



## REGIONAL RESOURCE ASSESSMENTS

# Western Region

Massachusetts Alliance for Economic Development

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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

### Define Resources:

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

Aligning Industry Needs  
With Community Resources

## 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					■		■		

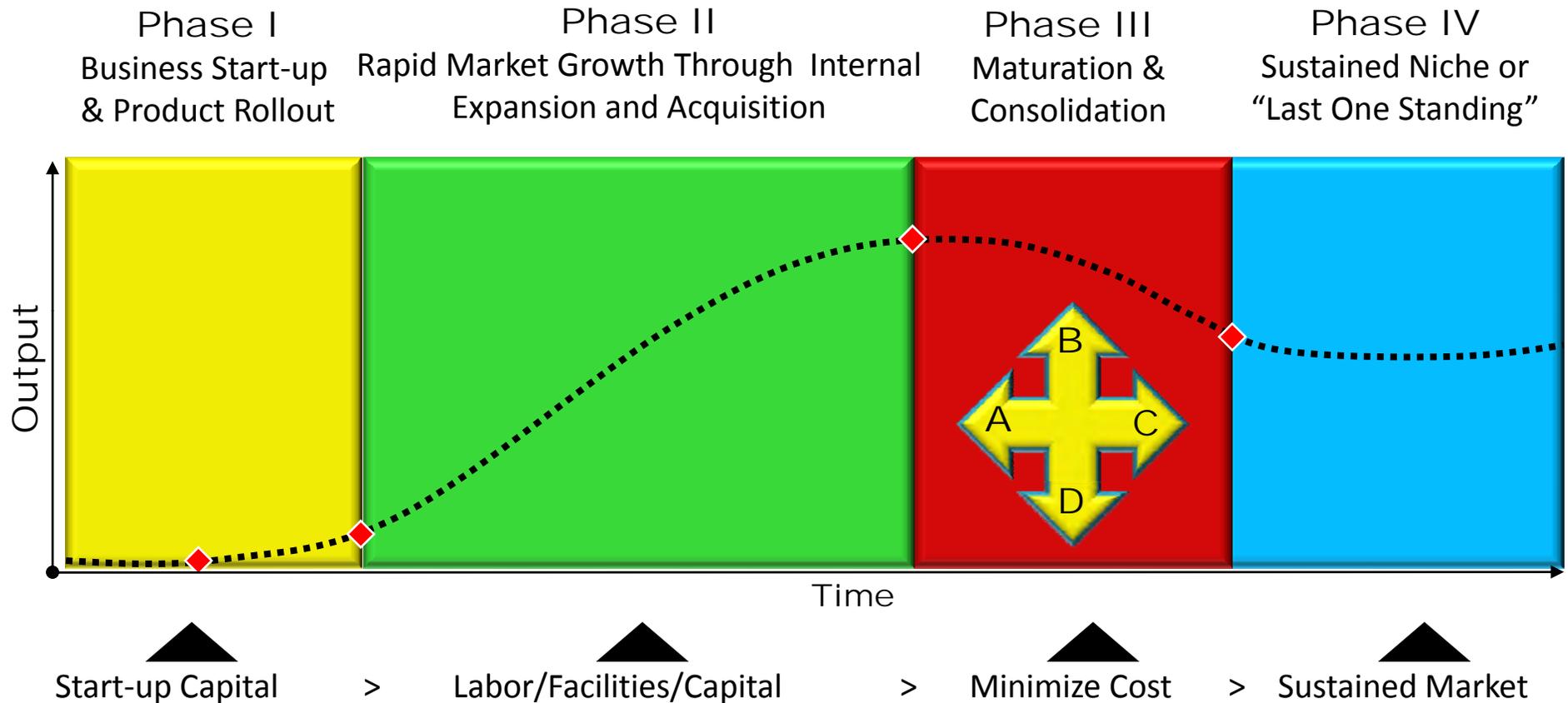
■ State Target Industry

\*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
• <i>Medical Instruments</i>	12,000	0	900	20	1,100	3,100	1,100	2,700	2,900	0
• <i>Pharmaceuticals</i>	15,700	800	4,000	3,500	1,800	800	1,600	900	1,800	100
• <i>Computers/Electronics</i>	71,200	30	1,800	1,800	4,500	30,600	14,800	13,300	4,000	600
• <i>Food Processing</i>	22,900	200	2,200	800	700	2,800	2,500	8,600	4,800	400
• <i>Fabricated Metal</i>	35,200	500	6,300	1,400	4,700	4,500	3,400	6,100	4,700	200
• <i>Plastics</i>	15,700	800	4,000	3,500	1,800	800	1,600	900	1,800	100
• <i>Textiles</i>	6,400	200	400	200	700	900	400	300	2,600	10
• <i>Paper</i>	12,300	1,500	3,600	1,800	1,000	1,300	1,000	2,000	1,200	0
• <i>Furniture</i>	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



### 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



## 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

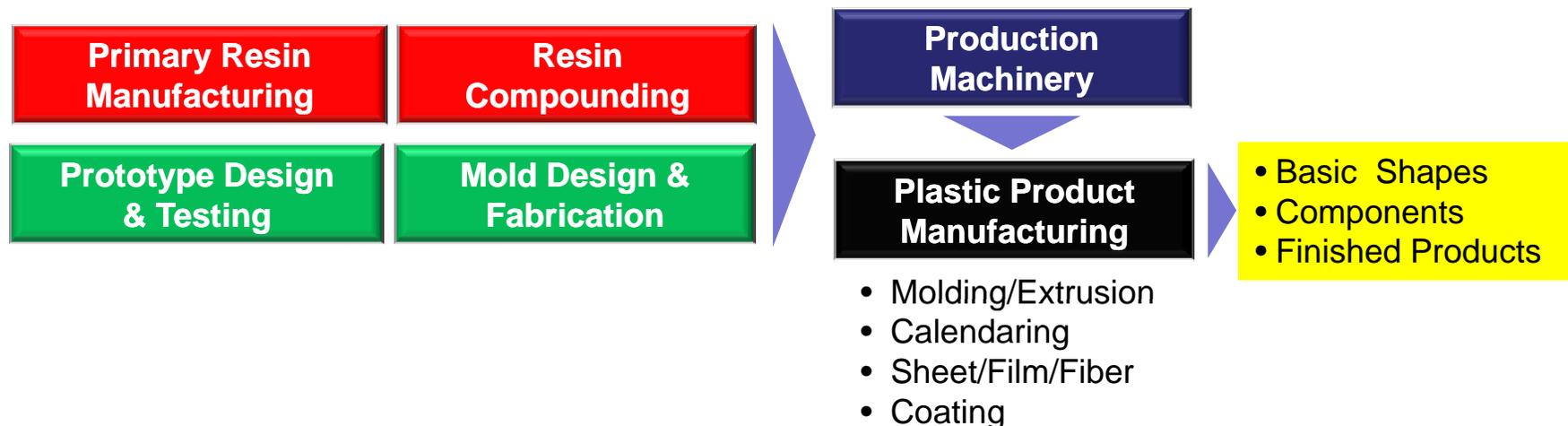
Industry/Segment	Headquarters	Back Office Shared Serv.	R&D	Manufacturing	Distribution
• Biotech/Pharmaceuticals		■	■	■	
• Medical Equipment	■	■	■	■	
• Marine Science	■	■	■	■	
• Computers/Electronics	■	■	■	■	
• Food Processing				■	
• Fabricated Metals				■	
• Plastics (Resin/Parts/Products)			■	■	
• 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: Plastics Industry (NAICS 3261)



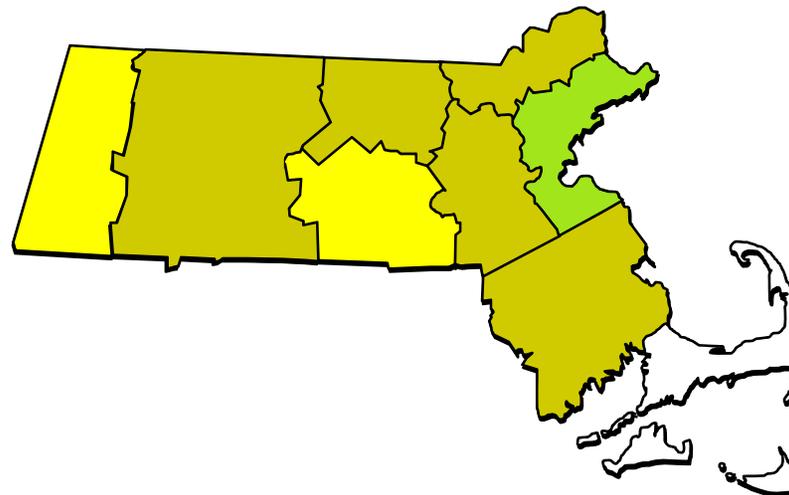
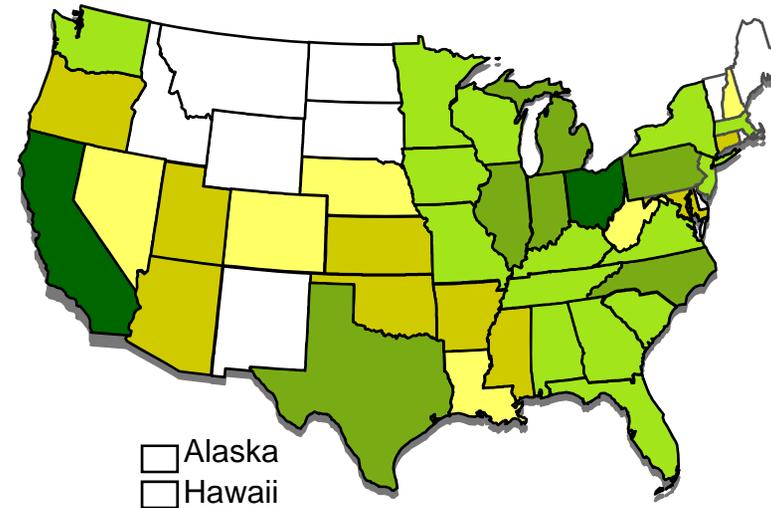
### Industry Profile and Trends

- Global market highly fragmented, relatively low barriers to entry
- If it's light, low margin, long runs, small size . . . it's gone.
- Although employment has dropped substantially since 2000, the value of shipments has increased by 42% to \$81.4 billion
- From 2005 to 2006, exports increased 12.3% and the trade surplus grew to \$6.8 billion. Trade deficit significant with China (\$4.7 billion)
- Product innovations: biodegradable plastics, nanocomposites to produce tougher, more heat/dent resistant, electrically conductive
- Process productivity is a relentless mission of plastics companies



## Target Industry Overview: Plastics Products (NAICS 3261)

Plastics Products (3261)			
State	2006	2000	Change
USA	715,867	876,848	-18.4%
CA	67,505	90,051	-25.0%
OH	58,030	72,796	-20.3%
MI	49,137	60,617	-18.9%
IL	45,753	61,994	-26.2%
TX	42,369	51,327	-17.5%
PA	39,642	45,840	-13.5%
IN	35,752	43,000	-16.9%
NC	28,855	30,217	-4.5%
NY	23,923	35,052	-31.7%
WI	23,732	30,559	-22.3%
GA	22,671	22,788	-0.5%
NJ	21,988	31,626	-30.5%
TN	19,070	22,494	-15.2%
VA	17,674	17,746	-0.4%
KY	16,242	18,128	-10.4%
MA	15,127	20,682	-26.9%
MN	14,888	19,070	-21.9%
SC	14,482	15,122	-4.2%
FL	14,386	19,642	-26.8%
MO	13,789	17,695	-22.1%



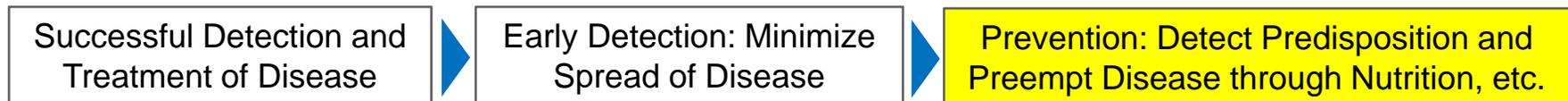
## Target Industry Overview: Biotechnology/Life Sciences

