Special thanks to David Borges, Assistant Director of the University of Massachusetts Center for Policy Analysis, for the economic impact calculation and regional overviews, and to Eva Gaffney, Bridgewater State University Director of Marketing and Publications, for providing a final review of copy.

Data and information were collected from numerous sources to develop the content in this publication. For a complete list of references or a specific citation, please contact the CONNECT office.

Population, statistics, economic impact calculations, and other data in this report reflect the six-county region of Southeastern Massachusetts: Norfolk, Bristol, Plymouth, Barnstable, Dukes, and Nantucket counties, and unless stated otherwise, are based on FY09 fiscal information (the last year that audited reports were available).
Dear Colleague:

CONNECT was founded in 2003 with two goals: to improve the quality, accessibility and affordability of higher education; and to advance the economic, educational, and cultural life of Southeastern Massachusetts.

The impact of our institutions on the region is inarguable. As the following pages show, we are a key source of higher education within our six-county service area, collectively enrolling more than 53,000 students last year. Over the years, of the alumni we have graduated, 105,000 remain here investing their knowledge, loyalty and earnings into our communities.

The impact of the CONNECT institutions on the economic vitality of the region, however, goes far beyond our educational accomplishments. The six colleges and universities employ 9,400 faculty, staff, and students, and infuse a combined $670 million dollars into Southeastern Massachusetts. Taken together, we are among the area’s largest employers and act as a key support for the regional economy.

CONNECT’s previous economic impact reports and conferences were produced in 2003, 2005, and 2008. Tangible outcomes from these past initiatives include the formation of a task force coordinating math curriculum across the six institutions; regional leadership of a STEM (science, technology, engineering, and math) network; grants for MTEL (Massachusetts Test for Education Licensure) preparation to increase the number of teachers qualified to lead Massachusetts classrooms; enhanced partnerships with K-12 schools to foster college preparedness and enrollment; support for green jobs and curriculum; and cooperation with the state to develop a centralized clinical placement system for nursing.

With input from our community partners, this 2010 report and summit will yield new actionable recommendations. In collaboration with employers, private industry, state and local government, and area economic development agencies, the CONNECT partners will work to build partnerships and strategies fueling economic security for Southeastern Massachusetts.

We look forward to working with you to bring these plans from concept to reality.

Sincerely,

[Signatures]
Southeastern Massachusetts is a region rich with history and potential. The area’s fortunes throughout the centuries have been defined by its five cities – Attleboro, Brockton, Fall River, New Bedford and Taunton – and their role as traditional manufacturing and industrial centers, as well as by the maritime history of whaling and fishing in its coastal towns.

The region’s economy boasts the country’s leading fishing port, marine science research facilities, a burgeoning medical instruments/medical devices manufacturing sector and a strong, multifaceted service industry that is growing at a consistent rate.

With healthcare as the region’s largest employer, leisure and hospitality is also an important sector, representing more than 10 percent of area employment and growing approximately 11 percent since 2001. Education is another important sector, representing 8.4 percent of regional employment.

Population in the area has grown 12 percent in the last decade, almost twice the rate of the state average. Southeastern Massachusetts now comprises 20 percent of the state’s population, with the five cities accounting for nearly 30 percent of the region’s population.

In recent decades, the region has exhibited uneven economic growth, partly as a result of differing levels of educational attainment. The unemployment rate (May 2010) in Southeastern Massachusetts was 11 percent compared to just over 9 percent statewide and nationally. Industry has been reluctant to locate in the Southeast’s cities out of concern over the lack of a skilled workforce.

However, education rates are rising: from 2000 to 2006-2008, the proportion of high school graduates among the population rose from 57.6 to 64.3 percent in New Bedford; from 74.8 to 83 percent in Taunton; from 81.9 to 85.5 percent in Attleboro; and from 56.6 to 66.4 percent in Fall River. Communities are hearing the message about the importance of an educated workforce in attracting and retaining industry as our state moves toward a post-industrial economy based on innovation and knowledge.
Gradually, Southeastern Massachusetts is separating into four distinct economic areas, differentiated by commuting patterns, economic bases, demographic profiles, the influence of the Boston and Providence metropolitan economies, and uneven progress toward a postindustrial economy.

**Cape & Islands**

Range: 23 towns in Barnstable County, Martha’s Vineyard, and Nantucket  
Population: 246,625 (2008 Census)  
Average annual earnings 2009 (third quarter): $37,336  
Increase in earnings from 2001: 19.5 percent  
Labor force (May 2010): 140,310  
Increase in labor force from 2000: 7.2 percent  
Unemployment rate (May 2010): 8.9 percent

Cape Cod & the Islands was one of the fastest-growing economic areas in Massachusetts during the 1990s. A population boom of 35 percent, fueled mainly by retirees and commuters to the South Shore and Boston, slowed considerably in the 2000s. More than half of this area’s economic base depends on the hospitality industry, retirees, second-home owners, and residents who work in other parts of the state.

The share of the area’s employment from 2001 to 2009 increased most significantly in leisure and hospitality, which employs nearly 30 percent of the three counties’ population. Other jobs are found in the many small entrepreneurial businesses that service the growing retirement population.

