Spring 2010

# Sustainable Portland: Implementation Series 3

New England Environmental Finance Center

**Sustainable Portland: Implementation Series 3**

Spring 2010

A Report by Students from the Muskie School of Public Service
Community Planning and Development Program, Course in "Sustainable Communities"

*Source: http://www.skyscrapercity.com*

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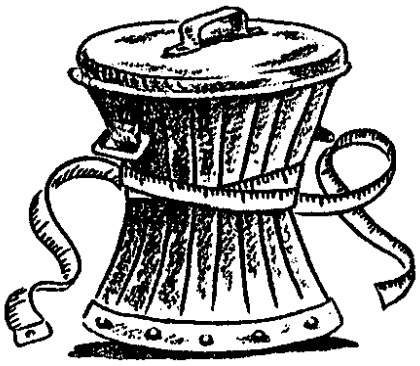
**Introduction**

*This report is the third in a series of efforts by students at the Muskie School of Public Service, Community Planning and Development Master's program, in a core class called "Sustainable Communities." In this course students seek to understand principles of sustainability and how efforts to implement Sustainability programs can become more successful. The report assembles term papers students completed on particular efforts by municipalities, universities, and other groups to achieve sustainability goals. Students worked on each project in a service learning format with real world clients. They were asked to fashion their papers around lessons learned by other organizations that could help their client groups avoid pitfalls when implementing similar sustainability-oriented programs.*

## Section 1: Portland Public Schools Waste Reduction Program

*Source: Portland City School*



*Source: Town of Branford, Connecticut*

# Financing Waste Reduction: Portland Maine School District

***Jess Berna***

*ABSTRACT: The Waste Reduction Group in Portland, Maine has been working to reduce the amount of waste being produced by the Portland School District. This report focuses on the financial aspect of this objective. Successful models for how to fund recycling, reducing and reusing, composting, and educational programs in schools and school districts are detailed. Schools in King County, Washington were a strong model for waste reduction, and they have a regular newsletter documenting their efforts and funding sources. Another model program is the Kennebunk School District in Maine, particularly Kennebunk High School. Information about this program was obtained through interviews and local publications. Other successful funding examples were found in Wake County, North Carolina; Glencoe Elementary in Portland, Oregon; Downey Unified School District in Los Angeles County; The Marshwood School in Berwick, Maine; and the Brook Knoll Elementary School in Santa Cruz, California. Based on these successful model programs, specific recommendations for how Portland's Waste Reduction Group should proceed are outlined. Finally, overall conclusions and observations about financing a comprehensive waste reduction program are offered.*

## Introduction

The Waste Reduction Group, headed by Ed Suslovic, has been working to reduce the waste stream from the Portland School District. So far, they have made a lot of progress implementing milk carton recycling and starting a pilot compostable lunch tray program. However, there is still a lot of work to be done. One of the major barriers that the group is facing has to do with financing.

Like any other group or organization, the Portland School District is a functioning system, with many interconnected positive and negative feedback loops. A system can be defined as "a group of interacting, interrelated, or interdependent components that form a complex and unified whole."[1] This complex system includes everything from student achievement levels, to athletic competitiveness, to energy efficiency and waste management practices.

Currently, the Portland School District's system produces a lot of waste, however there are ways to modify this. There are levers in every system that can be pulled in order to change course (in this case

to reduce waste), and when looking for these levers, it is important to look upstream of the problem.[2] In order to reduce waste in the Portland School District, finding effective ways to pay for this shift is an important lever, especially if it can lead to long term savings. Even though recycling programs often save money in the long run, the upfront costs of implementation can prevent a system from changing. Therefore, if the Waste Reduction Group focuses on starting programs with little or no cost to the schools, a system-wide change can become enabled.

**Funding Recommendations – Successful Models**

***Recycling***

***Bins***

The simple act of acquiring bins can be a challenge to many emerging recycling programs. This challenge is especially significant for the Portland School District because due to space issues in hallways or classrooms, many schools have very specific requirements for the shape and size of their recycling bins. For this reason, the Coco-Cola Company/KAB Bin Grant Program is a good option. This grant is open to government agencies, religious and civic organization, school, universities, and non-profit groups, and provides recycling bins for the collection of beverage container recyclables.[3] This grant allows applicants to select the type of bin that would best suit their needs, and to indicate the quantity needed. It is a competitive grant ranked on level of need, strength of the implementation plan, and recovery potential. The 2010 application deadline has already passed, but the each year's application deadline is posted on the website. [4]

The Seattle Public Schools, in King County Washington, were a recipient of this award in the fall of 2008. [5] The bins were placed in schools that did not already have beverage container recycling bins. Students on the school's "Green Team" were responsible for making sure that the bins were used properly.[6]

Schools in King County, Washington also have a partnership with the county where schools who have shown a level of dedication to waste reduction are given up to $200 worth of recycling bins, and signs from the county.[7] This alliance was possible because the county has its own waste reduction goals, and school participation is an important part of meeting these county-wide objectives.

***Milk Carton, Can, Cardboard and Paper***

Recycling milk cartons and paper is an easy way for schools to save money on trash disposal fees. Schools in King County, Washington were able to start their program by having King County pay for the school's recycling bins, educational efforts, assessment, and recognition.[8] Another example of a similar program occurred in Wake County, North Carolina. The Wake County Solid Waste Management Division (SWMD) funded a pilot recycling program in 2008. [9] This program provided recycling bins and

other necessary materials to 15 public elementary, middle and high schools in the county, and then monitored the fiscal effectiveness of these programs.[10] The Wake County SWMD had a consultant, R.W. Beck, Inc. analyze recycling tonnage and trash volume from 13 of the 15 participating schools in order to determine any changes.[11] R.W. Beck projected that the recycling program would divert approximately 13.9 tons of solid waste per week if the entire county adopted the pilot program. This would divert over 500 tons from landfills each year, and it would save the county approximately $15,000 in tipping fees. This kind of savings far outweighed any associated startup costs, and the recycling program was implemented across the county in 2004.[12]

However, all schools do not have county level funding options at this scale, so many school across the county are able to fund paper and milk carton recycling programs through their savings from trash disposal fees. For example, Glencoe Elementary School in Portland, Oregon started their recycling program in 1997 in order to fund another program.[13] This program started by students collecting returnable recyclables every week from ad hoc bins, such as cardboard boxes or marked trashcans. The program then expanded to milk cartons and other paper products. It wasn't until years later that the program acquired more formal bins and supplies.[14] This sort of informal effort is often required in order to prove that the new system will save money, or at least won't cost more money, in the long run.

***Returnables***

Collecting returnable bottles can be a quick and easy revenue stream for many schools. In fact, many schools start their recycling programs by collecting returnables, often in order to fund something else entirely. Glencoe Elementary School in Portland, Oregon is a perfect example. In 1997, this elementary school had no recycling program at all, but the school was looking for a way to offset the expenses of their Readers' Mountain Program. The school's recycling team was responsible for collecting returnables once a week, and the profits are immediately handed over the Readers' Mountain Program.[15]

**Reducing and Reusing**

***Trash***

TerraCycle is a company that pays for certain types of waste, such a candy bar wrappers, yogurt containers, and Capri-Sun pouches. [16] This program is free to join, and includes shipping costs, collection bags, and donates $0.02 for every piece of trash they receive. TerraCycle actually makes a variety of products from the trash that they collect, such as backpacks, laptop cases, and decorative ornaments.[17] This program is a simple way to reduce the waste stream, and save on trash removal fees, and to make a little extra money at the same time. Various schools in the King County School Districts participate in TerraCycle programs, and they have Capri-Sun juice pouch collections, chip bag collections, and cell phone collections.[18]

***Paper***

Double sided printing and copying is an excellent way to decrease paper usage by up to 50%. Many schools, such as those in King County, Washington have purchased machines with this capability in anticipation of the savings they will lead to in the future. Schools in King County found that the additional cost of double side capable printer and copiers paid for themselves through saved paper costs within the first year or two.[19]

Many schools, though, do not have the upfront funding to buy new printers and copiers, or they are not due to upgrade for a number of years. A number of schools in Oregon have managed to reduce their paper consumption without this equipment, and without spending any money, by simply using scrap paper for note taking, and reprinting assignments on the back side of previous documents.[20]

***School Lunches***

School lunch programs are a significant source of waste, particularly in Portland, Maine. This is a hard obstacle to overcome because it is a structural problem rather than a behavioral one. Therefore, in order for real change to occur, new equipment and materials must be purchased. This is a significant barrier to entry. Fortunately, the USDA offers grants for food service equipment.

The State of Maine Department of Education Food Service Equipment Assistance Grant is available for any piece of equipment that costs over $5000, including any associated transportation and installation fees. [21] For 2010, the state of Maine has a total of $76,036 available to distribute through this program, and the deadline is May 14th 2010. Priority for this grant goes to schools with at least a 50% eligibility for free or reduced lunches, improving meal quality, improving meal energy efficiency, and ability to meet reporting obligations.[22]

Once a school has the tools and equipment necessary to reduce lunch waste, it has been shown that they are able to continue to save money year after year as a result of waste reduction programs. A number of schools in California have been able to quantify their savings after shifting to waste free lunches. For example, Downey Unified School District in Los Angeles County was able to reduce their trash by 65% through their recycling and composting programs, which cut the District's annual trash bill in half, from $100,000 a year to $50,000.[23]

Kennebunk High School is in the process of switching from plastic silverware to reusable bio silverware that can be washed and reused hundreds of times. It is believed that this program will save the school money in the long run because they will have to purchase significantly less silverware. However, this switch does have an initial startup fee, and there is a chance that it will not be successful, so the campus' environmental club is paying for the upfront costs, and if the program proves to be successful and less expensive then the school will take over the expense, and possibly reimburse the club. The

student-led environmental club is able to pay for this expense from their "green fund" from a number of fundraisers they have conducted, including a bake sale, a green fashion show, and a smart energy expo.[24]

The annual Smart Energy Expo is the group's primary source of funding, raising about $1000 last year.[25] More than 30 companies and organizations in southern Maine that specialize in energy-saving and renewable energy technologies set up informational booths at Kennebunk High School on May 9th, 2009 in order to educate community members about how to save energy.[26] Some of the companies included: Solar Market, the Saco Solar Store, ReVision Energy, Evergreen Heat, Maine Stove and Chimney, and Katahdin Energy Works.[27] This was the second year of the expo and it had about 250 attendants and was cosponsored by Maine Partnership for Cool Communities, MSAD 71's Energy and Conservation Advisory Team, and a group of students led by freshman Hannah Rolland, who formed the school's environmental club.[28] Kennebunk High School's strategy of fundraising in order to launch new waste reduction programs within the school, with the hopes or re-cooping the expenses through savings over time, is a strategy that can be transferred to other aspects of waste reduction, such as paying for double-sided printers, or purchasing recycling and composting bins.

### *Composting*

Diverting food scraps from the waste stream is an important element of any waste reduction program. The two primary options available to schools are to have on-site composting or to pay to have a composting company take the food scraps away. A few schools in Maine have implemented composting programs, and these have proven to be cost-saving from their introduction.

The Marshwood School in Berwick, Maine has a composting agreement with nearby Bartlett Farm. Once a week, a pickup truck full of milk cartons and food scarps is transported from the school to Bartlett Farm. These food wastes are added into the farm's existing composting mix.[29]

In Kennebunk and Kennebunkport Maine, five schools send their food waste, milk cartons, rice paper plates, and napkins to Winterwood Farms in Lyman, Maine.[30] The composting program began in the fall of 2007, and the schools involved were able to save $2000 in the first month of the program.[31] Since food waste is often the heaviest portion of the waste stream, trash removal fees can decrease significantly when it is removed or minimized. In one Kennebunk elementary school, the weekly waste decreased from an average of 16 bags to 2 bags. A company called Oceanside Rubbish also transports organic waste from three schools in Wells, Maine to Winterwood Farms.[32] As long as the cost of removing compostable waste is less than the cost of removing traditional waste, immediate savings can be expected.

## Education

### *Gardens*

School gardens are a good way to increase environmental awareness for children. These programs can be particularly beneficial to schools that are interested in implementing comprehensive composting programs, such as the Portland School District. There are a number of grants available for starting or maintaining existing garden projects. One potential grant for the Portland School District is the Youth Garden Grant. This grant offers gift certificates to hundreds of schools to the Home Depot for starting gardens.[33] Schools, youth groups, community centers, camps, and clubs that intend to garden with at least 15 children between the ages of 3 and 18 are eligible to apply.[34] Grants applications are evaluated based on the following criteria: Educational focus or curricular/program integration, nutrition or plant-to-food connections, environmental awareness/education, entrepreneurship, and social aspects of gardening.[35]

The Brook Knoll Elementary School in Santa Cruz, California was a Youth Garden Grant recipient in 2009. This grant was the launching point for a special educational program called Life Lab.[36] Life Lab is a science and nutrition program based around the garden. The program allows students to connect with the outdoors through gardening, and teaches the student's valuable lesions about natural cycles.[37]

***Reduce/Reuse/Recycle***

Kennebunk High School is planning on having a representative from Ecomaine come talk to the student body about recycling in the Fall of 2010.[38] As a public service, Ecomaine has agreed to do this at no cost.[39] The purpose of the talk is to educate students about the importance of recycling and to help students understand how to recycle properly.[40] This sort of basic informational session is often free to administer, either by outside professionals, or by educated teachers or staff. However, a higher level of education is often required for a more effective recycling program.

A number of classroom lesson plans on recycling, complete with grade-level appropriate activities, are available at no cost from a number of organizations. The Solid Waste Authority in Florida is a good example: http://www.swa.org/site/recycling/school_recycling_education/school_recycling_and_education.htm.

Another great free and local resource is the Maine State Planning Office. Their Waste Management and Recycling program has a number of resources for educators at http://www.maine.gov/spo/recycle/schools/curriculum.htm.These resources include interactive online lessons and full curriculums on waste management issues from the "Pathways to a Sustainable Future" through the Chewonki Foundation, EPA curriculums and resources, and model curriculums from other states with successful recycling programs.[41]

In order for schools to go further into environmental education, the EPA offers Environmental Education Grants in every state. These grants can be used to educate teachers and custodial staff, and they

can also be used to develop courses and curriculums, or to fund field trips or projects.[42] In 2004 Camden, Maine received a $4,500 grant for enhancing the public school curriculums in natural science and ecology.[43] The program is designed to bring kindergarten-through-fifth-graders outside to learn about native plant and animal habitats.[44] The EPA Environmental Education grants are available for local education agencies, state education or environmental agencies, colleges and universities, and other non-profits.[45] A detailed application and projected budget must be submitted, usually by December.[46]

***Waste Reduction Group Action Items***

Schools and organizations across the country have provided a strong model for how to finance a comprehensive waste reduction program. Based on these best practices, there are a number of next steps that Portland's Waste Reduction Group (WRG) can take in order to fund waste reduction in the Portland School District. Below is a list of potential action items:

***Recycling***

- Apply for the Coco-Cola Company/KAB Bin Grant in order to provide proper bins for recycling bottles and cans on behalf of the Portland School District.
- Communicate with the City, County, and perhaps the State about the possibility of them providing recycling bins in order to help them meet their own waste reduction goals.
- Continue to expand the milk carton recycling program to more schools within the district.
- With Troy Moon, communicate with Clynk or another local bottle return program about working schools.

***Reducing and Reusing***

- Encourage a school in the district to sign up for free TerraCycle bags in order to reduce the amount of waste going into the trash stream. If this proves successful, work to expand this program district-wide.
- Work with a school to implement a system for using scrap paper whenever possible.
- Help a school work the expense of double sided printers and copiers in the school budget, or fundraise to accommodate this upfront expense.
- Ron Adams should continue to expand the use of compostable lunch trays through Huhtamaki with donations, grants, and fundraising efforts. Work with schools to get them to agree to pay for the trays if they prove to save money in the long run.
- Ron Adams should apply for a State of Maine Department of Education Food Service Equipment Assistance Grant in order to purchase dishwashers.

***Composting***

- Ron Adams, Troy Moon and the WRG should continue to work with Organic Alchemy Composting LLC in order to work out a compost pick-up system.

- If there are upfront costs associated with working with Organic Alchemy Composting LLC, consider fundraising to overcome these initial barriers.

***Education***

- The WRG should contact Ecomaine about giving presentations to schools on waste reduction.
- The WRG and David Hilton should find lesson plans and activities from the Maine State Planning Website, and add them to existing courses.
- The WRG should assist the school district in applying for an EPA Environmental Education Grant.

**Conclusion**

Financing a new waste reduction program in a school district can be a challenge. Even when programs save money in the long run, it is often difficult to change the status quo. Some implementation strategies cost money, while others save money. When moving forward, it is important to start with programs that save or generate money, and keep track of how much. These funds can then be used for upfront expenses for other programs. For example, money earned through returnable bottles can pay for reusable silverware in lunchrooms. Another important lesson from model programs is the importance of applying for grants in order to kick start programs.

Successful model programs have proven that reducing waste at the school district level can save a significant amount of money. Therefore, once some of these programs are implemented and the savings is self evident, a system-wide transformation can occur. Finding the simple ways to pay for waste reduction programs is an essential lever to pull in order to alter the current system, and this can definitely be done in Portland by looking at successful models, and considering their applicability to Portland's unique set of strengths and obstacles.

**References**

Anderson, Virginia, and Lauren Johnson. ***Systems Thinking Basics: from Concepts to Causal Loops.*** Waltham, Mass.: Pegasus Communications, 2007.

Brook Knoll Elementary School. ***Welcome to Brook Knoll Elementary School.*** Accessed online April 24, 2010. http://www.brookknoll.santacruz.k12.ca.us/School/special-programs.htm.

King County, Washington. ***February 2010 – Class Act Newsletter – Education & Schools Assistance – King County Solid Waste Division.*** Accessed online April 24, 2010. http://your.kingcounty.gov/solidwaste/education/classact/current.asp.

Flaherty, Emily. Personal interview April 27, 2010.

US Environmental Protection Agency . ***How to Apply | Environmental Education | US EPA***. Accessed online April 28, 2010. http://www.epa.gov/enviroed/grants_apply.html.

Maine.gov. ***Maine Child Nutrition***. Accessed online April 24, 2010. http://www.maine.gov/education/sfs/equip.html.

Sierra Club, ***Maine Sierran***. Publication. 3rd ed. Vol. 7. 2009.

Portland: Oregon Department of Environmental Quality Publication. Oregon Green School Tools: Creating Healthy School Environments through Resource Efficiency. 1997.

Ramsay, David. "Cafeteria Composting in Southern Maine." Biocycle May 10, 2008.

Maine.gov. ***Recycling Curriculum, Activity Books, and Online Games***.Accessed online April 28, 2010. http://www.maine.gov/spo/recycle/schools/curriculum.htm.

Glencoe Elementary School. ***Recycling***. Accessed online April 24, 2010. http://www.glencoe.pps.k12.or.us/.docs/pg/10724.

Senge, Peter M. The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization. New York: Currency, Doubleday, 1994.

King County, Washington. Solid Waste Division. ***Program Benefits and Assistance from King County's Green Schools Program – King County Solid Waste Division***. Accessed online Apr 28, 2010. http://your.kingcounty.gov/solidwaste/greenschools/assistance.asp

TerraCycle. Accessed online April 24, 2010. http://www.terracycle.net.

The Coca-Cola Company/***KAB Bin Grant Program***. Accessed online April 24, 2010. http://bingrant.org/.

Environmental Protection Agency***. Two Maine Groups Receive Environmental Education Grants***. October 12 2004. Accessed online April 28, 2010. http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/85e66e447ec17ce8852570d1006b0b96!OpenDocument.

Wake County: UNC Environmental Finance Center.***Wake County School Recycling Program Case Study***. 2009 Publication.

Wastefreelunches.org. ***Waste-Free Lunches***. Accessed online April 24, 2010. http://www.wastefreelunches.org/SchoolSavings.html.

Welcome to KidsGardening! ***Garden Resources, Gardening for Families, Teacher's Garden and Shopping for Gardening***. Accessed online April 24, 2010. http://www.kidsgardening.com/grants.asp.

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[1] Anderson et al. 2007
[2] Senge 1994
[3] http://bingrant.org/
[4] ibid
[5] Waste Division 2010
[6] ibid
[7] Solid Waste 2010
[8] Solid Waste 2010
[9] Wake 2009
[10] ibid
[11] ibid
[12] ibid
[13] Recycling 2010
[14] ibid

[15] ibid
[16] TerraCycle 2010
[17] ibid
[18] Waste Division 2010
[19] Waste 2010
[20] Oregon 1997
[21] Maine 2010
[22] ibid
[23]www.wastefreelunches.org
[24] Flaherty 2010
[25] ibid
[26] Maine 2009
[27] ibid
[28] ibid
[29] Ramsay 2008
[30] ibid
[31] ibid
[32] ibid
[33] Welcome 2010
[34] ibid
[35] ibid
[36] Brook Knoll 2010
[37] ibid
[38] Flaherty 2010
[39] ibid
[40] ibid
[41] Recycling Curriculum 2010
[42] How to 2010
[43] Two Maine 2004
[44] ibid
[45] How to 2010
[46] ibid

Financing Waste Reduction Example Compost Worksheet

| CONSTANTS | |
|---|---|
| Tipping Fee | $140 |
| Compost Fee | $20 |
| Compost Haul | $150 |
| Waste Haul | $100 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Solid Waste** | $100 | $80 | $75 | $60 | $44 | $25 | $20 | $60 | $90 | $80 | $80 | $30 |
| **Compost** | $0 | $20 | $25 | $37 | $60 | $0 | $0 | $0 | $35 | $44 | $40 | $22 |
| **Recycling** | $20 | $25 | $18 | $22 | $20 | $5 | $7 | $17 | $20 | $25 | $30 | $17 |
| **Total** | $120 | $125 | $118 | $119 | $124 | $30 | $27 | $77 | $145 | $149 | $150 | $69 |
| **Compost Diversion** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Recycling Diversion** | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **Diversion Rate** | $0 | $0 | $0 | $0 | $1 | $0 | $0 | $0 | $0 | $0 | $0 | $1 |
| **Solid Waste Disposal Cost** | $14,000 | $11,200 | $10,500 | $8,400 | $6,160 | $3,500 | $2,800 | $8,400 | $12,600 | $11,200 | $11,200 | $4,200 |
| **Compost Disposal Cost** | $0 | $400 | $500 | $740 | $1,200 | $0 | $0 | $0 | $700 | $880 | $800 | $440 |
| **Solid Waste Hauls** | $13 | $10 | $9 | $8 | $6 | $3 | $3 | $8 | $11 | $10 | $10 | $4 |
| **Solid Waste Haul Cost** | $1,300 | $1,000 | $900 | $800 | $600 | $300 | $300 | $800 | $1,100 | $1,000 | $1,000 | $400 |
| **Compost Hauls** | | $2 | $2 | $3 | $5 | | | | $3 | $4 | $3 | $2 |
| **Compost Haul Cost** | $0 | $300 | $300 | $450 | $850 | $0 | $0 | $0 | $450 | $600 | $450 | $300 |
| **Total Cost** | $15,300 | $12,900 | $12,200 | $10,390 | $8,810 | $3,800 | $3,100 | $9,200 | $14,850 | $13,680 | $13,450 | $5,340 |
| **Compost Diversion Savings** | $0 | $2,400 | $3,000 | $4,440 | $7,200 | $0 | $0 | $0 | $4,200 | $5,280 | $4,800 | $2,640 |
| **CDS Less Hauling Costs** | $0 | $2,100 | $2,700 | $3,990 | $6,350 | $0 | $0 | $0 | $3,750 | $4,680 | $4,350 | $2,340 |

# Environmental Education in Public Schools: Best Practices

***John Stoll***

*ABSTRACT: Maine is a treasure trove of environmental assets, and it is important that her children are given the knowledge of how to be proper stewards. This report is an attempt to show best practices in public school environmental education. The following locales were studied: California's comprehensive EEI curriculum, Oregon's Green Schools assets and resources, and Troy Howard Middle School's garden project in Belfast, Maine. There are many levels that a school can approach environmental education from, and only that school will know what is best for them. Any of the methods documented in this report could serve as a guide for the Portland Waste Reduction Group.*

*Source: www.greenercorners.com*

## Introduction

*"You must be the change you wish to see in the world." –* ***Mahatma Gandhi****.*

Parents, teachers, and even state governments are beginning to take the words of Mahatma Gandhi to heart. We as a society now understand the importance of environmental stewardship, and even more importantly, we are beginning to realize how important it is to instill these beliefs into our children. I can remember, as a child growing up in Wichita, KS, celebrating Earth Week at school. One week of the year we were treated to gymnasium assemblies warning us all of the dangers of chlorofluorocarbons

(CFCs); and classroom activities that sought to teach why littering was so bad. Before moving on to middle school, I can even remember one of my teachers instructing the class on "the 3 R's," and how to go about getting our parents involved.

Today steps have been and are actively being taken to ensure that future generations learn their responsibilities on this planet. Some of the steps have been quite large; the state of California is implementing a comprehensive curriculum that will involve environmental education in all subjects. Some places have provided a plethora of tools for educators to use to assist in developing a quality environmental education program. Finally, some schools have developed wonderful education programs that will send children forward with a wealth of education that others will never have.

The purpose of this report is to provide the Portland Waste Reduction Group with a chapter that will expose them to some of the quality environmental education programs that exist around the country and in their own backyard.

