

# Bunker Hill Community College's **GreenPACT** Climate Action Plan



*Image of BHCC's new Health & Wellness Center*

PREPARED BY

**The BHCC President's Climate Commitment Committee**

**September 15, 2009**

**Amended September 28, 2009**



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imagine the possibilities

Office of the President

September 15, 2009

Dear Friends of Bunker Hill Community College:

Bunker Hill Community College is the largest community college in Massachusetts, with an enrollment of approximately 11,000 students. We believe that taking a leadership role on vital social issues such as climate change is essential to the education of our students and the community. BHCC is determined to work toward a more sustainable future. This report, representing the first steps in that direction, reflects our commitment to a more sustainable way of life for our students, our community and our planet.

As a signatory to the Presidents' Climate Commitment, Bunker Hill Community College supports the efforts of college and university presidents around the country to address the critical issue of climate neutrality. At BHCC I have appointed a Climate Commitment Committee charged with developing and implementing a climate action plan to reduce our carbon footprint. The attached report represents the Committee's plans and progress to date toward creating a more sustainable future for our College and community.

Fundamental to the College's plan is the commitment by our institution to become carbon neutral by the year 2050. As outlined in this report, the Climate Commitment Committee determined the key contributors to our greenhouse gas emissions and helped us develop five comprehensive strategies that will eventually reduce our College's carbon footprint to zero. As we embark on this challenging process, the College is purchasing renewal energy credits to offset current dependence on fossil fuels by as much as 67.8 percent. We will also develop an aggressive, campus-wide single-stream recycling program that will reduce the impact on local landfills by 50 percent.

In early 2010, Bunker Hill Community College will open a Health & Wellness Center, a 48,000-square-foot building that in itself represents our commitment to a more sustainable future. We expect that this new building will receive LEED Gold certification, surpassing the energy-efficiency and environmental impact requirements of the Commonwealth of Massachusetts.

We invite you to visit [www.bhcc.mass.edu/climatecommittee](http://www.bhcc.mass.edu/climatecommittee) for further updates on our efforts to create a sustainable future for everyone.

Sincerely,

A handwritten signature in black ink, appearing to read "Mary L. Fifield".

Mary L. Fifield  
President



## 1. Executive Summary

### from the Climate Commitment Committee

In September 2007, Mary L. Fifield, President of Bunker Hill Community College (BHCC), became a charter signatory of the American College & University Presidents' Climate Commitment. Participation in this commitment reflects the College's dedication toward environmental stewardship and sustainable prosperity. Not only is BHCC's commitment seen as a global responsibility, but also as a significant opportunity for students to become educated about, and eventually industry leaders of sustainable issues and technologies.

The President appointed a Climate Commitment Committee to establish sustainability goals that reflect BHCC's core values and mission. As goals are developed to reach zero net greenhouse gas emissions, these strategies will guide actions throughout the process.

#### **BHCC's Sustainability Goals follow:**

- Undertake steps to stop global warming and reverse its profound implications
- Lead by example
- Reduce operational cost by tying sustainability principles to our processes

After a comprehensive Greenhouse Gas Inventory was completed in September 2008, the Climate Commitment Committee used the inventory to recommend strategies to reduce, and ultimately eliminate, the College's greenhouse gas emissions. BHCC's *GreenPact* Climate Action Plan, summarizes the greenhouse gas inventory findings and illustrates the chosen strategies. A climate action plan is required as part of the ACUPCC, and serves as the primary tool for publicly communicating the College's efforts to reduce its carbon footprint.

#### **The *GreenPact* Climate Action Plan consists of the following components:**

- A summary of campus emissions and target date for climate neutrality;
- An outline of objectives and mitigation strategies to institutionalize the *GreenPact* Climate Action Plan to support the climate neutrality goal;
- Examples of sustainability within the curriculum;
- A description of financing mechanisms to support *GreenPact* initiatives;
- A definition of metrics for reducing Greenhouse Gas emissions and impacts from facilities management; building and operations; purchasing; transportation; and waste management;
- A description of a governance structure for the management of the program.



## 2. Introduction

The urgency and importance of global warming, and the profound implications upon our students and future generations, require leadership to halt and reverse the warming of our planet. As a charter signatory of the American College & University Presidents' Climate Commitment (ACUPCC) and joining 650 Colleges and universities, the President of Bunker Hill Community College is providing guidance, leadership and commitment from BHCC to eliminate the College's contribution to global warming.

BHCC's participation in the ACUPCC additionally supports ongoing initiatives in compliance with the Commonwealth of Massachusetts and the greater BHCC sustainability strategy. BHCC has undertaken its first steps toward carbon neutrality by committing and pledging an initial goal to become carbon neutral by 2050, surpassing requirements dictated by the Commonwealth of Massachusetts. The Commonwealth of Massachusetts mandates the reduction of energy consumption and carbon footprint by 20% by 2012 and 80% by 2050 as a piece of the "Greening Massachusetts" initiative.

"Greening Massachusetts" is both a recent, and prominent, theme for the state. In August 2008, the Governor signed into law the Global Warming Solutions Act (GWSA), making Massachusetts one of the first states in the nation to move forward with a comprehensive regulatory program to address climate change. To reiterate, GWSA requires an 80 percent reduction of greenhouse gas emissions economy-wide by 2050, with a 2020 target be set between 10 and 25 percent below 1990 levels. Massachusetts has already promulgated greenhouse gas reporting regulations under GWSA; with 2009 emissions being the first year reported.

Additionally, GWSA requires the Massachusetts Department of Environmental Protection (Mass DEP), with the Executive Office of Energy and Environmental Affairs (EEA) and the Department of Energy Resources (DOER), develop a statewide 1990 greenhouse gas emission baseline as well as a projection of greenhouse gas emissions for a 2020 "business as usual" (BAU) scenario. The developed baseline and BAU estimates will be critical for determining the 2020 and 2050 target reductions.

Under the law BHCC is not required to register because BHCC is below the emissions threshold, however BHCC voluntarily submitted a Greenhouse Gas Emissions Registration Form (Appendix 2A) for the 2008 calendar year.

Several strategies for reducing the College's greenhouse gas emissions were a result of submitting the Greenhouse Gas Emissions Registration Form. The strategies include, but are not limited to: purchasing 100% green power, a recycling and solid waste reduction plan, energy efficiency measures, water conservation measures, a green building policy to achieve a minimum of LEED<sup>1</sup>

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<sup>1</sup> Leadership in Energy and Environmental Design. See [www.usgbc.org](http://www.usgbc.org)



Silver certification for all new construction and major renovations, a temperature set point policy, and an Energy Star equipment purchasing policy.

The President appointed a Climate Commitment Committee to develop and implement BHCC's sustainability strategy and implementation plan. The committee includes 22 faculty, staff, and administrative personnel. The committee is co-chaired by the Director of Fiscal Affairs & Central Services, Jeff Ginsberg, and the Director of Facilities Management & Engineering Services, Joseph Steffano. In order to institutionalize the President's Climate Commitment, the committee will become a permanent Advisory Committee of the College Forum in October 2009. The College Forum is the institutional governance body for BHCC. The purpose and composition of the President's Climate Commitment Committee is outlined in Appendix 2B. Further, an Office of Sustainability Management will be created and a full-time position devoted to it.



### 3. Campus Emissions

The primary method of tracking our College's progress toward environmental stewardship is to translate the majority of our activities into metric tons of carbon dioxide equivalents emitted. By using this standard unit of measurement, we can monitor our "carbon footprint" reduction, or total metric tons of carbon dioxide equivalent emitted, and communicate our progress using the same metrics as other participants in the ACUPCC initiative.

To define and understand our College's current carbon footprint, the Facilities Management Department conducted a comprehensive examination of campus operations and activities for the calendar year 2008. By generating this exhaustive greenhouse gas inventory, the total metric tons of carbon dioxide equivalent established for the year 2008 will be used as a baseline to track progress against in the years looking forward.

The greenhouse gas inventory was also used to identify mitigation strategies to reduce the College's "carbon footprint." For example, it was determined that the greatest contributors to our total footprint were: purchased electricity, fuels consumed for HVAC systems, and air travel of faculty and students. Data center and computing activities were found to be significant contributors to the College's electricity consumed. Mobile combustion and waste disposal related emissions were also identified as carbon footprint contributors that could be mitigated by changing the community's commuting and recycling practices. These findings helped prioritize strategies for reducing our "carbon footprint" and identifying a realistic action plan towards a net zero emission campus.

The following sections provide details of the Greenhouse Gas Inventory and the resulting goals and mitigation strategies.

#### 3.1 Greenhouse Gas Inventory

On September 15, 2008, BHCC generated and submitted a comprehensive Greenhouse Gas Inventory in compliance with the ACUPCC commitment. Led by the President's Climate Commitment Committee, the inventory is a cumulative effort of College staff, faculty, and students. The data collection was obtained through collaboration with the Executive Dean of Institutional Effectiveness, Directors of Fiscal Affairs, Public Safety, Human Resources, Facilities Management & Engineering Services, Business Office, Registrar's Office and a Sustainability Coordinator.

Based upon the data submitted and entered into the Clean Air Cool Planet Campus Carbon Calculator<sup>2</sup>, BHCC generates approximately 6,531 metric tons of carbon dioxide equivalents per year, broken down as follows:

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<sup>2</sup> Clean Air Cool Planet, <http://www.cleanair-coolplanet.org/toolkit/index.php>

Scope 1, Direct Emissions:

“Direct emissions from sources that are owned and / or controlled by BHCC. This includes combustion of fossil fuels in College-owned facilities or vehicles, fugitive emissions from refrigeration, and emissions from on-campus agriculture or livestock husbandry”.<sup>3</sup>

Source	Tons per Year	Unit(s) of measurement
Stationary Combustion	2,109	metric tons of CO <sub>2</sub> e
Mobile Combustion	104	metric tons of CO <sub>2</sub> e
Fugitive Emissions	13	metric tons of CO <sub>2</sub> e
<b>Total</b>	<b>2,226</b>	metric tons of CO <sub>2</sub> e

Scope 2, Indirect Emissions:

“Indirect emissions from sources that are neither owned nor operated by BHCC but whose products are directly linked to on-campus energy consumption. These include purchased energy: electricity, steam, and chilled water”.<sup>4</sup>

Source	Tons per Year	Unit(s) of measurement
Purchased Electricity	3,996	metric tons of CO <sub>2</sub> e
<b>Total</b>	<b>3,996</b>	metric tons of CO <sub>2</sub> e

Scope 3, Other Emissions:

“Other emissions attributed to BHCC, include emissions from sources that are neither owned nor operated by BHCC but are directly financed (e.g. commercial air travel paid for by the institution) and / or linked to the campus via influence or encouragement (e.g. air travel for study abroad programs, regular faculty, staff, and student commuting)”.<sup>5</sup>

Source	Tons per Year	Unit(s) of measurement
Air Travel	295	metric tons of CO <sub>2</sub> e
Solid Waste	14	metric tons of CO <sub>2</sub> e
<b>Total</b>	<b>309</b>	metric tons of CO <sub>2</sub> e

<sup>3</sup> Clean Air Cool Planet, [Carbon Calculator User Guide](#), August 2008, p. 8

<sup>4</sup> Clean Air Cool Planet, [Carbon Calculator User Guide](#), August 2008, p. 8-9

<sup>5</sup> Clean Air Cool Planet, [Carbon Calculator User Guide](#), August 2008, p. 9





**BUNKER HILL COMMUNITY COLLEGE TOTAL CARBON DIOXIDE EQUIVALENT EMISSIONS SCOPE**  
Metric tons of CO<sub>2</sub>e

Scope		MTCO <sub>2</sub> e	% of Total
1	Stationary Combustion	2, 109	32.3
1	Mobile Combustion	104	1.6
1	Fugitive Emissions	13	0.2
2	Purchased Electricity	3, 996	61.2
3	Air Travel	295	4.5
3	Solid Waste	14	0.2
<b>Totals</b>		<b>6,531</b>	<b>*100.00%</b>

**TABLE 3.1**

\* 93.5% of BHCC’s emissions are derived from the use of purchased fuels and electricity

### 3.2 Reduction of Carbon Footprint

The greenhouse gas inventory provides BHCC a means to communicate to the College community the sum of our carbon dioxide equivalent emissions, our baseline for comparing future progress, and perspective on the origin of the bulk of our emissions. As part of our responsibility to the ACUPCC, BHCC will track and update its greenhouse gas emission summary every other year with the goal of reaching zero net emissions by the year 2050. Toward this goal, BHCC has committed to several immediate tangible actions and explored various mitigation strategies. The actions and strategies address the targeted goal of emissions reduction while providing a comprehensive roadmap toward environmental stewardship.

While the mitigation strategies take shape over the next 60 years, BHCC is beginning with the following steps to offset emissions and reduce the College’s carbon footprint.

**FY 2009:** BHCC implemented a tangible action to offset 100% of purchased electricity with Renewable Energy Credits, consequently reducing our carbon foot print by 61.2%.

**FY 2010:** BHCC is committed to purchasing renewable energy credits for air travel and fuel used for all College vehicles and grounds equipment, further reducing our carbon footprint by 6.1%.

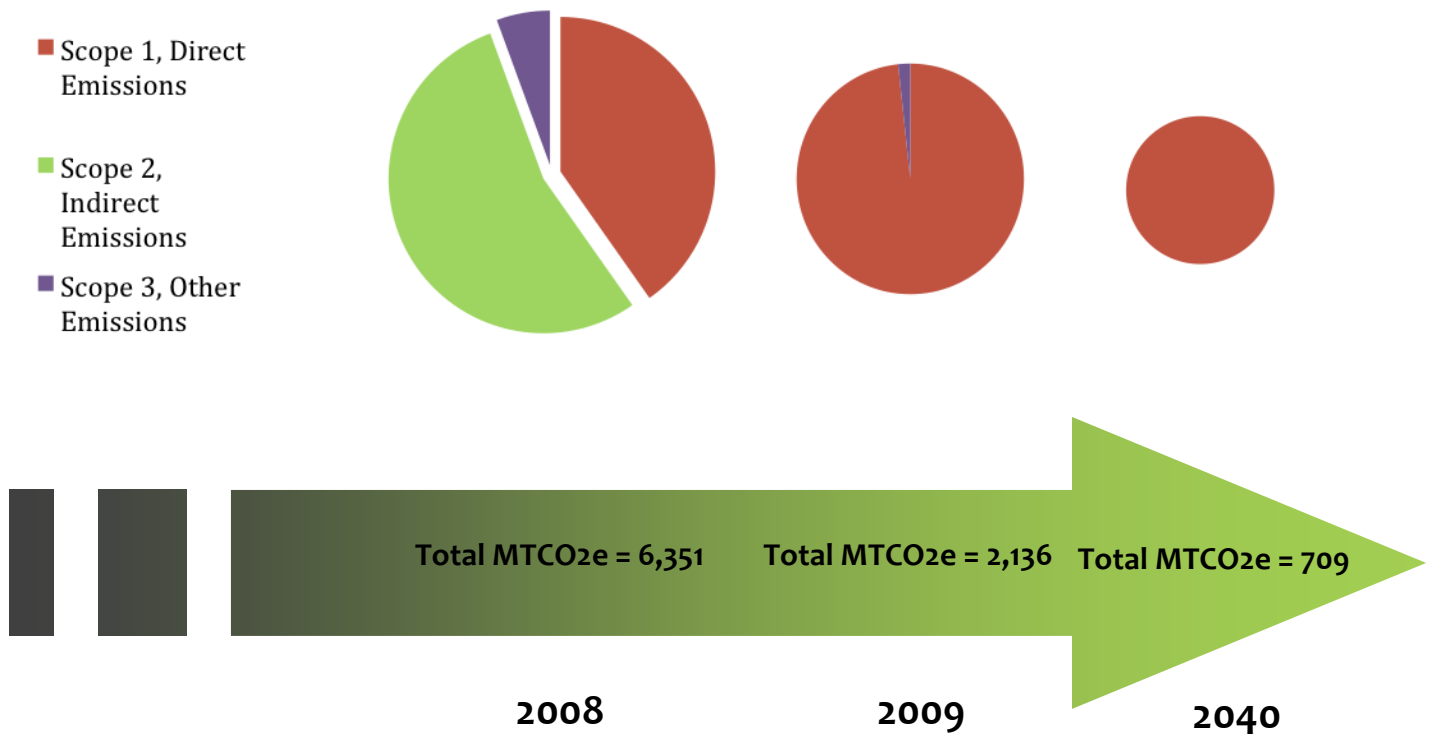
**FY 2011:** BHCC’s campus wide single stream recycle program will increase its recycled contents to 75%. The calculation indicates this will reduce waste deposited to landfills by 50%.



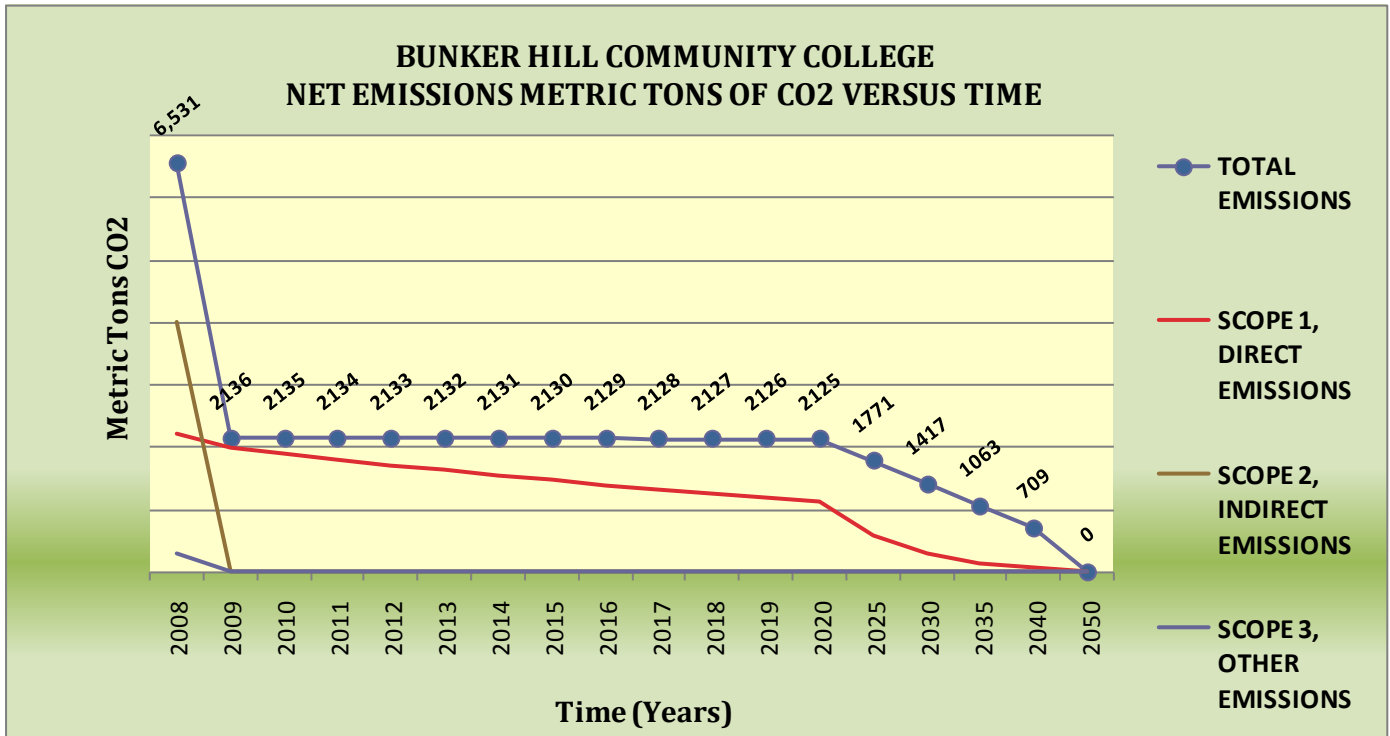
Other mitigation strategies included, while not an exhaustive list, are described in Section 4., Mitigation Strategies. These strategies will help BHCC achieve an additional 5% reduction of energy usage and water conservation per year.

With the established target date of 2050 and the goal to reduce 100% of our carbon footprint, there must continue to be significant advances in technologies to eliminate the use of fossil fuels for power generation and transportation as well as elimination of landfills for waste. BHCC recognizes that renewable energy credits will only help offset the progress toward carbon neutrality. The illustration below highlights the reduction in total emissions and contribution by scope over the time period for 2008 - 2040.

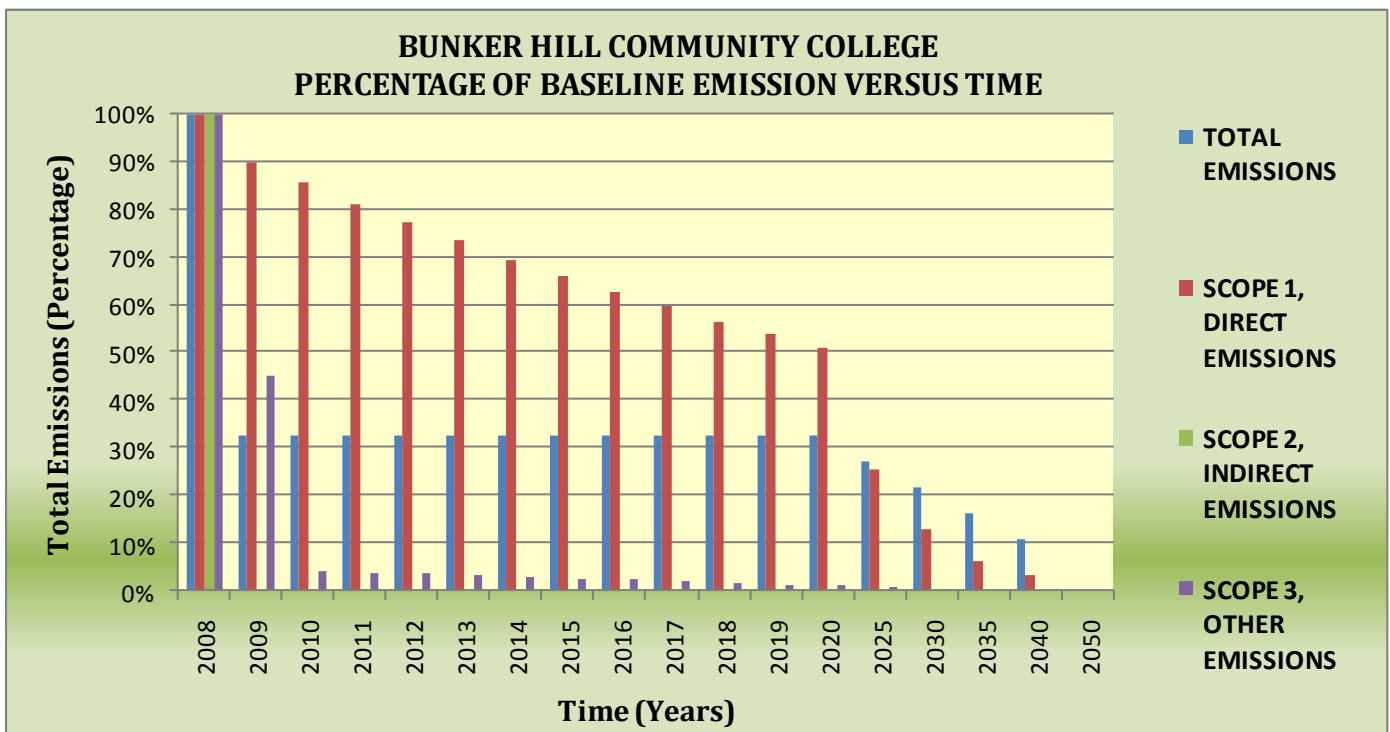
**BUNKER HILL COMMUNITY COLLEGE TOTAL CO<sub>2</sub>e EMISSIONS AND CONTRIBUTION BY SCOPE FOR YEARS 2008, 2009 and 2040**



\*MTCO<sub>2</sub>e, Metric tons of carbon dioxide equivalent



**FIGURE 3.1** illustrates the decrease in total net emissions of metric tons of carbon dioxide equivalent by scope and totality for the time period 2008 – 2050.



