Annual Report 2009
Dear Fellow Citizens:

It is our pleasure to share with you some of the important work happening right now at the Massachusetts Technology Collaborative. Our fiscal year 2009 annual report offers a snapshot of our efforts in health care technologies, broadband infrastructure development, and support for cluster growth in the state’s innovation economy.

During one of the worst economic downturns in decades, MTC is working with leaders from government, industry, universities, trade associations, and non-profit organizations to strengthen the knowledge economy in Massachusetts.

The agency is aggressively pursuing federal funding to support economic development in Massachusetts through the American Recovery and Reinvestment Act of 2009. MTC’s rich history of successfully managing complex projects that involve significant public and private investment have positioned the agency to serve as an important conduit for infusions of funding into the Commonwealth.

Working through its major divisions—the John Adams Innovation Institute, the Massachusetts e-Health Institute, and the Massachusetts Broadband Institute—the agency is strengthening the innovation economy by supporting and expanding economic clusters.

Please take a moment to read about some of the exciting initiatives at MTC and explore more online at masstech.org. We appreciate all of the support we receive from our many partners throughout industry, government, and academia.

Sincerely,

Karl Weiss
Board Chairman

Mitchell Adams
Executive Director

Philip Holahan
Deputy Executive Director

General Counsel

Karl Weiss
Board Chairman
MTC Board

Executive Committee
Karl Weiss, Board Chairman, MTC; Professor Emeritus, Northeastern University
Lawrence J. Reilly, Board Vice Chairman, MTC
Michael Hunter, Undersecretary of Business Development, Massachusetts Executive Office of Housing and Economic Development
David D. Fleming, Group Senior Vice President, Genzyme Corporation
Gerald L. Wilson, Professor Emeritus, Massachusetts Institute of Technology

Board Members
Martin Aikens, Business Agent, International Brotherhood of Electrical Workers, Local 103
The Honorable Ian A. Bowles, Secretary, Massachusetts Executive Office of Energy and Environmental Affairs
Patrick Carney, Manager of Field Training, NStar
Phillip L. Clay, Chancellor, Massachusetts Institute of Technology
Michael J. Cronin, President and CEO, Cognition Corporation
Stephen W. Director, Provost, Northeastern University
Priscilla Douglas, Vice President - Learning and Development, Vertex Pharmaceuticals
Richard M. Freeland, Commissioner, Massachusetts Department of Higher Education
C. Jeffrey Grogan, Partner, Monitor Group, LP
Alain J. Hanover, Managing Director and CEO, Navigator Technology Ventures
James S. Hoyte, Fellow, W.E.B DuBois Institute for African and African American Research, Harvard University
The Honorable Jay Gonzales, Secretary, Massachusetts Executive Office for Administration and Finance
Penny McLean-Conner, Vice President, Customer Care, NStar
Dana Mohler-Faria, President, Bridgewater State College
Paul Wesley Nakazawa, President, Nakazawa Consultants; Lecturer in Architecture, Harvard University, Graduate School of Design
Benjamin I. Schwartz, Novelist; Consultant, Scuderi Group
Frederick Sperounis, Executive Vice Chancellor, University of Massachusetts Lowell
Krishna Vedula, Professor of Engineering, UMass Lowell
Jack M. Wilson, President, University of Massachusetts

Chairpersons Emeriti
George S. Kariotis, Chairman Emeritus (retired), Alpha Industries
Jeffrey Kalb, Technology Advisor, California Micro Devices Corporation
John T. Preston, President and CEO, Atomic Ordered Materials, LLC
Edward Simon, Unitrode Corporation (retired)
William R. Thurston, Genrad, Inc. (retired)

Officers of the Corporation
Mitchell L. Adams, Executive Director
Philip F. Holahan, Deputy Executive Director, General Counsel and Secretary
Christopher B. Andrews, Treasurer, Chief Financial and Administrative Officer
The Massachusetts Technology Collaborative (MTC) is a public economic development agency established by the Legislature in 1982 to foster a more favorable environment for growth in the state’s innovation-based economy.

MTC is governed by a 23-member Board of Directors appointed by the Governor that includes industry executives and academics from public and private universities, as well as leaders from state government.

The agency is often called upon to manage complex technology deployment and economic development projects that form the foundation for economic growth in regions throughout the state.

