

Agency Sustainability Plan

Middlesex Community College

Submitted to the
State Sustainability
Coordinating Council
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1. General Information, Impacts and Sustainability Team

1.1 Description and Scope

Founded in 1970, Middlesex Community College (MCC) is the largest community college in Massachusetts with two campuses, one in the City of Lowell; bounded by the Merrimack River, the Concord River and the canal system for which Lowell is known and another in the suburban town of Bedford on a 205-acre, heavily wooded site, on which resides a pond and surrounding palustrine, forested wetlands that are part of the Shawsheen River watershed. On these properties reside 20 buildings, consisting of 521,000 gross square feet.

We offer many paths to higher education, including 78 degree and certificate programs, hundreds of noncredit courses, career training, online courses and programs, and bachelor's degree completion programs with Salem State College. All of these programs and supporting activities can potentially effect the environment; those of greater impact lay in Nursing, Science, and Dental Assisting. Operational functions such as the provision of technology and facilities maintenance are other significant sources of energy use and hazardous waste generation.

MCC intends to meet the goals of Executive Order 484, noted in Appendix A, through the use of this document created originally through Executive Order 438, established in July of 2002. However MCC is no stranger to the goals of sustainability and has pursued environment-ally sound practices both in partnership with State initiatives of the past, (i.e. the Energy Conservation Measures of the early 90's and Executive Order #350 the Clean State Initiative), as well as independently. As a result, MCC is the second lowest emitter of carbon dioxide (CO₂) per square foot of buildings, of the fifteen community college campuses in Massachusetts.¹

Being an institute of higher learning, our mission is not only to develop curriculum to be applied both locally and globally, but to consider all interaction as a learning experience, influencing the development of a world culture of sustainability, both in the classroom and in daily practice.

1.2 Impacts on the Environment and Human Health

MCC on average consumes 824,000 cubic feet of water, or over 5 million gallons, for domestic use, and heating and cooling requirements. These activities result in approximately 482,000 cubic feet of sewer water; (accounting for losses due to evaporative cooling and irrigation.)

Through its consumption of fossil fuels, MCC emits approximately 3500 tons of CO₂.

1. Sustainability Tracking & Reporting, College & University CO₂ Emissions, 2005

The College produces over 500 tons of solid waste per year. Currently only 17% is being recycled.

The Bedford Campus, being a suburban community, has limited access to public transportation, as a result many of the 2028 full time enrolled students, and 420 full and part-time faculty and staff make single occupant trips to the campus.

There are 20 vehicles in the facilities maintenance fleet, 4 shuttle vans, and 2 staff cars consuming on average a combined 9000 gallons of gas and diesel annually, with 55 gallons of waste oil as a byproduct. 25 acres of parking lots and roadways requiring 120 tons of sand, salt and ice melt for de-icing, affecting habitats. 450 faculty and staff, and 5000 FTE students consume tons of paper and \$29,000 of toners, annually. MCC possesses numerous acres of landscaped grounds that require pesticides, herbicides, fertilizer and a small fleet of gas powered landscaping equipment to maintain, creating waste oil and greenhouse gas emissions.

In addition, MCC runs a dental clinic as part of the dental hygiene program; x-ray processing generate heavy metal effluent which must be retained for proper disposal.

1.3 Operational Costs

	FY 2005	FY 2006
Electricity	5,323,134 kW	5,481,127 kW
Natural Gas	145,764 ccf	128,059 ccf
Water/Sewer	5,930,772 gallons	5,264,634 gallons
Solid Waste	~500 t	~500 t
Hazardous Waste	\$14,543	\$4670

1.4 MCC Sustainability Team Members

John Marzec – Director of Administration for Facilities, EH&S

Steve Hatch - Dir of Operations for Facilities

Robert Bickford – HVAC

William O’Neil – Custodial

Maureen Hudson – Purchasing Coordinator

Mary Anne Dean – Dean of Professional Development

Linda Young - Sciences

Jessie Klein – Sciences

2. Long-Term Goals/Vision

Seek an alternative to domestic water supply, (i.e. well or canal), for two cooling towers in the Lowell Campus, thus eliminating the demand for treated water.

Consider a co-generation option for City Building to reduce fossil fuel use and increase efficiency

Pursue LEED-EB certification for all buildings beginning with the Federal Building in 2006.

Consider alternative fuel vehicles over gas fueled fleet vehicles, where applicable, on a replacement basis.

Encourage a zero-spill policy in sciences to eliminate chemicals in waste stream

3. Short-term Actions and Priorities

Current Initiatives:

- Replace fluorescent lamps with 25W super saving T8's

- MCC is currently reviewing proposals to replace existing copiers and networked printers. Copiers will be equipped with scanning capability to encourage the use of electronic archiving and documenting in order to reduce paper and toner usage. Printers will be reviewed and consolidated to reduce existing numbers, providing reduced energy usage and disposition impacts.