**FIGURE 3.2** illustrates the percentage of baseline emission by scope and totality for the time period 2008-2050



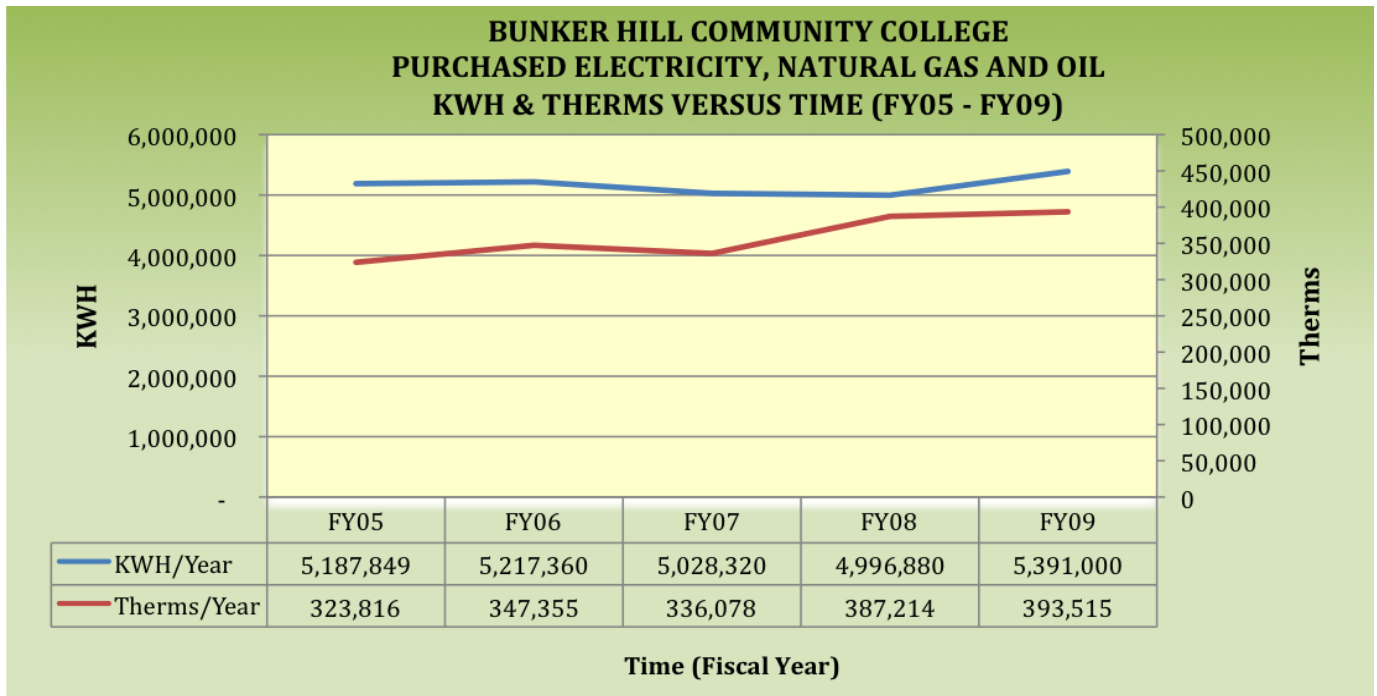
## 4. Mitigation Strategies

BHCC has chosen to develop five comprehensive strategies to reduce the College's carbon footprint and begin working toward zero net emissions. Our mitigation strategies are summarized under the following five categories:

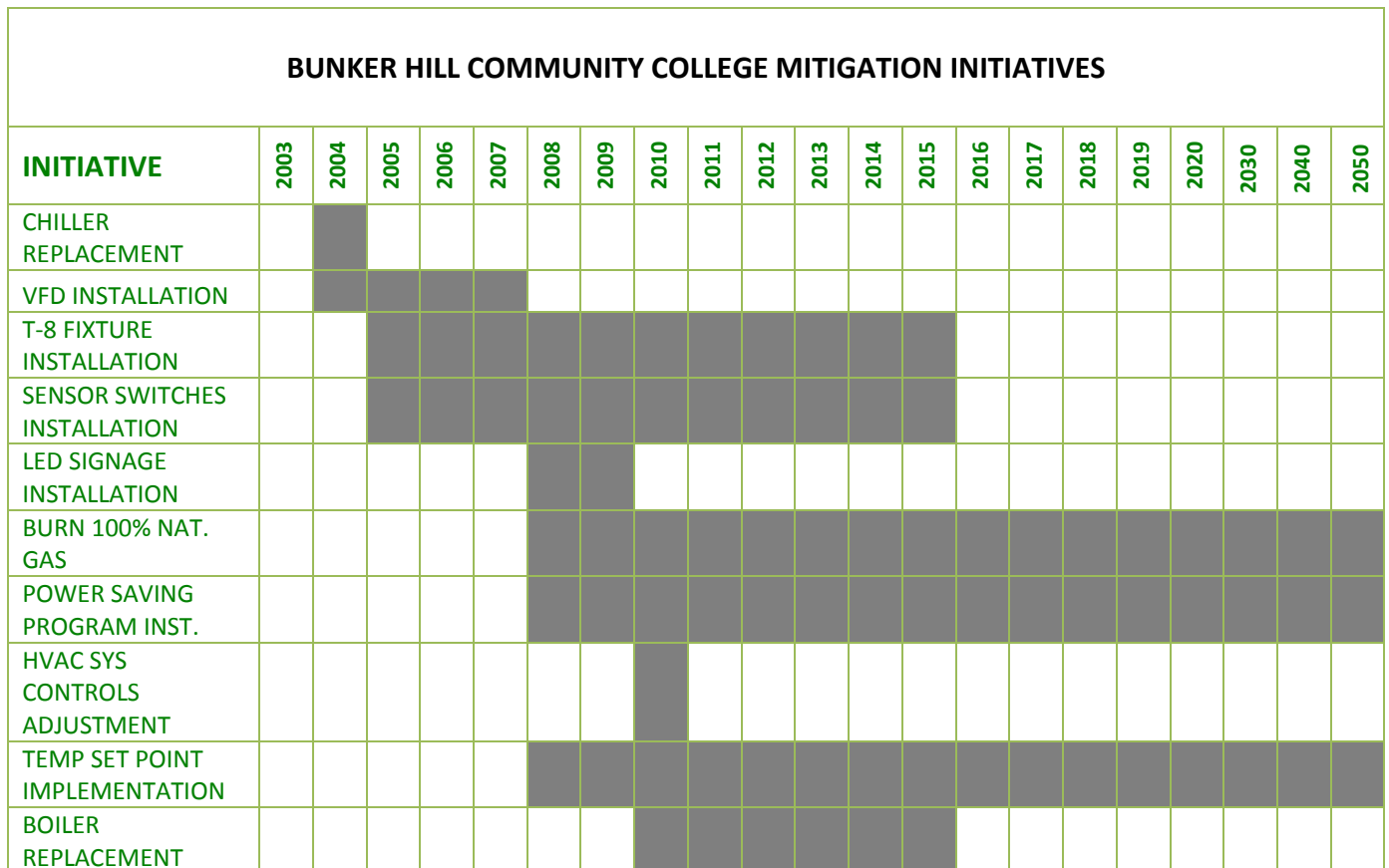
1. Energy Consumption of Building Systems
  - a. Mechanical Systems (addressing stationary emissions)
  - b. Electrical Systems (addressing stationary emissions and purchased electricity)
  - c. Electricity Procurement (addressing purchased electricity)
2. Green Building
3. Energy Star Procurement
4. Travel
5. Waste Minimization

These strategies take into consideration what is attainable with today's technology and financing. While our efforts are expected to make large strides in emissions reduction, true carbon neutrality would require technology eliminating the use of fossil fuels for power generation and transportation, eliminating the need and use of landfills for waste disposal, and a transformation of the service industries which we employ. It is within this context that BHCC has set a target date of 2050 to attain the goal of carbon neutrality.

BHCC's mitigation strategies include developed policies that incorporate currently available technologies, developing technologies, and carbon offsets for power generation and travel to provide structure as the *Green Pact* is institutionalized throughout the institution. Our targets will be influenced by a continued growth in enrollment, with a 32% increase in enrollment from 2003 through 2009, consequently increasing carbon emissions through increased activity within BHCC operations.



**FIGURE 4.1** illustrates the total annual KWH and Therms purchased between FY2005 – FY2009.



**FIGURE 4.2** outlines a summary of initiatives undertaken by BHCC to reduce energy consumption.

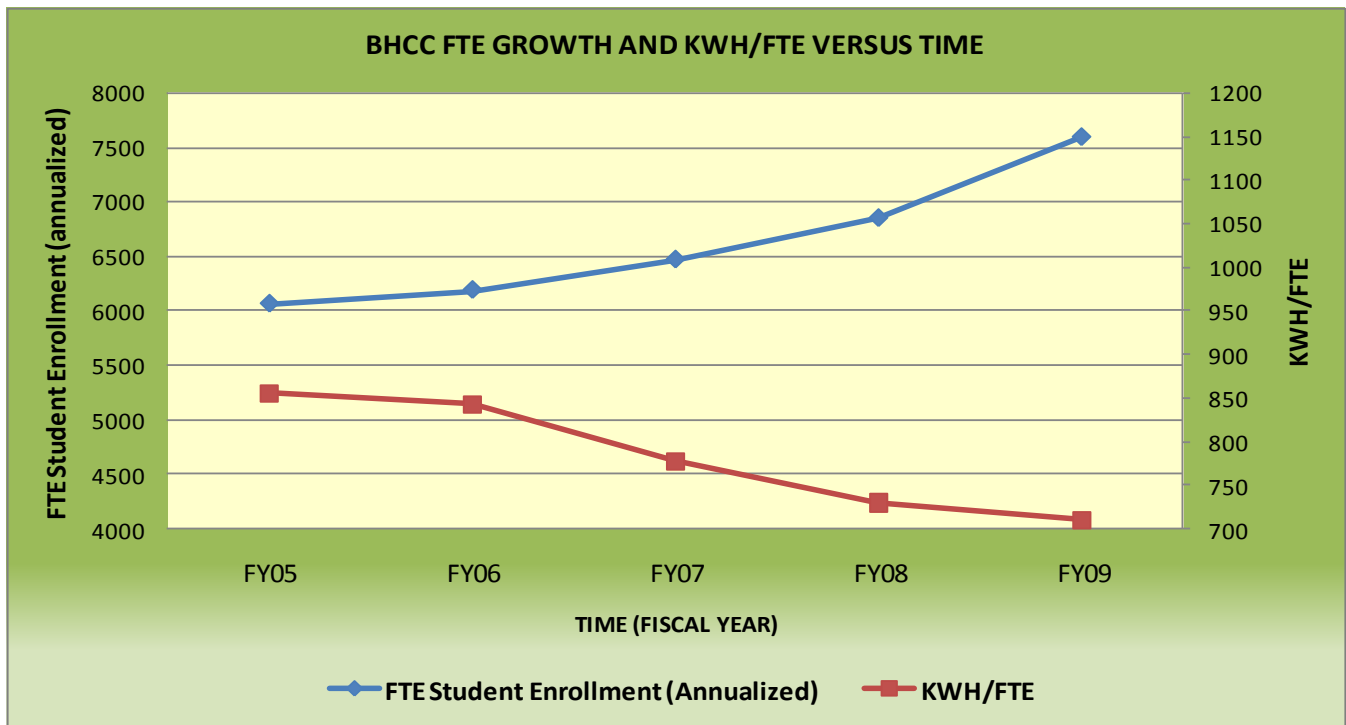


FIGURE 4.3 illustrates the impact of initiatives on BHCC electrical consumption (KWH/FTE) aligned with FTE growth for the time periods FY2005-FY2009

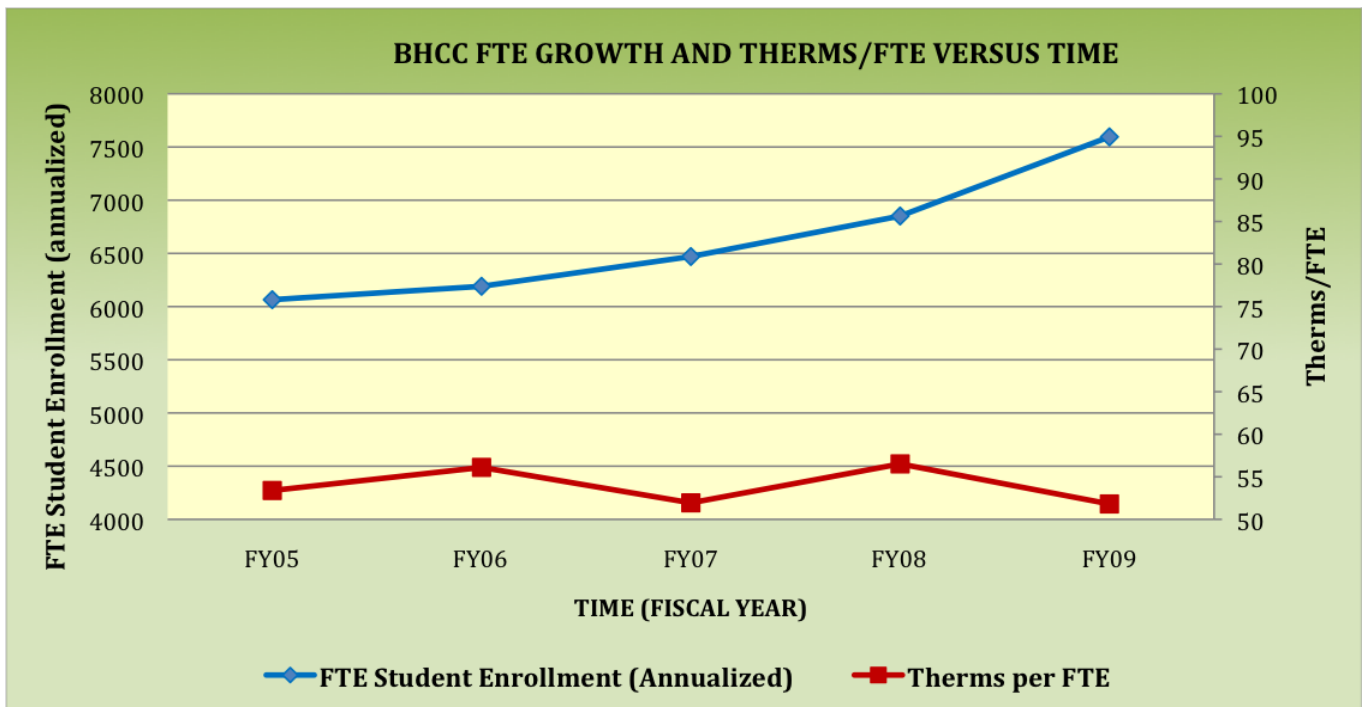


FIGURE 4.4 illustrates the impact of initiatives on BHCC fuel consumption (Therms/FTE) aligned with FTE growth for the time periods FY2005-FY2009



## 4.1 Energy Consumption of Building Systems

As BHCC's Greenhouse Gas Inventory, submitted on September 15, 2008 indicates, the majority of our emission contributions are derived from purchased electricity and stationary combustions, such as the fossil fuels to operate heating and cooling equipment throughout our buildings. By employing energy efficiency measures in the College's existing buildings and creating an aggressive new construction policy, our College can mitigate the majority of our greenhouse gas emissions.

Therefore, our first strategy is to update and modify our existing building systems to reduce the necessity for fossil fuels. Over time, non-renewable energy sources and combustion equipment will be replaced with a renewable energy supply.

**BUNKER HILL COMMUNITY COLLEGE TOTAL FUEL CONSUMPTION  
(Therms)**

	2007	2008	% change	2009	% change
<b>Charlestown Campus</b>					
• <i>Oil</i>	159,850	98,690	-62%	0	-100%
• <i>Natural Gas</i>	157,466	268,857	41%	369,737	27%
<b>Charlestown Campus Total</b>	317,316	367,547	14%	369,737	1%
<b>Chelsea Campus Total</b>	18,762	19,667	5%	23,778	17%
<b>BHCC Campus Total</b>	<b>336,078</b>	<b>387,214</b>	<b>13%</b>	<b>393,515</b>	<b>2%</b>
<b>BHCC Total MTCO<sub>2e</sub>*</b>	<b>1,919</b>	<b>2,211</b>	<b>13%</b>	<b>2,247</b>	<b>2%</b>

**TABLE 4.1**

\*MTCO<sub>2e</sub>, Metric tons of carbon dioxide equivalent

### 4.1.1 Mechanical Systems (addressing stationary emissions)

The primary sources of our stationary emissions are the boiler and HVAC systems used to heat and cool our buildings. The efficiency, or inefficiency, of this equipment depends upon multiple factors: building envelope tightness and construction, size and efficiency of boilers and chillers, pumps, motors, integrity of ductwork, and accuracy of controls. The following mitigation strategies will be implemented to improve the overall mechanical equipment efficiency, thus reducing fuel needed and emissions created.

- The original five buildings located on the Charlestown Campus were constructed in the early 1970s. They are concrete structures with poured concrete floor and roof slabs. The exterior walls are insulated concrete masonry units with single-glazed operable and fixed windows nearing the end of their economic life.



Strategies:

- FY 2015 - replace single-glazed windows with Low-E double-glazed windows and coordinate new window placement to be continuous with wall insulation plane, providing an energy consumption savings at a minimum of 105,000 KWH and 30,000 therms annually.
  - FY 2035 - at the end of the economical life of the current roofing material, replace black membrane roofing with a high albedo membrane and ensure a minimum of 4" rigid polyisocyanurate insulation, preventing energy loss and saving BHCC 20% in therm savings.
  - The walls and roof structure are in excellent condition and they should remain in their current state. However, an envelope audit and infra-red analysis could be considered within the next five-ten years. As funding for potential deep energy retrofits become more readily available, an envelope audit and retrofit may become a mitigation strategy to consider.
- There are three original low pressure steam dual fuel boilers which are sized to meet the load of two 1200 energy inefficient steam absorption chillers. Prior to FY 2009 BHCC fired the low pressure steam boilers in the winter season with fuel oil and natural gas in the summer season. In FY 2009 the standard operating practice requires that only natural gas be used year round. Additionally, the replacement of all boilers between FY 2010 and FY2015 will contribute to consumption reduction.

Strategies:

- The absorption chillers were replaced with high energy efficiency direct fired natural gas steam absorption chillers in FY 2004. A single boiler is operated all winter with the combustion controls locked out at 20% fire. In FY 2010, we will replace one of the three boilers with a high efficiency natural gas low-pressure steam boiler, one half of the rated capacity of the original boilers, with advanced controls. The other two boilers will be replaced in FY 2015. The replacement of all three boilers will result in energy consumption savings of at least 115,000 KWH and 20,000 therms equivalent annually.
  - We installed energy efficient gas fired small boilers for domestic hot water that are operated to save fuel consumption when the heating system boilers are not operating.
- BHCC conducted a campus wide survey to establish standard temperature settings to operate our HVAC systems. (Refer to Appendix 4.1.1A for Heating and cooling operating temperature set points survey results)





Strategies:

- BHCC adopted a formalized standard for indoor temperature ranges to be expected by building occupants in academic and administrative spaces depending upon the season. Adoption of a formalized standard for indoor temperature ranges will reduce utility costs associated with the consumption of energy to operate the heating and cooling systems.

This policy supports the College's educational mission and commitment to environmental stewardship. Energy reduction resulting from this measure helps curtail global, social and environmental impacts including the country's dependency on foreign oil and reduces the production of greenhouse gases that contribute to global warming.

- The standard temperature ranges are consistent with policies of our peer institutions and with research performed by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). The enforcement of the standard temperature ranges will prevent inefficient and wasteful operation of the heating and cooling systems. Refer to Appendix 4.1.1B, Heating and Cooling Temperature Set Points Policy.
- In FY 2009, we reduced the building temperature one degree in the winter and increased the building temperature one degree in the summer. These temperature adjustments resulted in energy consumption savings equivalent to at least 15,000 therms annually.
- BHCC will upgrade the existing building management system in FY 2010. This upgrade will include new features to monitor and adjust the HVAC systems operation for peak performance. It will also be used to monitor the sub-meters installed in our new Health & Wellness Center in compliance with the Measurement & Verification Plan for the building's electrical and mechanical systems.

#### **4.1.2 Electrical Systems (addressing stationary emissions and purchased electricity)**

BHCC's total annual electricity consumption is approximately 5,800,000 KWH. Adjustments to the existing air handling units can reduce energy consumption by 100,000 KWH, and adjusting the variable air volume units by calibrating the electronic temperature recordings and pressure sensors will reduce energy consumption by an additional 110,000 KWH. We now calibrate the room thermostats in response to thermal comfort issues in addition to calibrating the equipment more frequently. These are ongoing actions that were implemented in FY 2007 and are ongoing when we renovate offices and classrooms in the College.



These strategies reduce the electricity consumed for electrical components of the mechanical systems, as well as reduce the fuels needed for heating and cooling equipment. While the College has purchased renewable energy credits for 100% of purchased electricity, the reduced electricity consumption will reduce current energy costs and lessen the need to purchase renewable energy credits in the years to come.

BHCC has implemented several programs to reduce energy consumption.