The knowledge-intensive sector, including educational institutions, high technology manufacturing, high-tech services, and professional services, accounts for 6.8 percent of the region’s employment. The region’s low wages – 42.5 percent below the statewide average – are typical of the wages found in the tourism industry. However, when data on total personal income (from all sources) is included, income for year-round residents compares favorably to the state as a whole.

The Cape has sought to expand its economic base by spreading its resort economy into the “shoulder seasons” of early spring and late fall. Economic planners are also promoting the development of light-clean industries, such as health care, entrepreneurship, professional services, and high technology, which generally provide high-wage jobs and have less environmental impact than traditional manufacturing.

**South Shore**

Range: 12 towns in Plymouth County  
Population: 206,571 (2008 Census)  
Average annual earnings 2009 (third quarter): $41,181  
Increase in earnings from 2001: 17.9 percent  
Labor force (May 2010): 113,497  
Increase in labor force from 2000: 8.3 percent  
Unemployment rate (May 2010): 9.7 percent

The largest towns, Plymout and Marshfield, account for 38.9 percent of this eastern coastal area’s population. Since its transportation network does not facilitate east-west movement in and out of the South Shore, the area’s economic fortunes depend largely on its commuting relationship to Greater Boston and on the local demand for retail trade and services created by Boston commuters. The unemployment rate, educational attainment levels and incomes of the South Shore generally move in tandem with statewide averages.

The South Shore’s major business clusters include construction (6.9 percent of total employment), health services (6.5 percent of employment), financial services (3.9 percent) and professional services (3.3 percent). The construction and health services clusters’ expansion occurred mainly due to rising local demand generated by population growth. Of these categories, the only employment sector that grew from 2001 to 2009 was health services.

**South Coast**

Range: 14 towns and cities in the southernmost section of Bristol and Plymouth Counties  
Population: 349,944 (2008 Census)  
Average annual earnings 2009 (third quarter): $37,672  
Increase in earnings from 2001: 23.9 percent  
Labor force (May 2010): 176,455  
Increase in labor force from 2000: 10.4 percent  
Unemployment rate (May 2010): 14.5 percent

Despite business and housing costs that are lower than Boston’s, the South Coast has been less able to capitalize on the state’s general prosperity because of low levels of educational attainment and its more isolated location. In addition, the South Coast is far more dependent on manufacturing than other areas of Southeastern Massachusetts, although traditional
manufacturing is gradually being replaced by high-tech manufacturing and services.

Maritime industries form a key sector; New Bedford in particular has been an industry leader nationally for generations and still leads the nation in value of fish landings annually at over $250 million. To augment the fishing industry, the region has transitioned to include related business, like marine equipment, storage facilities, seafood processing plants and food service suppliers.

Allied health services and business services are two of the most rapidly expanding employment sectors and are projected to remain at the forefront of the region’s employment growth in the coming years because of the SouthCoast’s aging population and new business formation. Health services comprise 12.5 percent of total employment. New growth is expected in relation to high-tech manufacturing, especially marine electronics and instrumentation and medical devices.

The SouthCoast’s population grew 5.5 percent since 1980. While average annual earnings are 41.2 percent below the statewide average, the most significant business clusters pay significantly higher wages than the area’s average.

**Tri-Cities**

Range: 22 cities and towns in Bristol and Plymouth Counties
Population: 488,647 (2008 Census)
Average annual earnings 2009 (third quarter): $41,386
Increase in earnings from 2001: 20.1 percent

Labor force (May 2010): 271,480
Increase in labor force from 2000: 12 percent
Unemployment rate (May 2010): 10.5 percent

The area’s three cities – Brockton, Taunton and Attleboro – account for almost 40 percent of its population. The Tri-Cities added more than 90,000 people during the last decade, benefiting from the southward movement of the Boston metropolitan economy and from the northeastward movement of the Providence metropolitan economy.

This growth has been partly facilitated by a transportation network linking these communities with the metro areas, and from the direct relocation of businesses in search of land, lower costs, better access to transportation and an increasingly well-educated labor force.

The Tri-Cities Area has the most diversified economy in Southeastern Massachusetts. Its economic base is in a period of transition, where manufacturing remains important to many of its towns and cities, but manufacturing employment is declining overall as the area shifts to a service-based economy. Manufacturing remains important, although the metals industry is increasingly being replaced by high technology, particularly in computer and electronics manufacturing, telecommunications and computer systems design.

Health services, with 9.2 percent of total employment, is the largest sector, which also saw the largest, though still modest, share of employment growth from 2001-2009 (1.3 percent increase).
MARINE SCIENCE AND TECHNOLOGY
An Ocean of Opportunity

Southeastern Massachusetts has always relied on the ocean. New Bedford, in particular, benefits from its coastal location, leading the nation in annual value of fish landings at more than $250 million.

In the SouthCoast, employment in the marine science and technology industry more than doubled between 2000 (523 jobs) and 2009 (1,068 jobs). Fishing also accounts for 1.3 percent of total employment on the Cape & Islands. To augment the fishing trade, the region’s economy has transitioned to include related business such as marine equipment, storage facilities, processing plants and food service suppliers.

Marine sciences and technology range from companies producing rope for commercial fishing and marine instrumentation, to companies producing advanced undersea robotics and stabilized sensor systems, to agencies conducting oceanographic research and marine-related educational services.

