacturing
- Distribution

Aligning Industry Needs
With Community Resources

Define Resources:
- Facilities/Utilities
- Workforce
- Transportation Access
- Co-Location (With R&D, Others)
- Financial Support/Operation Costs
- Overall Business Climate
- Cost of Living/Housing

Target Industry Overview by Region

Industry/Segment	Berkshire	Western	Central No.	Central So.	Metro West	Merrimack Valley	Greater Boston	Southeast	Cape & Islands
■ • Biotech/Pharmaceuticals		■		■	■	■	■	■	
■ • Medical Equipment		■			■	■		■	
■ • Marine Science								■	■
■ • Computers/Electronics		■			■	■			
■ • Food Processing			■					■	
■ • Fabricated Metals		■		■					
■ • Plastics (Resin/Parts/Products)	■	■	■						
■ • Renewable/Alternative Energy	■	■			■	■		■	■
■ • Aerospace/Defense/Security					■	■	■		
• Institutional Healthcare Services		■		■	■		■		
• Institutional Education Services				■			■		■
■ • University R&D		■		■			■		
■ • Financial Services		■			■		■		
■ • Prof/Tech/Creative/IT Services*	■	■			■	■	■		■
• Transportation/Distribution								■	
• Hospitality/Rec./Culture/Tourism	■	■					■	■	■
• Mgmt. of Companies/HQ					■		■		

■ State Target Industry

*Many Prof/Tech/Creative/IT Services companies are very small and operated from homes.

Employment by Selected Industry Segment (U.S. Department of Labor for 2005)

Industry	Total	Berkshire	West	Central No.	Central So.	Metro West	Merrimack Valley	Greater Boston	Southeast	Cape & Islands
Manufacturing	299,300	6,200	31,900	15,500	27,700	58,800	44,200	65,800	46,200	2,400
• *Medical Instruments*	12,000	0	900	20	1,100	3,100	1,100	2,700	2,900	0
• *Pharmaceuticals*	15,700	800	4,000	3,500	1,800	800	1,600	900	1,800	100
• *Computers/Electronics*	71,200	30	1,800	1,800	4,500	30,600	14,800	13,300	4,000	600
• *Food Processing*	22,900	200	2,200	800	700	2,800	2,500	8,600	4,800	400
• *Fabricated Metal*	35,200	500	6,300	1,400	4,700	4,500	3,400	6,100	4,700	200
• *Plastics*	15,700	800	4,000	3,500	1,800	800	1,600	900	1,800	100
• *Textiles*	6,400	200	400	200	700	900	400	300	2,600	10
• *Paper*	12,300	1,500	3,600	1,800	1,000	1,300	1,000	2,000	1,200	0
• *Furniture*	5,500	30	600	700	900	900	400	1,200	700	130
Healthcare Services	470,700	10,600	47,300	10,800	39,400	53,400	31,900	200,400	59,400	15,700
Education Services	309,800	6,800	40,000	9,400	26,500	48,600	21,500	114,800	33,600	7,600
Financial Services	180,600	2,100	1,700	1,700	12,300	21,400	6,400	109,100	12,200	2,700
Prof/Technical Services	245,900	2,800	8,000	2,600	12,100	59,600	18,600	117,700	13,400	4,900
Transportation/Ware.	100,600	1,200	11,000	2,300	8,000	9,300	7,000	45,200	13,200	2,800
Retail	351,100	8,800	34,300	10,500	29,000	55,300	20,900	109,500	61,800	19,100
Hospitality	250,000	7,100	21,600	6,100	18,300	33,900	17,200	93,200	35,500	16,500
Arts & Entertainment	52,000	1,800	5,100	1,700	3,200	9,300	3,400	16,100	7,200	3,900
Mgmt. of Companies	62,400	700	4,200	1,100	5,000	20,600	3,900	18,100	8,000	700

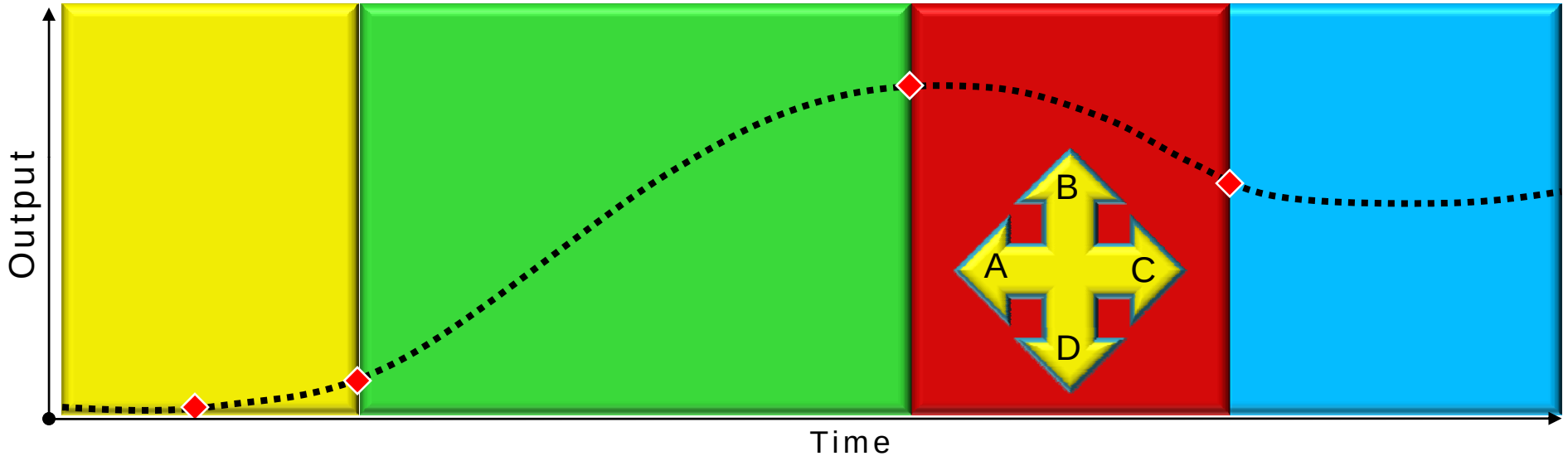
Company/Product Life Cycle: Key to Understanding Opportunities

Phase I
Business Start-up & Product Rollout

Phase II
Rapid Market Growth Through Internal Expansion and Acquisition

Phase III
Maturation & Consolidation

Phase IV
Sustained Niche or "Last One Standing"



Start-up Capital > Labor/Facilities/Capital > Minimize Cost > Sustained Market

Critical Decisions Made in Phase III

A: Attempt to go back to Phase II (new market expansion/product improvements)
B: Consolidate with competition to grow share in a shrinking market
C: Go/stay private with niche operation and proceed to Phase IV
D: Continue to enhance productivity to sustain margins (production improvements/cost takeouts)

Facility Requirements Through Life Cycle of Technology Company

Phase I Business Start-up & Product Rollout	Phase II Rapid Market Growth Through Internal Expansion and Acquisition	Phase III Maturation & Consolidation
Initially: Full service incubator Transition to: Multi-tenant building with some shared facilities • Parking facilities • Conference rooms • Café • Locker/exercise room	As Business Expands: HQ, R&D, back office and manufacturing operations are uncoupled and placed in the most optimum locations for cost and market access	At Maturity: Cost becomes an overriding issue for most operations

Life Cycle Stages by Target Industry

Industry/Segment	Product R&D	Business Startup	Product/Business Expansion
• Biotech/Pharmaceuticals	■	■	■
• Medical Equipment	■	■	■
• Marine Science	■	■	■
• Computers/Electronics	■	■	■
• Food Processing			■
• Fabricated Metals		■	■
• Plastics (Resin/Parts/Products)		■	■
• Renewable/Alternative Energy	■	■	■
• Aerospace/Defense/Security			■
• Institutional Healthcare Services			■
• Institutional Education Services			■
• University R&D	■		■
• Financial Services			■
• Prof/Tech/Creative/IT Services		■	■
• Transportation/Distribution			■
• Hospitality/Rec./Culture/Tourism		■	■
• Mgmt. of Companies/HQ			■

Types of Operations by Target Industry

Industry/Segment	Headquarters	Back Office Shared Serv.	R&D	Manufacturing	Distribution
• Biotech/Pharmaceuticals		■	■	■	
• Medical Equipment	■	■	■	■	
• Marine Science	■	■	■	■	
• Computers/Electronics	■	■	■	■	
• Food Processing				■	
• Fabricated Metals				■	
• Plastics (Resin/Parts/Products)			■	■	
• Renewable/Alternative Energy	■		■	■	
• Aerospace/Defense/Security	■	■		■	
• Institutional Healthcare Services					
• Institutional Education Services					
• University R&D			■		
• Financial Services	■	■			
• Prof/Tech/Creative/IT Services	■				
• Transportation/Distribution					■
• Hospitality/Rec./Culture/Tourism					
• Mgmt. of Companies/HQ	■				

Target Industry Overview: Biotechnology/Life Sciences

Definitions

Life Science : The overlying field of study that engages in the classification, structure and behavior of living organisms that includes biology, biochemistry, biotechnology, medicine and pharmacology.

Biotechnology : Involves the genetic manipulation and modification of living organisms to create new and practical applications for agriculture, medicine and industry.

Evolution in Strategic Approach

Successful Detection and Treatment of Disease → Early Detection: Minimize Spread of Disease → Prevention: Detect Predisposition and Preempt Disease through Nutrition, etc.

Key Steps in Product Development

Support Materials, Equipment and Services

- Lab Instruments/Equipment
- Materials and Supplies
- Lab/Testing/Clinical Services
- Technical/Legal Services
- Bioinformatics

Government, Industry and University Labs

- Primary Research
- Applied Research
- Product Development
- FDA Approval
- Commercialization

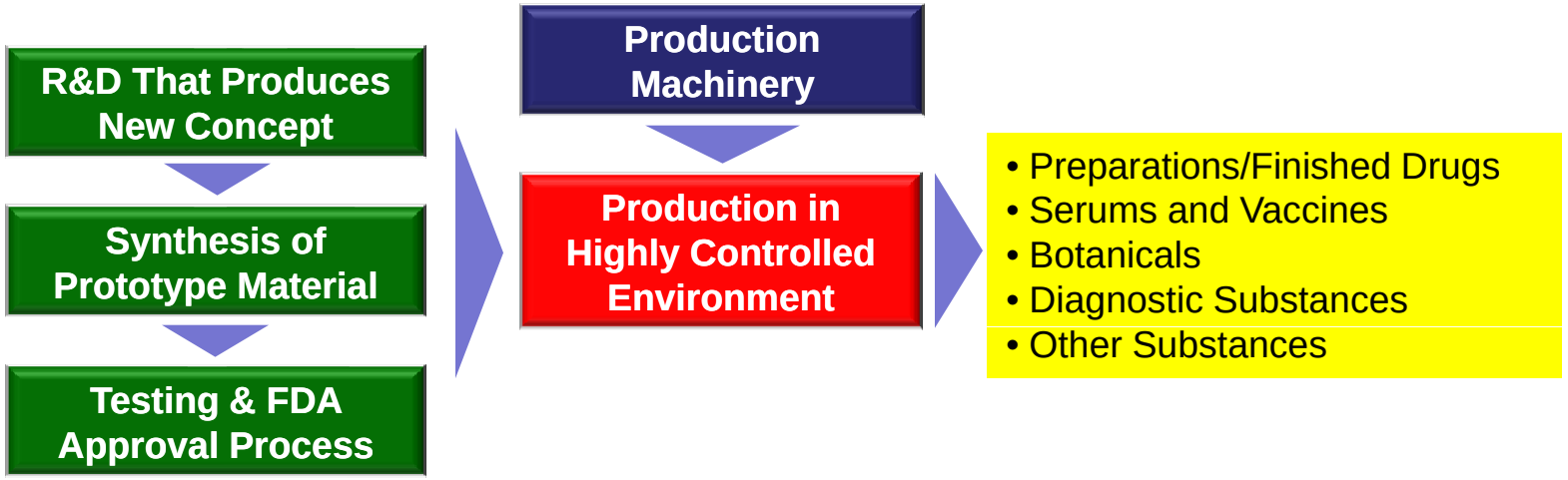
- Materials/Substances
- Instruments/Devices/Equipment
- Processes/Procedures

Target Industry Overview: Pharmaceuticals/Medicines (NAICS 3254)