**California (Education and the Environment Initiative)**

One of the most comprehensive environmental education programs being implemented in the United States today is the Education and the Environment Initiative (EEI) in the state of California. In 2003, the California state legislature signed into law a mandate that requires California schools to implement environmental education into all subjects in public institutions serving grades K-12[1].

This law should significantly alter the face of environmental education in the classroom. With most environmental education programs in the United States being supplemental, the EEI makes it possible for students to attain "environmental literacy" while meeting minimum learning requirements. Since there has long been a conflict for educators to be able to juggle what they may feel as an obligation to increase student awareness of environmental responsibility with the fact that they must achieve certain standards; the EEI takes pressure off of teachers, and by combining these two obligations.

The groups that are responsible for the implementation of this ongoing process are California's Department of Education; its EPA; the California State School Board and California Waste Management Board.

***Phases***

For implementation, California has broken this massive process up into seven different phases. Four have since been completed, and they are currently working on Phase 5.

*Phase 1: Environmental Principles and Concepts*

- The purpose of the Environmental Principles and Concepts is to establish the core material that will serve as the basis for establishing a curriculum that is aligned with the state learning standards. These key principles were approved from this process:

- People depend on natural systems;
- People influence natural systems;
- Natural systems change in ways that people benefit from and can influence;
- There are no permanent boundaries that prevent matter from flowing between systems; and finally principle number;
- Decisions affecting resources are complex and involve many systems[2].

*Phase 2: Alignment of Environmental Principles and Concepts to state academic content standards*

- In Phase 2, K-12th grade subject matter experts reviewed how effectively the aforementioned principles lined up with California academic content standards. The purpose of this phase is to ensure that all new content that will be incorporated from the Environmental Principles and Concepts will not be in conflict as the state moves forward with creating the actual curriculum.

*Phase 3: Development of a Model EEI Curriculum plan*

- During the third phase, hundreds of individuals and organizations were involved in the development of the model plan. The purpose of the model plan was to create a document that would explain the entire process that would eventually lead to the implementation of a curriculum.

*Phase 4: Development of EEI Curriculum*

- During the fourth phase, writers, consultants, and designers collaborated on a finished curriculum. The curriculum was sent out to volunteer school districts around California for field testing and editing. Once complete, the curriculum was submitted to the state board of education for approval.

*Phase 5: Disseminate EEI Curriculum and Professional Development*

*Phase 6: Assessment of EEI Curriculum*

*Phase 7: Ongoing Outreach of EEI implementation*[3]

The Education and Environment Initiative in California is not necessarily a recommendation for the Portland Schools Waste Reduction Group (WRG). The state of California's approach to the topic of environmental education is more of an example of what Maine could aspire to. The phases that were used to implement the EEI curriculum could serve as an outline at a smaller level for the WRG to work with teachers and the school district to create a more sustainable approach to environmental education. To create a long term and lasting approach to this issue, it remains important to come to a consensus about what environmental principles and concepts are important in an education in Portland, Maine (Phase 1). In order to successfully implement these principles and concepts it would be important to align them to Maine's Learning Results (Phase 2), and it would be beneficial to create an implementation model curriculum plan working alongside curriculum experts and educators (Phase 3). The author does not claim to have any formal training in education nor does he know the specific needs of the Portland School District so these are to be taken as merely suggestions that might guide experts to a suitable plan for

Portland. The rest of the phases are self-explanatory, as the process will involve carrying out what is written in the State of California's statutes. This should illustrate why this lesson is important to WRG for long-term possibility regarding environmental education in the Portland schools.

***A link to Sustainable Communities***

Throughout the EEI model curriculum paper, they discuss how important it will be to start thinking about systems. This instantly brought to mind the first reading for Professor Sam Merrill's class, Anderson and Johnson's ***System's Thinking Basics: From Concepts to Causal Loops***. Specifically, this part addresses Concept 4 of the EEI's Principles and Concepts section. Anderson and Johnson define a system as "a group of interacting, interrelated, or interdependent components that form a complex and unified whole.[4]" This easily applies to the environment, and helps to explain why it is so important for students to understand how environmental systems interact with each other.

***San Francisco, California***

In addition to a completely comprehensive education system, several towns have developed some great programs to educate children about environmental responsibility. In San Francisco, the City has established a public education program that assists schools with activities and curriculum guides. The unique aspect of the San Francisco program is their use of Phoebe the Phoenix. Phoebe is a colorful mascot who travels to local elementary schools to teach about the environment[5].

The San Francisco environmental program is an example of how a city can use creative ideas, such as a physical mascot, to get children actively interested. A bright and colorful bird could be more appealing than just another boring adult and may grab the children's attention and be able to keep it.

**Oregon Green Schools/Oregon DEQ/Metro**

In 2009, Oregon followed the lead of California in adopting a comprehensive environmental literacy law entitled "No Child Left Inside," which is to be implemented by October of 2010.

While Oregon works to make their environmental education more comprehensive, they already have developed a host of tools for educators to use at the local level. One of the best tools that Oregon educators have at their disposal is the Oregon Green Schools Program. Oregon Green Schools is a nonprofit organization that has 25 regional coordinators placed throughout the state. These coordinators assist member schools with waste audits and recommendations for green lesson plans[6]. WRG is currently working with a similar organization here in Maine, and that organization is EcoMaine. Through a continued partnership with EcoMaine; WRG and the Portland school district could develop an even more comprehensive education assistance program that would greatly resemble the Oregon Green Schools program.

***Metro***

In the Portland, Oregon area Metro, an elected regional government body has coordinators that work with Oregon Green Schools to promote recycling education within the schools. For kindergarten through third grade, Metro provides free puppet shows to help educate students on various topics such as recycling, composting, and green gardening strategies. Metro also offers classroom presentations for grades one through five that cover topics ranging from waste reduction to the environmental impacts of common household products. An example of a relevant lesson would be "Composting in the Classroom" which encourages an understanding of nature's recycling methods, through hands-on activities. In addition the informative lessons that Metro provides free of charge, it helps schools coordinate field trips to local waste reduction facilities such as landfills, and recycling centers[7].

***Oregon DEQ Curriculum***

The Oregon Department of Environmental Quality collaborated with the Oregon Department of Education to create "Rethinking Recycling: an Oregon Waste Reduction Curriculum." This document was created to provide educators throughout the state with sample lesson plans that emphasize recycling and environmental education for elementary aged children. The lesson plans in Rethinking Recycling are all-inclusive, addressing environmental education from all perspectives. The following are a few examples of their lesson plans for grades K-3. One of their science lessons, called "Our Natural Resources" has students discuss and discover the difference between natural resources and fabricated items. A combined science and math lesson plan called "Cycles in Nature" has students learn about, and count nature's cycles, such as tree cycles and water cycles. In an English lesson plan entitled ***Native American Culture***, students learn about Native Americans and the relationship they share with the environment. In a social studies lesson plan called "What is Trash," students learn what garbage is and how waste could become a productive resource. One of their art lesson plans entitled ***Primary Songs***, has students write and learn songs with familiar tunes about recycling and reusing. They also have a health lesson plan called, "Hazardous Products Substitutes." In this lesson, students learn about hazardous products and how much of each product would make for a health risk, and then they learn safer substitutes[8].

***Political Issues in Oregon***

Oregon did not seem to have to deal with a lot of political opposition to their various environmental education programs. When asked about any political opposition that might have been encountered, Freda Sherbourne, a Metro waste reduction education specialist and Oregon Green Schools regional coordinator had not encountered any.

*"I do not recall encountering any political opposition to doing waste reduction activities in schools. I am in classrooms at the invitation of classroom teachers, or doing assembly programs at the invitation of principals. Folks seem very happy to have an 'expert' come into the classroom to help with these concepts. We strive to stick to the facts about human impacts on the environment and what choices there are for decreasing our impact. Staying away from what's good and what's bad reduces or eliminates the sense that we are preaching to the students."*[9]

This is an example of how important it is to make sure that both school administrators and teachers take the lead when it comes to involving outside educators assisting public schools.

***Environmental Education applied at the local levels***

When it comes to waste reduction education at the local and classroom level the educators seem to prefer to use the assistance of the Oregon Green Schools coordinators and the expertise of their individual instructors. Sue Shade, a resource conservation specialist in Beaverton, Oregon states, "Curriculum instruction on waste reduction and recycling is conducted by certified staff… These types of class are inspired by teachers or driven by parents that have a teacher's ear. We shy away from the 'c' word – curriculum – but try to offer websites to teachers that can be informative and provide ideas for blocks of study.[10]" Similarly, Jan Rankin, the Schools Recycling Coordinator in Gresham, Oregon says that the "creative juices and enthusiasm for the environment displayed by individuals rather than curriculum adoption at the district level" drive most classroom instruction[11].

Both of these waste reduction specialists caution that these programs are the first to be cut, as funding becomes shortened and educational benchmark issues come into play. Additionally, because concerned teachers and parents drive these programs, they can be lost quite easily when staff move on and children move forward with their education.

Oregon Green Schools is an excellent source for expertise, lesson plans, and general waste reduction education. At the same time, Oregon Green Schools and Metro's education programs also illustrate that no matter how much expertise is at a school district's disposal, sustaining long-term education programs can be problematic. The most important lesson to take away from the Oregon example is that if a school district desires to maintain an element of environmental education consistently within their walls, it is vital to create and maintain a sustainable energy for the future.

**Connecticut**

Tomlinson Middle School in Fairfield Connecticut puts on several solid waste management workshops throughout the year. These are operated by the Southwest Connecticut Regional Operating Committee (SWEROC). They are primarily designed to educate teachers in recycling activities but on occasion they are put on for children. The instruction takes place in both a classroom setting and outdoors.[12] This example shows how a specific school can partner with an interested party to create an

education option for teachers. A day-long workshop that emphasizes environmental education, and explains how to incorporate these concepts into a classroom setting would be a simple and inexpensive method to get people thinking about environment-oriented education.

**Maine**

In Belfast, Maine, the Troy Howard Middle School established a garden project during the 2001-2002 school years. The project has been expanding and evolving since then, and takes place entirely on the school's 86 acre site. Students learn the importance and potential impacts of eating and growing locally farmed food. The garden project additionally attempts to satisfy Maine science, math, technology, and social studies results throughout their curriculum. Students break into different divisions based on expertise and interest.

One of these is a composting division, in which students learn about all aspects of composting. The goal of the Compost Team is to reduce the organic waste stream in the kitchen, student dining areas and teachers' room. The Compost Team leaves class early to be first in line for lunch so that they are prepared to collect compostable items. They then record the amount of food scraps, and bury them in the composting trench and cover with soil. Between 2003 and 2010 students harvested over 48,000 pounds of food from the garden enriched by this compost; and a large percentage of the food is sold into the school lunch program. Additionally, students assist local soup kitchens and social welfare agencies with food donations and volunteering.[13]

Troy Howard Middle School is an example of what motivated and empowered teachers can accomplish, given the support of administrators and parents. This program began as a single class, and developed into a massive and self-sustaining, fully-functional farm. In addition to the financial success of The Garden Project; it has also developed into a broad ranged learning experience to teach children about multiple subjects. The WRG could take this as a means to get to the comprehensive curriculum that they desire, through an incremental process.

**Justification for Environmental Education**

One of the continuing themes found throughout this research was that most environmental programs were cut due to teachers' needing to make time to prepare students to attain high enough scores on standardized tests, and general concerns that environmental education would interfere with learning of emphasized subjects. A study was completed by The Pacific Education Institute comparing academic results of schools prior to instituting environmental education and afterwards. The results of this study showed that 73 out of 77 schools that participated in environmental education programs had higher scores on standardized tests in at least one subject.[14] Although the listed improvements were not greatly

increased, this study at least shows that environmental education will not hurt students current learning, and in fact can improve it.

**Conclusions**

The purpose of this document has been to expose the WRG to the various education programs that function around the nation, and to provide a possible tool for what may be possible today in Portland, Maine. California's integrated Comprehensive Curriculum Law was included as a tool for educators to use to possibly implement a smaller scale program in the Portland school district. The examples from Oregon provide a reference for possible future interactions between Portland schools and regional bodies such as EcoMaine, and the Maine State Planning Office. Finally the Troy Howard Middle School shows just how far teacher-driven programs can take environmental education right here in Maine.

**A Link to Sustainable Communities**

Doppelt writes, "to overcome resistance and transform organizational culture, sustainability change leaders must find the key leverage points.[15]" In order for a successful environmental education curriculum to be implemented, it will be important for WRG to find out exactly what these points may be within the Portland Public School System. Doppelt says that these are not easy to find, and at times can be counter-intuitive, but they must drive fundamental change within the organization. This concept may become quite important as this movement continues forward. There will undoubtedly be teachers, parents, and even students who will be uncomfortable changing the system, and will resist. Only the qualified individuals involved with the Portland School District will be able to tell what the key leverage points are, but it will be important to address in order to successfully execute an education plan.

**To Do List - Portland Waste Reduction Group**

- Work with interested parents, teachers, and students to come up with a plan for what is best regarding education opportunities at your specific school. None of the model plans that are listed in this report will satisfy all of the needs of any specific institution in Maine. It will also be beneficial in avoiding any possible conflicts if all affected parties are involved in these steps.
- Contact the Chewonki Foundation in Wiscassett to obtain a copy of "Pathways to Sustainability," a K-12 curriculum developed with the state of Maine. If this is not available, as it was not for the author, a good alternative may be the Solid Waste Resource Guide for Massachusetts Schools. Additional curriculum guides are available from Oregon, Washington State, California, and Arizona; but Massachusetts will better address the New England environment, and more closely fits Maine's learning standards.
- Get the support of the principal and involve the administration in your plans. In all cases that were researched for this project, not one curriculum idea was successful without the support of the principal.
- Find interested teachers, and get them to take the lead; their energy is what will carry this to completion. All successful programs that were studied for this report were the results of energetic and creative educators.

- In the beginning, stay away from the "C" word (curriculum) and try to approach this incrementally. Start small. This prevents the program from being interfered with in the early stages while it is still finding its legs, allowing energy to begin to develop and grow.

**References**


Anderson, V. and L. Johnson. ***Systems Thinking Basics: From Concepts to Causal Loops.*** Pegasus Communications, Waltham, 1997 pp. 1-16.

Bartosh, Oksana. "Improving Test Scores Through Environmental Education." ***Applied Environmental Education and Communication***. 5. (2006): 161-169.

Doppelt, B. 2003. ***Leading Change Toward Sustainability***, pp. 70 – 86, 243 – 248. Greenleaf Publishing, United Kingdom.

"Education and the Environment Initiative Homepage." ***California Environmental Protection Agency***. California Environmental Protection Agency, 04 may 2010. Accessed online April 12, 2010. http://www.calepa.ca.gov/education/eei/.

Elliot, Ian. "Much Ado About Recycling." ***Teaching PreK-8***. 1993.October (1993): 52-54. Print.

"Oregon Green Schools Home." ***Oregon Green Schools***. N.p., n.d. Accessed online March 9, 2010. http://www.oregongreenschools.org/.

Rankin, Jan. April 13, 2010 email communication.

"Recycle at School." ***Metro***. N.p., 2010. Accessed online April 20, 2010. http://www.oregonmetro.gov/index.cfm/go/by.web/id=546.

"Rethinking Recycling." ***Oregon Department of Environmental Quality***. Oregon DEQ, n.d. Accessed online April 1, 2010. http://www.deq.state.or.us/lq/education/curriculum.htm.

"SFEnvironmentkids." ***SFEnvironment***. City and County of San Francisco, n.d. Accessed online May 8, 2010. http://www.sfenvironmentkids.org/ourhome.htm.

Shade, Sue. April 12, 2010 email communication.

Sherbourne, Freda. April 12, 2010 email communication.

State of California. ***Education and the Environment Initiative***. , 2003. Accessed online May 5, 2010.

"THMS Garden Project." ***School Garden Project***. N.p., 2010. Accessed online May 4, 2010. http://www.schoolgardenproject.com/


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[1] Education and the Environment Home Page
[2] Education and the Environment
[3] Education and the Environment Homepage
[4] Anderson and Johnson, p. 2.
[5] SFEnvironmentkids
[6] Oregon Green Schools
[7] Metro
[8] Rethinking Recycling

[9] Sherbourne
[10] Shade
[11] Rankin
[12] Elliot pp 52-54
[13] School Garden Project
[14] Bartosh
[15] Doppelt p. 78

# Portland Public Schools Waste Reduction Program: Operational Issues

***Thea Youngs***

*ABSTRACT: The Portland, Maine public schools have a huge opportunity to increase community sustainability by implementing a plan for waste reduction throughout the district, even if there are many challenges. This paper will examine operational issues surrounding implementing a strong composting and recycling program in the district, such as how to gain support for the program from a wide spectrum of the school community, and methods to create a consistent district wide-system. The paper will examine elements from several case studies: San Francisco, California; Kennebunk, Maine; Mansfield, Connecticut; and a program at Cornell University. Information comes from a mix of site visits, phone interviews, and online guides and information. Major conclusions include the importance of a consistent system throughout the district, the importance of educational programs prior to implementation and a focus on student and staff involvement.*

## Introduction

Implementing a strong waste reduction program throughout a school district is not an easy task, but it provides huge opportunities to make both the district and community at large more sustainable, not just in terms of smaller environmental impact, but also from economic and social perspectives. Compared to other settings, there is a huge opportunity to educate children on environmental issues and to instill practices that will last beyond being in school. Economically, waste reduction offers the opportunity for cost savings for the district from disposal costs. Finally, it offers the chance to reduce the environmental impact of throwing away large amounts of non-recyclable waste, or food scraps that could provide a valuable commodity.

*Source: blogs.seattleweekly.com*

## Overview of the situation in Portland

Unlike many school districts, Portland public schools have a centralized kitchen, where all meals for the district are prepared. This makes it very challenging to adopt re-usable trays and silverware, because in most cases dirty dishes could not be washed on site, and could not be returned in the same truck that food is shipped in because of health regulations. Without the expense of installing dishwashers at individual schools, it is difficult to use reusable dishware to reduce waste. Additionally, as facilities

vary significantly from school to school, not all students eat in a cafeteria. Some schools (Longfellow and Reiche) do not have a cafeteria and most students eat in classrooms. Other schools, such as Deering High School, have an open campus; many students leave during lunchtime or do not necessarily eat at the cafeteria. Thus, designing a program for lunch waste is a particular challenge.

Space constraints are a further challenge at certain schools, such as Longfellow; they do not have space for substantial additional infrastructure. Finally, the urban nature of many schools means that it would be challenging or impossible to provide onsite composting on the scale necessary to deal with all food scraps produced by individual schools, meaning that most compost would likely to be dealt with offsite, even if smaller scale bins could be used wherever possible largely as an educational tool.

**Case Studies**

***Case 1: San Francisco, California Public Schools***

The San Francisco Public Schools have one of the oldest and most successful large scale composting programs in the country. The program, which is called “food to flowers,” separates recyclable and compostable waste using a three-bin system that ties in with the larger San Francisco waste management system. The program includes a comprehensive education program, and incentives to schools to reduce waste as much as possible. Additionally, the district has managed to hold waste costs constant through use of the program, despite inflation and increased enrollment. This program is successful because of several elements, such as a strong education system, incentives for schools and staff, and the use of a consistent three-bin system throughout the district.

The district implements an education program for students and staff at the school prior to implementation. This program explains the purpose of composting and how to use the three-bin system. It has a mascot, Phoebe the Phoenix, who visits schools and is featured in a short educational film that schools can use. The program uses the idea of ‘worm food’ to help children think about what is compostable and what is not. “If a worm can eat it, it goes in the compost bin (Food to Flowers: Compost and Recycle with Phoebe the Phoenix).” Additionally, the district trains older elementary students to act as compost monitors and to help younger students compost correctly, which reduces some burden on staff, and allows children to feel responsible for the project.

Additionally, the district recognizes schools and staff that have been successful at waste reduction and composting. Staff members are given individual recognition for supporting the project. There is a plan in the works to partially tie cost savings to individual schools. If schools are saving money through the composting program, part will be directed back as additional funding to that individual school, providing incentives for schools to work at implementation.

The program uses a coherent color-coded bin system throughout the district, with bins that are similar to those used by the city as a whole. Waste stations have three bins: One for single stream recyclables (bottles, cans, and clean paper), one for compost, and one for other waste. The program makes extensive use of biodegradable trash bags (biobags), which keeps the system cleaner than if bins that had to be washed frequently were used.

The program has been very effective at the elementary level, but still has challenges at the upper levels, where there is less buy-in from students. For the most part, there has been support for the project from the school community. There were reservations from some members of the custodial staff. The district negotiated with the custodial staff's union prior to implementation, and reached an agreement where custodial staff would not have to be responsible for emptying small compost and recycling bins into larger ones, but rather that this would be handled by teachers and students.

The San Francisco case provides several insights for the Portland Public Schools. A clear and well-designed educational program is very important for program success, and should be a major component of designing a workable system. The district should look for as many ways as possible to allow individuals to have a stake in making the program successful, from students who serve as monitors to staff who can see a benefit to the school.

Finally, the program has a clear and consistent three-bin system that remains constant throughout the district, and is in many ways similar to the larger citywide waste disposal system. This system could likely work well for the Portland schools. Program organizers should be in communication with city officials as well, so that the color-coding and system used in the school district is similar to what students are encountering at home. If the city were to implement a form of curbside composting, the color-coded system should be similar to that used at the school district level.

***Case 2: Mansfield Middle School, Mansfield Connecticut***

Mansfield Middle School has adopted an onsite composting system for the school, and has developed a comprehensive guide to setting up a composting system.[1] Although onsite composting is not likely to be a major part of the work in Portland, the guide offers many valuable process-oriented suggestions for getting a program up and running with support from many different members of the school community, and integrating it into the culture of a school, both of which are important aspects of setting up a program.

Prior to setting up the program, the school created a steering committee composed of staff members and administrators who were committed to making composting happen, but also particularly making sure that there were representatives from various departments of the school, such as custodial and

kitchen staff. The committee is in charge of organizing the school program, searching for funding, and evaluating its effectiveness as it gets started, tweaking things that are not working.

To bring teachers on board, the committee created a PowerPoint presentation that was shown before school opened, and additionally created a second one that could be used in classes in order to make explaining the new system simpler. The guide suggests speaking to teachers, lunch, and custodial staff at every step of implementation, and to ask for suggestions as to how it could work better from their end, in order to make it as easy as possible and to ensure that staff do not feel ignored in the process. At the time of the report, the school was investigating the possibility of making composting supervision a duty of teachers in lieu of bus or recess duty.

The school formed an Afterschool Compost Club to enlist students to help set up the program and devise ways to get the message about composting across. They created posters and came up with compost 'tips of the week' that were broadcast as part of school announcements. Other ways of increasing student support included a Compost Awareness Week, with names of students who have composted correctly entered into a drawing for a free ice cream, and a few names drawn every day. To enlist volunteers to assist with monitoring and taking out composting, volunteers were entered into a drawing to receive a basketball signed by the UCONN men's basketball team.

The report suggests enlisting support from parents by putting out announcements in school newsletters asking parent and community volunteers to help in the process of monitoring composting. Since composting in this case was done on site, some of the compost was used as part of a plant sale and fundraiser by the Mansfield PTA.

The information from Mansfield does not offer specific cases of political opposition to the plan. It does emphasize the importance of involving the whole school from the beginning of the process, and to solicit input whenever possible as the system is being designed, in order to avert challenges down the road.

The guide produced by Mansfield Middle School offers several lessons for the Portland schools. It is an excellent "how to" reference in terms of the pragmatic steps of getting a composting system set up in a school. Additionally, if any schools decided to set up small onsite compost as an educational tool, the guide for doing this is extremely comprehensive. Additionally, this case study offers a great deal in the way of suggestions for the process of getting support from wide ranges of people in the school community, and of ways of integrating composting into the culture of a school.

***Kennebunk, Maine***

Kennebunk High School is currently working on implementing composting. The school has a small but active club that is taking the lead on this and other environmental issues. Through attending a

club meeting, Jessa Berna and I were able to learn a little bit about how the club was attempting to increase support for composting and related waste reduction initiatives.

The high school is currently separating lunch waste into compost, recyclables, and other waste, although they are currently searching for someone who is willing to accept the compost. The club is working on ways to encourage other students to use the separation system, since there is currently not very strong adherence. They were working on an education program, as well as designing and painting extremely large wooden color-coded signs to go above the bins. Students rejected monitoring bins themselves as awkward. The club was also looking at reduction efforts through increasing use of washable and reusable items for lunch, such as silverware. They had secured substantial funding through hosting a renewable energy expo and charging a small admission fee, which was being used for startup costs for their investigations. The club was attempting to implement measures by buying the initial items, and if the project proved to be functional and cost-effective, the district would continue with the initiative. Although dependent on external fundraising, this model gives the group a way to experiment with different methods of waste reduction without negatively impacting the school system budget.

The largest challenge that the club seemed to be facing was that they were acting as a small committed group, but were having challenges attracting wider support for their programs from the rest of the student body. Staff had already been suggesting that composting should be implemented and have been supportive of initiatives that would do this. Additionally, their method of financing allows the club to avoid opposition on the grounds that their work is negatively impacting the school budget.

Observing this club in action offered several insights into implementing waste reduction programs at the secondary school level. When students get behind a project, they can work incredibly hard to make it happen. However, this case also highlights the need to ensure as many students as possible have a stake in the process and feel that it is relevant to them in order for it to be successful.