### 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



### Key Steps in Product Development

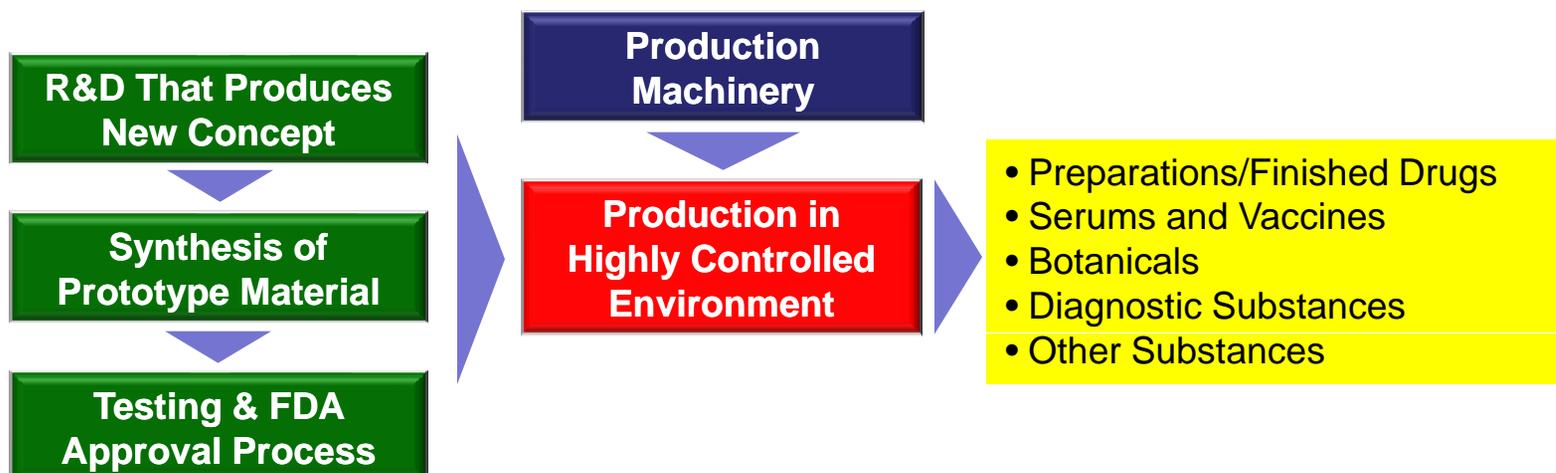


## Target Industry Overview: Pharmaceuticals/Medicines (NAICS 3254)



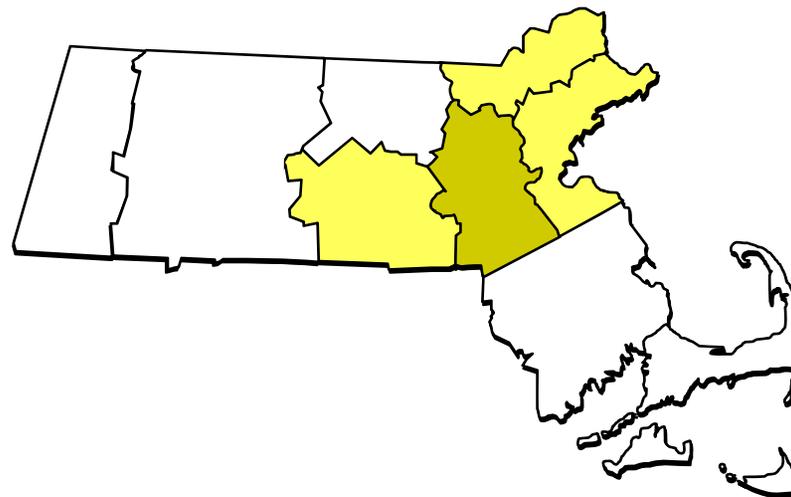
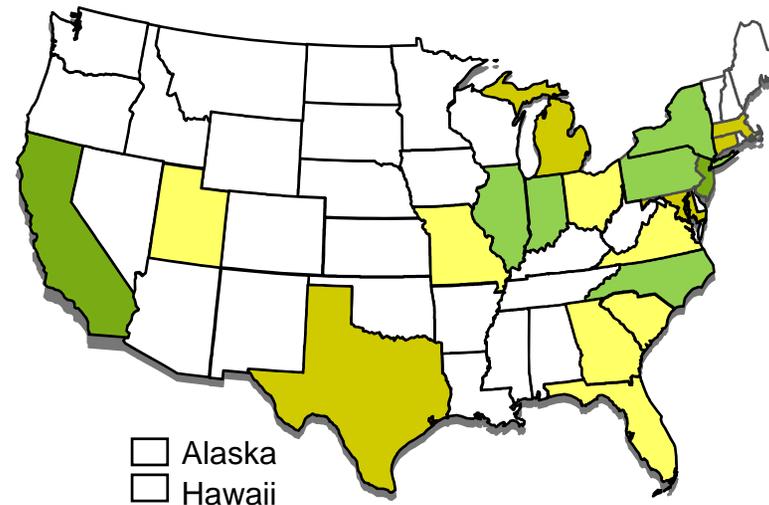
### Industry Profile and Trends

- 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%

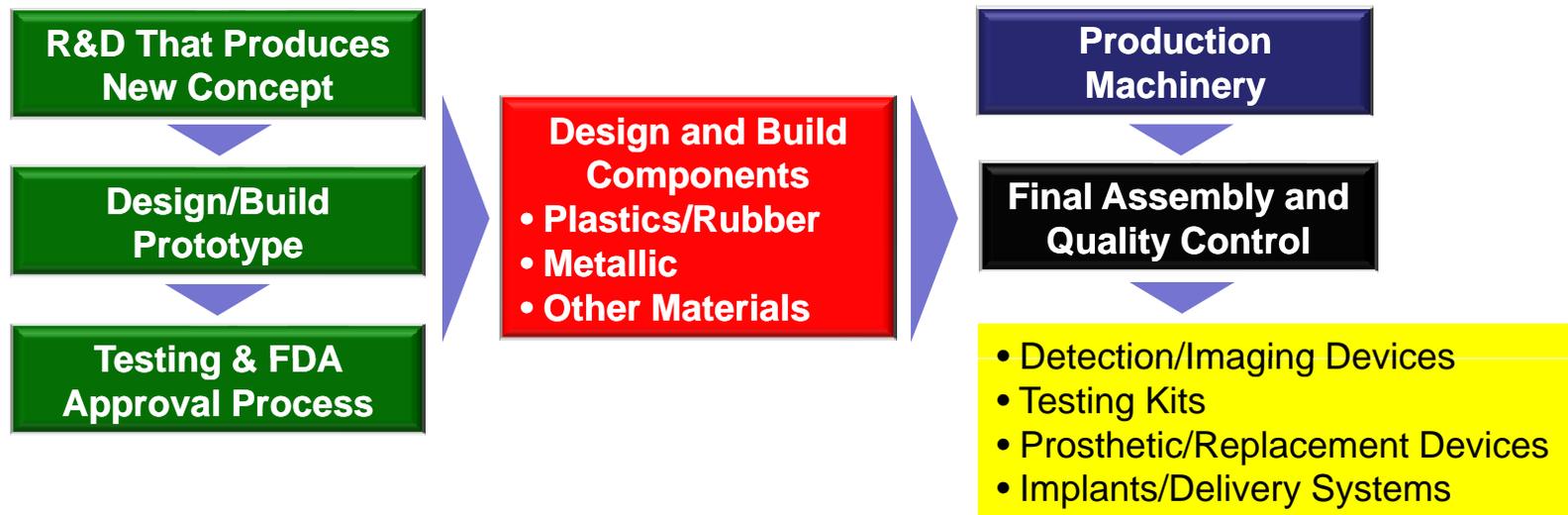


## Target Industry Overview: Medical Equipment and Supplies (NAICS 3391)



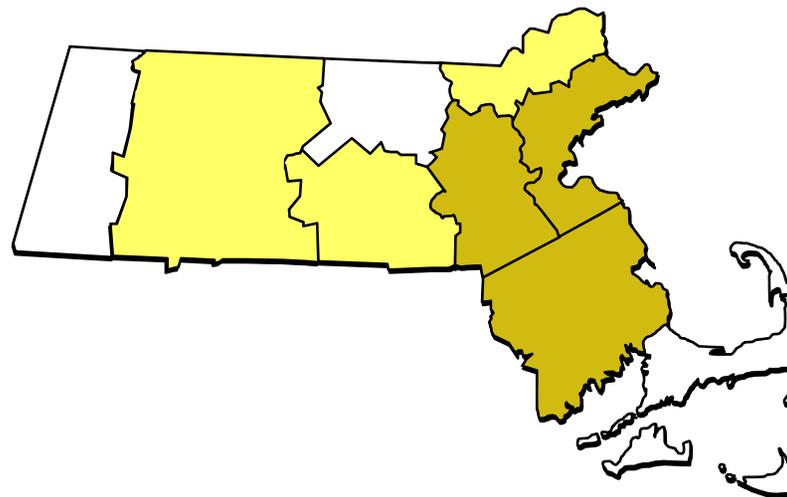
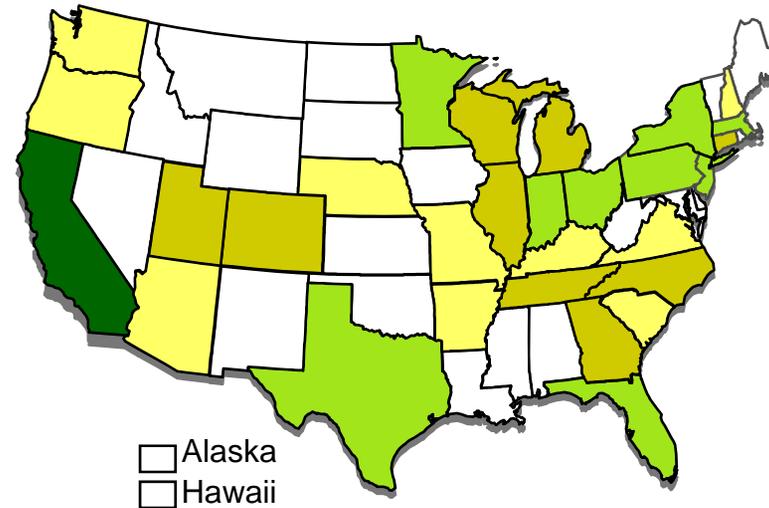
### Industry Profile and Trends

- 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

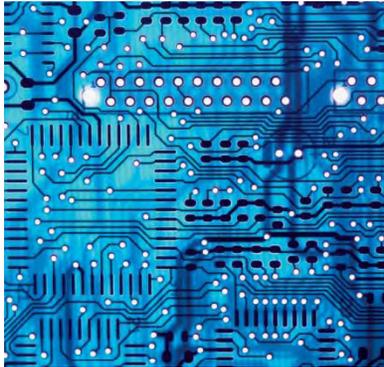


## Target Industry Overview: Medical Instruments and Supplies (NAICS 3391)

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)



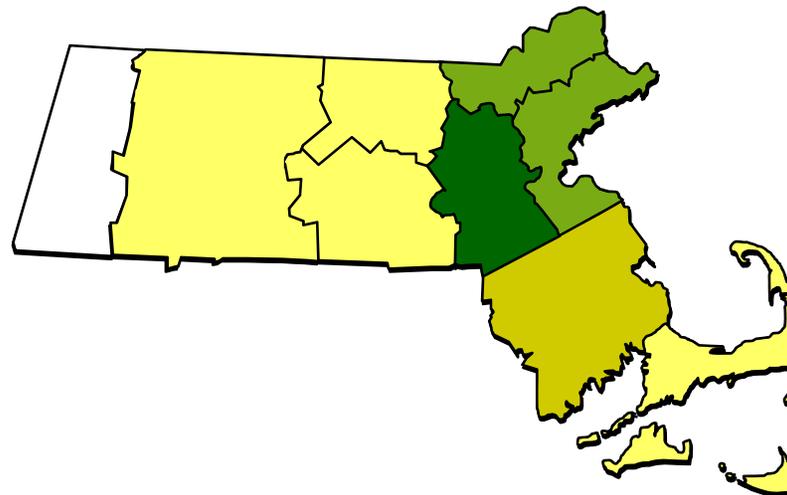
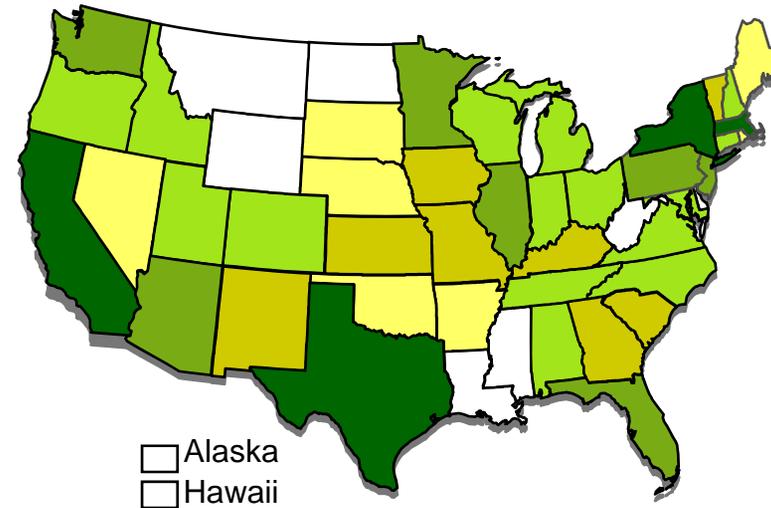
### Industry Trends

- 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



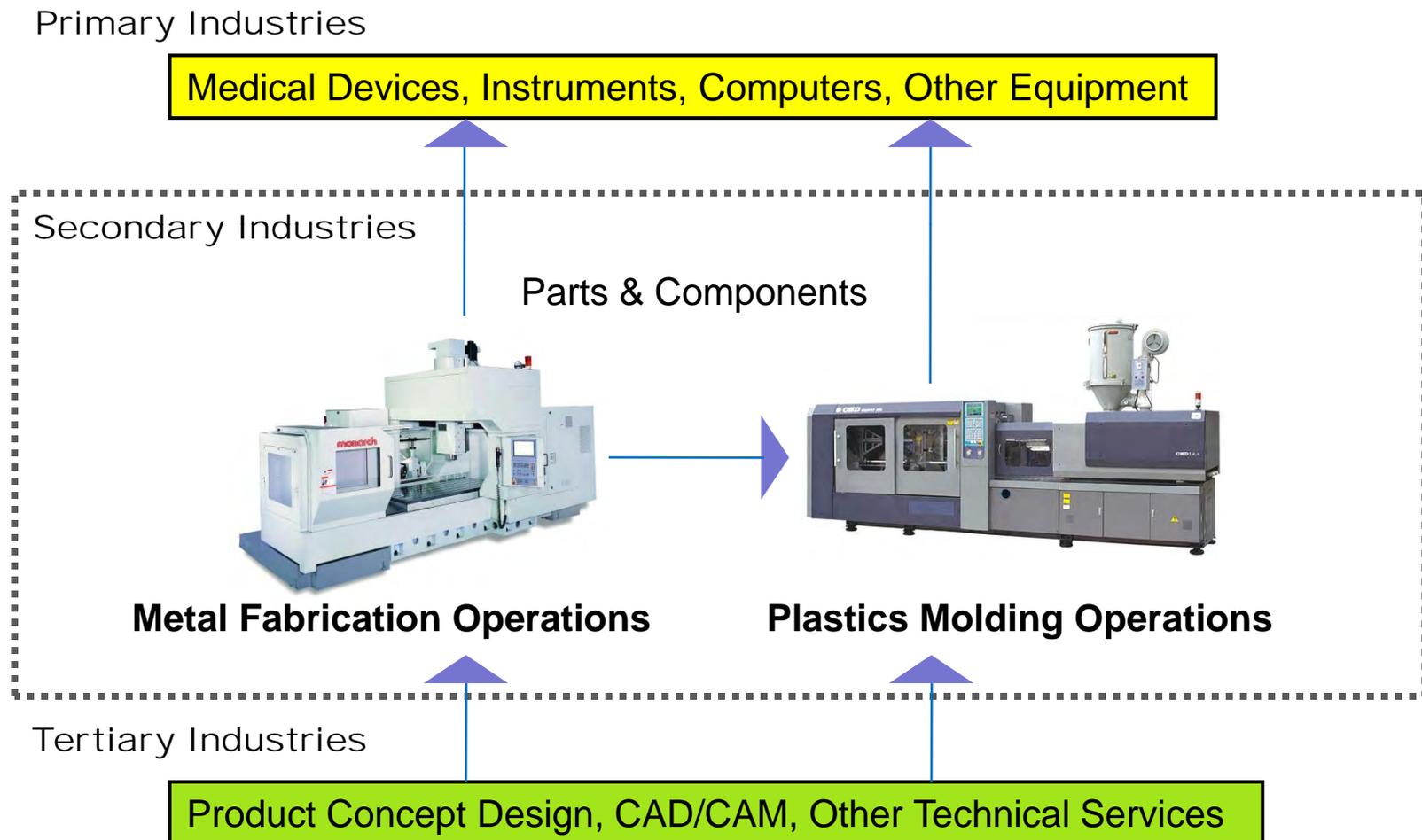
## Target Industry Overview: Computer/Electronic Products (NAICS 334)

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%



## Strategic Components of a Long-Term Cluster Formation

As the primary industries cycle out, the secondary and tertiary industries adapt to the evolving needs of the current “hot” industry.



