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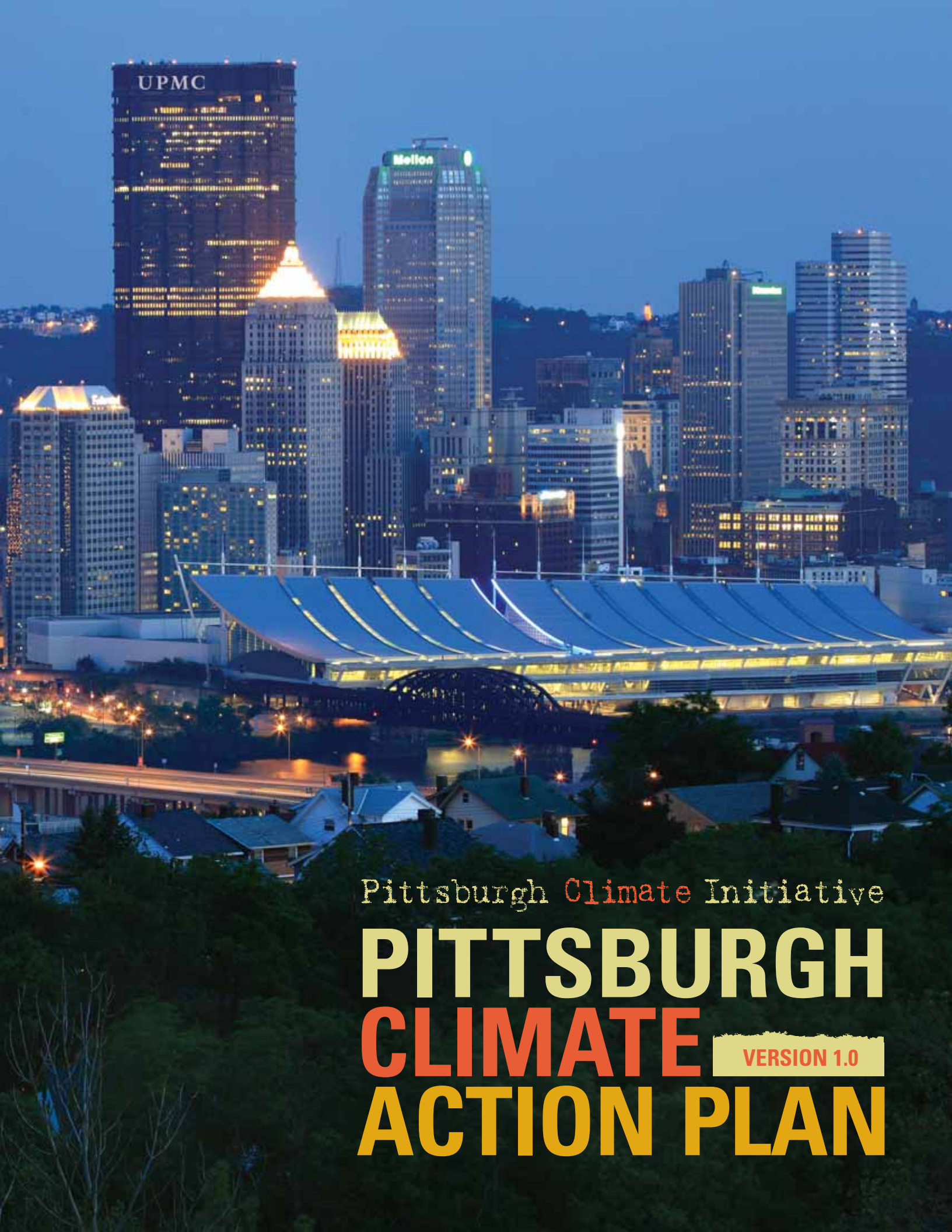

Pittsburgh Climate Initiative

PITTSBURGH CLIMATE ACTION PLAN

VERSION 1.0

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Pittsburgh Climate Initiative

PITTSBURGH CLIMATE ACTION PLAN

VERSION 1.0

Endorsed by the

Green Government Task Force of Pittsburgh

A collaboration of

GREEN BUILDING ALLIANCE

CLEAN AIR COOL PLANET

Pittsburgh, Pennsylvania
June 2008

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Pittsburgh, Pennsylvania
June 2008

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Executive Summary

Climate change is a serious problem with major implications for global and local economies, environments, and societies. Unless coordinated action is taken to reduce greenhouse gas emissions locally, Pittsburgh will experience a variety of negative conditions due to the temperature increase projected to occur during the next century. These effects of global warming may include higher prices and shortages of basic goods (especially food and energy), a higher susceptibility to flooding, increased public expenditures on rebuilding and relief efforts due to extreme weather events, and a higher rate of infectious diseases and heat-related illnesses and deaths.

In an effort to create a coordinated Pittsburgh climate protection effort, the *Pittsburgh Climate Action Plan* presents the City of Pittsburgh and its residents, businesses, and higher education institutions with opportunities to reduce the impacts of local and global climate change, improve the local environment and the local economy, and enhance Pittsburgh's reputation as an environmentally progressive city.

The *Pittsburgh Climate Action Plan* outlines the measures that government, businesses, higher education institutions, and citizens of the City of Pittsburgh have begun and can continue to undertake to help mitigate the local effects of global climate change. This plan also includes recommended actions that the municipal, community, business, and higher education sectors of Pittsburgh are encouraged to adopt in order to achieve the City's target of reducing greenhouse gas emissions 20% lower than the 2003 level by 2023.

Specific strategies for achieving this emission reduction are initially organized in this plan by the following sectors: municipal, community, business, and higher education. The climate action recommendations for each of these sectors are then classified into the following categories:

- General
- Energy
- Recycling and Waste Management
- Transportation
- Green Building Practices (*Higher Education Only*)
- Student Engagement and Education (*Higher Education Only*)

Following issuance of this *Pittsburgh Climate Action Plan* in June 2008, the Pittsburgh Climate Initiative will pursue implementing and monitoring its outcomes. Short-term recommendations will be the first to be implemented, and their impact will be quantified to track progress towards the goal of 20% reduction in greenhouse gas emissions by 2023.

As individual recommendations, goals, and measures are achieved, the Pittsburgh Climate Initiative will work with the City of Pittsburgh's Sustainability Committee, Pittsburgh Higher Education Climate Consortium, Pittsburgh Business Climate Coalition, and Community Climate Coalition to assess which climate action strategies will be acted upon next, as well as what new recommendations should be incorporated into future versions of the *Pittsburgh Climate Action Plan* to continue achieving broader Pittsburgh greenhouse gas reduction targets.

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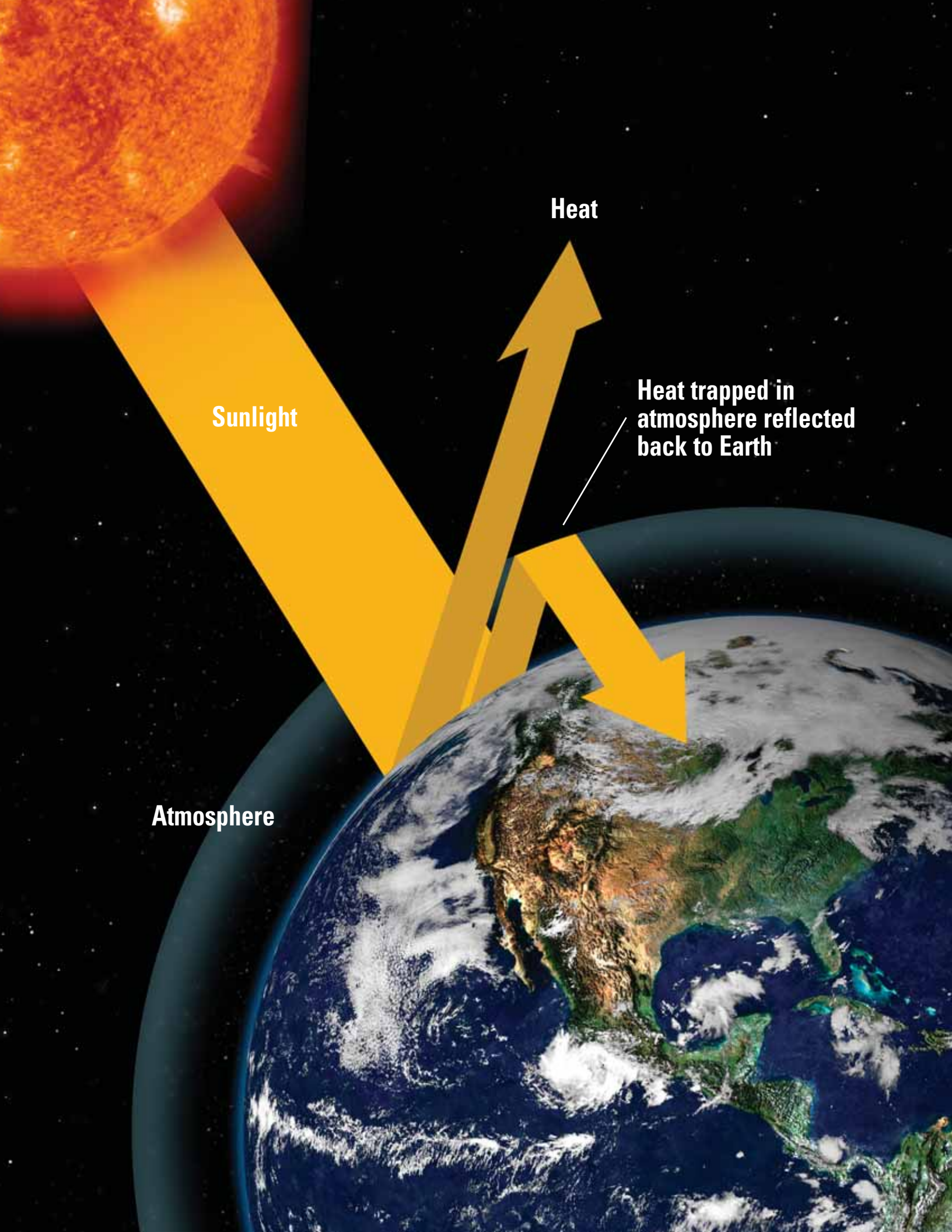
Glossary

ACRONYM / TERM	DESCRIPTION / DEFINITION
Biodiesel	The EPA defines biodiesel as "a renewable fuel produced from agricultural resources such as vegetable oils."
Brownfield	The EPA defines a brownfield as "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."
CA-CP	Clean Air - Cool Planet A national nonprofit organization dedicated to finding and promoting solutions to global warming.
eCO_2	Carbon Dioxide Equivalent ICLEI defines eCO_2 as "a unit that allows emissions of greenhouse gases of different strengths to be added together. For carbon dioxide itself, emissions in tons of CO_2 and tons of eCO_2 are the same thing, whereas for nitrous oxide, an example of a stronger greenhouse gas, one ton of emissions is equal to 310 tons eCO_2."
Carbon Footprint	A measurement used to calculate the impact human activities have on the environment. Measured in terms of the amount of greenhouse gases emitted from each activity, and reported in units of carbon dioxide (CO_2).
EPA	Environmental Protection Agency The U.S. government agency dedicated to protecting human health and the environment.
GBA	Green Building Alliance A Pittsburgh nonprofit organization that advances economic prosperity and human wellbeing in Western Pennsylvania by driving market demand for green buildings and green building products.
GHG	Greenhouse Gases Atmospheric gases that create a greenhouse effect by increasing the amount of heat retained by the Earth's atmosphere, thus contributing to an increase in global temperatures. Principle greenhouse gases emitted from human activities include carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NO_x), and fluorocarbons.
GGTF	Green Government Task Force (of Pittsburgh) A coalition of Pittsburgh climate stakeholders convened in 2006 to create this Pittsburgh Climate Action Plan. The GGTF included government officials, educators, businesses, environmentalists, and concerned citizens.
Greenfield	Previously undeveloped land.
ICLEI	ICLEI Local Governments for Sustainability An international association of local governments and national and regional local government organizations that have made a commitment to sustainable development.
IPCC	Intergovernmental Panel on Climate Change

ACRONYM / TERM	DESCRIPTION / DEFINITION
LED	Light Emitting Diode
LEED®	Leadership in Energy and Environmental Design A green building rating system created by the U.S. Green Building Council.
mpg	Miles per Gallon
PCI	Pittsburgh Climate Initiative The collaborative climate efforts of the City of Pittsburgh, Clean Air - Cool Planet, Green Building Alliance, Green Government Task Force, and ICLEI through June 2008.
ULEV	Ultra Low Emission Vehicle A vehicle certified by the California Air Resources Board to produce 50% fewer emissions than the average for other vehicles produced in its model year.
URA	Urban Redevelopment Authority of Pittsburgh The economic development agency that generates and manages redevelopment projects in the City of Pittsburgh.
USGBC	U.S. Green Building Council A national nonprofit community of leaders working to make green buildings accessible to everyone within a generation.


Heat
Sunlight
Heat trapped in atmosphere reflected back to Earth
Atmosphere

Chapter 1:
Climate Change Background

THE SCIENCE OF GLOBAL CLIMATE CHANGE

When sunlight strikes the Earth, much of it bounces off the Earth's surface, but some is absorbed into the Earth's atmosphere to drive weather and climate. The "greenhouse effect" refers to phenomenon wherein the Earth's atmospheric gases, such as water vapor, carbon dioxide, and methane, trap the sun's heat in the Earth's atmosphere. These "greenhouse gases" act similar to the glass walls of a greenhouse and prevent the sun's heat from bouncing back into outer space; they also serve to help keeping the Earth's temperature at an average 60°F, which also allows life as we know it to exist.[1] However, whenever the natural balance of greenhouse gases is disrupted, planetary temperatures can rise, and weather patterns can be disturbed. The National Academy of Sciences reports that the Earth's surface temperature has risen by about one degree Fahrenheit in the past century, with accelerated warming during the past two decades.[2]

Since the Industrial Revolution, atmospheric concentrations of carbon dioxide (CO_2) have increased nearly 30%. In addition, methane (CH_4) concentrations have more than doubled and nitrous oxide (NO_x) concentrations have risen by about 15%, increasing the heat-trapping capability of the Earth's atmosphere.[3] While plant respiration and the decomposition of organic matter release more than 10 times the CO_2 released by human activities such as transportation and manufacturing, these emissions were generally in balance prior to the Industrial Revolution because CO_2 was adequately absorbed by terrestrial vegetation and the oceans. Scientists believe that these natural carbon sinks cannot sufficiently absorb the more recent increase in human-caused CO_2 releases, which account for the rise in CO_2 concentrations in the atmosphere.[4]

The release of carbon dioxide by human activities has increased dramatically over the last few hundred years. According to the National Park Service, 98% of CO_2 emissions, 24% of methane emissions, and 18% of nitrogen oxide emissions in the United States are the result of fossil fuel combustion for heating, energy, and transportation.[5] Changes in land use, such as deforestation and increased agriculture also contribute to changes in carbon sequestration.

Increasing concentrations of greenhouse gases are likely to accelerate the rate of climate change. The National Academy of Sciences predicts an increase in average global surface temperature of 1 to 4.5°F in the next 50 years, and 2.2 to 10°F in the next century. Evaporation is expected to increase as the climate warms, which will increase average global precipitation. Regional variations in temperature and precipitation change are likely, and predicted consequences include severe storms, floods, droughts, heat waves, and sea-level rise. These climate changes are expected to also increase the spread of disease and pest vectors and further stress vulnerable species and ecosystems, leading to a shift in species composition. In Pennsylvania, livelihoods based on agriculture and forestry may experience significant impacts.