***Cornell University***

Many colleges and universities around the country have implemented a composting program as a part of their dining services or other program. One such program is in operation at Cornell University. Before implementation of the program, plate scrapings and other waste were being ground up and entering the wastewater system. Under the program, these scraps were instead separated into bins that were delivered to the university farm services, where they became a component of compost, along with manure and other agricultural wastes. In 2005-2006, a student began a project that made greater use of post consumer composting, now done by patrons of the dining halls and other food service facilities rather than just dining hall staff. Extensive signage and an education campaign encourage waste sorting. The university purchases compostable containers whenever possible. These can lead to additional challenges

however, because it makes it harder to distinguish materials that can be composted from those that should be recycled because they look very similar.

Since composting was planned to be done on campus, the university encountered some challenges from municipal planning officials who were worried about cleanliness and odors from the composting site. The site was eventually developed, and Cornell avoids challenges in this area through intensive monitoring, managing, and testing of the site in order to ensure that it does not have an adverse affect on nearby housing and water bodies.

The Cornell case study shows how implementation can work beyond the high school level, thus tying it in to what high school students may encounter when they go to college.

**Key focus issues for the Portland Public Schools**

In order for a district-wide composting and waste management process to happen successfully, these case studies suggest several areas to focus on: system consistency and clear instructions, student buy-in, staff buy-in, and choice of waste disposal.

***System Consistency***

Although there will have to be slight tweaks in waste reduction processes for different schools, what students are asked to do should remain consistent throughout the district. In San Francisco, similarities go beyond the school level to the city as a whole, with a district bin system that is similar to the one used by the city, thus increasing the consistency beyond the school level. The guide to composting at Mansfield Middle School noted that the compost club attracted largely fifth graders, who had come from a school that already had implemented composting, and so were eager to support a system similar to what they were used to. When such a system becomes standard, then the places that do not do it stand out. For example, at Cornell, the fact that waste was only collected at dining halls led other dining facilities to add composting to their locations as well.

Both Kennebunk and San Francisco use a three-bin system, with different colored bins for different items: recyclables, trash, and compostables. Illustrations of the system at Cornell depict a similar three level system, with less color-coding (yellow color-coding for compost, nothing for trash/recycle), but with labels according to where the waste was going (i.e. the bin for trash was labeled ‘landfill’). Cornell had illustrations using photos and actual waste (bottles, wrappers etc) above bins to help avoid confusion about what goes where. Students at Kennebunk were planning to paint huge signboards to go over the bins, to help other students distinguish between bins. Mansfield ties a spatula to the compost bin to make cleaning off trays an easier task.

Similarly, a district-wide education program that shares a similar and clear message with all students in the district prior to implementing a composting program was very helpful in the case of the

San Francisco program. San Francisco used a short video, presentations at assemblies, and a mascot to share the message. Mansfield Middle School used a PowerPoint presentation.

***Student Support***

The case studies differed in their methods of developing student support and interest in a project, but all emphasized the necessity of ensuring students were engaged and had a stake in the composting and waste reduction process. Suggestions from the case studies included setting up a compost monitor program with older elementary school students helping younger students (San Francisco); building vibrant environmental or composting clubs (Mansfield, Kennebunk); incentives for composting correctly such as free ice cream (Mansfield); curriculum integration (Mansfield); Compost or Environmental Awareness Weeks (Mansfield, Kennebunk); having students design awareness programs themselves (Mansfield, Kennebunk); making curricular connections to other aspects of the students lives (San Francisco, Mansfield); including it as part of a service learning curriculum (Mansfield); and enlisting the help of the student council (Mansfield).

One additional example, not related to waste reduction but pertaining to the transforming effect of having young people buy into a project is found in the transformation of the Pyramiden apartments in a run-down section of Stockholm, which has been transformed using sustainable community development ideas (James and Lahti, 2004). A problem in the neighborhood involved extensive vandalism and graffiti. To combat this, rather than just cleanup and repair, the project hired young people in the neighborhood to do landscaping work and planning. This resulted not only in a reduction in vandalism, but in the beginnings of a youth-run bicycle rental and building a stone patio in the neighborhood, building momentum in a positive direction to the benefit of the entire neighborhood.

***Staff Support***

Having strong support and help from staff members is also crucial to a successful program. This is emphasized in the various case studies. Many people may already be on board. For example, conversations in Kennebunk indicated that at least some custodial and food service staff had been advocating for the program before it was implemented.[2] In Portland, some of the food scraps from the central kitchen are currently being separated and used by a dining services member in making home compost. [3] Education programs for staff are also important prior to implementation, and were used in San Francisco and Mansfield.

The guide produced for Mansfield suggests ensuring that a steering committee includes representatives from teachers, custodial, and food service staff, in order that they have input in every step of the process. Staff will often have the best ideas about what will work at individual schools. A program should appeal to this experience and expertise.[4] Staff should also be asked what is working and what is

not as a program gets under way, so that details that are not working can be remedied.[5] San Francisco makes extensive use of compostable trash bags (biobags) that can make collecting food and recyclables easier and cleaner without using more plastic. The San Francisco program recognizes staff and schools that are doing exceptional composting work, and is furthermore examining ways to partially re-direct cost savings from the program to individual schools as an incentive for successful implementation.

***Food Waste Removal***

Once waste is separated, each of the case studies demonstrates a slightly different method of dealing with the waste, each method offering advantages and disadvantages.

***Onsite***

Mansfield Middle School composts on the school grounds, via a system of wooden and steel bins. In addition to waste collection, students are actively involved in making compost. The onsite program provides a direct connection for students about where their food is going and what happens to it. It means that waste can easily be taken care of on a daily basis, since it does not leave the school grounds. When done correctly, it also produces a marketable commodity (The Mansfield PTA used compost from the school in a flower sale fundraiser). On the downside, it requires more effort from all members of the school community, since the compost will have to be made and taken care of, and requires sufficient space on school grounds, which may not be a reality for many schools in an urban setting such as Portland. This may be the only option at island schools, where it is impractical to cart food waste back to the mainland. Additionally, Mansfield does not compost any meat products in the onsite facility, so they are still going into the waste stream.

***Local Farms***

Waste in Kennebunk was originally being accepted by a local farm, and this is also how some other college programs handle food scraps. For example, at Bates College, food waste goes to farms in Lisbon and Poland. This can help support local agriculture, and still provide connections to students about where their waste is going. The downside to this is that it is reliant on finding local farms willing to accept the waste; and once started, if a farm backs out and a replacement cannot be found, it can mean that food diversion is for naught. For example, Kennebunk is working on separating waste, but currently has no farm to accept the compost. Additionally, the school district and farm would need to come up with a way to get the waste to the farm.

***City/Commercial Compost Pickup***

The City of San Francisco has a municipal compost pickup service, which the school district can tap into in order to dispose of compost. This greatly simplifies the process of compost disposal, making it

not much different from garbage or recycling, and means that the system the students see in school may be similar to the one at home. A commercial pickup service would be similar. Downsides to such a system include that students would have less direct connection to what happens to the food waste, which could result in lower buy-in and greater challenges in getting waste effectively separated. Additionally, the school misses a chance to produce a marketable commodity.

### *Central Facility*

Cornell composts waste onsite, but the scale is very large. Waste is collected three to five days a week in dump trucks lined with sawdust and other bedding to prevent leakage, and transported to a central facility, where it is mixed with other wastes and materials to create compost onsite. The compost cures for 6-9 months, and is then reused throughout the campus in construction, landscaping, and athletic fields; and sold to go into topsoil mixes. This allows the university to absorb the value of compost, but such a system would require substantial land and investments by the district, and require substantial time to set up.

## Recommendations Moving Forward

### *Actions*

***Design a training program that can be used throughout district, and implement the training district-wide prior to beginning program.***

The Waste Reduction Group (WRG) should ensure the creation of a consistent district-wide training program that is appropriate to different grade levels and explains the system and why it is being done. This could be done by the group itself, by a group of teachers who are willing to get involved for this particular task, a group of college-level Education students as part of a service-learning program, or, for younger grades, by high school students. This should be done as soon as the overall bin design has been created.

***Students should play as large a role in designing the program as possible***

The WRG would contact teachers and club leaders at every school and request assistance with creation and promotion of a composting and waste reduction program. Some concrete examples of things that could be done include having technical education classes build carts for bins, art classes create large signs for bins, and drama clubs write skits that could be performed at their schools or for younger students. However, the request should be fairly open-ended in order to get as many ideas and projects as possible. The primary goal of this is to have as many students working on the project as possible and thus engaged in the implementation process, with a secondary goal of creating useful end products. This

should happen the semester prior to launching a program in order to build the groundwork before implementation.

***Strengthen Environmental Clubs***

The waste inventory spreadsheet indicated that there are existing environmental clubs or green teams at most middle and high schools in the Portland school district, and at three elementary schools. Strengthening these clubs, and creating interest and resources to create them where they don't currently exist should be a priority in terms of creating a culture that will be receptive to composting and waste reduction.

Some suggestions for this might involve the Waste Reduction Group compiling guidelines and resources for staff who may be interested in a club but need some ideas to get off the ground; creating a website or Facebook page that would allow students at different schools to share projects and ideas; hosting a Saturday meet-up that would allow groups to share ideas and socialize; and planning an event such as a beach cleanup involving multiple ages, allowing older students to lead teams of younger ones. It might also be useful to increase interest at the high school level by including field trips to colleges with effective environment-related projects, such as the composting program at Bates College.

***Teachers and staff at schools should evaluate the proposal layout and system prior to implementation***

Once system standards are created (such as a bin system, color coding, and a mascot or symbol if one is going to be used), the Waste Reduction Group should develop initial plans for programs at each school, and allow staff to suggest design changes, ways that they could be more appropriate at individual schools, and ways that it could be done more easily, in order to create a system that is as simple as possible at each school. The timeline for this would be as soon as an overall bin design is created. It would also be useful to have custodial and cafeteria staff represented on a committee that is in charge of creating the initial district-wide design.

***Enlist community volunteers***

In order to reduce the demands on staff, the Waste Reduction Group should investigate ways that community volunteers could assist the project, particularly among those interested in environmental issues. For example, volunteers might be willing to monitor a compost bin during lunch once a week. As part of this, the group could investigate becoming part of a service exchange program such as the Portland Hour Exchange, in which members offer certain services in return for others.

***Investigate whether the Eco-schools framework would be a valuable tool to implement this program***

Eco-schools is a program from the Foundation for Environmental Education that is used worldwide. It provides a framework to implement environmentally sustainable practices throughout a

school and curriculum. The program involves applying for a 'green flag' by addressing one or more of 8 areas: energy, water, climate change, global dimensions, transportation, school grounds, consumption and waste, and 'green hour.' This is done through seven steps: forming an eco-action team, linking to curriculum, whole school/community involvement, environmental review, action plan, monitor and evaluate, and create an eco code. It may be particularly relevant to Portland because of the program's international scope, emphasis on student involvement, and the fact that work is done through an eco-action team composed of representatives from whole school. This should be investigated soon into the program development process, as it would provide a structure shaping the whole process.

**Concluding Thoughts**

Looking at the recommendations above, the vast majority of them do not provide concrete information on the logistics of putting a waste reduction system into place, but rather suggestions to build the greatest amount of support possible for a change in the current disposal system. Hallsmith, in her book ***Building Sustainable Communities***, discusses the importance of examining community issues from the perspective of looking at the whole system surrounding the issue. For example, she discusses looking at the problem of homelessness in Burlington, Vermont. A systems approach would look at the whole housing system in order to address this problem. Most new construction tends to be high-end homes; therefore, people with moderate incomes are not able to afford to buy homes. These homes remain in the rental market, resulting in lower vacancy rates and higher rents, making it harder for those with low incomes to afford any type of housing at all. This may be coupled with a problem of addiction to cigarettes consuming a large portion of income and thereby decreasing people's ability to afford housing.

Once something is looked at as a system, it is easier to see cycles of positive and negative feedback, and to identify possible levers for change. For example, in the case of Burlington, incentives for building middle class housing coupled with funding for non-smoking programs might be an effective strategy for combating homelessness, even if it is not immediately obvious.

One of the greatest challenges in setting up a waste reduction program is that of separating waste in a manner that allows recyclables and compostables to have a useful continuing life cycle. A systems analysis of the problem might look something like this: students do not see a reason to separate waste prior to disposing of it, therefore students or staff who are committed to the problem face the difficult task of re-sorting others' waste and removing misplaced items. Such work might decrease interest in a green club, since this is their major task. Asking custodial staff to do it creates extra work for them, and decreases their level of support for the program. Sending it on to farms and recycling centers without assuring that it is sorted properly means it is a less desirable product and the school sees less financial gain – or even a net loss from the project – and it is in danger of being discontinued.

However, examining the key lever of increasing buy in could result in positive feedback to the system, completely changing things: students and staff feel as if they have a stake in the process, and see incentives to make it work. More is sorted correctly, and disposal is a less odious task. Students in a green club can spend time learning about making their own compost and designing a garden for the school that uses it as fertilizer, which helps build further community support for the project. The school district sees a net financial benefit from the program, allowing more resources to go back into expanding it, thus building the program for everyone's benefit.

These two scenarios are very black and white, but serve to demonstrate the importance of looking at the whole system of waste disposal at a school prior to implementation, and seeing what the crucial components are that make a system succeed or fail. The district can then focus on these particular elements when implementing a plan, and work to create a system with positive feedback that builds upon itself rather than one that has negative feedback, bringing it back towards the original system to no one's benefit.

**References**


Adams, R. Conversation and tour of the Portland School Waste Systems, April 14, 2010.

Bates College. ***Bates College Dining Program***. Accessed online May 13, 2010 http://www.bates.edu/x217715.xml.

Coughlin, P. (2002). ***School Composting: A manual for Connecticut Schools.*** Hartford, CT. Connecticut Department of Environmental Protection. Accessed May 9, 2010 http://www.ct.gov/dep/lib/dep/compost/compost_pdf/schmanual.pdf

Foundation for Environmental Education. ***Eco-School.*** Copenhagen, DK. Available at: http://www.eco-schools.org . Date Accessed 3/13/10

Escalante, M. Personal Communication, April 28, 2010.

Flaherty, M. Conversation and visit to eKo club meeting at Kennebunk High School, April 27, 2010.

Hallsmith, G. (2003). The Key to Sustainable Cities: Meeting Human Needs, Transforming Community Systems.

James, S & Lahti, T (2004). The Natural Step for Communities: How Cities and Towns can Change To Sustainable Practices. Gabriola Island, BC: New Society Publishers

Reston, VA. (2010). ***National Wildlife Federation Eco-Schools.*** Accessed online May 13, 2010. http://www.nwf.org/ecoschools/ .

Schwartz, M. Bonhotal, J. (2009). ***The Cornell Farm Services Compost Facility***. Ithaca, NY. Cornell Waste Management Institute. Accessed online May 9, 2010. http://cwmi.css.cornell.edu/farmservices.pdf.

SFenvironment. (2004). ***Sfenvironment: School Education***. Accessed on May 9, 2010. http://sfenvironmentkids.org

SFenvironment. ***Food To Flowers: Compost and Recycle with Phoebe the Phoenix.*** Video accessed May 13, 2010. http://www.sfenvironmentkids.org/teacher/f2f/phoebe_the_phoenix.htm.

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[1] Coughlin, 2002
[2] Flaherty
[3] Adams
[4] www.ct.gov/dep/lib/dep/compost/compost_pdf/schmanual.pdf
[5] ibid

## Section 2: Sustainability Projects at the University of Southern Maine

*Source: University of Southern Maine*

# The Commuter Choice Program and USM

***D. Robin Beck***

Source: VSPI Inc.

*ABSTRACT: A request by the University of Southern Maine (USM) President's Council on Climate Neutrality is to review the federal Commuter Choice Program and the possibility of implementing it on both the Gorham and Portland Campuses for staff and faculty. Resources used in this study include The Commuter Choice Primer provided by the Federal Highway Administration and individual university and college websites along with emails and phone interviews to show involvement of other campuses in the program. Research indicates that there is only one peer institution to USM that has implemented this program and it appears to be successful. Also noted is that this college along with other larger universities using the Commuter Choice program have bright, interactive, and informative websites which aid the education of staff on the benefits of Commuter Choice. The implementation of the Commuter Choice Program can be successful on the USM campus with proper incentives and education. Application of this program will be a positive move in becoming a zero net emission campus while saving the university money and increasing the take home pay and health of the staff and faculty who choose to participate.*

*"…each of us shares in the responsibility for sustaining the life forces, cycles, and processes upon which all life depends." –* ***From a joint statement of the University of Southern Maine Faculty***

**Introduction**

On January 13, 2010, President of University of Southern Maine, Selma Botman signed the American College and University Presidents Climate Commitment pledging USM "to produce no net emissions of green house gases as soon as possible and no later than 2040."[1] This document touches on aspects of climate and emission neutrality from buying habits to waste dispersal. Directive 3 is to:

*Arrange to have a Muskie CPD class complete a formal study of the federal "Commuter Choice" program and propose implementation of this or other effective incentive strategies, including telecommuting, to reduce unwanted University employee or student intercampus travel impacts. Included in this assessment, and under the direction of USM's Parking and Transportation Committee, will be a feasibility study of offering incentives for employees who carpool, bike, walk or take public transportation.*

It is this directive that this research paper will address with proposals to implement the program on both the Portland and Gorham campuses with minimal budget outlay, and also include suggestions to approach, implement, and promote the program. The importance of this directive reaches farther than emissions control.

The University of Southern Maine has set a goal of having both of its campuses becoming carbon net neutral by 2040.[2] This is an admirable and achievable goal. The aim is for more than environmental quality but also for sustainability as a whole. Not only will USM be helping to protect the environment through this program, but it will be improving the human condition and its own economic viability.[3] By instituting the federal Commuter Choice program, the campus may have an overall decrease in staff obesity rates. Researchers have found that for every 30 minutes people commute, they increase their chances of obesity by 3%.[4] As summer increasingly becomes warmer and as the climate continues to change, asphalt on roads and parking lots will deteriorate much more quickly which will then incur more cost to the university.[5] With just these two examples, health is improved and moneys saved. In addition, pre-tax incentives will increase the take-home pay of the employees.

**Commuter Choice**

In an attempt to decrease greenhouse emissions on the campuses as well as decrease commutes to and from the campuses, USM's Facilities Management is looking into the Federal Commuter Choice Program. This program offers insight and assistance in making decisions on how employees commute to work, when and how fast to commute to work, where to commute to and whether or not to commute, and which way to commute. The other goal of the program is to make it more financially lucrative to use other means of transportation. In Figure 1, these options are laid out with possible strategies.

Three incentive options are available to employers for their employees. The first is an employer paid benefit up to $230 a month that is given to each employee if they decide to use

alternative modes to commute to work. This option will come as an employer paid bus or transit pass. The cost of these passes can be deducted from the employer's corporate income tax. The second incentive is the employee pre-tax savings. Each employee can save up to $230 a month to use for bus or other transit passes and expenses including parking on or off campus. This decreases the employee's taxable income. A third option would be a combination of the two, where the employer could pay up to $115 a month and the remainder of up to $115 a month would be paid for by the employee's pre-tax commuter savings plan. If parking is provided free or subsidized by the employer, a parking cash-out option would allow employees to have up to $115 of taxable cash income converted to pre-tax commuter passes if they gave up their parking space and chose other modes of commuting to work.

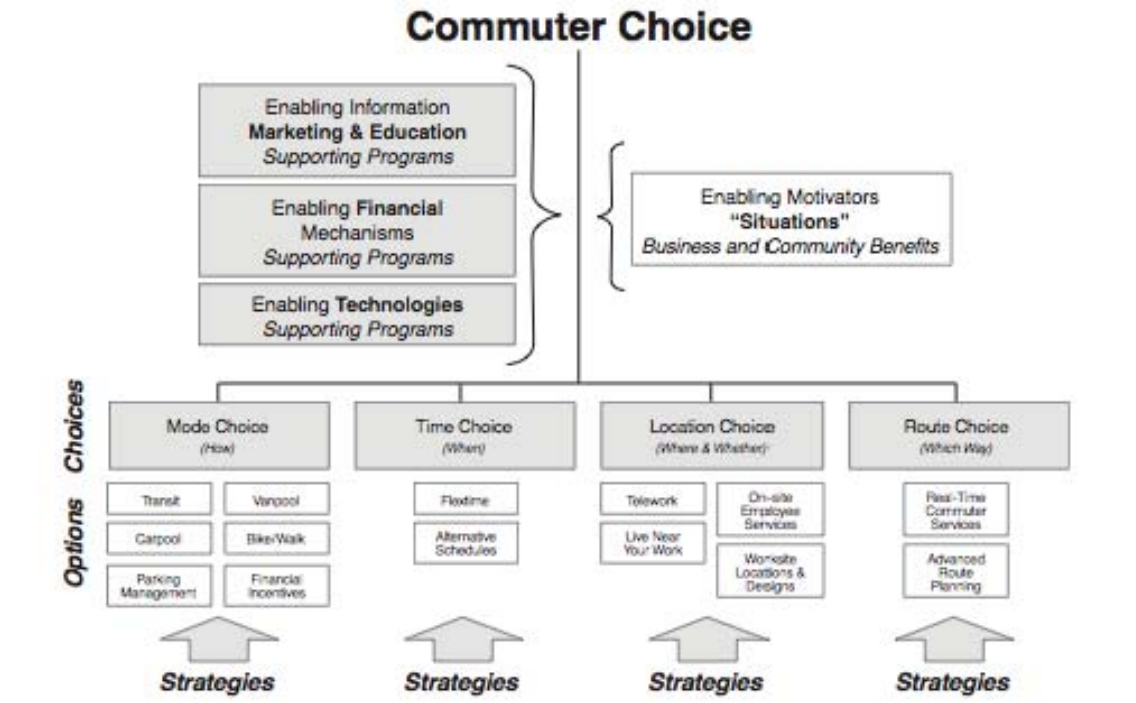


Figure 1. Commuter Choice Concept Framework

*Source: ntl.bts.gov*

***Other campuses***

In an effort to research what other campuses have done on their road to sustainability and decreased climate impact, I looked at several universities through Google's search engine. A quick search of universities using the keywords Commuter Choice brings up eighteen different universities across the country. Some of these are Harvard, University of California in Davis, Delphi, and Penn State. Due to the size of these schools, Mr. Dudley Greeley of USM's Environmental and Economic Sustainability Office suggested I look at the group of peer

institutions to our own university. I also wanted another example from Maine and chose the University of Maine in Orono. The first question posed was if any of these universities were using the Commuter Choice program? If not, have they instituted any alternative commuting programs?

The University of Maine in Orono set up a carpool program in 2007.[6] In a telephone conversation Alan Storman, from the university's Parking and Transportation services, explained that the carpool program was instituted with no difficulties and was welcomed on campus by staff and administration.[7] Approximately thirty-five to forty carpool hang tags have been assigned to staff and faculty members. Mr. Storman did express that he was not happy with the numbers and wished more employees would utilize the system. Each employee must register with the GoMaine.org, the statewide car and vanpool website to find their suitable carpool partner(s). Once a carpool is formed, a hangtag for the lot of the carpool's choice is given to them free of charge. A section of each lot is cordoned off for carpoolers which is only dependent on the number of carpool tags distributed for each lot. Each person registered in the carpool program is guaranteed a ride home by the university in case of an emergency or if they are not able to ride with their carpool for business reasons. Parking Services will call and pay for a taxi or, if staff live outside the city, the university will pay Enterprise Rent a Car to bring them a car to get home. The guarantee has only been used twice in three years. Mr. Storman was unsure what could be done to increase the use of carpooling at this time. Many of the peer institutions to USM have not established such a program yet.

In Kentucky, Morehead State University has not instituted any commuting program but their Going Green website does state that a bike share program is pending.[8] Another Kentucky school, Northern Kentucky University, has a website that references the Transfer Authority of Northern Kentucky (TANK), but no other alternative commuting resources.[9] It was curious that these two Kentucky institutions had so little emphasis on alternative commuting, but in researching the availability of statewide ride-share programs, there were none. On the other hand, the state of North Carolina has a state-wide sustainability mandate and state-wide carpool program online, but in Durham, North Carolina Central University has no sustainability or green website and no commuter options.[10] Another southern college, Kennesaw State University in Georgia, has formed a partnership with Local Zoom for ride-share options on their website.[11] Local Zoom offers incentives such as gas cards, cash, and prizes for regularly using the system

and has a guaranteed ride home. In the midwest, Southern Illinois State University, like NCCU promotes a state wide mass transit, car and vanpool program.[12] Out west, Boise State University promotes premium parking spaces for carpoolers. Riders share the cost of a single permit and are guaranteed a ride home through Commuter Ride who also adds the availability of a vanpool.[13] In an email response to questions about how the program was running and if they had any problems in instituting the program, Tyler Johnson, Management Assistant in the Transportation and Parking Services Department, stated:

> *The carpool program that we have in place is not exactly used as much as we would like it to be. In order for students or staff to receive a carpool permit, they must provide class (or work) schedules proving that all classes coincide with each other showing that there is a need for only one car to be on campus at a time. Most students don't have the exact same schedules so they don't generally attempt to obtain this permit. If they do have a carpool permit, there are designated reserved spaces either very close to the buildings, or on the first floor of the parking structures.*[14]

Student carpooling on any campus would be very difficult with class, work, and family schedules. It is admirable that they attempt to promote this concept to students. In New England, our peer institution of Salem State University has no sustainability or commuter website but states in the employee handbook that the school "may establish a rideshare program" in the future.[15] Only one school in our list of peer institutions has established the Commuter Choice program: Central Connecticut State University. Their website explains the benefit briefly and well.