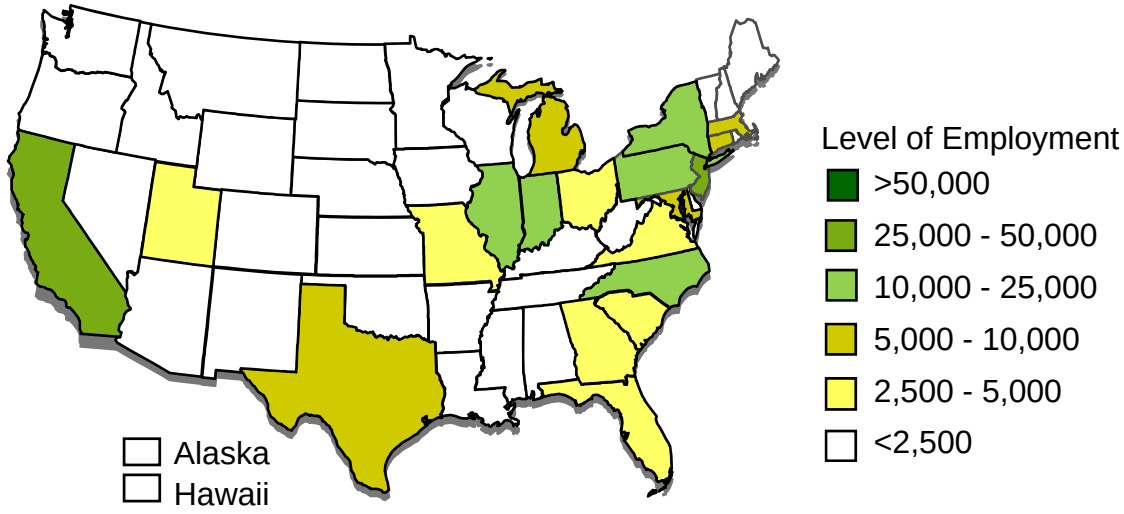
Industry Profile and Trends

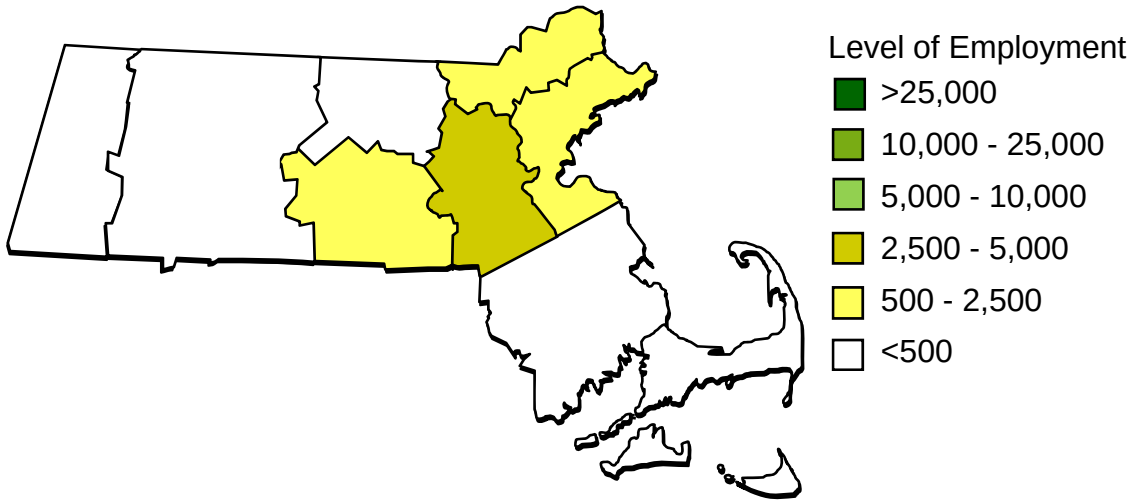
- U.S. has 53.5% of the global pharmaceutical market
- Industry has one of the highest levels of commercial R&D investment
- Major pharma firms have 50% market share, balance is fragmented
- Major issues: patent expirations, long/expensive development periods, product safety/recall issues, and moral/ethical issues on gene manipulation and trials in third-world countries
- Trends: miniaturization of sample sizes reduce cost, use of automation and robotics, application of nanotechnology for precise product delivery
- Use of bioinformatics to design and pre-test drugs



Target Industry Overview: Pharmaceuticals/Medicines (NAICS 3254)

Pharma./Medicine (3254)			
State	2006	2000	Change
USA	233,459	240,711	-3.0%
CA	40,476	34,213	18.3%
NJ	25,957	24,968	4.0%
IL	21,159	24,276	-12.8%
PA	18,666	12,752	46.4%
NY	18,514	25,733	-28.1%
NC	14,283	13,070	9.3%
IN	10,537	10,453	0.8%
CT	9,440	11,611	-18.7%
MA	9,020	7,038	28.2%
MI	8,058	12,519	-35.6%
MD	6,770	4,593	47.4%
TX	5,660	9,893	-42.8%
FL	4,692	4,475	4.8%
OH	3,561	4,334	-17.8%
MO	3,484	5,794	-39.9%
SC	3,298	3,419	-3.5%
VA	3,116	3,104	0.4%
UT	2,951	3,618	-18.4%
GA	2,769	2,612	6.0%
KS	2,475	1,466	68.8%



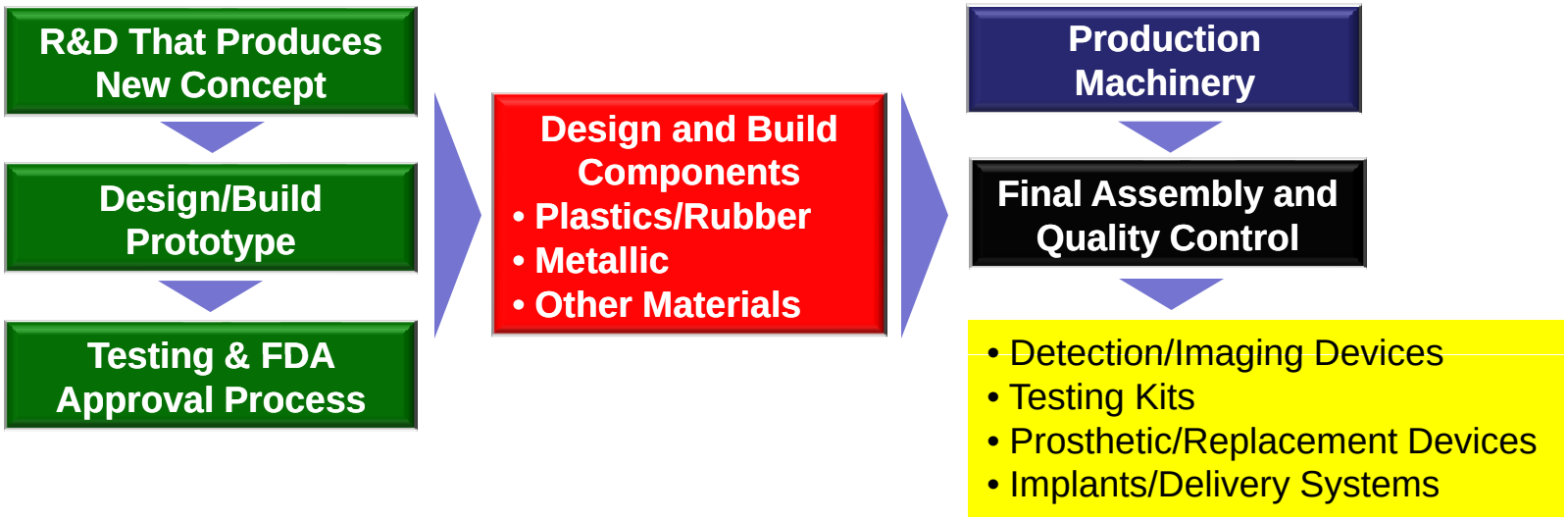


Target Industry Overview: Medical Equipment and Supplies (NAICS 3391)



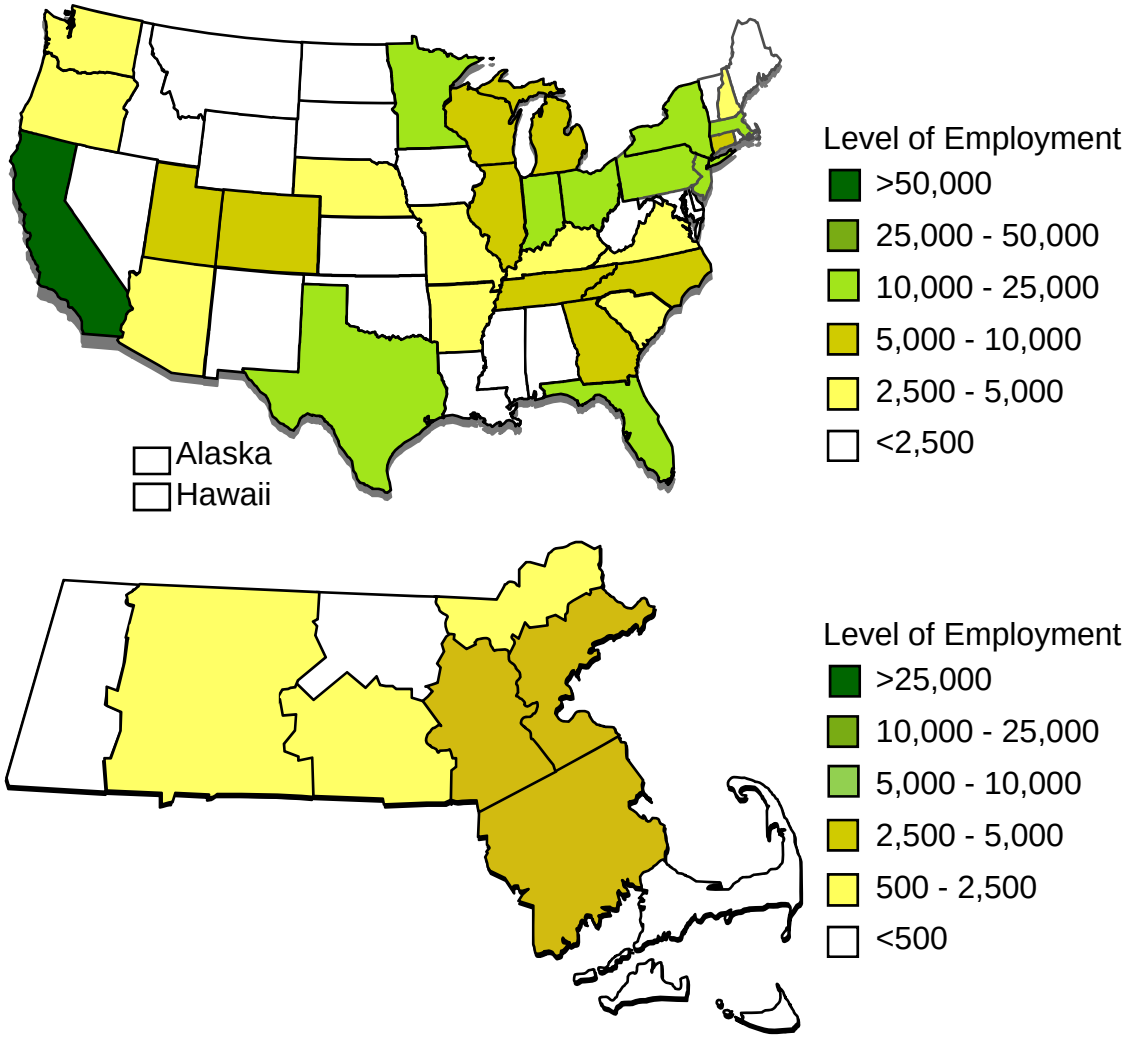
Industry Profile and Trends

- U.S. has 75% of global market share
- Industry highly competitive, price sensitive with rapid advances
- High barriers to entry due to R&D costs, acute expertise, patent protection and the need for FDA approvals
- A few very large competitors and many niche players
- Process improvements (laser machining) and high interest in nanotechnology for multiple applications
- Many new products related to catheter design, minimally invasive surgical tools, wound-care/closure, and adaptable instruments

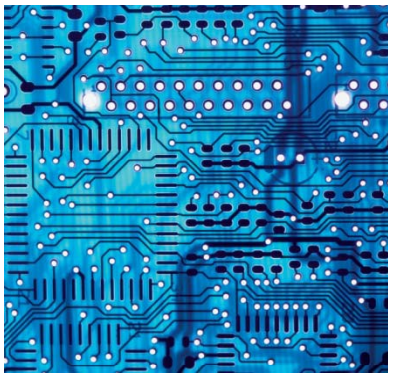


Target Industry Overview: Medical Instruments and Supplies (NAICS 3391)

Medical Equip/Supplies (3391)			
State	2006	2000	Change
USA	304,580	307,008	-0.8%
CA	56,834	58,230	-2.4%
FL	19,273	19,615	-1.7%
NY	17,351	18,291	-5.1%
PA	16,263	17,563	-7.4%
MN	14,925	15,456	-3.4%
▶ MA	14,236	11,568	23.1%
IN	14,230	12,048	18.1%
TX	13,376	16,285	-17.9%
OH	13,134	10,925	20.2%
NJ	12,236	12,877	-5.0%
MI	7,659	7,462	2.6%
IL	7,420	9,013	-17.7%
NC	7,247	6,024	20.3%
WI	7,154	6,705	6.7%
TN	6,758	5,261	28.5%
UT	6,385	5,891	8.4%
CT	5,809	7,513	-22.7%
CO	5,585	4,674	19.5%
GA	5,482	6,852	-20.0%
AZ	4,822	6,066	-20.5%
NE	4,075	3,735	9.1%
WA	4,032	3,384	19.1%
MO	3,578	5,554	-35.6%



Target Industry Overview: Electronics/Semiconductor Industry (NAICS 334)