## Financial Services Industry: Major Segments

Loans/credit for growth as well as transaction of funds

### Credit Intermediation

- Commercial banks
- Savings and loan institutions
- Credit card operations
- Central banks (Federal Reserve)

Growth through defined risk

### Securities/Other Financial Investments

- Trading securities & commodities (Brokers and exchanges)
- Investment banking
- Investment advice
- Portfolio management
- Trust, fiduciary and custody services
- Other related services

Hedge against future risk

### Insurance

#### Business, Institutional & Government Insurance

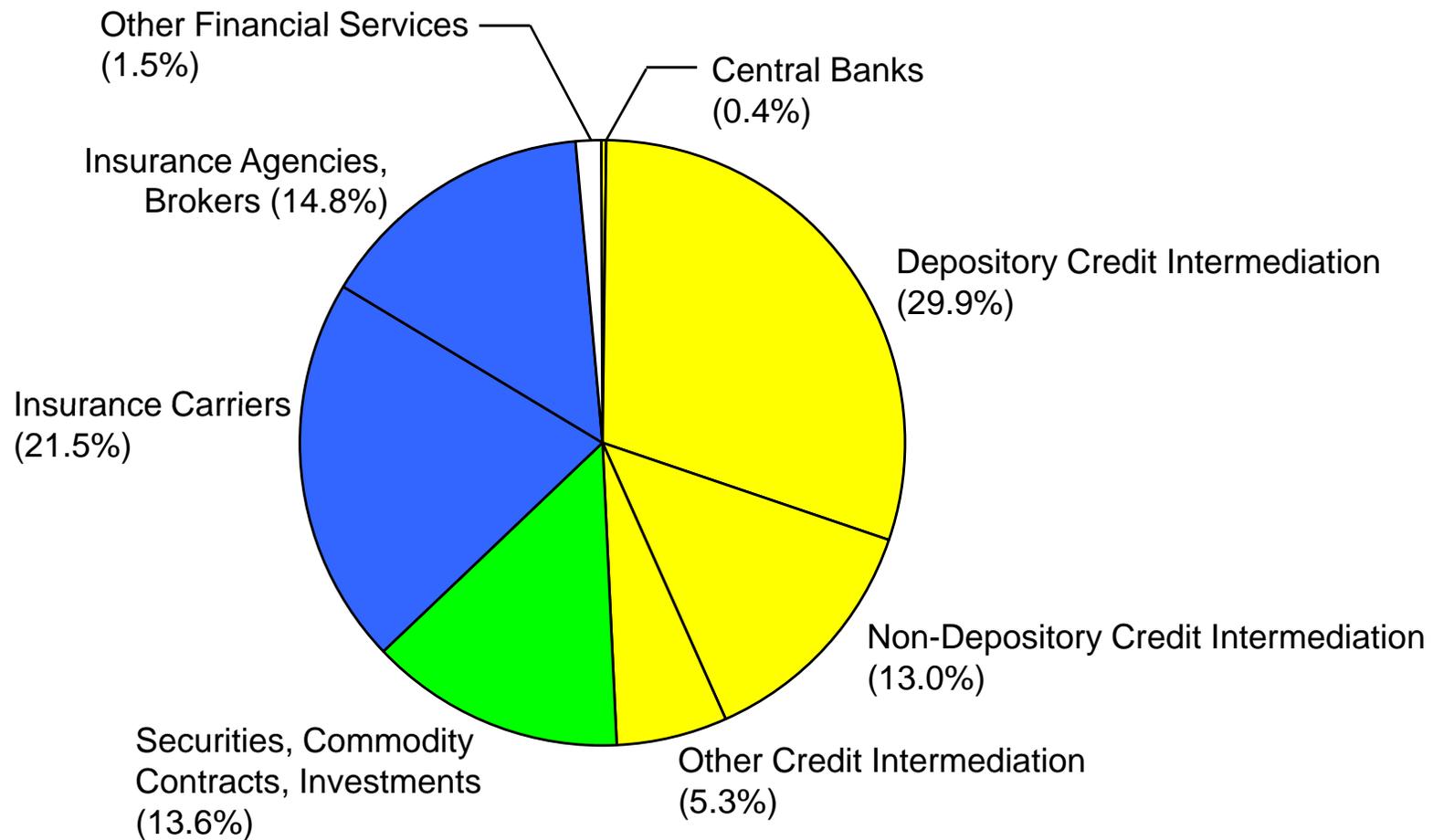
- Property & Casualty
- General business liability
- Product liability
- Professional liability
- Workers Compensation
- Employee health and disability benefits

#### Individual Insurance

- Property & Casualty
- Health
- Disability
- Long-term care
- Life

## Financial Services Industry: Major Segment Employment

Financial Services Industry Represents Over 6 Million Jobs Nationally



## Financial Services Industry: Major Segments

Segment	NAICS Code	2006 Employment	Average Growth (2001 - 2006)
Total Financial Services	52	6,012,700	7.1%
49.1%	Central Banks	21,200	7.8%
	Depository Credit Intermediation (Banks)	1,800,000	5.9%
	Non-Depository Credit Intermediation (Cards)	780,000	18.2%
	Other Credit Intermediation*	350,000	52.2%
13.6%	Securities, Commodity Contracts, Investments	820,000	-1.2%
35.8%	Insurance Carriers	1,260,000	-3.0%
	Insurance Agencies and Brokers	890,000	11.3%
1.5%	Other Financial Services**	91,500	5.2%

**Notes:**

\*Other Credit Intermediation (NAICS 5223) includes non-bank mortgage lenders

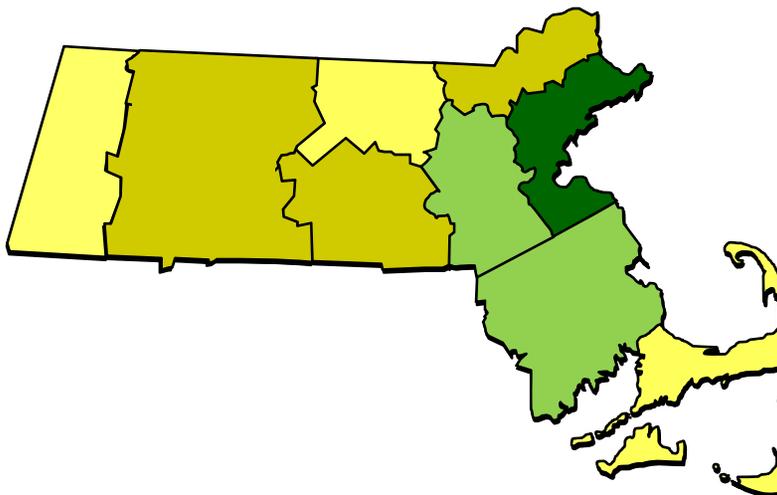
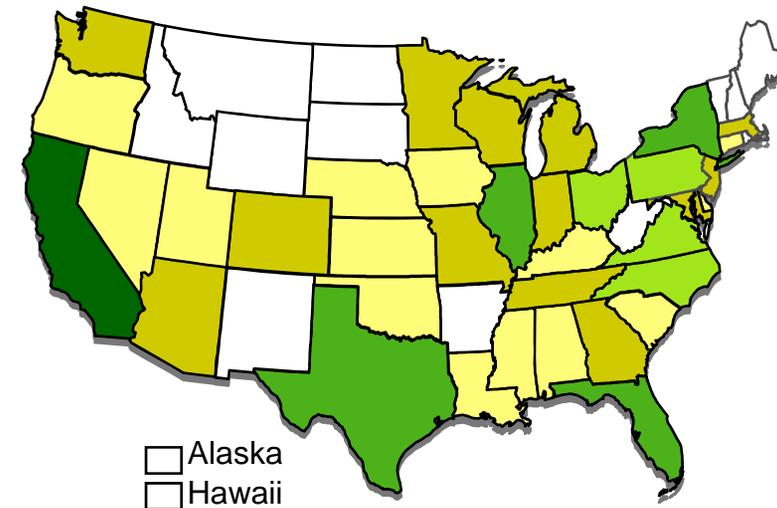
\*\*Other Financial Services (NAICS 525) includes insurance and employee benefit funds, pension funds, health and welfare funds and other insurance funds

**Projected 10-Year Growth for Selected Segments:**

- Depository Credit Intermediation (Banks): -1.8%
- Securities, Commodity Contracts, Investments: 15.8%
- Insurance (driven primarily by brokers): 9.5%

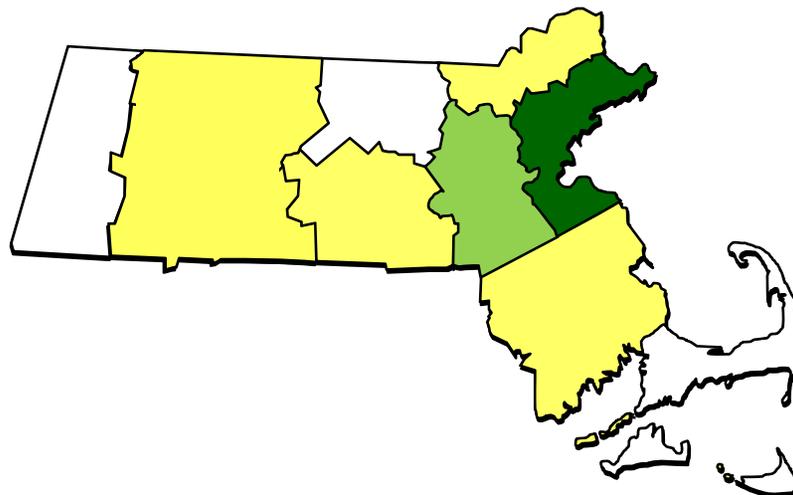
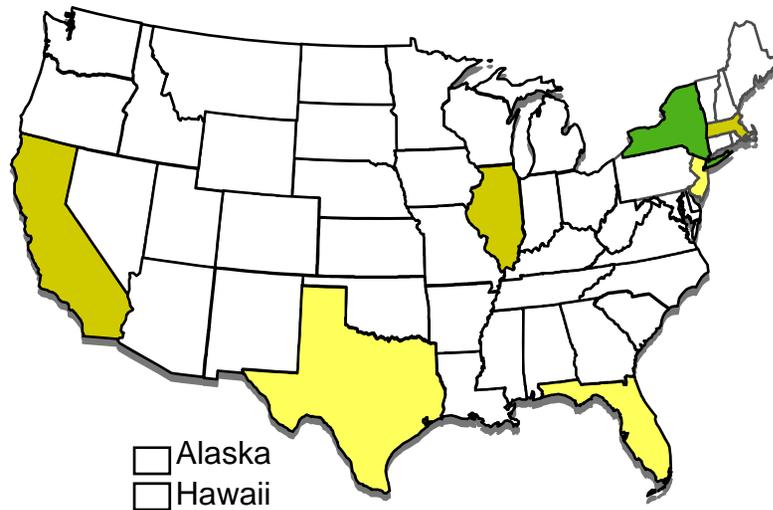
## Financial Services Industry: Credit Intermediation (NAICS 522)

Credit Intermediation (522)			
State	2000	2005	% Change
USA	2,290,299	3,201,700	40%
CA	295,053	364,109	23%
TX	190,652	241,320	27%
NY	209,048	224,571	7%
FL	154,053	195,762	27%
IL	149,052	157,932	6%
OH	123,861	140,405	13%
PA	105,830	117,947	11%
NC	81,574	115,559	42%
VA	76,254	96,964	27%
GA	79,856	94,196	18%
MI	85,070	87,598	3%
NJ	71,886	82,929	15%
MA	70,130	78,258	12%
AZ	67,109	71,842	7%
MI	53,063	70,676	33%



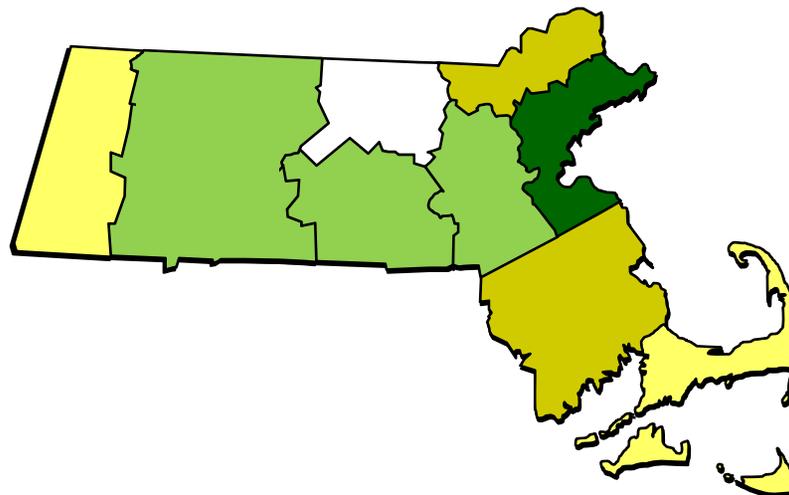
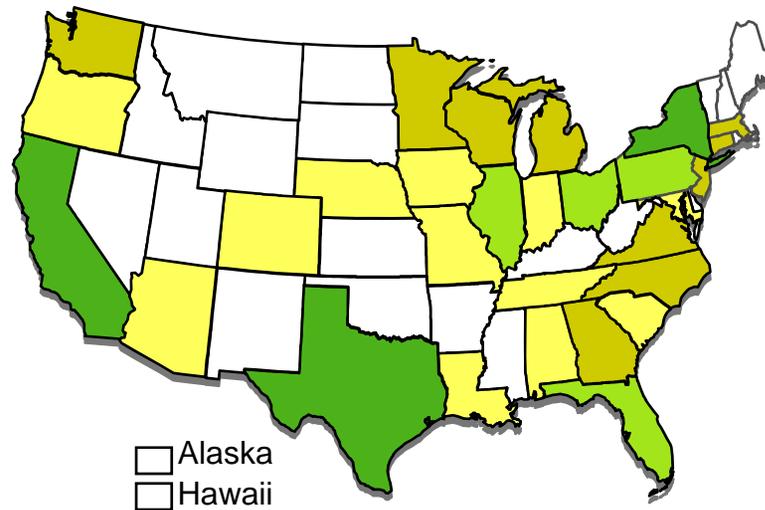
## Financial Services Industry: Securities (NAICS 523)

