



UMass: An Innovation Imperative for the Commonwealth

Prepared for:

**Waltham West Suburban
Chamber of Commerce**

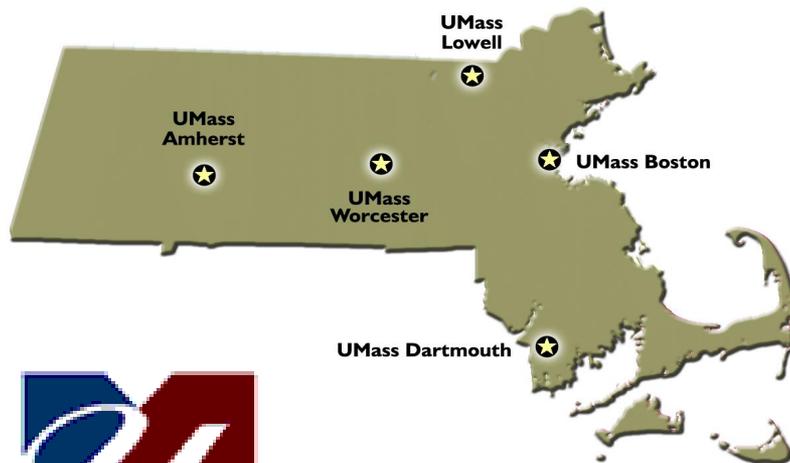
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By:

Dr. Jack M. Wilson

President

University of Massachusetts



Understanding the Massachusetts Economy and Its Competition

- Massachusetts is an Innovation Economy whose success depends on highly-educated people, great universities, innovative research and effective collaboration
- Increasingly, the economic success of the entire state (not just Boston and Cambridge) depends on these critical factors
- But, other states and nations have discovered our formula for success
- Mass. faces new S&T competition from other states (e.g., NY, CA, NC) and nations (e.g., China, Singapore)
- Mass. can no longer assume that we will be an S&T leader simply because we have Harvard and MIT

Warning Signs about the High Tech Economy in Massachusetts

- State employment growth lags the US, especially in key technology sectors
- The state is losing market share of US R&D
- Mass. lacks the history of strategic alliances and collaboration that are increasingly important for future success
- The state is failing to capture the manufacturing end of high tech
- Mass. suffers from a loss of population growth and a “brain drain” of talent
- Many regions outside 128 are not well-positioned for growth in the Innovation Economy

Key Lessons from Across the US

- Strategic alliances between universities and industry are at the center of state competition
- The right state investments in public higher education and S&T do pay off
- Strong private university/teaching hospital resources are a unique advantage for Massachusetts and other New England states
- But, public universities are critical for complementing the private universities, growing talent and fostering regional economic development



UMass Mission

- The University's mission is to provide an affordable and accessible education of high quality and to conduct programs of research and public service that advance knowledge and improve the lives of the people of the Commonwealth, the nation, and the world.