Estimating future emissions depends on demographic, economic, technological, policy, and institutional changes. By one estimate, without the implementation of climate change actions, policies, and regulations like those recommended

[1] U.S. House of Representatives Committee on Science and Technology. (2008). "Frequently Asked Questions." http://science.house.gov/resources/climate_change_faq's.htm. Accessed 28 May 2008.
[2] U.S. Environmental Protection Agency. "Why Sustainability?" http://yosemite.epa.gov/R10/OI.NSF/Sustainability/Why. Accessed 29 May 2008.
[3] Idaho Soil Conservation Commission. (2003). "Carbon Sequestration on Idaho Agriculture and Forest Lands." http://www.scc.idaho.gov/PDF/Carbon%20Sequestration/IDAHOSEQUESTRATIONREPORT.pdf. Accessed 28 May 2008.
[4] Enviro Tools. (2008). "Greenhouse Effect and Gases." http://www.envirotools.org/factsheets/contaminants/greenhouse.shtml. Accessed 29 May 2008.
[5] National Park Service. (2002). *Air Quality in the National Parks.* Second Edition. U.S. Department of the Interior. http://www.nature.nps.gov/air/Pubs/pdf/aqNps/aqnps.pdf. Accessed 1 June 2008.

in this *Pittsburgh Climate Action Plan*, carbon dioxide concentrations are projected to increase by 30 to 150% by 2100.[6]

GLOBAL CLIMATE CHANGE AND ITS IMPACTS ON PENNSYLVANIA

The effects of global climate change are already apparent in the state of Pennsylvania.[7] In the past century, the annual average temperature has risen 1.5°F. Over the past thirty-five years, temperatures in the Northeast have risen 0.5°F per decade. As well, winter precipitation has increased. Projections for temperature increases of 7°F to 12°F above historic levels in winter and 6°F to 14°F in summer, combined with predictions of drought in summer and 20 to 30% more precipitation in winter over the next century, have raised concern over decreased snowfall, change in forest composition, and effects on agriculture. Also of concern is public health, including a projected 50% increase in the number of heat-related deaths, increased symptoms of respiratory diseases such as asthma, and accelerated spread of disease through increasing populations of pest vectors. The Union of Concerned Scientists predicts that if no steps to decrease emissions are taken, Western Pennsylvania can expect a climate similar to that of Northern Alabama by the end of this century.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE FOURTH ASSESSMENT REPORT[8]

A 2007 report of the Intergovernmental Panel on Climate Change (IPCC) found evidence that recent changes in biological systems are related to human-caused temperature increases. The assessment concluded that much of the increase in average global temperature in the past 50 years is very likely caused by human activities that release greenhouse gases. The scientists reviewed over 29,000 data sets from 75 studies completed since 1990 and spanning a period of at least 20 years. Significant changes in biological systems in 89% of the studies are consistent with the predicted responses to global warming.

The report identified specific potential results of global climate change. The authors predict significant changes to terrestrial and aquatic ecosystems. For instance, there is high confidence that Spring events, such as leaf-out, migration, and birth of young, are occurring earlier. As well, due to warmer temperatures, plant and animal communities are shifting towards the poles. In freshwater and marine ecosystems, temperature increases combined with changes in oxygen levels and salinity, are causing shifts in the ranges of aquatic plants and animals. Additionally, shifts in migration of fish in rivers are associated with warming water temperatures.

The IPCC report also highlights likely natural responses to climate change which will have direct effects on human society. For example, regions that are in danger of being flooded by rapidly melting glaciers must invest in dams and drainage. In lower latitudes, temperature increases are predicted to decrease crop yields, increasing the problem of hunger. Rising sea levels will disproportionately hurt those living on small islands or in the large mega-deltas of Asia and Africa. Changes in precipitation patterns worldwide will also increase flooding and the potential for mudslides.

No region of the globe is exempt from the predicted effects of global warming. While it is a global problem, though, climate change can be mitigated through local actions such as those recommended for Pittsburgh's own government, citizens, businesses, and higher education institutions in this *Pittsburgh Climate Action Plan*.

[6] U.S. Department of Transportation, Center for Climate Change and Environmental Forecasting. (2008). "About Transportation and Climate Change." http://climate.dot.gov/science.html. Accessed 28 May 2008.

[7] Frumhoff, P.C., et al. (2007). "Northeast Climate Impacts Assessment." July 2007. Union of Concerned Scientists. http://www.climatechoices.org/ne/resources_ne/jump.jsp?path=/assets/documents/climatechoices/confronting-climate-change-in-the-u-s-northeast.pdf. Accessed 28 May 2008.

[8] Intergovernmental Panel on Climate Change (IPCC). (2007). "Climate Change 2007: Impacts, Adaptation, and Vulnerability." *The IPCC Fourth Assessment Report.* Cambridge University Press. http://www.ipcc.ch/ipccreports/ar4-wg2.htm. Accessed 28 May 2008.

Photo: Maggie Chutz

Chapter 2:

Pittsburgh Climate Initiative Background

BACKGROUND

There is strong agreement within the scientific community that the increasing quantity of the primary greenhouse gases like carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NO_x), and fluorocarbons are raising the global temperature and increasing the frequency of extreme weather events worldwide.[9] Combustion of large quantities of fossil fuels such as coal, oil, and gas for electricity, heating, and transportation; production of methane from landfills and agriculture; and destruction of carbon sinks such as forests all contribute to an increased concentration of greenhouse gases.

Pittsburgh's Commitment to Greenhouse Gas Emission Reduction

While few issues have such international scope and scale with such far-reaching impacts, many of the most promising solutions to combat global climate change are local initiatives, especially those over which municipalities like the City of Pittsburgh have control.

In October 2006, the City of Pittsburgh demonstrated its commitment to being a national leader in environmentally responsible practices by joining ICLEI Local Governments for Sustainability (ICLEI), an international association with more than 815 local government members committed to reducing greenhouse gas emissions and supporting sustainable development. Simultaneously, the City of Pittsburgh also became a "Partner Community" of Clean Air - Cool Planet (CA-CP), a science-based, nonpartisan, nonprofit organization solely dedicated to finding and promoting solutions to global warming.

Additionally, the Municipal Working Group of the Green Government Task Force of Pittsburgh has adopted the goal of reducing greenhouse gas emissions to 20% below 2003 levels by 2023. Measures to reduce greenhouse gases can also provide cost-savings and improvements to the environment and human health.

GREEN GOVERNMENT TASK FORCE OF PITTSBURGH

Through its membership with ICLEI, the City of Pittsburgh committed its government, businesses, and citizens to implementing programs to reduce community-wide emissions of greenhouse gases. In 2006, to meet this commitment effectively, the City of Pittsburgh and its stakeholders began developing a municipal and community vision of how to reduce greenhouse gas emissions with locally-based strategies.

With Green Building Alliance (GBA) as a catalyst, the City of Pittsburgh formed a Green Government Task Force (GGTF) in 2006 to assist in creating a plan for reducing the City's energy consumption and greenhouse gas emissions. The Green Government Task Force was led by co-chairs Pittsburgh Mayor Luke Ravenstahl, Pittsburgh City Councilman William Peduto, and Pennsylvania State Senator Jim Ferlo; it was convened by Rebecca Flora, Executive Director, Green Building Alliance.

The Green Government Task Force was a coalition whose membership spanned government officials, educators, businesses, environmentalists, and concerned citizens. Its first step toward reducing Pittsburgh's climate impact was to benchmark the City's greenhouse gas emissions.

[9] The Town of Amherst Energy Conservation Task Force. (2005). "Amherst Climate Action Plan." http://www.amherstma.gov/departments/Conservation/CAP_9-27-05_FINAL-cover1.pdf. Accessed 29 May 2008.

Pittsburgh Greenhouse Gas Emissions Inventory

Using ICLEI's *Clean Air and Climate Protection Software*, the Pittsburgh Climate Protection Initiative *Greenhouse Gas Emissions Inventory* was completed in December 2006.[10] This inventory was completed by graduate students under the direction of Rebecca Flora, who, along with being Executive Director of Green Building Alliance, was adjunct professor at the H. John III Heinz School of Public Policy and Management at Carnegie Mellon University.

The Pittsburgh *Greenhouse Gas Inventory* reports equivalent carbon dioxide emissions (eCO_2) for the City of Pittsburgh for benchmark year 2003. The Inventory takes into account municipal and community emissions. Municipal greenhouse gas emission sources include buildings, street and traffic lights, vehicle fleet, water and sewer, and solid waste. Community-wide emissions include greenhouse gas emissions from vehicle-miles traveled, waste generation, and the use of electricity, natural gas, and steam.

The Pittsburgh greenhouse gas inventory results indicate that approximately 6.6 million tons of eCO_2 were released from Pittsburgh sources in 2003. Municipal emissions amounted to nearly 250,000 tons eCO_2 (or 4% of total emissions) in the 2003 benchmark year.

Clean Air and Climate Protection Software

Emissions data for the Pittsburgh Climate Protection Initiative *Greenhouse Gas Emissions Inventory* and some of the measures included in this *Pittsburgh Climate Action Plan* were quantified using the *Clean Air and Climate Protection Software*, a product designed for ICLEI to assist local communities with greenhouse gas emissions inventories. The software uses energy use and waste data to estimate GHG emissions in terms of equivalent carbon dioxide (eCO_2), and criteria pollutants, nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOCs) and coarse particulate matter (PM_{10}). The software can also be used to predict future emissions and to evaluate proposed measures in terms of emissions reduction benefits. After plan development, the software can be used to track progress towards the reduction target.

ICLEI staff provided technical support during both the inventory and plan development, when assumptions were necessary to quantify predicted emissions reductions. The methodologies and assumptions behind measures are discussed in the individual measure sections.

PITTSBURGH CLIMATE INITIATIVE

The Pittsburgh Climate Initiative (PCI) seeks to raise awareness and engage Pittsburgh's residents, businesses, government, and higher education institutions in taking actions that will reduce greenhouse gas emissions and their impact on our local economy and human wellbeing. PCI is financially supported through generous funding from the Roy A. Hunt Foundation, The Heinz Endowments, and the Surdna Foundation.

Through June 2008, the Pittsburgh Climate Initiative was co-managed by Green Building Alliance and Clean Air - Cool Planet, a nonprofit organization providing climate protection services throughout New England and the Mid-Atlantic states. Technical support was provided by ICLEI through the Cities for Climate Protection® campaign to create a plan for reducing Pittsburgh's greenhouse gas emissions that followed the ICLEI "Five Milestone" process which includes the following tasks:

1. Complete a Greenhouse Gas Emissions Inventory and Report.
2. Set an Emissions Reduction Target.
3. Complete a Pittsburgh Climate Action Plan to Reduce Greenhouse Gas Emissions.
4. Implement the *Pittsburgh Climate Action Plan.*
5. Monitor the Impact of Pittsburgh's Emission Reduction Measures.

Pittsburgh Climate Action Plan

As part of the Pittsburgh Climate Initiative, the Green Government Task Force (GGTF) was responsible for developing this *Pittsburgh Climate Action Plan*. The Plan is the result of a concerted effort by many local individuals and organizations to develop achievable climate protection strategies. This Plan is a working document expected to operate in tandem with complementary actions already being undertaken locally to reduce greenhouse gas emissions. Additionally, because Pittsburgh has taken a holistic approach to determining how to best reduce greenhouse gas emissions locally, it now has a better idea of how to address the challenges of global climate change systematically instead of in isolation.

The GGTF was originally convened as a temporary climate advisory body to the City of Pittsburgh. In order to meet the City of Pittsburgh's commitment to greenhouse gas emission reductions effectively, the GGTF developed a

[10] Pittsburgh Climate Protection Initiative. (2006). *Greenhouse Gas Emissions Inventory*. December 2006. http://www.pittsburghclimate.org/documents/Pittsburgh%20Inventory%20Report.pdf. Accessed 19 May 2008.

four-pronged vision of the need to reduce greenhouse gas emissions locally, along with strategies for accomplishing these reductions.

The GGTF created four working groups: Municipal, Community, Business, and Higher Education. These groups worked to develop climate action recommendations for their respective sectors. Consequently, the Green Government Task Force's *Pittsburgh Climate Action Plan* incorporates recommendations for Pittsburgh's business, community, higher education, and municipal sectors. This effort recognizes and complements actions already being undertaken locally to reduce greenhouse gas emissions, while also recommending steps that City of Pittsburgh government, businesses, higher education institutions, and individual residents can take to reduce energy consumption and greenhouse gas emissions.

Outline of Pittsburgh Climate Action Plan

This first chapter of the *Pittsburgh Climate Action Plan* describes the City of Pittsburgh's engagement with Clean Air - Cool Planet, Green Building Alliance, and ICLEI, which resulted in the creation of Pittsburgh's baseline greenhouse gas inventory. Subsequently, the Green Government Task Force was tasked with creating recommendations for local greenhouse gas emission reduction measures. Chapter Two presents background information about climate change and outlines potential impacts of global warming in Pittsburgh and across the globe.

This *Pittsburgh Climate Action Plan* then goes on to outline a variety of measures for Pittsburgh's municipal government, community, business, and higher education sectors to complete, propose, or enact by 2023 in order to achieve the City of Pittsburgh's stated goal of 20% greenhouse gas reduction by 2023. Throughout this report, the climate action recommendations are organized by municipal, community, business, and higher education sectors. The recommendations are then classified in the following categories: general, energy, recycling and waste management, and transportation. Within these categories, recommendations are divided into short-term (0 to 2 years), medium-term (2 to 5 years), and long-term (greater than 5 years) recommendations. This categorization scheme will allow Pittsburgh to place its immediate focus on the more urgent and straightforward actions, while taking a longer amount of time to address the more intricate and time consuming greenhouse gas reduction measures.

Presentation of the Pittsburgh Climate Action Plan to Pittsburgh City Council

Completing its commitment to the City of Pittsburgh, the Green Government Task Force presented this *Pittsburgh Climate Action Plan* to the Pittsburgh City Council in July 2008. The Pittsburgh Climate Initiative will continue to pursue the implementation and measurement phases of the Plan.

Photo: Maggie Chutz

Chapter 3:

Municipal Climate Action Recommendations for the City of Pittsburgh

INTRODUCTION

The Municipal Working Group of the Green Government Task Force set a greenhouse gas emission reduction goal of 20% fewer municipal greenhouse gas emissions by 2023; the benchmark year for this comparison is 2003, hence "20% less by 2023."

This *Pittsburgh Climate Action Plan* sets forth actions the City government can take to reduce its greenhouse gas emissions and become a leader for the entire community. This plan assesses the eCO_2 reductions and cost-saving effects of measures that might be implemented through municipal operations, which include buildings, streetlights, water and wastewater, vehicle fleet, solid waste and general/educational recommendations. In cases where an eCO_2 reduction cannot be accurately forecast, environmental and economic benefits are highlighted.

City of Pittsburgh Municipal Greenhouse Gas Emissions Inventory and Forecast

The *Greenhouse Gas Inventory* was completed in the Fall of 2006. The Inventory indicated that 247,605 tons of carbon dioxide equivalent (eCO_2) were released from municipal sources in 2003. Because there are many different GHGs with different heat-trapping capabilities, a unit of carbon dioxide equivalent is used to represent total emissions. The ICLEI software was used to forecast emissions levels for 2023. If the City takes no additional actions to decrease emissions (beyond those described under "Existing Measures") 247,599 tons of eCO_2 will be released in 2023 (see Figure 1).

Pittsburgh municipal operations account for approximately 4% of the total eCO_2 produced in the City of Pittsburgh. While the City has generally done an excellent job of managing its resources, improvements can be made with the right investments. Investments into greenhouse gas reduction methods benefit the City through both direct savings in electricity and fuel purchase costs, and by contributing to overall greenhouse gas reduction.

Figure 1: CITY OF PITTSBURGH ESTIMATED GREENHOUSE GAS EMISSIONS IN 2023

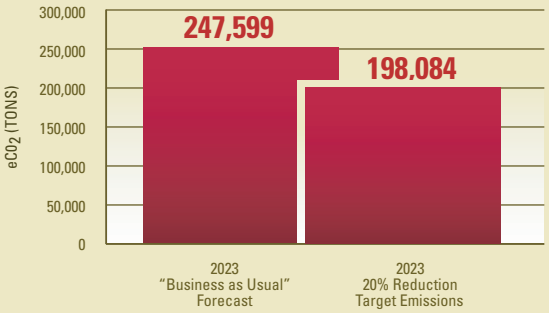
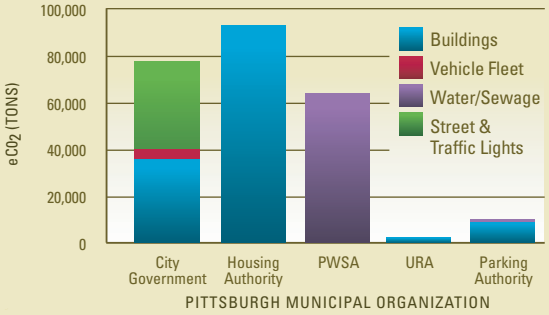


Figure 2: 2003 PITTSBURGH MUNICIPAL GREENHOUSE GAS EMISSIONS BY ORGANIZATION (TONS eCO_2)



The municipal operations were divided into five sectors: City government, Housing Authority, Pittsburgh Water and Sewer Authority (PWSA), Urban Redevelopment Authority (URA), and Parking Authority. Greenhouse gas emissions and their sources for each sector are shown in Figure 2.