Securities and Related Products (523)			
State	2000	2005	% Change
USA	866,200	860,400	-1%
NY	211,670	185,442	-12%
CA	89,331	93,872	5%
MA	69,347	62,159	-10%
IL	51,866	55,187	6%
PA	36,155	51,230	42%
NJ	53,359	48,946	-8%
TX	42,644	42,001	-2%
FL	40,212	37,341	-7%
CT	15,565	20,396	31%



## Financial Services Industry: Insurance (NAICS 524)

Insurance (524)			
State	2000	2005	% Change
USA	2,753,200	2,323,000	-16%
CA	229,479	240,295	5%
NY	166,059	165,944	0%
TX	146,950	152,738	4%
FL	116,861	136,356	17%
IL	139,675	126,323	-10%
PA	134,903	124,282	-8%
OH	103,274	103,063	0%
NJ	82,840	81,274	-2%
CT	81,011	74,256	-8%
WI	69,741	70,690	1%
GA	66,467	66,031	-1%
MA	74,959	64,409	-14%
MI	65,346	64,253	-2%
MN	58,373	59,255	2%
VA	46,871	51,416	10%



## Financial Services Industry: Regulatory Impacts and Trends



### **Major regulatory changes that have had profound impact on the industry:**

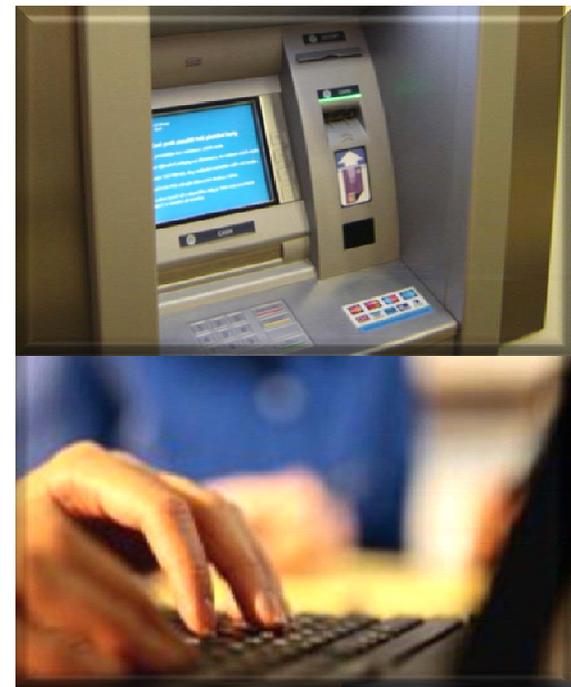
- The Depository Institutions Deregulation and Monetary Control Act (1980) and the Depository Institutions Act (1982) allowed savings and loan associations to engage in commercial loans, real estate investments, and receive checking account deposits. This contributed to a rash of bank failures – over 500 – from 1980 to 1988.
- The Interstate Banking and Branching Act (1994) mandated states to allow banks to engage in interstate banking and establish branches in multiple states by 1997. This caused an explosive growth in local branches (bricks & mortar) and the acquisition frenzy of the past 10 years.
- In 1999, Congress overhauled the entire U.S. financial system by repealing the Glass-Steagall Act and allowing banks to enter the insurance and securities segments.

## Financial Services Industry: Regulatory Impacts and Trends

- Sarbanes-Oxley Act of 2002 was passed to protect investors from fraudulent corporate accounting and build accountability and transparency.
- Sub-prime mortgage issues surface in 2006, become more intense in 2007, and threaten the strength of the industry in 2008.

### **Use of Technology Within the industry:**

- Use of ATM's to extend access/reduce labor costs
- Internet access for:
  - > Banking transactions
  - > Loan application, comparison and purchase
  - > Information on and purchase of securities
  - > Comparison and purchase of insurance
- Building uniformity (less customization) into internal software platforms . . . focus on software engineering vs. programming
- Seeking substantial productivity gains . . . reducing need for clerical, credit check and related jobs
- Using offshore software labor to cut costs



## Financial Services Overview: Labor Situation

Job Classification/Title	Long Term Potential	Banking		Insurance		Securities	
		% of Total	10-Yr % Growth	% of Total	10-Yr % Growth	% of Total	10-Yr % Growth
<b>Finance/Accounting</b>							
• Financial managers	High	4.4	0.3	0.9	13.5	3.6	17.4
• Accountants and auditors	High	1.4	0.3	1.8	14.0	2.5	23.4
<b>Customer Interface</b>							
• Marketing & sales mgrs.	High	-	-	1.0	22.0	1.2	24.6
• Sales Supervisors	High	-	-	0.9	9.9	0.9	11.7
• Sales agents	High	2.2	10.3	12.5	8.6	20.9	9.4
• Personal financial advisors	High	0.9	6.8	0.4	29.3	7.3	30.2
• Customer service reps.	High	6.9	12.9	11.2	20.0	4.7	24.0
• Tellers	Moderate/High	27.9	3.7	-	-	-	-
• Loan officers	Moderate/Low	5.9	-5.7	-	-	-	-

### Impacted Jobs

- Loan Officers: Internet marketing and standardization/automation of credit ratings

## Financial Services Overview: Labor Situation

Job Classification/Title	Long Term Potential	Banking		Insurance		Securities	
		% of Total	10-Yr % Growth	% of Total	10-Yr % Growth	% of Total	10-Yr % Growth
<b>Computer/Systems Support</b>							
• Computer/IT managers	High	-	-	0.7	17.4	0.9	27.5
• Computer programmers	Low	-	-	1.0	-8.3	0.9	-1.1
• Comp. software engineers	High	-	-	1.0	32.1	1.9	45.1
• Computer systems analysts	High	0.7	9.6	1.8	20.9	1.0	34.1
• Computer support spec.	Moderate	0.6	-0.3	-	-	0.9	22.0
<b>Industry-Specific Specialists</b>							
• Actuaries	Moderate/High	-	-	0.5	10.9	-	-
• Insurance Underwriters	Moderate/High	-	-	3.8	6.0	-	-
• Lawyers	Moderate/High	-	-	0.5	11.6	-	-
• Nurses	Moderate/High	-	-	0.9	11.3	-	-
• Title Examiners	Low	-	-	1.0	-4.3	-	-
• Financial analysts	High	1.1	19.5	0.7	12.6	5.1	19.0
• Credit Analysts	Low	0.8	-10.3	-	-	-	-

### Impacted Jobs

- Computer Programmers: shifting to packaged vs. custom software platforms to support uniformity
- Credit Analysts: standardization/automation of credit ratings

## Financial Services Overview: Labor Situation

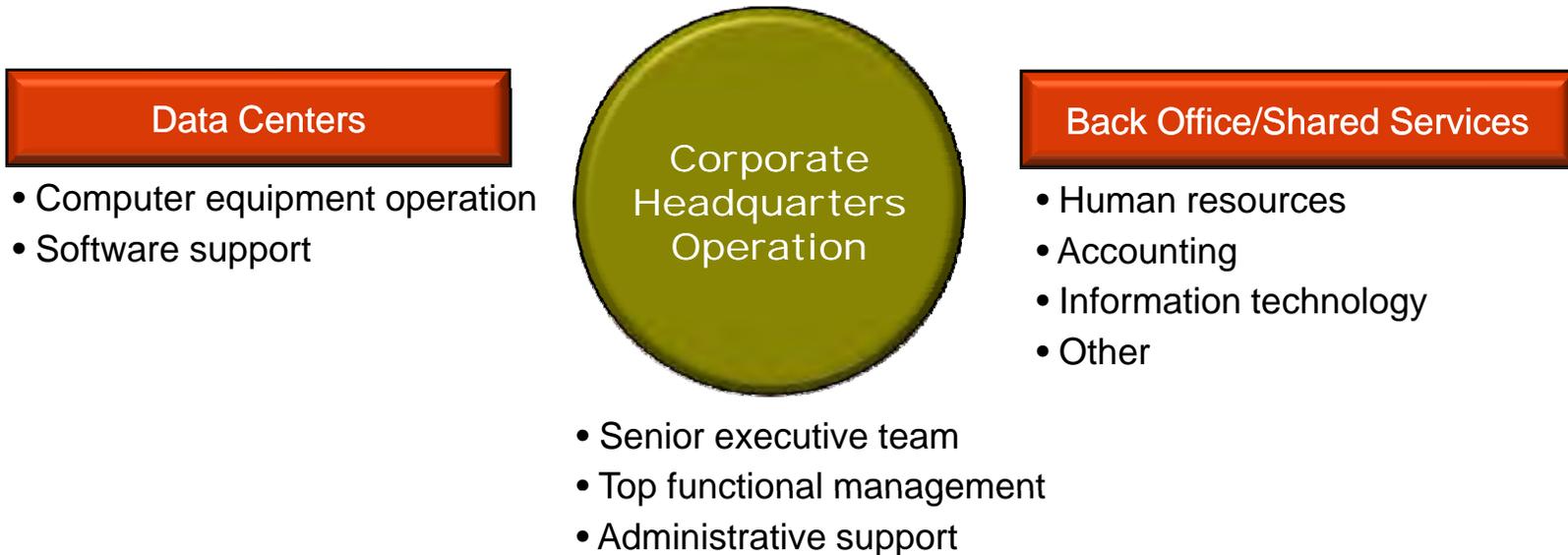
Job Classification/Title	Long Term Potential	Banking		Insurance		Securities	
		% of Total	10-Yr % Growth	% of Total	10-Yr % Growth	% of Total	10-Yr % Growth
<b>Administrative Support</b>							
• Front-line Super/Mgr.	Moderate/Low	6.0	-9.0	3.0	4.4	2.5	10.7
• Accounting clerks	Low	3.2	-10.3	2.1	6.7	2.1	6.5
• Office Clerks	Low	2.4	-11.3	-	-	5.1	8.5
• Brokerage clerks	Low	0.4	-9.4	-	-	7.6	9.4
• Secretaries/admin assist.	Moderate	-	-	5.6	4.0	8.0	8.3
• Data Entry Clerks	Low	0.4	-23.0	1.4	-13.8	-	-
• Receptionists/info. clerks	Moderate	-	-	-	-	0.9	16.9

### Impacted Jobs

- Clerical positions: process automation and direct data entry

## Financial Services Overview: Types of Operations

### Headquarters and Support Operations



### Sales and Customer Service Operations



# Western Region

## Target Industries vs. Life Stages and Types of Operations

Industry	Life Stage(s)	Types of Operations
Biotech/Pharmaceuticals	<ul style="list-style-type: none"> <li>• Start-up and small emerging firms</li> <li>• Well established firms relocating to area</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D</li> <li>• Manufacturing</li> </ul>
Medical Equipment	<ul style="list-style-type: none"> <li>• Start-up of new firms</li> <li>• Expansion of existing firms</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D</li> <li>• Manufacturing</li> </ul>
Computers/Electronics	<ul style="list-style-type: none"> <li>• Start-up of new firms</li> <li>• Expansion of existing firms</li> <li>• Well established firms relocating to area</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturing</li> </ul>
Fabricated Metals	<ul style="list-style-type: none"> <li>• Start-up of new firms</li> <li>• Expansion of existing firms</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturing</li> </ul>
Plastics	<ul style="list-style-type: none"> <li>• Start-up of new firms</li> <li>• Expansion of existing firms</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturing</li> </ul>
Renewable Energy	<ul style="list-style-type: none"> <li>• Start-up and small emerging firms</li> <li>• Well established firms relocating to area</li> </ul>	<ul style="list-style-type: none"> <li>• Small offices with combined business and "technical" functions</li> </ul>
Financial Services	<ul style="list-style-type: none"> <li>• Well established firms relocating to area</li> </ul>	<ul style="list-style-type: none"> <li>• Back office</li> </ul>
Creative/Professional/ Technical Businesses	<ul style="list-style-type: none"> <li>• Start-up and small emerging firms</li> <li>• Well established firms relocating to area</li> </ul>	<ul style="list-style-type: none"> <li>• Small offices with combined business and "technical" functions</li> </ul>

## Resource Assessment by Type of Operation

Type of Operation/Resources	Resource Assessment
Manufacturing	
Labor	<ul style="list-style-type: none"> <li>• Six-year population growth is low (1.08%).</li> <li>• In general, there is a good supply of manufacturing labor derived from a diverse industrial base.</li> <li>• Recruiting highly specialized and younger talent into the area can be an issue.</li> </ul>
Real Estate/Facilities	<ul style="list-style-type: none"> <li>• Significant options for primarily larger operations.</li> <li>• Limited supply of modern industrial facilities and developable sites with infrastructure.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Varied electric power costs . . . major factor for manufacturers.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Excellent interstate access to I-90 and I-91 with arterial routing in the Springfield area.</li> <li>• Rail access available.</li> </ul>
Technical Support From Universities	<ul style="list-style-type: none"> <li>• Research support at UMass-Amherst (Plastics) and metal fabrication (WPI).</li> <li>• Significant other research support across the state for other R&amp;D needs.</li> </ul>
Cost of Living/Housing	<ul style="list-style-type: none"> <li>• Overall Cost of Living Index is 88 and for Housing is only 48. (U.S. average = 100). Some new housing product is being built in the region.</li> </ul>
Incentives/Other Financial Resources	<ul style="list-style-type: none"> <li>• Financing available through Western Massachusetts Enterprise Fund.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Regional Technology Corporation – catalyst for the growth and development of the region’s technology-based companies; supports several business networks.</li> </ul>

## Resource Assessment by Type of Operation

Type of Operation/Resources	Resource Assessment
Small offices with combined business and “technical” functions	
Labor	<ul style="list-style-type: none"> <li>• Labor volume and there are a large contingent of colleges and universities from which to recruit.</li> <li>• May be significant challenge recruiting younger workers from major metro areas (NYC and Boston) into the region.</li> </ul>
Real Estate/Facilities	<ul style="list-style-type: none"> <li>• Plenty of vacant office space &lt;10,000 sf available, particularly in downtown Springfield and in selected Franklin County communities.</li> <li>• Some businesses are home-based operations.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Utility rates vary but small offices not significant consumers.</li> <li>• Gaps in the availability broadband Internet access across the region.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Excellent interstate network serving the region.</li> <li>• Air access through Bradley International is 20 miles away.</li> </ul>
University Research	<ul style="list-style-type: none"> <li>• Multiple universities to tap depending on R&amp;D topic.</li> </ul>
Cost of Living/Housing	<ul style="list-style-type: none"> <li>• Overall Cost of Living Index is 88 and for Housing is only 48. (U.S. average = 100). Some new housing product is being built in the region.</li> </ul>
Incentives/Other Financial Resources	<ul style="list-style-type: none"> <li>• Financing available through Western Massachusetts Enterprise Fund.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• HIDDEN TECH – networking organization for small companies with &lt;10 employees, creative types, and consultants based in the Pioneer Valley.</li> </ul>