According to the Massachusetts Office of Business Development, the annual output of the marine science and technology cluster in Massachusetts is approximately $1.5 billion. The concentration of research institutions such as Woods Hole Oceanographic Institution, Marine Biological Laboratories, and UMass Dartmouth’s School of Marine Sciences and Technology in Southeastern Massachusetts positions the area to remain a global leader in established and emerging marine technologies.

**Massasoit Community College: Recreational Marine Trades Certificate Programs**

Since 1998, Massasoit Community College has collaborated with the Massachusetts Marine Trades Association (MMTA) in training recreational marine technicians. This program was collaboratively designed to address short and long-term workforce needs in the region. Aspiring marine technicians and incumbent workers receive an industry-recognized certificate upon completion of each course or program. Approximately 18 marine technicians have been certified each year for the past seven years of the program.

**Bristol Community College: Raising Quahogs**

Bristol Community College students spent the summer raising babies – baby quahogs, that is. Under the direction of Professor Robert Rak, students fostered 150,000 baby mollusks for reseeding in the Westport River. They worked with the quahogs in silos under a dock in Battleship Cove, cleaning barnacles and monitoring their environment. The clams will grow in the Westport River for two to three more years before becoming part of the region’s shellfish output.

**University of Massachusetts Dartmouth: School of Marine Science and Technology**

The UMass Dartmouth School of Marine Science & Technology (SMAST) is embedded in the SouthCoast economy through its partnerships with businesses and communities. Faculty and students in the Fisheries Department are working side-by-side with industry partners and government regulators using university research to shape public policy and to manage the nation’s fisheries resource in a sustainable manner. UMass Dartmouth scallop research generates millions of dollars in additional landings and hundreds of jobs, while helping New Bedford remain the number one cash port in the United States.

“No other port in New England can match New Bedford Harbor for its growing blend of yachts and fishing boats.”

*Boston Globe “G” Magazine (September 25, 2010)*
CONNECT institutions have profound economic impact on the region. While the main mission of the six CONNECT institutions – Bridgewater State University, Bristol Community College, Cape Cod Community College, Massachusetts Maritime Academy, Massasoit Community College and University of Massachusetts Dartmouth – is education, all are major employers and a stabilizing economic anchor in Southeastern Massachusetts.

The estimated economic impact of the CONNECT institutions throughout the state is $705 million, with $670 million remaining in Southeastern Massachusetts. This economic impact estimate is based on a conservative model that does not include consulting, spending or business ventures by faculty or staff, money spent by visitors (e.g. parents), and non-scholarship foundation expenditures.

CONNECT institutions collectively employ 2,834 full- and part-time faculty and 2,892 full- and part-time staff, for a total number of 5,726 employees. Ninety-two percent of them reside in Southeastern Massachusetts. The six institutions also provided employment for 3,674 students.

According to the state Office of Labor and Workforce Development, if the workforces of the CONNECT institutions were combined, the partnership would be among the top five employers in the region, along with SouthCoast Hospitals, Acushnet Company of Fairhaven, Technical Futures of Canton and Shaw Group of Stoughton.

If the CONNECT institutions were a publicly held company, with a total FY’09 revenue of more than $518 million, they would rank 37th in the Commonwealth in the 2010 “Globe 100,” and fourth in the region behind Analog Devices of Norwood ($2,141.3 million), Clean Harbors of Norwell ($1,074.2 million), and Haemovetica of Braintree ($628.7 million).

The state appropriation for higher education comprises only 30 percent of the support for the six institutions. For every dollar in state appropriation, the CONNECT institutions generate $4.25 in regional economic output and $0.22 elsewhere in the state for a total of $4.47.

Other sources of income include tuition and fees, room and board, continuing education and non-credit offerings, donations and endowment income, and related educational enterprises. CONNECT institutions won more than $29 million in grant funding in FY’09 to support student learning, academic improvement, and cutting-edge research, often from out-of-state sources, thereby infusing fresh revenue to support enterprise in Southeastern Massachusetts.
At the same time that enrollment has surged at the commonwealth’s public colleges and universities, state support for the institutions has dropped steadily to levels that could threaten the institutions’ ability to carry out their missions of providing affordable, accessible education to the region’s students.

According to a September 2010 release from the State House News Service, between 2004 and 2009, Massachusetts reduced public higher education funding per student by more than 13 percent, while nationally, per-student funding rose by 4 percent. During the same period, enrollment surged by 22 percent in Massachusetts community colleges, 9.5 percent in state universities and 14 percent in University of Massachusetts undergraduate admissions.

Education Commissioner Richard Freeland said the state appropriation dropped an additional 12 percent in 2010. Massachusetts ranks 46th among the 50 states in per capita support for public higher education.
SUPPORTING OUR COMMUNITIES
Boosting the Regional Economy

Public higher education institutions in Southeastern Massachusetts enhance the intellectual and cultural life of the region, provide education and training to students, and foster a skilled workforce for employers.

Yet the CONNECT colleges and universities yield substantial, direct monetary impact to the region, as well. The six CONNECT institutions spent an estimated $121 million in FY’09 on goods and services (the figure does not include payroll) largely in Southeastern Massachusetts. These purchases of goods such as furniture, paper, computers and food, and services such as accounting, utilities, and graphic design, contribute to the bottom line at hundreds of local companies.