Approximately half of City government emissions are attributed to streetlights and traffic signals. The majority of other emissions are the result of heating and electricity use in buildings.

As shown in Figure 3, the Housing Authority is the single largest municipal source of emissions. While it is responsible for approximately 60% of total municipal energy use, it accounts for only 38% of all municipal emissions. The PWSA consumes approximately 13% of all municipal energy; however, it is responsible for 26% of municipal emissions. The difference

between percentage of energy used and emissions is the result of what fuel type is used. Although the Housing Authority accounts for over half the energy used in municipal operations, most of this energy is natural gas for heating. Natural gas is a relatively clean-burning fuel. In contrast, electricity in southwestern Pennsylvania comes mainly from coal-fired power plants, which release high levels of emissions. The PWSA uses mostly electricity to run motors and pumps. So although it only uses 13% of the municipal energy demand, it accounts for over a quarter of the emissions.

Similarly, the share of emissions resulting from City government is relatively large, due mostly to emissions resulting from electric street and traffic lights. Of the emissions from those lights, 88% results from streetlights and 12% from traffic signals.

The 2003 City of Pittsburgh energy costs by municipal sector are displayed in Figure 4. Not including public authorities, the City of Pittsburgh government paid approximately $7.4 million annually for its energy in 2003 (or approximately 2% of the 2003 operating budget of the City). This spending accounts for about 42% of all municipal energy expenses. By comparison, it is only responsible for 24% of all municipal energy consumed. The Housing Authority pays the next largest share of municipal energy costs ($6 million, or 34% of total municipal costs), although a large portion of this expense is paid through federal aid from the Department of Housing and Urban Development, with the remainder being paid by Housing Authority residents. The PWSA paid just over $3 million annually for its energy in 2003.

The main reason for the disparities between energy consumption and energy costs in the various Pittsburgh municipal sectors is the average rates paid for energy by each entity. In 2003, the City of Pittsburgh government paid (on average) 10 cents per kilowatt-hour of electricity, while the Housing Authority pays 7.5 cents and PWSA pays 5.4 cents. For natural gas, City of Pittsburgh government again paid the highest rate in 2003, at about double that of the Housing Authority. Within City government, costs are split evenly between street and traffic lights, and city buildings. The vehicle fleet is responsible for only a small portion of City energy costs.

RECOMMENDED ACTIONS FOR CITY OF PITTSBURGH GOVERNMENT

Using the climate inventory software, an emissions forecast indicates that in a "business as usual" scenario, the City of Pittsburgh government will emit approximately 247,600 tons of eCO_2 in the year 2020. In order to reach the municipal target, the City government must eliminate 49,521 tons eCO_2 between 2003 and 2023 (see Figure 1).

Figure 3: PITTSBURGH MUNICIPAL ENERGY USE BY SOURCE AND ORGANIZATION (MMBtu)

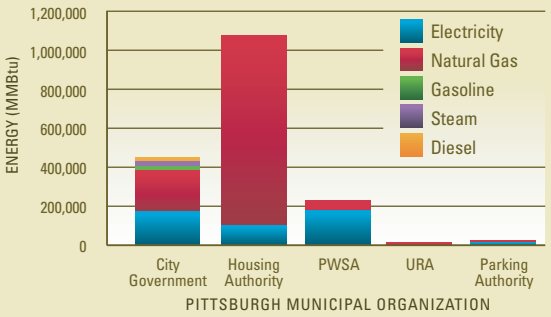
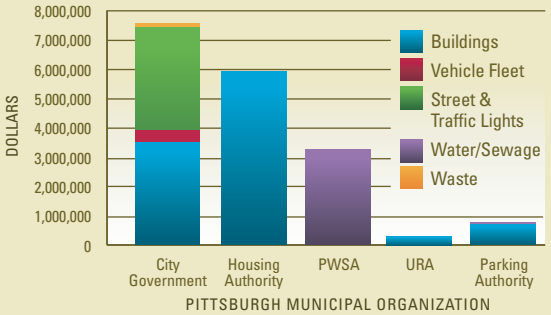


Figure 4: 2003 PITTSBURGH MUNICIPAL ENERGY COSTS BY ORGANIZATION



Municipal measures already in place have reduced Pittsburgh's municipal greenhouse gas emissions by 8,366 tons eCO_2 from 2003 through June 2008. Implementing the quantified municipal climate action measures proposed in this *Pittsburgh Climate Action Plan* will result in an emission reduction of 10,199 tons eCO_2, which leaves Pittsburgh's municipal operations to eliminate 30,956 tons eCO_2 by 2023. It is predicted that many of the currently un-quantified municipal climate action recommendations will contribute to this reduction in municipal greenhouse gas emissions.

Each section of this Municipal chapter of the *Pittsburgh Climate Action Plan* outlines existing and proposed strategies for the City. Existing measures are either current initiatives that are being implemented, or are in the developmental stage since the baseline year of 2003. Most proposed measures are new initiatives that have not yet been considered for implementation. Many of them follow the example of other local government emission reduction efforts, but have been restructured to address the unique needs of Pittsburgh. The proposed measures are divided into short-term (0 to 2 years), medium-term (2 to 5 years), and long-term (greater than 5 years) recommendations.

Existing Measures

The existing measures described below are either current initiatives already implemented, or are in the development stage since the baseline year of 2003.

MUNICIPAL GENERAL 1.1:

Participate in EPA Change a Light Day

GHG Reduction: Unknown
Implementation Year(s): 2007
Information Contact: Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org

The EPA Energy Star Program, "Change a Light," usually starts part of the campaign during October or November. According to the Energy Star website, a CFL will produce 450 pounds less CO_2 over its lifetime than a traditional incandescent.

Switching out one incandescent for a CFL would save 81 kWh per year, based on a daily use of 5 hours per day, 365 days per year. This yields an eCO_2 savings of 94 lbs per year, or 0.047 tons per year. In October 2007, City of Pittsburgh, Green Building Alliance, and Clean Air - Cool Planet staff distributed free CFLs and informational material in the lobby of the City-County Building during lunch time. Fifty CFLs were distributed, accounting for an estimated reduction of 2.35 tons eCO_2.

MUNICIPAL GENERAL 1.2:

Participate in Earth Hour

GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Dan Gilman, Chief of Staff, Office of Councilman Peduto, (412) 255-2133, daniel.gilman@city.pittsburgh.pa.us

On Saturday, March 29, 2008, the City of Pittsburgh participated in the international event, Earth Hour, which serves to raise awareness of climate change. During Earth Hour, individuals and organizations save energy by turning off lights for one hour. Institutional participants in Pittsburgh included the Children's Museum, Andy Warhol Museum, Frick Art Museum, Highmark's Fifth Avenue Place and Penn Avenue Place, Madison Realty Pittsburgh's Landmark Building, Federal North Facility, Chatham University, and the Heinz History Center, which turned off the Heinz Ketchup sign for the event. More than twenty major cities across the world participated. Noted landmarks which were dark for Earth Hour include the Golden Gate Bridge in San Francisco, the Sears Tower in Chicago, and the Coca-Cola Headquarters in Atlanta.

MUNICIPAL ENERGY 1.1:

Receive Solar Cities America Grant

GHG Reduction: Unknown
Implementation Year(s): 2007
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In June 2007, the Department of Energy announced that Pittsburgh was one of thirteen cities to be awarded a Solar Cities America Grant to increase the use of solar power. Using the DOE grant, in addition to City matching funds and technical assistance from DOE experts, the City will integrate solar technologies into city energy planning, zoning and facilities; streamline city-level regulations and practices that affect solar adoption by residents and local businesses; and promote solar technology among residents and local businesses through outreach, curriculum development, and incentive programs.

The City of Pittsburgh's long-term goal for solar energy is to transform the energy marketplace through a program called the Pittsburgh Solar Initiative (PSI), by converting 0.5% of all electrical energy generation to solar. Between 2009 and 2015, the City of Pittsburgh will engage in several demonstration projects to showcase the viability of solar power in this region, especially when used for low-power, distributed systems, or to reduce overall energy consumption for small-scale buildings. The City of Pittsburgh's programs will be designed to complement and improve upon the state initiatives to make solar power affordable enough to be embraced by all sectors.

Converting widely distributed low-power systems such as traffic lights to solar makes sense on an immediate scale, but the possibility of reducing costs for larger City consumers will also be explored. The City will develop a plan and pilot program to convert its traffic lights — a distributed, low-power, essential system — to solar power. The integration of solar power into the traffic light system in Pittsburgh can have a direct and immediate effect on Pittsburgh's energy consumption and emergency preparedness. Once installed, the cost of operating a solar-powered LED traffic light would be virtually zero, except for annual maintenance, which is also lower than the cost of maintaining incandescent traffic lights. The

high initial cost of installation is mitigated by the massive savings in power consumption and improved safety that would be achieved.

The City's goal for this program is to leverage DOE funds to create a large rebate fund for residential and small-scale commercial consumers. Ultimately, the amount and scope of such a rebate would be determined during the planning stage, but based on successful programs in other areas, and depending on the amount of money available as well as customer demand, mildly adjusted for tilt, orientation, and shade factors. The City's solar rebates will dovetail with the state's rebate program to further sweeten the deal for small-scale consumers for whom the costs of solar power were prohibitive in the past. In all, at the current price per peak watt, the City and state rebates could reduce the cost to the consumer by one-half to two-thirds.

Other specific project goals include the following:

- Investigate best practices nationwide and integrate them into City planning and promotion of solar energy deployment.
- Analyze existing City operations, including emergency preparedness and determine which operations would be best suited to solar power.
- Identify and plan pilot projects in City facilities to demonstrate deployment of solar technologies in Pittsburgh.
- Carry out survey of utilities, building industry, building owners, and residents to determine the apparent barriers to deployment of solar technology.
- Work with International Union of Operating Engineers to expand training for installation and operation of solar power.
- Identify providers of solar technology and expertise and facilitate making their capabilities available to local residents and businesses.
- Streamline City building codes to facilitate implementation of solar energy and incorporate the activities in the one stop resource shop.
- Working with the Green Building Alliance and local financial institutions, develop viable approaches to attaining project financing for solar installations.
- Establish one stop resource shop where business and public can come to get answers about solar energy.
- Develop media campaign to educate the public and promote deployment of solar technologies.

MUNICIPAL ENERGY 1.2:

Purchase Renewable Energy

GHG Reduction: 7,217 tons eCO_2
(802 tons from City government plus 6,415 tons from Pittsburgh Water and Sewage Authority)
Implementation Year(s): 2008
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In early Spring 2008 the City conducted a reverse auction to accept bids from electricity providers. As part of this process, the City has agreed to purchase 10% of its energy from a green power source. As well, any entities within the City that signed on to go to bid with the City (in an effort to save money by buying collectively) will purchase 10% of their electricity from renewable energy. This includes the Pittsburgh Water and Sewage Authority (PWSA), the PPG Zoo and Aquarium, and the Sports and Exhibition Authority. The City and the PWSA are purchasing an estimated 7 million and 56 million kWh, respectively, through the agreement. Of this, 6,300,000 kWh (700,000 kWh for the City and 5,600,000 for the PWSA) will be purchased from renewable energy.

Examples:

- *Santa Monica, California purchases 100% of the electricity used by the municipal government from renewable sources.*[11]
- *The City of Los Angeles is purchasing 10% of its municipal power needs from renewable sources.*[12]

MUNICIPAL ENERGY 1.3:

Establish Pittsburgh Green Up Program

GHG Reduction: Unknown
Implementation Year(s): 2007
Information Contact: Jennifer Watson, Neighborhood Initiatives Coordinator, Mayor's Office, City of Pittsburgh, (412) 255-4765, jennifer.watson@city.pittsburgh.pa.us

The City of Pittsburgh has begun converting City-owned vacant lots into community green spaces through a project called Green Up. The goals of the project are to reduce blight, inspire community pride, and promote environmental values.

[11] ICLEI: Local Governments for Sustainability. (2000). "Best Practices for Climate Protection." http://www.colorado.gov/energy/in/uploaded_pdf/Best_PracticesLocalGov.pdf. Accessed 29 May 2008

[12] U.S. Department of Energy. (2008). "Renewable Energy Certificates." http://www.eere.energy.gov/greenpower/markets/certificates.shtml?page=2&companyid=146. Accessed 29 May 2008

The Mayor's Office provides plants and signs for the Green Up lots, and the Penn State Cooperative Extension (PSCE) provides soil testing and technical assistance. Each Green Up site has a community partner organization that can coordinate volunteers or staff to maintain ongoing stewardship of each lot in the project.

In its first pilot year, Green Up Pittsburgh forged partnerships in the following six neighborhoods:

Beechview

Location: End of Methyl Street, near Crane Avenue
Community Partner: Beechview CLUB
Purpose: Community walking path
Status: Planting complete; maintenance ongoing.

Beltzhoover

Location: Gearing Ave
Community Partner: Beltzhoover Neighborhood Council
Purpose: Green Palette
Status: Planning underway, planting in Spring/Fall 2008

Chartiers City

Location: Middletown Road
Community Partner: Windgap/Chartiers Athletic Association - Civic Club
Purpose: TBD
Status: Planning underway, planting in Spring/Fall 2008

Hill District

Location: Centre Avenue, east of Kirkpatrick Street
Community Partner: The Hill House Association
Purpose: Community green space and potential for public art
Status: Planning underway, seeding and partial planting complete, additional planting Spring 2008

Larimer

Location: Lenora Street, on either side of the Meadow Street Bridge
Community Partner: East Liberty Concerned Citizens
Purpose: Gateway greening
Status: Planning complete; maintenance ongoing

Manchester

Location: Fulton Street, between Juniata Street and Lake Street
Community Partner: Manchester Citizens Corporation
Purpose: Crime Victims Memorial Garden
Status: Planning underway, seeding complete, additional plantings in Spring 2008

Perry South

Location: Crispen Street, on an out-of-use baseball field
Community Partner: The Pittsburgh Project
Purpose: Urban Farm & neighborhood farmer's market
Status: Planning and site preparations underway, produce plantings in Spring 2008

In sum, nearly 40 blighted, vacant lots have been greened through Green Up Pittsburgh and the URA's Larimer Green Zone.

MUNICIPAL ENERGY 1.4:

Plant Trees Throughout the City

GHG Reduction: Unknown
Implementation Year(s): Ongoing
Information Contact: Lisa Ceoffe, Urban Forester, Department of City Planning, City of Pittsburgh, (412) 393-0154, lisa.ceoffe@city.pittsburgh.pa.us

The most recent census of trees in the City of Pittsburgh found a total of 30,000 trees within city limits. However, many of these trees were in poor health and have been removed to prevent safety hazards. The City is dedicated to replacing these trees and planting additional trees throughout the city.

Through the TreeVitalize program, over 20,000 trees will be planted in the Greater Pittsburgh area over a course of five years. Partners in this program include the City of Pittsburgh, the Department of Conservation of Natural Resources, Western Pennsylvania Conservancy, and Allegheny County Parks.

As part of this program, 250 trees were planted in the Spring of 2007 to celebrate the 250th anniversary of the City. Additional large plantings are planned for the Fall of 2008, and both the Spring and Fall of 2009. Locations for these plantings are based on a U.S. Forest Service Study of shade trees in urban areas. Priority will be given to those areas which currently have a low tree-to-person ratio.

The City also has a Shade Tree Commission, which reviews codes and ordinances to encourage city trees and open space.

In 2005, the City developed a seven year plan for planting trees in the City, but due to lack of funding and staff time, the project has a backlog of about 450 tree requests. Despite hardships, though, the tree planting program did replace 600 trees in the City in 2007.

Finally, the City took part in an Earth Day giveaway of 1,200 fir trees for backyard plantings in April 2007.