- Replace existing T-12 light fixtures with energy efficient T-8 ceiling fixtures when offices and classrooms are renovated. To date approximately 250 fixtures have been installed. In the coming years (FY2010-FY2015) we will schedule replacement of all T-12 fixtures.
- Installation of variable frequency drives (VFD's) on all 7 HP and larger motors in FY 2005 through FY 2008.
- Replacement of neon signage with LED exit signs, variable message signs, and building letters in FY 2007 and FY 2009. The LED signs use 1/10 the electricity of neon.
- Installation of sensor switches in faculty offices and restrooms in FY 2006 and continuation of sensor switches in classrooms and public areas throughout the College through FY 2015.
- In FY 2008 we installed a power saving program for all computers except a select few that are used to monitor the servers and switches.

### **4.1.3 Electricity Procurement (addressing purchased electricity only)**

Renewable energy or Green Power is electricity generated by renewable resources such as wind power, solar power, hydro-power, bio-mass or biofuels, or nuclear power.

Purchasing Green Power directly involves either finding a producer of clean power that sells the power to the New England Power 'grid' that BHCC's electric service is carried on and arranging to purchase that power from them or producing the Green Power on site. These solutions are generally not cost effective in urban communities because renewable energy is typically generated in vast open areas away from heavily populated locations.

Producing Green Power on site for direct use by BHCC would be the most environmentally friendly solution. Unfortunately, the realities of this undertaking pose tremendous problems including the initial investment of capital, the requisite long-term cost of maintenance for equipment, and the inability to assure a reliable, measurable and dependable supply of electricity. Additionally, local zoning requirements and the aesthetics of BHCC's location are causes for concern.



There are two alternative solutions that have been implemented to open the market to renewable technologies. The first is a regulatory solution. States mandate that a certain percentage of the electricity sold within their jurisdiction must come from renewable sources called a ‘renewable portfolio.’ The second is the purchasing of renewable energy credits.

*“In a renewable energy credit deal, the power from the new renewable energy facility is not physically delivered to the customer, but the environmental benefits created by the facility are attributed to that customer, directly offsetting the environmental impact of the customer’s conventional energy use.”* –Bonneville Environmental Foundation

BHCC elected the Renewable Energy Credits solution for Green Power.

Renewable energy credits represent units of “green” kilowatt hours. For every “green” kilowatt hour that BHCC purchases there is a direct 1:1 correlation to reducing pollutants emitted into the atmosphere caused by the equivalent of conventional power production. By purchasing renewable energy credits to cover 100% of our electric energy consumption, BHCC is purchasing all legal rights to the benefits clean energy creates and avoiding pollutants associated with conventional power generation.

- BHCC has the right to declare that 100% of its power is GREEN POWER.
- BHCC’s purchase of renewable energy credits combined with the initiatives to reduce energy consumption will update the baseline Greenhouse Gas Inventory to indicate a substantial reduction in our carbon footprint.

Purchasing renewable energy credits will not be limited to BHCC. BHCC, through its partnership with Windstreet Energy<sup>6</sup>, will extend Green Power offerings to its faculty, staff, students and surrounding communities, further advancing BHCC’s commitment to climate neutrality. The program provides members of the College community the opportunity to purchase “A Green Auto Card” and “A Green Home Card” to obtain renewal energy credits to offset carbon emissions from electricity and automobiles used throughout the year. The program will encourage the College community to continue membership after leaving BHCC.

## 4.2 Green Buildings

Building upon existing building energy efficiency measures, BHCC is committed to all new construction on campus being a minimum of LEED Silver certified. This means new construction will address multiple environmental concerns including: site issues, water conservation, energy efficiency, material choices, and indoor environmental quality. BHCC’s Green Building Policy will outline environmental issues which are of significant importance to our College, creating a template for all future campus construction projects. (Refer to Appendix 4.2C, Green Building (LEED) Policy).

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<sup>6</sup> Windstreet Energy, “A Green Auto Card” see <http://www.windstreet.com/>



As a testament to its green building commitment, Bunker Hill Community College broke ground in April 2008 for its first new building on the Charlestown campus in more than 30 years. When fully completed, it is anticipated that this environmentally friendly building will receive **LEED GOLD** certification. This would exceed the LEED+ criteria mandated by the Commonwealth of Massachusetts as well as our own Green Building Policy minimum design standard. The design was optimized to reduce energy consumption through measures such as day lighting strategies and a heavily insulated envelope. The building design has already won a Design Showcase award. The 48,000-square foot structure will house the College's expanding nurse education and, health professions programs, and a fitness center as well as BHCC's first gymnasium. The new building will be completed in December 2009 and occupied in March 2010.

The future holds additional opportunities for BHCC in the next several years. A master plan includes a learning resource center, a science and technology building, an arts and humanities building, and an academic building configured around a very green central quad. This configuration should give a new sense of enclosure, completeness, and meaning to the campus.

As illustrated in section 4.1, the existing buildings on campus are also becoming greener in a number of ways. The Green Building Policy overlaps, or works in conjunction with, mitigation strategies 4.1 and 4.2, as they influence the overall energy performance in new buildings, additions and alterations, and can be accounted for under the LEED rating system.

### 4.3 Energy Star Procurement

In an effort to further reduce greenhouse gas emissions associated with the purchase of electricity, BHCC has implemented an ENERGY STAR® purchasing program (Appendix 4.3D, Solid Waste Management; Environmental Preferable Products; & Energy Star Procurement Guidelines) for all products where such ratings exist and whenever financially and operationally feasible. As energy-efficient, Energy Star rated durable goods are purchased and used, the College's process loads should decrease causing an additional reduction of BHCC's carbon footprint.

Bunker Hill Community College established an ongoing partnership with the ENERGY STAR® Program administered by the EPA, and continually presses the market for greater energy efficiency of products and services regularly purchased by the College.

BHCC monitors product categories that are available with the ENERGY STAR® rating and focuses its procurement efforts consistent with the needs of the College community. BHCC upgrades computers and monitors and all commercial kitchen appliances and equipment with ENERGY STAR® rated products.



## 4.4 Travel

Bunker Hill Community College has instituted several initiatives to reduce our carbon footprint pertaining to travel.

The College instituted a Vehicle Usage Policy for vehicles that staff have access to (Refer to Appendix 4.4E, College Vehicle Use Guidelines). This policy was adopted in FY 2008. By doing this, the College is reducing the amount of fuel being used for its travel.

BHCC has purchased a hybrid vehicle to replace a Ford Taurus. By doing so, gasoline purchases have been cut in half for staff travel with this vehicle. Also the carbon emissions produced by this staff vehicle have been greatly reduced.

The College will purchase carbon offsets for all College related business travel.

Bunker Hill Community College will require its vendors to adopt travel policies to reduce their own carbon footprints.

BHCC has also instituted parking discounts for those students who drive hybrid vehicles (Refer to Appendix 4.4F, Guidelines for Reduced Student Parking Fees) and park on campus.

BHCC purchases approximately 4,200 gallons of gasoline and 3,800 gallons of diesel fuel annually for all College vehicles and grounds equipment. Using an average of 15 mpg, the total fuel purchased equates to 120,000 miles annually. BHCC will purchase ten “Green Auto Cards” to offset the emission from all College vehicles and ground equipment. (Refer to Appendix 4.4G, Windstreet Energy Auto card).

## 4.5 Waste Minimization

Bunker Hill Community College is committed to reducing the amount of waste that is generated for disposal in landfills or incineration facilities. The College currently has an aggressive campus wide program to recycle 100% of all hazardous (chemicals, oils, solvents, computers/monitors, etc.) and universal (batteries, fluorescent lamps, etc.) waste and 20% of non-hazardous (bottles, cans and cardboard, etc.) materials. The intent of this program is to reduce the amount of waste and toxins that are disposed of in landfills or burned at incineration facilities. In November 2009 BHCC will institute a campus wide single stream recycling program for waste, cardboard, bottles and cans to replace the existing program. In doing so, BHCC will increase the recycle volume from 20% to 50% by FY 2010 and at least 75% by FY 2011 to significantly reduce the amount of waste going to landfills.

Bunker Hill Community College expanded its waste management program beyond recycling.

Bunker Hill Community College developed procurement guidelines to procure materials, equipment, and supplies that are biodegradable and/or contain recycled material when financially



and operationally feasible and instituted double-sided printing and copying of documents. The procurement guidelines contain contract language to incorporate in contracts for vendors and contractors to abide by our waste minimization policy. BHCC is in the process of developing a waste management awareness program consisting of signage and special events for faculty, staff and students to expand the program beyond the borders of the College.



## 5. Educational, Research, & Community Outreach Efforts

Bunker Hill Community College currently has several credit courses that incorporate sustainability into the curriculum. These programs are a collaboration of several academic departments designed to increase awareness and involve students with principles of sustainability and climate neutrality.

### 5.1 Curriculum

A broad range of opportunities exist for students including:

- The **Science Department** incorporates awareness of sustainability in the engineering curriculum by having student teams research and write a report on an energy related issue. Notably, one student team recently prepared a Team Technical Report (Appendix 5.1A, Team Technical Report) titled “Reducing the Consumption of Energy at the Bunker Hill Community College Charlestown Campus” dated May 1, 2009. The findings will be used as a guideline to improve the efficiency of lighting. In summary, their findings indicate BHCC can greatly improve lighting efficiency through the use of occupancy sensors with a return on investment (ROI) of 0.3 years.
- **Environmental Science I and II with Laboratory.** The curricula for these courses are built upon the ideas of sustainability, reduction of resources, with special attention and focus on climate change as unifying themes throughout the courses. Discussions and deliverables are related to cause, consequences, and preventative measures to climate change. Additionally, the course requires that students submit a final report with a calculation and model of their own footprint. Using their calculation, they must make final recommendations and provide a call to action to minimize their footprint.
- **Learning Community (A combined course between History, English and Environmental Science).** In the fall term 2008 BHCC piloted a course, Learning Community, with a section of students who concurrently attended history, English and environmental science courses. The purpose of the course was to research historical and cultural changes impacting our environment and conversely explores how the environment influences modern society. One project addressed the carbon footprint of early settlers in comparison to the carbon footprint of modern students. Students began with visits to local historical farms; Concord, Massachusetts and Ipswich, Massachusetts to become educated with time period customs and practices such as burning wood, farming and livestock husbandry. Using collected research and computer modeling, the students were able to compare the early settlers footprint to their own modern footprint.



- **Study Abroad Programs**

Students are able to complete part of their degree program through educational activities outside the United States. Such studies include, but are not limited to, classroom study, research, intern- or externships, and service learning.

- **Costa Rica:** Since 2000, each summer two BHCC science professors have led students through an ecological study tour of Costa Rica. The course is based in the principles of sustainability and environmental conservation. The tour begins with the students visiting the In Bio Eco House<sup>7</sup> demonstrating alternative fuel systems, energy conservation mechanisms and recycled hot water systems. Additionally, the students stay at an eco friendly research station, solely powered by water and solar driven electrical systems, in a remote part of the Osa Peninsula. The students study the systems and learn from experts and researchers about the importance of forests and rainforests, as carbon sinks and emissions collectors, contributing to recycling and energy reduction.
- **Senegal:** In the summer term 2009 BHCC conducted its first faculty led study trip to Senegal, West Africa. Led by faculty members, students partnered with a large national conservation effort called Activites Citoyenne. The project is a pilot to a larger African based initiative to reforest a large tract of land from the east to west coast to halt desertification and collect greenhouse gas emissions. Students participated in the program by learning about alternative energy systems and experienced first hand sustainable practices in a developing country. Students also worked alongside Senegalese students in a rural village helping to plant trees as part of a national reforestation project. Curriculum and deliverables included research papers reviewing the use of resources, cultural incentives within Senegal and energy reduction in developing countries. Students will be required to present their experiences to the BHCC community during the study abroad fair in the fall term 2009.
- Since the fall 2004 semester, the **English as a Second Language (ESL) Department** has included a Service Learning Recycling / Environmental Project. The department also provides a Service Learning Project called “ESL Goes Green” in the advanced writing and reading course integrated with a basic computer course.
  - In the academic writing course, students receive credit for participating in a student service learning project involving research, writing, and creating campus awareness for recycling among other environmental topics. The project is based upon four basic components:

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<sup>7</sup> National Biodiversity Institute, The National Biodiversity Institute (INBio) of Costa Rica is a private research and biodiversity management center, established to support efforts to gather knowledge on the country’s biological diversity and promote its sustainable use, <http://www.inbio.ac.cr/en/default.html>





- **Action-** Recycling receptacles were placed around the campus to collect aluminum cans, glass, and plastic bottles. Contents were monitored on a weekly basis. Approximately 5,000 cans and bottles were collected for the first two semesters. Since 2008, recycling of cans, bottles and plastic has been a mandatory policy at BHCC. For redeemable cans and bottles, monies collected are donated to charity and for the non-redeemable material; contents are taken to a nearby recycling facility.
- **Education & Outreach-** Students complete internet research for an assigned environmental topic. They design, make, and distribute informational flyers throughout the campus and are required to write a persuasive essay on the topic further developing their communication skills and increasing student awareness.
- **Collaboration-** At the end of each semester, students sponsor an on campus “Recycling Day”. Students showcase their special topics and research by designing and constructing display boards for the BHCC Community.
- **Reflection-** Throughout the course and as a final deliverable, students compose reflection papers to document their awareness, development, and comprehension of environmental issues.

In addition to this project, students participate in a tour of the EpiCenter<sup>8</sup>, a LEED Platinum certified building in South Boston. In the future, this tour will be conducted in the BHCC LEED Gold certified Health & Wellness Center. (pictured on the *Green Pact* cover)

The Service Learning Recycling / Environmental Project are documented in writings, photographs, and a power point presentation (Refer to Appendix 5.1B, Service Learning Project).

- *Advanced writing and reading* integrated with, “*ESL Goes Green*” - Students select an environmental issue to research as their essay topic. The essays include a description of the environmental issue, probable causes and potential solutions. The essays are also supported by data collected from student developed surveys regarding their topic. The surveys are distributed to interested participants and collected for review. In collaboration with the students from the *Academic Writing course* they participate in “Recycling Day” where they share their researched information and conclusions in the form of poster boards and flyers. Donated “gifts” like reusable shopping bags, energy efficient light bulbs and other “green” gifts are shared with “Recycling Day” attendees.

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<sup>8</sup> USGBC LEED projects and case studies directory, see <http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=736>



Credit-Free “Green” courses are available by the College’s **Workforce Development Center**. These include:

- **The Oil and Gas Industry Overview:** Oil accounts for 40 percent of the world’s total primary energy demand, and its availability is a major factor in global economic conditions. Demand for oil is expected to increase 35 percent by 2020. During the same period, demand for gas will increase by 45 percent. The dramatic effect of the oil and gas industry on global markets makes it an attractive and lucrative business opportunity. This course is designed to help students navigate the complex processes of the oil and gas industry. Students will explore industry challenges, key players, and the business models used to maintain production values. Additionally, students will examine key strategic solutions for difficult industry problems such as regulatory issues and geopolitical conditions.
- The **Home Inspection** training course and online certificate program. Includes a review of the principal components of home inspection procedures and processes. Students learn how to create a home inspection report that details the home’s condition including the heating and cooling systems, plumbing, electrical, roof, siding, frame and foundation. The online certificate program is offered in partnership with major accredited Colleges and universities
- The **Principles of Green Buildings** is geared to individuals in the building, remodeling, or trade industries. It was co-developed and written in partnership with nationally recognized building science experts from Advanced Energy of North Carolina. The course educates participants in the efficiency principles for building performance and prepares individuals for certifications; NATE<sup>9</sup>, NARI<sup>10</sup>, BPI<sup>11</sup>, RESNET<sup>12</sup>, and other industry credentials for green building. This course is NATE recognized for 28 hours of continuing education units applicable to NATE recertification. Materials are included.

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<sup>9</sup> NATE - North American Technician Excellence, see <http://www.natex.org/>

<sup>10</sup> NARI - National Association of the Remodeling Industry, see <http://www.natex.org/>

<sup>11</sup> BPI - Building Performance Institute, see <http://www.bpi.org>

<sup>12</sup> RESNET - Residential Energy Services Network, see <http://www.natresnet.org/>



The **Culinary Arts Department** has developed an initiative titled “The Living Campus at Bunker Hill Community College”. BHCC has teamed with Top Sprouts<sup>13</sup> (See Appendix 5.1C, The “Living Campus” at Bunker Hill Community College), a company dedicated to building and efficiently operating roof-top greenhouses, to proceed with a feasibility study. In FY2010 construction of a roof top greenhouse is anticipated.

This initiative supports BHCC in three ways:

1. Curricular Development-

To educate our students and community about the benefits derived from local, sustainable agriculture, programs and classes will focus on:

- *Eco-gastronomy*, demonstrating how the chef of tomorrow can responsibly lead the industry into a more sustainable future.
- *The Locavore Movement*, supporting how buying and living “local” benefit the individual, community, and world
- *Tours, Seminars, and Outreach*, explaining how this sustainable model at BHCC will act as a model for future generations of consumers
- *Learning Community Clusters*—enhancing the BHCC culinary arts program by teaming up with other curricula (i.e. environmental science, entrepreneurship, etc.).
- *Building a National Model for Culinary Arts Programs*—illustrating why Bunker Hill Community College provides a state-of-the art culinary education.

2. Community Involvement-

A seasonal farmer’s market will be created and open to all urban residents of Boston, students, and the surrounding areas as the centerpiece of the Living Campus at BHCC. Providing this food oasis will make locally grown food and goods available to the community by foot, bike, or public transportation. Some consumer related links to “The Living Campus at Bunker Hill Community College” could involve the following:

- A Seasonal Farmer’s Market Overview
- Agriculture Seminars & Classes Focused on Urban Gardens
- Guest Lecturers, Book Signings, etc.
- Tours and Dinners
- Community Co-op/ Farming Subscriptions
- High School and Grammar School Programs
- Recruitment for the Culinary Arts Program

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<sup>13</sup> Top Sprouts, see <http://topsprouts.com/main/>



3. Environmental Impact-

A successful partnership with **Top Sprouts** depends upon an efficient, productive, and environmentally responsible operation. Methods to be explored include:

- Systems for capturing rainwater
- Systems for capturing heat from the building and its kitchens
- Systems for composting and recycling waste material
- Creating a vertical integration component to food and beverage
- Systems for capturing the solar potentials of the building
- Maximizing the potentials of space usage
- Certification by the Dine Green Associations and other Agencies

## 5.2 Community Outreach

- BHCC will expand on current on-line and hybrid course curricula providing flexibility for students and minimizing commuting to the campus reducing travel and transportation.
- A sub-committee of the Presidents Climate Committee will develop an awareness program to encourage the College community to employ best practices at work and home. The program will include a partnership with Windstreet Energy making renewable energy credits available to faculty, staff, and students enabling them to offset their household electricity through “A Green Home Card” and “A Green Auto Card” to offset automobile carbon dioxide equivalent emissions in a convenient and easy fashion for the purchase term.
- A Sustainability Club will be created by students
- An energy and water conservation campaign will be launched in response to the President’s commitment to climate change, thus saving the campus money by reducing campus wide utility costs
- Web communications, targeted outreach to the campus and community will continue.
- BHCC will continue to explore partnership opportunities and foster relationships with local organizations whose strategies are aligned with the BHCC sustainability goals, such as Green Jobs and LEED workshop training.
- BHCC will seek to grow volunteerism in cooperation with the College’s office of Service Learning and Community Engagement.



## 6. Financing

There are a number of funding options available to Bunker Hill Community College to help employ its efforts towards becoming carbon neutral. Among them are:

### Energy Performance Contract:

Performance contracting is an alternative financing strategy that allows educational facilities to finance energy-efficiency projects. Performance contracting uses actual energy savings from installed efficiency measures to pay for the project, including energy-saving equipment, installation, and maintenance services. An energy service company (ESCO) enters into an energy service agreement (ESA) with the party making the decision to improve energy performance and with a financial investor, who could be a commercial bank or the ESCo itself. As its name implies, a performance contract does not specify how an energy savings project must be implemented, in terms of particular retrofit measures and technologies, but rather what the final outcome of the project must be, in terms of energy cost per square foot. The distinguishing characteristics of an energy performance contract include:

- One contractor is accountable for design, purchase, installation, maintenance, operation of the equipment, and any necessary training. The contractor finances all project costs and assumes the technical risk of energy savings performance, and the client does not need to put any money up front to implement the contract, i.e., cash flow is always positive. Payments by the client to the energy service contractor are made after project completion and the amount is contingent upon actual savings achieved.
- Under a performance contract, an ESCo uses a turnkey approach to project management. The ESCo conducts a feasibility analysis, obtains and arranges the necessary financing, performs the engineering design, manages construction, purchases and installs equipment (this may be performed by a subcontractor), monitors project performance, maintains equipment, and provides training and administrative services. The facility manager makes no up-front capital investment, because the ESCo provides financing, and usually enjoys immediate cost savings from the project. Depending upon the type of performance contract, the client may not assume any financial risk for the project. The ESCo is paid based on the savings generated. The ESCo guarantees a minimum level of cost savings during the contract term, which is used to cover the financing costs. The savings are first estimated in the feasibility study, and later verified by energy performance monitoring. Because the ESCo has incentives to do jobs right, commissioning and metering are typical and essential elements of ESCo projects. Once the payments have covered the ESCo's cost of doing business plus a percentage profit outlined in the contract, further savings benefits belong to the client.
- Typical performance contracts last five to ten years. Ideally, the contract length lasts about twice the calculated payback period, plus one or two years for the ESCo to recover its



administrative costs and the interest on its outstanding principle investment. Thus, a project with a payback of three to four years will be under contract for seven to ten years.

#### Endowments:

BHCC hopes to incorporate the funding for sustainability projects in future years. BHCC will seek to undertake projects with a short-term payback period and the expectation of a higher rate of return than that of the endowment portfolio. Realistically, current numbers forecast that only very small projects could be funded and the return on investment (ROI) would have to stay within the one to two year payback range.

#### Gifts:

Gifts from alumni, corporations, and students are other avenues for funding sustainability initiatives.

#### Operating Budget:

BHCC's operating budget provides for most of the renovation, building and sustainability projects that are ongoing or planned.

BHCC has an internal process for review of projects that helps BHCC track successes and failures.

The President has committed to fund at least one sustainability project on campus each fiscal year. Potential projects for this fiscal year include;

- Replacement of light fixtures and the addition of ceiling sensors
- Performing a needs assessment of our recycling program as BHCC seeks to purchase new recycling bins in and around campus. Our current bins are not properly placed or sufficient for the amount of traffic on campus.

#### Utility Rebates:

There are several utilities providing rebates and grants to organizations installing efficient and renewable energy products. At BHCC we are investigating several opportunities to reduce our electric output, all of which have utility rebate potential.