> *Central Connecticut State University employees can save hundreds of dollars each year in taxes if they commute to work by bus, train or eligible vanpools through the state's change to Qualified Transportation Benefit Program. As of March 2009, you may set aside, through payroll deduction, up to $230 per month tax-free from your salary to pay for your bus, train or vanpool fare. Parking expenses up to $230 per month are also eligible. State employees are eligible for this program if they are full-time or permanent part-time working at least 20 hours a week and commuting to and from work using public transportation or incurring parking expenses.*[16]

Included in the website are interactive calculators to estimate both money spent on commuting and money that can be saved with alternative transportation choices. The website also has pages devoted to finding a carpool partner, bus information, bicycle to work, guaranteed

ride home, and information on how to start a vanpool. The importance of a clear, interactive, and informative website is key to the success of a program such as this.

**USM's Efforts to Date**

There are references on the USM website to GoMaine.org for faculty use. The references come under Commuter Student Services and Parking and Transportation websites for students, faculty, and staff. There is no website promoting a bike to work campaign or information on available facilities. There is mention in various department communications that flex time can be used by certain employees.

***USM and Commuter Choice***

In establishing directives under ***USM's Guide to a Climate-Neutral Education***, the faculty and administration have addressed the need of decreasing greenhouse emissions. This, coupled with the current economic situation, is a wonderful starting point to establish the Commuter Choice program. The program will save the employees and the university money. Employees will save in reduced income tax, gas for transportation, and wear and tear on their vehicles. The university will save, if implemented well, on building new parking infrastructure. According to Ron Nayler of Northwestern University, surface parking costs an average of $4,000 per space while above ground garages cost about $20,000 per space above-grade and $30,000 to $40,000 for below-grade parking spaces in 2006.[17] There are many references available on the internet to aid in establishing a successful program.

**Tools**

The ***Commuter Choice Primer: An Employer's Guide to Implementing Effective Commuter Choice Programs*** is filled with suggestions on how to establish a successful program. The suggestions on known effectiveness are to offer incentives for the use of alternative transportation, manage parking supply or price of parking, and match the incentives and support to the workplace.[18] The Commuter Choice website also offers a calculator that allows employers to estimate financial savings in addition to traffic and pollution reduction from the implementation of different strategies.[19] Also available by mail or on the Commuter Choice website is an ***Interactive Commuter Choice Guidance Tool*** through which employer motivations, employer and worksite characteristics, and management support data is entered and suggestions are then compiled on recommended strategies for the university.[20]

The Maryland Department of Transportation has lists of suggestions on how to implement alternative commuting strategies and the benefits to employers, employees, and the communities when these strategies are used. Strategies include commuting, telework (telecommuting), flextime or variable hours, and the guaranteed ride home.[21] Together with the ***Commuter Choice Primer,*** Commuter Choice.com website, and GoMaine.org, tools are available to help make the USM Commuter Choice Program successful.

**Success**

In order to be successful with this program, it will be important to reach the stakeholders, the employees, pique their curiosity, and hold their interest in actually acting on ways to change their transportation habits. A successful campaign needs to contain incentives, positive stories from peers, public goals to meet, and follow through on suggestions. Measures must be made and the campaign re-evaluated on a regular basis in order to keep and grow enrollment.

**Things to Do**

***Establish which strategies will work best with the employees of the University of Southern Maine.***

- An intern or graduate assistant (GA) could research how many USM employees are offered and are using flextime. If they are not using flextime, what are the reasons for not doing so. Flextime can be a good strategy for facilities and maintenance support. Also to determine is if telecommuting is even an option for employees on campus. The services are available through information technology on campus. The majority of infrastructure is already set up for the commuting strategy with GoMaine.org so the need is just to connect with that system.
- An intern or GA can formulate a poll to find out what transportation choices the staff are currently using for a base measurement of the program.

***With this report and the above information, get the approval of President Selma Botman to continue on to the next step.***

***Secure the cooperation of the Benefits Department of Human Resources.***

- Clair Hassler, in charge of Employee Benefits, would need to approve the application form template and addition of the benefit itself.

***Secure the cooperation of Human Resources***

- This is crucial when examining which employment positions will be able to opt into flextime or telecommuting. The intern or GA can work with Human Resources to identify these positions.

***Secure the cooperation of the USM Parking/Transportation Review Committee.***

- The intern or GA would need to get approval for the dispersal of carpool hangtags and write up the procedure for obtaining one.

***Begin education of the employees***

- Contact Donna Bird who is in charge of new faculty orientation. She also sets up the Faculty Handbook and any new information on the program would need to be added to both of the campus's curricula.
- Develop an advertising and education campaign. Using an intern or work-study student from the marketing school, set up a vibrant and active advertising campaign aimed at the employees of both campuses.
- Develop a dynamic, colorful, and informative website for employees to get information and apply to the program. This can be set up by an intern or work-study student from marketing or information systems using the current USM server.

***Kick Off!***

- Using marketing materials, a week-long USM Commuter Choice program Kick Off around the campuses and within the departments can be planned through HR by an intern or GA.
- Incentives such as door prizes from area merchants and restaurants, free bus passes, or prime parking spaces can be used to entice staff members to sign up for the program.

***Follow-up***

- Following the kickoff, evaluations should be made by the intern or GA as to success of the kickoff. Measurements must then be made each semester as to enrollment and drop-out rates in the program.
- Updates must be made regularly to the website to emphasize current seasonal and/or semester updates and promotions.
- Within three months of enrolling in the program, the employee should be sent a follow-up survey to measure their likes, dislikes, and suggestions of the program.

**Conclusion**

If the previous steps are taken, USM will be on its way to achieving a carbon neutral environment. This program will be groundbreaking among the campuses of Maine and may provide the leverage for those campuses to take this initial step to join USM as a carbon neutral campus.

**Resources**

***Literature***

Commuter Choice.com: Employer Resources by Federal Highway Administration Available at http://www.commuterchoice.com/

Commuter Choice Maryland: For Employers Only by the Maryland Department of Transportation & MTA Maryland. Available at http://www.commuterchoicemaryland.com/emp_programoptions.htm

United States Department of Transportation Federal Transit Administration, United States Department of Transportation Federal Highway Administration, & United States Environmental Protection Agency. Commuter Choice Primer: An Employer's Guide to Implementing Effective Commuter Choice Programs http://ntl.bts.gov/lib/jpodocs/repts_pr/13669/section03.htm.

***Website Examples***

Central Connecticut University http://www.ccsufacultystaff.ridesharect.com/ccsu-commuter-benefits.php

George Mason University http://transportation.gmu.edu/masonemployee.html

Harvard University http://www.commuterchoice.harvard.edu/

***Works Cited***

Boise State University. (n.d.). Carpool connection. In Boise State University parking and transportation services. Retrieved April 19, 2010, from http://www.boisestate.edu/parking/carpool/

Connecticut State University. (2010). CCSU commuter benefits. In Central Connecticut State University faculty and staff commuter information site. Retrieved April 19, 2010, from http://www.ccsufacultystaff.ridesharect.com/ccsu-commuter-benefits.php

Federal Highway Administration. (n.d.). Employer resources. In CommuterChoice.com: America's way to work. Retrieved February 2, 2010, from Association for Commuter Transportation website: http://www.commuterchoice.com/

Gates, J. (2009, October). Climate change and transportation in Maine. Maine: Maine Department of Transportation Environmental Office.

Kennesaw State University. (2009). KSU Ride.com. Retrieved April 19, 2010, from http://www.ksuride.com/

Maryland Department of Transportation, & MTA Maryland. (2009, December 3). For employers only. In Commuter choice Maryland. Retrieved May 12, 2010, from http://www.commuterchoicemaryland.com/emp_programoptions.htm

Morehead State University. (2010, May 12). Green initiatives @ MSU. In Morehead State University - Going green @ MSU. Retrieved April 19, 2010, from http://www.moreheadstate.edu/green/index.aspx?id=45676

Newscenter. (2006, January 12). Community invited to discuss Evanston parking plans. In Northwestern University newscenter. Retrieved April 27, 2010, from http://www.northwestern.edu/newscenter/stories/2006/01/parking.html

North Carolina Central University. (n.d.). North Carolina Central University. Retrieved April 19, 2010, from http://www.nccu.edu/index.cfm

Northern Kentucky University. (2010). Green initiative. In Resources: NKU goes green. Retrieved April 19, 2010, from http://green.nku.edu/resources/index.phphttp://

Parking and Transportation Services. (2009, September 21). UMaine's staff carpool program. In The university of maine parking and transportation services. Retrieved April 10, 2010, from University of Maine website: http://www.umaine.edu/parking/carpooling%20R&R.html

Roseland, M. (2005). Toward sustainable communities (Rev. ed.). Gabriola Island, British Columbia, Canada: New Society. (Original work published 1992)

Salem State University. (2009). Salem State University employee handbook (Monograph). Retrieved from www.salemstate.edu/HR/Employee_Handbook.pdf

Southern Illinois State University. (2010). Parking services. In Southern Illinois State University. Retrieved April 19, 2010, from http://www.siue.edu/parking/links.shtml

United States Department of Transportation Federal Transit Administration, United States Department of Transportation Federal Highway Administration, & United States Environmental Protection Agency. (2003, March 14). Commuter choice primer. Retrieved from http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_PR/13669/CommuterChoicePrimer.pdf

University of Maine. (n.d.). UMaine's staff carpooling program. In The University of Maine - parking and transportation services. Retrieved April 19, 2010, from http://www.umaine.edu/parking/carpooling.html

University of Southern Maine. (2010, January 13). USM's guide to a climate-neutral education. Retrieved from http://www.usm.maine.edu/dfm/pages/CAP%20Final%201.0.pdf

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[1] University of Southern Maine, 2010
[2] ibid
[3] Roseland, p. 4
[4] Ibid, p. 116
[5] Gates, p. 2
[6] umaine.edu
[7] May 10, 2010
[8] Morehead State University, 2010
[9] Northern Kentucky University, 2010
[10] North Carolina Central University
[11] Kennesaw State University
[12] Southern Illinois State University
[13] Boise State University
[14] April 12, 2010
[15] Salem State University
[16] Connecticut State University
[17] Newscenter
[18] USDOT, et. al. pg. 18
[19] Federal Highway Administration
[20] ibid
[21] Maryland Department of Transportation & MTA Maryland

**Beacon: Lighting the Way toward Climate Neutrality at the University of Southern Maine.**
***The Wishcamper Center Pilot Project***

***Sandra Hughes Goff***

*"It's one thing to have green programs and green buildings, but to truly achieve sustainability you need the cooperation of people." –* ***Jenn White, Host of "Out of the Blue"***[1]

*Source: World of Stock*

*ABSTRACT: In January of 2010, University of Southern Maine (USM) President Selma Botman endorsed the University's Climate Action Plan (CAP), USM's Guide to a Climate-Neutral Education, pledging that USM will be a carbon-neutral university no later than 2040.*[2] *Involved in the CAP is the reduction of greenhouse gases attributable to the University's purchase of electricity, identified as Scope 2 emissions. This case study and subsequent recommendations seek to address Scope 2 emissions through the creation of an energy conservation program modeled after the University of Michigan's Planet Blue program. Integrating lessons learned from Planet Blue, the Beacon program is proposed. Led by the Beacon Working Group, a pilot project is suggested to be launched at the Wishcamper Center during the 2010-2011 academic calendar, followed by two additional buildings by May 2011. Through the use of student assistantships and undergraduate and graduate coursework, the Beacon program can be supported with minimal investment by the University. The case study suggests that Beacon is likely to reduce energy costs, support the goals of the University and create an opportunity for USM to market itself as a leader in "green" higher education.*

In January of 2010, University of Southern Maine (USM) President Selma Botman endorsed the University's Climate Action Plan (CAP), ***USM's Guide to a Climate-Neutral Education***. In doing so, USM joined universities across the country in a commitment to environmental stewardship. The University of Southern Maine has pledged to produce no net greenhouse gas emissions by 2040.

The University's Climate Action Plan (CAP) breaks total greenhouse gas emissions down into three subcategories, Scope 1, Scope 2 and Scope 3 emissions. Scope 1 emissions are those that are created directly by the University through things such as stationary, on-site fuel combustion. These emissions made up 42% of the 23,692 metric tons of total greenhouse gases emitted by the University in FY2006. The other 58% are indirect emissions characterized as Scope 2 and Scope 3. Scope 3 emissions result from activities such as employee commuting and University travel. Scope 2 emissions, the subject of this case study and recommendations, are a result of the emissions produced due to purchased electricity. In FY2006, purchased electricity was responsible for 6,827 metric tons of greenhouse gases, over a quarter of total University emissions.

Certainly, the University of Southern Maine could simply purchase offsets to cover its emissions, as the commitment is merely to produce no net emissions by 2040. Realistically, however, this option is not only expensive, but also politically and ethically suspect. In contrast, the creation of systemic initiatives to address each of the three Scopes will reduce costs, meet University goals in integrating sustainability education into its curriculum and create an opportunity for the University of Southern Maine to market itself as a leader in environmental education and stewardship.

The Princeton Review reports that sustainability is increasingly a factor in prospective students' decisions on where to apply and ultimately, where to attend school. Recent surveys by the organization found that "66% of respondents … would value having information about a college's commitment to the environment. Moreover, of that cohort, 24% said such information would 'very much' impact their decision to apply to or attend the school."[3] Focusing on sustainability initiatives and education may have an added benefit of helping the University of Southern Maine to boost enrollment.

Every dollar spent on the purchase of electricity is a dollar that cannot be spent on programs, salaries and scholarships, during an already difficult fiscal situation. Reducing energy consumption by 10%, the goal set by the University of Michigan Planet Blue program, could result in an annual cost savings of $339,103 (10% reduction, FY2006 kWh at $.17 per kWh) for the University of Southern Maine. Within the constraints of a tight University budget, learning from the failures and successes of other schools allows the University to make best use of its limited resources in producing substantial avoided costs and fulfilling the University's climate-neutral commitment.

**The University of Michigan's Road to a Campus-Wide Energy Conservation Campaign**

In the spring of 2007, the Survey Research Center at the University of Michigan's Institute for Social Research published "Ten Key Findings & Recommendations," an assessment of the University's energy conservation efforts, focusing on the occupants of those buildings which would soon become part of an energy conservation pilot program. As the name suggests, the study looked at ten areas of the current programming:

1. Knowledge and Ratings of UM Energy Reduction Efforts
2. Energy Fest – Participation & Impacts
3. Awareness of Posters
4. Evaluation of Posters
5. Willingness to Accept Building Changes
6. Availability & Use of Supplemental Lighting
7. Uncomfortable Working Conditions & Job Performance
8. Unclear or Lack of Information
9. Remote Accessing Office Computers
10. Willingness to Accept Less Comfortable Temperatures.[4]

The study found that students, faculty and staff were largely unaware of the efforts of the University of Michigan to reduce energy consumption. Most rated the University's leadership in energy conservation as fair or poor. It was also determined that only a small percentage of the students, faculty and staff had participated in the University of Michigan's Energy Fest, an annual campus event focusing on energy conservation.

Evaluation of the University of Michigan's energy conservation poster campaign was equally discouraging. The study found that faculty and students were generally unaware of the poster campaign, though about three-quarters of the staff reported that they had seen the posters around campus. In addition, "[m]any faculty, staff, and students thought the "Use Your Power Wisely" posters showing historic figures were promoting a lecture or play."[5] A sample poster from this campaign can be found in Appendix A.

Assessment of occupants' willingness to accept building changes led to more hopeful results. The survey found that most people are willing to accept building changes such as motion-activated corridor lighting, reduced evening temperatures, reduced building temperatures during winter months and increased building temperatures in summer months.

Echoing findings in the assessment of occupants' knowledge of the University's energy conservation efforts, the study found that building occupants were unsure about the guidelines for turning off lights, computers and electronic equipment. Overall, the study demonstrated that people were willing to help and make changes but were lacking the information and example they needed to contribute effectively to energy conservation.

**Planet Blue**

In response to the 2007 study, an annual electricity bill of approximately $111 million, and greenhouse gas emissions of 592,000 metric tons,[6] the University of Michigan created Planet Blue. Planet Blue is "a campus-wide educational and outreach campaign with a mission to actively engage the

University of Michigan community to conserve utilities and increase recycling thereby saving money and benefiting the environment."[7] The goal of Planet Blue is to decrease total university utility costs by 10% during a three-year campaign, combining the efforts of energy saving technology and changes in building occupant behavior. The theory behind Planet Blue is summarized by Planet Blue project manager, Kris Kolevar. "When people are more aware of the impact they can have, and the cost and the impact on the environment, they're more willing to change their behavior."[8] The program has an annual budget of $5 million for three years, which is derived from Plant Operations funds. It is expected that the University will recoup program costs within two years of the project's completion through energy cost savings.[9] The program seeks to incorporate approximately thirty buildings per year into the program.

The Planet Blue program consists of three major components: Planet Blue Teams, a publicity and marketing campaign, and a strong online presence. The program is implemented building by building and recognizes that a one-size-fits-all solution does not exist. Every building and group of occupants is different and will require unique energy conservation measures. There is one commonality between each of the buildings, however: a hefty financial incentive allows schools to reinvest energy cost savings into their academic programs.

***Pilot Buildings***

Planet Blue's pilot program involved five University buildings meant to represent different types of facilities found on campus. These buildings were Chemistry Building, Space Research, Rackham Graduate School, Fleming Building and Institute for Social Research. In general, the pilot program led to energy cost savings beyond those originally anticipated, reducing energy consumption by 6% and creating first year savings of $340,000.[10] Three of the buildings – Rackham, ISR and Space Research – reduced energy consumption by 32, 26 and 17 %, respectively.[11] See Appendix B for more information on the pilot program results.

Richard Robben, executive director of University of Michigan plant operations commented that "[a]s we got into the buildings and really engaged the community … they were much more flexible in responding to some of the ideas that we were coming up with."[12] The program's communications specialist, Anuja Mudali, echoed Mr. Robben's sentiments: "People are extraordinarily accepting of the idea. They're excited to be part of something. Being green is a hot topic now."[13]

Conservation measures taken in pilot buildings included the installation of occupancy sensors on fume hoods in teaching laboratories, relocation of a computer server room to a climate-controlled data center, reducing operating hours of heating, ventilation and air-conditioning fans, and installation of occupancy and daylight sensors in common areas. Table 1 details the expected savings from a few of the building activities.

**Table 1. Sample Savings from Planet Blue Pilot Buildings**

| Conservation Measure | Estimate Savings (Annual) |
|---|---|
| Fume hood occupancy sensors | $ 200,000 |
| Relocation of computer servers | $ 97,000 |
| Reducing operating hours of heating, ventilations and air-conditioning fans | $ 80,000 |
| Occupancy and daylight sensors in common areas | $ 13,000 |

**Framework of Planet Blue**

The Planet Blue program follows a seven step path to incorporating a new building into the program:

1. Assessment
2. Leadership Engagement
3. Team Building
4. Open House
5. Education
6. Energy Conservation Measures
7. Implementation.[14]

In the assessment stage, University of Michigan staff, with the assistance of a consultant and DTE Energy, create an energy audit of the building and recommend changes that will make the building more energy efficient. Following building evaluation, Planet Blue teams meet with the leadership within the building to foster buy-in by the building managers, deans, chairpersons and other leaders within the facility. Team building then engages all of the people who have a regular interaction with the building systems. Open Houses follow, ensuring that occupants understand the program and their role in creating energy savings. Open Houses involve giving building occupants information about their building's energy usage and costs and allow them to experience in-depth tours of the building. Tours include a peek into typically unvisited areas such as machine rooms, in an attempt to explain how the building operates. An education campaign follows. Planet Blue Liaisons go from program to program, floor to floor, and sometimes person to person, to explain the program and speak to occupants about what they can do as individuals to help conserve energy and bring the University closer to reaching its goals. After this, energy conservation measures are determined and installed, and finally, the program is fully implemented and energy usage is tracked. Feedback during the implementation stage allows facilities managers to make adjustments to the physical systems of the building and to ensure that occupants remain comfortable and committed.

One explanation for the success of Planet Blue is that it alters the energy conservation system at the University of Michigan by placing all three pieces of the governance process, as described by Doppelt, into the hands of the building occupants. The three components of this interactive governance process are decision-making and accountability, distribution of resources and wealth and information generation and sharing. Factors such as the participatory framework, public availability of building assessments and energy usage and costs, interactive education campaign and sharing of cost savings work together to holistically rearrange the governance paradigm in relation to energy consumption. Possession of all three of the governance components gives the University community real power and authority in making the change toward sustainable energy use. Other characteristics involved in Planet Blue's successful organizational change are detailed in the following section.

**Lessons for the University of Southern Maine**

There are a number of lessons to be learned from the success of Planet Blue. Analysis of the Planet Blue program highlights seven areas of importance – leadership, a participatory framework, clear and concise mission, publicity and marketing, an online presence, public tracking and careful choice of pilot projects.

***Leadership***

A message from University of Michigan President Mary Sue Coleman is prominently displayed on the program's homepage. President Coleman states, "The University of Michigan takes its responsibility of protecting and preserving resources very seriously, and every contribution can make a difference."[15] The placement of the President's message on Planet Blue's homepage creates a visible commitment to the program from the very top of the University of Michigan administration. James and Lahti underscore the importance of visible leadership by naming the "official endorsement of sustainability operating principles"[16] as one of their seven steps to change.

***Teamwork and Participatory Decision-Making***

Teamwork and a participatory approach are also very important. Harvard's sustainability program calls this "No Conservation without Representation."[17] Planet Blue uses Planet Blue Teams, consisting of facility mangers, plant operations personnel and unit and building representatives, to create a building-specific action plan.

Assessment of the Rackham Graduate School building underscores the importance of participatory decision-making. Occupants were concerned that one of the building's grand rooms would lose its ambiance if the chandeliers were kept off. The final agreement between plant operations and building leaders was that the one chandelier visible from the building's entrance would be kept on. Energy was saved and the "feeling" of the building was preserved.[18]

Compromises made through participatory decision-making ensure that a relationship persists that is mutually beneficial. Doppelt points to this type of horizontal organizational structure as a key component in organizational change. He calls rearranging the systems parts "the second-greatest leverage of change toward sustainability."[19]

***Clear, Concise Mission***

A mission that is clear and concise leaves little room for alternative interpretations and minimizes conflict between competing goals. For Planet Blue, this is simply "Save energy. Save money. Save the planet."[20] Systems theory highlights that "it is not uncommon for subsystems to have goals that compete directly with or diverge from the goals of the overall system.[21] To avoid conflicting and competing goals there is a need to ensure that all components of a system – in this case the people who make up the University community – are all working toward the same mission. One implication of a clear mission is evident in the goal of carbon neutrality. There are a number of ways to become carbon neutral. Purchasing offsets and switching to clean energy sources are two examples of alternatives to energy consumption reductions. Planet Blue specifically focused on energy conservation, the route toward which community members could directly contribute.

***Publicity***

A program cannot be successful if no one knows about it; Open Houses and press coverage are important components of a successful campaign. Although the University of Michigan had received accolades for its environmentally friendly programs and policies, members of the University were unaware of the University's efforts. It takes not only commitment to sustainability, but also visible commitment, to create change throughout the University community. The University of Michigan has also used the production of videos to highlight the program.[22]

***Marketing***

Marketing of the program should make use of social media. In addition, marketing materials should be simple, instructive and attractive and should be consistent across media so as to be readily associated with the program. This is a lesson that the University of Michigan has learned well, as demonstrated by the updated poster campaign that was implemented as a part of Planet Blue. T-shirts, online materials and posters carry the same design, making the messages easily identifiable as a part of Planet Blue. A comparison of the previous "Use Your Power Wisely" posters, the new Planet Blue posters, and energy conservation posters from USM's Office of Sustainability website are available in Appendix A. In his 2008 analysis of encouraging sustainability, McKenzie-Mohr emphasizes that prompts, such as posters, should be "vivid (a bright color) and eye-catching."[23]

***Interactive Website***

An interactive website adds to the marketing campaign by allowing online access to tools, tips, case studies, events, and ways to get involved and building information. Not only does it provide information, but it allows visitors to sign up to become part of the My Planet Blue online community and to submit comments and ideas for program improvement. Listing the names of University members who have made a commitment to Planet Blue helps in the creation of social norms favoring sustainable behavior. "Commitment as a behavior change tool has been utilized in a variety of studies, often with dramatic results."[24] This is explained by McKenzie-Mohr by a desire for people to appear consistent.