MUNICIPAL ENERGY 1.5:

Install Light Emitting Diode (LED) Traffic Signals

GHG Reduction: 1,000 tons eCO_2
Implementation Year(s): 2008
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

Starting in 2006, the City began the process of updating all traffic signals and accompanying crosswalk signals to LED light fixtures. To date the City has updated 3,668 lights to LED fixtures resulting in 958,945 kWh of annual energy savings, and a eCO_2 reduction of over 1,000 tons. By upgrading 15% of Pittsburgh's traffic signals, the City can expect to save $68,373 annually.

MUNICIPAL ENERGY 1.6:

Upgrade Sports Field Lighting Fixtures

GHG Reduction: 149 tons eCO_2
Implementation Year(s): 2007
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

The City uses over two million kWh per year to light the sports fields in City parks. In 2007, the City installed a central control system to light these fields. When a team or community group receives a permit to use a City field, the computerized system automatically turns the lights on 15 minutes before their reservation and shuts the lights off 15 minutes after their time slot. This new system has saved the City 130,000 kWh electricity in its first year, resulting in an emissions reduction of 149 tons eCO_2.

MUNICIPAL RECYCLING AND WASTE MANAGEMENT 1.1:

Operate a City Recycling Program

Projected GHG Reduction: Unknown
Implementation Year(s): Ongoing
Information Contact: Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, (412) 255-2631, Shawn.Wigle@city.pittsburgh.pa.us

The City offers recycling of corrugated cardboard, white office paper, mixed paper, newspaper, magazines, and catalogs, as well as bottles and cans at the City-County Building, and other City office buildings. It is hoped to expand this recycling to all City buildings. In order to make the collection process more efficient, the truck that collects recycling from the City and County office buildings also collects recyclables from drop-off sites, and thus it is impossible to know how much recycling has been collected from just City offices.

Currently no food waste is collected for composting. In order to implement a composting program, the City would need to re-bid its collection agreement. A concern of the City's is that it is only aware of one hauler/composting facility in the area which accepts composting. The current contractor cannot provide composting.

MUNICIPAL RECYCLING AND WASTE MANAGEMENT 1.2:

Institute a Computer Recycling Program

Projected GHG Reduction: Unknown
Implementation Year(s): Ongoing
Information Contact: Joan Anderson, Manager of Operations, City Information Systems, City of Pittsburgh, (412) 255-2268

The City has a policy of using a computer until it is more cost-efficient to replace it rather than upgrade. For example, some components, like video cards, are integrated into the motherboard, and to replace a motherboard is very expensive. When a computer is no longer usable, the hard drive is removed and destroyed to prevent the loss of confidential information. Then the computer is disposed of through ITI Solutions, an EPA-approved disposal company which recycles the computer and properly disposes of any hazardous wastes.

MUNICIPAL TRANSPORTATION 1.1:

Perform a Downtown Circulation Study

Projected GHG Reduction: Unknown
Implementation Year(s): Beginning in 2004
Information Contact: Patrick Hassett, Assistant Director, Bureau of Transportation and Engineering, City of Pittsburgh, (412) 255-2883, pat.hassett@city.pittsburgh.pa.us

The Pittsburgh Downtown Partnership commissioned a 2004 analysis of downtown circulation, the primary goal of which was to generate strategies for eliminating congestion downtown. The report issued several recommendations for alleviating congestion through improvements in the following areas: traffic operations, transit routing, parking, roadway management, master-planning, sidewalks, and special events planning. Recommendations included traffic signal retiming, left turn restrictions, bus lane modifications, changes in on-street parking, lane marking improvements, and others.

Currently, all of the lights in downtown have two time settings: peak and off-peak. These will be changing to a multiple-setting system (morning peak, afternoon peak, midday, weekend, Northshore event, Mellon arena event, and evacuation). This system will be controlled by a computer program. "Timing runs" were completed before to assess the travel time to get to certain City destinations. These "timing runs" will be repeated under the new system to assess circulation improvements.

In Spring 2008, buses were removed permanently from Market Square and the Planning Department is exploring ways to improve bus movement through the rest of Downtown. This includes reviewing parking meters that restrict bus movement and restricting left turns at locations which block buses, such as the corners of 6th Avenue and Smithfield, and Fort Duquesne at 6th and 7th Streets.

While the master plan for downtown circulation has not been updated since the late 1990s, adjustments have been made to accommodate downtown residences.

Two projects which are intended to be implemented within two years in the City of Pittsburgh, but not in downtown, are upgrading the stoplights on Beechwood Boulevard in Squirrel Hill and converting Penn Circle (East Liberty) to two-way traffic.

Short-Term Recommendations

Following are the short-term measures recommended for the municipal sector to be implemented in 0-2 years.

MUNICIPAL GENERAL 2.1:

Create a Full-Time City Sustainability Coordinator Position

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

Currently, sustainability programs in the City are handled by many different individuals and offices of City government. The City should hire a separate employee to be a full-time Sustainability Coordinator, under the Mayor's Office/City Information Systems. This staff person will be responsible for coordinating efforts between departments, managing a Mayor's Sustainability Committee (described in recommendation Municipal General 2.2), implementing the *Pittsburgh Climate Action Plan* and facilitating benchmarking of progress and biennial updates, partnering with community groups and nonprofits to further sustainability in the City, and collaborating with university partners to engage students through internships and class projects.

The Sustainability Coordinator will also facilitate the City's participation in numerous events and collaborations such as the following:

- Clean Cities
- Change a Light Day
- EPA Challenge
- Governors Challenge
- Mayor's Agreement
- Special Events

MUNICIPAL GENERAL 2.2:

Form a City Sustainability Committee

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

To help ensure adoption of this *Pittsburgh Climate Action Plan*, the Mayor of Pittsburgh will create a permanent, standing, City of Pittsburgh Sustainability Committee.This seven-member committee will act as a steering committee for the implementation of the municipal climate action recommendations and will also guide the process of completing revisions of the municipal plan every two years. The City of Pittsburgh Sustainability Committee will be made up of members from the following departments /positions:

- Mayor's Office
- City Council
- Planning and Zoning
- Public Works
- Finance
- Sustainability Coordinator
- Energy and Utilities Manager

MUNICIPAL GENERAL 2.3:

Foster Student Involvement in City Initiatives

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Kristen Baginski, Deputy Chief of Staff, Mayor's Office, City of Pittsburgh, (412) 255-2632, Kristen.Baginski@city.pittsburgh.pa.us

Initiatives such as the Pittsburgh Climate Initiative cannot continue without dedicated support. Given that municipal employees rarely have the time or resources to implement additional programs, extra help will be needed to continue to enhance the City of Pittsburgh's municipal climate actions. It is imperative that the City of Pittsburgh establish continued financial support for student internships for the Spring, Summer, and Fall semesters of every year. These student interns can help the City of Pittsburgh continue to develop its internal climate action plan. Student interns offer a fresh sense of creativity and are inexpensive compared to full-time employees. In return, the students are given the opportunity to learn about municipal policy and build relationships with City employees. As well, municipal employees are more likely to enjoy the students' participation in sustainability efforts if it does not create an additional burden on their time and energy.

The City of Pittsburgh should partner with Pittsburgh's higher education institutions and the public school system to provide meaningful internship opportunities to qualified students. In turn, the City can best utilize high school, undergraduate, and graduate students to accomplish recommended projects listed in this Municipal chapter of the *Pittsburgh Climate Action Plan*.

Strategy: The Sustainability Coordinator will act as a liaison between the City of Pittsburgh and Pittsburgh higher education institutions through the following activities:

- Disseminate possible projects to professors in the university system.
- Distribute possible projects to the targeted teachers in the Pittsburgh Public Schools.
- Work with the Pittsburgh Climate Initiative to ensure coordination with school, higher education, and other outreach partners.
- Report to the Sustainability Committee the status of projects being performed.
- Coordinate with City of Pittsburgh Public Relations and Pittsburgh Climate Initiative staff to ensure that pilot projects receive adequate media attention

MUNICIPAL GENERAL 2.4:

Institute an Environmental Behavior Change Program for City Employees

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

Often, a city's employees can be challenged to reduce energy consumption. The City can encourage employees through competitions, offering prizes or rewards for departments that can reduce its energy consumption. Such a challenge can be done at very little cost to the City, and will develop a sense of departmental community in acting together for a common cause. In addition, the City can ask individual departments to complete plans for energy reduction measures. These plans should be enforced by the Mayor.

Strategy:

- The Sustainability Committee will implement a pilot project initiative in selected City departments.
- Sustainability Committee members will conduct walkthroughs of the City-County Building to identify sources of existing energy use.
- Computers, printers, copiers, fax machines, light switches, and temperature controls will be identified and counted during the walkthrough. During the walk-through, department heads, administrative assistants/receptionists, and appropriate staff will be involved in the process.
- Department heads will be asked to choose from various templates and locations for behavior change signs that will be located throughout the building.
- Templates of signs will be printed according to numbers requested and needed for each department.
- A second walkthrough will be conducted to put up each poster and sign.
- An email will originate from the Mayor explaining the benefits of the pilot project with incentives for achieving success.
- The Sustainability Committee will make recommendations to the Mayor for what the incentives could be.
- The City Information Systems Department will be involved in the formation of policy dictating standby and shut-off settings for computers, printers, copiers, and fax machines.

MUNICIPAL GENERAL 2.5:

Make Environmental Information Available to 311 Response Center

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Wendy Urbanic, Coordinator, Mayor Luke Ravenstahl's 311 Response Center, City of Pittsburgh, (412) 255-4784

The existing 311 line provides information regarding City Environmental Services and recycling, such as reuse and recycling schedules, directories showing collection days for all City streets, and the Recycling Resource Directory for Allegheny County. Whenever possible, operators of the 311 line answer questions directly, although sometimes they forward inquiries to Environmental Services for more detailed responses. In addition, the Pennsylvania Resources Council assists with questions the 311 line cannot answer. The 311 Coordinator reported that environmental questions have been increasing. To better provide residents with information regarding environmental initiatives in the City, the Sustainability Committee should provide the 311 Office with periodic updates on appropriate information regarding the Pittsburgh Climate Initiative, the Solar Cities Initiative, and other City greening projects. As well, the Sustainability Committee should make itself available as a resource to the 311 Office, to ensure the operators can find appropriate answers to environmental questions.

MUNICIPAL ENERGY 2.1:

Require LEED Construction Standards for Municipal Buildings

Projected GHG Reduction: Unknown
Implementation Year(s): Legislation Pending
Information Contact: Corey Layman, Design Review Specialist, Department of City Planning, City of Pittsburgh, corey.layman@city.pittsburgh.pa.us; Daniel Sentz, Environmental Planner, Department of City Planning, City of Pittsburgh, dan.sentz@city.pittsburgh.pa.us

Third-party green building certification is a way to ensure that building owners and occupants receive a well-designed, economically beneficial, environmentally responsible, and socially relevant structure. The preeminent U.S. green building rating system is Leadership in Energy and Environmental Design (LEED®), which was created in a consensus process by the U.S. Green Building Council (USGBC). There are four possible levels of LEED certification: Certified, Silver, Gold, and Platinum. Achieving a certain level of LEED certification means that a green building project has achieved not only the prerequisite required for certification, but also a variety of optional credits in the areas of sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design. Projects are encouraged to pursue LEED credits that are most applicable to their building type and project goals. The LEED system aims to provide achievable building performance results that create energy, water, and resource efficient buildings that are economically viable and healthy for those living and working in them. LEED certified buildings ultimately depend less on City infrastructure because they use fewer utilities.

Since 2004, the number of government green building programs (the vast majority which are based on the LEED green building rating system) has quadrupled, increasing from 36 municipal programs to 160.[13, 14] As of May 2008, legislation mandating that all Pittsburgh municipal construction projects larger than 5,000–square-feet pursue LEED Silver certification was awaiting Pittsburgh City Council approval. A City of Pittsburgh municipal mandate that building projects pursue LEED certification will help foster the growing economic opportunities for green design, green construction, energy efficiency, green building product manufacturing, and other related local industries. Additionally, creating more economically, environmentally, and socially appropriate spaces for Pittsburgh residents and City staff will continue to enhance Pittsburgh's quality of life.

Example: New York City, NY

New York City Local Law 86, the Green City Buildings Act, was adopted in October 2005, and became effective January 1, 2007.[15] The act applies to New York City Agency projects, including new construction, additions to existing buildings, and significant renovations, with final design approval dates after January 1, 2007. Non-municipal agencies who receive 50% of the cost of the project or $10 million or more from the City must also comply with the act.

All non-residential projects of $2 million dollars or more must be designed and constructed to achieve at least a LEED Silver rating, with the exception of schools and hospitals, which must achieve at least LEED certification.

[13] Gruder. Sherrie. (2007). Government Green Building Policies: A National Inventor. 23 August 2007.
[14] Sharrard, Aurora. (2008). Personal Communication with Ashley Katz, U.S. Green Building Council. Green Building Alliance. 30 April 2008.
[15] Block, Kenneth. (2006). "New York City's Green Buildings Act Becomes Law." http://thelenreid.com/resources/documents/060918_green.pdf. Accessed 29 May 2008.

In addition to the LEED requirement, an energy efficiency requirement is stated in the act. The amount of energy use reduction required is based on the building use as well as the cost of the project.

The following uses are exempt from this act: high hazard, industrial, stadiums, prisons, residential, and sheds. As well, the mayor may exempt projects accounting for up to 20% of capital expenditures in each fiscal year if necessary for the public interest.

While achieving the above green building standards will likely cost more upfront, the City's financial analysis predicts that reduced energy and water costs alone will offset the increased price. As well, an increase in building occupant health and worker productivity is expected. The act is also believed to encourage market transformation, and to reduce the City's dependence on foreign energy supplies.

Strategy:

- Support City of Pittsburgh Planning Department employees in becoming certified as LEED Accredited Professionals.
- Take advantage of opportunities available to the City of Pittsburgh as a member of the U.S. Green Building Council such as:
  - Members-only access to online resources and green building data.
  - Significant discounting on USGBC and LEED programs and publications and certification costs.
  - Participate in legislative outreach efforts and stay up to date with federal and local government green building programs.
  - Serve on a LEED or USGBC committee to shape the future of LEED and green building.

MUNICIPAL ENERGY 2.2:

Complete Energy Audit of City-County Building and Implement Retrofits

Projected GHG Reduction: 7,945 tons eCO_2
Implementation Year(s): Starting in 2009 with energy audit
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In 2009, the City needs to hire a qualified contractor to complete a full energy audit of the City-County Building. Such an audit will result in recommendations for improving energy efficiency of the building, such as the installation of low-energy compact fluorescent bulbs, motion sensors for infrequently used office space, high efficiency windows and siding, or re-enforcing insulation. Buildings which achieve the Energy Star label have annual energy bills that are on average 35% lower than a typical building. Although there is a high upfront capital cost, the long-term energy reductions will cover many of the expenses.

Insulation: Proper insulation can reduce heating and cooling costs up to 30%. The City-County Building and the Pittsburgh Municipal Courts are heated by steam from Allegheny County Thermal. The steam necessary to meet the heating needs requires the use of 19,056-thousand-cubic–feet (KCF) natural gas. Installing improved installation would decrease this amount by 5,717 KCF, resulting in a reduction of 360 tons eCO_2 emitted. The remainder of the City municipal heating/cooling needs is met with the use of 194,435 KCF natural gas. A 30% reduction would result in an emissions reduction of 3,676 tons eCO_2.
Projected GHG Reduction: *4,036 tons eCO_2*

Windows: The replacement of single-pane windows with double-paned windows with low-emissive coating can reduce heating bills by 30%. However, if the windows were replaced in conjunction with an insulation improvement project, the reduction for just the window portion would be closer to 15 to 20% because the insulation would also contribute to building efficiency. Because the City-County Building is an historic building, special care will be taken when replacing the windows to ensure maintenance of this historic status.
Projected GHG Reduction: *A reduction of 30%, if only windows are replaced, would result in a reduction in emissions of 4,037 tons eCO_2. However, if the windows are replaced as part of an overall retrofit, an emissions reduction of 20% is more realistic, which would be 2,691 tons eCO_2.*

Occupancy Light Sensors: Occupancy sensors have been shown to save up to 30% electricity usage.[16] There are three basic types of occupancy sensors. Passive infrared (PIR) sensors, which are most appropriate for small spaces, such as individual offices, detect the movement of a heat-emitting body through its field of view. PIRs will be less effective in spaces where partitions or other objects may block a portion of its field of view. The installation of PIRs includes no extra wiring, as the sensor simply replaces the wall switch.