Expenditures of the CONNECT institutions generate additional spending in nearly every sector of the economy. The top off-campus employment impacts are in sectors such as food and drink service, retail, services to buildings and dwellings, and gasoline providers. Not only are the CONNECT institutions some of the largest employers in the region, but their spending (and that of their staff and students) also supports significant numbers of jobs in the local economy.

For example, the campuses had a combined investment in new construction of $9,935,245 in FY’09. This infusion of construction money into the economy supported an estimated 129 building trades jobs in Massachusetts.

These contractors worked on major projects in addition to vendors such as plumbers, electricians and carpenters who provide services and maintenance throughout the year. With construction being the hardest-hit field in the recession, the campus’s expenditures preserved much-needed jobs in this core industry.

“New College of Visual and Performing Arts revitalizes New Bedford.”
University of Massachusetts Dartmouth
“New Science and Math Center brings education into the future.”

BRIDGEWATER STATE UNIVERSITY

“New Middleborough Center joins education and economic development.”

MASSASOIT COMMUNITY COLLEGE

“I see (the opening of the center) as an economic development tool, unfolding right here in the middle of downtown Middleborough. One of the students I met today was a young woman with four children. She's come back to school for opportunity. This is about expansion of opportunity for people in our region, so we can compete in this 21st century economy.”

STATE SENATOR MARC R. PACHECO

UNIVERSITY OF MASSACHUSETTS DARTMOUTH: COLLEGE OF VISUAL AND PERFORMING ARTS REVITALIZES NEW BEDFORD

In 2001, UMass Dartmouth opened its College of Visual and Performing Arts facility in the former Star Store in the heart of downtown New Bedford. This collection of world class artist studios, teaching spaces, and galleries – positioned near the Zeiterion Theatre and many private art studios – has enlivened the creative economy of New Bedford. City officials credit the facility with attracting more than $90 million of commercial investment to the neighborhood.

BRIDGEWATER STATE UNIVERSITY: NEW SCIENCE AND MATHEMATICS CENTER BRINGS EDUCATION INTO THE FUTURE

The $98.7 million expansion and renovation of the Conant Science Building will add state-of-the-art laboratories and high-tech classrooms. An LEED-certified learning space, the 211,000-square foot center will double the size of the college’s science and math facilities. The building will feature natural flora gardens, an observatory with a 160-foot dome, and a multi-story atrium. The Center will open in fall 2011, with a full build-out for the start of the 2012 academic year.

MASSASOIT COMMUNITY COLLEGE: NEW MIDDLEBOROUGH CENTER JOINS EDUCATION AND ECONOMIC DEVELOPMENT

In September 2010, Massasoit Community College opened an additional location in Middleborough located at 49 Union Street, adjacent to Town Hall. The center offers credit courses toward some of the college’s most popular programs such as liberal arts, business, criminal justice, and child care education, as well as a variety of noncredit and career training courses designed specifically for the region.
Small business is BIG business in the commonwealth. Throughout Massachusetts, 6.4 percent of people report themselves as self-employed. In the 2006 Census (the most recent data available), small employers (less than 500 employees) accounted for 98 percent of the state’s employers, and more than 48 percent of private-sector employment. In particular, small employers dominate the Cape and Islands: among the 11,120 establishments reporting in March 2009, 92.3 percent had less than 20 employees.

Small business is an important element of the state’s “innovation economy.” A November 2009 article in CNNMoney.com names Massachusetts the state best positioned for growth when the current economic turmoil recedes. This study reinforces a 2008 report from Babson naming Massachusetts the top state in the nation for entrepreneurial activity. Knowledge and knowledge-generation are key factors underlying the commonwealth’s economic diversification and continuing ability to lead economic recovery.

CONNECT institutions support the growth of business in many ways. Faculty researchers partner with industry to develop, test, and capitalize upon new ideas. Entrepreneurship Centers guide start-ups through business planning and market research. The workforce training and professional education offered by the colleges and universities update the skills of existing staff and ensure a skilled pool of fresh talent so business can thrive.
University of Massachusetts Dartmouth: Advanced Technology Manufacturing Center, Fall River

Opened in 2001 on the site of a devastating fire that destroyed the historic Kerr Mill complex, the 60,000 square foot UMass Dartmouth Advanced Technology Manufacturing Center brings together university laboratories and start-up businesses to create new jobs for the region. The facility has a dozen young companies on-site, employing 59 individuals and generating $10 million in sales in Southeastern Massachusetts. Nine technology companies have graduated from the facility, creating over 150 jobs in the region and yielding over $30 million in impact annually on the Massachusetts economy. The ATMC labs and companies also provide internship experiences for nearly 100 students in engineering, science, and business.

Massasoit Community College: Workforce Development and Community Education Division

The Workforce Development and Community Education Division supports economic development in its service communities by providing a variety of business-related non-credit certificates and trainings. One example: between 80 and 90 participants successfully complete Human Resources, Quickbooks and Event Planning Certificates each year. In addition, large businesses provide staff development that allows them to move forward by using on-site corporate training provided by Massasoit. Each year, more than 1,000 employees gain these company-specific skills paid for by their employers.

