

# **Climate Action Plan**

**Northern Essex Community College**

**November 2009**

## Climate Action Plan – Fall 2009

In the fall of 2007, Northern Essex Community College President David Hartleb signed the [American College & University Presidents Climate Commitment](#) with a pledge to move the college toward eventual total climate neutrality. Since then, NECC has formed the Environmental Impact and Sustainability Committee (EISC) to explore ways that NECC can reduce its carbon footprint.

One of the first objectives of the EISC was to identify the college's carbon footprint in order to fully grasp the amount of carbon emissions for which the college is responsible. Over the past year, EISC has developed this Climate Action Plan (CAP) that sets the goal of reducing carbon-based emissions from all college activities (heating; air conditioning; lighting; student, faculty, and staff commutes; air travel by staff and faculty; and gas and diesel used by campus vehicles) to net zero by the year 2040. Achieving this goal will enable NECC to become carbon neutral in 31 years.

The college will achieve this goal with a planned reduction of carbon-based emissions of approximately 3% per year (based upon Fiscal Year 2008 emissions data). This reduction in energy use will be combined with expanding programs such as the recycling of paper, plastic, and cans. The college will also actively seek to bring online alternative energy projects such as wind, solar, and geothermal. These alternative energy projects will create larger reductions/offsets in the years that they become active.

Currently, NECC produces almost 11,000 metric tons (24 million pounds) of carbon emissions per year -- its carbon footprint. The CAP is based upon FY 2008 data and therefore is based upon the student enrollment for that fiscal year. As a 100% commuter college, future enrollment increases will be factored when computing the carbon footprint for future years. The college's carbon footprint is shown in Appendix A.

The college will focus on these areas to reduce carbon-based emissions:

### **Sustainable Development**

- Adopt the Leadership in Energy and Environmental Design (LEED) Silver Policy  
LEED is an internationally recognized green building certification system (<http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>). The college is in the planning process to construct an Allied Health and Technology Center in Lawrence, to be LEED silver at a minimum. Additionally this building will enable the college to fully offer several more academic programs on the Lawrence campus, thus reducing student commutes between the Lawrence and Haverhill campuses.

- **Respect Land Use**  
The Haverhill Campus spans 106 acres along Kenoza Lake. The college will optimize the current landscaping practices at NECC and work to create hardscapes that involve no fossil fuel burning maintenance as well as maximize the use of drought tolerant local fauna. Additionally the college will consider spaces that could be used as community composting areas.
- **Explore Community Farming Options**  
A goodly portion of the acreage of the Haverhill campus at NECC is that of green space not currently used by students or faculty. The college will investigate engaging the local community in creating a community garden space. This will minimize use of fossil fuel burning equipment and provide a farm-to-table option for campus dining.
- **Provide “No Mow Zones”**  
The college has established a “No Mow Zone” that has been conservatively estimated at absorbing 1 ton of CO<sub>2</sub> per year. The Facilities Department will review the campus for more “No Mow Zones” and recalculate potential carbon absorption values.
- **Institute Tree Management**  
The health of campus trees is declining and changes to campus landscapes have not included introduction of healthy trees. The college will engage in securing funding for new trees and calculate the total absorption of CO<sub>2</sub> per year as the trees mature. Further efforts may include working with the City of Haverhill to become a “Tree City USA” location.

## **Renewable Energy**

- **Explore Wind Energy**  
NECC has begun to explore the development of wind energy as an alternative source of power. Currently, neither of the campus locations is identified as a potential wind energy source by the Massachusetts Technology Collaborative, which is the predominant funder of wind turbines. The college will seek out collaborative relationships with local communities in its service area that are potential sites. The target is to bring online a 1.5 megawatt wind turbine by 2014. If the power is equally shared with a local community, then approximately 15% of the college’s electricity will be offset. It is further planned that by 2019 the college will produce 3.0 MW through wind energy. The MW’s produced will again double by 2024.
- **Pursue Solar Photovoltaic**  
Solar photovoltaic (pv) will be pursued for both campuses. A plan is currently available for 100 kwh of solar pv for B Building (General Services Center) on the Haverhill campus. It is planned that at a minimum, this 100 kwh will be online by 2012. It is further planned that every five years, this amount will be doubled.

- Investigate Geothermal  
Geothermal is being investigated as a potential energy source for the Spurr Building (C Building) rehabilitation.