Right now, MTC is advancing economic development in key areas such as health care technology, information technology, life sciences, marine sciences, nanotechnology, broadband deployment, and clean energy.

Working with the Patrick Administration, MTC added two new divisions in 2008—the Massachusetts e-Health Institute and the Massachusetts Broadband Institute. Through these and its other major division, the John Adams Innovation Institute, along with the Renewable Energy Trust, which MTC has administered, the agency is stimulating economic activity in every corner of the Commonwealth.

MTC has successfully invested close to $500 million in public funding by providing grants, loans, and other financial assistance to thousands of projects across the state during the past 27 years.

“MTC’s flexibility, creativity, and its collaborative approach have made it a critical partner in strengthening our innovation economy.”

Secretary of Housing and Economic Development
Greg Bialecki
Innovation Institute Governing Board

Executive Committee

**Donald Dubendorf**, Chairman, Innovation Institute; Attorney
Mitchell Adams, Executive Director, MTC
Philip Cheney, Raytheon (retired)
The Honorable Gregory P. Bialecki, Secretary, Massachusetts Executive Office of Housing and Economic Development
Pieter Schiller, General Partner, Advanced Technology Ventures
Mitchell G. Tyson, CEO and Director, Advanced Electron Beams, Inc.
Jack M. Wilson, President, University of Massachusetts

Governing Board Members

Christopher Anderson, President, Massachusetts High Technology Council
Michael Cronin, President and CEO, Cognition Corporation
Robert L. Culver, President and CEO, MassDevelopment
Thomas G. Davis, Executive Director, The Greater New Bedford Industrial Foundation
David D. Fleming, Group Senior Vice President, Genzyme Corporation
C. Jeffrey Grogan, Partner, Monitor Group
Matthew Harris, CEO and Managing Partner, Village Ventures, Inc.
Ranch Kimball, former President and CEO, Joslin Diabetes Center
Paul Martin, Dean of Research & IT, Harvard University
Peggy Newell, Vice Provost, Tufts University
Joan Y. Reede, MD, MPH, MS, Dean for Diversity and Community Partnership, Harvard Medical School
Lawrence Reilly, Vice Chairman, MTC Board of Directors
Stephen C. Smith, Executive Director, Southeastern Regional Planning Commission
Karl Weiss, Chairman, MTC Board of Directors

Patrick Larkin, Director, John Adams Innovation Institute

“
Our success is entirely dependent upon our ability to identify and support the champions who contribute the passion and vision necessary to make a difference.
”

Don Dubendorf
John Adams Innovation Institute Governing Board Chair

At Hoppe Tool in Chicopee, precision machining companies in western Massachusetts were awarded $500,000—part of the Precision Manufacturing Regional Alliance Project. (credit: John Fitzpatrick)
The John Adams Innovation Institute, the economic development division of MTC, is the Commonwealth’s leading science, technology, and innovation policy agent—fostering the vitality and capacity for self-renewal of the Massachusetts Innovation Economy.

Working closely with academics, industry practitioners, and government officials—region by region and sector by sector—the Innovation Institute’s mission is to enhance the capacity of the Massachusetts economy to sustain an ongoing flow of innovation which is crucial to create, attract, and grow companies in emerging and established industries. Through its projects, the Innovation Institute enhances the health and vibrancy of the Massachusetts innovation ecosystem.

On June 11, 2009, the state of Massachusetts and a group of universities and technology companies signed an agreement to work to develop a high-performance computing center in the city of Holyoke.

The Innovation Institute’s Challenge:
How do we accelerate and leverage the self-organizing capacity of individuals and organizations, fostering greater collaboration throughout industry, academia, and government to improve conditions for sustainable and equitable economic prosperity across the Commonwealth?