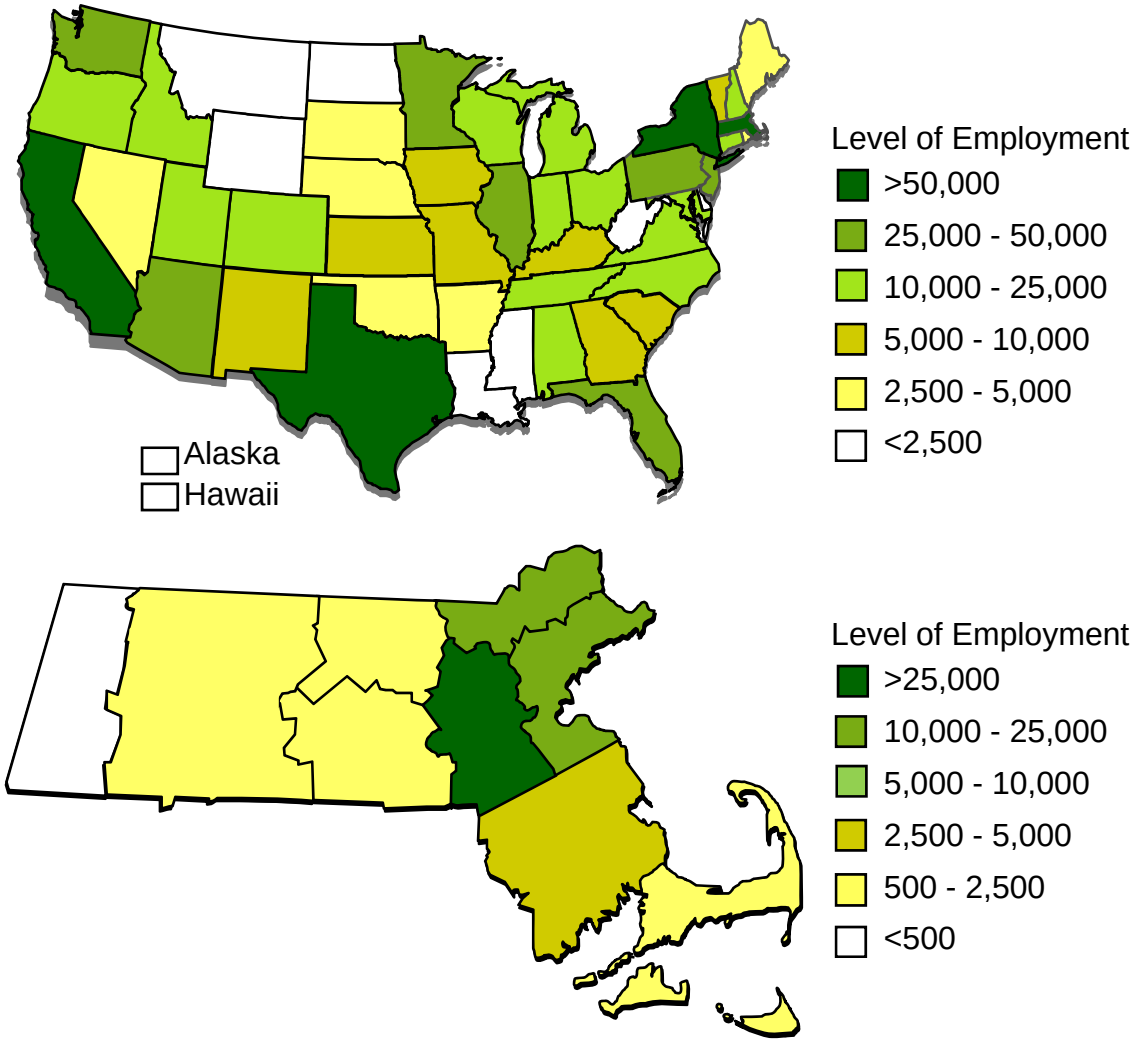
Industry Trends

- Employment losses from increase in productivity and shift to Asia
- Three types of semiconductor companies: (1) Integrated Device Manufacturers; (2) Fabrication Vendors; (3) Foundries
- High growth from cellular phones (Asian market), GPS equip., digital cameras, MP3 players, mobile video players, etc.
- New techniques to reduce electronic leakage, increase energy efficiency, enhance optical interface and reduce mfg. complexity
- Integration of nanotubes with CMOS technology and focus on nanodevices
- Seeking next generation breakthroughs on transistor gate lengths to increase processor speed and develop metrology at nanoscale level



Target Industry Overview: Computer/Electronic Products (NAICS 334)

Computer & Electronics (334)			
State	2006	2000	Change
USA	1,001,265	1,644,373	-39.1%
CA	226,970	389,384	-41.7%
TX	78,643	137,896	-43.0%
NY	57,360	80,633	-28.9%
MA	55,302	91,474	-39.5%
MN	49,608	58,555	-15.3%
FL	43,858	67,222	-34.8%
PA	31,806	60,504	-47.4%
IL	30,102	71,225	-57.7%
NJ	27,964	37,362	-25.2%
WA	27,920	44,555	-37.3%
AZ	27,568	47,554	-42.0%
OR	24,155	37,436	-35.5%
NC	22,184	51,538	-57.0%
MD	22,121	30,340	-27.1%
OH	20,870	36,079	-42.2%
WI	19,785	22,541	-12.2%
MI	17,246	22,993	-25.0%
CO	16,708	38,671	-56.8%
CT	14,883	23,460	-36.6%
NH	14,857	25,324	-41.3%
IN	14,224	25,324	-43.8%
ID	13,854	19,003	-27.1%
TN	12,134	14,467	-16.1%
UT	11,805	16,457	-28.3%



Merrimack Valley Region

Target Industries vs. Life Stages and Types of Operations

Industry	Life Stage(s)	Types of Operations
Biotech/Pharmaceuticals	• Start-up and small emerging firms • Well established firms relocating to area • Expansion of existing companies	• R&D • Manufacturing
Medical Equipment	• Start-up of new firms • Expansion of existing firms	• R&D • Manufacturing
Computers/Electronics	• Start-up and small emerging firms • Expansion of existing firms	• R&D • Manufacturing
Aerospace/Defense/Security	• Expansion of existing firms • Attraction of small portions of exiting firms	• R&D • Back office/Engineering/IT offices • Manufacturing
Renewable Energy	• Start-up and small emerging firms • Well established firms relocating to area	• Small offices with combined business and ”technical” functions
Professional/Technical Businesses	• Start-up and small emerging firms • Well established firms relocating to area	• Small to moderate size offices with combined business and “technical” functions

Resource Assessment by Type of Operation

Type of Operation/Resources	Resource Assessment
Manufacturing	
Labor	• Six-year population growth rate at 0.85%. Similar to MA average (0.67%) and low compared to national average (6.4%) • High school labor attainment (28.8%) is near national average (30.2%) • Education level for four-year college is favorable (31.5%) • Average unemployment rate was4.8% in 2007 is near national and state average • There is a significant presence of technology-related mfg. in the region but competition for top talent can be high.
Real Estate/Facilities	• Plentiful supply of industrial parks and sites with water, sewer and highway access in diverse locations. Vacancy rate of ~6% with average lease rates of $6 PSF.
Utilities	• Demand for power, water quality/quantity may be high for biotech/pharmaceuticals and semiconductor operations.
Transportation	• Access I-495 (north/south/west) and I-93 north to NH and south to Boston • Labor is drawn from NH and northeast MA.
Technical Support From University Research	• Some technical support in electronics/semiconductors from UMass-Lowell, Amherst and Dartmouth • Biotech support from WPI, UMass (multiple campuses) and MIT.
Cost of Living/Housing	• Overall Cost of Living Index is 103 and for Housing is 85 (U.S. average = 100). This makes the area much lower cost to Boston while still having easy access to R&D in Boston and Cambridge.
Incentives/Other Financial Resources	
Other	

Resource Assessment by Type of Operation

Type of Operation/Resources	Resource Assessment
Small offices with combined business and “”technical” functions	
Labor	• Six-year population growth rate at 0.85%. Similar to MA average (0.67%) and low compared to national average (6.4%) • Education level for four-year college is favorable (31.5%) • There is a significant presence of tech businesses in the region and competition for top talent can be high. • Multiple colleges in area to recruit talent
Real Estate/Facilities	• Overall vacancy rate of ~20% with average lease rates for Class A space of $21.50 PSF and for Class B of $18.50 PSF.
Utilities	• Requirements for utilities are minimal. Access to broadband for home-based offices in unserved areas may be an issue.
Transportation	• Access I-495 (north/south/west) and I-93 north to NH and south to Boston • Labor is drawn from NH and northeast MA.
University Research	• Not required for this segment
Cost of Living/Housing	• Mostly local hires . . . COL may help draw labor from Boston.
Incentives/Other Financial Resources	
Other	

Resource Assessment by Type of Operation

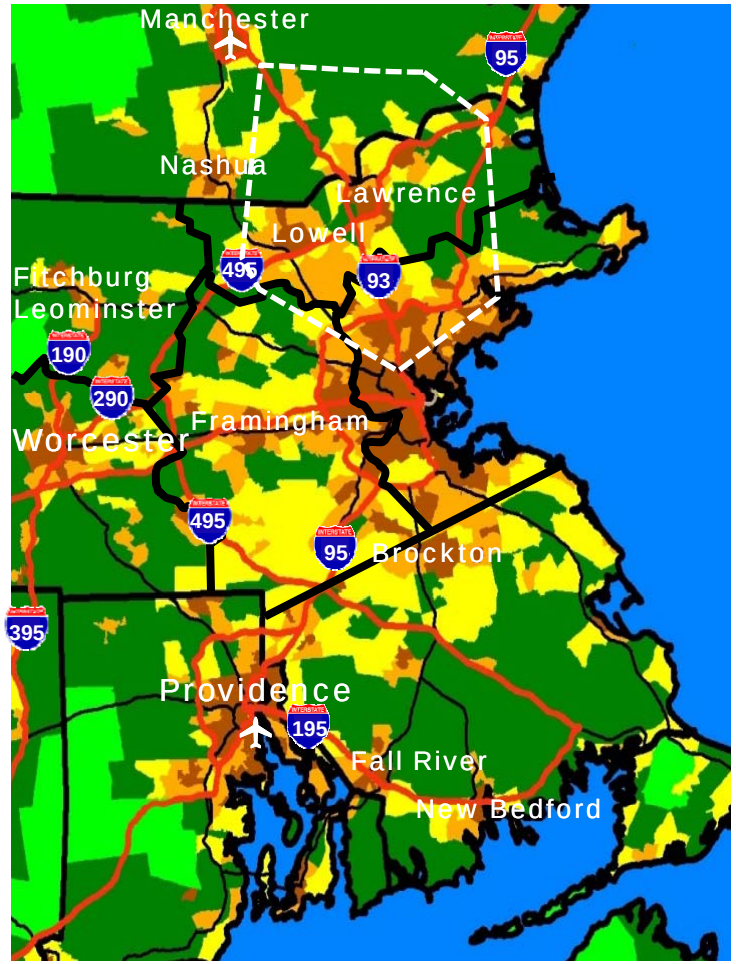
Type of Operation/Resources	Resource Assessment
Back Office/Technical/IT Operations	
Labor	• Six-year population growth rate at 0.85%. Similar to MA average (0.67%) and low compared to national average (6.4%) • Education level for four-year college is favorable (31.5%) • There is a significant presence of tech businesses in the region and competition for top talent can be high • Multiple colleges in area to recruit talent from.
Real Estate/Facilities	• Overall vacancy rate of ~20% with average lease rates for Class A space of $21.50 PSF and for Class B of $18.50 PSF.
Utilities	• Requirements for utilities are relatively low but there may be need for backup and dual-source power if an operation has a significant data center.
Transportation	• Access I-495 (north/south/west) and I-93 north to NH and south to Boston • Labor is drawn from NH and northeast MA.
University Research	• Access to R&D at UMass-Amherst and in Boston/Cambridge
Cost of Living/Housing	• Overall Cost of Living Index is 103 and for Housing is 85 (U.S. average = 100). This makes the area much lower cost to Boston while still having easy access to R&D in Boston and Cambridge.
Incentives/Other Financial Resources	
Other	• Merrimack Valley Venture Forum - facilitates business growth in the region's technology and scientific sectors.

Resource Assessment by Type of Operation

Type of Operation/Resources	Resource Assessment
R&D Operations	
Labor	• Will need to recruit primarily from Boston area • Education level for four-year college is favorable (31.5%) vs. U.S. average of 27.0%.
Real Estate/Facilities	• R&D/flex space is available at an average of $11.50 PSF.
Utilities	• Requirements for utilities are relatively low but water quality can be an issue and there may be need for backup and dual-source power if an operation has a significant data center.
Transportation	• Access I-495 (north/south/west) and I-93 north to NH and south to Boston • Labor is drawn from NH and northeast MA.
University Research	• Access to R&D at UMass-Amherst and in Boston/Cambridge
Cost of Living/Housing	• Overall Cost of Living Index is 103 and for Housing is 85 (U.S. average = 100). This makes the area much lower cost to Boston while still having easy access to R&D in Boston and Cambridge.
Incentives/Other Financial Resources	
Other	• Merrimack Valley Venture Forum - facilitates business growth in the region's technology and scientific sectors.