### **Energy Conservation**

- Install Classroom and Office Lighting Upgrades  
Beginning in the Fall of 2009, and continuing into the academic year, the college's Haverhill Campus is being retrofitted for new lighting. This new lighting will save the college 340,000 kwh of electricity per year.
- Convert Buildings  
Electric to gas conversions for buildings will save the college energy and money and will continue to be a major energy conservation method.
- Upgrade Air Conditioning Units  
Those buildings that are not centrally cooled will be fitted with new Energy Star air conditioning units.
- Install Motion Sensors for Lighting  
Many classrooms currently have motion sensors installed to automatically shut off lighting. The college plans to add them to all rooms, including bathrooms and hallways that do not have the sensors.
- Implement Holiday Recess/Energy Savings Plan  
Planned holiday shut downs of the college will save 120,000 kwh per year.

### **Recycling Efforts** (20% increase per year for five years followed by 10% per year)

- Increase Recycling Goals for Paper and Cardboard  
Currently all offices and classrooms have paper recycling receptacles, but there is a concern about consistent use. The college will increase campus awareness and facilitate meetings to improve overall cardboard recycling. There will also be an educational component for the maintenance staff.
- Increase Recycling Goals for Plastic and Cans  
The college does not currently have a formal bottle and can recycling program. A college-wide system will be implemented.
- Establish Composting Site  
This action will not take place until all land use plans noted above and food service agreements have taken place. The goal is to use some of the wooded land owned by the Commonwealth/Northern Essex to set up a composting site. This could simply compost campus waste from grounds maintenance or include on a larger scale, food scraps from

food service and the cafeteria.

### **Purchasing Policies**

- **Purchase Energy Star Computers**  
The college has committed to purchasing only Energy Star computers beginning with Fiscal Year 2010. In that year alone, 163,000 kwh of electricity will be saved. Additionally, all computers currently used at the college will have a planned BIOS (Basic Input/Output System) change to go into an energy savings mode. This will save approximately 27,000 kwh per 100 personal computers.
- **Purchase Energy Star Appliances**  
The college has committed to buying only Energy Star appliances. It cannot commit to replacing those that are still in working order, but as the need arises, they will be replaced with Energy Star units. By doing this slowly, the college will see a gradual decrease in energy use.
- **Purchase Energy Star Air Conditioning Units**  
The college has replaced 70 older window air conditioning units with new Energy Star rated AC units. Each unit will save 215 kwh per year. The total energy savings will be 15,050 per year.
- **Modify Food Service Agreements**  
The college will commit to using sustainable practices as one of the contract guidelines for new food services contracts. This may include but not be limited to contracting with a company that will use local food, recycle, and/or use only biodegradable serving goods, composts, and commits to the use of low impact purchasing.
- **Implement Sustainable Facility Upgrades**  
The college will commit to all future upgrades to office, classrooms, and college facilities being done in a sustainable manner. This will include reviewing the lifetimes of purchases, non-toxic paints, energy savings upgrades, and commitments from vendors of sustainable materials. All decisions will take into account the fiscal condition of the college.
- **Reduce Photocopying Costs**  
The college will also seek to increase the use of electronic dissemination of documents via the WEB and PDF's in order to reduce copying costs. The college will research the Return on Investment (ROI) of purchasing multiple copies of Adobe Writer.