## 7. Tracking Progress

The new *Green Pact* vision and sustainability strategy represents a significant transformation for BHCC. To coordinate the many initiatives referenced in this report an Office of Sustainability Management will be created and a full-time position devoted to it.

The President's Climate Committee is required to record and compile information about the process of developing the *Green Pact*. This record includes minutes from meetings, input from stakeholder groups, and a longer, more detailed report with descriptions of emissions reduction activities, plan for contingency (e.g., if interim targets are missed, or if the plan needs to be amended), and information about key actors, technologies, etc. By implementing the *Green Pact*, the College will monitor its progress and report on achievements.

Bi-annual greenhouse gas emissions inventories are submitted to the President for review. Adjustments to the *Green Pact* are made as activities are successfully implemented and upon the bi-annual required reviews.

The committee has also developed a share site to document its accomplishments and to post policies, minutes of monthly meetings, committee documents, reports and action plans, reference material, and feature articles.

Further, the BHCC Sustainability Plan (Refer to Appendix 7A, Sustainability Plan) is an integral part of our tracking tools and process.

The *Green Pact* is a work in progress as the College learns and expands its initiatives.



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**APPENDIX 2A  
BUNKER HILL COMMUNITY COLLEGE  
GREENHOUSE GAS EMISSIONS REGISTRATION  
LETTER OF SUBMITTAL**

March 16, 2009

Massachusetts Department of Environmental Protection  
Bureau of Waste Prevention  
Climate Strategies  
One winter Street, 6<sup>th</sup> Floor  
Boston, MA 02108

**RE: GREENHOUSE GAS EMISSIONS REGISTRATION FORM  
CALENDAR YEAR 2008**

Enclosed is the Greenhouse Gas Emissions Registration Form for calendar year 2008 for emissions for Bunker Hill Community College, Charlestown Campus. Bunker Hill Community College is submitting the Registration Form pursuant to 310 CMR 7.71 (4) as a voluntary participant.

If you have questions about our forms please call me at 617-228-2325.

Sincerely,

Joseph E. Steffano, PE  
Director of Facilities Management & Engineering Services

**APPENDIX 2B**  
**BUNKER HILL COMMUNITY COLLEGE**  
**PRESIDENTS CLIMATE COMMITMENT COMMITTEE**

The **purpose** of the Presidents Climate Commitment Committee is to:

1. Evaluate and recommend policies for developing action plans (e.g. reduce energy consumption) to reduce greenhouse gases;
2. Oversee and guide the development and implementation of a Climate Action plan to comply with the ACUPCC;
3. Evaluate measures that we can take to achieve no net greenhouse gas emissions;
4. Evaluate and recommend tangible action plans (e.g. only purchase energy star rated appliances) to be taken by BHCC to reduce greenhouse gases;
5. Evaluate and recommend measures to integrate sustainability into the curriculum and make it part of the educational experience;
6. Prepare reports detailing the progress of the implemented action plans for public view;
7. Act as the liaison between the College community and the President and between the President and the Nationwide Council on ACUPCC matters;
8. Report to the College Forum at each scheduled meeting.

The **composition** of the Presidents Climate Commitment Committee includes:

- a) Director of Facilities Management and Engineering Services (Co-Chair)
- b) Director of Fiscal Affairs & Central Services (Co-Chair)
- c) Vice President of Academic Affairs or representative from Academic Affairs
- d) Dean of Chelsea Campus or designee
- e) Science Department Chairperson or designee
- f) Registrar/Director of Enrollment Services or designee
- g) Executive Dean of Institutional Effectiveness or designee
- h) Executive Director of Workforce Development or designee
- i) Three faculty members elected by the College Forum
- j) One professional staff member elected by the College Forum
- k) One person appointed by the President

l) Two support staff members

m) One student elected by the Student Government Association

## APPENDIX 4.1.1A

### HEATING AND COOLING OPERATING TEMPERATURE SETPOINTS SURVEY

1/23/2008

The Commonwealth of Massachusetts established a mandatory 20% reduction of energy usage by 2012 for all state facilities. This mandate requires Bunker Hill Community College to adopt a formalized standard for indoor temperature ranges to reduce utility costs associated with the consumption of energy to operate the heating and cooling systems.

The mandate also supports the President's charter signatory of the American College & University Presidents' Climate Commitment (ACUPCC) that pledges BHCC to eliminate its contribution to global warming over time. Energy reduction resulting from this measure helps curtail global, social and environmental impacts including the country's dependency on foreign oil and reduces the production of greenhouse gases that contribute to global warming.

The Facilities Management Department will use the standard temperature ranges in addressing indoor environmental comfort complaints with regard to temperature. The standard temperature ranges are consistent with policies of our peer institutions and with research performed by the American Society of Heating, Refrigeration and Air conditioning Engineers (ASHRAE). The enforcement of the standard temperature ranges will prevent inefficient and wasteful operation of the heating and cooling systems.

The following survey will help us establish the standard for indoor temperature ranges.

#### **Building Heating and Cooling Indoor Space Temperature Guidelines**

##### **A. Heating Season**

1. A temperature of 68° F has been researched by ASHRAE (Standard 55 - 92 "Thermal Environmental Conditions for Human Occupancy") to be comfortable for most people (10% dissatisfaction rate) who are dressed appropriately for the season. Temperature readings in a space are taken at the thermostat and/or desk level. Heat will be provided to maintain interior temperatures at approximately 70° F during normal occupied hours during the normal heating season between October 15<sup>th</sup> and May 15<sup>th</sup>.

Do you: Strongly agree \_\_\_\_; Agree\_\_\_\_; Disagree\_\_\_\_\_

##### **B. Cooling Season**

1. Temperatures in the 72-76° F range has been researched by ASHRAE (Standard 55 - 92 "Thermal Environmental Conditions for Human Occupancy") to be comfortable for most people (10% dissatisfaction rate) who are dressed appropriately for the

season. Temperature readings in a space are taken at the thermostat and/or desk level. Cooling will be provided to maintain interior temperatures at approximately 74° during normal occupied hours during the normal cooling season between May 15th and October 15th. During off-hours, temperatures may rise above this level.

Do you: Strongly agree \_\_\_\_; Agree\_\_\_\_; Disagree\_\_\_\_\_

**C. Seasonal Changes**

It is difficult to present a simple description of the seasonal temperature switchover policy because of the buildings site orientation and HVAC system temperature control zones in each building. When determining the exact switchover date for the Campus, the Facilities Management Department considers prevailing weather patterns, the building's HVAC system, the system controls, and building usage. Switchover is approximately a one week process for cooling that is not reversible and a two day process for heating. In the spring and autumn, outside temperatures can be extremely variable. Statistics show that there are a couple of isolated days in the heating season that actually require cooling. The same is true for heat required in the cooling season. During these unpredictable days in the "intermediate" season indoor temperatures might drift beyond the comfort guidelines in many spaces in the buildings and little can be done other than to endure the event. In the event of a severe cold spell, all heating services will be turned on as quickly as possible.



Do you: Strongly agree \_\_\_\_; Agree\_\_\_\_; Disagree\_\_\_\_\_






**D. Unoccupied Hours**

Most buildings have designated occupied hours. To help save energy, the building temperatures may be changed from the normal operating set points during expected unoccupied hours (after-hours temperature setback).











Do you: Strongly agree \_\_\_\_; Agree\_\_\_\_; Disagree\_\_\_\_\_

**Question 5 comments**

	Comment Text	Response Date
 Find	1. unsure	Tue, 4/15/08 10:37 AM
 Find	2. As classes run until 10pm a setback occurring after 8:45 would be fine as the cooling would be gradual and still remain comfortable	Fri, 4/11/08 1:47 PM



-  Find **3.** Only after evening classes end - 10:00pm Fri, 4/11/08 11:03 AM
-  Find **4.** It depends if it costs more to bring the buildings up to a reasonable temperature or to leave the system running at a standard temperature. Fri, 4/11/08 7:31 AM
-  Find **5.** it takes too long to cool the building down in the AM Fri, 4/11/08 6:46 AM
-  Find **6.** not sure Fri, 4/11/08 6:09 AM
-  Find **7.** As long as the heat is turned back on at a specific point prior to 6am to ensure the room temp. is comfortable by the time people get to work. Fri, 4/11/08 5:49 AM

## Question 4 comments

		Comment Text	Response Date
	Find	<b>1.</b> 66 to 68	Mon, 4/14/08 7:14 PM
	Find	<b>2.</b> 68 is preferable	Mon, 4/14/08 8:55 AM
	Find	<b>3.</b> I find 65 - 70 quite right, I think cooler temp. are more conducive for productivity, it's easier to warm up with a sweater or additional layer than it is to cool down when heat is too high. I'd rather warm-up via working hard than be lulled into comfort and sleepiness through ample heat.	Fri, 4/11/08 1:47 PM
	Find	<b>4.</b> 68-70	Fri, 4/11/08 1:17 PM
	Find	<b>5.</b> 68-69, we are sitting and not moving around	Fri, 4/11/08 10:34 AM
	Find	<b>6.</b> 75	Fri, 4/11/08 7:46 AM
	Find	<b>7.</b> The lowest as possible to conserve energy.	Fri, 4/11/08 7:39 AM
	Find	<b>8.</b> varies, depending on activity	Fri, 4/11/08 6:46 AM
	Find	<b>9.</b> 60	Fri, 4/11/08 5:36 AM
	Find	<b>10.</b> prefer 65-70 but would be happy with 71-74. 80's are too hot!	Fri, 4/11/08 5:02 AM

## Question 3 comments

Displaying 1 - 10 of 10 responses    << Prev    Next >>    Jump To:     [Go >>](#)

		Comment Text	Response Date
	Find	<b>1.</b> 68 is preferable	Mon, 4/14/08 8:55 AM
	Find	<b>2.</b> Heat goes on Nov. 1 - April 1 set at 65 - 70 degrees- constant	Fri, 4/11/08 1:47 PM

Find	3. 68-70	Fri, 4/11/08 1:17 PM
Find	4. 68	Fri, 4/11/08 10:34 AM
Find	5. my thermostat is off	Fri, 4/11/08 9:30 AM
Find	6. 75	Fri, 4/11/08 7:46 AM
Find	7. 67 when home; under 60 during the day	Fri, 4/11/08 7:44 AM
Find	8. When at home, I keep it at 55-60 to save money and dress warmer. During the day when not home, it is set at 50.	Fri, 4/11/08 7:39 AM
Find	9. varies, depending on weather & activity	Fri, 4/11/08 6:46 AM
Find	10. 67 - 72	

## Question 2 comments



























	Comment Text	Response Date
Find	1. 68 is preferable	Mon, 4/14/08 8:55 AM
Find	2. 78 but not higher as it often is	Fri, 4/11/08 10:08 AM
Find	3. 75	Fri, 4/11/08 7:46 AM
Find	4. 76	Fri, 4/11/08 7:21 AM
Find	5. varies, depending on activity	Fri, 4/11/08 6:46 AM
Find	6. 60 or lower	Fri, 4/11/08 5:36 AM

## Question 1 comments

Displaying 1 - 36 of 36 responses << Prev Next >>

Jump To:  [Go >>](#)

	Comment Text	Response Date
Find	1. 75	Wed, 4/16/08 6:07 AM
Find	2. no home cooling system...	Tue, 4/15/08 10:37 AM
Find	3. none-- we turn off heater and do not use AC	Mon, 4/14/08 7:14 PM
Find	4. 68 is preferable	Mon, 4/14/08 8:55 AM
Find	5. 76	Fri, 4/11/08 4:33 PM
Find	6. No heat or cooling set, heat off April - Oct. No AC used, cross window ventilation and intake and outtake window fans, blocking of southern exposure windows during sunrise to 3pm.	Fri, 4/11/08 1:47 PM
Find	7. The heat is shut off, window AC units in use	Fri, 4/11/08 1:39 PM
Find	8. Lower than 60 for electric heat	Fri, 4/11/08 1:23 PM
Find	9. do not have central air	Fri, 4/11/08 12:03 PM

-  Find **10.** no air conditioning Fri, 4/11/08 11:27 AM
-  Find **11.** I only have heat (no AC) and it is off at that time Fri, 4/11/08 11:25 AM
-  Find **12.** we keep it turned off during the summer Fri, 4/11/08 10:34 AM
-  Find **13.** 78 Fri, 4/11/08 10:08 AM
-  Find **14.** 55-60 Fri, 4/11/08 9:38 AM
-  Find **15.** thermostat is off providing no heat Fri, 4/11/08 9:05 AM
-  Find **16.** 75 Fri, 4/11/08 7:46 AM
-  Find **17.** I use neither a fan nor an air conditioner, I deal with the heat. Fri, 4/11/08 7:39 AM
-  Find **18.** use as little as possible Fri, 4/11/08 7:39 AM
-  Find **19.** I turn off the heating system. Fri, 4/11/08 7:31 AM
-  Find **20.** 76 Fri, 4/11/08 7:21 AM
-  Find **21.** varies, depending on weather & activity Fri, 4/11/08 6:46 AM
-  Find **22.** 78 Fri, 4/11/08 6:43 AM
-  Find **23.** Turned off - we don't have A/C Fri, 4/11/08 6:29 AM
-  Find **24.** don't have a cooling system Fri, 4/11/08 6:29 AM
-  Find **25.** I shut my heating system off; thermostat down to 0 Fri, 4/11/08 6:25 AM
-  Find **26.** 66 - 75 Fri, 4/11/08 6:04 AM
-  Find **27.** shut off Fri, 4/11/08 6:02 AM
-  Find **28.** 50 Fri, 4/11/08 6:00 AM
-  Find **29.** Off Fri, 4/11/08 5:56 AM
-  Find **30.** 58 Fri, 4/11/08 5:49 AM
-  Find **31.** 55-60 Fri, 4/11/08 5:36 AM
-  Find **32.** I do not have air conditioning at home. Fri, 4/11/08 5:21 AM
-  Find **33.** Off - if AC is necessary 71-74 or higher Fri, 4/11/08 5:02 AM
-  Find **34.** I do not have central air conditioning. Fri, 4/11/08 4:57 AM
-  Find **35.** off Fri, 4/11/08 4:47 AM



## **APPENDIX 4.1.1B**

### **HEATING AND COOLING TEMPERATURE SET POINTS POLICY**

**EFFECTIVE 10/23/2008**

#### **Objective:**

The creation of a standard for indoor temperature set points to operate the heating and cooling systems will reduce the cost and consumption of energy to operate the systems and reduce the production of greenhouse gases that contribute to global warming.

#### **Policy:**

##### ***Heating Season***

Interior temperatures will be maintained at approximately 70° F during normal occupied hours during the heating season between October 15<sup>th</sup> and May 15<sup>th</sup>. The Facilities Management Department will endeavor to ensure that all heated spaces are as close to the normal operating set point of 70° F as possible. This means room temperatures may be in the 68-72° F range. Temperature readings in a space are taken at the thermostat and/or desk level.

During off-hours, temperatures are allowed to drop to as cold as 55° F.

##### ***Cooling Season***

Cooling temperatures will be maintained at approximately 74° during normal occupied hours during the cooling season between May 15<sup>th</sup> and October 15<sup>th</sup>. The Facilities Management Department will endeavor to ensure that all air conditioned spaces are as close to the operating set point of 74° F as possible. This means room temperatures may be in the 72-76° F range. Temperature readings in a space are taken at the thermostat and/or desk level.

During off-hours, temperatures are allowed to rise above the 72-76° F range.

##### ***Seasonal Changes or Shoulder Seasons***

It is difficult to present a simple description of the seasonal temperature switchover policy because of the buildings site orientation and HVAC system temperature control zones in each building. When determining the exact switchover date for the Campus, the Facilities Management Department considers prevailing weather patterns, the building's HVAC system, the system controls, and building usage. Switchover is approximately a one week process for cooling that is not reversible because the cooling tower is drained for winter months and a two day process for heating. The heating switchover is more flexible in that we can shut off the boilers and circulate outside air. In the spring and autumn, outside temperatures can be extremely

variable. Statistics show that there are a couple of isolated days in the heating season that actually require cooling. The same is true for heat required in the cooling season. During these unpredictable days in the "shoulder" season indoor temperatures might drift beyond the comfort temperatures in many spaces in the buildings and little can be done other than to endure the event. In the event of a severe cold spell, all heating services can and will be turned on as quickly as possible.

### ***Unoccupied Hours***

Most buildings have designated occupied hours. To help save energy, the building temperatures may be changed from the normal operating set points during expected unoccupied hours (after-hours temperature setback).

## **APPENDIX 4.2C**

### **GREEN BUILDING (LEED) POLICY**

**Effective 12-17-2007**

#### **Objective:**

Bunker Hill Community College is committed to adopt LEED certification for the design, construction, and operation of new buildings.

#### **Policy:**

The US Green Building Council's Leadership in Energy Efficient Design (LEED) certification recognizes buildings that are designed, constructed, and operated in environmentally responsible ways. The LEED Program is a building rating system that awards points in various design categories and rates buildings based on the number of points attained. BHCC will adopt LEED Silver certification that exceeds the LEED MA+ mandated by the Commonwealth of Massachusetts as the mechanism to guide the design and construction of all new building projects.

## **APPENDIX 4.3D**

### **BUNKER HILL COMMUNITY COLLEGE**

#### **Solid Waste Management; Environmental Preferable Products; & Energy Star**

#### **Procurement Guidelines**

**(Effective January 1, 2009)**

The Waste Minimization, Green Building (LEED), and Energy Star® policies approved by the Presidents Climate Committee are intended to reduce the amount of waste and toxins that are hauled to and disposed of in either landfills or incineration facilities; to utilize Environmental Preferable Products (EPP); and to require Energy Star® efficient equipment/appliances for services and commodity purchases with the ultimate goal of carbon neutrality. The procurement guidelines are used to implement these policies.

In summary Bunker Hill Community College will include requirements for vendors and contractors to comply with these policies in all Invitations to Bid; Bid Packages; Requests for Response (RFR); and Request for Purchase (RFP) for services and commodities. Procurement of services and commodities can be made by use of either Statewide Contracts by the Operational Services Division (OSD) or the Massachusetts higher Education Consortium (MHEC) or by Single Department Contracts issued by Bunker Hill Community College. The College will maximize the use of Statewide Contracts that promote EPP and sustainability. In the case of the OSD and MHEC contracts the user has to verify the contract referenced in the bid documents includes the requirements of our stated policies. The list of designated EPP is updated periodically by OSD, in cooperation with the Executive Office of Energy and Environmental Affairs (EOEEA) and the Massachusetts Department of Environmental Protection (DEP). For the latest information a vendor will be referred to the EPP Purchasing Program's website [www.mass.gov/epp](http://www.mass.gov/epp). In the case of Single Department Contracts by Bunker Hill Community College specific requirements for public bid contracts will be incorporated in the bidding documents. The Single Department Contracts will require a submission of a vendor's Solid Waste Management Policy; its use of Environmentally Preferable Products (EPP) for the services requested and commodities purchased; and/or the implementation of Energy Star® efficient equipment where applicable. The College will request this information in a detailed Scope of Work (SOW) or Scope of Service (SOS) when requesting either a service or a product from a vendor. Bunker Hill Community College will require its vendors for services and /or products to follow the required College guidelines for Solid Waste Disposal Policy with heavy emphasis on recyclable materials; use of EPP; and Energy Star® efficiencies as a basis of contract award.

In order to build upon the successful track record of **“green” or sustainable** purchasing Bunker Hill Community College will:

- Follow the mandatory EPP purchasing and specification requirements described below whenever any of the listed commodities or related services is being purchased; including Energy Star® specifications for energy efficiency.
- Adhere to the EPP purchasing and specification recommendations below whenever feasible;
- Promote the procurement and use of EPPs which have not been designated by OSD whenever feasible, and when cost, performance and availability are not compromised.
- Educate and inform all Bunker Hill Community College Faculty, Staff, and Students about EPP and the OSD requirements;
- Identify in Invitations to Bid; Bid Packages; RFR's; and RFP's that additional points will be awarded to vendors of EPP; an approved Solid Waste Disposal Policy, and the implementation of Energy Star® efficiency equipment as an added element for contract award. The concept "Best-Value" and "Total Cost of Ownership" will be considered in the award process.
- Maintain records of all procurements and purchases of EPPs and the vendor's detailed Solid Waste Disposal Policy in their procurement files, inclusive of Energy Star® specifications for energy efficiency.

OSD has established statewide contracts for each of the categories of commodities listed below. Bunker Hill Community College will use these statewide contracts whenever feasible. If any unusual circumstances necessitate a separate procurement (a Single Department Contract by Bunker Hill Community College) of these designated commodities, the RFR must include the mandatory minimum specifications presented below. Responses to a RFR that do not meet the mandatory minimum specifications will be considered unresponsive and be disqualified.