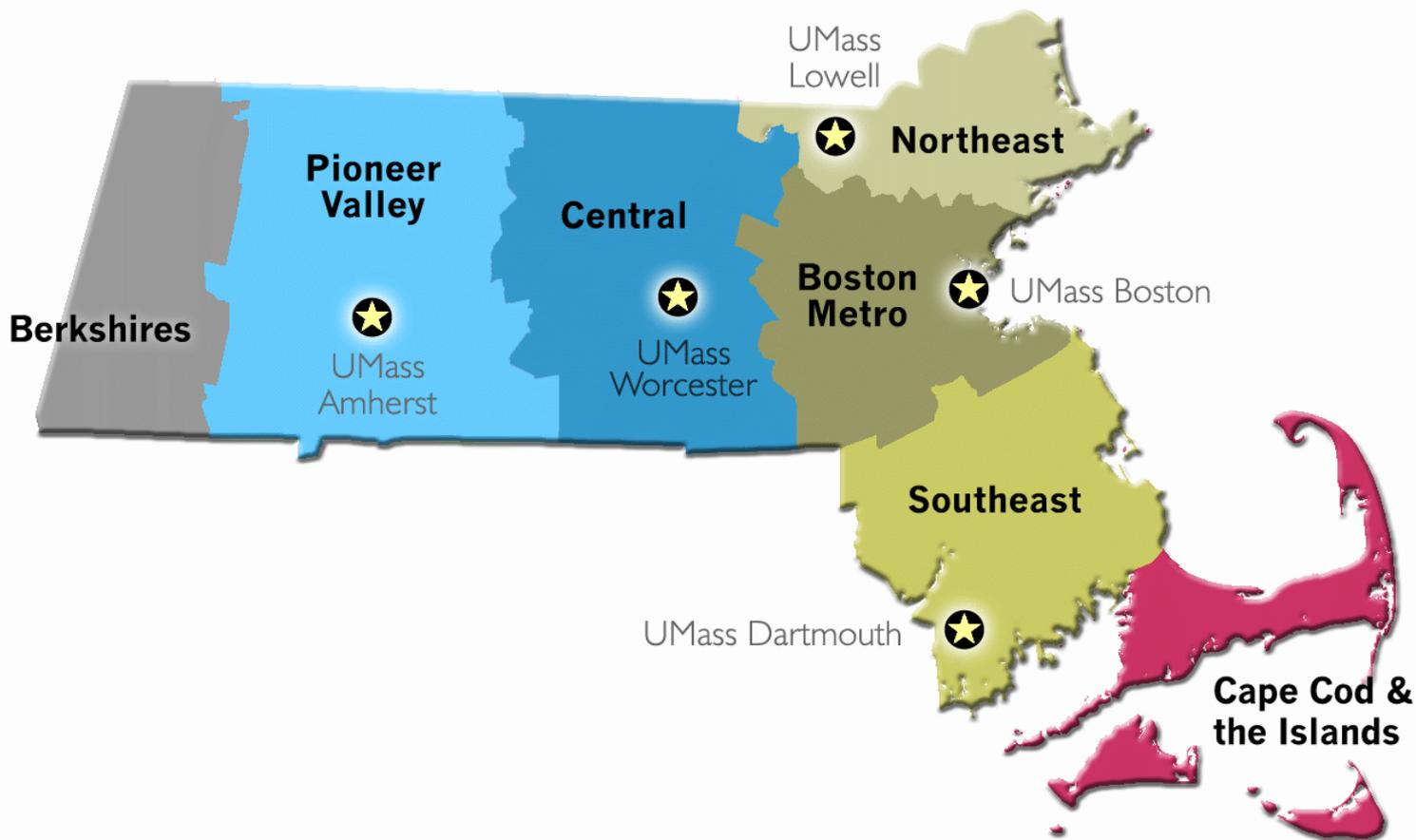
UMass Focus on Economic Development

- The path to the economic and social development Massachusetts and its diverse regions goes through UMass

A Substantial Economic Force and Higher Education Resource

- **\$1.9 B enterprise** (\$477M state appropriation)
- **5 campuses** and 80 off-campus sites throughout the Commonwealth
- **14,000 employees**, making UMass a major employer across the state
- **About 58,000** undergraduate/graduate/continuing education students
- Over **11,000 graduates** annually
- Over **320,000 alumni** – 2/3 living and working in Massachusetts
- Over **450 BS/MS/PhD** programs
- **#45 among World's Top 50 Universities**, according to rankings compiled by *The Times* of London
- **\$2.2 B capital program** – both strategic new construction and deferred maintenance

A Critical Asset for Regional Economic Development



A Major Force in Research, Development and Innovation

- **Over \$350M in R & D** – ranking #3 in Massachusetts, #4 in New England, top 50 in US, 90% outside Boston/Cambridge
- **Targeted R&D Initiatives** – in emerging fields such as nanotechnology, gene silencing, remote sensing, green chemistry, vaccine development, marine science
- **Office of Commercial Ventures and Intellectual Property** – generating over \$28M in annual license income, ranking in top 15 US universities and #1 in Mass
- **Mass Technology Transfer Center** – home to state-funded center to promote tech transfer from public and private universities to Massachusetts companies
- **High Tech Incubators** – located in Lowell, Fall River and New Bedford, housing more than a dozen companies, with several successful spin-offs (e.g., Konarka)
- **Corporate Partnerships** – R&D and license agreements with companies ranging from Phillips Electronics and Sepracor to Natick Labs and Boston Scientific



Targeted Initiatives in Workforce Development for the Innovation Economy

- **UMass Online** – a nationally recognized program in distance education, serving 19,700 students with 57 programs
- **Commonwealth Information Technology Initiative (CITI)** – UMass-led higher ed initiative to upgrade IT curriculum at UMass, state and community colleges
- **UMass system-wide degree programs** in high priority fields – MS/PhD in biotechnology and biomedical engineering and in marine sciences
- **Corporate partnerships** – workforce initiatives with companies ranging from Fidelity and Raytheon to Analog Devices and PTC
- **Support for STEM** – a variety of initiatives to promote the improved learning of science, technology, engineering and mathematics at K-12 level

What is UMASS Doing in STEM?