- Obtain Large Onsite Renewable Initiative (LORI) grant/funding

- Establish a window replacement specification to guide future projects

- Consider ceasing active maintenance of grassy area adjacent to North Gate to revert to meadow

- Convert outside lighting to pulse-start fixtures

- Install sub-meters to track building usage and establish demand side management program

- Increase mixed paper recycling and beverage recycling, campus wide

3.1 Priority and Area Goals

Natural Resource Protection

Investigate feasibility of anti-icing practices on campus to reduce roadway salt use

Promote the benefits of on site wetlands and waterways, or potentially develop a program, to elevate awareness of these natural resources and human impact to them

3.2 Action Steps

Sustainable Goal	Benefits	Specific Tasks	Responsible Staff	Timeline
Promote and energy star program for office equipment	Reduces electricity usage \$20,500 / yr	Promote with Purchasing to apply to all depts.	John Marzec John Lyons	Begins July 2007
Add renewable energy on campus	Reduces fuel use, cost and demands, meets mandate	Have House Dr. develop feasibility and grant proposal	John Marzec	By June 30, 2008
Install irrigation & deduct meters on cooling towers	Tracks non-sewer water for usage tracking, Cost savings of \$7200 / yr	Submit for meter permits, Schedule & coordinate installation	John Marzec Steve Hatch	Begun, Installation completion by Fall 2007
Install irrigation system in Bedford	Water conservation	Obtain design services, bid installation	John Marzec Steve Hatch	By Fall 2008 if budget allows
Determine feasibility of well-fed irrigation at Bedford Campus	Saves energy of treating water, Reduces demand on resources	Drill test wells, Possible hydro-geologic study	John Marzec	Complete study by Fall of 2008
Insulate domestic hot water and hydronic heating pipes	Reduces heat loss and fuel use	Install insulation when deficiencies are noted	Steve Hatch	On-going
Install sub-meters	Allows for remote building monitoring and measurement	Type is specified, contractor to provide and install	John Marzec	By Fall 2007
Increase paper and beverage recycling	Reduces solid waste and energy use through recycling	Purchase 400 desk side and beverage barrels	John Marzec Bill O'Neil	By Fall 2007

4. Management Systems and Institutionalization

The Facilities Management Department performs many functions for the college: EH&S, waste disposal, furniture disposition, water treatment, construction and renovation, purchasing, landscaping and so on. Thereby, much of the responsibility for Sustainability lies within Facilities, and as such we must promote the message throughout the organization. However it requires the contribution of every individual at MCC to accomplish the goals set forth in the Plan.

4.1 Integrating Environmental Impacts into Key Decision Points

A) Construction and Renovation

Include LEED Certification wording in contract language where possible

B) Facilities Maintenance

Continue to buy green and use best practices

Investigate whether an EMS is applicable to our environment

C) Purchasing

Inform on EPP and Energy Star, and investigate product alternatives

Incorporate language in bid and contract language

D) Open Up Discussion

Communicate Sustainability at all levels of the organization

4.2 Education and Training

Promote Sustainability awareness through staff meetings and Facilities website, publish success stories online.

Provide LEED and Green Building training to key personnel

4.3 Management Systems

- Integrate environmental responsibilities into job descriptions and performance reviews
- Incorporate environmental considerations into standard operating procedures
- Establish a written agency sustainability policy that sets a broad vision for the staff and includes specific operational guidelines for various agency operations.
- Provide the opportunity for employee feedback to review program efforts
- Include top-level management in the activity prioritization process
- Offer recognition / awards that highlight work and spread best management practices

5. Tracking Progress and Program/Plan Review

Tracking and monitoring confirms successes and closes the feedback loop.

5.1 Agency Tracking and Reporting

Establish a policy of monitoring and measurement to confirm goals, require that vendors produce the needed data in the contract verbiage, i.e. tonnage of solid and recycled waste handled, quantities and types of hazardous waste, performance data on energy projects.

Mercury and PBT reduction

MCC has eliminated all common mercury containing thermometers and reduced quantities kept on hand for experimental use

EPP

We buy 30% recycled content copier paper

We have replaced all bowl, tile and counter top cleaners with H2Orange, which is a biodegradable, low VOC, Green Seal product

We purchase EPP paper towels, toilet paper, hand soap, cleaning equipment, exam books and more

Established a policy where lab chemicals are ordered as needed reducing inventory levels

We require waste carpeting be recycled by vendors

An effort is under way to reduce duplicate magazines and publications delivered to the college, and promote the use online versions

Environmental Compliance

MCC regularly submits to voluntary environmental audits

Purchase Aircurity Meter for building evaluation, optimization and IAQ monitoring and trending

Increased paper and cardboard recycling

Energy Conservation Measures

Established policy of high-efficiency equipment replacement

Replacing 60T condensing unit with a high efficiency model having a eer of 11.5, and added CO2 sensing to minimize heating and cooling loads

Established a *wake on LAN* environment for 680 student computers

Downsized Cooling Tower to proper tonnage (-150T), and installed VFD fan

Installed weather striping on all doors of Campus Center

Replaced area of South Academic flat roofs, upgrading to R30 insulation meeting current energy code

Replaced existing cooling tower with one appropriately sized, reducing load by 150 tons, and upgraded to VFD motor

Programs pursued but deemed not feasible or not productive

Shared Energy opportunities – In corroboration with vendors, no project exists on a scale that is attractive for partnerships

Replacing existing standing pilots with automatic pilots proved to provide little energy savings at great cost; instead all new equipment will be specified with automatic pilots

6. Appendix A – Goals of Executive Order 484

Commonwealth agencies collectively, and to the greatest extent feasible individually, are to meet the following energy targets for agency buildings:

1. Reduce greenhouse gas emissions by 25% by fiscal year 2012 using fiscal year 2002 as a baseline;
2. Reduce overall energy consumption at buildings that are state owned and leased (when the agency pays directly for energy) by 20% by 2012 using fiscal 2004 as the baseline;
3. Procure 15% of annual electricity consumption from renewable energy sources by 2012;
4. Utilize bio heat products with a minimum blend of 3% bio based materials for all consumption of #2 heating fuel.

You can find this Executive Order at

http://www.mass.gov/envir/Sustainable/pdf/07_eo484.pdf