## Resource Assessment by Type of Operation

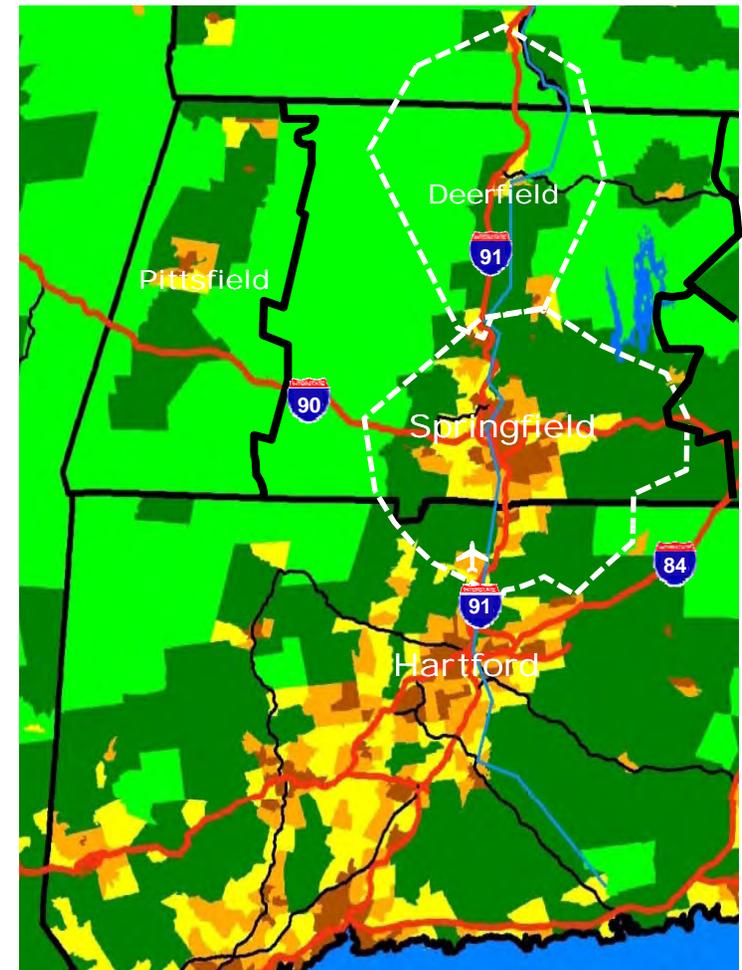
Type of Operation/Resources	Resource Assessment
Back Office Operations	
Labor	<ul style="list-style-type: none"> <li>• Six-year growth rate of 1.08% is low and may be a caution sign for outside firms needing to expand operations.</li> <li>• Substantial college and university resources to draw on in the region.</li> <li>• Unemployment rate is 4.6% which is not too tight.</li> <li>• May be significant challenge recruiting workers from major metro areas (NYC and Boston) into the region.</li> </ul>
Real Estate/Facilities	<ul style="list-style-type: none"> <li>• Plenty of vacant office space, particularly in downtown Springfield.</li> <li>• Most Class A office space located in the Springfield CBD.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Utility rates very but not significant issue for office operations.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Excellent interstate network serving the region.</li> <li>• Air access through Bradley International is 20 miles away.</li> </ul>
University Research	<ul style="list-style-type: none"> <li>• Not a factor for back office operations.</li> </ul>
Cost of Living/Housing	<ul style="list-style-type: none"> <li>• Overall Cost of Living Index is 88 and for Housing is only 48. (U.S. average = 100). Some new housing product is being built in the region.</li> </ul>
Incentives/Other Financial Resources	<ul style="list-style-type: none"> <li>• Financing available through Western Massachusetts Enterprise Fund.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• InternHere.com - web-based system matches employers with prospective interns enrolled in the region's higher education institutions</li> </ul>

## Resource Assessment by Type of Operation

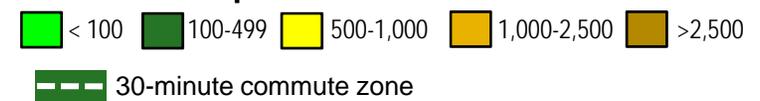
Type of Operation/Resources	Resource Assessment
R&D Operations	
Labor	<ul style="list-style-type: none"> <li>• Some R&amp;D labor can be drawn from both UMass-Amherst and UConn-Storrs.</li> <li>• Adult attainment of 4-year+ college is 22.5% is low. (U.S. average 27.0%).</li> <li>• May be significant challenge recruiting workers from major metro areas (NYC and Boston) into the region.</li> </ul>
Real Estate/Facilities	<ul style="list-style-type: none"> <li>• Incubator space available at the Scibelli Enterprise Center at the STCC Technology Park in Springfield.</li> <li>• R&amp;D space available at the Pioneer Valley Life Sciences Institute in Springfield for small businesses and at Solutia Park in Indian Orchard.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Utility rates vary but not significant issue for R&amp;D labs.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Excellent interstate network serving the region.</li> <li>• Air access through Bradley International is 20 miles away.</li> </ul>
University Research	<ul style="list-style-type: none"> <li>• UMass-Amherst and Worcester (other UMass schools based on R&amp;D area, UConn-Storrs, Tufts Medical School, WPI and Boston area schools can be leveraged).</li> </ul>
Cost of Living/Housing	<ul style="list-style-type: none"> <li>• Overall Cost of Living Index is 88 and for Housing is only 48. (U.S. average = 100). Some new housing product is being built in the region.</li> <li>• There will be a need to reinforce cultural, recreational and educational resources of the region to prospective companies.</li> </ul>
Incentives/Other Financial Resources	<ul style="list-style-type: none"> <li>• Financing available through Western Massachusetts Enterprise Fund.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Regional Technology Corporation – catalyst for the growth and development of the region’s technology-based companies; supports several business networks.</li> </ul>

## Population/Demographics

Population (2006) <ul style="list-style-type: none"> <li>• 30-minute commute zone around Springfield</li> <li>• 30-minute commute zone around Deerfield</li> </ul>	626,500 124,000
<b>Population growth (2000 - 2006)</b> <ul style="list-style-type: none"> <li>• 30-minute commute zone around Springfield</li> <li>• 30-minute commute zone around Deerfield</li> <li>• State average</li> <li>• National average</li> </ul>	1.08% -0.14% 0.67% 6.4%
<b>Adult population with High School diploma only</b> <ul style="list-style-type: none"> <li>• 30-minute commute zone around Springfield</li> <li>• 30-minute commute zone around Deerfield</li> <li>• State average</li> <li>• National average</li> </ul>	32.1% 26.4% 28.2% 30.2%
<b>Adult population with four-year+ college</b> <ul style="list-style-type: none"> <li>• 30-minute commute zone around Springfield</li> <li>• 30-minute commute zone around Deerfield</li> <li>• State average</li> <li>• National average</li> </ul>	22.5% 46.3% 37.0% 27.0%
<b>Percent of Population in 25 - 34 cohort</b> <ul style="list-style-type: none"> <li>• 30-minute commute zone around Springfield</li> <li>• 30-minute commute zone around Deerfield</li> <li>• State average</li> <li>• National average</li> </ul>	12.8% 13.8% 12.7% 13.3%



**Population Concentration**



## Population/Demographics

<b>Median Age</b> <ul style="list-style-type: none"> <li>• Springfield (Hampden County)</li> <li>• Northampton (Hampshire County)</li> <li>• Deerfield (Franklin County)</li> <li>• State average</li> <li>• National average</li> </ul>	37.4 years 35.4 years 41.2 years 38.3 years 36.4 years
<b>Median Household Income</b> <ul style="list-style-type: none"> <li>• Springfield (Hampden County)</li> <li>• Northampton (Hampshire County)</li> <li>• Deerfield (Franklin County)</li> <li>• State average</li> <li>• National average</li> </ul>	\$44,765 \$52,349 \$51,871 \$59,963 \$48,451



## Unemployment Rates

Location	2001	2003	2005	2007
Springfield MSA	3.7%	6.0%	5.3%	4.6%
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
Baystate Health Systems	Health care services	5,000 +
University of MA – Amherst	Higher education	5,000 +
MassMutual Financial Group	Financial services / insurance	2,500 – 5,000
Sisters of Providence Health System	Health care services	2,500 – 5,000
Friendly’s Ice Cream Corp.	Headquarters of restaurant chain	1,500 – 2,500
Westfield State College	Higher education	1,500 – 2,500
Hasbro Games (Milton Bradley)	Toy & game manufacturing	1,500 – 2,500
Cooley Dickinson Hospital	Health care services	1,500 – 2,500
Center for Human Development	Human services	1,500 – 2,500
Yankee Candle	Candle manufacturing / retail	1,500 – 2,500
Holyoke Medical Center	Health care services	1,000 – 1,500
C & S Wholesale Grocers	Wholesale trade	1,000 – 1,500
Verizon	Telecommunications	1,000 – 1,500
Holyoke Community College	Higher education	500 – 1,000
Springfield Technical Community College	Higher education	500 – 1,000
Mount Holyoke College	Higher education	500 – 1,000
Smith College	Higher education	500 – 1,000
Springfield College	Higher education	500 – 1,000
Western New England College	Higher education	500 – 1,000
Northfield Mount Hermon School	Private school	500 – 1,000

## Major Non-Government Employers

 Target Industry Employer

Company/Organization	Description	Employment Range
TD BankNorth Massachusetts	Financial services / banking	500 – 1,000
Top Flite Golf Company	Sporting goods manufacturing	500 – 1,000
Lenox American Saw Manufacturing	Fabricated metal manufacturing	500 – 1,000
Berry Tubed Products	Plastic products manufacturing	500 – 1,000
Solutia Inc.	Chemical manufacturing	500 – 1,000
Smith & Wesson	Fabricated metal manufacturing	500 – 1,000
InteliCoat Technologies	Chemical manufacturing (coatings & adhesives)	500 – 1,000
The Republican	Information / publishing	500 – 1,000
Wing Memorial Hospital	Health care services	500 – 1,000
Noble Hospital	Health care services	500 – 1,000
Peter Pan Bus Lines	Transportation	500 – 1,000
ISO New England, Inc.	Energy distribution	250 – 500
Western Mass. Electric Company	Energy distribution	250 – 500
Titeflex	Flexible hose and tube manufacturing	250 – 500
National Envelope Westfield	Paper conversion manufacturing	250 - 500
Mestek Inc.	Machinery manufacturing	250 – 500
Springfield Wire	Machinery manufacturing (components)	250 – 500
J. Polep Distribution Services	Transportation and warehousing	250 – 500
Parkview Specialty Hospital	Health care services	250 - 500

## Recent Developments

Company	Description
Liberty Mutual	<ul style="list-style-type: none"> <li>Plans to add 250 new jobs at its new Springfield office, located at the former Springfield Armory in the STCC Park.</li> <li>Opening later in 2008, the facility will host a variety of business operations, including a customer service call center to support Liberty Mutual's car and home insurance business in Massachusetts and throughout the U.S.</li> </ul>
Solutia Inc.	<ul style="list-style-type: none"> <li>Company best known for its Saflex product, used in car windshields, plans to invest \$50 million to \$75 million at its Indian Orchard plant over the next five to ten years.</li> <li>Also negotiated an agreement to host the new U.S. headquarters of Socaplast, a Belgian business that recycles a compound used by Solutia, on its campus.</li> </ul>
Performance Food Group Company	<ul style="list-style-type: none"> <li>Opened a new, expanded distribution facility on a 35-acre site in the Smith &amp; Wesson Industrial Park, creating more than 200 full-time jobs</li> </ul>
Verizon	<ul style="list-style-type: none"> <li>Announced that it will extend high-speed Internet to 23 communities in western Massachusetts where service is currently unavailable.</li> </ul>
Baystate Health Systems	<ul style="list-style-type: none"> <li>Announced a \$239.3 million expansion of Baystate Medical Center that will add 48 beds and eight operating rooms to the 653-bed hospital.</li> </ul>

## Utilities and Real Estate

Utilities	Supply-Related Issues
Water	Water quality and supply are generally excellent.
Wastewater Treatment	No issues identified.
Telecom/Broadband	Springfield has state-of-the art, fiber optic telecommunications infrastructure, but many nearby urban areas and rural communities lack broadband Internet access.
Gas	Most areas served by the Bay State Gas Company. Westfield and Holyoke are served by their respective municipally-owned utility providers.
Electric Power	Most areas served by Western Massachusetts Electric (WMEC), a Northeast Utilities Company, or by Massachusetts Electric, a subsidiary of National Grid. Chicopee, Westfield, South Hadley, and Holyoke are served by their respective municipally-owned utility providers.

Real Estate	Supply-Related Issues
Office Space	Most available office space is <10,000 sf. The majority of Class A space is in downtown Springfield and includes One Financial Plaza, which has 140,000 sf available. Appears to be greater demand for suburban office space, however.
Industrial Space	Vacancy rate has been steady at ~9%. Pre-permitted sites of varying sizes are available at area industrial parks. Large inventory of manufacturing and warehouse properties, but a limited supply of modern facilities... “the good space goes quickly.” More demand for distribution than for industrial space with interstate access, and for smaller industrial facilities with 10,000 – 30,000 sf.
R&D Space	R&D space is available at the Pioneer Valley Life Sciences Institute in Springfield for small businesses and at Solutia Park in Indian Orchard, but there is not much demand for R&D and flex space in this market.
Incubator Space	Available in the Scibelli Enterprise Center at the STCC Technology Park in Springfield.