Population/Demographics

Population (2006) • 30-minute commute zone around Lowell	1,272,800
Population growth (2000 - 2006) • 30-minute commute zone around Lowell • State average • National average	 0.85% 0.67% 6.4%
Adult population with High School diploma only • 30-minute commute zone around Lowell • State average • National average	 28.8% 28.2% 30.2%
Adult population with four-year+ college • 30-minute commute zone around Lowell • State average • National average	 31.5% 37.0% 27.0%
Percent of Population in 25 - 34 cohort • 30-minute commute zone around Lowell • State average • National average	 11.6% 12.7% 13.3%
Median Age • Lowell • State average • National average	 34.5 years 38.3 years 36.4 years
Median Household Income • Lowell • State average • National average	 $44,958 $59,963 $48,451



Population Concentration

< 100 | 100-499 | 500-1,000 | 1,000-2,500 | >2,500

30-minute commute zone

Labor Supply and Cost

Job Title	Code	Median Salary (U.S. Average)	Median Salary (State Average)	Median Salary (Lowell Area)	Employment Level (Lowell Area)
Financial Services					
Accountants/Auditors	13-2011	$60,670	$62,060	$65,820	1,160
Financial Analysts	13-2051	$77,280	$83,850	$76,760	210
Engineering/Science					
Computer Programmers	15-1021	$69,500	$76,660	$86,530	630
Software Engineers	15-1031	$82,000	$90,390	$95,470	1,590
Electronics Engineers	17-2072	$82,820	$86,450	$80,710	640
Mechanical Engineers	17-2141	$72,580	$82,930	$83,410	540
Chemists	19-2031	$66,040	$78,620	$101,260	240
Administrative					
Customer Service Reps.	43-4051	$30,400	$36,980	$36,890	2,120
Insurance Claims Clerks	43-9041	$32,740	$35,450	$38,530	120

Labor Supply and Cost

Production					
Electrical/Electronic Equipment Assemblers	51-2022	$27,510	$32,370	$32,780	760
Computer-Controlled Machine tool Operators	51-4011	$32,820	$36,790	$34,930	240
Machinists	51-4041	$35,810	$40,560	$42,690	430
Inspectors/Testers	51-9061	$32,190	$36,840	$34,840	480

Unemployment Rates

Location	2001	2003	2005	2007
Lowell/Billerica/Cheimsford MSA	4.1%	6.7%	5.1%	4.8%
Massachusetts Average	3.7%	5.8%	4.8%	4.7%
U.S. Average	4.7%	6.0%	5.1%	4.6%

Major Non-Government Employers

Target Industry Employer

Company/Organization	Description	Employment Range
Raytheon Integrated Defense	R&D / defense	5,000 +
The Lahey Clinic	Health care services	5,000 +
Caritas Holy Family Hospital	Health care services	1,500 – 2,500
United Parcel Service	Transportation and warehousing	1,500 – 2,500
Wyeth Pharmaceuticals	Pharmaceutical manufacturing	1,500 – 2,500
MITRE Corp.	R&D / defense & security consulting	1,500 – 2,500
Lowell General Hospital	Health care services	1,500 – 2,500
Verizon	Telecommunications	1,500 – 2,500
Analog Devices	Electronics manufacturing	1,500 – 2,500
M/A Com Inc.	Electronics manufacturing / defense	1,000 – 1,500
Saints Memorial Medical Center	Health care services	1,000 – 1,500
Emerson Hospital	Health care services	1,000 – 1,500
Lawrence General Hospital	Health care services	1,000 – 1,500
University of Massachusetts – Lowell	Higher education	1,000 – 1,500
Malden Mills	Textiles manufacturing	1,000 – 1,500
Kronos, Inc.	Computer software	1,000 – 1,500
Cisco Systems	Medical & testing equipment manufacturing	1,000 – 1,500
Zoll Medical	Medical device manufacturing	500 – 1,000

Major Non-Government Employers

Target Industry Employer

Company/Organization	Description	Employment Range
Millipore Corp.	Bioscience research / headquarters	500 – 1,000
Lucent Technologies	Communications equipment mfg	500 – 1,000
Middlesex Community College	Higher education	500 – 1,000
Northern Essex Community College	Higher education	500 – 1,000
Dynamics Research Corporation	Defense / headquarters	500 – 1,000
Eagle-Tribune Publishing Co.	Information / publishing	500 – 1,000
New Balance Athletic Shoe	Shoe manufacturing	500 – 1,000
Charles River Laboratories	Laboratory services / headquarters	500 – 1,000
American Science and Engineering	Manufacturing of X-ray detection systems	250 - 500
Motorola	Wireless and broadband communications	250 - 500

Recent Developments

Company	Description
Wyeth Pharmaceuticals	• Has announced plans for a major expansion at its 70-acre, 1.2 million sf campus in Andover. • Project to create at least 100 jobs, bringing the total workforce at the complex to >1,900.
Millipore Corp.	• Billerica-based life sciences company contemplating a manufacturing expansion at its 108,000 sf Danvers facility in 2008. • In 2006, Millipore completed a $50 million, 110,000 sf R&D center in Bedford, creating up to 500 new jobs.
Basilea Pharmaceuticals Inc.	• Newly launched U.S. subsidiary of a Swiss drug company has leased space in Andover. • Initially will create a small number of sales, marketing and finance jobs on-site, with more likely as products mature and come to market.
Various Partners	With a combination of public and private resources, historic mill buildings in the cities of Lawrence and Lowell have been transformed into attractive residential, retail, and office spaces with modern amenities. Projects include: • Washington Mill Lofts – the largest single private investment in downtown Lawrence in decades; 155 market-rate rental units located ¼ mile from the city's new intermodal transit center. • Monarch on the Merrimack – 600 luxury lofts with a private waterfront park and geothermal heating and cooling. • Hamilton Canal District – a project intended to "reinvent" a 15-acre site into a vibrant mixed-use district. The site is contiguous to the successfully restored Canal Place condominiums and the Market Mills, home to the Lowell National Historical Park Visitor Center.

Utilities and Real Estate

Utilities	Supply-Related Issues
Water	Adequate supplies are readily available in most communities.
Wastewater Treatment	Varies by community. Limited sewer infrastructure exists in some towns; sewer system extensions to accommodate economic development have been a priority.
Telecom/Broadband	Some gaps in service, but the availability of broadband Internet access is increasing.
Gas	Natural gas service is provided by the Bay State Gas Company, the Essex County Gas Company, and KeySpan (a subsidary of National Grid).
Electric Power	The Massachusetts Electric Company provides electricity to most communities in the region. Georgetown, Groveland, Merrimac and Rowley are served by their respective municipally-owned utility providers.

Real Estate	Supply-Related Issues
Office Space	Overall vacancy rate of ~20% with average lease rates for Class A space of $21.50 PSF and for Class B of $18.50 PSF.
Industrial Space	Plentiful supply of industrial parks and sites with water, sewer and highway access in diverse locations. Vacancy rate of ~6% with average lease rates of $6 PSF.
R&D Space	R&D/flex space is available at an average of $11.50 PSF.
Incubator Space	UMass Lowell operates a business incubator at the historic Wannalancit Mill near the main campus.
Other	An abundant supply of vacant or underutilized mill buildings that can be reused for commercial, industrial, and/or residential uses.

Note: Real Estate data based on average 2007 rates published by CBRE and Grubb & Ellis

Quality of Life

Cost of Living and Housing



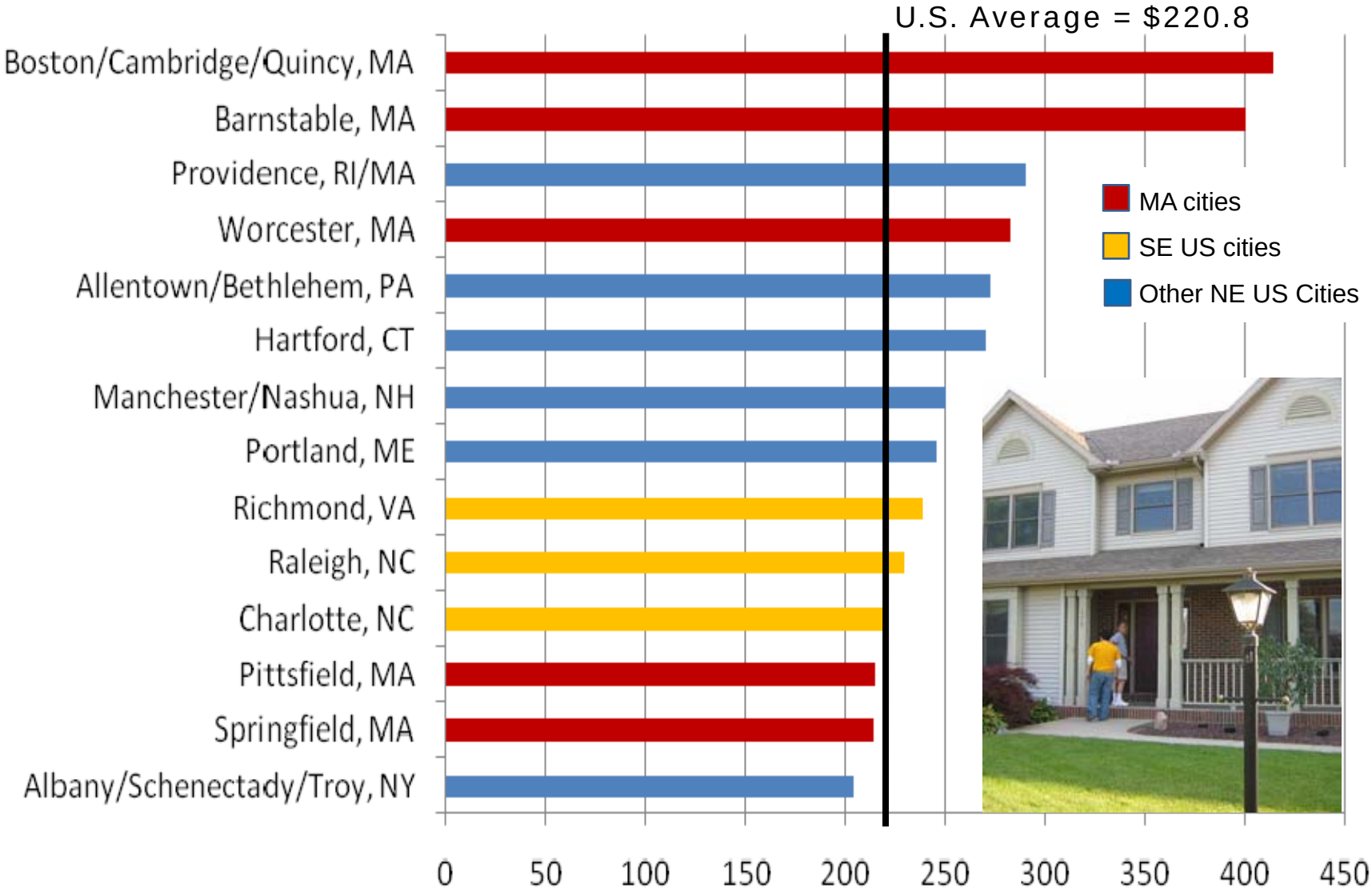


Cost of Living Index: Comparison

Location	COL Index	Grocery	Health Care	Housing	Utilities	Transportation	Misc.
Pittsfield	101	120.6	131	68	130	113	116
Springfield	88	117.5	117	48	103	112	105
Worcester	100	113.1	126	81	110	110	107
Framingham	114	108	125	118	121	113	108
Fitchburg	97	111.9	126	73	110	109	107
Lowell	103	109.3	127	85	121	112	109
Boston	128	112.2	130	148	132	115	111
Taunton	109	112.1	132	98	122	116	110
Brockton	107	113	129	87	131	116	113
Fall River	105	113.2	133	85	122	116	110
New Bedford	102	112	131	79	124	117	109
Barnstable	122	111.8	129	132	128	115	112
Manchester	97	103.4	111	77	133	104	106
Albany	105	121.1	146	66	150	113	124
Philadelphia	92	106.2	102	56	130	117	112
Richmond	87	94	89	70	107	100	94
Raleigh	106	101.9	106	111	94	100	107
Charlotte	91	98.6	103	78	90	99	98
Austin	96	86.8	107	97	90	95	102
Charlotte	91	98.6	103	78	90	99	98
San Diego	147	114.7	130	206	126	112	104

Source: Sperling's Best Places COL calculator

Median Home Sales Price ($000) for 3rd Quarter 2007



Source: National Association of Realtors

Cost of Housing Comparison: Merrimack Valley

$200,000



Haverhill
$215,000 ● 3 Bed, 1 Bath
1,003 Sq. Ft. ● 0.17 Acres



Lowell
$205,900 ● 3 Bed, 1 Bath
1,482 Sq. Ft. ● 0.08 Acres



Lawrence
$210,000 ● 3 Bed, 1 Bath
1,367 Sq. Ft. ● 0.17 Acres

$250,000



Haverhill
$257,500 ● 3 Bed, 1 Bath
1,328 Sq. Ft. ● 0.17 Acres



Lowell
$254,900 ● 3 Bed, 1.5 Bath
1,368 Sq. Ft. ● 0.43 Acres



Lawrence
$249,000 ● 3 Bed, 2 Bath
1,652 Sq. Ft. ● 0.11 Acres

$350,000



Haverhill
$349,900 ● 5 Bed, 2 Bath
2,706 Sq. Ft. ● 0.54 Acres



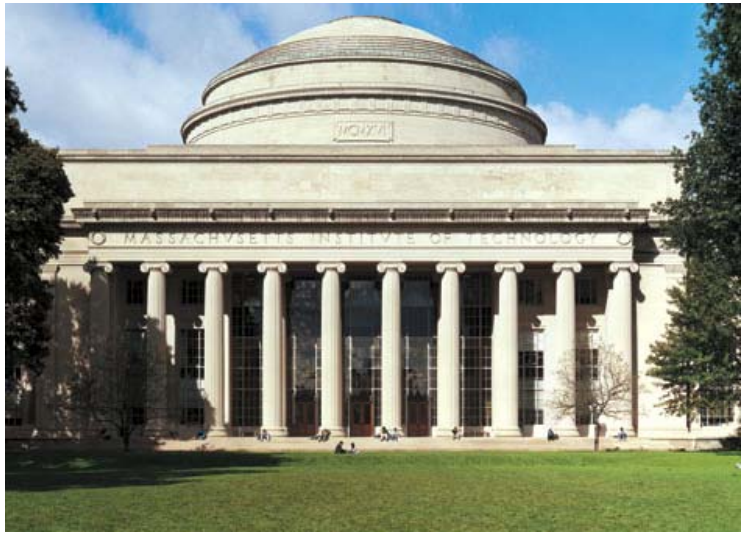
Lowell
$350,000 ● 4 Bed, 1.5 Bath
1,980 Sq. Ft. ● 0.18 Acres