A second type of sensor, ultrasonic sensor, emits an inaudible sound pattern. They react to changes in the reflected sound

[16] Garg, V. and Bansall, N.K. (2000). "Smart Occupancy Sensors to Reduce Energy Consumption." *Energy and Buildings*. 32(1): 81-87. http://eprint.iitd.ac.in/dspace/handle/2074/861. Accessed 29 May 2008.

pattern. Because these types of sensors can detect very minor motion better than most infrared sensors, they may be most appropriate for spaces like restrooms, where stalls can block the field of view.

Finally, dual-technology occupancy sensors use both technologies, minimizing the lights falsely coming on when the space is unoccupied; however, they also tend to be more expensive.

Projected GHG Reduction: *1,218 tons eCO_2*

MUNICIPAL ENERGY 2.3:

Install Vending Misers on All Vending Machines in City-County Building

Projected GHG Reduction: 18.64 tons eCO_2
Implementation Year(s): 2009
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

Vending Misers are devices that can be installed on beverage vending machines. Vending machines run very inefficiently. According to information from a Tufts University study, with a Vending Miser, the electricity consumption can be cut in half.[17] While vending misers cost about $165 each, they have a relatively quick pay-back period of about 1-2 years.

The average beverage vending machine uses nearly 3,500 kWh per year. In the Pittsburgh region (where most of our electricity comes from coal combustion) one vending machine can produce 3.724 tons of eCO_2 emissions per year. To put this in perspective, a modern residential refrigerator (22 ft^3) uses 450-800 kWh per year. There are ten beverage vending machines on the City-controlled floors of the City-County building on which misers could be installed. If misers were installed on all ten, the resulting energy savings would be 17,520 kWh per year.

Strategy:

- Purchase and install vending misers.
- Appoint a coordinator from City staff.
- Inform all involved parties (staff, facilities, vendors, etc.).
- Provide training early in the process on how the misers work.
- Establish a system for when vending machines have to be moved.
- Avoid blaming misers for problems.
- After evaluating the use of misers in the City-County Building, consider installing on vending machines in all City buildings.

MUNICIPAL ENERGY 2.4:

Replace Exit Signs in City-County Building with Signs Lit by Light Emitting Diodes

Projected GHG Reduction: 8.8 tons eCO_2 (579 lbs/sign)
Implementation Year(s): 2010
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In each public entry to City buildings, municipal and state regulations require illuminated exit signs. Quite often, these are overlooked as measures to consider, even though these devices are illuminated 24 hours a day. A standard exit sign, with two 20-watt incandescent bulbs, uses 316 kWh per year, and costs approximately $35 per year to operate.[18] A two-bulb light emitting diode (LED) Energy Star model uses only 44 kWh per year, resulting in a savings of 272 kWh per sign per year. As well, LED bulbs (which cost approximately $2.50 per year) only need replacement every 15 years (rather than every six months for incandescent bulbs), which saves money on maintenance.

There are 30 exit signs on the City-controlled floors of the City-County Building. Replacing the bulbs in all of these with LEDs could save 8,817 kWh per year. There are also approximately 30 exit signs in the City-County Building that are either too old to simply switch to LED (most of which are currently not illuminated), or use glow-in-the-dark lettering. When these are upgraded to newer models, Energy Star LED models should be installed.

Strategy:

- Include this in Energy Service Company retrofits or;
- Assign Facilities Department to begin investigation on cost.
- After evaluating the use of LED exit signs in the City-County Building, consider replacing the exit signs in all City buildings.

[17] Tufts Climate Initiative. (2008). "Vending Misers: Facts and Issues." http://www.tufts.edu/tie/tci/pdf/VendingMiserHandout.pdf. Accessed 23 May 2008
[18] Energy Star. (2008). "Life Cycle Cost Estimate for 100 Energy Star Qualified Exit Signs." http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_Calc_Exit_SignsBuild.xls. Accessed 28 May 2008

MUNICIPAL RECYCLING AND WASTE MANAGEMENT 2.1:

Broaden City Employee Recycling Program

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, (412) 255-2631, Shawn.Wigle@city.pittsburgh.pa.us

Using the statistic of 1.7 pounds of waste produced per employee per day, the City of Pittsburgh's 4,350 employees produce approximately 961.35 tons of trash per year, 95% of which is paper.[19] While the City-County Building has recycling bins available, the program could be improved to encourage greater participation by employees. Simply adding more recycling bins will not ensure more people recycle, as the recycling coordinator has made bins available on several occasions without success. Rather, a change in office culture as part of the overall greening of the City-County Building is essential.

The emissions reductions associated with greater office recycling depend on the type(s) and amount of materials recycled. For instance, one hundred pounds of aluminum recycled, rather than thrown away, reduces emissions by almost one ton eCO_2. Recycling 100 pounds of plastic soft-drink bottles further reduces emissions by approximately 0.1 ton eCO_2. Finally, recycling mixed office paper, the most prominent form of waste in the City-County Building, will reduce emissions by 0.25 tons eCO_2 per 100 pounds recycled.

Strategy:

- Work with custodial staff to meet the needs of greater recycling.
- Top-down support of recycling program. Backing from the Mayor and Department Heads is crucial to making recycling a priority for employees.
- Bottom-up support. Better education of the benefits of recycling to get people interested in recycling.
- A workplace policy requiring plastic bottles and cans be disposed of in recycling bins, in addition to the State and City code to recycle.
- Continued support of incentives to make recycling part of the office culture, such as the yearly "Clean Your Files" competition, as well as the addition of other recycling events.

MUNICIPAL RECYCLING AND WASTE MANAGEMENT 2.2:

Adopt GreenPrint Software and Duplex Printing Practices

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

GreenPrint is a software product that automatically detects pages which may not be necessary, such as a last page with only a URL or an online banner advertisement. The software gives the user the option of eliminating these wasteful pages from the print job. Another feature of the software is the ability to print only text or images, rather than both, using the print preview option. The software can also be used as a PDF writer, to save documents rather than printing. Reports can be generated daily, weekly, monthly, or yearly illustrating paper and ink saved, as well as an estimated cost-savings. More information is available on the company's website, at www.printgreener.com.

In addition to installing GreenPrint software, City Information Systems should work with department heads to ensure double-sided printing is the default on all printers and computers.

MUNICIPAL TRANSPORTATION 2.1:

Install Bike Racks at City Buildings and Create a Bike Program for City Employees

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Bike and Pedestrian Coordinator, Department of City Planning, City of Pittsburgh, (412) 251-7676

A non-motorized commute reduces greenhouse gas emissions by about 20 pounds of eCO_2 for every gallon of gasoline avoided. The City of Pittsburgh does not currently encourage its employees to bike to work, nor does it provide adequate bike racks. Currently, there are four bike racks on the corner of Grant Street and Forbes Avenue, outside the City-County Building. These racks, installed by the Pittsburgh Downtown Partnership, can provide storage for eight bikes, however they are not sheltered from the elements. The City-County Building also has a traditional square shaped bike rack at its Grant Street entrance, which can hold five bikes and is under shelter. There are none provided on the Ross Street or 4th Avenue sides of the building.

[19] Keep America Beautiful. (2001). *Waste in the Workplace.* http://www.recyclenassau.org/business_info.htm. Accessed 28 May 2008.

The City building located at 200 Ross Street does not provide any outdoor bike racks. One bike, however, was chained to a railing in the parking lot, but no shelter was provided.

To encourage employees to use bicycles for part or all of their commute, the City must provide safe, sheltered areas to store bicycles, either at secure bike racks or in an indoor storage area. As well, showers and lockers should be provided. If no facilities are available in the building, arrangements could be made with the YMCA or another gym. Other incentives include "bike pooling" programs, and rewards such as cash rewards, assistance purchasing bikes, reimbursement for bicycle repairs or bicycle/bicycle accessory purchase, free breakfast or snacks, and recognition in internal memos or publications.

Strategy: The Bike and Pedestrian Coordinator will need to perform the following activities:

- Determine the need for additional bike racks at key points for City employees.
- Analyze the need for showers and lockers for the facilities that have bike racks (for example, City and county employees could use the proposed fitness facility in the building).
- Generate a list of recommendations to forward to the Mayor for consideration.

MUNICIPAL TRANSPORTATION 2.2:

Install More Bike Racks Throughout Pittsburgh's Business Districts

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2009
Information Contact: Bike and Pedestrian Coordinator, Department of City Planning, City of Pittsburgh, (412) 251-7676

During the Summer of 2007, an intern in the Planning Department began an inventory of bike racks in the City, including location and usage. The Bike and Pedestrian Coordinator and the Sustainability Coordinator should collaborate to ensure the bike rack census is completed and that the results are used to define the placement of new bike racks.

MUNICIPAL TRANSPORTATION 2.3:

Increase Bike Rack Availability on Port Authority Buses

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2009
Information Contact: David Wohlwill, Lead Transit Planner, Port Authority of Allegheny County, (412) 566-5110, dwohlwill@portauthority.org;
Bike and Pedestrian Coordinator, Department of City Planning, City of Pittsburgh, (412) 251-7676

Over 300 bike racks have been installed on the following Pittsburgh bus routes: 11D, 21A, 26A, 26D, 500, 54C, 56C, 59U, 71A, 77D, 77F, and 77G. Bikes are also permitted on the Monongahela Incline and the following "T" routes: 42S, 47L, 47S, 52 (except weekdays from 6 a.m. to 9 a.m. and 4 p.m. to 6:30 p.m.). Twenty-eight park and rides also have bike racks. As of June 2008, the Port Authority had not collected information on usage of these bike racks.

Bicyclists often complain that the bus they plan to take on a bike rack route does not have a rack installed, which effectively strands the bicyclist and discourages a bike/bus commute. The new Bike and Pedestrian Coordinator for the City of Pittsburgh should work with the Port Authority to ensure that every bus driving the above routes does in fact have a working bike rack installed.

In the next year, the Port Authority will be outfitting 160 more buses with racks. In addition to expanding the bike rack program to more routes, the Port Authority also anticipates being able to keep racks on all of the routes listed above. The Port Authority's goal is to outfit 100% of its buses (that can accept racks) by 2011.

Port Authority should also be encouraged to change their policy regarding bikes on the T. Currently, no bikes are allowed on during peak hours. Port Authority should consider changing this policy to allow folding bikes on the T during peak hours and/or provide vertical bike racks in certain cars, similar to efforts in Minneapolis, Minnesota.

Furthermore, Bike Pittsburgh is currently working with the Port Authority on bus driver sensitivity towards on-road cyclists to contribute to cyclists road safety.

Medium-Term Recommendations

Medium-term recommendations should be accomplished within the first 2-5 years of implementaton of this plan.

MUNICIPAL ENERGY 3.1:

Retrofit Mercury Streetlamps with More Efficient Models

Projected GHG Reduction: 1,311 tons eCO_2 if all City streetlamps were replaced with LEDs
Implementation Year(s): 2010
Information Contact: Chet Malesky, Deputy Director, Department of Finance, City of Pittsburgh, (412) 255-2582

The City of Pittsburgh operates 39,709 streetlights, accounting for the use of 2,288,663 kWh per year. There are many types of streetlamps available that are more energy efficient than those currently in the City of Pittsburgh. The type of lamp used can affect color recognition and depth perception, making certain lamps better suited to roadways, while others might be more appropriate in crowded downtown areas.

A pilot project is planned for the Pittsburgh neighborhood of Mount Washington, to install LED streetlamps. A request for proposals from lighting contractors was released in Spring 2008. The results of this pilot project and/or further studies should be used to determine what type of lamp can best meet the City's lighting needs, while saving energy and money, without sacrificing aesthetics and safety.

The City of Ann Arbor, Michigan replaced many of its streetlights with LED lamps in a pilot project.[20] The City realized a savings of about $100 per lamp per year in reduced electricity and labor costs. LED streetlights use at least 50% less electricity than traditional models. If the City were to upgrade its lighting, associated required energy would be decreased by 50% to 1,144,332 kWh per year. This upgrade would result in an emissions reduction of 1,311 tons eCO_2.

MUNICIPAL ENERGY 3.2:

Upgrade Lighting at City Parks and Sports Fields

Projected GHG Reduction: 916 tons eCO_2
Implementation Year(s): Starting in 2010
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In 2007, providing lighting for evening ball games at City parks required approximately two million kWh. Upgrading the lights with innovative and energy efficient sports-lighting technology at all of the sports fields will reduce electricity demand by approximately 40%, or by 800,000 kWh.[21] Subsequent GHG reductions would equal 916 tons eCO_2.

MUNICIPAL ENERGY 3.3:

Consider Installing Variable Frequency Drives at Pittsburgh Water and Sewer Authority

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2010
Information Contact: Andrew Maul, Environmental Compliance Coordinator, Pittsburgh Water and Sewer Authority, (412) 255-8800 x2656, amaul@pgh2o.com

Many electric motor-driven devices operate at full speed even when working at less than capacity load. To match the output to the load, part-load control is in use for the majority of the device's life, which can waste energy.

Variable frequency drives (VFDs) accomplish partial load control by varying electric motor speed, resulting in energy savings of 50% or more than other part-load control strategies.[22]

As well, VFDs offer a "soft start" capability, gradually reaching operating speed, lessening mechanical and electrical stress on the motor system and reducing maintenance. Energy savings from variable-frequency drives can be significant; VFDs can reduce a pump's energy use by as much as 50%. For a 25 horsepower motor running 23 hours per day (2 hours at

[20] Large Cities Climate Summit. (2007). "LED Street Lighting Pilot Project Reduces Energy Use by 810%," http://www.nycclimatesummit.com/casestudies/lighting/lighting_annArbor.html. Accessed 23 May 2008.
[21] Baxter, Lindsay. (2008). Personal Communication with Jason Biggs, Musco Sports Lighting. Clean Air-Cool Planet. 28 May 2008.
[22] Alliant Energy. (2008). "Variable Frequency Drives," http://www.alliantenergy.com/docs/groups/public/documents/pub/p012399.hcsp. Accessed 23 May 2008.

100% speed; 8 hours at 75%; 8 hours at 67%; and 5 hours at 50%), a variable-frequency drive can reduce energy use by 45%.

VFDs are in the design for the largest of the three stations which pump the sewage to eventually reach the ALCOSAN (Allegheny County Sanitation) system. Precise figures on savings are not available at this time. Because savings vary greatly based on the size of the system and physical restraints, it is not possible to predict the savings. In general, the larger and more complicated the system, the more likely VFDs would be economical to use. The two smaller pump stations do not have VFDs in their current design.

MUNICIPAL RECYCLING AND WASTE MANAGEMENT 3.1:

Procure Environmentally Preferred Products (EPP)

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Chet Malesky, Deputy Director, Department of Finance, City of Pittsburgh, (412) 255-2582

Recently the City of Pittsburgh and Allegheny County have been combining some services for better economic efficiency (for example, the 911 system). The City now purchases commodities through the County. Approved vendors are under contract with the City, usually for one year, but sometimes as long as three years. The City does not have a procurement policy, but rather each department, or individual, is responsible for buying what they need, as long as they order from a contracted vendor. The deciding factor is usually cost.

Purchasing environmentally friendly products can not only reduce the City's carbon footprint, but often it can save money on energy costs. For example, a large laser printer typically uses 2.4 kWh per day, or a total of 867 kWh per year.[23] Using this figure, replacing a large laser printer with an Energy Star model could save approximately 217 kWh per year. In addition to saving money on electricity costs, this change would result in an emissions reduction of one-fourth ton of eCO_2.

Similarly, replacing a refrigerator manufactured in 2001 with a new Energy Star model reduces electricity usage between 15 to 40%.[24] Energy Star models of refrigerators and microwaves should be purchased when lunchroom appliances are replaced.

In addition to using energy efficient office equipment, the City could further reduce its carbon footprint through the use of post-consumer recycled goods. Currently, the City uses 30% post-consumer recycled office paper. As recently as the beginning of 2007, they have tried switching to 100% post-consumer recycled paper, but it does not work well in their printers and copiers.

Because it is sometimes difficult to decide what the most environmentally friendly choice would be when ordering supplies, an environmentally preferable purchasing guide would be a valuable tool. Between 2000 and 2001, Pennsylvania Resources Council (PRC) researched and developed such a guide. The City of Pittsburgh, Allegheny County, and the Pittsburgh Public School District each participated. All three entities had an individual purchasing department, which established contracts with approved vendors. However, in each case, individual departments (or schools) purchased their own supplies. PRC staff researched all of the products offered by approved vendors and made a listing of those that were environmentally preferred. Due to lack of funding, however, the green purchasing guide has not been updated since the end of the project.