Our projects target primarily, but not exclusively, four areas:

- Organizing for innovation: leadership development, stakeholder convening, industry organizing, and policy and planning.
- Building research and innovation capacity: technology transfer and commercialization, catalyzing university-industry partnerships, strengthening research and innovation infrastructure, enhancing the research enterprise, facilitating technology development.
- Supporting high-value projects: launch of the Massachusetts Life Sciences Center, launch of the Massachusetts Broadband Institute, formation of an Academic Research Council, support for Nanotechnology Ideation Forums, organizing and managing the IT Collaborative.
- Understanding the Massachusetts Innovation Economy: annual publication of the Index of the Massachusetts Innovation Economy, industry studies, project support studies, special projects.
The Innovation Institute supports numerous initiatives to enhance the capacity of practitioners in industry, academia, and government to organize and act strategically with the necessary tools and understanding to pursue innovation and business opportunities. In five years of operation, we have partnered with over 985 organizations and invested $35 million through 62 investments, leveraging $159 million across the sectors of the Commonwealth’s Innovation Economy.

Specific examples of our work include:

**Precision Machining Talent Development:** Helping to increase the flow of qualified workers into the precision machining industry cluster in western Massachusetts. This project has helped re-energize leadership within the western Massachusetts Chapter of the National Tooling and Machining Association.

**Marine Science and Technology Ocean Observing Initiative:** Leveraging the economic benefits of the global marketplace for marine science and technology, the Innovation Institute is supporting the Woods Hole Oceanographic Institution’s $100 million ocean observing infrastructure project, developing programs and initiatives to drive economic outcomes from the research and market opportunities created by the marine observatories.

**Nanomanufacturing Research Center Initiative:** Assisting research centers in creating favorable conditions for translating research outcomes into business opportunities. At the Nanomanufacturing Center of Excellence at UMass Lowell, faculty and staff are piloting an approach called Accelerated Technology Transfer Teams (AT3), high-value research projects defined by and worked on with industry. One AT3 group is working on a breakthrough nanoscale automated feeding system for cell cultures to enhance the efficiency and consistency of biological research.
Launching a Massachusetts IT Collaborative

The Massachusetts IT Collaborative is a forum led by 18 thought leaders from industry, academia, and government coming together to enhance the global competitiveness and advance the policy priorities of the region’s digital technology industries. Called to action by Governor Patrick in January 2009, the Collaborative works to organize the voice of one of the state’s most vital communities of business and innovation. Targeted efforts underway include initiatives to strengthen entrepreneurship, STEM education, and the sector’s visibility and identity.

The Innovation Institute was tapped by the Commonwealth’s Executive Office of Housing and Economic Development to support and manage the emergence of the IT Collaborative.

On June 10, 2009, the IT Collaborative drew more than 200 thought leaders from industry, government, and academia to an event titled “A Framework for Collaboration in the Region’s Information Technology Sector” at Microsoft’s New England Research and Development Center in Cambridge. The event’s keynote speaker Rodney Brooks, chairman and CTO of Heartland Robotics, co-founder of iRobot, and former director of the MIT Computer Science and Artificial Intelligence Laboratory, spoke about the social and productivity advancements facilitated by digital technology.

At the event, Governor Patrick announced the MassChallenge Venture Funds Competition, an initiative to catalyze entrepreneurship and new business formation also supported by the Innovation Institute.
This is one of the most exciting and far-reaching health care technology initiatives in the country. Rapid deployment of these proven technologies across the state will mean better care for our citizens and will result in real savings that can be re-invested in our hospitals, community health centers, doctors’ offices, and other health care settings.

JudyAnn Bigby, MD
Massachusetts Secretary of Health and Human Services
Massachusetts has long been a leader in both health care and technology, with world-class academic institutions, hospitals, and companies working with cutting-edge technologies to improve people’s lives and strengthen our economy.

To expand on this competitive advantage, Governor Deval Patrick and leaders in the Massachusetts Legislature created the Massachusetts e-Health Institute (MeHI) through the passage of Chapter 305 of the Acts of 2008 with a critical mission to improve quality and reduce costs in health care for citizens of the Commonwealth.

Led by Health and Human Services Secretary JudyAnn Bigby and administered by MTC, the e-Health Institute is aggressively promoting cost containment, transparency, and efficiency in the delivery of quality health care through the deployment of electronic health record systems in all health care provider settings in Massachusetts. These electronic health records would then be made available in all health care settings through the development of a robust health information exchange network.

Massachusetts Life Sciences Collaborative

The Collaborative’s Leadership Council—co-chaired by Harvard President Drew Faust, MIT President Susan Hockfield, UMass President Jack Wilson, and Genzyme CEO Henri Termeer—is represented by 45 principals from private industry and academia working together to enhance the competitive position of the life sciences cluster in Massachusetts.