# Quality of Life

## Cost of Living and Housing

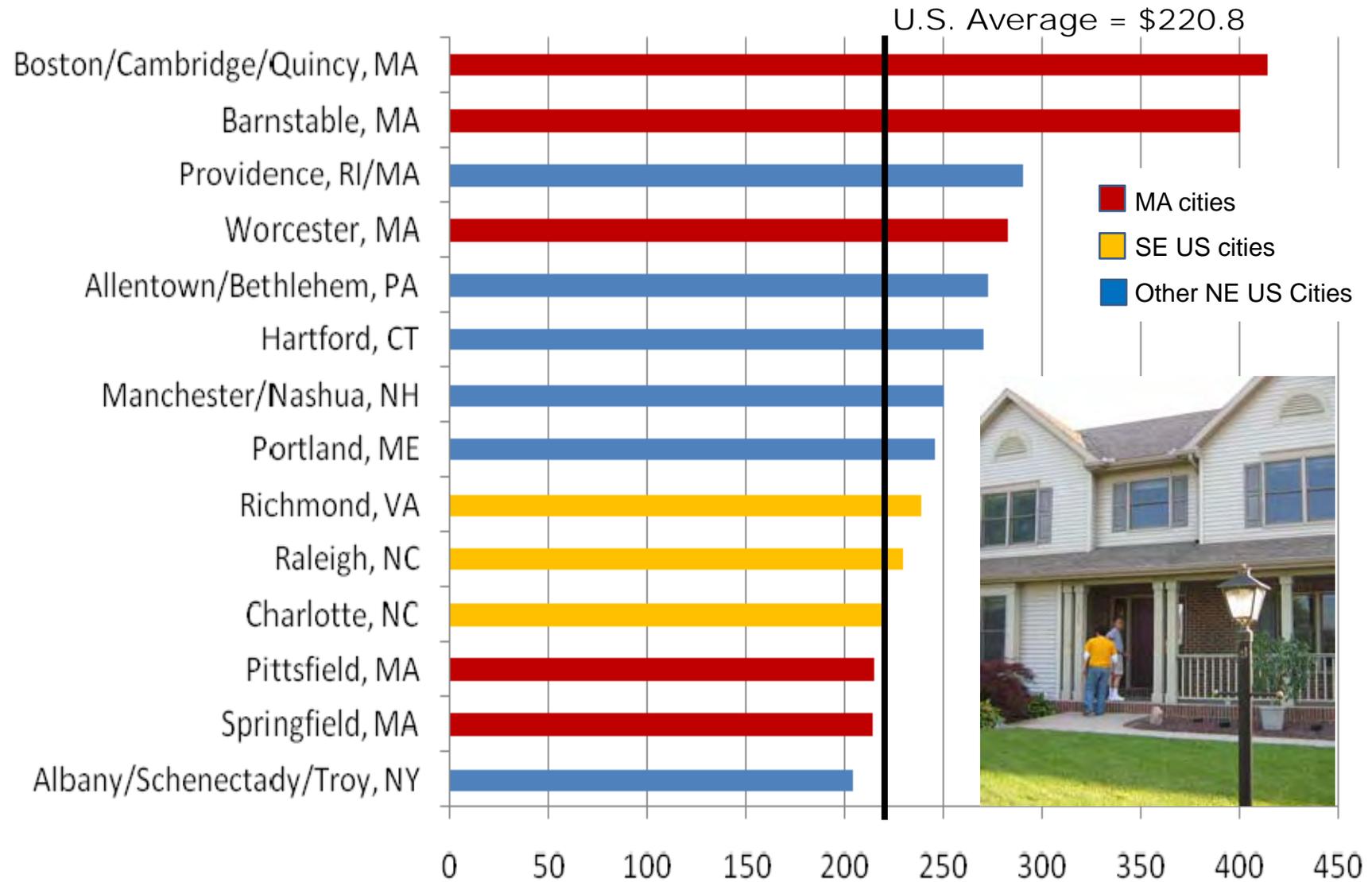


## Cost of Living Index: Comparison

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 3<sup>rd</sup> Quarter 2007



Source: National Association of Realtors

## Cost of Housing Comparison: Western Region (North)

\$200,000



**Orange**

\$204,900 • 4 Bed, 2 Bath  
1,761 Sq. Ft. • 0.31 Acres

\$250,000



**Orange**

\$264,900 • 4 Bed, 2.5 Bath  
1,924 Sq. Ft. • 2.06 Acres

\$350,000



**Orange**

\$299,900 • 3 Bed, 2.5 Bath  
2,500 Sq. Ft. • 1.07 Acres



**Greenfield**

\$208,000 • 4 Bed, 2 Bath  
1,648 Sq. Ft. • 0.24 Acres



**Greenfield**

\$259,000 • 4 Bed, 1.5 Bath  
2,223 Sq. Ft. • 0.63 Acres



**Greenfield**

\$325,000 • 4 Bed, 3 Bath  
2,013 Sq. Ft. • 0.96 Acres



**Montague**

\$219,900 • 5 Bed, 2 Bath  
2,262 Sq. Ft. • 0.15 Acres



**Montague**

\$245,000 • 4 Bed, 1.5 Bath  
1,872 Sq. Ft. • 1.22 Acres



**Montague**

\$318,900 • 3 Bed, 2.5 Bath  
2,025 Sq. Ft. • 2.68 Acres

## Cost of Housing Comparison: Western Region (Middle)

\$200,000



**Northampton**

\$205,000 • 2 Bed, 1 Bath  
972 Sq. Ft. • 0.47 Acres

\$250,000



**Northampton**

\$274,900 • 3 Bed, 1.5 Bath  
1,320 Sq. Ft. • 0.38 Acres

\$350,000



**Northampton**

\$349,000 • 3 Bed, 1.5 Bath  
1,718 Sq. Ft. • 0.13 Acres



**Amherst**

\$219,900 • 3 Bed, 1 Bath  
1,429 Sq. Ft. • 0.54 Acres



**Amherst**

\$299,000 • 4 Bed, 2 Bath  
1,720 Sq. Ft. • 0.71 Acres



**Amherst**

\$349,950 • 3 Bed, 2 Bath  
1,746 Sq. Ft. • 0.95 Acres



**Westhampton**

\$219,900 • 3 Bed, 1.5 Bath  
1,164 Sq. Ft. • 0.43 Acres



**Westhampton**

\$256,000 • 4 Bed, 1.5 Bath  
1,972 Sq. Ft. • 1.29 Acres



**Westhampton**

\$350,000 • 3 Bed, 2.5 Bath  
1,920 Sq. Ft. • 1.53 Acres

## Cost of Housing Comparison: Western Region (South)

\$200,000



**Westfield**

\$209,900 • 3 Bed, 1 Bath  
960 Sq. Ft. • 0.22 Acres

\$250,000



**Westfield**

\$289,000 • 3 Bed, 2.5 Bath  
1,698 Sq. Ft. • 1.23 Acres

\$350,000



**Westfield**

\$334,900 • 3 Bed, 2.5 Bath  
1,700 Sq. Ft. • 0.92 Acres



**Springfield**

\$200,000 • 3 Bed, 1 Bath  
1,225 Sq. Ft. • 0.21 Acres



**Springfield**

\$259,000 • 3 Bed, 1.5 Bath  
1,638 Sq. Ft. • 0.21 Acres



**Springfield**

\$349,000 • 4 Bed, 2.5 Bath  
3,728 Sq. Ft. • 0.48 Acres



**Chicopee**

\$204,000 • 3 Bed, 1 Bath  
1,098 Sq. Ft. • 0.2 Acres



**Chicopee**

\$264,500 • 3 Bed, 2.5 Bath  
1,600 Sq. Ft. • 0.3 Acres

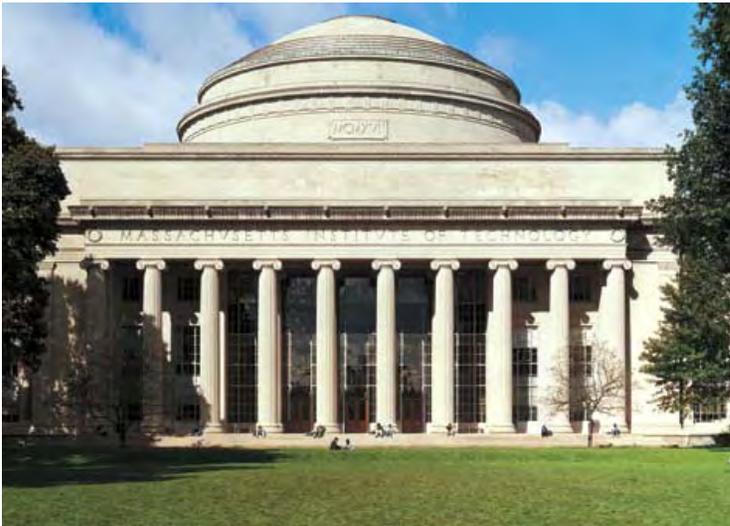


**Chicopee**

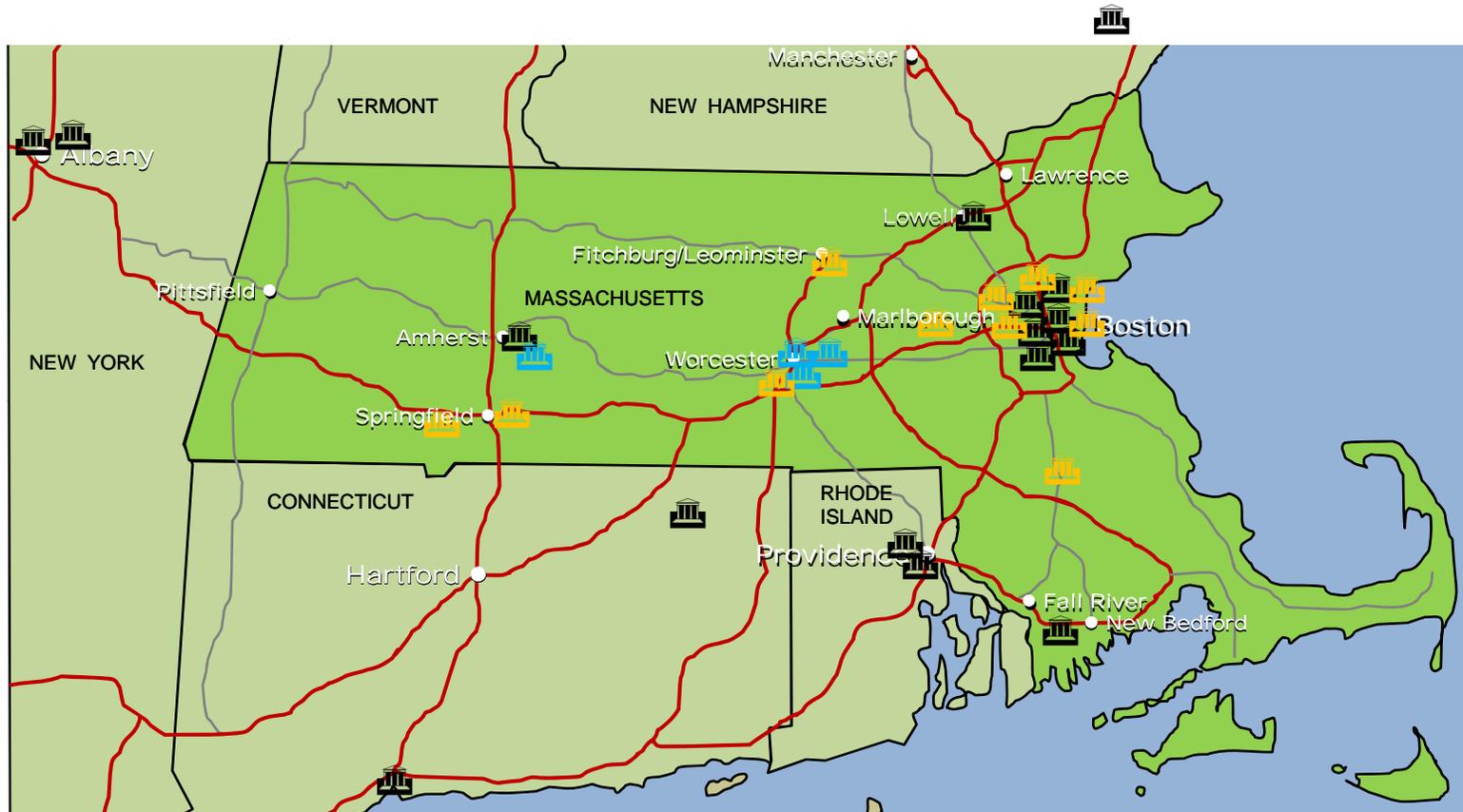
\$334,000 • 5 Bed, 2 Bath  
2,052 Sq. Ft. • 0.32 Acres

# University R&D

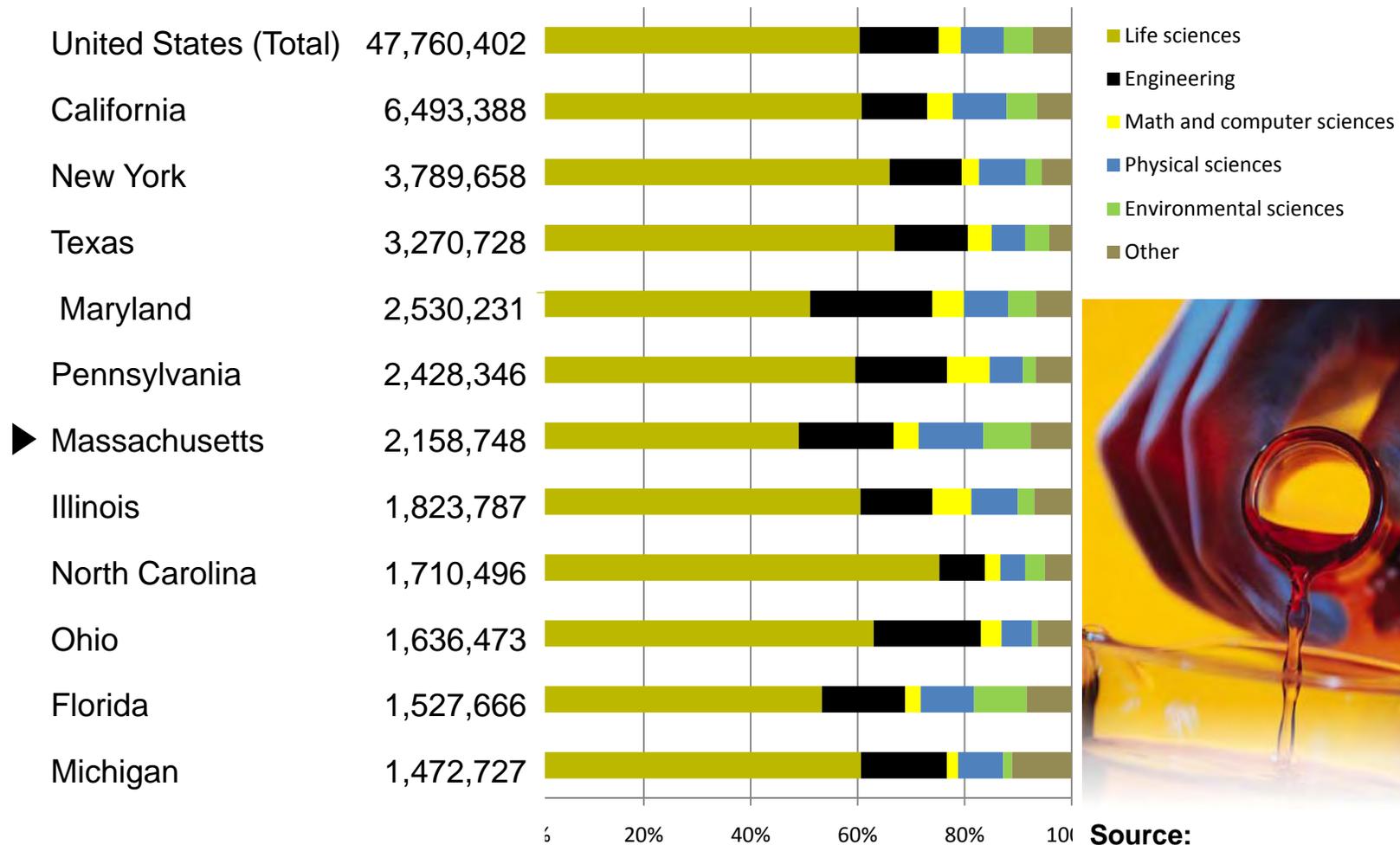
## Research Centers That Support Economic Development