- **The STEM Collaborative** – a UMASS-Lowell led initiative in partnership with Raytheon, EMC, etc. to increase interest of middle and high school students in STEM studies and careers
- **The Boston Science Partnership** - \$12.5M NSF-supported partnership led by UMASS Boston to improve teaching of math and science in Boston public schools
- **Great Schools Campaign** – K-2 reform initiative co-chaired by Presidents of UMASS and Nellie Mae
- **UMASS Online** – development of science teaching courses
- **Local and Regional Initiatives** – dozens of K-12 programs sponsored by all five UMASS campuses around the state

The UMass Agenda for the Commonwealth: Building the Innovation Economy Across Mass.

- **Focus on S&T**
 - Make UMass a major driver for the Massachusetts Innovation Economy
- **Develop the Workforce**
 - Given its quality, affordability and record of retention, UMass can help grow/keep a highly-educated workforce here
- **Support Regional Development**
 - Given the geography of its campuses, UMass can serve all the diverse regions of the state
- **Expand R&D Leadership**
 - Given its record of R&D growth and recent S&T successes, UMass can help the state maintain/expand its R&D base
- **Capture Economic Benefits**
 - Given its commitment to industry links and tech transfer, UMass can help capture R&D's downstream benefits

The UMass Agenda for the Commonwealth: Building the Innovation Economy Across Mass.

- **Focus on S&T**
 - UMass Amherst is home to MassNanotech, a new academic/industry center for nanoscale device fabrication
- **Develop the Workforce**
 - UMass Boston is collaborating with Northeastern and the Boston Public Schools for an NSF-sponsored Science Education Partnership
- **Support Regional Development**
 - UMass Dartmouth created the Advanced Technology and Manufacturing Center located in Fall River
- **Expand R&D Leadership**
 - UMass Worcester researcher co-discovered RNAi (gene silencing) recognized as one of the most important scientific developments in 2003
- **Capture Economic Benefits**
 - UMass Lowell has established a Nano-Manufacturing Center (with Northeastern and UNH) and is proposing a Bio-Manufacturing center – both designed to assist companies in manufacturing in Massachusetts

The Good News: UMass Innovation Performance

- **A Growing R&D Track Record**
 - \$350 M in R&D with a growth rate greater than the US or state average
 - \$1 M President's S&T Fund for start-up activities
 - \$28 M in Tech Commercialization (top 15 in US)
 - \$2 M for Mass Tech Transfer Center
- **Recent NIH and NSF Grants to UMass Strategic Alliances**
 - \$40 M Atmospheric sensing ERC at Amherst
 - \$17 M Botulinum center – Tufts/Dartmouth
 - \$16 M Immunology center – Worcester
 - \$12 M Nanotech center – Lowell with NE and UNH
 - \$12 M Science K-12 Partnership – Boston
- **Strategic Philanthropy**
 - \$20 M Nantucket Partnership on the Environment
- **Leadership in Distance Learning**
 - \$19 M in UMassOnline external revenues

The Bad News: Challenges in Obtaining State Support

- Much of UMass success depends on major state infrastructure investments in the past -- such as the creation of UMass Medical Center 40 years ago
- State operating support has seen dramatic cuts -- most severe in the US
- State capital support is well below national averages
- State S&T support is new and very modest compared to other states
- Some state policies present barriers to achieving greater excellence at UMass, per recent Mass Taxpayers analysis



Needed: A State Agenda for Building a World-Class Public Research University in Mass. *(per Mass Insight and Mass Taxpayers)*

- **Restore and stabilize the annual state appropriation** – return to historic levels of support and commit to multi-year growth
- **Commit to a substantial capital improvements program** –\$100 M annually for five years to match UMass’s annual \$200 M investment
- **Expand S&T investments and make permanent** – \$100 M annually focused on leveraging federal and private R&D
- **Strengthen leveraging of private giving** -- thru expanded endowment matching funds (\$20 M) for endowed chairs and facilities
- **Remove “barriers to excellence”** -- per the Mass Taxpayers analysis of tuition retention, funds carry-over, construction mgt, leasing, etc.



THANK YOU!



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