Environmentally Preferable Products are products and services that have a lesser or reduced effect on human health and the environment when compared to competing products or services that serve the same purpose. They may include, but not be limited to, items that:

- Contain recycled materials
- Minimize waste
- Conserve energy and/or water
- Consist of fewer toxic substances
- Reduce the amount of toxic substances disposed or consumed
- Protect open-space
- Lesson the potential impact to public health

**Paper Products and Office Supplies:**

- **Printing and writing papers, computer paper and forms, envelopes** – minimum 30% post-consumer content for all products in this group, except for coated papers which may be 10% post-consumer content

- **Printed materials** – minimum 30% post-consumer content, except for coated papers which may be 10% post-consumer content; printers must comply with all applicable federal, state and local environmental laws and regulations; printing facilities located in Massachusetts must also comply with the requirements of DEP’s Environmental Results Program ([www.mass.gov/dep/erp/about.htm](http://www.mass.gov/dep/erp/about.htm)).
- **File folders** – minimum 10% post-consumer content
- **Writing tablets, message pads and all other office paper** – minimum 20% post-consumer content
- **Corrugated cardboard boxes** – minimum 35% post-consumer content

**Janitorial Products:**

- **Paper towels** – minimum 100% total recycled content, 40% post-consumer content
- **Toilet tissue** – minimum 100% total recycled content, 20% post-consumer content
- **Facial tissue** – minimum 100% total recycled content, 10% post-consumer content
- **Napkins** – minimum 100% total recycled content, 30% post-consumer content
- **Paper wipes, disposable** – 50% post-consumer content
- **Wiping rags, cotton** – 100% reused cotton
- **Plastic trash bags** – minimum of 20% post-consumer content
- **Janitorial paper products as part of cleaning service contract** – specifications as listed above

**Automotive Products:**

- **Anti-freeze** – minimum 100% recycled ethylene glycol or 100% propylene glycol
- **Re-refined motor oil** – minimum 75% re-refined base stock; must be certified by the American Petroleum Institute (API)
- **Traffic cones** – 50% total recovered PVC or Low Density Polyethylene (LDPE) or crumb rubber material, 8% post-consumer content
- **Glass beads** – 100% total recycled glass

**Flooring and Facilities/Recreational Products:**

- **Carpeting/broadloom and tiles** – minimum 10% total recycled content (post/pre-consumer mix) by weight, with preference for styles made with the greatest percentage of post-consumer content; all carpet products must also be recycled unless the department can verify in writing that the condition of the carpet (e.g. contamination) prohibits recycling
- **Compost bins, plastic** – minimum 50% post-consumer content
- **Electrical supplies, equipment, devices, lamps and ballasts** – energy efficient lighting, ballasts, exit signs, office equipment and more in compliance with

Executive Order #484; such items must also be recycled or reused (as appropriate) through available statewide contracts

- **Fuels/vehicle use** – ultra-low sulfur diesel and bio-diesel (low emission/low particulate matter) where applicable
- **Rubber matting and flooring** – 80% post-consumer content
- **Office waste and recycling containers** – 20% post-consumer plastic or 25% post-consumer steel
- **Plastic lumber benches, tables, dimensional lumber, site amenities** – minimum 25-100% post-consumer recycled plastic (see contract for specifics)
- **Recycling carts, plastic** – minimum 20% post-consumer content
- **Recycling set out containers, plastic** – minimum 75% recycled plastic (50% post-consumer content)

### **Office Equipment:**

- **Computers, monitors, laptops** – must be EPEAT-registered at the Bronze level or higher ([www.epeat.net](http://www.epeat.net)). Products must also comply with the latest set of Energy Star® guidelines ([www.energystar.gov](http://www.energystar.gov)) and be shipped with the Energy Star® power management features enabled; contractors must provide training to all customers on the use and benefits of Energy Star® features.
- **Copiers, printers, facsimile and multifunctional equipment** – must comply with the latest set of Energy Star® guidelines ([www.energystar.gov](http://www.energystar.gov)) and be shipped with the Energy Star® power management features enabled; copiers with speeds of 15 cpm and over, black and white laser/LED printers with speeds of 21 ppm and over and color laser/LED printers with speeds of 6 ppm and over must include automatic double-sided copying/printing functionality. Contractors must provide training to all users on the use and benefits of Energy Star® and double-sided copying/printing features.

Bunker Hill Community College has adopted the OSD determination that the commodities listed below are frequently available at a value and quality comparable to non-environmentally preferable counterparts. These products also often offer a significant cost saving potential within a short period of time. OSD has established EPP statewide contracts for the items listed below. The College's internal departments are encouraged to use these EPP statewide contracts whenever feasible. Some of the contracts offer both EPP and non-EPP alternatives. The College's internal departments are encouraged to select the EPP alternative whenever possible or include the following specifications in their own RFRs:

- **Binders, office supplies and accessories** – minimum 25% post-consumer content/plastic binders, etc.
- **Building materials and supplies** – sustainable roofing, certified wood, water conservation and energy efficient products
- **Compost and mulch** – compost which meets state specifications
- **Fuels/heating**, ultra-low sulfur diesel and biodiesel that meet contract specifications
- **Hospital equipment** – remanufactured beds, wheelchairs, lifts, transfer devices

and other equipment

- **Insulation** – 5%-75% recycled content, depending on type of insulation, e.g., fiberglass, cellulose
- **Integrated pest management** – less toxic pesticides and an integrated approach to controlling pests
- **Janitorial cleaners** – minimum specifications must meet Green Seal GS-37 standards for Institutional and Industrial Cleaning Products (refer to [www.greenseal.org](http://www.greenseal.org))
- **Non-mercury alternatives** – digital thermometers, sphygmomanometers (blood pressure equipment), etc.
- **Office panels** – re-manufactured; meets all Original Equipment Manufacturer (OEM) specifications
- **Paint** – low volatile organic compounds (VOCs)
- **Paper plates, bowls, trays** – compostable/biodegradable materials or 25%-100% total recycled content paper (post-consumer/industrial)
- **Pool disinfecting equipment** – pool ionization systems which reduce chlorine use by 60%-80%
- **Promotional and marketing items** – wide range of paper, plastic, fabric and other items made with post-consumer recycled content
- **Retread tires** – the entire retreading process must be in full compliance with the most recent edition of the industry standards *Retread Requirements Manual* of the Cooperative Tire Qualification Program CTQP-441; any passenger car tires, pursuit and emergency high speed tires, light truck tires, truck/bus tires and off-road severe application tires (ORSA) must be listed in Cooperative Approved Tire List (CATL) in effect as of the date the retreading work is performed.
- **Solid waste and recycling services** – various options for creating a cost-effective waste management program
- **Toilets/composting** – waterless, odorless alternative for portable sanitation in specific areas
- **Toner cartridges** – re-manufactured; meets all Original Equipment Manufacturer (OEM) specifications
- **Vehicles/alternative fuel** – compressed natural gas, bi-fuel and ethanol flex-fuel vehicles
- **Vehicle/engine lubricants** – re-refined or bio-based, wherever possible, that meet API Certifications
- **Vehicles/hybrid** – fuel-efficient gasoline/electric hybrid vehicles are available in several models
- **Vehicle parts, motorized** – remanufactured parts, accessories and supplies
- **Vehicles/diesel emission control technologies** – available for many types of vehicles and equipment

For single use contracts Bunker Hill Community College will encourage awarded vendors to work with the College during their awarded contract term to enhance their environmental profiles by requiring them to create an environmental plan for Solid Waste Management Disposal; the use of Environmental Preferable Products; and Energy Star® Efficient Equipment/Appliances and the vendor's commitment to implementing such a plan as applicable. Such an agreement incorporated into the



awarded contract and approved Scope of Work removes the onus from all bidders and places it just with those actually awarded a contract. In addition, it allows the College to actively encourage the vendor(s) to expand their environmental initiatives during the contract term. The details of such an environmental plan depend on the interests of the College's requirements addressed in its Scope of Work.

**The following language is included in the RFR or Invitation to Bid:**

**“Throughout the contract duration, the awarded vendor(s)/contractor(s) must agree to work with Bunker Hill Community College to examine the feasibility of implementing an Environmental Plan for Solid Waste Management, the use of EPP, and to require Energy Star® Energy efficient vendor equipment.**

**The Environmental Plan may include, but not be limited to, the following:**

- **A plan to implement the recycling of materials used or produced in normal business operations.**
- **Environmental initiatives at a corporate and/or manufacturing level, such as clearly identifying recycled content of packaging on the packaging, use of recycled content papers for marketing materials, use of alternative vehicles for delivery or in the corporate fleet, product life cycle assessments and the elimination of the ozone depleting chemical usage in the manufacturing process and internal environmental auditing related to pollution control for the purpose of identifying ways to reduce the impact of manufacturing on the environment.**
- **Collaboration with the College to develop and distribute information and/or materials to the College's Faculty, Staff and students on the vendor's environmental practices and initiatives throughout the term of the contract regarding a Solid Waste Management Plan and the use of EPPs.**
- **Development and publication of a vendor's environmental policy, sustainability plan and/or an environmental management system (EMS) of EPP usage.**
- **Obtain industry certifications to verify environmental benefits and claims.**

**Bunker Hill Community College may award points to bidders who provide evidence of these and other measures already in place within the vendor(s)/contractor(s) operations, as well as for responses, regarding the Scope of Work, detailing a commitment to action contingent upon receipt of a contract award.”**

**The following text is included for Response Submissions:**

**“Bidders are encouraged to submit information identifying any and all environmental attributes of the requested product or services, even when such attributes have not been required and verify the percentage of recycled content**

in their commodities. The College also encourages vendor(s)/contractor(s) to provide an EPP as an alternative (or replacement) for their conventional product wherever possible.”

**The following language is included in the RFR or Invitation to Bid**

“In an effort to promote greater use of recycled and environmentally preferable products and minimize waste, all responses submitted should comply with the following guidelines:

- All copies should be printed double sided.
- All submittals and copies should be printed on recycled paper with a minimum post-consumer content of 30% or on tree-free paper (i.e. paper made from raw materials other than trees, such as kenaf). To document the use of such paper, a photocopy of the ream cover/wrapper should be included with the response.
- Unless absolutely necessary, all responses and copies should minimize or eliminate use of non-recyclable or non re-usable materials such as plastic report covers, plastic dividers, vinyl sleeves and GBC binding. Three ringed binders, glued materials, paper clips and staples are acceptable.
- Bidders should submit materials in a format which allows for easy removal and recycling of paper materials.
- Bidders are encouraged to use other products which contain recycled content in their response documents. Such products may include, but are not limited to, folders, binders, paper clips, diskettes, envelopes, boxes, etc. Where appropriate, bidders should note which products in their responses are made with recycle materials.
- Bidders will provide a detailed environmental plan addressing their solid waste management, use of EPPs and the use of Energy Star efficient equipment as applicable to either the product or service provided. The College will retain the winning vendor's environmental plan and/or reports in the procurement file.”

**The following language is included to Substitute or Add Plans to an Existing Contract:**

“Negotiations between the College and the vendor may occur during the contract term to permit the substitution or addition of environmental plans when either such products or services become available at less than competitive cost and/or improved efficiencies are readily available and satisfy the College’s performance needs.”

**The following language is included in contracts:**

**For appliances and equipment:**

“The Vendor shall supply and/or install equipment that earn the Energy Star® rating and meet the Energy Star® specifications for energy efficiency.”

Note: The specifications may be found by selecting the link below that connects to the document Energy Star® Program Requirements for Imaging Equipment. The Partner Commitment section provides Energy Star® specifications for Typical Electricity Consumption (TEC) as a function of: product; marking technology (e.g., Direct Thermal, Inkjet); Product Speed; and Product Size Format (e.g., Standard, Large Format).

[http://www.energystar.gov/ia/products/fap/IE\\_Prog\\_Req.pdf](http://www.energystar.gov/ia/products/fap/IE_Prog_Req.pdf)

The Vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for additional product information and an updated list of qualifying products.

**For Computers and Monitors:**

**“The Vendor shall provide new and repaired computers, monitors, and integrated computer-monitor systems that earn the Energy Star® rating and are configured properly for automatic energy-saving features, as per current Energy Star® specifications. The vendor shall provide customer support with respect to power management features, such that these features remain properly enabled and repaired if a malfunction occurs. The vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for complete product specifications and an updated list of qualifying products.”**

**For Commercial Fryers:**

**“The Vendor shall provide commercial fryers that earn the Energy Star® rating and meet the Energy Star® specifications for energy efficiency. The vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for complete product specifications and an updated list of qualifying products.”**

**For Commercial Hot Food Holding Cabinets:**

**”The Vendor shall provide commercial hot food holding cabinets that earn the Energy Star® rating and meet the Energy Star® specifications for energy efficiency. Dual function equipment, such as cook-and-hold models, cannot qualify as Energy Star®. The vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for complete product specifications and an updated list of qualifying products.”**

**For Vending Machines:**

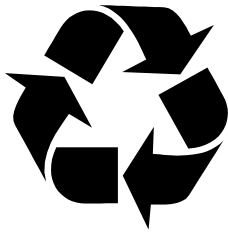
**“The Vendor shall provide vending machines that earn the Energy Star® rating and meet the Energy Star® specifications for energy efficiency. The vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for complete product specifications and an updated list of qualifying products.”**

**For Commercial Solid Door Refrigerators and Freezers:**

**“The Vendor shall provide commercial solid door refrigerators and freezers that bear the Energy Star® label and meet the Energy Star® specifications for energy efficiency. The vendor is encouraged to visit [www.energystar.gov](http://www.energystar.gov) for an updated list of qualifying products.”**

**For guidelines on construction waste management:**

**“The vendor is encouraged to access Waste & Recycling at <http://www.mass.gov/dep/recycle/reduce/managing.htm>”**



**Definitions**

**Include These in Your Bid Language to Clarify Environmental Specifications**

**Env**

or r

**efera**

ser

human health and the environment when compared with competing products or services that serve the same purpose. Such products or services may include, but are not limited to, those which contain recycled content, minimize waste, conserve energy or water, and reduce the amount of toxics either disposed of or consumed.

Energy Star® is a Federal standard applied to office equipment for the purpose of rating the energy efficiency of the equipment. Energy Star® computers, monitors, and printers save energy by powering down and going to “sleep” when not in use, resulting in a reduction in electrical bills and pollution levels.

**MBE** – a Minority Business Enterprise certified by the State Office of Minority and Women Business Assistance (SOWMBA).

**Post-consumer Content** – Products generated by a business or consumer which have served their intended end uses, and which have been separated or diverted from solid waste for the purpose of collection, recycling and disposition.

**Pre-consumer Materials** (also known as Post-Industrial) are generated by manufacturers and product converters. Instead of being trashed, the materials such as trimmings, damaged or obsolete products or overruns are collected and incorporated into a manufacturing process.

**Price Preference** – When a government agency, municipality or department, or any other entity is willing to pay a higher price (usually 5 – 10%) for recycled or environmentally preferable products.

**Recycled Products** means goods which contain materials which have been diverted from the solid waste stream, including post-consumer materials, and materials

and/or by-products generated in industrial processes, or which have been wholly or partially remanufactured.

**Recovered Materials** are waste materials and byproducts which have been recovered or diverted from solid waste, including post-consumer materials and materials generated in industrial processes.

**Re-manufactured Products** are those products or equipment partially or fully manufactured from existing product materials where such materials are cleaned and repaired to the extent possible and reused in the new product or equipment. All unusable parts are to be removed and replaced with new or remanufactured parts which meet OEM standards.

**Recyclability** – The ability of a product or material to be recovered from or otherwise diverted from the solid waste stream for the purpose of recycling.

**Unreasonable Price** – Prices for recycled paper goods may be considered “unreasonable” if the cost is greater than 10% of the lowest responsive virgin material bid. However, for other products, please remember that purchasers should consider the cost of maintenance, frequency of replacement and disposal costs, in addition to the purchase price, to get the “true” or “life-cycle” cost of a product.

**WBE** – a Women’s Business Enterprise certified by the State Office of Minority and Women Business Assistance (SOWMBA).

**W/MBA** – a Minority and Women’s Business Enterprise certified by the State Office of Minority and Women Business Assistance (SOWMBA).

## **REFERENCES**

**Executive Order #484:**

**BHCC policies approved by the Presidents Climate Committee:**

**Energy Star Procurement Policy - Effective 12-17-07**

Objective:

Bunker Hill Community College is committed to adopting an ENERGY STAR® Purchasing Program for all products where such ratings exist and whenever financially and operationally feasible.

Policy Statement:

For product categories that have ENERGY STAR® rated products available, the College will focus its procurement efforts only on products with an ENERGY STAR® rating, consistent with the needs of the College community.

Bunker Hill Community College will establish an ongoing partnership with the ENERGY STAR® Program administered by the EPA, and continually press the

market for greater energy efficiency for the products and services regularly purchased by the College.

### **Green Building (LEED) Policy - Effective 12-17-2007**

Objective:

Bunker Hill Community College is committed to adopt LEED certification for the design, construction, and operation of new buildings.

Policy:

The US Green Building Council's Leadership in Energy Efficient Design (LEED) certification recognizes buildings that are designed, constructed, and operated in environmentally responsible ways. The LEED Program is a building rating system that awards points in various design categories and rates buildings based on the number of points attained. BHCC will adopt LEED Silver certification that exceeds the LEED MA+ mandated by the Commonwealth of Massachusetts as the mechanism to guide the design and construction of all new building projects.

### **Waste Minimization Policy - Effective 12-17-07**

Objective:

Bunker Hill Community College is committed to minimize waste generated by the college and creating awareness programs to foster waste minimization.

Policy:

Bunker Hill Community College will expand its waste management program to include purchasing, minimizing waste, and recycling. To the extent financially and operationally feasible, procure materials, equipment, and supplies that are biodegradable and/or contain recycled materials. Where equipment permits, institute double sided printing and copying of documents. Furthermore, require vendors and contractors to abide by the college's waste minimization policy whenever financially and operationally feasible. Bunker Hill Community College will also develop a waste management awareness program for faculty, staff and students to expand the program beyond the borders of the College.

**APPENDIX 4.4E**  
**BUNKER HILL COMMUNITY COLLEGE**  
**COLLEGE VEHICLE USE GUIDELINES**

The College Facilities Management Department has three vehicles that are available for authorized staff to use for College related travel. These guidelines are used by the Facilities Management Department to determine the appropriateness of vehicle usage by destination, use and number of passengers traveling.

Vehicles are assigned on a first come first served basis; therefore, requests should be made as soon as possible. Request forms are available in the Facilities Management Department. The signature of the immediate supervisor must be obtained on all forms. Vehicle usage for out-of-state travel requires the signature of the President or designee. Vehicle usage for overnight in-state travel requires the signature of the Executive Vice President and CFO, or designee.

The Toyota Camry is available for transport of up to five individuals. This vehicle is a Hybrid and reduces the carbon footprint consistent with the College's Climate Commitment. The shuttle bus should be used when attending a meeting at our Chelsea Campus. Individuals transporting heavy materials or bringing prospective candidates to the Chelsea Campus will be allowed to use the Camry for such travel.

Two 15 passenger vans are available for groups of six or more. The Athletics Department is given first priority in reserving these vans so that our sports teams can travel to away games. If the vans are not reserved by the Athletics Department, a staff member can reserve them for travel. These vans are designed for groups of six or more; therefore, they will not be reserved for an individual or a group smaller than six.

If the type of vehicle is not available to honor a request, the staff will be informed in a timely manner so that other travel arrangements can be made. Anyone who has a special circumstance for travel should discuss the situation with Manager of Buildings & Grounds, who can be reached at Ext. 3474.

**APPENDIX 4.4F**  
**BUNKER HILL COMMUNITY COLLEGE**  
**GUIDELINES FOR REDUCED STUDENT PARKING FEES**  
**12/15/2008**

**OBJECTIVE:**

Bunker Hill Community College is committed to reduce greenhouse gases generated by vehicles and will reduce the parking fees for students that drive low emission/hybrid vehicles and park at the Charlestown campus.

**GUIDELINES:**

The parking fee for each semester for any student that presents documented evidence for a parking permit for a low emission or hybrid vehicle that comply with the ACEEE Green Score 40 vehicles (refer to make and model listed below) to the Charlestown Campus will be reduced by 20%.

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2008	01_TS	AUDI	TT COUPE	2.0L 4, auto stk [P]	ULEV II / Bin 5
2008	02_SUB	CHEVROLET	AVEO 5	1.6L 4, auto	ULEV II / Bin 5
2008	02_SUB	CHEVROLET	AVEO 5	1.6L 4, manual	ULEV II / Bin 5
2008	02_SUB	CHEVROLET	COBALT	2.2L 4, auto	PZEV
2008	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	PZEV
2008	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	LEV II / Bin 5
2008	02_SUB	MERCEDES-BENZ	SMART FORTWO CONVERTIBLE	1.0L 3, auto stk [P]	ULEV II / Bin 5
2008	02_SUB	MERCEDES-BENZ	SMART FORTWO COUPE	1.0L 3, auto stk [P]	ULEV II / Bin 5
2008	02_SUB	MINI	CLUBMAN	1.6L 4, auto stk [P]	LEV II / Bin 5
2008	02_SUB	MINI	CLUBMAN	1.6L 4, manual [P]	LEV II / Bin 5
2008	02_SUB	MINI	CLUBMAN S	1.6L 4, auto stk [P]	LEV II / Bin 5
2008	02_SUB	MINI	CLUBMAN S	1.6L 4, manual [P]	LEV II / Bin 5
2008	02_SUB	MINI	COOPER	1.6L 4, auto stk [P]	LEV II / Bin 5
2008	02_SUB	MINI	COOPER	1.6L 4, manual [P]	LEV II / Bin 5
2008	02_SUB	MINI	COOPER CONVERTIBLE	1.6L 4, manual [P]	LEV II / Bin 5
2008	02_SUB	MINI	COOPER S	1.6L 4, auto stk [P]	LEV II / Bin 5
2008	02_SUB	MINI	COOPER S	1.6L 4, manual [P]	LEV II / Bin 5
2008	02_SUB	NISSAN	ALTIMA COUPE	2.5L 4, auto	PZEV
2008	02_SUB	NISSAN	ALTIMA COUPE	2.5L 4, manual	PZEV
2008	02_SUB	PONTIAC	G5/PURSUIT	2.2L 4, auto	PZEV
2008	02_SUB	PONTIAC	G5/PURSUIT	2.2L 4, manual	PZEV
2008	02_SUB	PONTIAC	G5/PURSUIT	2.2L 4, manual	LEV II / Bin 5
2008	02_SUB	TOYOTA	YARIS	1.5L 4, auto	ULEV II / Bin 5
2008	02_SUB	TOYOTA	YARIS	1.5L 4, manual	ULEV II / Bin 5
2008	03_COM	CHEVROLET	AVEO	1.6L 4, auto	ULEV II / Bin 5
2008	03_COM	CHEVROLET	AVEO	1.6L 4, manual	ULEV II / Bin 5
2008	03_COM	FORD	FOCUS	2.0L 4, auto	Bin 4
2008	03_COM	FORD	FOCUS	2.0L 4, auto	PZEV / Bin 3
2008	03_COM	FORD	FOCUS	2.0L 4, manual	Bin 4
2008	03_COM	FORD	FOCUS	2.0L 4, manual	PZEV / Bin 3