Bristol Community College: Academic Center for Entrepreneurship

Jen Cincotta, owner of Joslin Foods and creator of a pasta sauce aimed at picky eaters, used the services at the Bristol Community College Academic Center for Entrepreneurship to launch her business. Ms. Cincotta came to ACE charged with passion and drive but needed more direction to get her innovative pasta sauce – Eat Your Vegetables! – off the ground. With mentoring from ACE, she was able to secure licensing and launch her product, which is sold commercially throughout the South Coast at supermarkets and specialty food outlets. She creates Eat Your Vegetables! in a rented commercial kitchen, preparing to sell batches to 11 local food stores in southeastern New England.

A Massasoit Community College Grant Writing Training conducted in partnership with the Plymouth Chamber of Commerce, October 2010

CONNECT ECONOMIC IMPACT REPORT 2010
The renewable energy industry is a fast-evolving business sector in Massachusetts. In 2007, the renewable energy industry in Massachusetts included 209 companies; of these, 45 had formed in the past two years. The Massachusetts Technology Collaborative (MTC) expects industry employment will increase 30 percent over 10 years, and the Massachusetts Executive Office of Housing & Economic Development predicts clean energy industries to be a high-growth sector in the coming decades, with significant demand for occupations across skill and income levels.

Workers will be needed for firms that develop new technologies and those that design, engineer, finance, and construct renewable energy systems using technologies ranging from wind and solar to biomass, tidal, and geothermal.

Renewable energy is a subset of the larger “clean technology” industry supporting green-collar jobs. The federal government considers “green jobs” those “involved in economic activities that help protect or restore the environment or conserve natural resources,” including:

- Renewable energy
- Energy efficiency
- Greenhouse gas reduction
- Pollution reduction and cleanup
- Recycling and waste reduction
- Agricultural and natural resources conservation and
- Education, compliance, public awareness and training.

According to the Massachusetts Executive Office of Housing & Economic Development, “The development of green jobs and industries addresses state, national and international challenges of global warming, environmental degradation, increased energy costs and unreliable energy supply. Akin to life sciences, clean energy discoveries are not only critical to the state’s economy, they are essential to the economic health and functioning of the state itself.”

“While much of the U.S. real estate market has been floundering, one area has not seen a dip. Green building now accounts for nearly one-third of new construction in the U.S.” – Green Building: A Real Estate Revolution?

by Franklyn Cater, National Public Radio (September 7, 2010)

Cape Cod Community College: Developing Workforce for the Green Economy

Changing careers and moving into a new era was the goal of Cape Cod Community College student Matthew Kusza. He saw the future as one focused on the environment, water quality, eco-testing, wastewater management – the entire arena of “green jobs” – and decided that’s where he wanted to place his future. With a large family to support, it was a major decision. After years in the workforce, he’s found he enjoys science and technology and is upbeat about the decades ahead. Cape Cod Community College has a wide variety of environmental technology/renewable energy courses, certificates, and degree options for students, all focused on empowering the emerging “green economy.”
Bristol Community College: Green Jobs Grants

Bristol Community College serves as the lead partner for several grants that provide workforce training enabling incumbent workers (such as contractors, architects, and construction companies) to incorporate green technologies into their business as well as helping the unemployed move into new green fields such as weatherization. Work is based in The Green Center, which promotes sustainable practices in our region through workforce training and community education. In the initial rollout, a total of over $730,000 in grant money from four sources will support training for 130-plus students:

- The Stepping Stone program provides an intensive, free, eight-week training for unemployed individuals on topics such as home weatherization, energy auditing, green building, work readiness and business entrepreneurship.
- A Solar Training program financed through the State Energy Sector Partnership offers licensed electricians the board-certified (NABCEP) Photovoltaic Entry Level Certificate of Knowledge.
- The MassGREEN statewide weatherization training program prepares students to work as professional air sealing technicians and insulation installers.
- In partnership with Massasoit and Cape Cod Community Colleges, BCC is creating an online course (both for credit and non-credit) called 'Introduction to Sustainable and Green Energy Technologies' to be offered at all three schools in the fall.

University of Massachusetts Dartmouth: Marine Renewable Energy Center

In response to the global energy challenge, the UMass Dartmouth Marine Renewable Energy Center (MREC) leads an international consortium of universities, research institutions, government agencies and private companies committed to harvesting clean, sustainable and renewable energy from the ocean. MREC’s mission is to accelerate the discovery, development and deployment of innovative new hydro-kinetic technologies to generate clean electricity from wind, waves and tides. Capitalizing on this opportunity will re-position the commonwealth and region as a world leader in marine renewable energy, help reduce our carbon footprint and create thousands of jobs throughout the region.

Massachusetts Maritime Academy: Ocean Thermal Energy Conversion

Four years after failing an electrical engineering class at the University of Washington in Seattle, Matthew Loomis graduated from University of New Hampshire summa cum laude with a degree in physics. He proceeded into a master’s program, and then a doctoral program focusing on geochemical systems. It was then that Loomis realized his physics background could help solve environmental problems.

At the Massachusetts Maritime Academy’s aquaculture laboratory, Loomis is conducting the preliminary research on a promising new technology known as ocean thermal energy conversion (OTEC). OTEC technology uses warm surface seawater to run an evaporator and cold bottom seawater to run a condenser. The pressure differential between the two can power a turbine, generating electricity.