***Tracking***

Access to building information from Planet Blue's website allows building users to view graphs of historic and current energy usage and costs. This accessible tracking allows occupants to see the outcomes of their sustainable behaviors. When it comes to taking the stairs instead of the elevator, for example, it is difficult for people to see the effect of their action on something as big as climate change. This is because "feedback is not necessarily transmitted and returned through the same system component – or even the same system."[25] Providing a feedback closer to the source of the behavior is more productive in encouraging continued compliance with the program. Doppelt states that "the sixth-greatest leverage for modifying a social system toward sustainability comes by correcting its feedback mechanism."[26]

Tracking also allows the program to publicly acknowledge those people and groups that go above and beyond in their commitment to energy conservation. In 2009, Planet Blue handed out its first Distinguished Citizen Award to Jan Buswinka, the staff member from the Chemistry Building who came up with the idea to install sensors on fume hoods in teaching laboratories.[27] This is in keeping with McKenzie-Mohr's suggestion to make norms visible.

***Set Yourself up for Success***

Using a building by building roll-out of the Planet Blue program, new buildings can be added to the program as resources become available. This allows the program to focus on a quality program instead of spreading resources thin in an attempt to apply the program to the entire University at one time.

There are a number of ways to go about choosing pilot programs for sustainability projects. One approach is to choose the project with the potential for the most dramatic change. Alternatively, in a program with a more long-term focus, it is sometimes suggested that the project most likely to be successful should be initiated first.

**Beacon**

Incorporating the key lessons of Planet Blue, the Beacon program is proposed. A beacon is "a signal for guidance" or "a source of light or inspiration."[28] In addition, historically, the lighting of a beacon signaled the lighting of subsequent beacons. In this way, the beacon represents not only the way in which social norms can be altered to encourage sustainability, but it also reflects the way in which social media effectively spreads a message throughout a community. The University of Southern Maine's Beacon program will seek to engage the University community to support Scope 2 of the University's CAP through energy conservation.

***Beacon Working Group***

A Beacon Working Group should include:

- Selma Botman, President,
- Faculty representatives, especially those from environmental science and communication & media studies,
- Bob Bertram, Executive Director of Facilities Management,
- Representatives from campus environmental groups,
- Representatives from the Office of Public Affairs and the Office of Marketing and Brand Management,
- Dudley Greeley, Sustainability Coordinator at the Office of Sustainability, and the President's Council on Climate Neutrality.

**Table 2. Initial Tasks in Creating the Beacon Program**

| TASK | WHO | WHEN |
|---|---|---|
| Present Beacon proposal to Bob Bertram, Executive Director of Facilities Management | Sandra Hughes Goff, Dudley Greeley | May 2010 |
| Present Beacon proposal to President Selma Botman | Sandra Hughes Goff, Dudley Greeley | May 2010 |
| Create Beacon Working Group | Dudley Greeley | Summer 2010 |
| Create Beacon Plan | Beacon Working Group | Summer 2010 |
| Hire work study/assistantships | Dudley Greeley, Bob Betram, Faculty | Summer 2010 |
| Assess opportunities in curriculum to support Beacon | Faculty | Summer 2010 |
| Determine Beacon Team Members | Beacon Working Group | Summer 2010 |
| Design the Beacon contest | Beacon Working Group | Beginning of Fall 2010 |
| Create interactive Beacon website | Student assistant/work study | To be completed by January 2011 |

Initial tasks for the Beacon Working Group (BWG) are outlined in Table 2. First, the Beacon Working Group needs to convene in order to develop a "Beacon Plan," articulating the mission, goals, timeline, budget, and incentive plans; and including what the University will do with the energy cost savings. The Beacon Plan should designate one pilot building, and at least two additional buildings to become Beacons by May 2011.

The BWG should also determine the number of student assistantships that will be required to produce the necessary products for the program. Contacting University faculty in environmental science and communication & media studies may provide further opportunities for coursework that may serve to support the needs of the Beacon program. Products include an interactive website that allows members of the USM community to pledge their commitment to sustainability by becoming "Keepers," as well as the creation of a marketing plan and design work. Members of the Working Group should also be responsible for creating a "design the Beacon" contest. This would provide low cost design work for the program and create publicity. The Beacon Working Group also needs to determine which members of the University staff should become Beacon Team members. Finally, the Working Group should launch a pilot program.

***Beacon Teams***

The Beacon Team is the group responsible for assessing buildings within the program. This group consists of key facilities staff, such as Bob Bertram, Dana Gray and Dudley Greeley. Also serving as team members are building-specific members such as the director of facilities for the campus of which the building is a part, and the custodians or regular facilities contacts for the building.

***The Wishcamper Center Pilot Project***

The Wishcamper Center would be an ideal setting for the launch of an energy conservation initiative for a number of reasons. First, the Wishcamper Center is Leadership in Energy and Environmental Design (LEED) Gold certified, meaning that the structure incorporates a variety of sustainable features into its design. The self-guided Green Spot Tour, currently in place within the facility, calls attention to sustainable aspects of the building. The Wishcamper Center is home to a number of organizations concerned with environmental issues, such as the Environmental Finance Center, Cutler Institute for Health and Social Policy and Casco Bay Estuary Partnership. Finally, the Wishcamper Center houses the Edmund S. Muskie School of Public Service. As the home of the Muskie School, participation by Wishcamper in Beacon would be in keeping with the late Senator's legacy of environmental stewardship.

***Launching the Pilot Project***

The seven steps to launching the Wishcamper Center Pilot Project are outlined in Table 3. The first step is for the Beacon Team to create an assessment of the Wishcamper Center. The group should assess past and present energy usage, occupant behaviors and concerns and the physical systems of the building. Through this assessment, the group should determine if additional team members are needed to obtain further expertise.

**Table 3. Plan for Launching the Wishcamper Pilot Project**

| TASK | WHO | WHEN |
|---|---|---|
| 1.Assess Wishcamper | Beacon Team | Fall 2010 |
| 2.Engage leaders within Wishcamper | Beacon Team | Concurrently with assessment |
| 3. Build the Wishcamper Beacon Team | Beacon Team | Fall 2010 |
| 4. Host Open House | Wishcamper Beacon Team Office of Public Affairs | January 2011 |
| 5. Education | Wishcamper Beacon Team | In concert with Open House week |
| 6. Energy Conservation Measures | Wishcamper Beacon Team | Immediately following Open House |
| 7. Implementation | Wishcamper Beacon Team | Immediately following creation of energy conservation measures |

Concurrently with the assessment, the Beacon Team should be involved with engaging the leadership within the building. In the case of the Wishcamper Center, this would include leaders from Osher Lifelong Learning Institute (OLLI), leaders from each of the research centers, the chairperson of the Muskie Student Organization and Mark Lapping, Executive Director of the Muskie School.

Once the leadership within the building has been engaged and has offered their expertise, a Wishcamper Beacon Team is assembled. This Team will be responsible for the operation of the Beacon program within Wishcamper. Again, it is important that all of the various groups within Wishcamper are represented.

The Wishcamper Beacon Team is then ready to perform its first task, hosting an Open House. This event is important as a source of information, publicity and social marketing. It is vital that this event be hosted as sustainably as possible to demonstrate the program's environmental commitment. In concert with the open house, an educational component should be carried out. This includes publicizing current energy usage and costs, as well as sharing the results of the assessment. In-depth tours should be offered the week and evening of the Open House, and all regular building occupants should be strongly encouraged to attend. It is also important at this time to communicate the plans for the energy cost savings. During the weeks leading up to and including the introduction of energy conservation measures

and implementation, Wishcamper Beacon Team members should visit groups of people throughout the building to discuss how they can contribute to energy conservation.

Targeted energy conservation measures and any necessary technology, such as motion-sensing devices, are introduced next. These may be general methods, such as setting thermostats to a certain temperature, or more specific to the building and its occupants, such as not opening windows in Wishcamper. Finally, implementation begins. Posters go up, energy usage is publicly tracked, feedback is solicited and the results are publicized.

***Paying for Beacon***

The University of Michigan's Planet Blue has an annual budget of $5 million that comes from Plant Operations funds. The program utilizes the services of an outside consultant and in January of 2009 hired a full-service marketing company, Phire Branding Company, to handle the Planet Blue brand. It is suggested here that the use of outside firms to create products for the energy conservation program results in the loss of an opportunity to create a hands-on learning environment for University students. Many of the tasks required to launch Beacon can be carried out by University students through assistantship opportunities, work study and class projects.

The Climate Action Plan states that "[t]he campus itself is a powerful teaching tool."[29] Utilizing the combined efforts of students in marketing, environmental science, education and community planning and development, students will create valuable products for the Beacon program while learning about what it takes to encourage sustainable behavior. These skills are likely to become in great demand in the future and the University plays an important role in preparing students to become sustainability professionals. Coursework, assistantships and work study opportunities all provide a venue for training.

The following courses found in the 2009-2010 University catalogue all contain subject matter applicable to the Beacon program and thus are likely candidates for coursework in supporting the program through applied projects:

ESP203W-Environmental Communication,
ESP275-Energy Use and Societal Adaptation,
ESP445-Environmental Education and Interpretation,
BUS357-Triple Bottom-Line Marketing,
CMS 398-Topics in Communication II.[30]

***Expanding on the Mission of Beacon***

Once the Beacon program has been established, the pilot program has been carried out and subsequent buildings have stepped up to become Beacons, the University could take the opportunity to expand upon the mission of Beacon. Through the creation of a program called Navigators, the University could address some of the greenhouse gas emissions attributable to Scope 3 sources and better integrate

sustainability into the University's curriculum. The Navigator program would exist as sustainability education teams modeled after Santa Monica's SustainableWorks program[31] and would aid the University in integrating sustainability into its curriculum.

This program could be created as a joint project between USM's Environmental Science and Education programs. Together, the two disciplines could create a workbook used to lead a 6-week course in incorporating sustainable behavior into everyday life. The course would be held once a week in a Wishcamper classroom and would be taught by student volunteers. The program can be encouraged by professors through offering extra credit to students who enroll in and complete the course. Navigators could make use of and expand upon the existing Green Spot Tours and might represent an opportunity to collaborate with the Office of Civic Engagement to provide the service to community groups and schools. Collaboration with the Sustainable Portland program might also represent opportunities to expand the service learning capacity of the program.

**References**


About Planet Blue Teams. Retrieved from University of Michigan Planet Blue website: http://www.planetblue.umich.edu/about.php.

Anderson, V. & Johnson, L. (1997). ***Systems Thinking Basics: From Concepts to Causal Loops***. Waltham, MA: Pegasus Communications.

Doppelt, B. (2003). Leading ***Change toward Sustainability: A Change-Management Guide for Business, Government and Civil Society***. Sheffield, UK: Greenleaf Publishing.

Energy Management at UM – Outreach. Retrieved from University of Michigan Plant Operations website: http://www.energymanagement.umich.edu/utilities/energy_management/energy-mgmt/outreach.html.

Gershman, D. (2008, September 14). U-M aims to save on energy: Planet Blue campaign launched to cut costs. ***The Ann Arbor News***. Retrieved from http://www.planetblue.umich.edu/news.php.

James, S. & Lahti, T. (2004). The *Natural Step for Communities: How Cities and Towns can Change to Sustainable Practices.* Gabriola Island, BC, Canada: New Society Publishers.

Marans, R. & Scott, L. (2007). ***Ten Key Findings & Recommendations***. Retrieved from University of Michigan Institute for Social Research website: http://www.isr.umich.edu/energypilot/ten-key-findings.pdf.

McKenzie-Mohr, D. (2008). Fostering Sustainable Behavior: Beyond Brochures. ***International Journal of Sustainability Communication***. 3. 108-118.

Merriam-Webster. (2010). Retrieved from http://www.merriam-webster.com/dictionary/beacon.

White, J. & McElroy, C. (Executive Producers). (Episode 205, Planet Blue). ***Out of the Blue: The Michigan Difference***. [Television Broadcast]. Ann Arbor, Michigan: Michigan Productions.

Phire Branding Company. (2009, January 29). ***Phire Named Marketing and Branding Supplier for UM Planet Blue***. Retrieved from http://www.phirebranding.com/blog/category/press_release/.

Planet Blue Distinguished Citizen Award. (2009). Retrieved from University of Michigan Planet Blue website: http://www.planetblue.umich.edu/news.php?nid=28.

Planet Blue Homepage. Retrieved from University of Michigran Planet Blue website: http://www.planetblue.umich.edu/home.php.

Planet Blue Reduces Energy Consumption by 6%. (2009). Retrieved from University of Michigan Planet Blue website: http://planetblue.umich.edu/news.php?nid=30.

Planet Blue Tools. Retrieved from University of Michigan Planet Blue website: http://planetblue.umich.edu/resources/tools.php.

Planet Blue Video. Retrieved from University of Michigan Planet Blue website: http://ummedia10.rs.itd.umich.edu/flash/bmcvideo/bmcvideo.html?dep=bmcvideo&file=PB4_14_10.flv.

President's Council on Climate Neutrality. (nd). ***USM's Guide to a Climate-Neutral Education***. Retrieved from University of Southern Maine Facilities Management website: http://www.usm.maine.edu/dfm/.

***Sleep is Good; Time Off is Better.*** Retrieved from the University of Southern Maine Office of Sustainability website: http://www.usm.maine.edu/sustain/pages/Energy.htm.

The Princeton Review. ***The Princeton Review's Guide to 286 Green Colleges***. Retrieved May 11, 2010, from http://www.princetonreview.com/green-guide.aspx.

Undergraduate Catalog 2009-2010. Retrieved from University of Southern Maine website: http://usm.maine.edu/catalogs/undergraduate/index.htm.

## Appendices

### Appendix A– Comparison of Energy Conservation Posters

**Planet Blue Posters**


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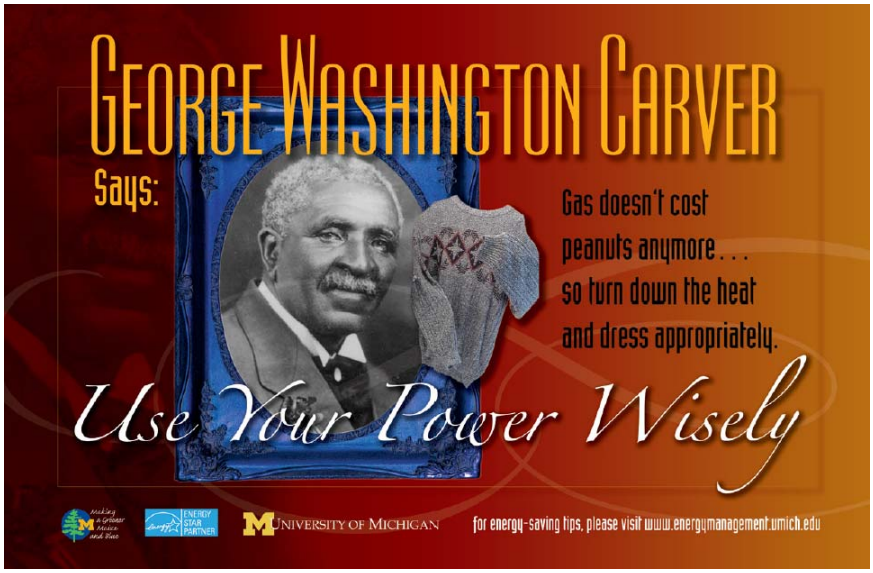
***"Use Your Power Wisely" Campaign*** *– Mistaken for advertisements for upcoming play or lecture*

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***Energy conservation flyer from USM's Office of Sustainability website*** *– Too much text!*

# *Sleep is Good.*
# *Time off is Better!*

Last year USM used over 19,000,000 kWh of electricity.

Our use of this power resulted in the release of over 8500 tons of global warming CO2, Sulfur Dioxide and NOx.

Please turn off your monitor when it is not needed and let us all breathe slightly cleaner, healthier air.

**Disable your "screen saver" (a feature that wastes energy) and**
**Enable the "sleep" mode on your monitor.** By using this clever energy-management tool you will help reduce electricity use at USM. "Sleep" mode turns your computer's monitor down from full power if you haven't touched the keyboard or moved the mouse for 10 minutes or so. The monitor is "woken up" by a keystroke or by moving the mouse. If you aren't using your monitor, **it's good to let it "sleep", but turning it off is even better.**

It only takes a moment to enable the "sleep" function on your monitor. Ask a friend to help if you haven't done this before, or call the **Computer Help Desk at: 4029**. Coal-fired power plants produce much of the electricity we use. This is not a clean or sustainable process. By allowing your monitor to sleep, you slow global warming, reduce health care costs, improve our quality of life, and help protect our loons from the mercury that is released into the atmosphere when coal is burned. Protect your monitor from unnecessary heat-related damage. Press the "off" button.

**Sleep is good – Time off is Better!**

This information is provided on 100% reused paper by the USM Sustainability Office. Contact Dudley Greeley at 780-4884 for more information.

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## *Appendix B – Results from the Plant Blue Pilot Buildings*

**PLANET BLUE PILOT BUILDING RESULTS**
June 10, 2009

planet blue
UofM environmental & energy initiative

**Background**
Steam and electricity are the primary energy sources for central campus buildings.
We monitor and track energy data by individual building.
We implement a wide variety of Energy Conservation Measures (ECMs) specific to each building. Some examples include:

- Occupancy sensors for lighting
- Optimization/interconnection of chillers
- HVAC scheduling adjustments
- Restroom water faucet modifications

**Planet Blue**
Planet Blue began in 2007 with five pilot buildings.
The five pilot buildings were: Chemistry, Fleming, Institute for Social Research, Rackham and Space Research.
Planet Blue engages building occupants by educating them on "best practices" for conservation and ways to reduce consumption.

**Results**
Energy consumption decreased by 6% for the five pilot buildings collectively.
Annualized cost avoidance is $340K (based on the last 12 months).
Planet Blue is actively engaged in 30 buildings for FY09.

**Details by Building**
We realized noticeable energy savings in three of the five pilot buildings:

| | Energy Reduction | Cost Avoidance | Key ECMs and Activities |
|---|---|---|---|
| ISR | 26% | $191K | Chiller interconnection, HVAC scheduling, occupancy sensors |
| Rackham | 32% | $210K | Fan schedule reductions & equipment sequencing, occupancy sensors |
| Space Research | 17% | $62K | Air handler upgrades, steam trap replacements, building tune-ups |

We encountered more challenging situations in two of the five pilot buildings that impacted potential savings:

Chemistry: Historical electric data are artificially low due to old meters that were replaced in February 2007.
New meters now provide more accurate readings, but consequently it appears that electric consumption is increasing.
While we have reduced steam usage, the net result to the building is negligible ($17K). However, several projects are still in progress and we expect significantly lower usage in the future.

Fleming: Energy usage increase of 28% ($106K) due to a variety of factors, including local server room cooling requirement.
A majority of the servers were relocated to a central location in May 2009 and we modified fan schedules accordingly.
Consumption is expected to decrease going forward.

**Appendix C: Descriptions of Courses Applicable to Beacon**

***ESP 203W Environmental Communication***

Students study environmental communication to understand the influence of socio-economic, political, and scientific factors in the social construction of environmental problems. Topics include basic communication theory and its application to the perception and communication of risk, how communication is used to persuade/dissuade the public regarding environment problems, and how the environment is used to manipulate consumer behavior. Students also will explore the basics of social science research and its application to environmental communication.

***ESP 275 Energy Use and Societal Adaptation***

This course focuses on the topic of energy, its utility, its use, and its impact on society and the environment. Subjects to be explored include: 1) traditional, modern and future energy resources; 2) energy consumption; 3) energy technologies; 4) energy and the environment and 5) sustainable development. The class will consist of a combination of lectures and seminars using a variety of media, including textbooks, technical articles, print, and video

***ESP 445 Environmental Education and Interpretation***

Students explore the basics of classroom and nonformal environmental science education and interpretation using an inquiry-based approach. Topics include teaching ecosystem and environmental science principles, selecting and designing environmental curricula, and applying the Maine Learning Results to environmental education. Prerequisite: 12 credits of science or permission.

***BUS 357 Triple Bottom-Line Marketing***

How can marketers manage for the triple bottom line of financial, environmental, and social performance? This asynchronous, online course begins with an exploration of sustainable business (i.e., the pursuit of profits without causing pollution or social inequity). The course ends by examining green consumer behavior and the interrelationship between environmental issues and marketing strategy.

***CMS 398 Topics in Communication II***

A selection of courses varying in content from term to term. May be repeated for credit when topics vary. Students should consult MaineStreet for a listing of current topics courses and the CMS homepage for detailed course descriptions. CMS 398 will be listed under "Communication Theory."[36]

[1] White & McElroy
[2] President's Council
[3] The Princeton Review, 2009
[4] Marans & Scott, 2007
[5] Ibid, p. 5
[6] Planet Blue Video
[7] Planet Blue Homepage
[8] Gershman
[9] Ibid
[10] Planet Blue Video
[11] Planet Blue Reduces Energy Consumption
[12] Gershman
[13] Ibid
[14] White & McElroy
[15] Planet Blue Homepage
[16] Lahti, p. 208
[17] http://green.harvard.edu/node/651
[18] White & McElroy
[19] Doppelt, p. 83
[20] Planet Blue Homepage
[21] Anderson & Johnson, p.79
[22] Planet Blue Video, White & McElroy
[23] McKenzie-Mohr, p.115
[24] Ibid, p. 114
[25] Anderson & Johnson, p. 5
[26] Doppelt, p. 84
[27] Planet Blue Distinguished Citizen Award, 2009
[28] Merriam-Webster
[29] President's Council
[30] For more a detailed description of the courses, see Appendix C
[31] visit www.sustainableworks.org for more information
[32] Planet Blue Tools
[33] Energy Management at UM – Outreach
[34] Sleep is Good; Time Off is Better
[35] Planet Blue Reduces Energy Consumption
[36] Undergraduate Catalog 2009-2010

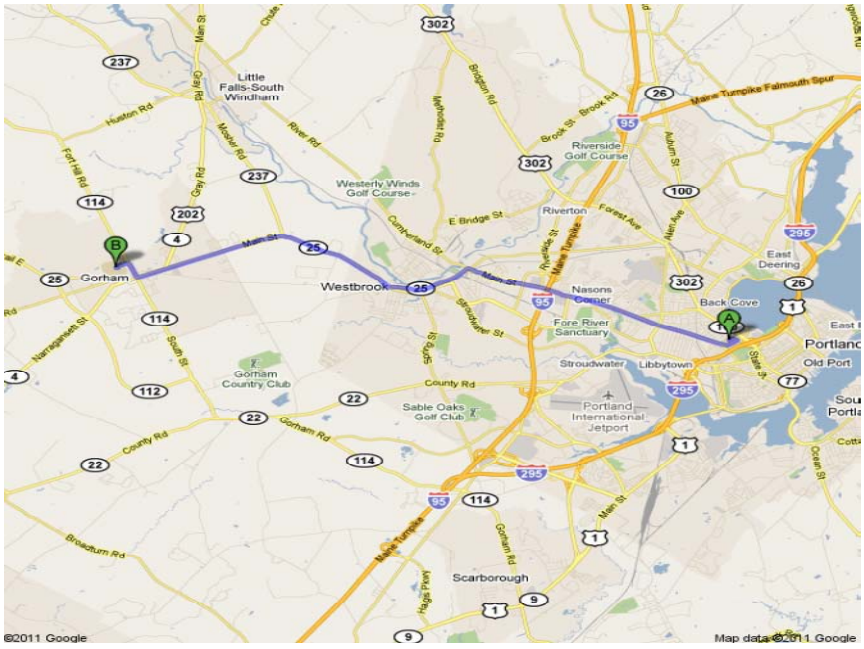
**University of Southern Maine Bus Reduction**

***Ken Whitney***

*When addressing the sustainability of any entity, one often focuses on small issues that are noticeable and develops incremental goals with which to minimize the negative impacts of these issues. Examples of these often include increased participation in recycling programs, minimized energy usage, or augmented levels of the purchase of local goods and services. Transportation, however, be it for individuals, companies, or large institutions of higher education, is often ignored; the myriad issues that make some modes of personal transportation inherently unsustainable are often less tangible, less noticeable, and much more difficult to address.*

*In these pages, the author examines the operation of inter-campus bus services at the University of Southern Maine. He examines the basic elements that contribute to the unsustainability of this system, and he will focus on the efforts of three other universities systems – the Five College Consortium, University of New Hampshire, and the University of Guelph – to better address their institutions' sustainability through changes in transportation paradigms. Finally, he proposes a list of priority actions and a longer-term vision that this University should adopt to reduce the negative environmental, social, and economic impacts of transportation between the Gorham and Portland campuses.*

University of Southern Maine – ***Gorham***




University of Southern Maine – ***Portland***

**An Introduction: USM's Intercampus Bus System**

The University of Southern Maine maintains two main campuses: Gorham and Portland. The Gorham Campus evolved from Gorham Normal School, established in 1878 directly northwest of the village center. The Portland Campus was established as Portland Junior College in 1933; it is located in the Oakdale neighborhood and is adjacent to the Exit 6 interchange of Interstate 295. These two institutions merged in 1970 to become the University of Maine at Portland-Gorham (UMPG), adopting its current name, the University of Southern Maine, in 1978. Since the merger, geographically divided programs of study have coerced the University's students to shuttle, either via private automobile or a dedicated bus system, between the two campuses.

Currently, USM operates approximately thirty-eight bus trips each week day and twelve trips on weekends. On a map, one might perceive the distance between the campuses to be short: on a constant heading, the Gorham and Portland campuses are just eight miles distant. However, the route the bus system usually navigates is approximately fifteen miles – a trip that can occasionally last more than 30 minutes. Based on the system's schedule, inter-campus buses at USM travel a distance of nearly two thousand miles each week, the equivalent of an epic roadtrip to Denver, Colorado. Notably, this calculation does not include the reality that several departures on the system's timetable includes not one but two buses.