Year	GB Class	Make	Model	M/M/Specs	Emission Std
2008	03_COM	HONDA	CIVIC	1.8L 4, auto	ULEV II / Bin 5
2008	03_COM	HONDA	CIVIC	1.8L 4, manual	ULEV II / Bin 5
2008	03_COM	HONDA	CIVIC GX	1.8L 4, auto [CNG]	PZEV / Bin 2
2008	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto	PZEV / Bin 2
2008	03_COM	HYUNDAI	ACCENT	1.6L 4, auto	ULEV II / Bin 5
2008	03_COM	HYUNDAI	ACCENT	1.6L 4, manual	ULEV II / Bin 5
2008	03_COM	KIA	RIO	1.6L 4, auto	ULEV II / Bin 5
2008	03_COM	KIA	RIO	1.6L 4, manual	ULEV II / Bin 5
2008	03_COM	MAZDA	3	2.0L 4, auto stk	PZEV
2008	03_COM	MAZDA	3	2.0L 4, manual	PZEV
2008	03_COM	MAZDA	3	2.0L 4, manual	Bin 5
2008	03_COM	MAZDA	3	2.3L 4, auto stk	PZEV
2008	03_COM	MAZDA	3	2.3L 4, manual	PZEV
2008	03_COM	MITSUBISHI	LANCER	2.0L 4, auto	PZEV
2008	03_COM	MITSUBISHI	LANCER	2.0L 4, manual	PZEV
2008	03_COM	TOYOTA	COROLLA	1.8L 4, auto	ULEV II / Bin 5
2008	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV II / Bin 5
2008	03_COM	VOLKSWAGEN	RABBIT	2.5L 5, manual	PZEV / Bin 2
2008	04_WGS	HONDA	FIT	1.5L 4, auto	LEV II / Bin 5
2008	04_WGS	HONDA	FIT	1.5L 4, auto stk	LEV II / Bin 5
2008	04_WGS	HONDA	FIT	1.5L 4, manual	LEV II / Bin 5
2008	04_WGS	PONTIAC	VIBE	1.8L 4, auto	ULEV II / Bin 5
2008	04_WGS	PONTIAC	VIBE	1.8L 4, manual	ULEV II / Bin 5
2008	04_WGS	TOYOTA	COROLLA MATRIX	1.8L 4, auto	ULEV II / Bin 5
2008	04_WGS	TOYOTA	COROLLA MATRIX	1.8L 4, manual	ULEV II / Bin 5
2008	04_WGS	SCION	xD	1.8L 4, auto	LEV II / Bin 8
2008	04_WGS	SCION	xD	1.8L 4, manual	LEV II / Bin 8
2008	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	PZEV
2008	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	ULEV II / Bin 5
2008	05_MID	HYUNDAI	ELANTRA	2.0L 4, manual	ULEV II / Bin 5
2008	05_MID	KIA	SPECTRA	2.0L 4, auto	PZEV
2008	05_MID	KIA	SPECTRA	2.0L 4, auto	ULEV II / Bin 5
2008	05_MID	KIA	SPECTRA	2.0L 4, manual	ULEV II / Bin 5
2008	05_MID	NISSAN	ALTIMA	2.5L 4, auto	PZEV
2008	05_MID	NISSAN	ALTIMA	2.5L 4, manual	PZEV
2008	05_MID	NISSAN	ALTIMA HYBRID	2.5L 4, auto	PZEV
2008	05_MID	NISSAN	SENTRA	2.0L 4, auto	ULEV II / Bin 5
2008	05_MID	NISSAN	SENTRA	2.0L 4, manual	ULEV II / Bin 5
2008	05_MID	NISSAN	VERSA	1.8L 4, auto	ULEV II / Bin 5
2008	05_MID	NISSAN	VERSA	1.8L 4, auto	ULEV II / Bin 5
2008	05_MID	NISSAN	VERSA	1.8L 4, manual	ULEV II / Bin 5
2008	05_MID	TOYOTA	CAMRY	2.4L 4, auto	PZEV
2008	05_MID	TOYOTA	CAMRY HYBRID	2.4L 4, auto	PZEV / Bin 3
2008	05_MID	TOYOTA	PRIUS	1.5L 4, auto	PZEV / Bin 3
2008	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto	PZEV / Bin 3
2008	12_UTS	MAZDA	TRIBUTE HYBRID	2.3L 4, auto	PZEV / Bin 3
2008	12_UTS	MERCURY	MARINER HYBRID	2.3L 4, auto	PZEV / Bin 3
2007	01_TS	LOTUS	ELISE/EXIGE	1.8L 4, manual	Bin 5 / LEV II
2007	01_TS	MAZDA	MX-5 MIATA	2.0L 4, manual [P]	ULEV II / Bin 5
2007	01_TS	MAZDA	MX-5 MIATA	2.0L 4, manual [P]	ULEV II / Bin 5
2007	02_SUB	CHEVROLET	AVEO 5	1.6L 4, manual	ULEV II / Bin 5
2007	02_SUB	CHEVROLET	AVEO 5	1.6L 4, auto	ULEV II / Bin 5

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2007	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	PZEV
2007	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	Bin 5 / LEV II
2007	02_SUB	CHEVROLET	COBALT	2.4L 4, manual [P]	Bin 5 / LEV II
2007	02_SUB	CHEVROLET	COBALT	2.4L 4, auto [P]	Bin 5 / LEV II
2007	02_SUB	MINI	COOPER CONVERTIBLE	1.6L 4, manual [P]	Bin 5 / LEV II
2007	02_SUB	MINI	COOPER CONVERTIBLE	1.6L 4, auto [P]	Bin 5 / LEV II
2007	02_SUB	PONTIAC	G5	2.2L 4, manual	PZEV
2007	02_SUB	PONTIAC	G5	2.2L 4, manual	Bin 5 / LEV II
2007	02_SUB	PONTIAC	G5	2.4L 4, manual [P]	Bin 5 / LEV II
2007	02_SUB	PONTIAC	G5	2.4L 4, auto [P]	Bin 5 / LEV II
2007	02_SUB	TOYOTA	YARIS	1.5L 4, manual	ULEV II / Bin 5
2007	02_SUB	TOYOTA	YARIS	1.5L 4, auto	ULEV II / Bin 5
2007	02_SUB	VOLKSWAGEN	NEW BEETLE	2.5L 5, auto stk	PZEV / Bin 2
2007	02_SUB	VOLKSWAGEN	NEW BEETLE	2.5L 5, manual	PZEV / Bin 2
2007	03_COM	CHEVROLET	AVEO	1.6L 4, manual	ULEV II / Bin 5
2007	03_COM	CHEVROLET	AVEO	1.6L 4, auto	ULEV II / Bin 5
2007	03_COM	FORD	FOCUS	2.0L 4, manual	PZEV / Bin 3
2007	03_COM	FORD	FOCUS	2.0L 4, auto	PZEV / Bin 3
2007	03_COM	FORD	FOCUS	2.0L 4, manual	Bin 4
2007	03_COM	FORD	FOCUS	2.0L 4, auto	Bin 4
2007	03_COM	HONDA	CIVIC	1.8L 4, manual	ULEV II / Bin 5
2007	03_COM	HONDA	CIVIC	1.8L 4, auto	ULEV II / Bin 5
2007	03_COM	HONDA	CIVIC GX	1.8L 4, auto [CNG]	PZEV / Bin 2
2007	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	PZEV / Bin 2
2007	03_COM	HYUNDAI	ACCENT	1.6L 4, manual	ULEV II / Bin 5
2007	03_COM	HYUNDAI	ACCENT	1.6L 4, auto	ULEV II / Bin 5
2007	03_COM	KIA	RIO/RIO5	1.6L 4, manual	ULEV II / Bin 5
2007	03_COM	KIA	RIO/RIO5	1.6L 4, auto	ULEV II / Bin 5
2007	03_COM	MAZDA	3	2.0L 4, manual	PZEV
2007	03_COM	MAZDA	3	2.0L 4, auto stk	PZEV
2007	03_COM	MAZDA	3	2.3L 4, manual	PZEV
2007	03_COM	MAZDA	3	2.0L 4, manual	Bin 5
2007	03_COM	MAZDA	3	2.3L 4, auto stk	PZEV
2007	03_COM	MAZDA	3	2.0L 4, auto stk	Bin 5
2007	03_COM	MAZDA	3	2.3L 4, manual	Bin 5
2007	03_COM	MINI	LANCER	2.0L 4, manual	ULEV II / Bin 5
2007	03_COM	MINI	LANCER	2.0L 4, auto	ULEV II / Bin 5
2007	03_COM	SATURN	ION	2.2L 4, manual	PZEV
2007	03_COM	SATURN	ION	2.2L 4, manual	Bin 5 / LEV II
2007	03_COM	SATURN	ION	2.4L 4, manual [P]	Bin 5 / LEV II
2007	03_COM	SATURN	ION	2.4L 4, auto [P]	Bin 5 / LEV II
2007	03_COM	TOYOTA	CAMRY SOLARA	2.4L 4, auto stk	ULEV II / Bin 5
2007	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV II / Bin 5
2007	03_COM	TOYOTA	COROLLA	1.8L 4, auto	ULEV II / Bin 5
2007	04_WGS	DODGE	CALIBER	1.8L 4, manual	Bin 5
2007	04_WGS	DODGE	CALIBER	1.8L 4, manual	LEV II
2007	04_WGS	DODGE	CALIBER	2.4L 4, manual	ULEV II
2007	04_WGS	HONDA	FIT	1.5L 4, manual	Bin 5 / LEV II
2007	04_WGS	HONDA	FIT	1.5L 4, auto	Bin 5 / LEV II
2007	04_WGS	HONDA	FIT	1.5L 4, auto stk	Bin 5 / LEV II
2007	04_WGS	PONTIAC	VIBE	1.8L 4, manual	ULEV II / Bin 5
2007	04_WGS	PONTIAC	VIBE	1.8L 4, auto	ULEV II / Bin 5

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2007	04_WGS	SUZUKI	SX4	2.0L 4, auto	Bin 5 / LEV II
2007	04_WGS	TOYOTA	MATRIX	1.8L 4, manual	ULEV II / Bin 5
2007	04_WGS	TOYOTA	MATRIX	1.8L 4, auto	ULEV II / Bin 5
2007	05_MID	HONDA	ACCORD	2.4L 4, auto	PZEV / Bin 2
2007	05_MID	HONDA	ACCORD HYBRID	3.0L 6, auto	PZEV / Bin 2
2007	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	PZEV
2007	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	Bin 4 / ULEV II
2007	05_MID	HYUNDAI	ELANTRA	2.0L 4, manual	Bin 4 / ULEV II
2007	05_MID	KIA	SPECTRA/SPECTRA5	2.0L 4, auto	PZEV
2007	05_MID	KIA	SPECTRA/SPECTRA5	2.0L 4, auto	Bin 4 / ULEV II
2007	05_MID	KIA	SPECTRA/SPECTRA5	2.0L 4, manual	Bin 4 / ULEV II
2007	05_MID	NISSAN	ALTIMA	2.5L 4, manual	PZEV
2007	05_MID	NISSAN	ALTIMA	2.5L 4, auto CVT	PZEV
2007	05_MID	NISSAN	ALTIMA	2.5L 4, manual	Bin 5 / LEV II
2007	05_MID	NISSAN	ALTIMA	2.5L 4, auto CVT	Bin 5 / LEV II
2007	05_MID	NISSAN	ALTIMA HYBRID	2.5L 4, auto CVT	PZEV
2007	05_MID	NISSAN	SENTRA	2.0L 4, auto CVT	ULEV II / Bin 5
2007	05_MID	NISSAN	SENTRA	2.0L 4, manual	ULEV II / Bin 5
2007	05_MID	NISSAN	VERSA	1.8L 4, auto CVT	ULEV II / Bin 5
2007	05_MID	NISSAN	VERSA	1.8L 4, manual	ULEV II / Bin 5
2007	05_MID	NISSAN	VERSA	1.8L 4, auto	ULEV II / Bin 5
2007	05_MID	TOYOTA	CAMRY	2.4L 4, auto	PZEV
2007	05_MID	TOYOTA	CAMRY HYBRID	2.4L 4, auto CVT	PZEV / Bin 3
2007	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	PZEV / Bin 3
2007	06_WGM	FORD	FOCUS WAGON	2.0L 4, manual	PZEV / Bin 3
2007	06_WGM	FORD	FOCUS WAGON	2.0L 4, auto	PZEV / Bin 3
2007	06_WGM	FORD	FOCUS WAGON	2.0L 4, manual	Bin 4
2007	06_WGM	FORD	FOCUS WAGON	2.0L 4, auto	Bin 4
2007	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto CVT	PZEV / Bin 3
2007	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto CVT 4wd	PZEV / Bin 3
2007	12_UTS	MERCURY	MARINER HYBRID	2.3L 4, auto CVT 4wd	PZEV / Bin 3
2006	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	SULEV II / Bin 5
2006	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I / Bin 9-1
2006	01_TS	LOTUS	ELISE	1.8L 4, manual [P]	Bin 5 / LEV II
2006	01_TS	LOTUS	EXIGE	1.8L 4, manual [P]	Bin 5 / LEV II
2006	01_TS	MAZDA	MX-5	2.0L 4, manual [P]	ULEV II / Bin 5
2006	01_TS	MAZDA	MX-5	2.0L 4, manual [P]	ULEV II / Bin 5
2006	02_SUB	ACURA	RSX	2.0L 4, manual	Bin 5 / LEV II
2006	02_SUB	ACURA	RSX	2.0L 4, auto stk	Bin 5 / LEV II
2006	02_SUB	CHEVROLET	AVEO	1.6L 4, manual	ULEV II / Bin 5
2006	02_SUB	CHEVROLET	AVEO	1.6L 4, auto	ULEV II / Bin 5
2006	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	PZEV
2006	02_SUB	CHEVROLET	COBALT	2.2L 4, auto	PZEV
2006	02_SUB	CHEVROLET	COBALT	2.2L 4, manual	Bin 5 / LEV II
2006	02_SUB	CHEVROLET	COBALT	2.4L 4, manual	Bin 5 / LEV II
2006	02_SUB	CHEVROLET	COBALT	2.4L 4, auto	Bin 5 / LEV II
2006	02_SUB	MINI	COOPER	1.6L 4, manual [P]	Bin 9-1 / LEV I
2006	02_SUB	SCION	xA	1.5L 4, auto	Bin 9-2 / LEV I
2006	02_SUB	SCION	xA	1.5L 4, manual	Bin 9-2 / LEV I
2006	02_SUB	VOLKSWAGEN	NEW BEETLE	2.5L 5, auto stk	PZEV / Bin 2
2006	02_SUB	VOLKSWAGEN	NEW BEETLE	2.5L 5, manual	PZEV / Bin 2
2006	03_COM	FORD	FOCUS	2.0L 4, manual	PZEV / Bin 3

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2006	03_COM	FORD	FOCUS	2.0L 4, auto	PZEV / Bin 3
2006	03_COM	FORD	FOCUS	2.0L 4, manual	Bin 4 / ULEV II
2006	03_COM	FORD	FOCUS	2.0L 4, auto	Bin 4 / ULEV II
2006	03_COM	HONDA	CIVIC	1.8L 4, auto	ULEV II / Bin 5
2006	03_COM	HONDA	CIVIC	1.8L 4, manual	ULEV II / Bin 5
2006	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	PZEV / Bin 2
2006	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	PZEV / Bin 2
2006	03_COM	HYUNDAI	ACCENT	1.6L 4, manual	ULEV II / Bin 5
2006	03_COM	HYUNDAI	ACCENT	1.6L 4, auto	ULEV II / Bin 5
2006	03_COM	KIA	RIO/RIO 5	1.6L 4, manual	ULEV II / Bin 5
2006	03_COM	KIA	RIO/RIO 5	1.6L 4, auto	ULEV II / Bin 5
2006	03_COM	MAZDA	3	2.0L 4, manual	PZEV
2006	03_COM	MAZDA	3	2.0L 4, auto stk	PZEV
2006	03_COM	MAZDA	3	2.3L 4, manual	PZEV
2006	03_COM	MAZDA	3	2.0L 4, manual	Bin 5
2006	03_COM	MAZDA	3	2.3L 4, auto stk	PZEV
2006	03_COM	MAZDA	3	2.0L 4, auto stk	Bin 5
2006	03_COM	MAZDA	3	2.3L 4, manual	Bin 5
2006	03_COM	MINI	LANCER	2.0L 4, manual	ULEV II / Bin 5
2006	03_COM	MINI	LANCER	2.0L 4, auto	ULEV II / Bin 5
2006	03_COM	NISSAN	SENTRA	1.8L 4, manual	Bin 5
2006	03_COM	NISSAN	SENTRA	1.8L 4, auto	Bin 5
2006	03_COM	SATURN	ION	2.2L 4, manual	PZEV
2006	03_COM	SATURN	ION	2.2L 4, auto	PZEV
2006	03_COM	SATURN	ION	2.2L 4, manual	Bin 5 / LEV II
2006	03_COM	SATURN	ION	2.4L 4, manual	Bin 5 / LEV II
2006	03_COM	SATURN	ION	2.4L 4, auto	Bin 5 / LEV II
2006	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV II / Bin 5
2006	03_COM	TOYOTA	COROLLA	1.8L 4, auto	ULEV II / Bin 5
2006	04_WGS	PONTIAC	VIBE	1.8L 4, manual	ULEV II / Bin 5
2006	04_WGS	PONTIAC	VIBE	1.8L 4, auto	ULEV II / Bin 5
2006	04_WGS	SCION	xB	1.5L 4, manual	Bin 9-2 / LEV I
2006	04_WGS	SCION	xB	1.5L 4, auto	Bin 9-2 / LEV I
2006	04_WGS	TOYOTA	MATRIX	1.8L 4, manual	ULEV II / Bin 5
2006	04_WGS	TOYOTA	MATRIX	1.8L 4, auto	ULEV II / Bin 5
2006	05_MID	FORD	FUSION	2.3L 4, auto	PZEV
2006	05_MID	HONDA	ACCORD	2.4L 4, auto	PZEV / Bin 2
2006	05_MID	HONDA	ACCORD HYBRID	3.0L 6, auto	PZEV / Bin 2
2006	05_MID	HYUNDAI	ELANTRA	2.0L 4, manual	Bin 4 / ULEV II
2006	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	PZEV
2006	05_MID	HYUNDAI	ELANTRA	2.0L 4, auto	Bin 4 / ULEV II
2006	05_MID	KIA	SPECTRA	2.0L 4, auto	PZEV
2006	05_MID	KIA	SPECTRA	2.0L 4, auto	Bin 4 / ULEV II
2006	05_MID	KIA	SPECTRA	2.0L 4, manual	Bin 4 / ULEV II
2006	05_MID	MERCURY	MILAN	2.3L 4, auto	PZEV
2006	05_MID	NISSAN	ALTIMA	2.5L 4, manual	PZEV
2006	05_MID	TOYOTA	CAMRY	2.4L 4, auto	PZEV
2006	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	PZEV / Bin 3
2006	06_WGM	FORD	FOCUS WAGON	2.0L 4, manual	PZEV / Bin 3
2006	06_WGM	FORD	FOCUS WAGON	2.0L 4, auto	PZEV / Bin 3
2006	06_WGM	FORD	FOCUS WAGON	2.0L 4, manual	Bin 4 / ULEV II
2006	06_WGM	FORD	FOCUS WAGON	2.0L 4, auto	Bin 4 / ULEV II

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2006	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto CVT	PZEV / Bin 4
2006	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto CVT 4wd	PZEV / Bin 4
2006	12_UTS	MAZDA	TRIBUTE HYBRID	2.3L 4, auto CVT 4wd	PZEV / Bin 4
2006	12_UTS	MERCURY	MARINER HYBRID	2.3L 4, auto CVT 4wd	PZEV / Bin 4
2005	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	SULEV II
2005	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	Bin 5
2005	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2005	01_TS	HONDA	INSIGHT	1.0L 3, manual	Bin 9
2005	03_COM	FORD	FOCUS	2.0L 4, manual	PZEV
2005	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	PZEV
2005	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	Bin 2
2005	03_COM	HONDA	CIVIC HX	1.7L 4, manual	ULEV I
2005	03_COM	HONDA	CIVIC HX	1.7L 4, manual	Bin 9
2005	03_COM	HONDA	CIVIC HX	1.7L 4, auto CVT	ULEV I
2005	03_COM	HONDA	CIVIC HX	1.7L 4, auto CVT	Bin 9
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	PZEV
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	PZEV
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	Bin 2
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	Bin 2
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	ULEV I
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	Bin 9
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	ULEV I
2005	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	Bin 9
2005	03_COM	MAZDA	3	2.0L 4, manual	PZEV
2005	03_COM	MAZDA	3	2.0L 4, auto stk	PZEV
2005	03_COM	NISSAN	SENTRA	1.8L 4, manual	PZEV
2005	03_COM	NISSAN	SENTRA	1.8L 4, auto	PZEV
2005	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV II
2005	03_COM	TOYOTA	COROLLA	1.8L 4, manual	Bin 5
2005	03_COM	TOYOTA	COROLLA	1.8L 4, auto	ULEV II
2005	03_COM	TOYOTA	COROLLA	1.8L 4, auto	Bin 5
2005	03_COM	TOYOTA	ECHO	1.5L 4, manual	Bin 9
2005	03_COM	TOYOTA	ECHO	1.5L 4, manual	LEV I
2005	03_COM	TOYOTA	ECHO	1.5L 4, auto	Bin 9
2005	03_COM	TOYOTA	ECHO	1.5L 4, auto	LEV I
2005	04_WGS	PONTIAC	VIBE	1.8L 4, manual	ULEV II
2005	04_WGS	PONTIAC	VIBE	1.8L 4, manual	Bin 5
2005	04_WGS	PONTIAC	VIBE	1.8L 4, auto	ULEV II
2005	04_WGS	TOYOTA	MATRIX	1.8L 4, manual	ULEV II
2005	04_WGS	TOYOTA	MATRIX	1.8L 4, manual	Bin 5
2005	04_WGS	TOYOTA	MATRIX	1.8L 4, auto	ULEV II
2005	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	PZEV
2005	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	Bin 3
2005	06_WGM	FORD	FOCUS WAGON	2.0L 4, manual	PZEV
2005	12_UTS	FORD	ESCAPE HYBRID	2.3L 4, auto CVT	PZEV
2004	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	SULEV II
2004	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	Bin 5
2004	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2004	01_TS	HONDA	INSIGHT	1.0L 3, manual	Bin 9
2004	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	PZEV
2004	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	Bin 2
2004	03_COM	HONDA	CIVIC HX	1.7L 4, manual	ULEV I