Here are some of the Collaborative’s actions carried out over the past fiscal year which contribute to maintaining the Commonwealth’s leadership role in life sciences research and innovation:

- Developed the first definitive study on the conduct of clinical trials in Massachusetts, in partnership with the health care consulting firm, Fletcher Spaght.
- Involved in a detailed analysis of the potential for bio-manufacturing in the Commonwealth, in cooperation with MIT’s Industrial Performance Center.
- Launched a strategic effort with support from PricewaterhouseCoopers and the MIT Entrepreneurship Center to address the impact of the economic downturn on life sciences innovation and venture formation in Massachusetts.
- Sent a letter to the Massachusetts Congressional delegation urging them to include increased life sciences research funding in the American Recovery and Reinvestment Act. Due in part to these efforts, significant funding for NIH and other related research was included in the $787 billion Act passed in February 2009.
- Provided valuable input and direction to the design of Massachusetts Life Sciences Center programs, including human capital, investment, and incentive programs.
- Helped to guide the UMass Donahue Institute’s Life Sciences Talent initiative, an extensive review of the workforce demands of the life sciences cluster, commissioned by the Massachusetts Life Sciences Center.
MeHI developed an action plan that leverages state resources with federal stimulus funding through the Health Information Technology for Economic and Clinical Health Act. The vision is that by 2015 all Massachusetts health care providers will use interoperable electronic health record systems to record patient information.

In addition to administering MeHI, MTC has spearheaded other highly successful statewide health technologies initiatives including a policy-influencing study on hospital Computerized Physician Order Entry systems.

CPOE University is a comprehensive educational program for physicians and clinical teams consisting of seminars and full day courses. We provide a tailored educational program that reflects the needs of hospital leadership across all departments and encourages the kind of participation and collaboration of medical and clinical staffs that is crucial to the success of these projects. The effective use of CPOE in Massachusetts hospitals will be required by October 2012 as a condition of state licensure.

Working with the New England Healthcare Institute, as well as all of the major associations, non-profit organizations, and other health care leaders, MTC is catalyzing action in health information technology. Through the FAST Program, MTC is working with health care professionals to identify and advocate for the adoption of significant technologies that move the needle on cost and quality.
In the upcoming year, MTC and its partners will be working on two exciting technologies:

1. **Tele-ICU** is a technology that enables physicians known as “intensivists” to care for patients in remote locations, which ensures that they are treated by the best trained doctors in the world. This technology also significantly reduces costs and could save up to $175 million per year for Massachusetts.

2. **Interactive Health Support Platform** is a technology that has tremendous promise in treating patients with chronic diseases, such as cardiovascular conditions, diabetes, and chronic respiratory diseases. The technology enables patients to transmit vital health data from the comfort of their home to physicians’ offices and, in turn, receive health coaching based on the clinical data they transmit.

---

**Fast Fact**

Electronic Health Records applications surpass paper-based records because they can support other care-related activities, including evidence-based decision support, chronic disease management, and outcomes reporting.

---

*During the Spring of 2009, one of numerous public hearings held to receive comments on the Health Information Technology for Economic and Clinical Health Act (HITECH Act) Provisions of the American Recovery and Reinvestment Act of 2009.*
Ex Officio Board Seats

C. Stanley McGee, Board Chairman; Assistant Secretary for Policy and Planning, Massachusetts Executive Office of Housing and Economic Development (designee for Secretary Greg Bialecki)

Anne Margulies, Chief Information Officer for the Commonwealth of Massachusetts, Executive Office of Administration and Finance (designee for Secretary Jay Gonzales)

Geoffrey G. Why, Commissioner, Department of Telecommunications and Cable

Mitchell L. Adams, Executive Director, MTC

Donald R. Dubendorf, Attorney; Chairman of the Governing Board, John Adams Innovation Institute

Gubernatorial Appointments

Brian Burke, Senior Director of State Government Affairs, Microsoft Corporation

David D. Clark, Senior Research Scientist, MIT Computer Science and Artificial Intelligence Laboratory

Linda Dunlavy, Executive Director, Franklin Regional Council of Governments

Rick Oliveri, Director of Technology Management, Baystate Health

Officials and citizens gather in front of the Goshen Town Hall for the Governor’s August 2008 announcement of the creation of the Massachusetts Broadband Institute.