## Major Academic and R&D Institutions

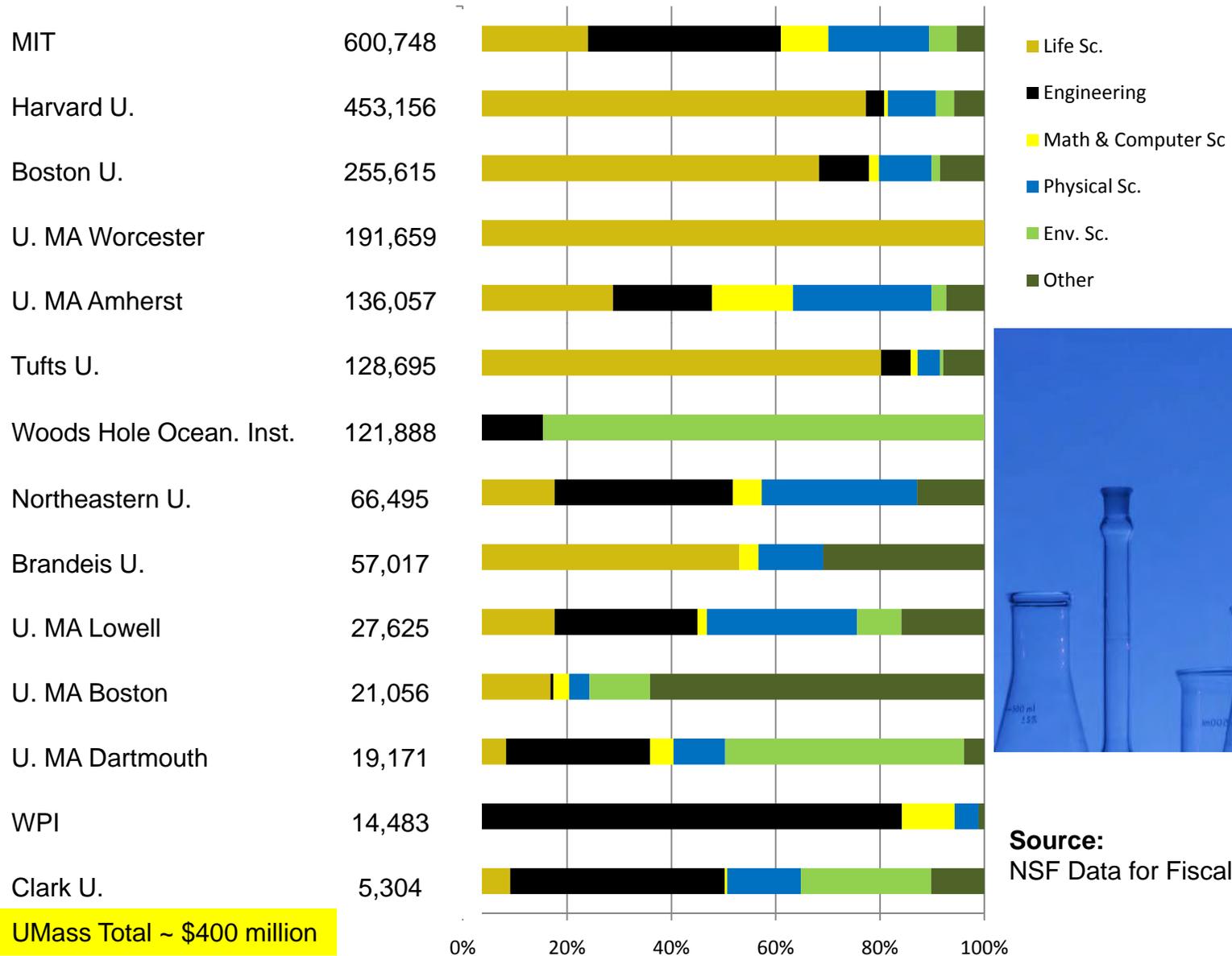


## University R&D: National Total and Top Ten States (\$000)



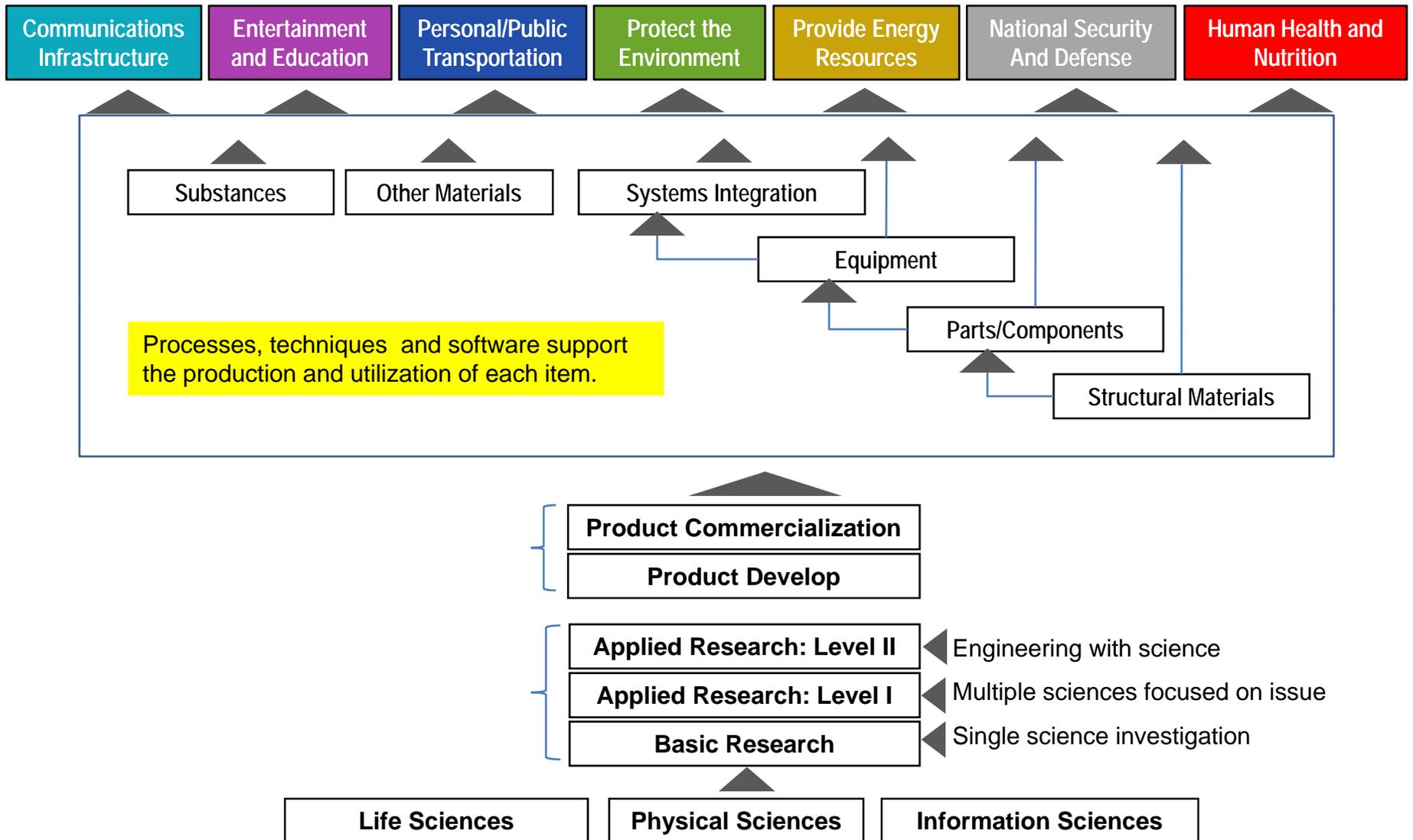
Source:  
 NSF Data for Fiscal Year 2005

## Massachusetts University Research (\$000)



**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	■							■

## 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

College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bio-Related		Business		Comp./Info. Sc.		Engineering	
					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	Northampton	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

College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bio-Related		Business		Comp./Info. Sc.		Engineering	
					Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
<b>North Central</b>												
Fitchburg State College	Fitchburg	5,508	3,768	1,740	5	4	107	47	17	21	0	0
<b>South Central</b>												
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
<b>Merrimack Valley</b>												
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
<b>Metro West</b>												
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

College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bio-Related		Business		Comp./Info. Sc.		Engineering	
					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

College/University	Location	Tot. Enroll.	Undergrad Students	Grad Students	Bio-Related		Business		Comp./Info. Sc.		Engineering	
					Bach	MS/PhD	Bach	Masters	Bach	MS/PhD	Bach	MS/PhD
<b>Greater Boston (cont'd)</b>												
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
<b>Southeast</b>												
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
<b>Berkshire Region</b>							
Berkshire Community College	Pittsfield	2,225	0	43	3	10	62
Mildred Elley	Pittsfield	104	0	0	0	0	23
<b>Western Region</b>							
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
<b>North Central Region</b>							
Mount Wachusett Community College	Gardner	3,937	37	11	14	5	112
<b>South Central Region</b>							
Quinsigamond Community College	Worcester	6,022	0	114	38	60	155
<b>Merrimack Valley Region</b>							
Northern Essex Community College	Haverhill	6,361	0	115	27	24	122
<b>Metro West Region</b>							
Middlesex Community College	Bedford	8,109	0	149	10	40	148
Wyotech	Bedford	227	0	0	0	187	0
<b>Greater Boston Region</b>							
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
<b>Southeast Region</b>							
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
<b>Cape Cod/Islands Region</b>							
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:

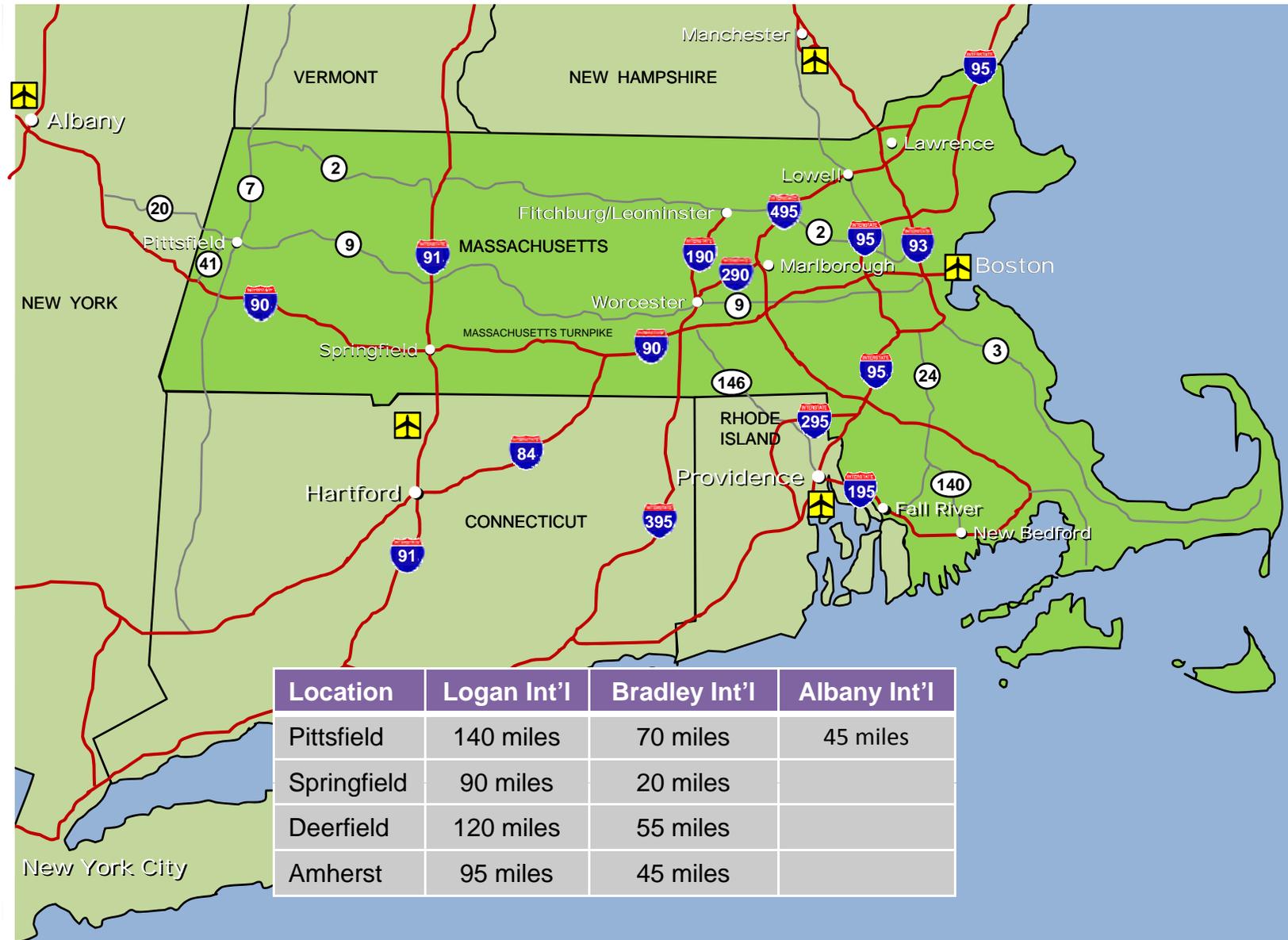
Unmarried ► Married Without Children ► Married With Children

# Transportation

## Limited Access Highways and Commercial Airports



## Transportation: Principal Highways and Commercial Airports



## 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

<b>Location</b>	<b>Boston</b>	<b>NYC</b>
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.