It is also important to note that USM contracts with V.I.P. Charter Bus, Inc., to provide transportation between the two campuses. Each student at USM, regardless of whether or not he uses the buses, must pay a transportation fee to subsidize the service for its riders.

***A Model of Unsustainability: The Impacts of USM's Intercampus Bus System***

The University's reliance upon a dedicated bus service between the two campuses is inherently unsustainable. First, buses are environmentally unsustainable: these diesel-engine buses contribute markedly to the emissions of greenhouse gases (GHGs) in the Greater Portland area, and have contributed to and will be a factor in increased investments in highways corridors between the cities. Second, buses are socially unsustainable: studies indicate that buses and other similar modes of transportation increase rates of asthma and obesity among riders; it is discriminatory because the general public is not permitted to ride and is provided with no alternative. Finally, the budgetary impact the bus system has on the University's bottom line is both unnecessary and financially unsustainable.

***Environmental Sustainability***

Transportation is estimated to account for approximately 25-40 % of all greenhouse gas emissions. However, in the University's Climate Action Plan (CAP), much of the data conveyed does not include transportation; the CAP's Scope 3 conspicuously ignores the impact that student commuting has

on the University's carbon footprint. The intercampus bus system utilizes diesel engines, the product of century-old technologies. Additionally, V.I.P. Charter is currently being investigated by the Department of Environmental Protection (DEP) for violations in maintenance of its vehicles, relating to oil and fuel leaks. Far from being a sustainable element of the University, the bus system is literally a black cloud over current efforts for USM's evolution into a green, carbon-neutral entity.

***Social Sustainability***

The scores of buses operated weekly by the University damage local air quality, increase asthma and obesity rates, and decrease quality of life. The previously noted emission of greenhouse gases from the diesel bus engines damages air quality; the particulates in the air have been shown to increase asthma rates among impacted people.

Additionally, undergraduates who must spend nearly one hour a day on the bus to attend classes at another campus are losing one hour of time for recreation. For many students, this means an hour of time for activities such as intramural sports, exercise, or simple time outdoors is unavailable. Such an infringement on recreational time not only provides the potential for weight gain, but many European countries measure standard of living by the amount of free time one has each day; by using this measure, USM students fail to measure up. Finally, the inter-campus bus service discriminates against non-University residents of Gorham and Portland; the general public is not permitted to ride, and there are no alternative modes of transportation between the two communities.

In ***Toward Sustainable Communities***, Lahti notes that by decreasing vehicular congestion and "reclaiming the streets," social, cultural, and recreational activities within the communities are enhanced. Thus, the presence of frequent, private bus service from USM must negatively impact these activities.

***Economic Sustainability***

Busing between Gorham and Portland is an expensive endeavor. The Department of Energy estimates it costs $1.83 per mile to operate a diesel intra-city bus, and this figure does not include labor. USM's system costs approximately $1M, and these funds are derived almost exclusively from a blanket fee charged to all University students, regardless of their system usage. The presence of this fee effectively becomes part of USM's tuition rates; hence, the $1M spent for transit between campuses substitutes other areas of potential funding for academic endeavors. Additionally, it is possible that USM is unable to attract and retain many students based on the necessity of shuttling between campuses; such an impact has tremendous financial consequences for the institution.

Buses on this corridor have contributed to the construction and study of new highway projects. Judy Gates of the Maine DOT notes in her paper, "Climate Change and Transportation in Maine," that

increased tourism and traffic from warmer summers will make the corridor between Portland and Gorham more congested. This corridor will be another expensive project for the State of Maine.

Finally, simply imagine, especially in the University's current fiscal crisis, if more than 20% of the budget cap could be simply eliminated. This is the impact USM's busing system has on its bottom line.

**Concepts from Other Universities**

Several other universities are implementing new measures through which their transportation sector is becoming more sustainable.

***The Five College Consortium – western Massachusetts***

For years, five colleges in western Massachusetts have offered joint courses available to students from the other schools – Amherst College, Hampshire College, Mount Holyoke College, Smith College, and the University of Massachusetts at Amherst. Utilizing and expanding upon the Pioneer Valley Transit system, these five institutions of higher education offer free shuttles to students, and the general public of these communities is also eligible to ride for a nominal fare. Funded by the Five Colleges and fare revenue, this bus system serves a large, diverse populace that includes fifteen thousand students, faculty, and staff, in addition to residents in the area.

Additionally, the Five Colleges have made available bicycle racks on each system bus and at each stop. This simple feature has served to enhance the functionality of this intermodal university transit system, while diminishing the perceived necessity of the Colleges' faculty, students, and staff to maintain a personal motor vehicle.

***The University of New Hampshire – Durham (UNH)***

For several years students and faculty at UNH have contributed to sharp increases in vehicular congestion and decline in the quality of life with emissions and traffic noise in both downtown Durham and on the UNH campus. The pressure for parking lots has resulted in the pavement of former farm pastures used by the agricultural departments at this land-grant university.

In 2001 the people of Maine, with the assistance of Congestion Mitigation and Air Quality (CMAQ) grants from the federal government, funded the reintroduction of passenger rail service from Boston to Maine with three station stops in the Granite State, including Durham. Since then, UNH has funded the renovation of the former depot (now the Dairy Bar deli) and platform, and has been active in promoting the use of passenger rail at its station. According to Steve Pesci of UNH, the administration is actively promoting their new “RailCat” proposal, in which students and faculty would be permitted to ride from either of the two neighboring New Hampshire stations, to Durham on the Downeaster train with a ticket fully subsidized by the University. By incorporating this available transit mode into their

institution's long-term planning, UNH is expecting to realize decreased congestion on campus and a decline in the pressures to increase parking capacity.

***University of Guelph – Guelph, Ontario***

The University of Guelph in Ontario, Canada, has recently taken the sensible – yet novel – approach in dealing with transit between its multiple campuses. Instead of contracting with a private company to run private buses for its University, UG has developed the U-Pass, a universal, university pass for its students and faculty with which they can ride the city's transit system buses, run by Guelph Transit. These U-Passes are voluntarily purchased by UG students who either commute from their distant homes or to classes at satellite campuses of the University.

By adopting the U-Pass, both the University of Guelph and the City of Guelph have benefited. The University is not forced to either raise tuition or student fees, or to decrease its budget due to these increases, and the City benefits financially from the increased fares collected on its public buses. Additionally, the greater society of Guelph, Ontario, benefits from the U-Pass in the form of a better, more integrated transit system and lower fares derived from the critical mass of riders to which UG students contribute.

**Priority Actions to Enable a More Sustainable USM Intercampus Bus System**

The University of Southern Maine has taken the first – and necessary – step to improving the sustainability of its campuses: it has recognized that the *present* USM is unsustainable, and that the current administration must take certain actions by which a more sustainable USM will result. As aforementioned, USM's Climate Action Plan includes student commuting. While the intercampus bus system is included within this scope, it is not directly addressed within the data. However, among the list of interim goals – to be achieved by 2025 – are three action items that directly apply to the system.

Adopt a Campus-Wide Anti-Idling Policy. In its next contract with V.I.P. Charter, the University is committed to reducing idling to only periods of time in which the bus is arriving, loading, or departing. Estimates from the CAP indicate that twenty metric tons of $CO_2$, the equivalent footprint of twenty Maine households, would be eliminated by enacting and enforcing this simple policy.

- Conduct a study of costs/benefits of schedule and class-space modifications. In particular, undergraduates at USM are institutionally coerced to attend classes at both the Gorham and Portland campuses, thus creating the need for intercampus buses. However, with the consolidation of certain undergraduate departments on the Gorham Campus, much of this transport need could be expected to be eliminated. Merely a cursory glance at course offerings indicates that if certain departments, most notably some of the physical science and social science classes, were relocated to Gorham, the need for busing would be reduced. Historically, most undergraduates reside in Gorham, where the availability of on-campus housing and cheap rental properties are abundant.

- Conduct a study to see if “alternative-fuel” buses can be utilized. While the CAP mandates a study of alternative-fuel buses, such a study is utterly unnecessary. Cities and universities across the country have commenced purchase and utilization of such vehicles, powered by fuels as diverse as propane, compressed natural gas, biofuels, and diesel-electric hybrids. Already established in Maine, the METRO of Portland uses CNG systems and the Island Explorer of Mount Desert Island uses propane power. Each of these systems has yielded environmental and social benefits, with decreased emissions and improved air quality. Upon retirement of the current diesel buses, USM should require V.I.P Charters to acquire alternative-fuel vehicles.

The University's CAP largely ignores other simple ways by which USM could reduce its carbon footprint, and enhance its environmental, social, and economic sustainability. The action items listed below are listed in order of priority.

1. ***Conduct a comprehensive study of present and prospective USM students on their perceptions of the bus system services.*** The administration must realize that the necessity of intercampus busing – which, if nothing else, is time-consuming for its students – must have a negative impact on students' perceptions of the University in its entirety. The University should conduct a comprehensive study of prospective students to determine the buses' impact on their enrollment at the school. Additionally, it should survey current students' perceptions of the system, and the buses' impact on both students' quality of life and retention. Only by conducting this study will the administration comprehend the system's effect on both the quality of education and the financial impacts.
2. ***Install bicycle racks on buses and increase capacity at the campuses.*** This simple action would improve the mobility of students within both Gorham and Portland, and increase the functionality of the bus system.

Each of these shorter-term actions, of which three are already included in the approved CAP, will address certain elements of sustainability of the University's transit system. Both anti-idling measures and the future acquisition of alternative-fuel buses will decrease emissions and improve air quality and quality of life for many students and area residents. Analyzing both class schedules and students' perceptions of the service will serve to improve the awareness of the administration of the present and future effects of the service. Finally, the installation of bicycle racks will serve to improve the mobility of students by enhancing access to a green transit mode even while maintaining the buses' status quo.

***Gorham to Portland: Long-Term Visions for Improved Efficiency, Access, and Sustainability***

It is necessary for USM to envision the potential of a fully integrated, efficient, accessible, and sustainable transit system between its campuses. The following are three items that the University should pursue in the long-term, in order of ease and priority:

1. ***Better integrate transit options between the five major regional campuses.*** In addition to Gorham and Portland, campuses of the University of Maine System exist in Bath, Lewiston, and Saco. Programs of study often require students to attend classes at multiple campuses, and most students – and faculty – utilize their private vehicle. Transit options often exist between these locations. Intercity bus service provided by Greyhound and Concord Coach Lines currently connect both Lewiston and Bath to Portland. Western

Maine Transportation Services connect Lewiston with Bath, and both ShuttleBus and Amtrak's Downeaster train connect Saco and Portland. To encourage its students to use public transportation and, thus, decrease their impact on the environment, USM should model itself on the University of New Hampshire and fully fund student trips on available transit systems between its cities.

2. ***Attain membership with METRO and integrate its services with the City's.*** The University should be proactive and develop a long-term vision of full integration of the school's buses with METRO's public intra-city buses. At present, USM and METRO buses both serve the Portland Campus on Bedford Street, yet their schedules do not coincide for students and faculty to make convenient connections between the two systems; the University and METRO do not cooperate. The University should, first, become a member of the METRO organization. Afterwards, it should work to fully integrate its schedules with the METRO routes that serve Brighton and Forest Avenues; the physical infrastructure is already available by which a transit hub on Bedford Street could evolve.
3. ***The University should relinquish its buses to become part of METRO's comprehensive system.*** Gorham is one of the largest communities in the Greater Portland area, and its residents should be granted the option of a reliable public transportation option. Using the University of Guelph as a model, USM's intercampus bus system should evolve into a new METRO route, by which only students who use the service should pay for its operation, and the general public from the communities of Gorham and Portland are encouraged to ride. Such a relationship could be one of mutual benefit, in which USM relinquishes the operation of its buses, and METRO increases its ridership by offering a new, public service to a popular transportation corridor.
4. ***The University should encourage Maine DOT to implement a light-rail system.*** As aforementioned, the Gorham-to-Portland corridor is heavily traveled, and state studies are currently underway to analyze future traffic levels and services. The University should take an active role in encouraging MDOT to consider the development of a light-rail system. This transportation mode is powered by electricity (perhaps from renewable sources), encourages dense land-use patterns, and reinvigorates local economies. An old rail-bed grade exists from the Mountain Division from southern Portland to Gorham, and most of this corridor is still intact.

**Conclusion**

The University of Southern Maine's intercampus bus system is not a sustainable operation. The service produces grave environmental consequences, and impacts both society and the USM budget adversely. The University's administration has already taken the preliminary action of developing a Climate Action Plan. However, student transportation and its effects on USM's sustainability are largely ignored. Several steps can be immediately taken by which USM's bus system can commence a path towards sustainability. These include anti-idling measures, the purchase of alternative-fuel vehicles, comprehensive study of classroom space alterations and students' perceptions of the service, and the introduction of bicycle racks on buses and on the campuses. Longer-term visions should include an improvement of students' access to transit services between each of the regional sites, better integration and cooperation between USM and METRO administration and bus systems, and the realization that a

light-rail corridor could be developed in the future to serve the needs of future students, staff, and area residents.

The University has boldly taken on the challenge of becoming a sustainable institution in the future. Now, it must accept the responsibility of analyzing, in a comprehensive way, the negative effects of the intercampus bus system on the environment, on society, and on the economy, and take action to mitigate – and eventually eliminate – the adverse impacts.

## Section 3: City of Portland, Maine Initiatives

*Source: Portland Real Estate*

**Green Fleet Plans: an Assessment of Ann Arbor and Toronto's Green Fleet Plans with Recommendations for Portland**

***By Rick Harbison***

*Across the country, cities and towns are becoming more aware of their energy use and contribution to climate change. Yet in the wake of the recent economic downturn, municipal budgets are stretched thin and local governments are routinely tasked to do more with fewer resources. In this trying economic climate, cities increasingly rely on energy efficiency measures as strategies to reduce environmental impact without sacrificing the bottom line. One area cities often look to for improvement is the municipal vehicle fleet. With the help of government and non-profit organizations, many cities have adopted Green Fleet plans to reduce the environmental impact and operational costs of their vehicle fleets. This paper assesses the implementation of Green Fleet plans in the cities of Ann Arbor and Toronto and offers recommendations for actions and policies the City of Portland could adopt to "green" its vehicle fleet.*

*Source: www.telogis.com/the-rise-of-the-green-fleet-industry/*

**Background**

In 2001, Portland signed a resolution to participate in the Cities for Climate Protection Campaign, sponsored by ICLEI (Local Governments for Sustainability). The campaign required Portland to complete the following 'Five Milestone' process:

1. Complete a greenhouse gas emissions inventory and report;
2. Set an emissions reduction target;
3. Complete a local Climate Action Plan to reduce greenhouse gas emissions;
4. Implement the local Climate Action Plan;
5. Monitor the local Climate Action Plan.

In 2005, Portland began the Five Milestone process by completing an inventory of emissions by government sector (see Appendix 1) and committing to reduce City emissions to 10% below 1990 levels by 2020. In 2008, Portland finished its Climate Action Plan, which outlined actions the City could take to "model appropriate conservation practices"[1] and reduce emissions. Having completed milestones one through three, the City is currently working to implement and monitor the recommendations prepared in the Climate Action Plan. These efforts also coincide with Portland's goal to "incorporate the concept of sustainability into our everyday decision-making" as outlined by the ***Sustainable Portland Report*** completed in 2007.

According to the emissions inventory gathered in 2005, Portland's vehicle fleet comprises 13% of municipal emissions. One way to decrease this percentage is to implement a Green Fleet plan to reduce fuel consumption and emissions. This paper will provide an analysis of the Green Fleet plans undertaken by the cities of Ann Arbor and Toronto, and offer recommendations for actions and policies the City of Portland could embrace in order to expand the reach of the Climate Action Plan and reduce the environmental impact of the vehicle fleet.

**City of Ann Arbor, Michigan**

The City of Ann Arbor (population 115,000) has been at the forefront of energy efficiency measures for many years. In 1981 it created an official energy plan and in 1985 the City established an Energy Office, dedicated to move the City towards efficient and sustainable energy use. In 1999, Ann Arbor joined the Department of Energy's Clean Cities program, which granted access to funds for the purchase of alternative vehicles and fuel infrastructure. This led to a scrutiny of the City's vehicle fleet and the creation of a Green Fleets policy, which established a goal for a10% reduction in annual gasoline and diesel use by 2012.

***The Road to a Greener Fleet***

The Green Fleets plan established a Green Fleets Team, appointed by the City Administrator to oversee the program. The team consists of representatives from a broad spectrum of City departments – including Finance and Administration, Environmental Coordination Services, Public Services – and is responsible to monitor and ensure compliance to the Green Fleets policy.

The Green Fleets Team conducted a comprehensive inventory of all municipal vehicles and fuel-using equipment before taking specific actions. In addition to general vehicle information (vehicle number, year, make, model, etc.), the inventory detailed specific information about vehicle function, type of fuel used, annual miles driven, miles per gallon and estimated emissions (see Appendix 2 for full inventory). The policy also established a baseline year of FY 2002-2003, from which to evaluate the

effectiveness of Green Fleet measures in future years. After reviewing the information gathered in the inventory, the City established the following objectives:

***Optimize Fleet Size –*** The plan stipulated certain vehicles be removed if they fit the following criteria: light-duty and use less than 200 gallons of gas annually, light-duty over seven years old, or heavy-duty over 10 years old. In most cases, the removed vehicle would not be replaced. Exceptions would be considered and reviewed by the Green Fleets team.

***Increase Average Fuel Economy –*** The policy established fuel-efficiency standards for new vehicle purchases that were higher than the average fuel-efficiency for each vehicle class in 2004 as measured by the Environmental Protection Agency [EPA]. See Appendix 3.

***Minimize Vehicle Miles Traveled –*** A number of recommendations were included to accomplish this goal: implement route optimization software for vehicles with fixed routes to reduce travel time, conduct meetings in centralized locations or allow teleconferencing when appropriate, enforce an anti-idling ordinance, and encourage alternative means of transportation (bike, carpool, buses, etc.).

***Reduce Vehicle Size –*** A popular buzzword in fleet management is "right-sizing." This approach encourages the selection of smaller vehicles and optimizes engine size, vehicle weight and drive train (2wd or 4wd) for the job typically assigned to the vehicle. Based on the inventory and discussions with vehicle operators, the Green Fleet Team would be responsible for selecting vehicles to be downsized.

***Reduce Vehicle Emissions of Greenhouse Gases –*** This objective required the use of the EPA's national emissions standards to ensure that any new vehicle purchase ranked as a Low Emissions Vehicle (LEV) or Ultra Low Emissions Vehicle (ULEV).

***Increased use of Alternate Fuel Vehicles and Equipment –*** The policy set a goal for a minimum of 10% of vehicle purchases to be alternative fuel vehicles, vehicles operating on compressed natural gas or biodiesel.

***Vehicle Maintenance –*** The plan required all vehicles be inspected and emissions tested once a year. Ecologically friendly products would be used when appropriate and cost effective. Use of synthetic oil would be considered to extend the time between oil changes and retreaded tires would be purchased for large-wheeled vehicles.

***Annual Reporting –*** Fleet managers would be responsible to provide an annual report to demonstrate how well the fleet complies with the Green Fleets plan. The report would include an updated inventory and a list of vehicles purchased or removed the previous year.

***Results***

The City of Ann Arbor provided an annual Green Fleets report for 2005 and 2006, but has not produced reports for recent years.

As of 2006, the City eliminated 46 vehicles, reducing its fleet size by 11% from 420 to 374. The City also added 28 new alternative fuel vehicles. The average fuel economy of the fleet increased from 17.5 mpg in 2003 to 17.8 mpg in 2006 and the average fuel economy of new vehicles purchased was 19.0 miles per gallon. The City approximates a decrease in emissions of

7% from baseline year 2003 to 2006. This is due to increased use of alternative fuels and a slight reduction in overall fuel use (see Appendix 4).

The stated goal of a 10% reduction in gasoline and diesel use was achieved in the second year of the program, when the City recorded a reduction of 11% (see Appendix 5). Some of the reduction in gasoline and diesel was offset by an increased use of biodiesel, compressed natural gas and ethanol. Accounting for these increases, the City still managed to reduce its gasoline and diesel use by 8,750 gallons in 2006. This reduction is attributed to new fuel-efficient vehicles and employee education.

In 2006, the City increased its biodiesel blend to B50 (50% biodiesel, 50% standard diesel) in the summer months and returned to B20 to prevent gelling problems in the colder months. In mid-2006, the City also began to use E-10 (10% ethanol, 90% standard gasoline) to fuel its gasoline vehicles. There appear to be no adverse effects to these changes in fuel use.

***Key Lessons Learned***

Ann Arbor reported scant opposition to their Green Fleet programs. Andrew Brix, energy programs manager for Ann Arbor states the opposite, "We have not had any political opposition to Green Fleets. In fact, our mayor and city council have been very supportive."[2]

The strength of Ann Arbor's Green Fleets program stems from its thoughtful, deliberate approach to improving its vehicle fleet. Instead of implementing a few scattered measures, the City conducted a comprehensive inventory to target specific areas of improvement and establish baseline data. This information allowed the City to accurately track its reduction in fuel use and emissions throughout the years. The creation of a Green Team to oversee purchases and monitor fleet activities was also critical to ensure compliance to the new policy and its continuation.

Ann Arbor's 10% reduction in gasoline and diesel use by 2012 appears to be a reasonable goal, considering it was achieved in the second year and annual fuel use is a relatively easy figure to track. Portland could expect to achieve similar results if it implemented such measures, especially considering how vehicle technology and average miles per gallon are continually improving.

**City of Toronto**

The City of Toronto, Canada (population 2.5 million), has also been proactive in streamlining its vehicle fleet and has produced two policies: the Green Fleet Transition Plan 2004-2007 (Phase I) and the Green Fleet Plan 2008-2011 (Phase II). The City has devoted an entire division, Fleet Services, to be responsible for its fleet of over 4000 vehicles. Because Toronto is such a large city, its primary motivation for implementing a Green Fleet plan was to reduce vehicle emissions and improve current and projected

air quality issues. By implementing the policies of Phase II, the City expects to reduce carbon emissions by 15,000 tons, or 11% compared to business-as-usual practices.

### *The Road to a Greener Fleet*

The bulk of this section will focus on Phase II of Toronto's Green Fleet plan as it is the most current. The actions recommended in Phase II cover five topic areas: emissions reduction targets, vehicles, fuels, sustainable choices and maintenance and management practices.

#### *Emissions reduction targets*

This section of the plan recognizes that 35% of the greenhouse gases produced in Toronto come from the transportation sector and City vehicles are responsible for 4% of this figure. Phase II will help Toronto reach its emissions reduction goal (the Kyoto target) of 6% reduction from 1990 levels of greenhouse gases by 2012.

#### *Vehicles*

Toronto plans to continue the measures enacted in Phase I to reduce fleet size and purchase fuel-efficient, "right-size" vehicle replacements. The City has set specific goals to replace a certain amount of vehicles each year – 80 vehicles in 2008, 100 vehicles in 2009. In 2009, the City replaced all existing street sweepers with new "regenerative air" dustless sweepers that trap fine particulate matter pollution and have more efficient diesel engines. In 2010, the City intends to replace all existing cube vans with newer versions that have cab heaters, to reduce idling time.

An area of special interest in Phase II is pilot testing "promising green technologies and working with industry to accelerate development of large-scale adoption in Canada."[3] For most pilot programs, the City buys the vehicle or technology in limited quantities and conducts tests in the field to determine its quality and usefulness. Occasionally, Toronto will receive vehicles or equipment on loan for a trial period. The City recently collaborated with Toyota to pilot test the plug-in Prius and is actively seeking pilot testing opportunities for hybrid medium and heavy-duty trucks.

An exciting new development is the testing and incorporation of anti-idling technology in the City's vehicle fleet. In 2008, Fleet Services reprogrammed the Engine Control Module (ECM) of 152 garbage packers to shut down after three minutes at idle; the engine previously did not shut down if the power take-off [PTO] was engaged or the vehicle was in gear. Fuel savings were 52,000 liters (13,737 gallons) in the four-month trial period. The City is currently reprogramming all existing heavy-duty trucks and new trucks are reprogrammed prior to delivery. The City also conducted a successful trial of aftermarket anti-idling devices for light-duty cars and trucks and is installing the devices in selected vehicles, at the cost of $500 each.

***Fuels***

Since 2000, Toronto has required that all potential fuel suppliers include information on sulfur levels with cost, and purchases the low sulfur option each year. In 2001, the City pledged to use on-road diesel for all off-road diesel applications. The Province agreed to exempt Toronto from the on-road diesel tax for this designated purpose, which made the switch cost effective. The City is currently piloting the use of biodiesel in its off-road vehicles. In the summer months of 2003, Toronto conducted the largest trial of B50 biodiesel to date with no negative effects.

Unfortunately, due to a rise in biodiesel prices the City recently scaled back and ran B5 for much of 2009. In 2010, the City hopes to run B5 in the winter months, B10 in the spring and fall, and B20 in the summer. Toronto is also in the process of "evaluating biofuels to determine which products and feedstocks provide the greatest environmental benefits on a life-cycle basis."[4]

***Sustainable Choices***

This section of the plan refers to actions Toronto can take to encourage individuals to reduce their fuel consumption and vehicle trips. In 2008, the City joined Fleet Challenge, a non-profit committed to help fleet operators reduce their fuel consumption. Using GPS technology, City drivers were monitored to determine idling behavior. The City then competed with other municipalities and private fleets to achieve the lowest times at idle.