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2004	03_COM	HONDA	CIVIC HX	1.7L 4, manual	Bin 9
2004	03_COM	HONDA	CIVIC HX	1.7L 4, auto CVT	ULEV I
2004	03_COM	HONDA	CIVIC HX	1.7L 4, auto CVT	Bin 9
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto	PZEV
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	PZEV
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	Bin 5
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	Bin 5
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	ULEV I
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	Bin 9
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	ULEV I
2004	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	Bin 9
2004	03_COM	MAZDA	3	2.0L 4, manual	PZEV
2004	03_COM	MAZDA	3	2.0L 4, auto stk	PZEV
2004	03_COM	NISSAN	SENTRA	1.8L 4, auto	PZEV
2004	03_COM	NISSAN	SENTRA	1.8L 4, manual	PZEV
2004	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV I
2004	03_COM	TOYOTA	COROLLA	1.8L 4, manual	Bin 9
2004	03_COM	TOYOTA	ECHO	1.5L 4, manual	Bin 9
2004	03_COM	TOYOTA	ECHO	1.5L 4, manual	LEV I
2004	03_COM	TOYOTA	ECHO	1.5L 4, auto	Bin 9
2004	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	PZEV
2004	05_MID	TOYOTA	PRIUS	1.5L 4, auto CVT	Bin 3
2003	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	SULEV II
2003	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2003	01_TS	HONDA	INSIGHT	1.0L 3, manual	LEV I
2003	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	LEV I
2003	03_COM	HONDA	CIVIC	1.7L 4, manual	ULEV I
2003	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	SULEV II
2003	03_COM	HONDA	CIVIC HX	1.7L 4, manual	ULEV I
2003	03_COM	HONDA	CIVIC HX	1.7L 4, auto CVT	ULEV I
2003	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto	SULEV II
2003	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	SULEV II
2003	03_COM	HONDA	CIVIC HYBRID	1.3L 4, auto CVT	ULEV I
2003	03_COM	HONDA	CIVIC HYBRID	1.3L 4, manual	ULEV I
2003	03_COM	NISSAN	SENTRA	1.8L 4, manual	SULEV II
2003	03_COM	NISSAN	SENTRA	1.8L 4, auto	SULEV II
2003	03_COM	TOYOTA	COROLLA	1.8L 4, manual	ULEV I
2003	03_COM	TOYOTA	ECHO	1.5L 4, manual	LEV I
2003	03_COM	TOYOTA	ECHO	1.5L 4, auto	LEV I
2003	03_COM	TOYOTA	PRIUS	1.5L 4, auto CVT	SULEV II
2003	03_COM	TOYOTA	PRIUS	1.5L 4, auto CVT	ULEV I
2003	12_UTS	TOYOTA	RAV4	Electric	ZEV
2002	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	SULEV II
2002	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2002	01_TS	HONDA	INSIGHT	1.0L 3, manual	LEV I
2002	01_TS	HONDA	INSIGHT	1.0L 3, auto CVT	LEV I
2002	02_SUB	HONDA	CIVIC HX	1.7L 4, manual	ULEV I
2002	02_SUB	HONDA	CIVIC HX	1.7L 4, auto CVT	ULEV I
2002	03_COM	HONDA	CIVIC	1.7L 4, manual	ULEV I
2002	03_COM	HONDA	CIVIC GX	1.7L 4, auto CVT [CNG]	SULEV II
2002	03_COM	NISSAN	SENTRA CA	1.8L 4, auto	SULEV II
2002	03_COM	TOYOTA	ECHO	1.5L 4, manual	LEV I

Year	GB Class	Make	Model	M/M/Specs	Emission Std
2002	03_COM	TOYOTA	PRIUS	1.5L 4, auto CVT	SULEV II
2002	03_COM	TOYOTA	PRIUS	1.5L 4, auto CVT	ULEV I
2002	12_UTS	TOYOTA	RAV4	Electric	ZEV
2001	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2001	01_TS	HONDA	INSIGHT	1.0L 3, manual	LEV I
2001	02_SUB	HONDA	CIVIC GX	1.7L 4, auto [CNG]	SULEV II
2001	02_SUB	HONDA	CIVIC HX	1.7L 4, manual	ULEV I
2001	02_SUB	HONDA	CIVIC HX	1.7L 4, auto CVT	ULEV I
2001	02_SUB	SUZUKI	SWIFT	1.3L 4, manual	LEV I
2001	03_COM	TOYOTA	CAMRY	2.2L 4, auto [CNG]	ULEV I
2001	03_COM	TOYOTA	ECHO	1.5L 4, manual	LEV I
2001	03_COM	TOYOTA	PRIUS	1.5L 4, auto	SULEV II
2001	03_COM	TOYOTA	PRIUS	1.5L 4, auto	ULEV I
2001	12_UTS	TOYOTA	RAV4	Electric	ZEV
2000	01_TS	GM	EV1	Electric (with NiMH batteries) +1	ZEV
2000	06_WGM	NISSAN	ALTRA	Electric +8	ZEV
2000	02_SUB	HONDA	CIVIC GX	1.6L 4, auto [CNG] +4	ULEV I
2000	01_TS	HONDA	INSIGHT	1.0L 3, manual	ULEV I
2000	01_TS	HONDA	INSIGHT	1.0L 3, manual	LEV I
2000	12_UTS	TOYOTA	RAV4	Electric +25	ZEV
2000	01_TS	GM	EV1	Electric (with PbA batteries) +2	ZEV
2000	03_COM	TOYOTA	CAMRY CNG	2.2L 4, auto [CNG] +6	ULEV I
2000	10_PCM	FORD	RANGER PICKUP	Electric (with NiMH batteries) +19	ZEV

**APPENDIX 4.4G**

**BUNKER HILL COMMUNITY COLLEGE**

**Windstreet Energy Auto Card**

**(Effective August 25, 2009)**



You have purchased the Green Auto Card!

WindStreet is committed to the environment and we make it easy for you to help preserve it! Over the past few years, the debate on whether human activity is causing global warming has ended. The vast majority of the world's climate scientists agree that green house gas emissions are the root cause of global warming. And one of the major contributors to greenhouse gases is electricity generated from fossil fuels.

Your purchase offsets your pollution from the electricity that you use with renewable energy! Our renewables come from clean and green sources like wind, solar and hydro so you can be proud that nature is your energy provider!

*Please tell other family members, friends and your neighbors about your commitment to the environment. The more green energy we produce the brighter our children's future. They can sign up themselves at [www.windstreet.com](http://www.windstreet.com).*

Thank you for your help in repairing the world!

Sincerely,

A handwritten signature in black ink, appearing to read "Edal 74", is written over a faint, larger signature.

Edward Jones  
WindStreet Energy, Inc

157 New Brunswick Avenue, Perth Amboy, NJ 08861  
888-85-EARTH (32124)



my  
**green2auto**  
offsets emissions with  
 **windstreet**<sup>™</sup>  
energy

Client Name Bunker Hill Community College - Facilities Management

Address 250 New Rutherford Avenue, Charlestown, MA 02129

Vehicle Description \_\_\_\_\_

By undertaking this initiative to promote the use of renewable energy sources, the Purchaser is actively encouraging the development of environmentally friendly electric generation and raising awareness of your position as an environmental steward.

Through the purchase of this Renewable Energy Certificate, you have offset (neutralized) the amount of CO2 that your vehicle is creating (based on national average usage), thus allow your vehicle to become carbon neutral. The equivalent amount of environmental attributes associated to the production of energy through renewable generation sources are conveyed to the Purchaser. This Renewable Energy Certificate is retired in the name of the purchaser and will not be used to meet any obligations or standards and is subject to the terms and conditions of sale.

Term 12 Months

Signature Carol F A

Date 8/25/09



**APPENDIX 5.1A**

**Team Technical Report  
Reducing the Consumption of Energy  
at the Bunker Hill Community College  
Charlestown Campus**

Submitted 11 May, 2009

Dung Huynh

Oliver A. Kia

Christopher R. Kim

## **Problem Statement**

The Charlestown campus of Bunker Hill Community College consumes a large amount of energy, much of which is inefficient waste. This waste could be reduced through improvements in equipment efficiency.

## **Summary of Findings**

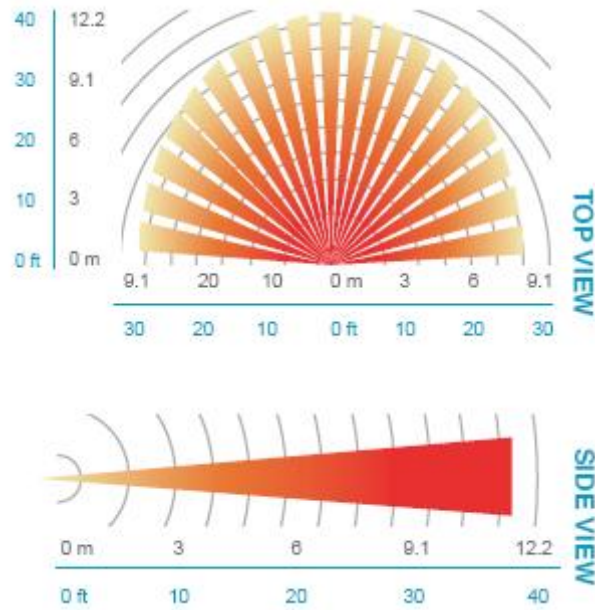
The Charlestown campus of BHCC is, in general, not designed for efficient use area lighting. This can be greatly improved through the use of occupancy sensors to reduce energy wasted lighting rooms and areas which are not being used.

Appropriate sensors to use are the LWS-PDT and HW-13 models, manufactured by Sensor Switch. Installation costs of such devices in targeted locations are estimated at \$17,000. The devices would save an estimated \$51,000 annually, resulting in a payback on investment time of 0.3 years.

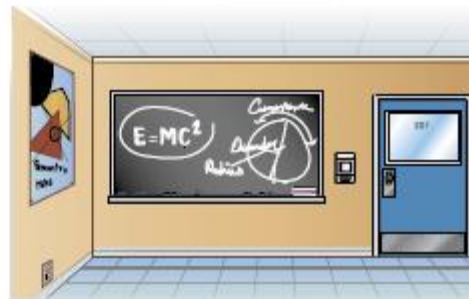
**PRODUCTS:**

**LWS-PDT:**

THE COVERAGE ARC: From both top and side view.



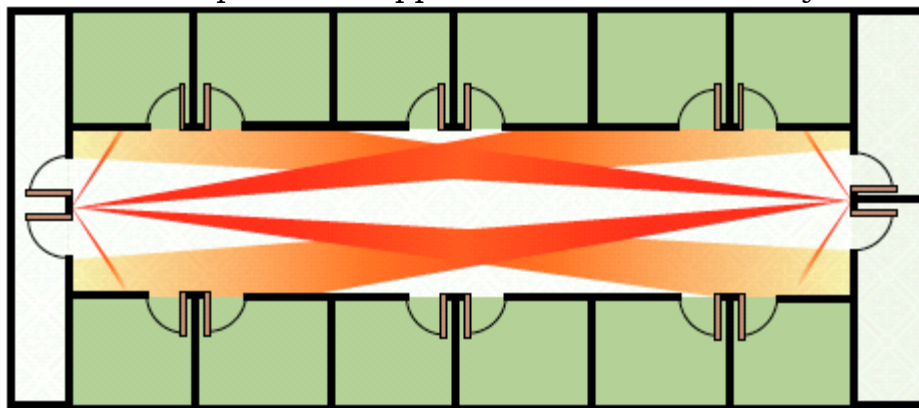
Examples of placement within a classroom:



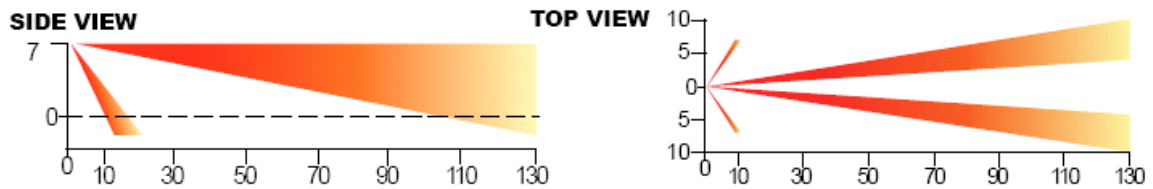
**HW-13:**



AN EXAMPLE OF THE SENSOR PLACEMENT: Note that there are two sensors which will be placed on opposite ends of the hallway:



COVERAGE ARC: From side and top viewpoints:



## Table of Contents

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High-Performance Windows	8
Light Emitting Diodes	10
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## **ELABORATION OF PROBLEM**

The Charlestown campus of BHCC is, in general, not designed for efficient use area lighting. Few (if any) classrooms are exposed to daylight. The corridors, office spaces and common areas which do feature windows do not have measures to restrict the redundant use of electrical lighting during the peak daylight hours of the day. Many rooms, such as the B-building atrium and lower E-building, have extensive lighting systems which run constantly for aesthetic appeal.

Area lighting requirements increase during the winter, when daylight is insufficiently long to illuminate the building during its entire daily use. This increases the occurrence of area lights being casually left on in rooms which are not consistently occupied.

Data provided by Energy Management Associates, Inc indicates that classroom lights on the BHCC campus operate, on average, 150 hours per week. However, the classrooms are used for an average of only 35 hours per week. Hallway lights similarly operate for an average of 133 hours per week, when they are needed for only 85. These conditions waste energy, and present an opportunity for cost-cutting measures.

## **ASSESSMENT PROCESS**

When initially choosing a problem, we decided that it would be interesting to continue with the work of another group of students who were mentioned by Professor Field. The project was to design a plan for the installation a wind turbine on Bunker Hill Community College's Charlestown campus, with the objective of



producing energy natively and thus offset the need to purchase energy from elsewhere.

Following more-targeted research and discussion, we realized that the installation of a wind turbine would not be feasible to plan. Thus, we reevaluated our root problem. The problem was the overall consumption of energy on campus. We had already divided our approach into two categories: production and consumption; however, via brainstorming with new information in hand, the list was further expanded:

<u>Reduce Consumption</u>	<u>Increase Production</u>
Efficiency of Appliances	Wind Turbine
Efficiency of Electronics	Solar Electricity (Photovoltaic)
Efficiency of Lighting	Solar Water Heating
Efficiency of HVAC units	Solar HVAC
Efficiency of Windows	

The next step we took was to determine the most feasible of our remaining options. At the recommendation of Professor Field, we met with Joseph Steffano, and learned that he had already done research into the campus’ energy costs and ways to reduce them. Mr. Steffano, along with data he provided, indicated that the installation of wind or solar energy would be cost-prohibitive, whereas the campus’ lighting systems had great potential for improvement in efficiency. With that in hand for a problem, we further detailed our possible solution.

<u>Problems: Sources of Consumption</u>	<u>Potential Solutions</u>
Light wasted when rooms are unoccupied	Automatic lighting controls
Poor use of natural light	System of channeling natural light

Inefficient lighting fixtures	Alternative light bulbs (LED, CFL)
-------------------------------	------------------------------------

Our criteria for success in choosing a solution were the following:

- The production of consistent and sufficient light year-round
- Low cost of purchase (including incentives)
- Low cost of installation
- Quick payback of initial investment
- Minimal adverse effect on building climate (heat)
- Minimal obtrusive effect on building occupants

The data supplied by Mr. Steffano (prepared by Energy Management Associates, Inc) provided us with cost estimations for all of our solutions. Ultimately, cost factors were weighted the highest amongst our selection criteria. We considered three subjects when ultimately choosing our solution. The report provided by Mr. Steffano showed that almost 60% of BHCC’s electricity consumption goes to area lighting, at a total approximate cost of \$450,000. The report, and additional research, showed that approximately \$52,000 could be saved each year through the use of more energy efficient lighting systems.

After discussing all of the information we had gathered, we decided to concentrate on automatic lighting controls. Information gathered indicated that high performance windows and LED area lighting fixtures both would cost orders of magnitude more than automatic light controls.

## **HIGH-PERFORMANCE WINDOWS**

### **Problem Statement**

The windows currently installed throughout the BHCC campus are a significant source of wasted energy.

Windows are a primary source of thermal conductivity between the interior and

exterior of a given building. During the late Fall and Winter seasons, heat is lost from the building, requiring compensatory increased production on the part of the heating system in order to maintain acceptable temperature conditions inside. During the late Spring and Summer seasons, heat is gained from the outside, requiring increased compensatory cooling efforts.

All five buildings of the BHCC campus feature almost exclusively single-glazed glass windows which are approaching the end of their predicted economic lifespan. Many windows are accompanied by HVAC units positioned directly below the frame.

## **Solutions**

The present configuration of BHCC's windows can be improved in two primary manners.

Firstly, the single-glazed windows currently in place can be replaced with the current commercially available standard of a double-glazed glass unit. Such a unit is composed of two glass panes, one of which is coated with a low-emissivity coating, and is filled with a gas. The gas is typically argon, krypton or sulfur hexafluoride. The glass panes are held apart (and gas held inside) by spacers made of aluminum, plastic, fiberglass or combinations of the three. (Hammond)

Secondly, the convective heat transfer of the air flow around the window surface, specifically the effect of the adjacent HVAC units, can be controlled.

## **Analysis**

Data collected by Energy Management Associates estimates the cost of replacing the windows across the BHCC campus at approximately \$90,000. The data further estimates the potential value of energy saved per year to be approximately

\$60,000, resulting in a return on investment of 1.5 years. This is three times the approximate cost and five times the approximate payback period when compared to the installation of automatic lighting controls. Though economically feasible on its own, the cost factors for the installation of high performance windows ultimately made it less worthwhile. It was thus discarded as a potential solution.

## **LIGHT EMITTING DIODES**

### **Problem Statement**

The lights currently installed throughout the BHCC campus feature compact fluorescent light bulbs, which could be replaced with longer-lasting bulbs.

### **Solution**

LEDs (or light emitting diodes) are semiconductors that convert electrical energy into light very efficiently. They are relatively expensive as of now but are very efficient in using little electrical energy to produce lighting of a quality very much similar to incandescence light bulbs. LEDs are easy to mount and their longevity can lead to saved labor costs, especially when mounted in difficult to reach places.

Because LEDs emit very little unwanted heat, they can lead to a lot of energy savings during summer months when air conditioners are in use. Because of their fine focus, LED light bulbs can be very effective in lighting long hallways and stairs. Environmentally, LED bulbs are very friendly first because they do not radiate UV-rays and second because they do not contain mercury like incandescence bulbs do. They are not considered hazardous materials during disposal.

Below are some reasonable advantages and disadvantages of LED bulbs in buildings.

### **Advantages**

- LED bulbs waste extremely little energy through heat, compared to typical compact florescent and incandescent bulbs
- White LED lights are well-suited for reading when compared to other, yellow-distorted bulbs
- LED lights do not flicker or emit UV light; thus cannot hurt human eyes or skin, or harm paintings
- No formal training is required for the installation of LED fixtures, LED lamps are available with Edison (Screw-in type) base to retrofit existing fixtures
- Low energy consumption – Retrofit LED bulbs range from 0.85 to 7.3 watts
- LED bulbs can last from 30,000 to 50,000 hours

### **Disadvantages**

- LEDs have a very high relative initial cost
- LEDs are climate sensitive and their lifespan can be reduced by exposure to excessive heat
- LEDs cannot cast light Omni-directionally, complicating area lighting

### **Analysis**

Concerning the problem of reducing energy consumption today at Bunker Hill Community College, LEDs cannot be considered as part of the solution because of their very high initial cost. The extremely high cost of LEDs today makes the payback time unacceptably long, and thus unsuitable given our required solution criteria.

## **LIGHTING CONTROLS**

Lighting controls are used as part of high quality energy efficient lighting systems that integrate daylight and electric light sources. They are appropriate for a variety of spaces from corridors to open offices and classrooms.

Electric lighting controls can save energy and extend the life of lamps and ballasts by reducing the amount of power used during peak demand period, reducing the total time per year that lights are on, reducing internal heat gains, and allowing occupants to lower light levels. This can be achieved by automatically dimming or

turning off lights when appropriate, which will reduce the power used. This will also reduce the heat gains from lighting thus reducing the cooling output needed from the building's HVAC.

Some different types of lighting controls are time-scheduled controls, occupancy sensors, daylight sensors, dimming devices and centralized controls.

Occupancy sensors are used to automatically turn lights on and off based on whether or not the room is occupied. They utilize technology such as Passive infrared sensors (PIR), which are triggered by the movement of body heat; and Ultrasonic sensors, which work by sensing disruptions in an emitted, inaudible sound pattern. Ultrasonic sensors have the advantage of being mostly unaffected by location and the layout of the room. However, detecting sonic variations is less precise than detecting the presence of human body thermal radiation. Dual-technology occupancy sensors use both infrared and ultrasonic technologies to combine the accuracy of each, but are slightly larger and more expensive. They can be used in conjunction with dimming and daylight controls for a variety of possibilities. There are several different coverage patterns and mounting configurations such as wall or ceiling mounted and 360°, elongated "corridor", fan-shaped, and rectangular coverage.

Photo sensors can be used to automatically turn lights on and off and to dim them depending on the amount of available daylight, and can provide a smooth transition between natural and electrical light as the level of daylight changes.

Time-schedule switches are used to turn lights on and off for specific time periods. They are typically manually configured to account for the daily variations in

dawn in dusk points. However, more sophisticated switches are available which feature precise astronomical data preprogrammed into the device.

Centralized controls can be used to control lighting based on any criteria, and can be used for individual rooms or on a building wide scale. This has the advantage of allowing daylight or occupancy sensor information to be aggregated for better accuracy.

They can also integrate lighting controls with other building systems such as security. However, they require significant wiring work in order to implement.

Distributed controls are local rather than central and speak to individual ballasts or groups of ballasts. They utilize their own independent wiring, often only the wiring already present, and offer the greatest flexibility available at this time.

## **PRODUCT SELECTION**

Having decided, for a solution, on the installation of occupancy sensors to control area lighting, we constructed a list of requirements for choosing an available product.

- Daylight sensors: The device must feature a photocell override to avoid superfluous area lighting during peak daylight hours.
- Coverage: The device must not be obstructed by the layout of BHCC's rooms.
- Climate suitability: The device must function within BHCC's internal climate conditions. The daylight sensor must also not be damaged by direct sunlight.
- Voltage suitability: The device must function on BHCC's 120V range.
- Wiring: The device must not require extensive rewiring (if any).
- Cost: The device must be affordably priced for a large purchase

We researched available products for a system capable of meeting these criteria. We quickly discarded centralized systems due to their complexity of installation and cost. Ultimately, we decided upon two products from the company

Sensor Switch: product series LWS-PDT (Large Area Wall Switch Sensor – Passive Dual Technology) and HW-13 (Low Voltage Passive Infrared Hallway Sensor).

The LWS-PDT model features both passive infrared and ultrasonic (trademarked Microphonics™ by Sensor Switch) sensors in a device which can accommodate the standard socket sizes, voltage and room layout of the BHCC campus. The Microphonics™ system is especially suited to BHCC's construction. The interior of the BHCC campus is composed of cinderblock walls which very effectively assist ultrasonic sensors through the reverberation of the emitted wave. Additionally, BHCC uses very little drywall or carpeting, which absorb ultrasonic waves and detract from the effectiveness of such sensors. Almost all classrooms are arranged in a rectangular shape, which the 180 degree coverage arc of the passive infrared sensor can easily cover from the location of current wall switches.

The HW-13 model, used for hallways, does not feature an ultrasonic sensor. However, such a sensor would not be suitable for hallways, as ultrasonic waves dissipate too greatly at the extended ranges required to cover the length of a hallway.

Both the LWS-PDT and HW-13 feature minimal wiring requirements, and both are powered by the electrical line (as opposed to batteries). They both feature photocell sensors for evaluating daylight levels, and a function for overriding activation in the presence of sufficient daylight levels (which is configurable).