Strategy:

- Use the process already developed by PRC to create a new EPP buying guide.
- Have the Mayor issue an Executive Order requiring that departments purchase environmentally preferred products, when available.
- Make funding/staff time available for periodic updates of buying guide. These updates could be a great student project involving higher education partners.
- Gain research from ICLEI on procurement policies for cities of equal size, and consider adopting one for the City.
- Begin working with the County to adopt a policy for both the City and County. This would involve an initial meeting with the purchasing agents for the City and County, facilitated by GBA, with the direction of the Mayor.

Example: Massachusetts

Since 1997, the Commonwealth of Massachusetts has included Energy Star standards in its procurement specifications for office equipment, such as computers, fax machines, copiers, and printers. Purchasing Energy Star equipment allows the state to purchase products from almost all manufacturers at the same cost as more energy-intensive models that save money and prevent pollution.[25]

[23] Nordman, Bruce. (1999). "Power Levels, Operating Patterns, and Energy Use." Lawrence Berkeley National Laboratory. http://eetd.lbl.gov/BEA/sf/POWER.DOC. Accessed 23 May 2008.
[24] APS Solutions for Business, (2008). "Energy Answers for Small Offices," http://www.aps-solutionsforbusiness.com/ProjectCenter/Portals/54/FactSheet_SmOffice_WEB.pdf. Accessed 23 May 2008.
[25] Commonwealth of Massachusetts. (2008). "Operational Services Division." http://www.mass.gov/?pageID=osdhomepage&L=1&L0=Home&sid=Aosd. Accessed 23 May 2008.

Example: Chicago Housing Authority, Chicago, IL

The Chicago Housing Authority reduced annual electric bills by more than $500,000 by purchasing 10,000 Maytag Energy Star refrigerators through a national initiative of the U.S. Department of Energy and the Consortium for Energy Efficiency.[26] Chicago was one of 38 cities that purchased over 70,000 energy efficient Maytag brand refrigerators through this program.

MUNICIPAL TRANSPORTATION 3.1:

Analyze Existing City of Pittsburgh Fleet

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Robert Yackich, Fiscal and Fixed Asset Manager, Department of Finance, City of Pittsburgh, (412) 255-8923

The City should consider a thorough examination of the number, size, fuel type, and usage profiles of its municipal vehicles. There are numerous ways to undertake an analysis of vehicle usage, and a reduction in fleet size will save both fuel costs as well as maintenance costs. Also, in acquiring new vehicles, the City should examine with scrutiny the size/payload of the new vehicle to ensure that it is appropriately sized. Quite often, a municipal fleet has "too much bang for the buck." Cost effective and reliable vehicles are commonly available.

The City has used RouteSmart software to evaluate its snow removal regime. The City should utilize this tool to evaluate trash pick-up, paving, and street sweeping routes.

MUNICIPAL TRANSPORTATION 3.2:

Incorporate Alternative Vehicles and/or Zipcar into City Vehicle Fleet

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Robert Yackich, Fiscal and Fixed Asset Manager, Department of Finance, City of Pittsburgh, (412) 255-8923

The City owns about 20 motor pool vehicles. They are all 1998 Chevrolet Cavaliers, which get 20 miles per gallon (mpg) in the City and 27 mpg on highways.[27] The motor pool vehicles are generally used by the City for trips to meetings within the Pittsburgh City limits; however, occasionally they are used for trips outside of the city. As well, a few are used by the Parking Authority on a reimbursement basis. There has been discussion of upgrading, and more fuel efficient, hybrid, and alternatively fueled vehicles are being investigated. However, a definite decision has not been made. While Cavaliers are no longer produced, if the City wanted to stay with Chevrolet, the 2008 Malibu is available as a hybrid, which gets an average 24 mpg in the city and 32 mpg on the highway. Assuming an average yearly mileage of 8,000 city miles, this could save 66 gallons per car per year.

Cavalier:
20 city mpg x 8000 miles = 400 gallons of gasoline / year

Malibu Hybrid:
24 city mpg x 8000 miles = 334 gallons of gasoline / year

To switch to a Malibu hybrid would save 0.71 tons eCO_2 per car or 3.5 tons eCO_2 per year to switch out five cars per year. If the vehicle replacement plan started in the year 2011, by 2015 the City would avoid 14.2 tons eCO_2 per year by operating 20 Malibu hybrids, rather than 20 Cavaliers.

The Malibu was chosen as an illustration because the City has a policy to purchase American-made vehicles and has recently purchased Chevrolets. However, there are a variety of hybrid vehicles available with varying environmental benefits. In comparison, the Toyota Prius gets 46 city miles per gallon, saving 226 gallons of gasoline per year. To switch to a Prius hybrid would reduce emissions by 2.45 tons eCO_2 per car, or 12.25 tons eCO_2 per year to switch out five cars per year; by the 4th year, the City would save 49 tons eCO_2 per year by operating 20 Prius hybrids rather than 20 Cavaliers.

When total monthly vehicle costs are divided by hours of use, many vehicle fleets can cost up to $15 per hour to operate.[28] Using Zipcar will not guarantee or require that all City vehicles be eliminated, but it could ultimately delay or eliminate the requirement to purchase new vehicles or even allow the sale of the most underutilized vehicles in the City fleet. Zipcar would help fill the gaps, saving the City of Pittsburgh money and maintenance time.

Strategy:

- Assign a small City of Pittsburgh Vehicle Working Group to investigate the replacement of City vehicles with more fuel efficient, hybrid, alternatively fueled, and/or Zipcars.
- Include Pittsburgh Region Clean Cities Coordinator in Working Group.

[26] NYCWasteLe$$. (2008). "Energy Efficiency Case Studies." http://www.nyc.gov/html/nycwasteless/html/at_agencies/govt_case_studies_energy.shtml. Accessed 23 May 2008.
[27] U.S. Department of Energy and U.S. Department of Environmental Protection. (2008). "1998 Chevrolet Cavalier." http://www.fueleconomy.gov/feg/findacar.htm. Accessed 23 May 2008.
[28] Go Car Sharing. (2008). "Business Solutions." http://www.igocars.com/custom_programs. Accessed 23 May 2008.

Long-Term Recommendations

It is envisioned that long-term recommendatons will be explored within the first five years and implemented shortly after.

MUNICIPAL GENERAL 4.1:

Support Planning and Zoning Incentives

Projected GHG Reduction: Unknown
Implementation Year(s): Unknown
Information Contact: Corey Layman, Design Review Specialist, Department of City Planning, City of Pittsburgh, corey.layman@city.pittsburgh.pa.us;
Daniel Sentz, Environmental Planner, Department of City Planning, City of Pittsburgh, dan.sentz@city.pittsburgh.pa.us

The City of Pittsburgh recently joined the U.S. Green Building Council (USGBC), the national green building organization. Additionally, at least one City of Pittsburgh Planning Department employee is currently interested in becoming a LEED Accredited Professional. However, the City has yet to incorporate green building incentives or requirements into its planning ordinances.

For instance, the City is currently considering an ordinance to change zoning codes to allow for wind turbines and solar panels to be installed on buildings, specifying maximum size and other parameters, as well as mandating that new buildings cannot block the solar access of existing buildings. It is hoped to be approved in 2008. While this is the only green building-related ordinance currently being considered for approval, there are other ideas under investigation by the Planning Department.

The potential of each of the following incentives is being explored:

- A density zoning incentive for rooftop gardens on buildings in non-residential districts, a height or density bonus to commercial or residential projects that provide affordable housing and achieve at least LEED Silver, or a height and density bonus to multi-family residential and non-residential projects that comprise of a green roof.
- Permit incentives, to expedite the permitting process for projects aiming for LEED certification, as well as a reduction in permit fees based on carbon footprint and LEED certification level.
- Tax incentives for commercial developments incorporating green building strategies or a partial refund of certification fees paid by the developer to USGBC.
- A property tax abatement for LEED Gold buildings for the first five years, incrementally increased by 20% per year through year ten.
- Financial assistance for new LEED residential or rehabilitated low-income or mixed-income structures and homes from the Community Development Block Grant.
- Expedite water and electrical connections for buildings meeting LEED Silver.
- Offer publicity to builders incorporating green building practices in new single-family homes.

MUNICIPAL GENERAL 4.2:

Consider Planning and Zoning Mandates

Projected GHG Reduction: Unknown
Implementation Year(s): Unknown
Information Contact: Corey Layman, Design Review Specialist, Department of City Planning, City of Pittsburgh, corey.layman@city.pittsburgh.pa.us;
Daniel Sentz, Environmental Planner, Department of City Planning, City of Pittsburgh, dan.sentz@city.pittsburgh.pa.us

In addition to incentives (Municipal General 4.1), the City should explore the option of the following sustainability mandates for public and/or private projects.

Potential planning or zoning mandates the City of Pittsburgh might want to consider include:

- Unless they are LEED certified, building projects over 5,000-square-feet must establish a building-specific sustainable education program or contribute to a general sustainability education program fund for the City.
- Any new building construction or renovation projects receiving public financing of any kind must achieve LEED certification.
- Private-sector buildings over 10,000-square-feet that receive 10% of their project costs or $200,000 from public agencies must achieve LEED Silver certification.
- Private commercial/industrial projects over 10,000-square-feet and residential/mixed use projects of 50 or more housing units must pursue LEED certification.
- Private-sector, non-residential buildings 10,000-square-feet or larger must pursue LEED certification.

- Public projects larger than 5,000-square-feet must be LEED certified.
- All public projects (new construction or major renovations) greater than 10,000-square-feet must have a green roof if there is a horizontal roof surface.
- All government buildings must achieve LEED certification.

MUNICIPAL TRANSPORTATION 4.1:

Create City Employee Commuter Incentive Program

Projected GHG Reduction: Unknown
Implementation Year(s): 2015
Information Contact: Chet Malesky, Deputy Director, Department of Finance, City of Pittsburgh, (412) 255-2582

Insight into the commuting habits and preferences of employees can inform the City's implementation of measures that will simultaneously meet employee needs and reduce the overall contribution to transportation-related GHGs. This strategy proposes that the City provide incentives to City employees who find alternatives to single-occupancy vehicle commuting, such as carpooling, taking public transit, walking, or bicycling to work.

Strategy:

- Conduct a survey of City employee commuting habits.
- Begin with pilot program with the City-County Building.
- Create incentives for employees to choose public transportation.

CONCLUSION

For several years, the City of Pittsburgh has been improving how it is positioned to address environmental concerns and climate change. As such, the City is also uniquely supported by its residents, businesses, higher education institutions, and nonprofit organizations. With issuance of this *Pittsburgh Climate Action Plan*, the City of Pittsburgh was part of a process that has positioned its municipal operations for success in addressing the challenges of climate change and sustainability—both on its own and in collaborations with other Pittsburgh organizations. These municipal sector recommendations of the *Pittsburgh Climate Action Plan* were uniquely developed for and by City of Pittsburgh governments. As the City moves forward towards instituting these recommendations, it will be a leader and collaborator so Pittsburgh can start to systematically and successfully address climate change holistically on a local level.

The recommendations included in this plan represent only the first steps. As the *Pittsburgh Climate Action Plan* is implemented, more opportunities for climate protection will present themselves. The current Municipal Working Group of the Green Government Task Force will, upon adoption of this plan, evolve into the City of Pittsburgh Sustainability Committee, which will serve as the steering committee for implementation of this municipal chapter of the *Pittsburgh Climate Action Plan*.

Photo: Robert Casey

Chapter 4:

City of Pittsburgh Implementation and Monitoring

The Municipal Working Group of the Green Government Task Force has played a central role in the development of this document. The process of creating it has demonstrated how individuals from various sectors of government can effectively come together and organize around a clear and common goal. This same spirit of dedication and commitment will be required for the next phases of implementation, monitoring, evaluation, and problem-solving.

IMPLEMENTATION STRATEGY

The Sustainability Committee will become the central body that oversees and advances the strategies outlined in this *Pittsburgh Climate Action Plan*. The Sustainability Committee should meet on a monthly basis to support implementation, evaluation, and progress towards the strategies outlined in this plan. Individual members will be assigned coordinating roles depending upon the relevance of the strategy to the particular sector that member represents. As the *Pittsburgh Climate Action Plan* is a living document, additional strategies and measures will be created and incorporated into the plan on a biennial basis.

MONITORING STRATEGY

The monthly meetings of the Sustainability Committee will serve as a means to keep track of progress on measures. The biennial review of the plan will include updates on existing measures, successes from the past two years, obstacles, and goals for the next implementation phase. Emphasis will be placed on identifying the specific funding and support needs of City departments in order to achieve emissions reduction goals in the coming two years. Reports on specific measures and an overall forecast as to how the 20% reduction target is being met will be produced utilizing the ICLEI software and included in the biennial reviews.

Given the financial investments necessary to implementing many aspects of the plan, efforts will be made by members of the Sustainability Committee to locate and pursue funding sources, or to recruit and support a team of volunteers to help in this work. Within the next few years, the Sustainability Committee should review all of the recommendations in this document, quantify emissions reductions achieved, and develop a plan with specific measures and strong implementation dates to serve as a roadmap to meeting the reduction target by 2023.

CONCLUSIONS

The effort to stabilize human-caused greenhouse gases in the atmosphere will require a long-term commitment. The emissions reduction goals that are currently being set on local, national and international levels are the starting point for an unprecedented global effort to lessen the potentially devastating impacts of an environmental problem that can affect every person on this planet. Fortunately, the human race has a tremendous capacity for innovation and adaptation. The Green Government Task Force believes, and hopes, that this *Pittsburgh Climate Action Plan* is the beginning of one small – but potentially important – demonstration of that capacity.

Photo: Maggie Chutz

Inset Photo: Courtesy Port Authority.

Chapter 5:

Community Climate Action Recommendations for Pittsburgh

INTRODUCTION

In Fall 2007, Clean Air - Cool Planet and Green Building Alliance, with the support of the Green Government Task Force, held a series of public meetings throughout the City of Pittsburgh to share with residents the results of the greenhouse gas (GHG) inventory and to solicit recommendations for decreasing GHG emissions within the City. Community visioning sessions were held at locations in Brookline, Downtown, East Liberty/Highland Park, Greenfield, Mount Washington, North Side, South Side, and Squirrel Hill. Attendees made recommendations ranging from simple (e.g., Carpooling) to very creative (e.g., Banning water bottles and plastic bags). The recommendations below represent the most popular and most feasible recommendations from those meetings.

This document is intended to guide the future actions of nonprofits, neighborhood associations, faith groups, scout troops, concerned residents, and all other community members in confronting climate change. Whenever possible, a community group with expertise in the area of each recommendation has been named. An initial goal of the Community Climate Coalition will be to engage as many community groups as possible and to identify partners to be leads on exploring the feasibility of and/or implementing each of the recommendations.

RECOMMENDED ACTIONS FOR COMMUNITY

While the recommendations of citizens were more ambiguous and may prove harder to implement than those of the other working groups, they are in some ways the most important recommendations in this plan. They reflect what Pittsburghers want to see their City doing to fight climate change. The entire list of recommendations gathered at the eight meetings is included as Appendix A. The most popular and feasible of the community recommendations are included with descriptions in this chapter; community recommendations which are already included in the municipal part of this plan or which are already being undertaken have not been specifically discussed in this chapter.

The entire list of recommendations in Appendix A should serve as a guiding document for future versions of this plan. Additionally, existing Pittsburgh organizations involved in climate activities of varying sorts are listed in Appendix B. Many of these organizations are listed thorough the *Pittsburgh Climate Action Plan* as contacts, but others may be the perfect organizations to assist in implementing other current or future climate action recommendations. The *Pittsburgh Climate Action Plan* is intended to be a living document, which is reviewed and updated as the City takes steps to confront climate change.

The recommendations described in this chapter have been divided into short-term (0 to 2 years), medium-term (2 to 5 years), and long-term (greater than 5 years) categories. This categorization will allow more immediate actions to be implemented with relative ease while tougher issues can be set as ongoing goals.

Short-Term Recommendations

Following are the short-term measures citizens recommended to be implemented in 0-2 years.