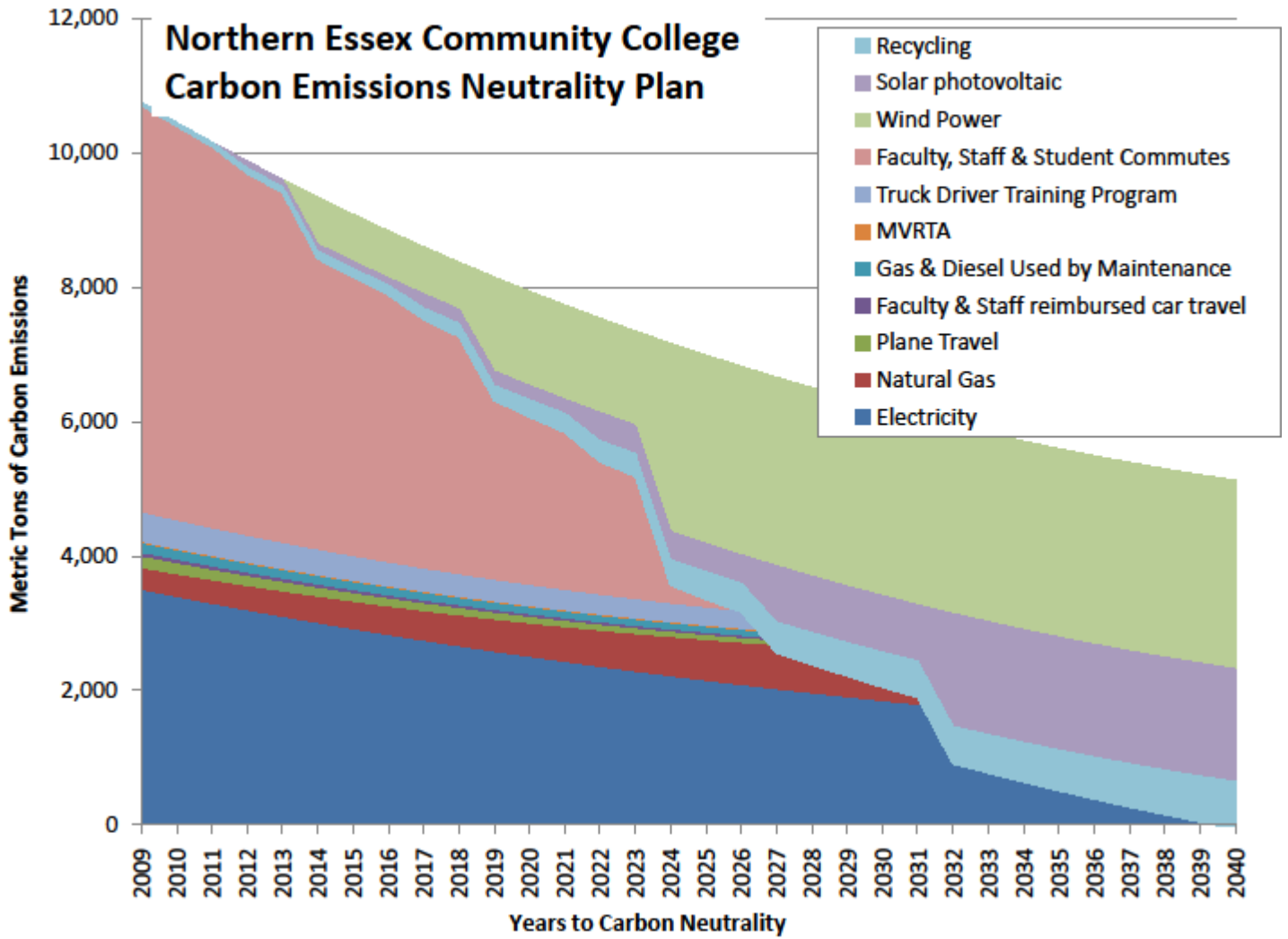
### **Education**

- **Provide College-wide Educational Opportunities**
  - The members of the EISC (Environmental Impact and Sustainability Committee) will offer a series of “Brown Bag Lunch” Seminars to inform the staff and faculty of actions taken by the Committee and their environmental impact.

- The Liberal Arts Committee will continue to implement an Environmental Awareness week each year in April where many of the courses offered spend a week on green themes.
- Two Environmental courses at Northern Essex Community College will continue to be offered: Environmental Issues (Science Department); and Green Technology (Engineering Department).
- Infuse “Green” into the Curriculum
  - Starting in the Fall of 2009, a group of faculty in the Business, Mathematics, Science, and Technology Division have begun meeting to create a “Green Infusion Plan.” The goal is to create a series of courses that have significant green content that students could opt to take and receive a “Green Minor” upon graduation.
- Modify the Commutes of Faculty, Staff, and Students (3% reduction per year)
  - One of the largest contributors to NECC’s carbon footprint is commuting mileage. The college will work long-term to create a campus culture that fosters students staying on campus between classes. This work will include student life activities and comfortable (sustainably designed) student spaces. Options for telecommuting, extended work hours, and four day scheduling will be reviewed and considered for faculty and staff.
- Promote Ride Share
  - Both the Lawrence and Haverhill campuses have designated parking spaces for students who carpool. The college will look at increasing the numbers of “prime” spaces as well as adding faculty carpooling spaces.
- Enhance Smart Scheduling Options
  - Individual college departments will continue to create student scheduling that minimizes the need to be on campus five days a week. The same smart scheduling, in conjunction with looking into telecommuting options for faculty and staff, will help minimize employee commuting.
- Increase MVRTA (Merrimack Valley Regional Transit Authority) Access
  - Both campuses have public transportation available; however, many students continue to drive to school. The college will integrate bus schedules into the smart scheduling plan as well as work to create more access and awareness of public transit options.
- Increase Use of Bicycles for Commuting
  - Increased promotion and use of bicycles and bike racks will motivate more people to cycle onto campus. In the warmer months there is an increase in students and staff cycling to campus.
- Modify Air Travel
  - The college has two primary options to consider: first, off-setting emissions generated by all flights purchased at NECC; and second, to minimize the number of trips taken