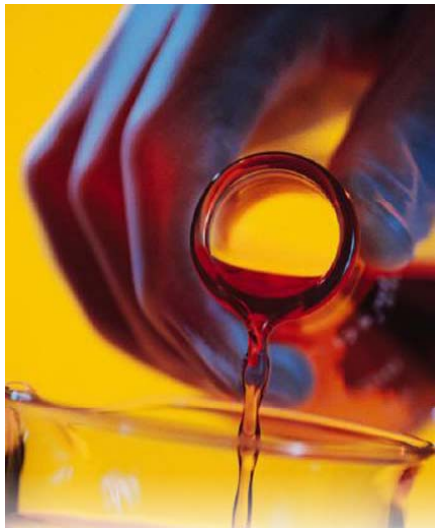


Lawrence
$349,900 ● 5 Bed, 2.5 Bath
2,280 Sq. Ft. ● 0.44 Acres

University R&D

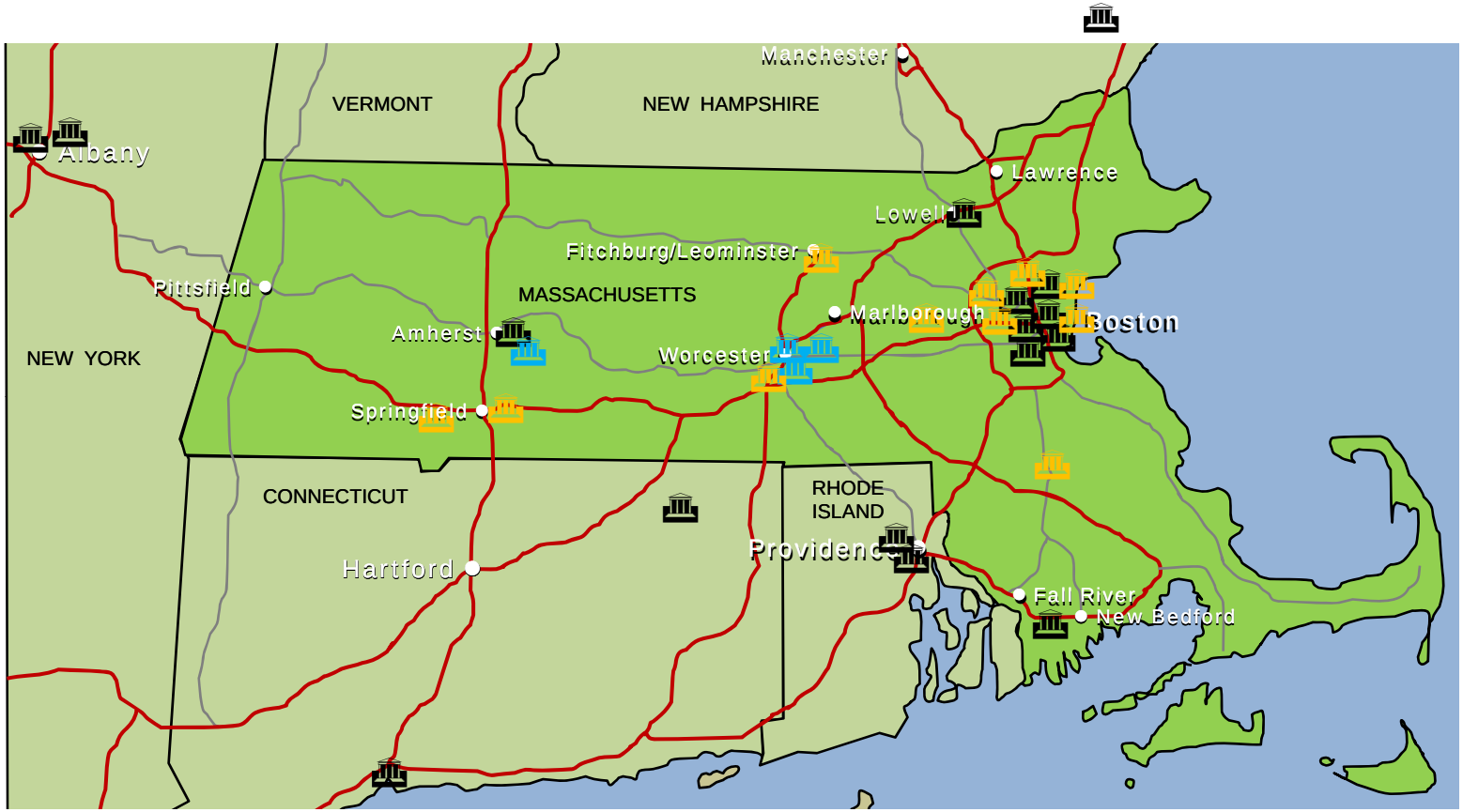
Research Centers That Support Economic Development







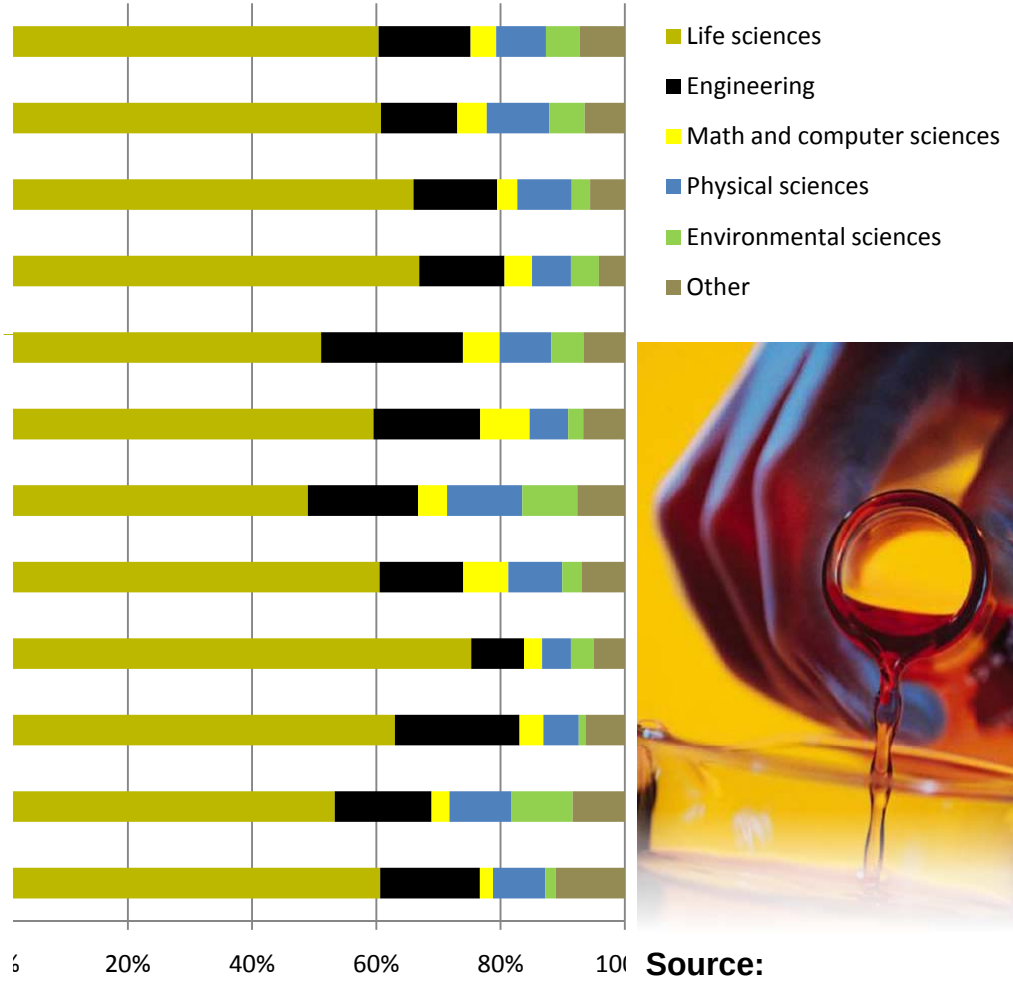
Major Academic and R&D Institutions



- Major Institutions (>5,000 students) with R&D
- Major Institutions (>5,000 students) without R&D
- Institution with R&D and <5,000 students

University R&D: National Total and Top Ten States ($000)

United States (Total)	47,760,402
California	6,493,388
New York	3,789,658
Texas	3,270,728
Maryland	2,530,231
Pennsylvania	2,428,346
▶ Massachusetts	2,158,748
Illinois	1,823,787
North Carolina	1,710,496
Ohio	1,636,473
Florida	1,527,666
Michigan	1,472,727

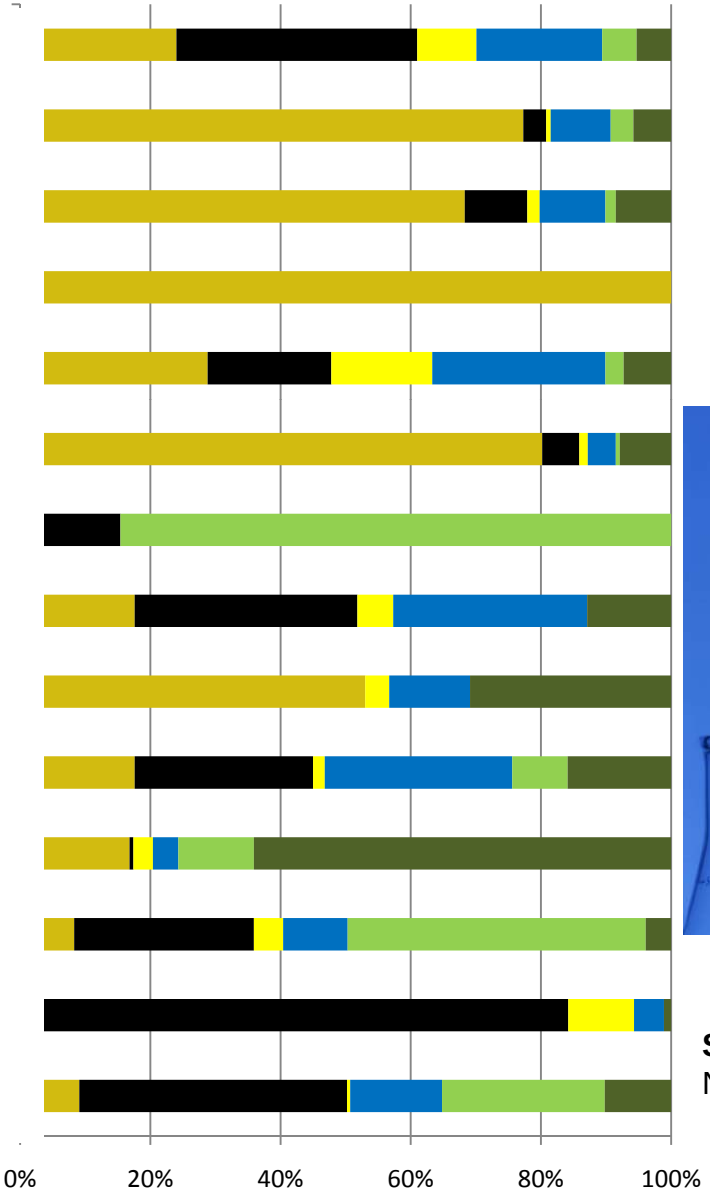


Source:
NSF Data for Fiscal Year 2005

Massachusetts University Research ($000)

MIT	600,748
Harvard U.	453,156
Boston U.	255,615
U. MA Worcester	191,659
U. MA Amherst	136,057
Tufts U.	128,695
Woods Hole Ocean. Inst.	121,888
Northeastern U.	66,495
Brandeis U.	57,017
U. MA Lowell	27,625
U. MA Boston	21,056
U. MA Dartmouth	19,171
WPI	14,483
Clark U.	5,304