In 2005, the City committed to host an annual Green Fleet Expo to actively share its experiences with other municipal and private fleet managers. The Green Fleet Expo has continued to grow each year and is regarded as the premier exposition for fleet managers.

Under Phase II, Toronto will continue to support the Bike Share program and provide a fleet of bikes and bike infrastructure for staff to use. The City is currently working on a "green pool" program to make fuel-efficient vehicles available for staff to carpool with.

***Maintenance and management practices***

Toronto currently employs many environmentally friendly maintenance practices such as recycling used oil, retreading used tires and buying rebuilt components. Like Ann Arbor, Toronto is presently investigating the benefit of using synthetic oil in its vehicle fleet.

For management practices, the City will consider the use of fuel-efficient vehicles in tenders for work done by private contractors. Fleet Services will continue to provide annual updates on progress achieved on emissions reduction goals.

***Results***

In Phase I of Toronto's Green Fleet program (2004-2007), the City reduced emissions from the vehicle fleet by over 5,000 tons. The City estimates it reduced approximately 4,800 tons from its use of alternative fuels and over 200 tons resulting from its purchase of 122 fuel-efficient vehicles (see Appendix 6).

In Phase II (2008-2011), Toronto expects to reduce emissions by over 15,000 tons. The majority of reductions will also result from the increased use of alternative fuels (14,600 tons). The City expects to reduce emissions an additional 680 tons by continuing to downsize the vehicle fleet and purchase fuel-efficient replacement vehicles (see Appendix 7).

***Key Lessons Learned***

According to Sarah Gingrich, Business Developer and Improvement Analyst at Fleet Services, there was little political opposition to Toronto's Green Fleet program aside from the occasional gripe about cost. Ms. Gingrich reports the past two City Council sessions were the "greenest ever" and council members voted unanimously for every progressive energy policy the City adopted. However, a new election cycle is months away and Ms. Gingrich feels the make-up of the new City Council will be more conservative leaning and less likely to approve green fleet expenditures.[5]

Toronto has the advantage of size, and with it the ability and resources to pilot new vehicles and technologies. Portland may not have the budget to experiment with new technologies or the clout to partner with big manufacturers, but it can follow in the footsteps of cities like Toronto. For instance, Toronto has: thoroughly tested anti-idling technology for both heavy and light-duty vehicles, fully incorporated route optimization software, and conducted the largest trial of B50 biodiesel to date. Most of Toronto's findings are posted on its website or are an easy phone call away.

Another strength of Toronto's plan is the partnerships it has established with other municipalities and organizations involved in fleet management. The City is currently partnered or a member of over ten government and non-profit organizations and regularly shares information with other municipalities.

**Funding**

Although Green Fleet plans are a win-win solution, a major hurdle is finding the initial upfront resources required to purchase newer, fuel-efficient vehicles or technologies.

***Ann Arbor***

Ann Arbor originally found funding in 1999 when it joined the Department of Energy's Clean Cities program. Participation in the program allowed access to federal funds for the purchase of alternative fuel vehicles and infrastructure. However, for the bulk of its expenditures the City created a program that allows for the purchase of a green vehicle if the price falls within 20% of the lowest bid for

a conventional vehicle. The Green Fleet team is responsible for making specific recommendations and reserves the right to provide exemptions.

Another source of funding comes from the City's Municipal Energy Fund, designed in 1988 to be a self-sustaining source of funds for energy-efficiency projects. Reinvesting the savings of energy efficiency measures into new projects finances the fund, and a bond provided the original upfront cost.

***Toronto***

In 2004, Toronto began a three-year replacement program designed to leverage the City's buying power. It also established a formal partnership with Enbridge Gas Distribution, known as the Better Transportation Partnership. For every four natural gas vehicles the City purchases, Enbridge funds a fifth natural gas vehicle. A special account was created for Enbridge so it could report the fuel savings to the Ontario Energy Board. The City is currently researching emissions trading and external funding, such as grants, to offset costs.

The majority of vehicle purchases are funded through Toronto's Green Fleet Capital Project, which has an annual provision of $500,000 in the City's budget. If a division needs a new vehicle, it is accountable to finance the would-be cost of a conventional vehicle. The price premium to purchase a fuel-efficient vehicle is then paid for by the Green Fleet Capital Project. However, the City may choose to standardize a green vehicle if it successfully passes an evaluation period. In this case, the division would be required to purchase the green vehicle in full. For instance, the City now requires all divisions to replace cars or light-duty trucks with hybrid models and will not cover the price premium for these purchases. The City has received some criticism from fleet managers due to lack of options for light-duty trucks (the only truck approved is the GMC Sierra). Fleet Services has granted no exceptions, but new light-duty trucks should be available in the coming years to alleviate this problem.

The City is currently working with the Toronto Atmospheric Fund to develop a Green Vehicle Evaluation and Selection Tool (GVEST). The tool will allow fleet managers to determine the best fuel-efficient vehicle technologies. The City received a $250,000 grant from the fund for 2009 and will use it to compare various fuel-efficient refuse trucks.

The City projects that implementation of Green Fleets Phase II will result in savings of 2.032 million (see Appendix 8).

**Actions the City of Portland has Taken**

Portland has adopted the following Green Fleet strategies in recent years:

- In 2005, Portland switched to a biodiesel blend. Currently, diesel vehicles run on B5 in the winter and B20 for the rest of the year. The City also uses cleaner on-road diesel for all off-road applications.

- In 2006, the City launched an anti-idling policy and a Fuel Reduction Awareness campaign for employees, and recognized those who achieved the most fuel reductions. The City installed aftermarket anti-idle devices in several police cars designated for traffic detail.
- In 2005 and 2006, the City reduced its vehicle fleet by 5% and is currently "right-sizing" vehicle replacements (i.e. for 2010, supervisor trucks have been downsized from three-quarter ton to half-ton).
- The City launched a two-year fuel reduction program to reduce fuel consumption by 5% in 2009 and 5% in 2010 through driving habits alone.
- The City retrofitted several diesel garbage trucks with aftermarket oxidation catalysts and filters to reduce emissions.
- The City routinely replaces air filters and checks tire pressure.[6]

**Recommendations for the city of Portland**

***Draft a Green Fleet Plan***

While the city's current measures are to be commended, improvements have been made in an adhoc fashion with no overarching policy or vision for the City's fleet. Therefore, it would be beneficial for the City to create a comprehensive Green Fleet plan to clearly articulate a vision for the future of Portland's vehicle fleet. Such a plan would prioritize environmental considerations in decision-making, attract funding and showcase measures the City has already implemented to improve the vehicle fleet. The Fleet Users Committee would be responsible to draft and implement the plan with the help of the Sustainability Director and other city employees with similar backgrounds or interests. The following recommendations could be incorporated into the plan:

***Update Vehicle Inventory***

The current inventory includes the following fields: vehicle year, lifecycle, replacement target, miles driven in current year and total miles (see Appendix 9). A more comprehensive inventory would include information on: engine size, drive train, miles per gallon, total fuel consumption, etc. (see Appendix 2). This is a labor-intensive project but it would allow the Fleet Users Committee to incorporate environmental and fuel efficiency standards into its decision-making. This work would be an excellent opportunity for a student intern from USM, the Muskie School, or Clean Air Cool Planet.

A detailed inventory that includes fuel economy and emissions would also allow the committee to keep track of the fleet's average fuel economy. The City currently tracks monthly and annual fuel use, but this figure often reflects changes in weather or workload rather than driving behavior. With reliable average miles per gallon and emissions figures, the City could set realistic and concrete goals that accurately reflect the progress of the vehicle fleet.

***Update Vehicle Purchasing Policy***

Currently, the Fleet Users Committee makes purchase decisions for new vehicles. The committee is composed of representatives from each city department. Every year the departments create a wish list of vehicles they would like to replace. The committee then deliberates and compiles a prioritized list that attempts to accommodate each department as fairly as possible. Adhering to the prioritized list, the committee replaces as many vehicles as the available budget will allow.

For 2010, the committee introduced a provision where requests for fuel-efficient replacement vehicles would receive slightly higher ranking on the list. While this may be an incentive, the City should create a stricter procedure for replacement vehicles that incorporates specific fuel efficiency and emissions goals. For instance, the state vehicle fleet currently has a goal of meeting 30 miles per gallon for any passenger car.[7] The City should create a rubric of required miles per gallon and emissions standards for each vehicle class that would be updated every few years to accommodate new technology (see Appendix 3). This information is easily accessed by visiting www.epa.gov/greenvehicles or www.GreenCar.com.

***Invest in New Vehicles***

The City's vehicle fleet is old and oversized. A number of vehicles are several years past their scheduled replacement date and there is an inordinate amount of pickup trucks. For instance, of the parking division's 11 allotted vehicles, eight are late 90's models and all are pickup trucks. A number of these trucks could be replaced by hybrids, Smart Cars, bikes, or Segway scooters. The municipal fleet should also utilize the existing natural gas station on Saint John St. and pilot natural gas conversions for select, heavy emitter vehicles. Currently, 50% of the City's Metro buses and 27% of the City's school buses run on CNG. Running a vehicle on CNG is the equivalent to paying $1.65 for gas or $1.85 for diesel –without tax.[8] For a complete list of Toronto's green vehicles, see Appendix 10.

***Continue to Optimize Fleet Size***

This is an area of improvement that requires little to no expenditure. Although Portland successfully reduced its vehicle fleet by 5% in 2006, the City should continue to seek reductions wherever possible and use an established criteria similar to Ann Arbor's and consider an additional clause for metered equipment – i.e. used less than 100 hours a year – to earmark which vehicles could be removed. The City should continue to seek opportunities to downsize replacement vehicles through reductions in weight, engine size and drive train, and aim to reduce the number of trucks.

***Anti-Idle Technology***

Although the City established an anti-idling policy and conducted an employee awareness campaign, according to the Climate Action Plan, "anecdotal evidence suggests… employees have not

fully embraced or implemented it."[9] The City should pursue the use of anti-idling technology for its heavy-duty vehicles. Reprogramming a vehicle's ECM is a cost effective task, and the fuel and emissions reductions for such vehicles could be extensive. The City made such modifications in previous years, but reverted to prior configurations after operators complained. Toronto Fleet Services reported similar problems with operator complaints on older trucks, but maintains that ECM reprogramming on newer models has been highly successful. Portland should also consider the use of aftermarket anti-idle devices such as "idle-right" on vehicles delegated to traffic detail or similar uses.

***Route Optimization and GPS Technology***

As recommended in the Climate Action Plan, the City should "purchase route optimization software to create the most efficient possible routes for operations such as trash and recycling collection, snow plowing, street sweeping and any other operation that requires route driving."[10] For the past three years, route optimization software has been proposed but declined in the budget. The City should consider GPS tracking technology to further enhance vehicle efficiencies and track anti-idling offenders. The use of these technologies could reduce vehicle miles traveled, fuel use and emissions, which could allow the City to further reduce the number of vehicles in the fleet.

***Implement Climate Action Plan Recommendations***

The City should follow through with the recommendations set forth in the Climate Action Plan to assist with alternative forms of employee commute by "promoting carpooling, maintaining a bulletin board… offering the opportunity for telecommuting, encouraging the use of public transportation and promoting bicycling or walking to work." Installing showers and bike racks were also mentioned as incentives to encourage employees to commute by bicycle.[11]

***Funding and Networking***

The City should continue to seek partnerships with government, private and non-profit organizations. The new Sustainability Director may be instrumental in cultivating these partnerships and funding opportunities. The City may be eligible to receive 'Clean Cities' grants from the Department of Energy by joining Maine Clean Communities. The City may also be eligible to join Project Get Ready, an organization dedicated to help cities prepare for plug-in electric vehicles. Portland should consider sending a representative to Toronto's annual Green Fleet Expo to gather ideas and network with vendors and fleet managers. In addition to grants and assistance from outside sources, the City should consider creating an energy fund to be a self-sustaining resource for energy efficiency projects. A funding mechanism for replacement vehicles such as Ann Arbor's 20% provision would also help defray the cost of green vehicles.

***Maintenance***

Portland should review its vehicle maintenance procedures to ensure the maintenance schedule and repairs are in accordance with manufacturers specifications. Portland should make sure it is up-to-date with best environmental practices such as purchasing retreaded tires, replacing worn tires with Low Resistance Tires (LRT), purchasing rebuilt components, and considering synthetic oil.

***Update Website***

The City should update its website with a "Green Portland" link to inform citizens on actions the City has taken to reduce its environmental impact, goals for future actions and what citizens can do to help. The website for Albuquerque, NM provides an excellent example at http://www.cabq.gov. As an example, the City could include information about the anti-idling ordinance, fuel-efficient driving techniques and citizen incentives. For instance, Albuquerque recently unveiled a novel program that allows free parking at any city meter for a specified time if the vehicle is a hybrid or runs on alternative fuel.

***Conclusion***

In her work "The Key to Sustainable Cities," Gwendolyn Hallsmith notes how "municipal governments are often the last organizations to adopt innovative strategies for management or service delivery." Hallsmith offers a number of reasons for this: public officials are under more scrutiny than private business owners; taxpayers are usually unenthusiastic about their money being used as venture capital for risky, untested projects; resources and revenue streams are scarce; and elected officials come and go which makes it difficult to plan for the long-term. "As a result, municipal officials find themselves mired in short-term problem solving, crisis management, and band-aid solutions."[12]

In Portland, fleet managers have done their best with limited resources to educate employees and make improvements to vehicles, but without a long-term vision and overarching goals, these measures represent band-aid solutions. As the largest city in Maine, Portland is highly visible and its public officials tend to be environmentally conscious. Just as Toronto leads the way for Canada, Portland should lead the way for the state of Maine, which consistently ranks in the top ten for most vehicle miles driven per capita.[13] The implementation of a comprehensive Green Fleet plan would be an important step for Portland to save money and reduce the environmental impact of its vehicle fleet. But perhaps the most important impact would be the ripple effect these changes would have among the citizenry of Portland and municipalities throughout the state.

**REFERENCES**

Austin, Kevin. Personal and email interviews. April 25,2010

Brix, Andrew. Email interview. April 10, 2010.

City of Albuquerque. 2010. Website. http://www.cabq.gov/albuquerquegreen

City of Ann Arbor. 2010. Energy Department Website
http://www.a2gov.org/government/publicservices/systems_planning/energy/Pages/Energy.aspx

City of Ann Arbor. 2004. City of Ann Arbor Green Fleets Plan.
http://www.a2gov.org/government/publicservices/systems_planning/energy/Documents/systemsplanning_greenfleetspolicy_2005-07-01.pdf

City of Ann Arbor. 2005. City of Ann Arbor Green Fleets Annual Review 2005
http://www.a2gov.org/government/publicservices/systems_planning/energy/Documents/systemsplanning_greenfleetsreport2005_2006-04-10.pdf

City of Ann Arbor. 2006. City of Ann Arbor Green Fleets Annual Review 2006

http://www.a2gov.org/government/publicservices/systems_planning/energy/Documents/systemsplanning_greenfleetsreport2006_2007-07-05.pdf

City of Portland. 2008. Municipal Climate Action Plan
http://www.ci.portland.me.us/clmateactionplan.pdf

City of Portland. 2007. Sustainable Portland Report
http://www.ci.portland.me.us/planning/sustainableportlandreportdraft.pdf

City of Seattle. 2003. A Clean and Green Fleet
http://www.seattle.gov/environment/Documents/CleanGreenFleetAP.pdf

City of Toronto. 2004. Green Fleet Transition Plan 2004-2007 (Phase I)
http://www.toronto.ca/fleet/pdf/gftp_apr04.pdf

City of Toronto. 2008. Green Fleet Plan 2008-2011 (Phase II) http://www.toronto.ca/fleet/pdf/gfp.pdf

City of Toronto.2009. Green Fleet Annual Update 2008
http://www.toronto.ca/legdocs/mmis/2009/gm/bgrd/backgroundfile-20243.pdf

City of Toronto. 2010. Fleet Services Website http://www.toronto.ca/fleet/index.htm

Gingrich, Sarah. Telephone and email interview. April 23, 2010.

Hallsmith, Gwendolyn. “The Key to Sustainable Cities.” New Society Publishers, Gabriola Island, CA. Copyright 2003.

Harrington, Cheryl. “Maine Energy Policy: More Like the Nation.” Chapter from Changing Maine 1960-2010. New England Environmental Center. Muskie School of Pubic Service. Portland, ME. Copyright 2004.

James, Torbjorn and Sarah James. “The Natural Step for Communities: How Cities and Towns can Change to Sustainable Practices.” New Society Publishers, Gabriola Island, CA. Copyright 2004.

Lambert, Rebecca. Telephone interview. May 2, 2010.

Meadows, Donella. : Leverage Points: Places to Intervene in a System. The Sustainability Institute. Hartland, VT. Copyright 1999.

Municipal Equipment and Operations Association (MEOA). Website. http://www.meoa.org/

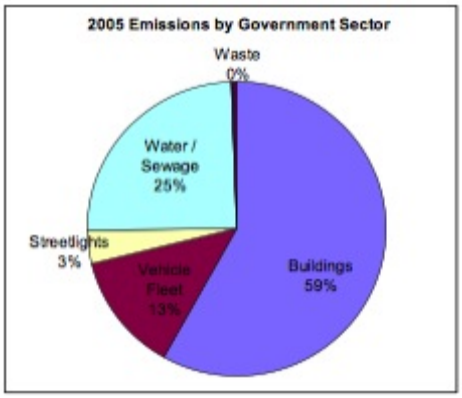
National Association of Fleet Administrators (NAFA). Website. http://www.nafa.org/

State of Maine. 2007. A Report on the State Vehicle Fleet: Emissions, Fuel Economy and Vehicle Miles Traveled. http://www.maine.gov/dep/air/mobile/docs/2006%20Executive%20Order%20Report-Final.pdf

State of Maine. 2008. State of Maine Comprehensive Energy Plan 2008-2009 http://www.maine.gov/oeis/docs/OEIS%20Comp%20Energy%20Plan.pdf.

**Appendices**

**Appendix 1**




**Appendix 2**

**ANN ARBOR GREEN FLEET VEHICLE INVENTORY**

- Vehicle number, year, make, model, drive train, transmission type, VIN number
- Miles per gallon -actual if possible, EPA rating if actual not available
- Type of fuel used
- Average cost per gallon (or gallon equivalent) of fuel
- Average fuel cost per mile, if available
- Annual miles driven per vehicle, if available
- Total fuel consumption per vehicle
- Vehicle function
- Estimated Emissions per mile for each pollutant by vehicle type/class (defined in 1 above) based on EPA tailpipe standards for carbon monoxide, nitrogen oxides and particulate matter
- Carbon dioxide calculations based on gallons (or equivalent) of fuel consumed

**Appendix 3**

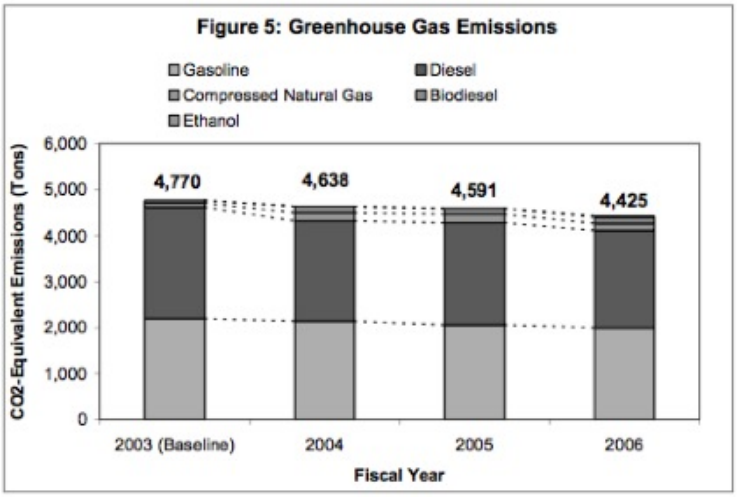
**ANN ARBOR FUEL EFFICIENCY TARGETS**

| Vehicle Class* | MPG Target** |
|---|---|
| **Compact Cars** | **26** |
| **Midsize and Full-Size Cars** | **20** |
| **Minivans/Mini-Pickups** | **19** |
| **2X4 Trucks** | **16** |
| **Passenger/Cargo Vans** | **15** |
| **4X4 Trucks** | **15** |

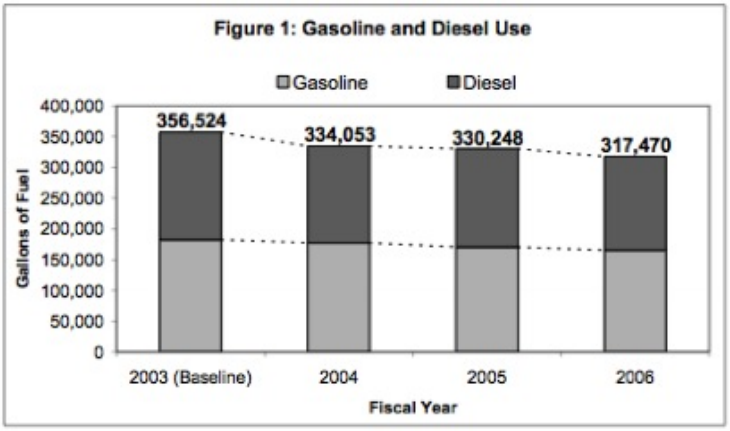
**Vehicle class is based on EPA categories for combined cargo and passenger volume in the Model Year 2004 Fuel Economy Guide.*

***These figures are based on a 90% city, 10% highway driving cycle typical for City-operated vehicles.*

**Appendix 4**




**Appendix 5**



**Appendix 6**

Table 4
Estimated greenhouse gas emission reductions 2004-2007, from the City's "Actual" green vehicles and fuels, compared to "Business as usual"

| | Actual emission reductions from green vehicles | | Actual emission reductions from fuels | | Total actual emission reductions | |
|---|---|---|---|---|---|---|
| | (kg $CO_2$) | %* | (kg $CO_2$) | % | (kg $CO_2$) | % |
| 2004 | 6,700 | 13 | 111,000 | 0.4 | 118,000 | 0.4 |
| 2005 | 9,600 | 12 | 846,000 | 3 | 855,000 | 3 |
| 2006 | 66,000 | 29 | 2,082,000 | 6 | 2,148,000 | 6 |
| 2007 | 144,000 | 26 | 1,823,000 | 5 | 1,967,000 | 6 |
| **Total** | **226,000** | **25** | **4,862,000** | **4** | **5,088,000** | **4** |

(Numbers may not add evenly due to rounding)
*Actual emission reductions from green vehicles are for 122 green vehicles for which reductions could be quantified compared to the 122 conventional vehicles they replaced, not for all vehicles in the fleet.

** All Toronto figures are measured in kilograms. To convert to tons divide by 1000 (i.e. total actual emissions in Table 4 of 5,088,000 kilograms would convert to 5,088 tons).*

Appendix 7

Table 9
Estimated forecast greenhouse gas emission reductions 2008-2011, from the City's green vehicles and fuels, compared to "Business as usual"

| | Forecast emission reductions from green vehicles | | Forecast emission reductions from fuels | | Total forecast emission reductions | |
|---|---|---|---|---|---|---|
| | (kg $CO_2$) | %* | (kg $CO_2$) | % | (kg $CO_2$) | % |
| 2008 | 160,000 | 29 | 3,120,000 | 9 | 3,280,000 | 9 |
| 2009 | 164,000 | 30 | 3,846,000 | 11 | 4,010,000 | 11 |
| 2010 | 172,000 | 32 | 3,834,000 | 11 | 4,006,000 | 11 |
| 2011 | 184,000 | 34 | 3,824,000 | 11 | 4,008,000 | 11 |
| **Total** | **681,000** | **31** | **14,624,000** | **10** | **15,304,000** | **11** |

(Numbers may not add evenly due to rounding.)
*Actual emission reductions from green vehicles are for 642 green vehicles (122 existing and 520 planned) compared to the 642 conventional vehicles they replace, not for all vehicles in the fleet. Additional reductions will result from initiatives that could not be quantified at this time.

**Appendix 8**

Table 11
Financial implications of the Green Fleet Plan 2008-2011

| | Capital Cost ('000s) | Operating Cost* ('000s) | Total Cost ('000s) |
|---|---|---|---|
| 2008 | $500 | -$917 | -$417 |
| 2009 | $500 | -$947 | -$447 |
| 2010 | $500 | -$1,027 | -$527 |
| 2011 | $500 | -$1,141 | -$641 |
| **Total** | **$2,000** | **-$4,032** | **-$2,032** |

* Operating costs are net costs after fuel savings have been deducted.