The upwelling of cold, nutrient rich seawater to run the condenser also promotes rapid growth of a single-cell phytoplankton species called Coccolithophorids. As it grows, this phytoplankton forms a series of thick calcium carbonate scales as part of the cell wall - thereby sequestering carbon. OTEC could be used as a “carbon negative” energy source, meaning it could actively remove carbon dioxide from the atmosphere and store it harmlessly in ocean sediments.

A great deal of research is needed before OTEC is viable on a large scale, but several companies and governments are actively pursuing such technologies. Loomis said successful deployment of OTEC technology to meet the country’s energy needs has the potential of advancing a “blue revolution” revitalizing the maritime industry.
CONNECT institutions offer degree and training programs in emerging industries; however, the six institutions also educate students for the basic, core functions that underlie the health, safety, government and education of our communities.

Graduates of our institutions can be found in almost every police force, fire department, elementary and middle school, social service agency, and government office in Southeastern Massachusetts. Alumni handle our money at banks, teach our preschoolers, respond to our 911 calls, manage our town councils, and fulfill hundreds of other roles to keep our towns and cities running and protect our individual and collective quality of life.

**Cape Cod Community College: Hospitality and Leisure**

With tourism representing the largest segment of the Cape and Islands economy, at 43 percent, preparing students for the hospitality and leisure industries is not just a matter of “putting icing on the cake,” but becomes a matter of ensuring a solid foundation for a bedrock regional industry. The William and Linda Zammer Hospitality Institute at Cape Cod Community College provides students the finest in culinary and hospitality skills and education, sending them out into the workforce ready to make a real difference on “day one.”

In the photo below, new chef Gina McDonald presents a catered meal to College President Kathleen Schatzberg and her guests in the president’s office. This Zammer program graduate was hired by Cape Cod Community College’s food service provider, FAME, Inc. to work on campus preparing an outstanding variety of meals in its cafeteria and for special occasions.
Bridgewater State University: Teaching Our Region’s Teachers

Bridgewater State University is home to the nation’s oldest permanently sited teacher-preparation program and is one of the most prolific generators of new teachers, recently training more science and math teachers than any institution in the state. Since its founding as the Bridgewater Normal School in 1840 by American public education pioneer Horace Mann, the institution has held a leading position in the commonwealth in educating tomorrow’s teaching professionals. According to the Massachusetts Department of Elementary and Secondary Education, BSU’s School of Education and Allied Sciences has produced the largest number of students in the state to complete the initial educator licensure program for the last three academic years, among approximately 70 programs reporting. For the fall 2010 semester, Bridgewater had 168 student teachers gaining experience in the field.

Massachusetts Maritime Academy: Protecting Ports and People

Mass Maritime offers both bachelor’s and master’s degrees in Emergency Management/Homeland Security. Studying topics such as organizational behavior, legal issues, business continuity and disaster recovery, crisis communications, and public health prepares students for emergency response and security positions at hospitals, police and fire departments, shipping lines, and ports. The baccalaureate program has graduated approximately 30 professionals in the last two years. Several alumni traveled to the Gulf Coast to clean up after the disastrous 2010 oil spill; others were hired by environmental clean-up agencies; others found work protecting our nation’s transportation infrastructure. Employers are both public and private sector companies and agencies including FEMA, MEMA, National Grid, Bechtel, Maersk Lines, and General Dynamics. The Academy is uniquely positioned in the Northeast to educate future leaders about transportation security and the unique domain of ships and ports, and the complex and multiple disciplines involved in managing them.
PREPARING STUDENTS
To Join the Workforce

The CONNECT institutions “manufacture” one main product: graduates.

Together, the six colleges and universities in FY’09 awarded 5,562 degrees, 693 certificates, and non-credit training for a whopping 18,562 individuals. Collectively, 53,301 students were enrolled in the six institutions in FY09. Ninety-five percent of those students were from Massachusetts, and 82 percent—nearly 44,000—came from cities and towns in Southeastern Massachusetts.

Enrollments keep on growing: the number of students learning with the six colleges and universities has increased 10 percent in five years (FY’05-’09).

Not only do our students come from the region, they also tend to stay in the region. Sixty-eight percent of alumni make their homes in Southeastern Massachusetts. They hold jobs, sustain industry, purchase goods and services, and contribute to the economy. In fact, of the students who have graduated from the six institutions, 105,584 are known to reside in Southeastern MA. If they all lived in the same town, the CONNECT alumni would compose the largest city in Southeastern Massachusetts—larger than Fall River (90,931), New Bedford (91,365), or Brockton (93,007) (2008 Census).

BRIDGEWATER STATE UNIVERSITY: ACADEMIC EXCELLENCE
“At Bridgewater, I’ve had the chance to do everything from a research conference in Montana to a summer job at Woods Hole and community service in Belize. The opportunities I had at Bridgewater, especially the training that I had and the support I received from the faculty, are chiefly responsible, I believe, for why I’m going to Johns Hopkins. My objective is to earn a doctorate in cell and molecular biology and someday teach at the college or university level.” – Ms. Allison Galanis of Stoughton, a 2010 honors graduate of Bridgewater who has been admitted to the Cellular and Molecular Medicine doctoral program at the Johns Hopkins University School of Medicine.