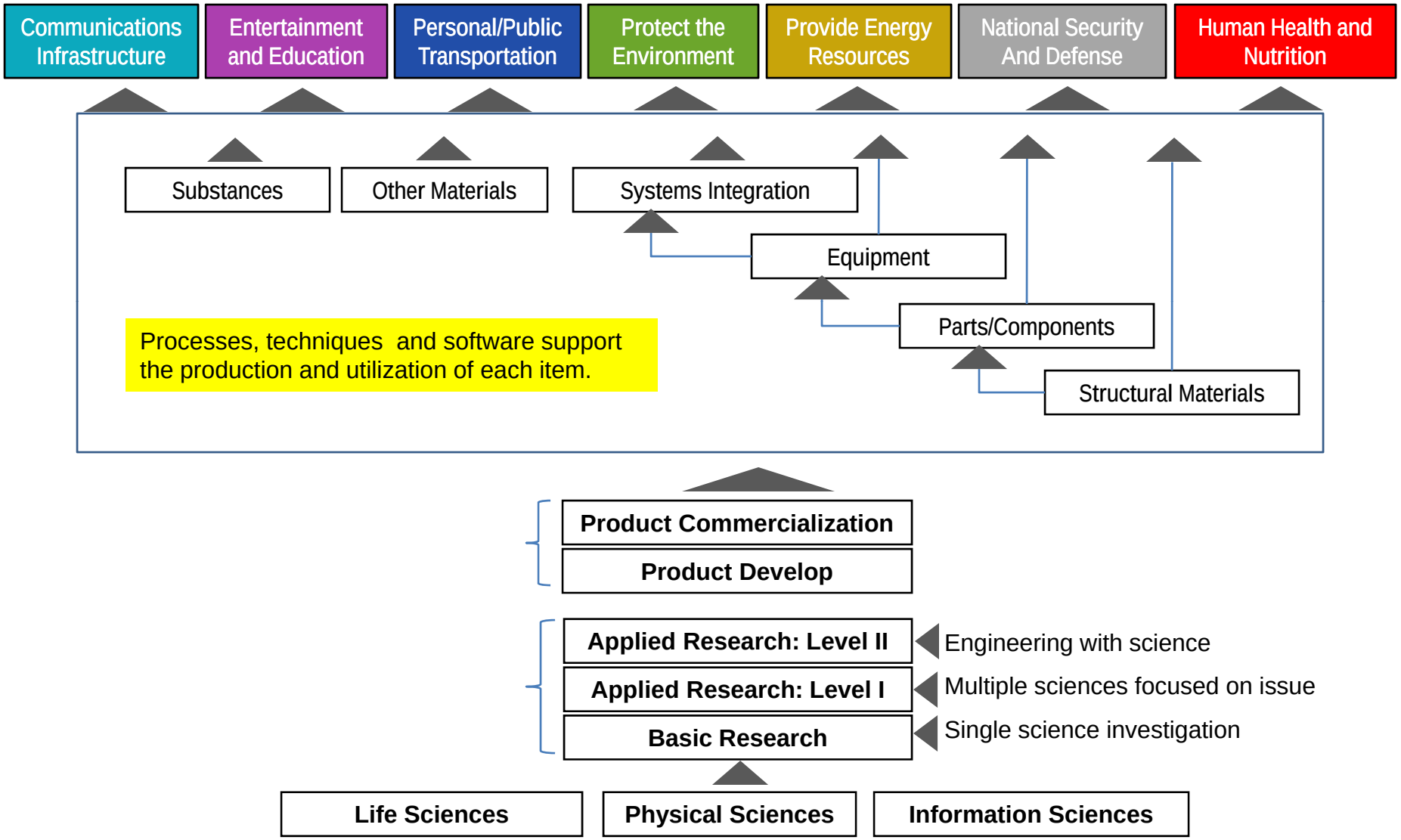
UMass Total ~ $400 million





Source:
NSF Data for Fiscal Year 2005

R&D vs. Economic Development



University R&D by Program Area

R&D Program Area	MIT	Harvard	Boston Univ.	UMASS-Worcester	UMASS-Amherst	Tufts Univ.	Woods Hole Ocean. Inst.	Northeastern Univ.
Life Sciences: Disease Dynamics	■	■	■	■	■	■		■
Life Sciences: Pharmaceuticals	■	■				■		■
Life Sciences: Medical Devices	■	■						
Life Sciences: Tissue/Skin/Bone Syn.	■	■		■		■		■
Life Sciences: Bioinformatics	■	■	■	■	■			
Marine Sciences	■						■	■
Food and Nutrition		■			■	■		
Computers/Electronics	■		■		■			■
Material Sciences: Polymers	■		■		■			
Material Science: Metals								
Material Science: Nanomaterials	■		■		■			■
Alternative Energy	■				■			
Aerospace/Defense/Security	■							■

Source: Websites for each institution

University R&D by Program Area

R&D Program Area	Brandeis Univ.	UMASS - Lowell	UMASS - Boston	UMASS-Dartmouth	WPI	Clark Univ.
Life Sciences: Disease Dynamics		■			■	
Life Sciences: Pharmaceuticals					■	
Life Sciences: Medical Devices		■		■	■	
Life Sciences: Tissue/Skin/Bone Syn.			■		■	■
Life Sciences: Bioinformatics	■	■		■		
Marine Sciences			■	■		
Food and Nutrition				■		
Computers/Electronics		■		■		
Material Sciences: Polymers		■				
Material Science: Metals					■	
Material Science: Nanomaterials		■		■	■	
Alternative Energy		■			■	
Aerospace/Defense/Security					■	

Source: Websites for each institution

Colleges & Universities

Enrollment and Graduates Within Specific Programs





College/University Enrollment and Graduates by Selected Programs

					Bio-Related		Business		Comp./Info. Sc.		Engineering	
College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
Berkshire Region												
Williams College	Williamstown	2,079	2,033	46	61	0	0	0	9	0	0	0
Mass College of Liberal Arts	No. Adams	1,800	1,450	350	15	0	45	0	6	0	0	0
Western Region												
UMass-Amherst	Amherst	25,593	19,823	5,770	238	50	577	255	77	55	215	100
Westfield State College	Westfield	5,426	4,603	823	13	0	120	0	19	0	0	0
Springfield College	Springfield	4,994	3,506	1,488	18	0	44	0	2	0	0	0
Western New England College	Springfield	3,653	2,813	840	5	0	190	69	11	0	60	6
Smith College	Northhampton	3,092	2,634	458	56	3	0	0	4	0	33	0
Mount Holyoke College	South Hadley	2,153	2,149	4	56	0	0	0	4	0	0	0
American International College	Springfield	1,957	1,443	514	9	0	59	47	1	0	0	0
Amherst College	Amherst	1,648	1,648	0	32	0	0	0	11	0	0	0
Bay Path College	Longmeadow	1,479	1,321	158	6	0	79	0	1	23	0	0
Hampshire College	Amherst	1,448	1,448	0	18	0	0	0	4	0	0	0
College of Our Lady of the Elms	Chicopee	1,172	1,013	159	9	0	27	0	3	0	0	0

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

College/University Enrollment and Graduates by Selected Programs

					Bio-Related		Business		Comp./Info. Sc.		Engineering	
College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
North Central												
Fitchburg State College	Fitchburg	5,508	3,768	1,740	5	4	107	47	17	21	0	0
South Central												
Worcester State College	Worcester	5,440	4,626	814	39	9	171	0	22	0	0	0
Worcester Polytechnic Institute	Worcester	3,918	2,866	1,052	61	10	28	27	89	48	401	132
Clark University	Worcester	3,071	2,262	809	35	6	36	122	18	8	0	0
College of the Holy Cross	Worcester	2,821	2,821	0	32	0	0	0	0	0	0	0
Assumption College	Worcester	2,792	2,420	372	29	0	148	28	8	0	0	0
Becker College	Worcester	1,729	1,729	0	1	0	88	0	0	0	0	0
Nichols College	Dudley	1,470	1,470	0	0	0	141	77	0	0	0	0
Anna Maria College	Paxton	1,183	818	365	0	0	12	25	0	0	0	4
UMass Medical School - Worcester	Worcester	1,020	0	1,020	0	27	0	0	0	0	0	0
Atlantic Union College	South Lancaster	821	753	68	7	0	13	0	3	0	0	0
Merrimack Valley												
UMass-Lowell	Lowell	11,207	8,648	2,559	27	30	233	54	153	44	162	120
Merrimack College	North Andover	2,282	2,246	36	11	0	167	0	7	0	18	0
Metro West												
Framingham State College	Framingham	5,836	3,804	2,032	25	0	117	22	22	0	0	0
University of Phoenix-Central Mass	Westborough	264	189	75	0	0	18	27	4	0	0	0

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

College/University Enrollment and Graduates by Selected Programs

					Bio-Related		Business		Comp./Info. Sc.		Engineering	
College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
Greater Boston												
Boston University	Boston	31,574	18,521	13,053	216	352	706	712	54	201	264	148
Harvard University	Cambridge	25,778	9,968	15,810	154	194	0	925	25	24	25	37
Northeastern University	Boston	23,411	18,001	5,410	87	26	811	366	103	67	306	207
Boston College	Chestnut Hill	14,661	9,880	4,781	167	7	486	528	38	0	0	0
UMass-Boston	Boston	12,362	9,246	3,116	95	10	361	69	27	16	0	0
MIT	Cambridge	10,253	4,127	6,126	111	43	81	494	171	155	407	894
Salem State College	Salem	10,230	7,455	2,775	23	0	163	20	15	0	0	0
Tufts University	Medford	9,638	4,995	4,643	83	46	0	13	19	32	198	91
Suffolk University	Boston	8,862	5,214	3,648	26	0	358	428	3	9	2	0
Lesley University	Cambridge	6,981	1,793	5,188	0	8	45	17	0	0	0	0
Bentley College	Waltham	5,555	4,296	1,259	0	0	949	475	39	21	0	0
Brandeis University	Waltham	5,313	3,304	2,009	96	34	0	50	14	113	0	0
Simmons College	Boston	4,650	2,009	2,641	14	0	28	96	5	0	0	0
Cambridge College	Cambridge	4,637	934	3,703	0	0	28	159	0	0	0	0
Emerson College	Boston	4,324	3,402	922	0	0	112	121	0	0	0	0
Wentworth Institute of Tech	Boston	3,613	3,613	0	0	0	116	0	71	0	21	0
Endicott College	Beverly	3,507	1,886	1,621	0	0	132	66	8	0	0	0
Babson College	Wellesley	3,359	1,776	1,583	0	0	426	572	0	0	0	0
Curry College	Milton	3,073	2,765	308	3	0	101	0	3	0	0	0
Wellesley College	Wellesley	2,370	2,370	0	35	0	0	0	10	0	0	0
Emmanuel College	Boston	2,340	2,156	184	23	0	115	48	0	0	0	0

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

College/University Enrollment and Graduates by Selected Programs

					Bio-Related		Business		Comp./Info. Sc.		Engineering	
College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
Greater Boston (cont'd)												
Gordon College	Wenham	1,661	1,528	133	31	0	30	0	4	0	0	0
Mount Ida College	Newton	1,361	1,361	0	0	0	63	0	0	0	0	0
Dean College	Franklin	1,315	1,315	0	0	0	0	0	0	0	0	0
Regis College	Weston	1,315	860	455	7	0	24	9	1	0	0	0
Newbury College-Brookline	Brookline	1,282	1,282	0	0	0	68	0	9	0	0	0
Lasell College	Newton	1,275	1,225	50	0	0	71	12	0	0	0	0
Eastern Nazarene College	Quincy	1,222	1,063	159	10	0	102	20	3	0	4	0
Fisher College	Boston	1,121	1,121	0	0	0	67	0	0	0	0	0
Wheelock College	Boston	1,028	727	301	0	0	0	0	0	0	0	0
University of Phoenix-Boston	Boston	628	464	164	0	0	24	65	5	0	0	0
Pine Manor College	Chestnut Hill	501	491	10	11	0	22	0	0	0	0	0
Benjamin Franklin Institute of Tech	Boston	438	438	0	0	0	0	0	0	0	2	0
Franklin W. Olin College of Engr	Needham	296	296	0	0	0	0	0	0	0	64	0
Southeast												
Bridgewater State College	Bridgewater	9,655	7,825	1,830	40	0	176	0	26	0	0	0
UMass-Dartmouth	North Dartmouth	8,756	7,626	1,130	43	9	324	73	35	25	79	34
Stonehill College	Easton	2,386	2,371	15	42	0	132	7	10	0	0	0
Wheaton College	Norton	1,551	1,551	0	23	0	0	0	3	0	0	0
Mass Maritime Academy	Buzzards Bay	1,045	1,001	44	0	0	5	0	0	0	85	18

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

Major Community Colleges Enrollment and Graduates by Selected Programs

Community College/Vocational School	Location	Total Enrollment	Bio-Related	Business	Computer/IT	Engineering	Health-Related
Berkshire Region							
Berkshire Community College	Pittsfield	2,225	0	43	3	10	62
Mildred Elley	Pittsfield	104	0	0	0	0	23
Western Region							
Holyoke Community College	Holyoke	6,297	0	157	11	20	78
Springfield Tech. Community College	Springfield	5,992	4	104	35	118	194
Greenfield Community College	Greenfield	2,208	0	40	4	4	37
North Central Region							
Mount Wachusett Community College	Gardner	3,937	37	11	14	5	112
South Central Region							
Quinsigamond Community College	Worcester	6,022	0	114	38	60	155
Merrimack Valley Region							
Northern Essex Community College	Haverhill	6,361	0	115	27	24	122
Metro West Region							
Middlesex Community College	Bedford	8,109	0	149	10	40	148
Wyotech	Bedford	227	0	0	0	187	0
Greater Boston Region							
Bunker Hill Community College	Boston	8,212	12	148	32	0	133
North Shore Community College	Danvers	6,910	3	0	7	16	175
Massachusetts Bay Community College	Wellesley Hills	5,040	3	71	13	52	130
Quincy College	Quincy	3,801	0	88	15	0	203
Roxbury Community College	Roxbury Crossing	2,329	0	44	3	0	45
Labourne College	Boston	573	0	0	0	0	100
Gibbs College	Boston	520	0	70	21	0	61
ITT Technical Institute-Woburn	Woburn	408	0	0	70	29	0
ITT Technical Institute-Norwood	Norwood	327	0	0	32	44	0

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

Major Community College Enrollment and Graduates by Selected Programs

Community College/Vocational School	Location	Total Enrollment	Bio-Related	Business	Computer/IT	Engineering	Health-Related
Southeast Region							
Massasoit Community College	Brockton	6,975	147	44	12	44	136
Bristol Community College	Fall River	6,927	0	130	25	39	111
Diman Regional Technical Institute	Fall River	93	0	0	0	0	24
Cape Cod/Islands Region							
Cape Cod Community College	West Barnstable	4,212	0	14	15	4	99

25 - 99 annual graduates
100+ annual graduates

Source: U.S. Department of Education, Center for Education Statistics (2006-2007 school year)

Young Knowledge Worker's Basis for Location Decision

Job and Career-Related

- Familiarity with company (based on friends input, reputation or internship)
- Job content (challenging and interesting)
- Employment options if current job lost or doesn't meet needs
- Ability to pursue further education
- Spouse/significant other employment options
- Minimize commute distance

Life Style-Related

- Access to other young adults (size of cohort locally and places to meet people)
- Access to family and friends
- Recreational/cultural venues and events . . . "cool" place to live
- Affordability (particularly housing)
- The weather: impact on outside activities and culture

Locational needs shift with life stage:

Unmarried ▶ Married Without Children ▶ Married With Children

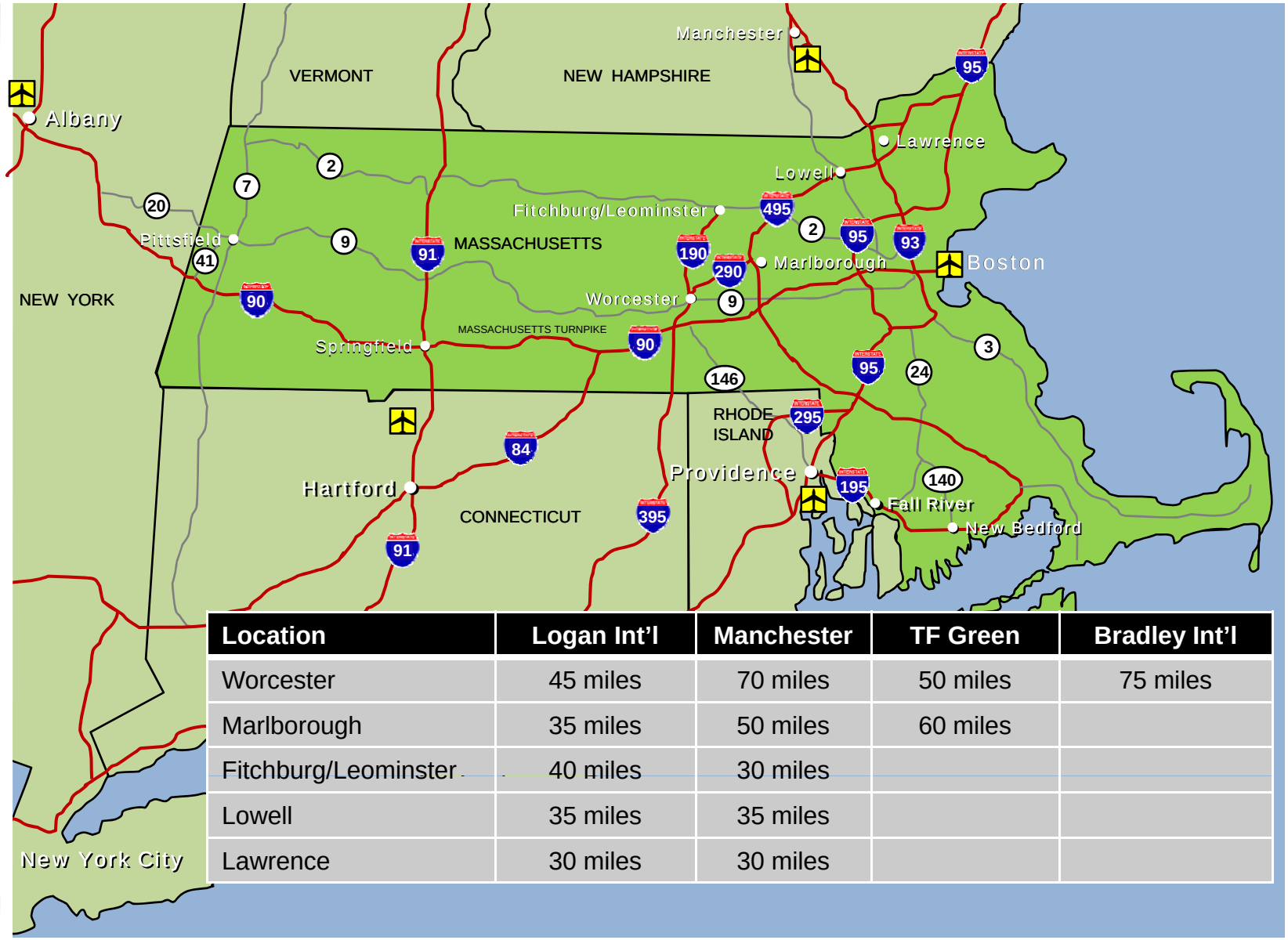
Transportation

Limited Access Highways and Commercial Airports





Transportation: Principal Highways and Commercial Airports



Location	Logan Int'l	Manchester	TF Green	Bradley Int'l
Worcester	45 miles	70 miles	50 miles	75 miles
Marlborough	35 miles	50 miles	60 miles	
Fitchburg/Leominster	40 miles	30 miles		
Lowell	35 miles	35 miles		
Lawrence	30 miles	30 miles		

Transportation: Air Access to Strategic Cities (Domestic)

Destination	Logan Int'l	Manchester	TF Green	Bradley Int'l	Albany
Atlanta	■	■	■	■	■
Baltimore	■	■	■	■	■
Charlotte	■	■	■	■	■
Chicago	■	■	■	■	■
Cincinnati	■	■	■	■	■
Cleveland	■	■	■	■	■
Columbus	■			■	
Dallas	■			■	
Denver	■			■	
Detroit	■	■	■	■	■
Fort Lauderdale	■		■	■	
Houston	■			■	
Las Vegas	■	■	■	■	
Los Angeles	■			■	
Memphis	■				
Miami	■			■	
Minneapolis	■	■	■	■	
Nashville	■		■	■	

Transportation: Air Access to Strategic Cities (Domestic)

Destination	Logan Int'l	Manchester	TF Green	Bradley Int'l	Albany
NYC Area	■	■	■	■	■
Norfolk	■				
Orlando	■	■	■	■	■
Philadelphia	■	■	■	■	■
Phoenix	■	■	■	■	
Pittsburgh	■		■	■	■
Portland, OR	■				
Raleigh	■			■	
Richmond	■				
Salt Lake City	■				
San Diego	■				
San Francisco	■				
San Juan, PR	■			■	
San Jose	■				
Seattle	■				
St. Louis	■			■	
Tampa	■	■		■	■
Washington, DC	■	■	■	■	■
West Palm Bch	■			■	

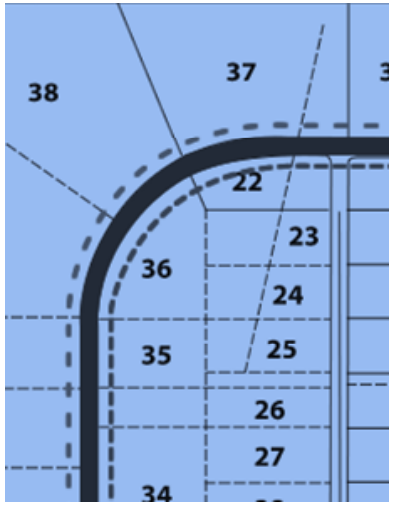
Transportation: Air Access to Strategic Cities (International)

Destination	Logan Int'l	Manchester	TF Green	Bradley Int'l	Albany
Amsterdam	■			■	
Frankfurt	■				
Halifax	■				
Keflavik (Iceland)	■				
London	■				
Milan	■				
Montreal	■			■	
Ottawa	■				
Paris	■				
Shannon	■				
Toronto	■	■		■	■
Zurich	■				

Travel Distance to Major Cities

Location	Boston	NYC
Pittsfield	136	186
Springfield	91	142
Deerfield	120	176
Amherst	94	167
Worcester	45	178
Fitchburg/Leominster	41	204
Lowell	40	221
Lawrence	30	231
Marlborough	31	194
Brockton	24	225
Taunton	39	200
New Bedford	50	172
Fall River	52	160

Real Estate and Utilities









Site Requirements/Potential Concerns vs. Type of Operation

Description	Office	R&D	Manufacturing	Distribution
Level of Readiness Required	Back Office: within 3 mos. HQ: may opt to build in 12-18 mos.	Within 3 mos. or build on fast track (9-12 mos.)	Within 3 mos. or build on fast track (9-12 mos.)	Within 3 mos.
Overall Image of Site, Park and Building	Important: reflects on company image and helps attract talent.	Important: reflects on company image and helps attract talent.	Varies	Varies
Specialized Space Required	Meeting/Training Spaces	Labs/Pilot Facilities	Certain Processes	
Local Amenities (restaurants, shopping, daycare, etc.)	Important	Important	Varies	
Adequate Parking (urban area)	Important	Important		
Truck Traffic			Varies	Heavy
Access to Interstate	Commuter access Brand exposure for some Security an issue for others	Commuter access	Truck access (varies by type and size of operation)	Track access
Public Transportation	Important near metro areas	Important near metro areas	Important for low income employees	
Rail Access			Some operations	Some operations
Reuse Potential for Community	High	Varies	Varies	High
Ability for Company to Easily Liquidate Facility	Back Office: Lease HQ: Lease or own (harder to liquidate due to specialized layouts)	Tend not to build with liquidation as a consideration	Tend not to build with liquidation as a consideration	Tend to be generic buildings that are easier to liquidate
Sewer/Water Requirements		Water quality an issue	Volume varies	
Cost of Energy	Moderate	Moderate	Critical issue	Moderate
Access to University R&D	Important if HQ and R&D are co-located	Local and distance access to university R&D partners	Having access to technical support	

Resource Requirements by Type of Operation

Resource Requirement	Headquarters	Back Office/ Shared Services	R&D	Manufacturing	Distribution
• Labor: Recruit Local Skills (High School)	Clerical	Customer Serv.		■	■
• Labor: Recruit Local Skills (College)	■	■	■	Some	
• Labor: Recruit From Other Locations*	Frequently	Some	Frequently	Limited	
• Facility Needs	Class A Office	Class A/B/C Office	R&D/Office	Mfg./Office	Warehouse/Office
• Utilities: Water	■	■	High Quality	High Volume Pot.	■
• Utilities: Sewer	■	■	■	High Volume Pot.	■
• Utilities: Electricity	Back-Up Power	Back-Up Power	Back-Up Power	Back-Up Power	Back-Up Power
• Utilities: Gas			Some Operations	■	
• Utilities: Telecom	Broad Band/Back-Up	Broad Band/Back-Up	Broad Band/Back-Up	■	■
• Transportation: Interstate	Within 5 miles	Near	Varies	Near	Near
• Transportation: Air Access	Within 30-45 min.	Within 30-45 min.	Within 30-45 min.		
• Transportation: Rail				Some Operations	Some Operations
• Co-Location Needs			University Partners		
• Operating Cost as an Issue	Low to Moderate	Moderate to High	Moderate	High	High
• Incentives: Training		For Some Jobs		■	■
• Incentives: Tax Reduction	■	■	■	■	■
• Incentives: In-Kind Provisions (roads)	■	■	■	■	■
• Community Responsiveness	■	■	■	■	■

*Quality of Life is an issue: cost of living/housing, education quality, healthcare, etc.

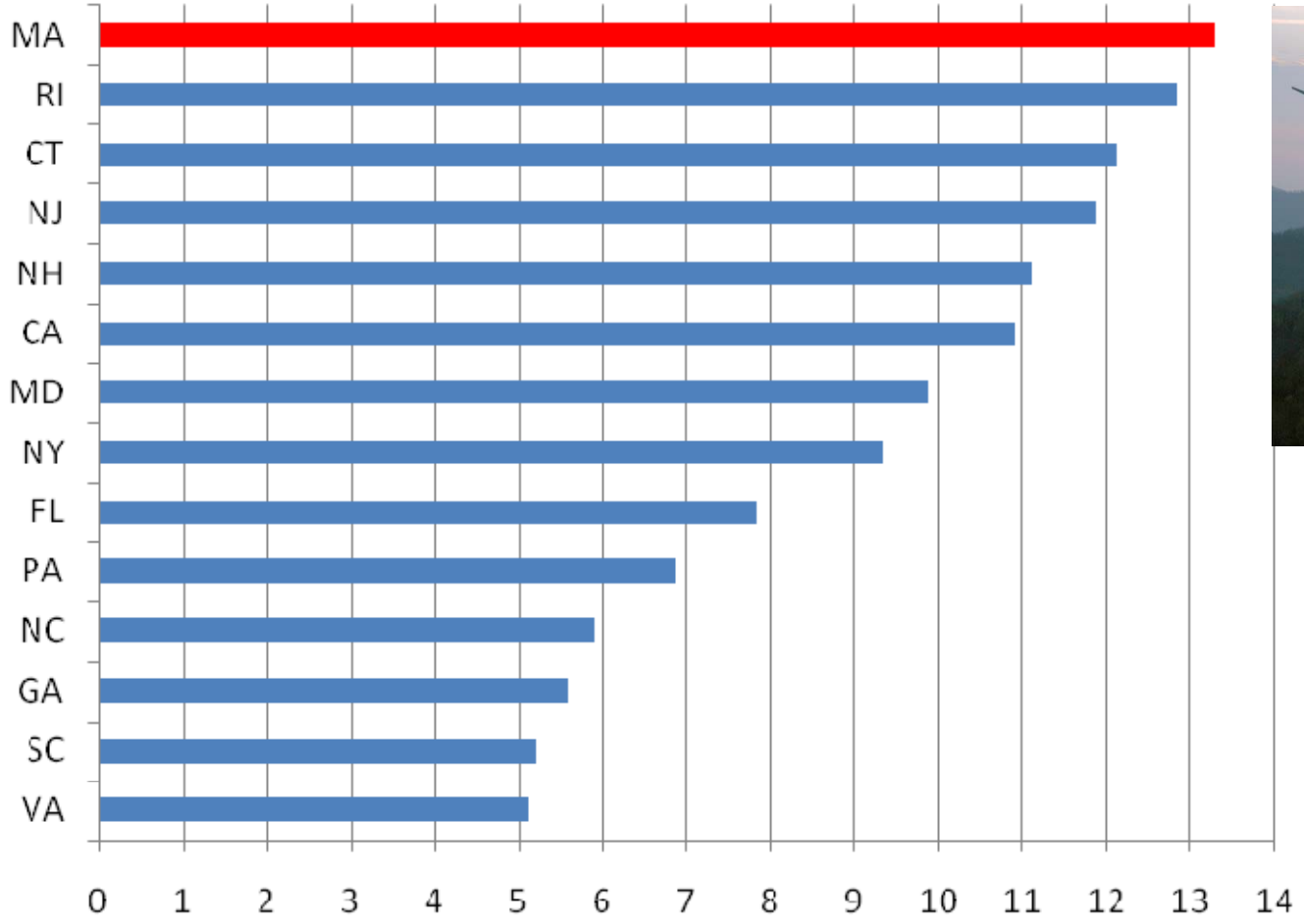
Significant Utility Requirements by Target Industry