Photo credit: John Fitzpatrick
Massachusetts Broadband Institute

High-speed Internet—or broadband—access is an essential building block for economic and educational advancement in the 21st century. Broadband leads to job growth, business expansion, and property values, along with improvements in public safety and access to health care, educational opportunities, and civic participation. Under Governor Patrick’s leadership, these important opportunities will be accessible in the near future to more than 5,750 businesses and 20,337 households in 43 Massachusetts communities that currently have either limited or no broadband availability.

In August 2008, the Governor enacted legislation creating the Massachusetts Broadband Institute (MBI) as a division of MTC to address this critical digital divide.

In its first year of operation, the MBI has built a strong foundation to deliver the benefits of broadband service to every community in the Commonwealth by 2011. Overseen by a nine-person governing board, the MBI manages the Massachusetts Broadband Incentive Fund, which is capitalized by $40 million in state bond funding that the MBI is investing in necessary and long-lived infrastructure assets—such as conduits, fiber-optic cable, and wireless towers.

“We are determined to empower all students and businesses with the tools they need to succeed. By leveraging an existing road project to bring broadband access to western Massachusetts, we are positioning the Commonwealth to compete for federal stimulus grants and investing wisely in our future.”

Governor Deval Patrick announcing $4.3 million broadband expansion project for western Massachusetts
Governor Patrick recently announced the MBI's first major broadband infrastructure investment: a $4.3 million broadband expansion project for western Massachusetts in partnership with the Massachusetts Department of Transportation. Aided by Congressman John Olver's tireless efforts to secure broadband funding at the federal level, the project leverages federal funding to run fiber-optic cable up Interstate 91 for an Intelligent Traffic System, and to simultaneously place additional conduits for the purposes of economic development and build out of broadband networks in western Massachusetts.

The MBI has also submitted proposals for more than $100 million in funding through the federal American Recovery and Reinvestment Act of 2009. Building on the I-91 project, the MBI would complete a fiber “middle mile” network throughout the western region of the state that, in addition to bringing broadband access to these communities, would provide direct connection to regional anchor institutions and critical community facilities. The project, which would create up to 3,040 jobs, would be developed in collaboration and partnership with other state and local government entities, non-profits, and for-profit companies.
Other MBI activities include:

- A detailed mapping project with the Commonwealth’s Office of Geographic and Environmental Information, MassGIS, to assess existing broadband availability, resources, and needs in western Massachusetts, where the digital divide is most acute.

- Intensive collaboration with other government agencies to understand how their resources can contribute to the MBI’s mission, and how the MBI’s investments can help address their priorities.

- A series of public forums to learn about community broadband priorities, one of which was hosted by Governor Patrick and drew a crowd of more than 140 residents, local officials, and business owners.

- Engagement with private broadband firms, both large and small, to develop the co-investment partnerships expected to provide service to the public based on the MBI’s assets. The MBI will make limited and strategic public investments that leverage the use of public dollars to incentivize private investment from providers to supply complete broadband solutions to customers in unserved and underserved areas.
The Renewable Energy Trust continues to be a catalyst for clean energy development and installation.

Ian Bowles
Massachusetts Secretary of Energy and Environmental Affairs
The Massachusetts Renewable Energy Trust, which has been administered by MTC, had a strong FY2009. Hundreds of solar, wind, and other renewable energy projects started generating new, clean electricity and many more are in the pipeline. This year, the Trust awarded $55 million to more than 800 renewable energy projects in 270 cities and towns in Massachusetts.

Working with our partners in the Patrick Administration and the Legislature, along with local officials, residents, businesses, and community groups across the Commonwealth, the Trust is supporting Governor Patrick’s vision for a cleaner energy future in Massachusetts.

Since the passage of the Green Communities Act in July 2008, the Trust has adopted and implemented a new strategic plan for renewable energy project development. The Act also established a new nine-member governing board for the Trust chaired by Department of Energy Resources Commissioner Philip Giudice, and the subsequently enacted Green Jobs Act shifted clean energy workforce development and company investments to the new Massachusetts Clean Energy Center.