MASSASOIT COMMUNITY COLLEGE: HANDS-ON EXPERIENCE
Massasoit Community College’s Diesel Program trains technicians to maintain, repair and overhaul diesel engines and support systems. Students gain a broad range of knowledge and skills needed in industries including transportation, marine, heavy equipment and power generation. Students in the program offered on the Canton campus repaired the blown engine on a 50,000 pound articulating loader used to rebuild sea walls on Cape Cod. The repair cost Crowell Construction of Dennis less than $7,000, compared to the original estimate of more than $22,000, and provided priceless hands-on experience for the students.

MASSACHUSETTS MARITIME ACADEMY: VALUED PROFESSIONALS
At Massachusetts Maritime Academy, through sea terms and co-op placements, undergraduate students log six months of career experience, often while traveling to a dozen or more countries. Upon graduation, cadets are distinctly qualified to lead as licensed maritime professionals, skilled business managers, ship safety officers, commissioned military officers, environmental safety professionals, power plant operators, facilities engineers, or emergency managers.
The photo is a video capture of student Thomas Trego who returned to change careers and study Nursing later in life. “This is one of the best things I’ve done for myself in a long, long time,” he states.

Graduates are sought after by companies such as FEMA, MBTA, Pilgrim Power Plant, Wheelabrator, Aramark, General Electric, Hasbro Toys, Marine Biological Laboratory, and Royal Caribbean Cruise Lines. More than 50 percent – twice the national average – of Massachusetts Maritime Academy graduates are employed in well-paying, career-track positions before they even graduate.

CAPE COD COMMUNITY COLLEGE: TAPPING EACH INDIVIDUAL’S POTENTIAL

For the CONNECT colleges and universities, “freshmen” aren’t always newly-minted high school graduates. This is especially true on Cape Cod, where nearly 25 percent (almost twice the state average) of the population is 65 or older. Cape Cod Community College’s nationally-recognized “Plus50” program builds a cadre of skilled, ready, and highly dependable workers for companies competing for talent in a global marketplace, and refreshes the skill set of “seniors” seeking second careers or looking to start businesses. “Plus50” is built upon a strong peer-tutor model, mentorships and partnerships on and off campus, and a highly welcoming College community that strongly supports the returning adult learner.

“While the recession has affected people at all educational levels, Americans with less education are more likely to be without a job. The national unemployment rate among workers 25 and older with only a high school diploma was 10.1 percent in July, compared to 4.5 percent for college graduates with a bachelor's degree or higher, the U.S. Department of Labor reported.”

SOUTHCOASTODAY.COM (AUGUST 12, 2010)
Of the fastest-growing occupations in the state, projected through 2016, ten of the top 15 will require education or training beyond a high school diploma:

### Top 15 Fastest-Growing Occupations in Massachusetts, 2006-16

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Degree/Education needed</th>
<th>Percent Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Systems and Data Communications Analyst</td>
<td>Bachelor’s degree or higher</td>
<td>50%</td>
</tr>
<tr>
<td>Personal and Home Care Aides</td>
<td>On-the-job training</td>
<td>36%</td>
</tr>
<tr>
<td>Computer Software Engineers, Applications</td>
<td>Bachelor’s degree or higher</td>
<td>35%</td>
</tr>
<tr>
<td>Home Health Aides</td>
<td>On-the-job training</td>
<td>34%</td>
</tr>
<tr>
<td>Animal Trainers</td>
<td>On-the-job training</td>
<td>33%</td>
</tr>
<tr>
<td>Veterinary Technologists and Technicians</td>
<td>Post-Secondary Training or Associate’s Degree</td>
<td>33%</td>
</tr>
<tr>
<td>Biochemists and Biophysicists</td>
<td>Bachelor’s degree or higher</td>
<td>31%</td>
</tr>
<tr>
<td>Veterinarians</td>
<td>Bachelor’s degree or higher</td>
<td>31%</td>
</tr>
<tr>
<td>Pharmacy Technicians</td>
<td>On-the-job training</td>
<td>29%</td>
</tr>
<tr>
<td>Skin Care Specialists</td>
<td>Post-Secondary Training or Associate’s Degree</td>
<td>28%</td>
</tr>
<tr>
<td>Social and Human Services Assistants</td>
<td>On-the-job training</td>
<td>27%</td>
</tr>
<tr>
<td>Environmental Engineering Technicians</td>
<td>Post-Secondary Training or Associate’s Degree</td>
<td>27%</td>
</tr>
<tr>
<td>Physical Therapist Assistants</td>
<td>Post-Secondary Training or Associate’s Degree</td>
<td>27%</td>
</tr>
<tr>
<td>Multi-Media Artists and Animators</td>
<td>Bachelor’s degree or higher</td>
<td>26%</td>
</tr>
<tr>
<td>Microbiologists</td>
<td>Bachelor’s degree or higher</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Source: Massachusetts Executive Office of Labor and Workforce Development*

“The pathway to recovering from this economic downturn is education. Massachusetts is leading the country out of the economic downturn through education, higher education, and the state working together.”

**STATE REPRESENTATIVE**

**THOMAS J. CALTER, 12TH PLYMOUTH DISTRICT**
The health services employ 10.2 percent of the total workforce in Southeastern Massachusetts, compared to 14.2 percent statewide, ranking first among all employment sectors in the Tri-Cities and SouthCoast, and second in the South Shore and Cape & Islands.