COMMUNITY GENERAL 1.1:

Engage Community Groups and Residents to Form a Community Climate Coalition

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2008
Information Contact: Community Working Group

The recommendations of the municipal plan were developed by municipal staff and elected officials, who had intimate knowledge of the workings of the City, what was being done, what could be done, and which department or individual should be responsible for each measure. The community plan, in contrast, is much more amorphous. The first recommended step for implementing these measures is the creation of a Community Climate Coalition, involving a diverse group of community partners.

COMMUNITY GENERAL 1.2:

Engage Public Through Education Campaign

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2008
Information Contact: Community Climate Coalition

A primary goal of the Community Climate Coalition is to engage City residents in climate protection through an education campaign. The education campaign will use traditional means of advertisement, such as billboards, public service announcements, and news coverage, to make citizens aware of the *Pittsburgh Climate Action Plan* and to direct them to the website.

While the Pittsburgh Climate Initiative website will be an invaluable tool for reaching out to the community and making information available, the Community Climate Coalition will also seek to engage citizens who do not use the internet, especially elderly and lower-income residents.

This effort will partner with the Department of Neighborhood Initiatives in the City of Pittsburgh. A representative of Neighborhood Initiatives attends most neighborhood meetings throughout the City. Through the Mayor's support, Neighborhood Initiatives will partner with the Community Climate Coalition to help bring information on environmental initiatives into the greater community.

COMMUNITY GENERAL 1.3:

Expand the Involvement of Labor Unions in Climate Protection Activities

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2008
Information Contact: William Cagney, Business Manager and Financial Secretary, International Union of Operating Engineers Local 95, (412) 422-4702, bcagney@iuoelocal95.org

The Pennsylvania DEP's Energy Development Authority has awarded a $150,000 grant to International Union of Operating Engineers Local 95 for measurement of local facilities' energy consumption and a training program of facilities operators in Energy Star energy conservation techniques. As of January, 2007, the students have been instructed on using Energy Star software to track progress in energy conservation and reduction of greenhouse gases and other emissions (such as mercury) in their facilities. The students are also trained regarding how to implement conservation measures. There are 31 newly-graduated students from the program, representing 33 facilities and an estimated 30 million square feet in total. The grant also covers the foregone work and wages of the students as they are completing the training. Local 95 has applied to expand the grant with the eventual goal of creating a green building operating program. They are also considering a state workforce grant to offer similar programs for municipal workers including the Housing and Airport authorities, and County workers.

The value of this training to individual facilities operators, as well as to the local economy is very significant. These trained and skilled green building operators boost Pittsburgh's comparative advantage in the green building market, and boost the individual's competitiveness in his/her own job markets. The Community Climate Coalition should work to encourage expansion of this program and to involve other trade organizations.

COMMUNITY GENERAL 1.4:

Plant Trees

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2008
Information Contact: Danielle Crumrine, Executive Director, Friends of the Pittsburgh Urban Forest, (412) 362-6360, Danielle@pittsburghforest.org.

While the tree planting and maintenance activities of the City of Pittsburgh are discussed under Existing Measures in the municipal portion of this plan, citizens at the community meetings demanded that more trees be planted in the City of Pittsburgh. Trees not only sequester carbon, but can also decrease the heat island effect in urban areas, decreasing the needs for air conditioning. Additional benefits include providing shade, soil stabilization, stormwater control, and neighborhood beautification. Organizations such as Friends of the Pittsburgh Urban Forest are likely partners to work with the Pittsburgh Climate Initiative to identify barriers to tree planting and collaborate to increase the number of trees in Pittsburgh.

COMMUNITY GENERAL 1.5:

Engage the Pittsburgh Public Schools

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Paul Gill, Chief Operations Officer, Board of Education, (412) 622-3775, pgill1@pghboe.net

The Pittsburgh Public School District is the second largest district in the state, educating 29,447 students in 65 schools. A short-term goal of the Community Climate Coalition is to engage representation of Pittsburgh Public Schools. Not only can the schools have a role in educating their students about climate change, but they can make changes in their own operations to save energy and money. For example, in 2004, the Pittsburgh Public Schools joined EPA's Energy Star program. Energy improvements resulted in 5,142 tons eCO_2 reduction in 2004 and 22,375 tons eCO_2 reduction in 2005, from decreased natural gas usage. The impact of the Pittsburgh Public Schools on the environment is significant, considering the number of students, employees, buildings, and buses that make up the school district. The district could be an important partner in climate protection efforts.

COMMUNITY ENERGY 1.1:

Build a Green Arena

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org

The new Pittsburgh Hockey Arena is LEED-registered, meaning the developer has declared the intent to build a LEED certified facility. The United States Green Building Council promotes buildings that are environmentally responsible, profitable and healthy places to live and work.

Example: *A new $311 million dollar stadium planned for the Washington, D.C. Nationals will include measures to more efficiently use energy, water, and materials.*[29] *Notable planned features include a 6,300-square-foot green roof over the concession stands, an energy-saving field lighting system that reduces electricity use 21% compared to standard code requirements, and water reduction measures to reduce usage 37%.*

COMMUNITY RECYCLING AND WASTE MANAGEMENT 1.1:

Enforcement of Mandatory Recycling

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Dave Mazza, Regional Director, Pennsylvania Resources Council, (412) 488-7490, davem@ccicenter.org;
Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, (412) 255-2631, Shawn.Wigle@city.pittsburgh.pa.us

Recycling is mandatory in the City of Pittsburgh for residences, businesses, offices, and institutions. Residences (including apartment buildings of 5 or fewer units) must separate recyclable items and place at the curb for bi-weekly recycling, or take them to a drop-off center.

Businesses in the City of Pittsburgh (including apartment buildings with 6 or more units) must have a program in place to recycle high-grade office paper, plastic bottles, corrugated cardboard, aluminum cans and leaf waste, where applicable. Businesses can take their recyclables to a City drop-off facility, or use a private hauler. Apartment buildings can either place commingled recyclables at the curb or use a private hauler. Businesses must report their recycling tonnages to the City on a quarterly or yearly basis (under PA Act 101 and City Code 619).

[29] Libby, Brian. (2007). "Green Monsters." *Sustainable Industries*. September 28, 2007. http://www.sustainableindustries.com/greenbuilding/10094401.html. Accessed 23 May 2008.

Finally, special events expecting 200 or more individuals per day must recycle beverage containers (glass, plastic, aluminum, and steel) and corrugated cardboard. The City of Pittsburgh Recycling Services will provide assistance to groups planning recycling at their events, upon request.

Community members felt that mandatory recycling needed to be better enforced in the City. In 2008 the City will embark on a major education and enforcement campaign. In addition to new residential programs, the City will be contacting every business in the City in 2008 and informing them of the recycling requirements. After an initial education period, the City will cite businesses in non-compliance.

Enforcement of recycling will require additional, dedicated staff. Community groups and nonprofits should explore what role they can have in supporting the efforts of the City Recycling Supervisor in education and enforcement programs.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 1.2:

Expand Recycling Drop-off Hours and/or Locations

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Dave Mazza, Regional Director, Pennsylvania Resources Council, (412) 488-7490, davem@ccicenter.org; Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, (412) 255-2631, Shawn.Wigle@city.pittsburgh.pa.us

In addition to curbside pick-up, the City maintains five drop-off centers, open Monday through Friday 8:00 a.m. to 2:00 p.m. Drop-off centers accept the same materials as curbside pick-up, including corrugated cardboard, magazines, catalogues, paperboard, office paper, and telephone books. Public Works drop-off sites also accept tires, yard debris, and scrap metal. Community members expressed dissatisfaction with available hours at the recycling drop-off centers and requested evening or weekend hours, allowing those who work during the day to drop off items. A community group or nonprofit, such as Pennsylvania Resources Council, should collaborate with the Recycling Supervisor to establish a pilot program for expanding drop-off hours, in order to assess demand.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 1.3:

Pair Every City Trash Container with a Recycling Container

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Dave Mazza, Regional Director, Pennsylvania Resources Council, (412) 488-7490, davem@ccicenter.org

Much of the trash disposed of in street garbage cans is recyclable, including plastic soft drink bottles, aluminum cans, and glass beverage containers. Unfortunately, all of these materials must be disposed of in a landfill, because opportunities to recycle are not available in the City. In the Mount Washington neighborhood of Pittsburgh, the Community Development Corporation has installed garbage cans with a separate receptacle for recyclables on top. The cans have been very successful; however there is so much recyclable waste that the tops fill up more quickly than the bottoms, resulting in a lot of recyclables being thrown away. The Mt. Washington example shows that if recycling is available, Pittsburghers will use it.

In busy areas of Downtown Pittsburgh, the City should install a separate recycling container beside each garbage can. Several cities have successfully implemented street recycling, so that recycling becomes a part of the culture of an area. Examples of cities which provide recycling cans next to garbage cans include Santa Barbara, California, and Seattle, Washington. First priority installations include high-traffic areas near the stadiums, at bus stops, and in City parks.

Pennsylvania Resources Council should work with the Department of Environmental Services to explore the possibility of installing recycling containers in the City of Pittsburgh.

COMMUNITY TRANSPORTATION 1.1:

Use Biodiesel for Public Transportation

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Nathaniel Doyno, Executive Director, Steel City Biofuels, nathaniel@steelcitybiofuels.org

In April 2008, the Port Authority of Allegheny County began testing B5, a fuel blend of 5% biodiesel and 95% traditional diesel. Potential concerns of the Authority include performance in cold weather and the warrantee of the engine manufacturer. Depending on the success of the B5 test, the Authority may use B20 (20% biodiesel) in the future. Steel City Biofuels should continue working with the Port Authority to identify possible funding sources and to explore the feasibility of alternative fuels.

COMMUNITY TRANSPORTATION 1.2:

Encourage Non-Motorized Transportation

Projected GHG Reduction: Unknown
Implementation Year(s): Starting in 2008
Information Contact: Scott Bricker, Executive Director, Bike Pittsburgh, (412) 325-4334;
Bike and Pedestrian Coordinator, Department of City Planning, City of Pittsburgh, (412) 251-7676

Popular recommendations at the community meetings included encouraging and expanding bike path development and use, encouraging shower and bike facilities, requiring all parking lots to include bike racks, and establishing city-wide bike rentals.

In order to reduce Pittsburgh's vehicle miles traveled (VMT), a multipronged approach must be adopted relating to infrastructure, enforcement, education, and incentives. The City has a wonderful trail system that can be enhanced with lighting and more frequent maintenance so that these can serve as bike commuting routes year-round. A "Complete Streets" policy needs to be adopted by the City so that all modes of transportation are planned for in new developments, street paving, and bridge rehabilitations. Traffic calming measures should also be explored in neighborhoods throughout the City. Bicycle route signage should be placed directing cyclists to preferred streets and to destinations. An outreach program to cyclists should be implemented to provide cyclists safety equipment for their bikes such as lights and reflectors. The Community Climate Coalition should work to further the efforts of the groups in the City already championing these projects.

More information on biking initiatives in the city can be found at the following websites:

- *www.bike-pgh.org/campaigns/complete-streets*
- *www.bike-pgh.org/2008/05/20/fact-sheet-the-bicycle-seven-wonders-for-a-cool-planet*
- *www.bike-pgh.org/green*

COMMUNITY TRANSPORTATION 1.3:

Provide City Alternative Fuel Map

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Nathaniel Doyno, Executive Director, Steel City Biofuels, (412) 418-4594, nathaniel@steelcitybiofuels.org

The Community Climate Coalition can encourage greater use of alternative fuels by developing an Alternative Fuel Map. Such a publication would show the locations of retail fuel stations within the City that sell alternative fuels. As well, the map should list the types of fuel sold by each station. Such a map would help create a market for alternative fuel use by increasing demand. It would also provide incentives for retailers to sell alternative fuels, in the form of free promotion. The map might be produced by an intern in the City or with a partnering nonprofit for a low cost.

Below are examples of state or regional alternative fuel maps:

- U.S. Department of Energy Alternative Fueling Station Locator
  http://afdcmap2.nrel.gov/locator/FindPane.asp
- Map of Renewable Fuel Retailers in Kentucky
  www.kentuckycleanfuels.org/biodiesel/Map.pdf
- Florida Department of Agriculture Renewable Fuel Station Map
  www.doacs.state.fl.us/standard/petro/AltSiteMap.html
- Clean Cars Map for California, Nevada, and Arizona Alternative Fueling Stations
  www.cleancarmaps.com

COMMUNITY TRANSPORTATION 1.4:

Encourage Retail Stations to Supply B5

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Nathaniel Doyno, Executive Director, Steel City Biofuels, (412) 418-4594, nathaniel@steelcitybiofuels.org

A common concern of citizens was the availability of alternative fuels at retail fueling stations. Because diesel engines can process a biodiesel blend without any mechanical upgrades, encouraging the availability of B5 was a goal. The Community Climate Coalition should work with Steel City Biofuels to make B5, and/or other alternative fuels, available at stations in the City.

COMMUNITY TRANSPORTATION 1.5:

Support and Undertake Downtown Circulation Plan Recommendations

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Patrick Hassett, Assistant Director, Bureau of Transportation and Engineering, City of Pittsburgh, (412) 255-2883, pat.hassett@city.pittsburgh.pa.us

The City of Pittsburgh should convene a working group to evaluate the logistics of installing bus priority traffic signals, alternatives for school bus parking in downtown, and sidewalk and Loading Zone evaluation. The existing Downtown Circulation Plan can be found at:
www.downtownpittsburgh.com/cms/assets/downtown%20circulation%20assessment.pdf

COMMUNITY TRANSPORTATION 1.6:

Encourage Ridesharing and Telecommuting

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Nathaniel Doyno, Coordinator, Pittsburgh Region Clean Cities, nathaniel@cleancities-pittsburgh.net

An important goal of citizens at several of the community visioning sessions was to alleviate traffic, particularly during the morning and evening commutes. While reducing emissions was an important goal, participants also saw the potential for improved quality of life, by limiting the amount of time vehicles spend idling in traffic on Pittsburgh's bridges and parkways.

Ridesharing is one tactic to decreasing the number of vehicles coming in and out of the City. It could include friends taking turns driving in their personal vehicles or paying to use a van shuttle service. The Community Climate Coalition could work with diverse partners such as the City, employers, and area businesses to provide incentives for ridesharing.

Another tactic for decreasing traffic and emissions is telecommuting, which allows employees to work part or all of their hours from home or another remote location, reducing their need to commute into the City for work. This tactic is better suited to some positions than others. Telecommuting reduces vehicle miles traveled during rush hour, and may often reduce unnecessary travel, for instance, if an employee has a meeting close to home and chooses to work from home that day. However, the benefits of telecommuting need to be assessed on a case by case basis. For example, working from home may use more energy (lighting, heating, and cooling) than working from a centralized office location.

The Community Climate Coalition should work with partners, such as Pittsburgh Region Clean Cities, to explore tactics for encouraging ridesharing and exploring the potential benefits of telecommuting. The Victoria Transport Policy Institute provides more information on the benefits and possibilities for ridesharing *(www.vtpi.org/tdm/tdm34.htm)* and telecommuting *(www.vtpi.org/tdm/tdm43.htm)* on their website.

Medium-Term Recommendations

Medium-term recommendations should be accomplished within the first 2-5 years of implementation of this plan.

COMMUNITY GENERAL 2.1:

Encourage Smart Growth

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Court Gould, Executive Director, Sustainable Pittsburgh (412) 258-6643, cgould@sustainablepittsburgh.org

Urban sprawl compromises a region's sustainable development. Over the past several decades, housing developments and strip malls have been developed on the greenfields surrounding Pittsburgh, despite overall population decline. Urban sprawl is resource intensive, requiring construction of new infrastructure, such as paved roads and water lines. As citizens move to the suburbs, the tax base in the City is decreased, making improvements to aging infrastructure difficult. As well, urban sprawl has been linked to more auto dependence, as people live further from where they work and further from public transit access. Social equity issues are often exacerbated as job opportunities are distanced from where people live. The Sierra Club has developed a calculator which allows citizen's to compare the environmental impact of housing choices. The tool is available at *www.sierraclub.org/sprawl/density.*

At the community visioning sessions, citizens asked for incentives for development along existing transit corridors and in densely populated areas. According to the organization Smart Growth Online, smart growth can be defined as follows: "In general, smart growth invests time, attention, and resources in restoring community and vitality to center cities and older suburbs. New smart growth is more town-centered, is transit and pedestrian oriented, and has a greater mix of housing, commercial and retail uses. It also preserves open space and many other environmental amenities."[30] A medium-term goal of the Community Climate Coalition is to work with

[30] Sustainable Communities Network. (2008). "About Smart Growth." http://www.smartgrowth.org/about/default.asp. Accessed 23 May 2008.

nonprofit, university, and City partners to develop Smart Growth policies for the City of Pittsburgh.