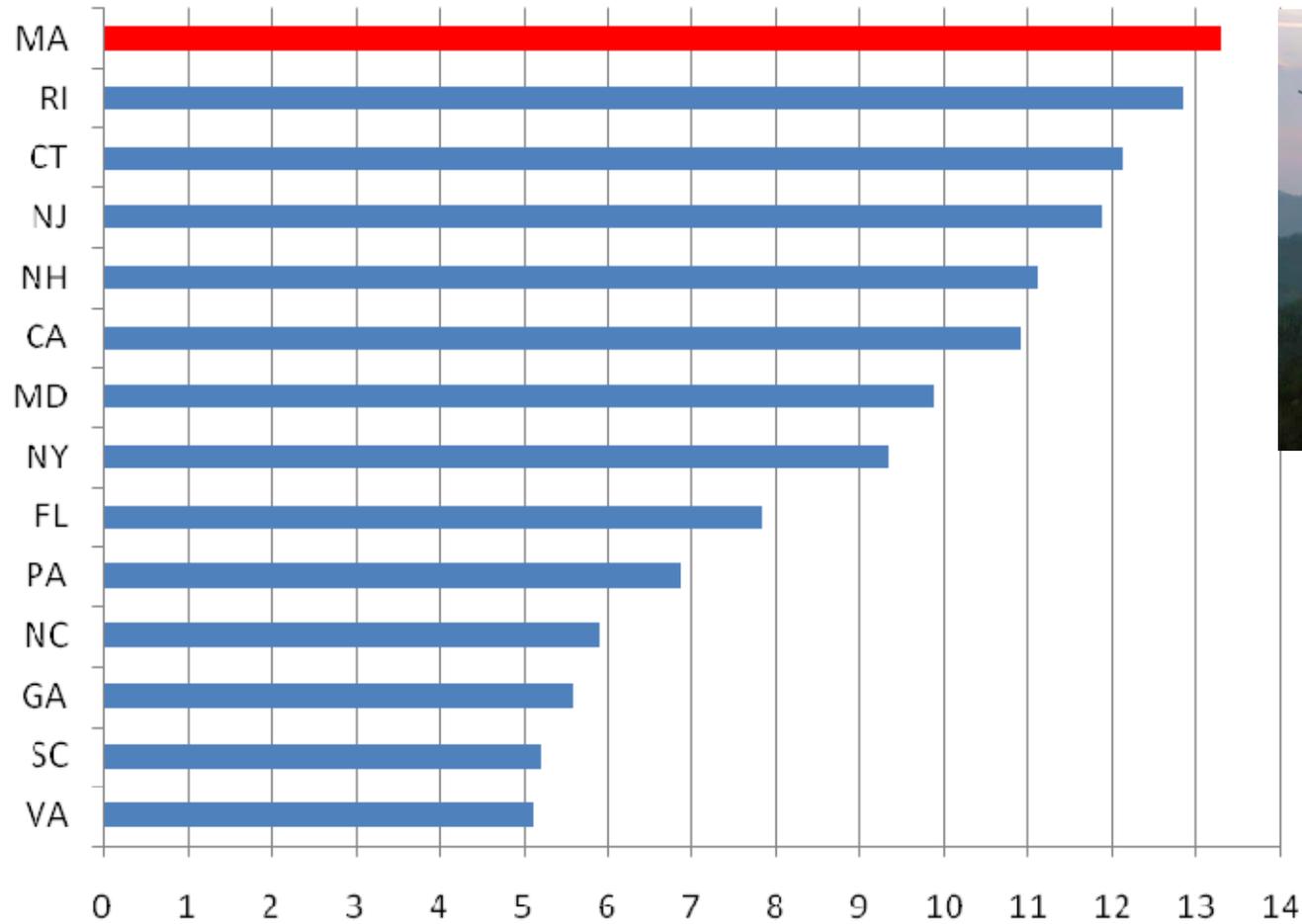
## Significant Utility Requirements by Target Industry

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**

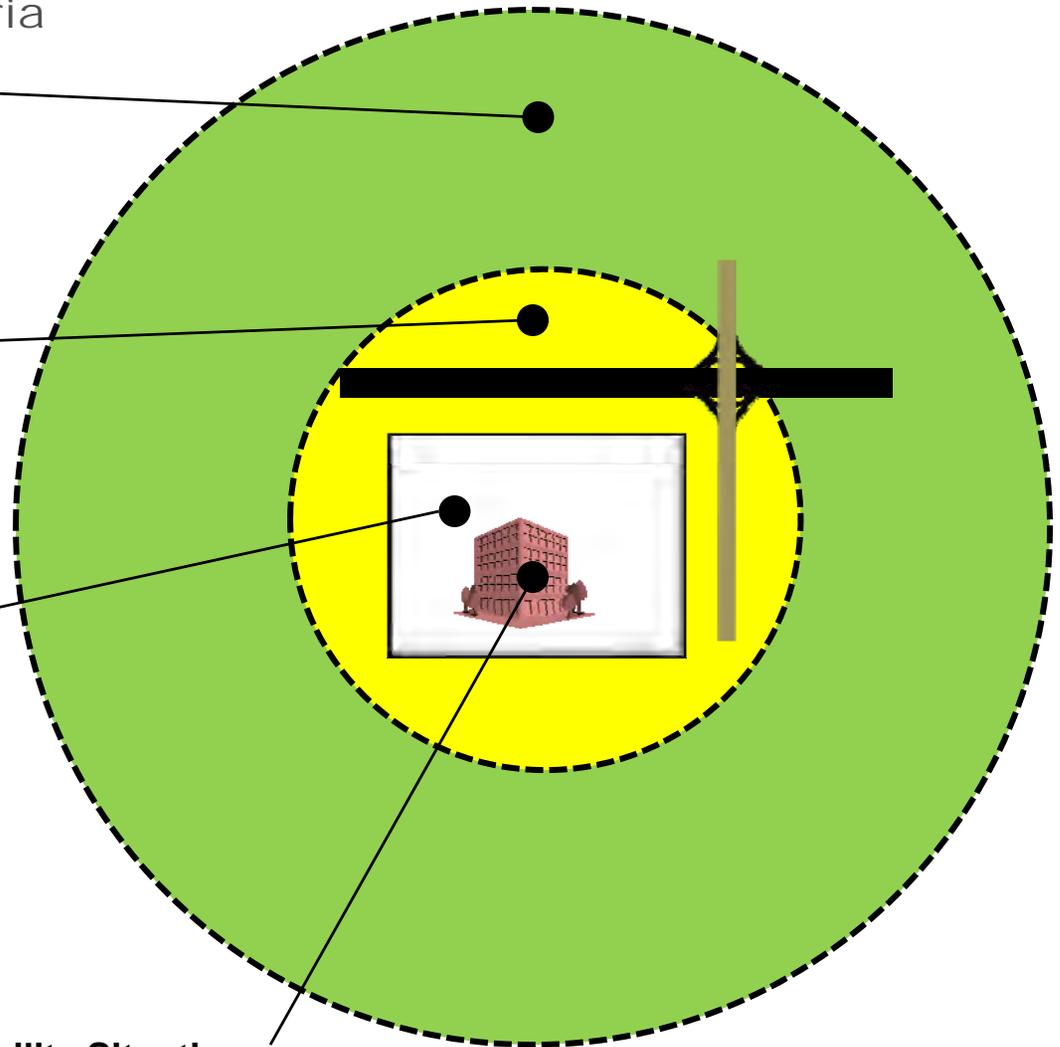
- Distance to limited access highway
- Public transportation access
- Restaurants/shopping/services
- Business services
- Sensitive areas for trucks

### 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

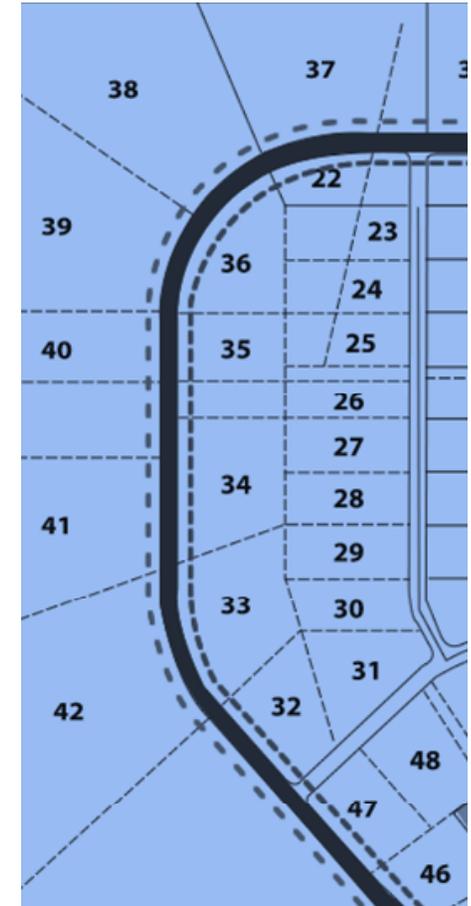
### Level 4: **Facility Situation**

- 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 to 15 months
4. Developed site ready for building construction <ul style="list-style-type: none"> <li>• Lots defined and graded</li> <li>• Roads and utilities in place with service to lots</li> <li>• Some permits secured and covenants defined</li> </ul>	18 months
5. Undeveloped site (“Shovel Ready”) <ul style="list-style-type: none"> <li>• Ownership/title cleared and ready for sale</li> <li>• Proper zoning in place</li> <li>• Surveys/studies completed</li> <li>• Permitting agencies poised for approvals</li> <li>• Infrastructure within reasonable access</li> <li>• Compatible adjacent land use</li> <li>• Conceptual site plan and covenants</li> </ul>	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 to 15 months
3. Upgrade/development of building <ul style="list-style-type: none"> <li>• Rough out floor plans by functional use</li> <li>• Remove any hazardous materials</li> <li>• Upgrade/replace all utilities/services</li> <li>• Address structural and facade issues</li> </ul>	18 to 24 months
4. Development-ready building <ul style="list-style-type: none"> <li>• Ownership/title cleared and ready for sale</li> <li>• Proper zoning in place for office/R&amp;D</li> <li>• Assessment of building to meet code and provide adequate parking</li> <li>• Permitting agencies poised for approvals</li> <li>• Infrastructure within reasonable access</li> <li>• Compatible adjacent land use</li> </ul>	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

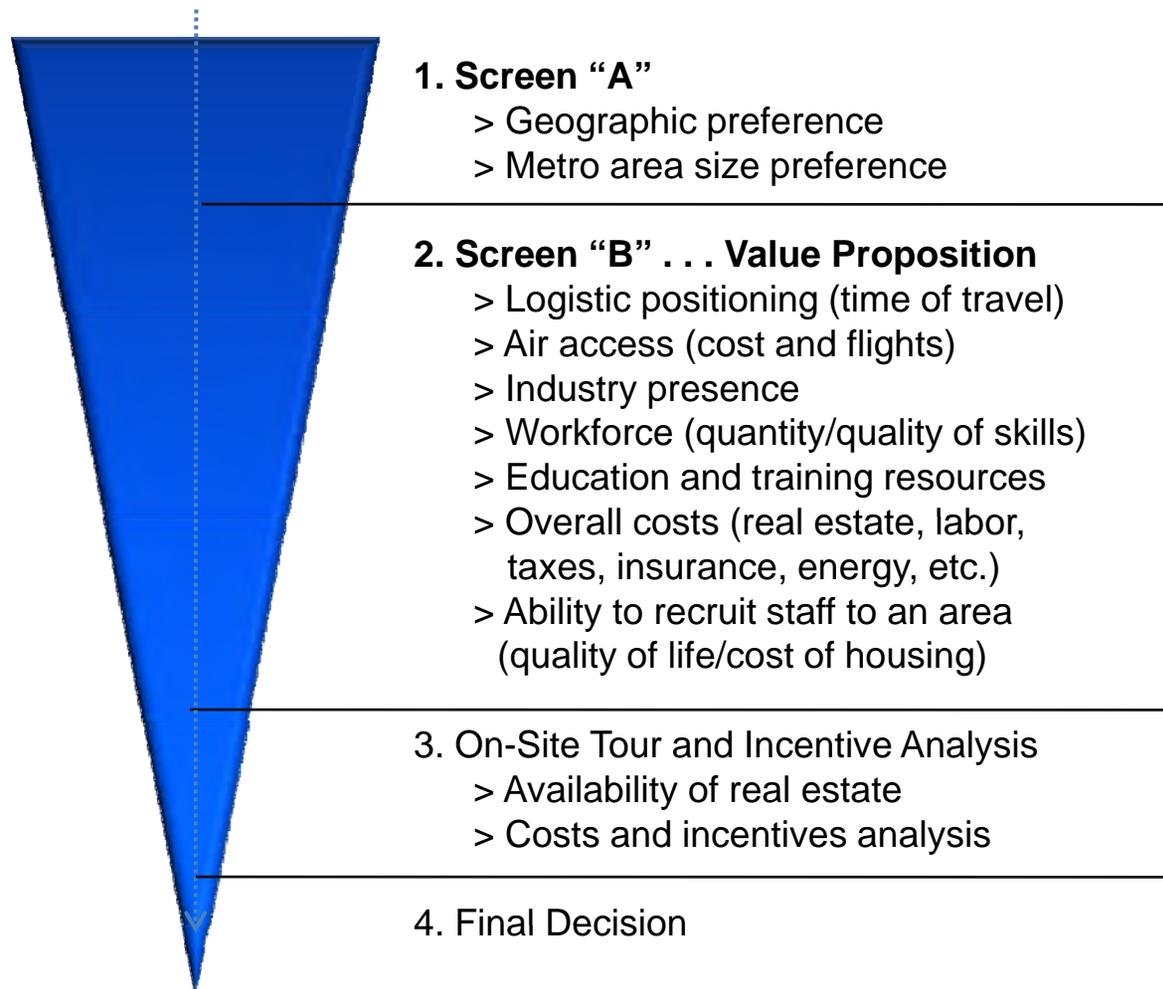
- 225 SF/person is typical for a back office while 300 SF/person is for headquarters or smaller operations.
- Actual space requirements may be expanded if there are large training and conference room or cafeteria requirements.

## 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



## 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