As of the date of this report, the Trust is being transitioned to the Massachusetts Clean Energy Center as a result of additional legislation passed by the Massachusetts Legislature.
Here are just a few of the Trust’s accomplishments in FY2009:

- More than 550 projects from the Trust’s pipeline were installed, bringing the total of installed systems to well over 2,000 projects generating more than 318,000 megawatt-hours.

- The Commonwealth Solar rebate program, launched by Governor Patrick in January 2008, has been successfully keeping the state on track to meet the Governor’s goal of 27 megawatts of solar photovoltaic (PV) systems installed by 2012. As of the end of FY2009, 11.9 MW of cumulative PV capacity—1,474 systems—had been installed in 266 communities across the Commonwealth with support from the Trust. Much of this installed capacity is due to Comm Solar, with the rest coming from other Trust programs.

- Dozens of wind projects ranging from less than 10 kilowatts to 1.5 megawatts in capacity have been installed across the Commonwealth, with dozens more in the pipeline. The amount of wind power put in operation in Massachusetts in the past year alone makes up almost 40% of wind power capacity ever installed in the state, bringing the state to a total of more than 8 megawatts.

- In FY2009, the Trust awarded more than $1.7 million to improve power production from five small hydroelectric facilities and approximately $1.5 million to clean bioenergy and biofuels projects.

The Commonwealth Solar rebate program has nearly quadrupled the number of solar installation contractors and subcontractors in Massachusetts since its January 2008 launch by Governor Patrick, from 51 to 193.

Photo credit: Beaumont Solar
Massachusetts Renewable Energy Trust

• Working with our partners in state government, the Trust used its investment in the Wind Technology Testing Center to leverage an additional $25 million in federal funding for the Center, which is being built in Charlestown.

• The Trust continues to support the U.S. Offshore Wind Collaborative, which is addressing the technical, environmental, economic, and regulatory issues necessary to catalyze the sustainable development of offshore wind energy in the waters of the United States.

• As of the date of this report, the towns of Ashburnham, Holden, Holyoke, and Templeton had taken advantage of a provision in the Green Communities Act for Municipal Light Plants (MLPs) to “opt in” to the Trust, with other MLPs expressing interest. These towns are already making use of their Trust membership by exploring and installing clean energy projects with Trust support.

With Trust support, the Woods Hole Research Center installed a 100-kilowatt wind turbine to power its George M. Woodwell Building at its Falmouth campus.

Photo credit: Woods Hole Research Center

Alternatives Unlimited, a nonprofit organization providing a wide range of services to people with disabilities throughout central Massachusetts, rehabilitated a hydroelectric facility at its new Whitinsville headquarters with assistance from the Trust.

Photo credit: Alternatives Unlimited
In today’s economy, no state or region can thrive without vigorous efforts to engage global markets. The Patrick Administration has breathed new life into the state’s international trade and investment operations by recognizing the value of international relations and carrying out a successful trade and business development mission to China. MTC, which played an important role in the China mission and subsequent visit of Chinese businesspeople to Boston, has been working in partnership with the Administration to help craft an international strategy for the Commonwealth to reap the benefits of cross-border collaborations.

We believe that the state is well positioned for success in the global arena, because it is a center of innovation, a leader in key growth industries, and home to world-class universities and research centers. Massachusetts must now leverage these assets to catapult the Commonwealth into the international arena.

MTC is working with the Massachusetts Office of International Trade and Investment (MOITI), under the Executive Office of Housing and Economic Development, to develop a plan for working within existing budgets to maximize exports, galvanize international business partnerships, and increase foreign direct investment.

Over the coming year, we anticipate facilitating public-private partnerships to plan, implement, and evaluate international economic activities. We will also consider ways in which Massachusetts can partner with federal agencies to tap into established networks and will explore the potential for targeted, “high-yield” business development missions.
MTC Awards to Date by Division or Program

- **$30,787,957** John Adams Innovation Institute
- **$5,288,988** Waste to Energy
- **$55,504,138** Policy Program
- **$75,688,654** Clean Energy Program
- **$69,322,793** Industry Investment & Development
- **$4,374,299** e-Health & Life Sciences
- **$501,314** International
- **$149,659,677** Green Buildings & Infrastructure Program
- **$4,300,000* Massachusetts Broadband Institute

*This award was officially made in July 2009*