The installation cost and savings figures provided by Energy Management Associates, Inc were compiled with the use of data from Sensor Switch sensor equipment, and consultation with the company. Thus, the figures we possess are notably tailored to the products chosen for our solution. The estimated cost of equipping the classrooms and auditorium of the BHCC campus with these sensors is



approximately \$17,000. Due to the availability of information and the degree to which the LWS-PDT and HW-13 sensor models, manufactured by Sensor Switch, met our criteria, they were ultimately selected for our use as a solution. There are no foreseeable ethical issues to consider with the use of these devices.

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Direct Energy

<http://www.directenergy.com/EN/Pages/default.aspx>  
[http://www.directenergy.com/EN/Pages/42tips.aspx?WT.ac=HP\\_TIPS\\_LNK2&WT.cg\\_n=HP\\_TIPS\\_LNK&WT.cg\\_s=HP\\_TIPS\\_LNK2%2042%20tips%20for%20businesses](http://www.directenergy.com/EN/Pages/42tips.aspx?WT.ac=HP_TIPS_LNK2&WT.cg_n=HP_TIPS_LNK&WT.cg_s=HP_TIPS_LNK2%2042%20tips%20for%20businesses)

NSTAR

[http://www.nstaronline.com/business/energy\\_efficiency/energy\\_advisor/](http://www.nstaronline.com/business/energy_efficiency/energy_advisor/)

WindStreet Energy

<http://www.windstreet.com/>

Lutron Electronics Co, Inc

<http://www.lutron.com/CMS400/default.aspx?app=SoftSwitch128>  
<http://www.lutron.com/CMS400/WorkArea/downloadasset.aspx?id=12965>  
<http://www.lutron.com/CMS400/TechInfoPage.aspx?id=19281>

Sensor Switch, Inc

<http://www.sensorswitch.com/datasheetlib.aspx?NodeName=Wall%20Switch%20Sensors&NodeID=9>  
[http://www.sensorswitch.com/DataSheets/LWS\(H\)-PDT.pdf](http://www.sensorswitch.com/DataSheets/LWS(H)-PDT.pdf)  
[http://www.sensorswitch.com/DataSheets/HW-13%20\(T045-003-P\).pdf](http://www.sensorswitch.com/DataSheets/HW-13%20(T045-003-P).pdf)

Toolbase Services

<http://www.toolbase.org/>

Appendix I:

Data collected for use in determining potential cost savings.

<b>Normalized Data Logger Information</b>					
<b>Location</b>	<b>Load (Watts)</b>	<b>Normalized Weekly Hours of Use</b>	<b>Normalized Weekly Hours of Occupancy</b>	<b>Potential Hours Saved</b>	<b>Potential Cost Savings</b>
A Hallway					
3rd	600	101.49	61.28	40.21	39.62%
C Hallway	600	96.48	85.46	11.02	11.42%
C Lounge	480	108.56	84.29	24.27	22.36%
C Pit/Game	2070	108.98	87.32	21.66	19.88%
C-202	2790	112.02	48.3	63.72	56.88%

Lecture					
Cafeteria	4620	168	83.31	84.69	50.41%
D Lounge	1380	145.88	91.78	54.1	37.09%
D-309 Tier	640	168	68.92	99.08	58.98%
E-174	3600	82.26	69.11	13.15	15.99%
E-175	1600	74.55	46.7	27.85	37.36%
E-235	11040	140.59	78.33	62.26	44.28%
E-419	1200	167.99	32.34	135.65	80.75%
E-450	900	168	39.09	128.91	76.73%
E-451	600	153.19	23.02	130.17	84.97%
Hallway	1200	164.21	123.34	40.87	24.89%
Library Stack	6600	96.64	77.03	19.61	20.29%
Main Library	6600	90.98	82.35	8.63	9.49%
<b>Total</b>	<b>46520</b>	<b>2147.82</b>	<b>1181.97</b>	<b>965.85</b>	44.97%

Data collected by Energy Management Associates, with the use of equipment by Sensor Switch.

## APPENDIX 5.1B SERVICE LEARNING PROJECT

### Service Learning Project--Overview *Academic Writing III ESL 099-05* (Updated 1/22/09)

#### Part One

We will set up recycling boxes around the BHCC campus for aluminum cans and plastic and glass bottles. We will monitor the boxes to make sure they don't overflow. Periodically (or weekly) we will take the cans and bottles to the store to redeem them for money. The ones we can't redeem we will take to the recycling plant behind BHCC. The money we collect will be donated to a worthy cause such as an environmental organization. We will need 3 or 4 people to help empty the boxes each week. Students are asked to sign up to volunteer for 3 or 4 different weeks during the semester.



#### Part Two

Students will do Internet research on a particular recycling topic assigned by the professor. Students will design and make flyers about their topic and will distribute these flyers around campus, talking to students about our recycling project. The flyers should contain 3 to 5 interesting facts about the special recycling topic. Students will go alone or in pairs around campus sometime between **February 20<sup>th</sup> to March 6<sup>th</sup>** and talk to students for a minute or two.

#### Part Three

We will have a Recycling Day on campus in the main lobby **May 1<sup>st</sup>**. On this day we will do two things. First, students will design and make display boards about their special recycling topics. The purpose of the display boards is to inform BHCC students about recycling and also to encourage them to recycle. Second, students will design and make short quizzes related to their special recycling topic. We can ask BHCC students to try the quizzes and offer them something in return such as free pencils/pens, candy, or bottled water.

#### Part Four

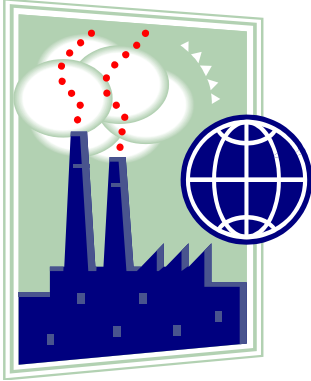
Students will write a Reflection Paper about the project, which will consist of 4 paragraphs:



- 1) your thoughts and feelings before beginning the project
- 2) your thoughts and feelings after talking to students on campus
- 3) your thoughts and feelings after Recycling Day
- 4) your thoughts about your participation in the Project

The paper will be due **May 8<sup>th</sup>**. As you can see, you should work on this paper piece by piece during the semester--don't wait until the last week! More specific information will be given about the Reflection Paper during the semester.

# Environmental Topics Research Assignment



As you prepare for your flyers, your research paper, and your display board, you will need to gather informative articles. Use Google or Yahoo! Print copies of your articles and keep them in a safe place, even if you are not sure you will use them. You may also keep copies of pictures you might use.

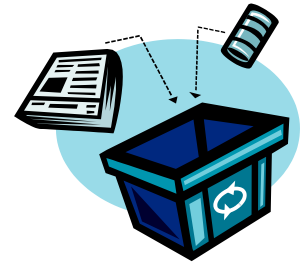
You are looking for information that explains what your topic means, why it is important, and what we can do to help.

Please bring copies of 3 or 4 articles that you have found on your environmental topic. They should be about 2-4 pages each. I would like to check them, and see if you are able to find useful, informative, interesting, simple, and clear information.

Please bring these copies of your articles February 27 or before (if you want to visit my office).

## ***Starting Your Research on Recycling and Other Environmental Topics***

**1.** You need to get some information on your topic. The Internet is a good place to start. You can use a search engine such as Google or Yahoo! Type in some key words such as “recycle” and “motor oil,” or whatever your specific recycling topic is. You will probably get **thousands** or even **millions** of websites.



You can **narrow your search** by adding other key words.

**2.** Try to find information about the **benefits** of recycling for the environment and for the community, and the financial benefits. For example, you can type in “recycle” and “motor oil” and “benefits.”

**3.** You can also type in other **key words** along with your topic such as “facts” or “interesting facts,” or a question such as “why should I recycle?”

**4.** Try to find 3 or 4 websites with clear and interesting web pages. **Print copies** of the web pages or articles that you like. Make sure that you have the exact **website address**. Usually it prints on the bottom of the page. You will need the website address later. Keep your articles in a safe place. You may use them to make your flyers, your poster, or in your essay.

**5.** You may find articles about recycling in other cities, states, or countries. Sometimes you can use that information, and sometimes not. Sometimes you want to discuss **local recycling**. For example, you may want to know where I can donate my old computer in the Boston area. You can try adding the word “Boston” or “Massachusetts” to your search.

**6.** Keep in mind that **IT WILL TAKE TIME** to find the right articles—hours or maybe days. Start your research early...do not wait until the last minute. Keep searching and don't give up. Remember that other students were able to do it, and you can, too!

# Recycling Day Display Boards Guidelines



You want your board to be attractive, clear, interesting and informative. Include some information about your topic to **TEACH** BHCC community members something about

## **recycling.**



Include **PICTURES**, *photos*, **diagrams**, and **CHARTS**

related to your topic or to recycling in general. Make captions to go with these items.



Explain what the pictures, etc, are!

Make sure the font is big enough. Use font that is no smaller than **SIZE 24**. You may have even

**SIZE 36** or **SIZE 48**. Use **different** *styles*

**of font** *if you wish*. Use **COLOR** to attract the reader's eye and

**DESIGN** that is interesting, not boring. **DO** fill up the

board, but **DON'T OVERCROWD** the board.



Include a **QUIZ** of about 5 to 7 questions related to your topic. You do not need to include the **answers** on the display board, but you might write them somewhere else (see the **QUIZ** handout for more information).




## APPENDIX 5.1C

### The “Living Campus” at Bunker Hill Community College

#### Culinary Arts Department – Top Sprouts - Overview

THE “LIVING CAMPUS” AT  
BUNKER HILL COMMUNITY  
COLLEGE



*The BHCC Culinary Arts Experience: Teaching, Learning, and Living a Sustainable Future*

 PROGRAM OVERVIEW



Classroom Instruction

Kitchen Laboratories

Experiential Agriculture

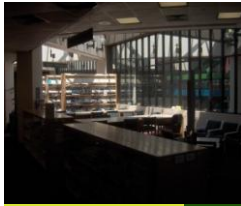
Farmer's Market

Clubs, Seminars, and Competitions

Field Trips, Cruises, and Internships

**BHCC Culinary Arts Program**





# CLASSROOM INSTRUCTION



- Learning Community Clusters
- Hospitality Seminars
- Two Smart Classrooms
- Library and Learning Commons
- Academic Tutoring
- Community Engagement-Service Learning
- Cooperative Learning Techniques
- Experienced Instructors
- Student Disability Services
- Math & Writing Labs



# KITCHEN LABORATORIES



- ◎ Modern Kitchen & Dining Room
- ◎ Pastry & Bake Shop
- ◎ Commercial Storerooms and Refrigeration
- ◎ Nutritional Science Lab

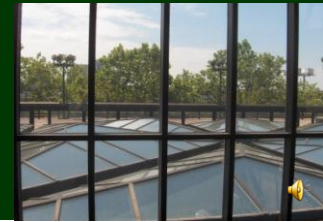




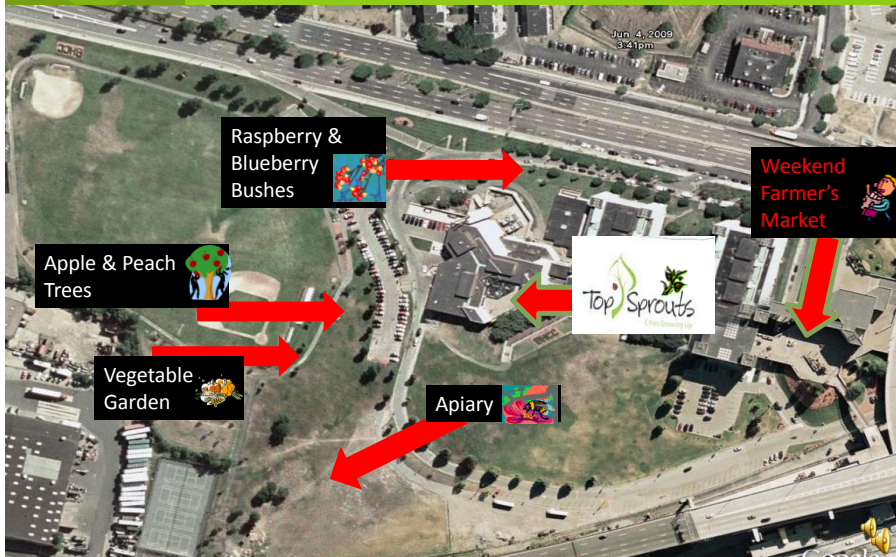
# EXPERIENTIAL AGRICULTURE



- Hydroponic & Traditional Farming Labs
- Culinary Recycling & Composting Program
- Seasonal Farmer's Market
- Outdoor Classrooms
- Culinary & Science Clustered Classes
- Community Farming Co-Op
- Greater Boston Food Bank Partnership



# THE "LIVING CAMPUS" AT BHCC

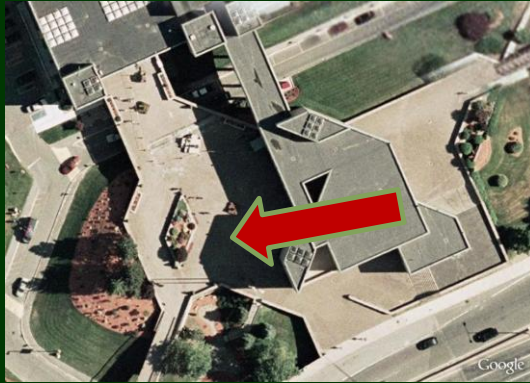




# FARMER'S MARKET AT BHCC



- Seasonal Weekend Farmer's Market
- Artisanal Craft Fairs



## TOP SPROUTS/ BHCC PARTNERSHIP: WORKING FOR THE WIN/WIN



Pilot Program Infrastructure

Recruiting and Retention Tool For BHCC Culinary Arts

Brand Recognition

Creating a Culinary Arts National Model

Marketing Model

Agricultural Lab/ Product/ Farmer's Market

Conceptual Model

New Classes & Programs



# CLUBS, SEMINARS, AND COMPETITIONS

- Hospitality Club
- Junior ACF Memberships
- Learning Community Seminars
- Regional & National Cooking Competitions



# FIELD TRIPS, CRUISES, AND INTERNSHIPS



- Field Trips to Local Farms & Wineries
- Summer Internship Class
- Field Trips to Local Restaurants
- Cruise Seminar
- Articulation Tours at Johnson & Wales, UMASS Amherst, and Boston University





## APPENDIX 7A

### SUSTAINABILITY PLAN

# Bunker Hill Community College Sustainability Plan



**Date: May 1, 2005 (ORIGINAL SUBMISSION)**

**Agency Coordinator: Paul Righi (current coordinator)**

**Phone: 617-228-3474**

**Email: [prighi@bhcc.mass.edu](mailto:prighi@bhcc.mass.edu)**

This Sustainability Plan has been reviewed and approved by (Robert Biswanger) of (Bunker Hill community College) on (May 1, 2005).

*Signature of Agency Head or other Appropriate Designee*

## 1. Agency Information, Impact Identification and Sustainability Team

### 1.1 Agency Description and Scope

#### Mission of Bunker Hill Community College

Bunker Hill Community College is a public institution of higher education offering programs and courses of study including Arts and Sciences, Nursing and Allied Health, Domestic and International Business, Hospitality and Culinary Arts, Early Childhood Development, and Computer Applications. The College supports open access to post-secondary education by providing a range of educational opportunities that include distance learning, self-directed learning and an Honors program. The College offers an entry-level assessment program for new incoming students, a sound foundation in developmental studies and, for non-native English speaking students, a variety of levels of English as a Second Language (ESL) instruction.

The student body reflects the diversity of the urban community, and an essential part of the College's mission is to encourage this diversity. The College seeks to become a national model for successfully incorporating the strengths of many cultures, ethnic backgrounds, age groups and learning styles into the curricular and extracurricular life of the institution.

Bunker Hill Community College seeks to enhance its position as a primary educational and economic asset for the Commonwealth through cooperative planning and program implementation involving neighboring institutions of higher education, the public schools, community organizations and area businesses and industries.

Bunker Hill Community Colleges main campus is located at 250 New Rutherford Ave. Charlestown, Massachusetts and its main satellite campus at 75 Hawthorn Street, Chelsea. The Charlestown campus has over 360,000 square feet of space and 5 buildings that are all connected. The Chelsea campus has 1 building and 30,000 square feet of space.

Enrollment: more than 7,800 students the fall of 2004.

Employees: 341 full-time employees including 118 full time faculty fall 2004 and 242 adjunct faculty fall 2004.

## ***1.2 Agency Impacts on the Environment and Human Health***

The College is now operating 7 days a week from 7 am to 10 pm weekdays and shorter hours on the weekends. With the exception of student breaks BHCC offers classes 12 months of the year and currently no weekends during the summer months. Due to the general nature of education, it is a very high consumer of paper and paper products; on average we consume more than 2200 cases of paper. With the colleges current waste disposal contract we are able to recycle paper of any type and color as well as cardboard. The EOE report on recycling stated "BHCC manages the most comprehensive recycling program of any of the campuses studied", we are very fortunate to have the involvement of students and faculty to help us. The College is dual fueled using both natural gas and oil and we pay close attention to the market to lock in the best prices available.

BHCC has a fleet of 12 vehicles of which three are passenger vans and two are 40 passenger buses. The buses are new to the College and are used for a shuttle service between the Chelsea and Charlestown campuses. By utilizing the new buses in place of the 15 passenger vans for one of the daytime shuttles BHCC has reduced the number of required shuttle trips between campuses considerable. During the spring semester of 2004 preliminary estimates show a reduction by almost a third of fuel consumption even after taking into consideration the addition of diesel fuel for the buses. BHCC is currently looking at using the bus to replace the nighttime shuttle van as well but the savings will be minimal due to the limited number of runs. An increase in diesel fuel consumption is expected but the buses carry a larger number of students and get three times the mileage per gallon.

## ***1.3 Agency Operational Costs***

The following is a list of operational costs BHCC incurred for both Campuses for fiscal year 2004:

Electric	\$590,000.00 (due to the size of the campus we are able to direct purchase our electricity at very favorable rates but we have no control over the distribution side of electricity and find ourselves at the control of NSTAR)
Heating oil	\$132,000.00
Natural gas	\$122,305.00 (due to the size of the campus we are able to direct purchase our natural gas at very favorable rates but we have no control over the distribution side of natural gas and find ourselves at the control of Keyspan)
Water and sewage	\$95,257.00
Gasoline	\$7,113.00
Diesel	\$1,155.00
Hazardous waste	\$9,670.00
Non-hazardous waste	\$26,843.00
Janitorial services	\$482,000.00 (includes snow removal of walks, stairs and ice melt, Chelsea)
Vehicle Maintenance	\$16,832.00

## **1.4 Agency Sustainability Team Members**

The BHCC Sustainability Team consists of Robert Steeper, Professor and Science Department Chair, Joseph E. Steffano, Director of Engineering Services, John Chirichiello Staff Assistant Chelsea Campus, Richard Pishkin, Staff Associate Auxiliary Services Business Office, Louise Miller-Finn, Information Technology and Robert Biswanger (resigned and replaced by Joseph E. Steffano), Director of Facilities Management. Currently the team meets monthly on Fridays and were chosen because of the unique areas each over see.

## **2. Long-Term Goals/Vision**

### **2.1 Long-Term Goals**

Bunker Hill Community College has identified the following for long-term goals;

- 1) During the design stages of new buildings BHCC will investigate and try to incorporate energy management systems and LEED design.
- 2) As the College replaces older computer monitors new more energy efficient computer monitors will be evaluated, purchased and installed were feasible.
- 3) Start a program to recycle old printer and copier toner cartridges
- 4) Investigate and reduce water consumption.
- 5) Meet state mandate of 25% CO2 emission reduction by 2012

## **3. Short-term Actions and Priorities**

### **3.1 Priority and Areas Goals**

Bunker Hill Community College has identified the following for short-term actions;

- 1) Start a program of buying copy paper with at least 10% recycled content
- 2) Install energy efficient classroom lighting controls. Ceiling mounted motion activated sensors and motion activated wall switches in hallways. Install photovoltaic sensors in halls with windows to reduce electric lights and take advantage of natural lighting.
- 3) Install new motion activated light switches in various offices.
- 4) Activate the Energy Star Energy Management System on all College computer monitors.

**Note: 2 and 3 are the same.**

### **3.2 Agency Action Steps**

Please refer to the attached Agency Sustainability Work plan Worksheet

## **4. Management Systems and Institutionalization**

Integrating Environmental Impacts into Key Decision Points

Include Sustainability issues in planning processes when possible.



Open discussions on sustainability issues College wide.

Investigate new ideas and possibilities.

Implement new ideas where possible

#### ***4.1 Education and Training of Staff***

The College has a faculty and staff newsletter published weekly September through May and biweekly June to August. Sustainability issues will be printed in the newsletter so that all faculty and staff are informed and kept updated.

#### ***4.2 Management Systems***

As new ideas are identified and the decision to implement them made, the appropriate departments will be involved in the decision making process and asked to implement them as required.

### **5. Tracking Progress and Program/Plan Review**

#### ***5.1 Agency Tracking and Reporting Form***

The sustainability team will collect pertinent data yearly and submit findings as requested.

#### ***5.2 Continuous Improvement***

The sustainability team will monitor the processes of each department or project to see if progress is being made and make possible suggestions to help the College meet its goals.

An open invite will be made so that interested individuals wishing to join the committee are welcomed and all interested parties and ideas listened to.

The sustainability team will hold regular meetings and processes will develop and evolve as needed.

All major recommendations will be submitted to senior staff for College wide assessment.

Appendix 4 - Agency Sustainability Work plan Worksheet

For Use in Section 3 of the Agency Plan Template “Short Term Actions and Priorities” and should be submitted as part of the agency plan.

<b>Sustainable Goal</b>	<b>Benefits</b>	<b>Specific Tasks</b>	<b>Responsible Staff</b>	<b>Timeline</b>
1) Start a program of buying copy paper with at least 10% recycled content	Reduction of solid waste Save cost	Purchase paper with at least a 10% recycled content	Central Services	July 1, 05
2) Install energy efficient classroom lighting controls. Ceiling mounted motion activated sensors and motion activated wall switches. Install photovoltaic sensors in halls with windows to reduce electric lights and take advantage of natural lighting.	Reduction of wasted energy	Identify type of fixtures needed and purchase from state vendor Install controls in classrooms and hallways.	Facilities Management	Start during fiscal year 06 and do a multiyear phase in due to cost. Add to all classrooms during any renovations.
3) Install new motion activated light switches in various offices.	Reduction of wasted energy	Identify type of fixtures needed and purchase from state vendor. Install switches in various offices.	Facilities Management	Program has started. As personnel move and offices vacated new lighting control switches are installed before the empty office is filled.
4) Activate the Energy Star Energy Management System on all College monitors.	Reduction of wasted energy	Identify all computer monitors that are not currently running the management system and activate same. Activate system.	Information Technology	All current and future computer monitors will be checked and system activated. On going now.