annually. It is likely that a combination of both will be needed to truly reduce the total emissions. The target is to reduce/off-set faculty/staff air travel by 5% annually.

The following graphic display shows that from 2009 to 2040 the carbon emissions produced by NECC are steadily reduced at a rate of 3% per year and how wind power, solar pv, and recycling combine to offset the remaining carbon emissions to create a carbon emissions neutral college. It is the understanding of the EISC that this Plan will be closely monitored by the Committee and modifications will be made as needed.



Data Supporting Carbon Emissions Neutrality Plan

	Electricity	Natural Gas	Plane Travel	Staff Car	trav other on-cam	MVRTA	Truck Driver	Commute	Wind	Solar	Recycling	Net Gain/Loss
2009	3508	323	176	54	145	16	442	6090	0	0	-42	10712
2010	3403	336	167	52	141	16	429	5907	0	0	-30	10401
2011	3301	349	159	51	136	16	416	5730	0	0	-60	10098
2012	3202	363	151	49	132	16	403	5558	0	-105	-73	9697
2013	3106	378	143	48	128	16	391	5391	0	-105	-87	9410
2014	3012	393	136	46	125	16	380	5230	-702	-105	-105	8427
2015	2922	409	129	45	121	16	368	5073	-702	-105	-125	8150
2016	2834	425	123	44	117	16	357	4921	-702	-105	-144	7886
2017	2748	442	117	42	114	16	346	4773	-702	-210	-166	7522
2018	2667	460	111	41	110	16	336	4630	-702	-210	-191	7268
2019	2587	478	105	40	107	16	326	4491	-1404	-210	-219	6317
2020	2509	497	100	39	104	16	316	4356	-1404	-210	-252	6071
2021	2434	517	95	37	101	16	307	4225	-1404	-210	-277	5841
2022	2361	538	90	36	98	16	297	4099	-1404	-420	-305	5406
2023	2290	559	86	35	95	16	289	3976	-1404	-420	-336	5186
2024	2221	582	82	34	92	16	280	3856	-2808	-420	-369	3566
2025	2155	605	77	33	89	16	272	3741	-2808	-420	-406	3354
2026	2090	629	74	32	86	16	263	3629	-2808	-420	-427	3165
2027	2027	654	70	31	84	16	255	3520	-2808	-840	-448	2562
2028	1967	681	66	30	81	16	248	3414	-2808	-840	-470	2385
2029	1908	708	63	29	79	16	240	3312	-2808	-840	-494	2213
2030	1850	736	60	28	76	16	233	3212	-2808	-840	-518	2046
2031	1795	765	57	28	74	16	226	3116	-2808	-840	-534	1895
2032	1741	796	54	27	72	16	219	3023	-2808	-1680	-530	910
2033	1689	828	51	26	70	16	213	2932	-2808	-1680	-567	770
2034	1638	861	49	25	68	16	206	2844	-2808	-1680	-584	636
2035	1589	896	46	24	66	16	200	2759	-2808	-1680	-601	507
2036	1541	931	44	24	64	16	194	2676	-2808	-1680	-619	383
2037	1495	969	42	23	62	16	188	2596	-2808	-1680	-638	265
2038	1450	1007	40	22	60	16	183	2518	-2808	-1680	-657	151
2039	1407	1048	38	22	58	16	177	2442	-2808	-1680	-677	43
2040	1365	1090	36	21	56	16	172	2369	-2808	-1680	-697	-61

3% cut per year based on previous year through energy efficiency lighting projects