**Appendix 9**

| Dept # | PARKING CONTROL | Year | Life Cycle | Replacement Target | Miles Driven FY2009 | Total Miles on Vehicle |
|---|---|---|---|---|---|---|
| 103145 | 2196 JIMMY-PARKING CONTROL | 1997 | 0 | 2007 | 2385 | 86266 |
| 101801 | 2195 PICKUP - PARKING | 1997 | 0 | 2007 | 2765 | 128022 |
| 101801 | 2154 PICKUP - PARKING CONTROL | 1998 | 0 | 2008 | 6793 | 77275 |
| 101801 | 2155 PICKUP - PARKING CONTROL | 1998 | 0 | 2008 | 10200 | 109932 |
| 101801 | 2156 PICKUP - PARKING CONTROL | 1998 | 0 | 2008 | 5205 | 74747 |
| 101801 | 2157 PICKUP - PARKING CONTROL | 1998 | 0 | 2008 | 7383 | 98458 |
| 101801 | 2158 PICKUP - PARKING CONTROL | 1998 | 0 | 2008 | 6254 | 78463 |
| 101801 | 2208 PICKUP - PARKING | 1998 | 0 | 2008 | 5146 | 72018 |
| 101801 | 2153 S10 - PARKING | 2001 | 0 | 2011 | 3269 | 82048 |
| 101801 | 2205 PICKUP - PARKING CONTROL | 2001 | 0 | 2011 | 5627 | 41030 |
| 101801 | 2216 COLORADO - PARKING | 2008 | 0 | 2018 | 6771 | 10815 |

**Appendix 10**

Table 1
Green vehicles in Toronto's fleet as of December 31, 2007

| Type of green vehicle | Number in Toronto's fleet |
|---|---|
| Smart Car | 25 |
| Honda Insight hybrid | 1 |
| Honda Civic hybrid | 24 |
| Toyota Prius plug-in hybrid | 1 |
| Toyota Prius hybrid | 3 |
| Ford Escape hybrid | 2 |
| Saturn Vue hybrid | 9 |
| Chevy Silverado hybrid pickup | 27 |
| Natural gas vehicle | 141 |
| Cube van with idle-free space heater | 29 |
| Hydrogen gator at Exhibition Place | 4 |
| Regenerative-air dustless street sweeper | 16 |
| 100 per cent Biodiesel garbage truck | 1 |
| **Total** | **283** |

[1] Climate Action Plan
[2] Brix
[3] Toronto Green Fleet 2008 Plan
[4] Phase II
[5] Gingrich
[6] Austin
[7] Maine State Energy 2008 Plan
[8] Lambert
[9] Climate Action Plan
[10] Ibid
[11] Ibid
[12] Hallsmith
[13] Changing Maine

**Building a Healthy Community: Engaging East Bayside Youth in Outdoor and Athletic Activities**

***Henry R. Heyburn Jr.***

*Engaging children in outdoor and athletic pursuits builds not only mental and physical health, but also social and community capital; this in turn strengthens families, neighborhoods and communities. This essay examines efforts to provide outdoor recreation and athletic opportunities to children in Portland's East Bayside neighborhood. In doing so, it focuses on efforts taking place in Portland with some exploration of similar efforts in Missoula, Montana, a city similar to Portland in several ways. The information has been gathered largely through conversations, interviews and interaction in the community. In the end, the essay presents five recommendations that were guided by these mandates:*

- *Link recreation opportunities with neighborhood jobs and work experience wherever possible.*
- *Provide opportunities for exploration beyond East Bayside.*
- *Seek collaboration whenever it makes sense.*

*Source: bangordailynews.com*

*The mandates evolved along with my knowledge and familiarity with East Bayside. Both Portland and Missoula strive to provide extensive recreation offerings to all ages, with after-school, summer camp and sports programs especially for children. The recommendations encourage actions that are straightforward. In some instances, these are steps already undertaken by the city and a new or slightly different approach is recommended. Where it makes sense lessons from Missoula are incorporated in the recommendations. In the end it was clear that both cities have a vision for providing great services to citizens and both wrestle with discovering the best way to reach their goals while addressing social, environmental, economic and other changes.*

**The Critical Role of Community**

A conversation with Portland Recreation Department's David Caldwell was telling, even though the implications were not immediately apparent. During our conversation, he observed that kids from Portland's East Bayside neighborhood frequently take part in activities sponsored by the nearby Boys'

and Girls' Club, but are less likely to participate in those at more distant sites. This information got me thinking about community. In his essay "Does Community Have a Value?," Wendell Berry examines the question in the title and begins to forge an answer.

> *But does community have a value that is practical or economic? Is community necessary? … Can people be neighbors if they do not need each other or help each other? …Such questions are being forced upon us now by the loss of community. We are discouraged from dealing with them by their difficulty in such a time as this, and yet these questions and others like them are indispensable to us for they describe the work we must do. We can only be encouraged to see that this work, though difficult, is fascinating and hopeful. It is homework, doable in some part by everybody and useful to everybody – as far as possible unlike the massive, expensive, elitist projects that now engross virtually every government of the world.*[1]

This revelation strengthened the premise that the key ingredient in building sustainable communities is strong relationships or community capital. As Mark Roseland puts it, "The critical resource for strengthening community capital is not money – rather, the resources are trust, imagination, courage, commitment, the relationships between individuals and groups, and time, the literal currency of life."[2] A great strength of the East Bayside neighborhood is its sense of community and place; it is hemmed in and well defined. This strong physical sense of place can also act as a barrier. The challenge for East Bayside is to integrate more thoroughly and consistently with the rest of the city while retaining its community identity.

**The Importance of Exercise and Play**

The public parks and recreation movement grew out of the late 19th century social welfare movement. Champions included Jane Addams and Joseph Lee. The first public recreation programs focused on poor and often immigrant children with limited access to safe and convenient play areas. Over time, city "parks departments" have evolved into "parks and recreation departments." As America has grown more affluent, some have wondered if there is still a social welfare aspect of public recreation.[3] A strong argument can be made that there is.

What child, or grownup for that matter, doesn't like to play games? While growing up, we played kickball in the street and had neighborhood-wide games of cops and robbers. These games were a lot of fun; they helped us get to know each other, figure out how to resolve conflict and burn off energy. Times change. My mother still lives in the house where I grew up, but the neighborhood children – and there are fewer of them – do not play kickball in the street. Their physical activities tend to be more organized and less spontaneous and time for play competes with video entertainment and more time spent getting to and from school. Technology has influenced many aspects of childhood, but the essentials of healthy and rewarding childhoods

really have not changed. Participation in formal and informal outdoor and athletic programs can provide focus and confidence, broaden participants' views, teach important skills and contribute to neighborhood stability. It can be a critical component of a well-rounded childhood.

***U.S Census 2006-08 Community Survey Data: Profile Highlights***[4]

| | Portland, ME 43°N | Missoula, MT 46°N | United States |
|---|---|---|---|
| Population | 63,591 | 64,650 | 309,256,586[5] |
| % White | 87% | 92% | 74.3% |
| % Black | 5.6% | 1% | 12.3% |
| % Asian | 3.5% | 1.2% | 4.4% |
| % Hispanic | 2.8% | 2.4% | 15.1% |
| % Native American | .4% | 2.3% | .8% |
| % Foreign born | 9.7% | 2.9% | 12.5% |
| Median Household Income | $44,906 | $36,521 | $52,175 |
| Per Capita Income | $27,716 | $22,180 | $27,466 |
| % Over Age 25 HS Grads | 91.5% | 92% | 84.5% |
| Families Living Below Poverty Level | 10.6% | 10.6% | 9.6% |
| Individuals Living Below Poverty Level | 16.2% | 23.7% | 13.2% |

**Portland and Missoula**

Portland and Missoula are 2113 miles apart but demographically surprisingly similar. Looking at the U.S. Census Bureau's Community Survey one can identify similarities and differences. Both are overwhelmingly white, but Portland has more than three times as many foreign-born residents as Missoula. Despite their similarities, certain features of history and geography set them apart and present challenges and opportunities.

Settled in 1633, Portland is an old city compared to Missoula, which was founded in 1866. Although it is in a sparsely settled state, Portland has the look and feel of an east coast city, with narrow streets and more densely settled neighborhoods, while Missoula has wider streets and a more well-defined grid layout. Missoula is home to the University of Montana, and the University of Southern Maine is in Portland. Both cities are in states renowned for their stunning natural assets, but in Missoula these resources are highly accessible; 34.86% of Montana's land

is state and federal, open to the public, versus 5.36% of Maine lands.[6] And, much of this land is minutes from downtown Missoula.

Shirley Kinsey, a Recreation Specialist with the Missoula Parks and Recreation Department, said that while the department's biggest challenge is budgeting, "citizens here get (understand and appreciate) recreation and our budget is largely intact."[7] Besides 400 acres of city parkland, 3,300 acres of conservation land and 22 miles of trails, the proximity of the Clark Fork and U.S. Forest Service and Bureau of Land Management land allow for nearby skiing and whitewater kayaking facilities. Missoula benefits tremendously from its location amidst accessible federal lands. Within the city the department has a goal that each citizen should be within ½ mile of a neighborhood park and within 1.5 miles of a community park. Neighborhood parks are described as the backbone of the community.[8] The city spends approximately $4.1 million annually on its parks and recreation budget.[9]

Portland had a parks and recreation budget of approximately $4.9 million in 2008.[10] The department strives to reach out to all Portland residents and has an active fee waiver program. The city of Portland is experiencing a budget deficit and the Parks and Recreation Department has had to make cuts.[11] Portland has been quite actively building relationships with outside organizations and these have allowed the department to leverage its reach.

***An East Bayside Overview***

Portland's East Bayside neighborhood is one of the most ethnically diverse enclaves in Maine, a state where 98% of residents identify themselves as white.[12] Of East Bayside's 2203 residents, 37% are non-white, 35.1% live below the federal poverty level, versus 14.1% for Portland as a whole, and 15.7% are foreign born.[13] The neighborhood's diversity is the source of its greatest strength, potential and challenge. The community has much to offer the city at large but to fully realize this potential contribution it must first address the extent to which it is culturally and physically cut off. East Bayside is a constrained and defined place. Franklin Arterial and I-295, imposing barriers that cut it off from its neighbors, border it on two sides.

At first glance, one could say that young people in Portland's East Bayside neighborhood, like young people anywhere in the country, face many of the same challenges as their counterparts just over the city limits in Falmouth. Both are under pressure to make good choices that will help them lead healthy and satisfying lives. But, the graduation rate at Falmouth High School is around 97%, while at Portland High School, which many East Bayside residents

attend, the graduation rate is just over 78%.[14] What accounts for the 21% difference between these two neighboring communities whose respective high schools are nine miles apart?

***Personal Perspectives on East Bayside***

Alfred Jacobs came to Portland from Sudan in 1999, following his brother who arrived in 1992. He is energetic and optimistic but his assessment of one trend in East Bayside is discouraging. "One of the worst things to happen to Kennedy Park is that it has been stripped of lots of things."[15] As examples of once active programs that used to provide outlets for youth he described the Maine Children's Theatre, the "Friday Thing" afternoon activity period and the neighborhood buy and maintain your own bike project. Referring to the neighborhood, he asked the question, "What do you expect to come out of it when you don't invest in it? What you get is never a pretty thing."[16]

Alfred was involved in developing the Portland United Soccer League. This adult group competes from May through August on Saturdays and Sundays, using Fox Field near Kennedy Park and other city owned fields. The purpose of this organization is to provide an active soccer league but also to provide leadership training to team captains and members so they can be models in the community. Games are almost always followed by a meal together and a chance to have "honest conversation" as Alfred described it.

From Alfred Jacob's perspective, there is a pressing need for activities for young people. He described a neighborhood with considerable community cohesion, but also many potentially vulnerable young people in need of help. The community needs a long-term vision that it can trust and rely upon.

I spoke with Molly Casto, senior planner for Portland, about Fox Field and its role in the neighborhood. Fox Field adjacent to the City of Portland's Kennedy Park apartments is a focal point for neighborhood sports and other social activities. The field is owned and administered by Portland's Department of Recreation and Facilities Management. Fox field along with the adjacent basketball courts, is the most significant outdoor recreation facility in East Bayside.

There is a lot of demand for playing time on Fox Field and it is showing signs of overuse and neglect. The field is largely surrounded by chain link fence, which has been torn in many places to allow easier access. Several initiatives in the immediate area are planned or underway which could have important impacts on the field and its surroundings. A block away to the northwest, work on the new Bayside Trail, connecting the East End Trail with Deering Oaks

Park, is in progress. This trail has will provide safe and convenient access to other parts of the city, including other recreation areas. Along with the Bayside Trail, two improvements are planned for the north and south ends of Fox Field.

At the north end the East Bayside Neighborhood Organization has received a community development block grant to pay part of the cost of turning the current street hockey and half court basketball area into two full basketball courts. In addition to the courts, there are plans to add lighting, benches, bicycle racks, trees and signs outlining park rules.[17]

At Fox Field's south end, there are plans to widen the narrow walkway between the houses and the field and continue this walkway through the nearby commercial area until it links with the Bayside Trail. This walkway is visually unappealing and its narrow width and fencing can create a feeling of confinement and vulnerability. According to Molly Casto, "The plan is to retake the area from both ends, similar to the Eastern Prom Trail."[18] The improvements at this end of the field are being undertaken by the City of Portland through its Targeted Neighborhood Based Program. Portland's Planning Department has considered seeking grants to help refurbish Fox Field but dropped those efforts pending completion of the work of the Athletic Facilities Task Force. This city-organized task force was formed in response to what was seen as a haphazard approach to athletic facility improvement.[19]

Fox Field is the cornerstone of many East Bayside sports activities but is in need of care and a plan to insure its long-term utility. Ethan Owens is responsible for maintenance and scheduling for all of Portland's athletic facilities. He describes Fox Field with a sense of vision of how it could function in the neighborhood and frustration with how it actually works. According to Owens, the field suffers from several problems. When it was rebuilt six years ago, an inferior loam was used. The loam's thickness and the pressure of heavy use have resulted in a compacted surface that prevents water from penetrating the soil and getting to the underlying drainage layers. Although the city owns and schedules use of the field, he describes a situation where scheduled groups arrive at the field only to find others using the facility informally and then being forced to share the field. Ethan described going to Fox Field and welding broken soccer goals only to have them broken a short time later.[20] In the past, seasonal park rangers would address unpermitted use of city playing fields, but both the number of rangers and the amount of time they work have been reduced so they are rarely available to mediate disputes or squatting.

For the past several years, Ethan has requested that the city purchase a deep tine machine to properly aerate the fields, thereby improving drainage and turf condition. These machines cost approximately $22,000.00 and he was pessimistic about the possibility of getting one.

Peggy Hinman's husband was a minister at a nearby Portland church. Following his death she worked at a variety of jobs until she found something she really loved, working as a Ministry Coordinator at The Root Cellar, a Christian-based clearinghouse for social and spiritual services located on Portland's Washington Avenue. Peggy describes The Root Cellar as "a huge part of what happens here in East Bayside."[21] During several visits to the Root Cellar one can see why it might be described that way. There always seems to be a steady stream of people coming and going and, although the facility itself is straightforward and simple, it has enough light and airiness to make it open and inviting.

The organization focuses on a wide range of social services for all ages, everything from arranging dental care, food deliveries and organizing crime watches to providing a teen recreation center that is open every weekend until ten o'clock. Like almost everyone with whom I spoke, Peggy immediately described East Bayside's ethnic diversity as its greatest strength while identifying the need for jobs along with providing residents with the skills needed to apply for and perform a variety of jobs as its biggest challenge. "Last year we got 32 kids jobs. They needed our services initially but now they need jobs."[22] Without a trace of bragging she describes how one resident told her, "Everyone promises us things but the Root Cellar follows through on promises."[23] Peggy Hinman seems to recognize the valuable role that athletics and outdoor activities can play in our lives. The Root Cellar organizes daily activities for kids throughout the summer. These include games, arts and crafts, and weekly field trips to the beach and other destinations. According to Peggy, "There is plenty of that (athletics) in this neighborhood."[24] Her organization plans cookouts at Fox Field and Peppermint Park to bring people together and create a feeling of neighborliness. Many of the Root Cellar's summer activities are carried out by mission teams that come to Portland from around the country. Peggy described how it has taken time and patience to become a trusted community presence and at one point described the organization's relationship with children this way. "We have to redirect them quite often because they get misinformation. We help them to stop and think. The more we get them jobs the more they listen to us."[25]

Early in December, just by coincidence, I was in a business on Anderson Street in East Bayside. As I finished what I was doing and was leaving, I mentioned to the owner that I planned to walk from there to Congress Street. I received a somewhat surprised look and a gentle warning to be careful if I really did walk through the neighborhood. I have never perceived of Portland as a particularly violent or crime prone city but I know that Portland, like all localities, has its underside. When describing my project to friends, both in and out of Portland, a common response was that East Bayside seemed to be a mysterious part of Portland that many had ideas about, few of which were based on firsthand knowledge.

Gayle Petty has been a member of the Portland Police Department for sixteen years and is the Senior Lead Officer for two districts, or beats, one of which includes East Bayside. She is part of a program designed to push a stronger police presence into Portland neighborhoods while optimizing the resources of a strained department. In fact, my time with Officer Petty highlighted a central issue that has repeatedly surfaced, namely the constant pressure to do more with less in all areas of city government. I met Gayle Petty, for the first time, as she was completing an introduction to American law for recent immigrants at the Catholic Charities of Maine office. She had to pack a tremendous amount of information into a short time and while walking outside she wondered out loud how well she had conveyed her message.

As we drove through East Bayside she stated that she felt the perception of crime in the area is much worse than what actually happens.[26] We drove down the incomplete Bayside Trail identifying potential trouble areas and eventually ended up just opposite Fox Field. In Officer Petty's words, "The kids don't really use the fields for activities but they are on the basketball courts constantly."[27] One significant transformation she believes is taking place is the distancing of neighborhood Somali and Sudanese youth from their elders. In light of the outside influences brought on by a new culture, one would believe that family change would be inevitable. The question is where these young people are now turning for guidance.

While engaged with this assignment this project I have spent time in East Bayside and spoken with people both formally and informally. My views about greater integration of athletics and outdoor opportunities have evolved from these interactions. Three mandates or principles have evolved:

1. Link recreation opportunities with neighborhood jobs and work experience.
2. Provide opportunities for exploration beyond East Bayside.

3. Seek collaboration whenever it makes sense.

The recommendations flow from these principles.

**Ideas and Recommendations**

Fox Field is a valued neighborhood property in need of help. For some of the issues such as inadequate drainage there is no quick fix. Proposals for improvements in the area are eagerly anticipated but it makes little sense to make improvements without first tackling underlying maintenance and vandalism issues.

- Engage local kids in identifying and resolving maintenance issues surrounding Fox Field. Through Portland Parks, the East Bayside Neighborhood Association and possibly local lawn care companies, identify jobs that can be performed by neighborhood residents. Possible sources of funding include field use fees and grants. Ethan Owens might be a strong point person for such an effort. It would make sense to coordinate upkeep of Fox Field and its environs and other facilities such as the Bayside Trail so there are no overlapping maintenance issues.

- The message, "We need and desire your help and we'll teach you what you need to know," is powerful.

Every summer cities, towns and other organizations scramble to find lifeguards. Providing opportunities to learn lifeguard skills could address a host of problems.

- The city of Portland offers lifeguard and Water Safety Instructor classes but they are expensive, ineligible for fee waivers and do not always fill, resulting in cancellation. Like states that offer to pay the medical school costs of students who promise to practice in state, the city could subsidize the cost of lifeguard training for those who agree to work for the city or another public organization. Besides being a useful skill lifeguard training teaches responsibility and is transferable. The East Bayside Neighborhood Organization, the Root Cellar and the guidance offices at Portland and Deering High Schools could help steer good candidates to the Park Department's lifeguard training. Colleen Lepage is Portland' Recreation Aquatics Leader.

Experiment and create methods for activity sign-up that that are convenient and also educate parents about recreation opportunities. Consider ways for representatives from many activities such as sailing, kayaking, hiking and others to publicize their activities together.

- There seem to be plenty of recreational opportunities offered throughout Portland, but they are not always easy to find. In the instance of East Bayside, it appears that sign-up sessions where parents can learn details of the activities might be beneficial. Portland Parks has worked with neighborhood organizations to host activity sign-up periods. Doing this consistently and in a way that includes parents might encourage more East Bayside residents to participate.

Organize a cross-country running program for 6-12 year old boys and girls. Cross-country running is a great sport that requires little equipment and is lots of fun. Kids naturally like to run.

- Many surrounding towns, including Falmouth, Yarmouth, Freeport, Pownal, Brunswick and Scarborough have teams for 6-12 year olds and they all compete every Wednesday. Meets usually include several teams, so there is a competitive but friendly aspect to the events.

- Use the new Bayside Trail to connect with Back Cove.

- Potential partners for a cross-country program are the USM cross-country running program with men and women's head coaches Scott Hutchinson and George Towle; and John Rogers, owner of the Maine Running Company on Forest Avenue.

Seek out specific opportunities for collaboration with organizations offering instruction in outdoor activities and education in outdoor skills.

- Portland Parks has already pioneered these types of programs through its partnership with Maine Audubon. Investigate collaboration with L.L. Bean's Outdoor Discovery Program and the potential for a Portland Schools Outing Club similar to the Portland Schools Nordic Ski Team. In this instance, the Portland high schools joined forces to form a single Nordic ski team. Craig Whiton has coached this team and would be a good source of information.

I have never seen a study that advised against exercise and being outside. These recommendations suggest ways to increase the chances for children in Portland, including those in East Bayside, to get outside and have fun. While juxtaposing how Portland, Maine, and Missoula, Montana, seek to offer healthy recreational opportunities to residents I was struck by the clear dedication to this goal in both cities. If there is one thing that Portland might learn from what is happening out west, it could be the extent to which Missoula's Parks Department has integrated itself into the lives of residents. This is purely intuitive and anecdotal but could provide some useful direction. ***Changing Maine: 1960-2010*** describes the need for a different kind of leadership based on shared values and interests.[28] This can cleanly connect to the efforts of cities and towns as they address sustainability. While one of the foremost goals of recreation organizations is to provide healthy and inviting opportunities for children and youth to get outside and open themselves up to the possibility of new experiences, these experiences can also help create a greater awareness of sustainability in the next generation.

*"The wilderness gave them their first taste of those rewards and penalties for wise and foolish acts which everyone in the outdoors faces daily, but against which civilization has built a thousand buffers."* ***– Aldo Leopold***

**References**

***Literature***


Barringer, Richard, ed. ***Changing Maine: 1960-2010.*** Gardiner, Maine: Tilbury House, 2004.

Berry, Wendell. ***Home Economics.*** New York: Farrar, Straus and Giroux, 1987.

Graham, John***. Outdoor Leadership: Technique, Common Sense and Self-Confidence.*** Seattle: The Mountaineers, 1997.

Louv, Richard, ***Last Child Left in the Woods: Saving Our Children from Nature-Deficit Disorder,*** New York: Workman Publishing, 2005.

Mumford, Lewis. ***The City in History: Its Origins, Its Transformations, and Its Prospects***. New York: Harcourt, Brace and World, 1961.

Roseland, Mark. ***Toward Sustainable Communities: Resources for Citizens and Their Governments***. Gabriola Island, BC, Canada: New Society Publishers, 2009.

***Websites***

http://www.factfinder.census.gov. ***American Community Survey - an ongoing survey of community information***. Accessed online May 1, 2010.

http://andromeda.rutgers.edu/~natalieb/sociwelfare.htm. Accessed online May 4, 2010

http://www.census.gov. Accessed online May 1, 2010

http://www.ci.portland.me.us/compparativefy08.pdf.

http://www.city-data.com/neighborhood/eastbayside-portland-maine. Accessed online March 12, 2010

http://www.co.missoula.mt.us/accounting/FY09Budget/Items/Parks/Exp_Parks.pdf. Accessed online May 6, 2010.

http://www.maine.gov/education/enroll/grads/comprate/comprate.htm Accessed online March 12, 2010

http://www.nrcm.org/documents/publiclandownership.pdf. Accessed online May 9, 2010.

***Interviews and Conversations***

David Caldwell: Portland Parks, Recreation Supervisor.

Molly Casto: Senior Planner, Portland Planning Department. March 8, 2010.

Peggy Hinman: The Root Cellar, Adult Ministry Coordinator. March 24, 2010.

Alfred Jacobs: Neighborhood Organizer and University of Southern Maine student. March 8, 2010.

Shirley Kinsey: Missoula Parks and Recreation Department, Recreation Specialist.

Christene Ming: The Root Cellar, Children's Ministry Coordinator.

Ethan Owens: Portland Parks, Recreation and Athletic Facilities Manager. March 3, 2010.

Gayle Petty: Portland Police Department, Senior Lead Officer. March 23, 2010.

Belinda Ray: East Bayside Neighborhood Organization. March 8, 2010; communications and email.

Karen Seymour: Portland Parks, Recreation Supervisor. May 10, 2010.

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[1] Berry
[2] Roseland
[3] www.andromeda.rutgers.edu/~natalieb/sociwelfare
[4] www.factfinder.census.gov
[5] www.census.gov
[6] www.nrcm.org/documents/publiclandownership.pdf
[7] Kinsey
[8] www.ci.missoula.mt.us

[9] www.co.missoula.mt.us/accounting/FY09Budget/Items/Parks/Exp_Parks
[10] www.ci.portland.me.us/compparativefy08
[11] Seymour
[12] www.city-data.com/neighborhood/eastbayside-portland-maine
[13] Ibid
[14] http://www.maine.gov/
[15] Jacobs
[16] Ibid
[17] Ray
[18] Casto
[19] Ibid
[20] Owens
[21] Hinman
[22] Ibid
[23] Ibid
[24] Ibid
[25] Ibid
[26] Petty
[27] Ibid
[28] Barringer