According to 2009 projections from the Executive Office of Labor and Workforce Development, the healthcare workforce will continue to grow at a steady pace, generating another 64,630 new jobs statewide by 2016. In 2010, Southeastern Massachusetts employers expected to increase hiring in the healthcare and social service sector by 4 percent in the first quarter.

With the aging population, it’s not surprising that projected rates of job growth 2006-16 are highest in home health care (42.9 percent) and residential care (31.8 percent).

“Ongoing partnerships between hospitals and local higher educational institutions create the opportunity for us to align program development with workforce needs, ensuring that the content of the programs is current with evolving best practices. In addition to preparing graduates for a wide variety of healthcare career opportunities, these local colleges and universities also provide ongoing training and education for our existing workforce right here in our communities.”

CARA HART, DIRECTOR OF HUMAN RESOURCES, MORTON HOSPITAL AND MEDICAL CENTER, TAUNTON

In FY09, the six CONNECT institutions together awarded an astonishing 839 health care degrees and a combined total of 324 credit and non-credit certificates in programs of study such as:*

Addiction and Treatment Certificate
Adult Health/Adult Nurse Practitioner
Bachelor of Science in Health Studies
Certified Nurse Assistant
Clinical Laboratory Science
Community Nursing/Advanced Practice
Complementary Health Care
Computerized Tomography Certificate
Dental Hygiene
Diagnostic Technician
Histology Certificate
Home Health Aide
Massage Therapy
Master of Education in Health Promotion
Medical Administrative Assistant
Medical Assisting
Medical Laboratory Science - Clinical BS
Medical Transcription Certificate
Nursing Education-LPN
Nursing LPN, RN
Occupational Therapy Assistant
Ophthalmic Assistant
Pharmacy Technician
Phlebotomy Certificate
Physical Therapist Assistant
Polysomnography
Pre-Radiology Technology Certificate
Radiologic Technology
Respiratory Care
Therapeutic Massage Certificate

*This list of degree and certificate programs is representative, not comprehensive
MASSASOIT COMMUNITY COLLEGE: POLYSOMNOGRAPHY TECHNOLOGY

The newest addition to the Allied Health Department at Massasoit is an Associate’s Degree program in Polysomnography Technology (sleep technology). This evening program will prepare students as sleep lab technicians who can provide non-invasive monitoring techniques to record clinical events that occur while patients sleep. Graduates will consult with physicians to recommend therapies and provide guidance for patients on the uses of devices to treat breathing problems during sleep. Upon completing the course of studies, students will be eligible to take the Registered Polysomnography Technologist (RSPGT) examination.

BRISTOL COMMUNITY COLLEGE: PARTNERSHIP WITH THE PRINCETON REVIEW

What happens when you face the perfect storm of not enough healthcare workers and too few public funds to educate all those who are qualified for programs? Rather than wait for the economy to get better, Bristol Community College formed a partnership with a private company, The Princeton Review, to forge a new model for educating the healthcare workforce. eHealthCareers combines online education with face-to-face clinical hours for a hybrid educational experience. Launched in Fall 2010 with Therapeutic Massage, Complementary Healthcare, Medical Coding, and General Studies/Health, the program expands the capacity of Bristol to prepare workers for high-demand health fields. The College expects to enroll 1,000 students over the next three years.
The educational mission of the six colleges and universities begins long before the freshmen arrive on campus. Each CONNECT institution offers a host of outreach, summer camp, and teacher professional development programs designed to enrich the educational experiences of our region’s students and raise their educational aspirations.

**Cape Cod Community College: Promoting Career Choices**

On June 8, 2010, Cape Cod Community College offered its fourth annual “Non-Traditional Career Day.” This award-winning program cultivates new applicants for critically needed jobs in the years ahead by exposing young people to occupations where either women or men comprise less than 25% of the workforce. Nearly 200 students from 17 middle schools and two high schools participated in team-building exercises and a Choosing a Career Workshop as well as career-exploration classes on occupations considered non-traditional by gender, especially those related to the STEM disciplines.

Below, participants learn critical team building skills during Non-Traditional Career Day at Cape Cod Community College.

**Massachusetts Maritime Academy: Advanced Studies and Leadership Program**

Through a partnership with Cape Cod Collaborative, Massachusetts Maritime Academy administers the Advanced Studies and Leadership Program. This unique month-long summer residential program brings 120 rising eighth and ninth-graders to the campus to study science, technology, engineering and math (STEM) and related topics, in hopes of recruiting much-needed new blood into these fields.

**Bridgewater State University: STREAMS**

Thanks to a five-year, million-dollar grant from the National Science Foundation, Bridgewater State University’s Student Retention Enhancement Across Mathematics and Sciences (STREAMS) program will increase by a third the number of science and math graduates at Bridgewater. Summer of 2010 saw the first cohort in the residential Summer Bridge program. Fifteen participating students from Southeastern Massachusetts communities including Brockton, Wareham and Attleboro lived on campus for three weeks, immersed themselves in undergraduate research with top Bridgewater math and science scholars, took the innovative class Integrated Science and Mathematics and completed their required First Year Seminar, Chemistry 199, Scientists at Work. Cape Cod and Massasoit Community Colleges are partners on the grant and receive subcontracts from Bridgewater for work on their campuses.