Industry/Segment	Water	Wastewater Treatment	Electrical Power	Natural Gas	Broadband/ Telecom
■ • Biotech/Pharmaceuticals	High Quality	Quantity	Quantity/Backup	■	■
■ • Medical Equipment	■	■	■		■
■ • Marine Science	■	■	■		■
■ • Computers/Electronics	High Quality	■	High Vol./Backup	■	■
■ • Food Processing	High Quality	■	High Volume	■	■
■ • Fabricated Metals	■	■	■		■
■ • Plastics (Resin/Parts/Products)	■	■	■	■	■
■ • Renewable/Alternative Energy	■	■	■		■
■ • Aerospace/Defense/Security	■	■	Backup Power		Data Center
• Institutional Healthcare Services	■	■	Backup Power		■
• Institutional Education Services	■	■	Backup Power		■
■ • University R&D	High Quality	■	Backup Power		Data Center
■ • Financial Services	■	■	Backup Power		Data Center
■ • Prof/Tech/Creative/IT Services	■	■	■		■
• Transportation/Distribution	■	■	■		■
• Hospitality/Rec./Culture/Tourism	■	■	■		■
• Mgmt. of Companies/HQ	■	■	Backup Power		Data Center

■ State Target Industry

Significant/Special Requirements

Comparison of Average Energy Cost to Industrial Users (cents/kilowatthour)





Source: Energy Information Administration

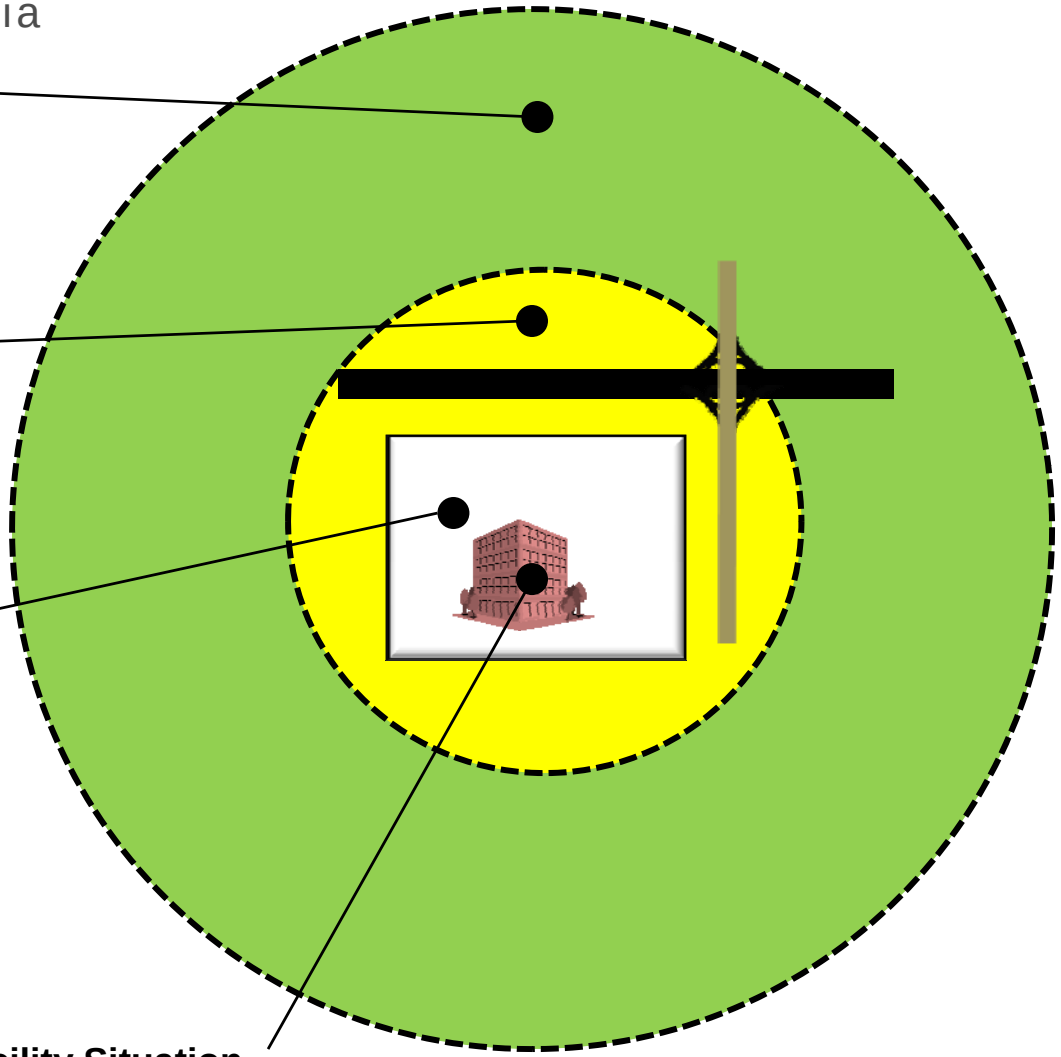
High energy costs forces the imperative of a focus on renewable energy.

Location/Site Assessment Criteria

Level 1: **Proximity (30-45 minutes)**
- Labor resources (education/demographics)
- Quality of life/housing costs
- Business/R&D partners
- Airport access

Level 2: **Local Access**
- Distance to limited access highway
- Public transportation access
- Restaurants/shopping/services
- Business services
- Sensitive areas for trucks

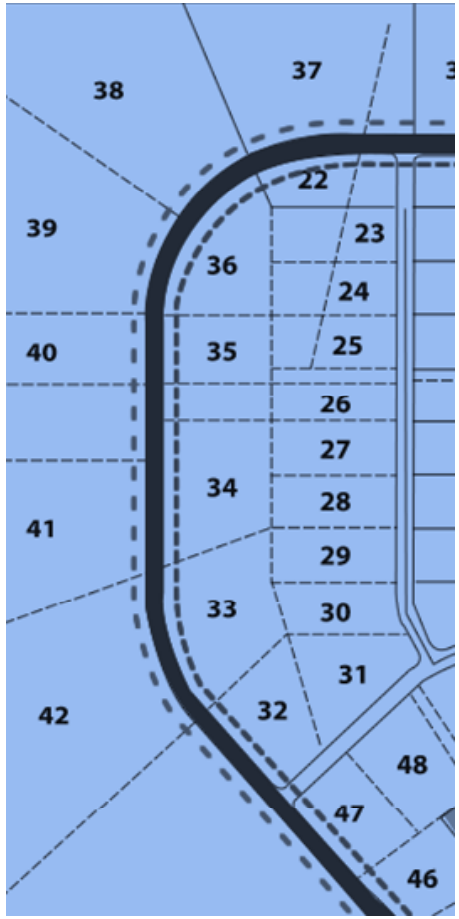
Level 3: **Site Conditions**
- Overall size of site/lot sizes
- Options for future expansion
- Wetlands/flood plains/soil
- Utility capacity, cost, backup
- Zoning/adjacent site use
- Road access and condition
- Rail access (some industrial)
- Level of site readiness



Level 4: **Facility Situation**
- Size/age/condition of structure
- Layout/types of space/flexibility
- Cost and buy vs. lease options
- Level of Readiness

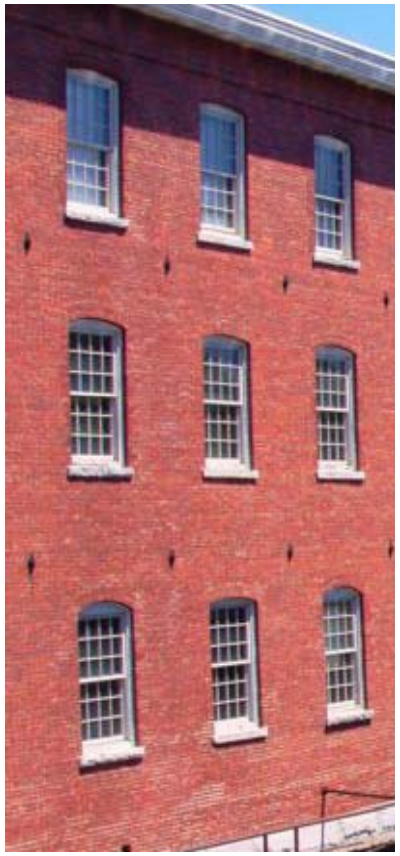
Levels of Site Readiness for Suburban Sites

Description of Readiness Levels	Time to Move-In
1. Completed building ready for painting and carpeting	3 to 4 months
2. Building shell in place or existing building needing modest renovation	6 to 9 months
3. Developed site with virtual permitted building	12 to15 months
4. Developed site ready for building construction • Lots defined and graded • Roads and utilities in place with service to lots • Some permits secured and covenants defined	18 months
5. Undeveloped site (“Shovel Ready”) • Ownership/title cleared and ready for sale • Proper zoning in place • Surveys/studies completed • Permitting agencies poised for approvals • Infrastructure within reasonable access • Compatible adjacent land use • Conceptual site plan and covenants	18 to 24 months
6. Zoned land in hands of original owner	> 24 months



Levels of Site Readiness for Urban Sites

Description of Readiness Levels	Time to Move-In
1. Completed building ready for painting and carpeting	3 to 4 months
2. Refine office and support areas and install walls and major partitions (complete utility installation)	9 to15 months
3. Upgrade/development of building • Rough out floor plans by functional use • Remove any hazardous materials • Upgrade/replace all utilities/services • Address structural and facade issues	18 to 24 months
4. Development-ready building • Ownership/title cleared and ready for sale • Proper zoning in place for office/R&D • Assessment of building to meet code and provide adequate parking • Permitting agencies poised for approvals • Infrastructure within reasonable access • Compatible adjacent land use	24 to 30 months
5. Older building or old mill complex needing substantial upgrade	> 30 months



Office Space Requirements

Industry/Segment	Office Space Requirements (Number of Employees)
Renewable/Alt. Energy	Office staff (5 - 20) that may grow over time
Aero/Defense/Security	Range: satellite support office (50-150) up to major operation (1,000+)
Financial Services	Range: small back office (50-250) up to major operation (500+)
Prof/Tech/Creative/IT Serv.	Range: small office (5-25) up to major firm (150+)
Mgmt. of Companies/HQ	Range: small HQ office (25-50) up to major HQ (250+)

Office Space Requirements by Number of Employees

Employees	225 SF Per Person	250 SF Per Person	300 SF Per Person
25	6,250	6,250	7,500
50	11,250	12,500	15,000
100	22,500	25,000	30,000
150	33,750	37,500	45,000
250	56,250	62,500	75,000
500	112,500	125,000	150,000
1,000	225,000	250,000	300,000

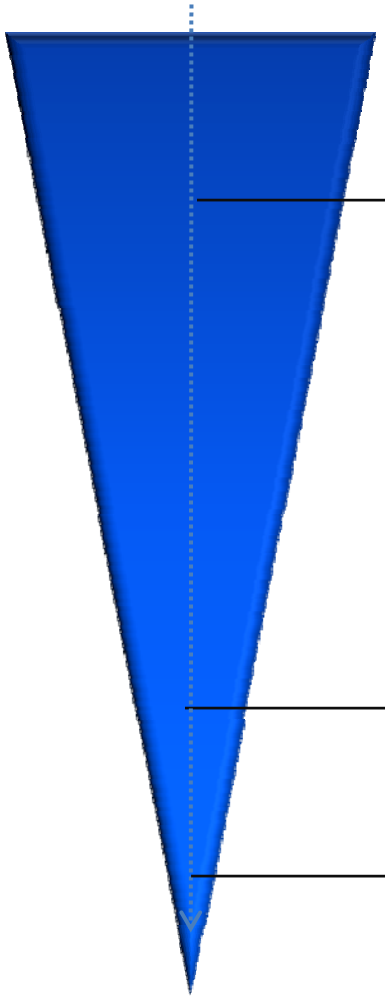
- 225 SF/person is typical for a back office while 300 SF/person is for headquarters or smaller operations.
- Actual space requirements may be expanded if there are large training and conference room or cafeteria requirements.

Real Estate/Facility Requirements by Target Industry

Industry/Segment	General Office Space	R&D/Lab With Office	Distribution/ Warehousing	Manufacturing With Office	Other Specialized Space	Home Office
■ • Biotech/Pharmaceuticals		■		Pharma Grade		
■ • Medical Equipment		■		Pharma Grade		
■ • Marine Science		■		■		
■ • Computers/Electronics		■		Clean Rooms		
■ • Food Processing				Food Grade		
■ • Fabricated Metals				■		
■ • Plastics (Resin/Parts/Products)				■		
■ • Renewable/Alternative Energy	Class A/B	■		■		
■ • Aerospace/Defense/Security	Class A/B			■		
• Institutional Healthcare Services					■	
• Institutional Education Services					■	
■ • University R&D		■				
■ • Financial Services	Class A/B					
■ • Prof/Tech/Creative/IT Services	Class A/B					■
• Transportation/Distribution			■			
• Hospitality/Rec./Culture/Tourism					■	
• Mgmt. of Companies/HQ	Class A					

■ State Target Industry

Location Selection Decision Process by Prospective Companies



1. Screen "A"
> Geographic preference
> Metro area size preference

2. Screen "B" . . . Value Proposition
> Logistic positioning (time of travel)
> Air access (cost and flights)
> Industry presence
> Workforce (quantity/quality of skills)
> Education and training resources
> Overall costs (real estate, labor, taxes, insurance, energy, etc.)
> Ability to recruit staff to an area (quality of life/cost of housing)

3. On-Site Tour and Incentive Analysis
> Availability of real estate
> Costs and incentives analysis

4. Final Decision

Next Steps

Phase I Activities

- Complete format assessment with SWOT analysis
- Develop external marketing materials (state and region level)

Phase II Activities

- On-site review of priority sites
- Collect further details on sites
- Complete site-level assessment
- Submit assessment to region

Phase III Activities

- Marketing of sites