4% inc

3% cut

3% cut

3% cut

same figure increase in demand will be offset by cleaner buses

3% cut more MVRTA better scheduling more efficient cars car pooling bikes

3% cut

a 1.5 mw wind turbine by 2014 and then a doubling of capacity every 3 years till 2024 when it will level off

a 100 kw solar pv array will be up by 2012 and then a doubling of capacity every 3 years till 2032 when it will level off

a 20% increase for the first 6 years followed by a 15% increase for the next 5 years, followed by a 10% increase for the next 5 years, followed by a 5% increase for the next 5 years, followed by a 3% increase for the next 10 years

# Appendix

Appendix A

Northern Essex Community College - Environmental Impact & Sustainability Committee

4-May-09  
Draft

**Carbon Footprint for FY 2008**

	<u>Quantity</u>	<u>Units</u>	<u>Conversion Unit</u>	<u>Pounds of CO2 Produced</u>	<u>FY2008 Metric tons</u>	<u>FY2007 Metric tons</u>	<u>Change</u>
Electricity used at all buildings Haverhill and Lawrence	8,941,600	kilowatt hours	0.829	7,412,586	3,362.3	3,185.1	177.2
Natural gas used at all buildings Haverhill and Lawrence	53,647	thermal units	11	590,117	267.7	250.2	17.5
Electricity used at all buildings that are <u>rented or leased</u>	388,794	kilowatt hours	0.829	322,310	146.2	141.0	5.2
Natural gas used at all buildings that are <u>rented or leased</u>	10,974	thermal units	11	120,714	54.8	54.7	0.1
Plane travel for all employees	430,619	miles	0.9	387,557	175.8	81.7	94.1
Travel mileage by cars in FY'07 ***	128,287	miles	X	118,513	53.8	54.6	(0.8)
gas used for lawn equipment, snow removal, Cushmans, etc	90	gallons	19.4	1,746	0.8	0.9	(0.1)
Athletic Dept gas	1,660	gallons	19.4	32,204	14.6	11.2	3.4
MVRTA bus service to campus	1,550	gallons	22.2	34,410	15.6	15.3	0.3
gas for all owned trucks and cars	3,100	gallons	19.4	60,140	27.3	30.5	(3.2)
diesel for all owned trucks and cars at NECC	185	gallons	22.2	4,107	1.9	0.8	1.1
gas used by Eagle Security (includes Shuttle Service)	9,669	gallons	19.4	187,579	85.1	89.3	(4.2)
diesel for all leased trucks and cars - Osgood St.	43,881	gallons	22.2	974,158	441.9	418.9	23.0
Commuting miles - students	11,239,090	miles	X	10,382,778	4,709.6	4,660.0	49.6
Commuting miles - faculty/staff	3,052,532	miles	X	2,819,958	1,279.1	1,365.0	(85.9)
Commuting miles - Little Sprouts parents	172,200	miles	X	159,080	72.2	54.6	17.6
Commuting miles - Lawrence daycare parents	66,360	miles	X	61,304	27.8	26.2	1.6
<b>Total =====&gt;</b>				<b>23,669,262</b>	<b>10,736</b>	<b>10,440</b>	<b>296.3 2.8%</b>

X - total miles traveled divided by 21 (average miles per gallon) multiplied by 19.4 (pounds of CO2 per gallon)  
1 Metric ton = 2,204.6 pounds

Note that NECC realized a 2% increase in enrollment over this period.  
Also, FY 2008 had a very cold winter.

NECC's Goal for FY 2008 was 10,330, so the college did not reach its goal.  
Goal calculation: 10,440 \* .97 (3% reduction) \* 1.02 (enrollment adjustment) = 10,330

**Environmental Impact and Sustainability Committee – Membership**

<b><u>Team Member</u></b>	<b><u>Campus</u></b>	<b><u>Position</u></b>
James Brocato	Haverhill	Staff
Dina Brown	Haverhill	Staff
Jody Carson	Lawrence	Faculty
Clifton Clarke	Haverhill	Staff
Alison Cody	Haverhill	Staff
Jessica Cogswell	Haverhill	Staff
Thomas Fallon, Co-chair	Haverhill	Staff
Melissa Fleming	Lawrence	Faculty
Linda Hudson	Haverhill	Staff
Martha Leavitt	Lawrence	Staff
Marcy Vozzella, Co-chair	Haverhill	Faculty
Susan Wolfe	Haverhill	Staff

Special thanks to Wendy Shaffer for editing this document and to Cathy Lavery for formatting this piece.