COMMUNITY GENERAL 2.2:

Create Neighborhood Climate Champions

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Ann Gerace, Executive Director, Conservation Consultants Inc, (412) 431-4449, anng@ccicenter.org; Community groups listed in Appendix C

Climate Champions could be created through existing neighborhood associations and community groups in each neighborhood of Pittsburgh. Volunteers will present information on the Pittsburgh Climate Initiative to community groups such as garden clubs, American Legions, Rotary clubs, etc. The presentation will recruit members to share the same information with their neighbors at informal gatherings, and will encourage them to recruit their neighbors into signing a pledge to increase energy efficiency and recycling in their own homes.

COMMUNITY GENERAL 2.3:

Enhance and Develop K-12 Climate Change Curriculum

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Indigo Raffel, Education Services, Conservation Consultants Inc., (412) 431-4449, indigor@ccicenter.org; School of Education at local colleges and universities

Incorporating climate change into K-12 curriculum is a way to integrate climate protection into the way of life of the region. The earlier students begin to understand the climate consequences of their actions, the more likely they are to turn climate-friendly activities into habits they carry throughout life. As well, schoolchildren are likely to talk about climate change with their parents, further spreading the knowledge.

The U.S. Environmental Protection Agency (EPA) has developed a robust and diverse portfolio of curriculum which integrates greenhouse gas reduction into K -12 education. The Department of Energy (DOE) also manages the Atmospheric Radiation Measurement Program's Education and Outreach Program. The program's goals include developing basic science awareness and increasing critical thinking skills with a focus on environmental science and climate change. In addition, the program supports relationship building between teachers, students, scientists, and communities.

More information on the programs mentioned above can be found at the following websites:

- Department of Energy
  www.education.arm.gov
- EPA
  http://unfccc.int/resource/beginner.html

Schools in Pittsburgh should integrate climate change into their curriculums, not only in science classes, but in subjects across the board from kindergarten through high school. The many nonprofits in Pittsburgh that already are involved in education should cooperate to move forward a climate change curriculum. As well, the schools of education at the universities and colleges in the City may be logical partners for developing curriculum and educating teachers (new and current) on climate change.

COMMUNITY ENERGY 2.1:

Create More Efficient Energy Codes

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org; Ann Gerace, Executive Director, Conservation Consultants Inc., (412) 431-4449, anng@ccicenter.org,

In Pennsylvania, residential and commercial construction (both new and renovations) are regulated by the 2006 IECC (International Energy Conservation Code) Standard, per 34 Pa. Code Section 403.21.

Many local governments have adopted more stringent building codes for energy efficiency, however, to decrease greenhouse gas emissions and save homeowners money through energy savings. For example, in Marin County, California, single-family homes larger than 3,500-square-feet cannot exceed the energy efficiency of a 3,500-square-foot home.[31] Basically, private citizens can build homes as large as they choose, but they must equip the home with energy efficiency measures or use alternative means of energy to keep the ecological footprint the same as that of a 3,500-square-foot home.

The City of Tucson, Arizona, and surrounding Pima County have both developed energy standards for new construction

[31] Marin County Community Development Agency. (2005). "The Marin County Single Family Dwelling Energy Efficiency Ordinance." http://co.marin.ca.us/depts/CD/main/comdev/ADVANCE/Sustainability/greenbuilding/pdf/SFDEEO_project_applicants_letter%20and%20calc%20form.pdf. Accessed 23 May 2008.

of homes and commercial buildings, establishing quantifiable requirements for building plans, to ensure that finished buildings will enjoy significantly less energy usage than under the Model Energy Code. More information on Tucson and Pima County's energy standards is available at *www.tucsonmec.org/pdf/2003IECCSESsustainFnlDRAFToct.pdf.*

The City of Pittsburgh could experience substantial benefit from better energy efficiency. A first step would be to work with the Building Codes Assistance Project *(www.bcap-energy.org/home.php),* a nonprofit organization that would provide free assistance to local governments updating codes to include sustainability concerns. Logical partners to take the lead in exploring options available are Green Building Alliance and Conservation Consultants Inc.

COMMUNITY ENERGY 2.2:

Support and Create Incentives for Solar

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: James Sloss, Energy and Utilities Manager, City Information Systems, City of Pittsburgh, (412) 255-4762, james.sloss@city.pittsburgh.pa.us

In Fall 2007, Pittsburgh was named one of 13 cities in the U.S. to receive a Solar America City Award from the Department of Energy. This grant also includes technical assistance that will amount to $2 million in 2007 and $600,000 in 2008. The goal of the award is to develop infrastructure to make solar energy mainstream in the City of Pittsburgh. Part of that infrastructure planning should include creating incentives for the use of solar power.

Strategies:

- Develop economic incentives for homeowners and businesses using solar power.
- Work with local unions and Allegheny County Community College to continue training courses in installation and maintenance of solar panels.

COMMUNITY ENERGY 2.3:

Create Incentives or Requirements for Green Roofs through Planning Department

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org; Ann Gerace, Executive Director, Conservation Consultants Inc., (412) 431-4449, anng@ccicenter.org; Barb Kviz, Environmental Coordinator, Facilities Management Services, Carnegie Mellon University, (412) 268-7858, bk11@andrew.cmu.edu

Green roofs decrease the heating and cooling needs of a building, absorb rainwater (slowing runoff), increase carbon sequestration, and decrease the "energy island" of a city. While green roofs often have a greater upfront cost than traditional roofs, when installed and maintained properly, they last longer than traditional roofs and save heating and energy costs. The installation of green roofs on homes and businesses in the Pittsburgh community could decrease Pittsburgh's carbon footprint and save owners money. As well, the retention of stormwater could help alleviate Pittsburgh's problems with flooding and combined sewer overflows.

Apart from the direct cost savings an organization receives from constructing a green roof, including reduced heating and air conditioning costs for example, there may also be considerable greenhouse gas reductions.

There are two potential opportunities. First, a green roof effectively reduces an organization's annual greenhouse gas (GHG) emissions by improving energy efficiency (through, for example, moderating a building's temperature).

Second, green roofs may generate a further opportunity in the form of producing carbon emission reduction credits (CERs) as green roofs also act as carbon sinks.

The Community Climate Coalition should work with Green Building Alliance and community partners who have green roofs to communicate their benefits to City government.

Example: *In Washington, DC, builders who incorporate green roofs into their design receive expedited permitting, because addressing stormwater is a priority for the city. In Portland, Oregon, a floor area ratio (FAR) bonus is available to builders who employ preferred practices, including green roofs.*[32] *Similarly, in Chicago's cultural district, buildings with green roofs receive a density bonus, expedited permitting process, and waived building permit application fee.*

[32] British Columbia Institute of Technology. (2006). "Case Studies of Green Roofs in North America 2006." http://commons.bcit.ca/greenroof/publications/2006_regulations.pdf. Accessed 23 May 2008.

COMMUNITY ENERGY 2.4:

Grow Bio-Energy Plants

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Andrew Butcher, CEO, GTECH Strategies, a.butcher@gtechstrategies.org

Plants that produce feedstock for biofuel can be grown on the region's vacant lands and brownfields, contributing in part to locally produced energy sources, increasing useable green space, and hence decreasing the region's carbon footprint. Not only do biofuels emit less carbon after combustion, but supporting the local industry decreases dependence on foreign fuel sources. Additionally, bio-energy plants such as sunflower and canola have the potential to remediate contaminated land, consequently increasing the amount of appropriate "clean" space available for local food production. Currently, the City has thousands of acres of vacant land. This land increases locally based economic initiatives for small scale agriculture and bolsters the region's carbon sequestration capacity.

COMMUNITY ENERGY 2.5:

Encourage Better Loan Rates for Energy Efficient, Energy Star Certified, and/or LEED Certified Homes

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org

Currently, Pittsburgh residents have access to lower interest rates for energy efficiency improvements through the Keystone Home Energy Loan Program (improvements to existing homes) and the Federal Housing Administration's Energy Efficient Mortgages (new home purchases or improvements to existing homes). The FHA program requires the services of a Home Energy Rater *(www.resnet.us/ratings/overview/default.htm).*

Although a new program to finance energy efficiency improvements has begun in parts of Pennsylvania, it is not yet available in Pittsburgh. The URA is exploring developing its own energy efficiency loans. The proposed program would require a home energy rating to be completed prior to improvements, and that the work be completed by approved contractors and approved by URA inspectors. Current loan products provided by the URA *(www.ura.org/consumerFinancing.html)* can be used towards energy efficiency improvements, but a separate program specifically targeted for that purpose with even lower rates would better encourage those improvements.

More information is available on the above programs at the following websites:

- Keystone Home Energy Loan Program
  www.keystonehelp.com
- Federal Housing Administration Energy Efficient Mortgage
  www.fha.com/energy_efficient.cfm
- PA Home Energy
  www.pahomeenergy.com

Examples:

The New York State Energy Research and Development Authority (NYSERDA) provides interest rate reductions on home loans up to $20,000 for improvements such as the purchase of Energy Star appliances, and the use of wind turbines or photovoltaic cells. The NYSERDA program offers interest rate reductions of 4 to 6%.[33]

The Alaska Housing Finance Corporation offers reduced interest rates to borrowers who purchase a new or existing energy efficient home, or who renovate a home to make it more efficient. The interest rate reductions apply to the first $200,000 borrowed, and range from 0.125% to 0.750%, depending on technologies utilized.[34]

COMMUNITY RECYCLING AND WASTE MANAGEMENT 2.1:

Support Methane Recovery

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Jeanne Clark, Director of Communications, PennFuture, (412) 258-6683, energyflak@aol.com

While carbon dioxide is the biggest contributor to global warming in terms of quantity, methane gas is about 21 times more potent than carbon dioxide. Methane is produced when decomposition occurs in the absence of oxygen, such as in landfills. When this methane gas is captured and combusted for energy, the methane is converted into carbon dioxide before being released.

[33] New York State Energy Research and Development Authority. (2008). "New York Energy Smart Loan Program." http://www.nyserda.org/loanfund/. Accessed 23 May 2008.
[34] Alaska Housing Finance Corporation. (2008). "Energy Efficiency Interest Rate Reduction Program." http://www.ahfc.state.ak.us/loans/eeirr.cfm. Accessed 23 May 2008.

The landfills to which Pittsburgh sends its garbage practice methane recovery. However, much can be done through policy to encourage the capture and use of methane from landfills. "Putting landfill gas to use to power our economy gives us a clean, cheap energy supply that businesses can use to keep utility costs down and keep jobs in Pennsylvania," said Environmental Protection Secretary Kathleen A. McGinty in September 2007.[35] "Supporting the increased development of landfill methane gas is another example of the Governor's commitment to using environmental protection to drive economic development."

Governor Rendell and the PA DEP have helped to encourage methane recovery and use through streamlined permitting processes, for both landfill gas recovery systems and end users. As well, the state has provided support for methane pipelines and included landfill gas as a preferred energy source in the Alternative Energy Portfolio Standard.

Currently, Pennsylvania is home to 24 operational gas-to-energy projects, generating an estimated 60 megawatts of electricity. According to the DEP, these methane-to-energy projects reduce emissions equivalent to taking 47,027 cars off the road.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 2.2:

Create Incentives for Renovation of Existing Buildings Rather Than Demolition; Reuse Construction and Demolition Debris

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Mike Gable, Executive Director, Construction Junction, (412) 243-5026

According to the Worldwatch Institute, building construction worldwide uses 40% of raw materials extracted from the earth. Renovation and demolition of buildings accounts for more than one-fifth of the total annual waste stream in the U.S. Upgrading existing buildings, rather than demolishing them and building new structures, can conserve energy and resources and prevent waste. As well, demolition can expose hazardous materials, whereas renovations leave these materials undisturbed, minimizing the risk to human health. Reuse of existing buildings can eliminate the need for new infrastructure as well, such as water lines, sewage, and utilities. Gutting and renovating an existing building can cost an estimated 30% less than new construction. More information on this topic is available at *http://www.informinc.org/fact_CWPconstruction.php.*

While it is unrealistic to ban demolition activities, the City can take steps to encourage renovation. As well, the recycling of construction and demolition debris should be encouraged.

Example: *Forty cities in California, including every city in San Mateo County, nine cities in Alameda County, and the cities of Santa Clara and San Jose, have construction and demolition debris ordinances and/or programs.*[36]

Strategy:

- Keep future uses in mind when constructing new buildings, so that they can either be altered for reuse, or disassembled and the individual parts reused.
- Require contractors to submit two bids for building removal contracts - one for demolition and one for deconstruction.
- Reuse components of a deconstruction project in nearby construction projects by using a materials exchange program such as Construction Junction or PA Materials Trader.
- Provide lower interest loans for renovation rather than construction.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 2.3:

Establish Incentives for Restaurants to Recycle Waste Grease

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Nathaniel Doyno, Coordinator, Pittsburgh Region Clean Cities, nathaniel@cleancities-pittsburgh.net

In December, 2006, Pittsburgh Mayor Ravenstahl announced that waste grease from fryers at Heinz Field would soon be used as fuel for Public Works vehicles. As an effort to reduce Pittsburgh's carbon footprint, the City should explore options for collecting used cooking grease from restaurants for use as fuel.

Example: *In November 2007, San Francisco Mayor Gavin Newsom announced a new program to reuse cooking grease from restaurants as fuel in the city fleet.*[37] *The Public Utilities Commissions will collect fat, oil, and grease from the restaurants, free of charge. More than 60 restaurants have signed on to participate in the program, called SFGreasecycle.*

The grease will be converted to biofuel to be used in 1,600

[35] Pennsylvania Department of Environmental Protection. (2007). "DEP, PENNDOT Support Recovery, Use of Landfill Methane Gas for Energy, Heating, Fuels." http://www.depweb.state.pa.us/news/cwp/view.asp?a=3&q=512753. Accessed 12 March 2008.
[36] City of Palo Alto. (2008). "C&D Frequently Asked Questions." http://www.city.palo-alto.ca.us/environment/news/details.asp?NewsID=357&TargetID=63. Accessed 23 May 2008.
[37] SFGreasecycle. (2008). "Introducing SFGreasecycle." http://www.sfgreasecycle.org. Accessed 23 May 2008.

buses and other vehicles. The program is expected to save the city an estimated $3.5 million each year in sewage repairs, as well. Similarly, a Philadelphia company, Fry-O-Diesel, recycles waste from restaurant grease traps and manufactures biodiesel that is used to run the Great Valley school district bus fleet, among other vehicles.[38]

COMMUNITY RECYCLING AND WASTE MANAGEMENT 2.4:

Create City Operated Compost Facility

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Dave Mazza, Executive Director, Pennsylvania Resources Council, davem@ccicenter.org
Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, Shawn.Wigle@city.pittsburgh.pa.us

The City should operate a composting facility which incorporates not only yard waste, but also food waste from commercial/institutional food service. Composting diverts waste from landfills, which is a major point source of methane, one of the most potent greenhouse gases. A potential Challenge is finding a suitable site within city limits. For every 20 tons of food waste composted instead of sent to a landfill, 18.6 tons of eCO_2 emissions are avoided. The City should also consider curbside pick-up of yard waste/organics to capitalize on this opportunity.

Strategy:

- Review past feasibility studies
- Request assistance from Department of Environmental Protection through 920 Grant
- Collaborate with other municipalities to increase cost-efficiency.

COMMUNITY TRANSPORTATION 2.1:

Create Incentives for Hybrids and Alternative Fuel Vehicles

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Nathaniel Doyno, Coordinator, Pittsburgh Region Clean Cities, nathaniel@cleancities-pittsburgh.net

Citizens commonly recommended incentives to encourage the use of hybrids and alternative fuel vehicles. For example, many suggested an exception for these vehicles to use the HOV lane, even when driving alone. Other recommendations included preferential reserved parking spots, a reduced fee, or free parking at City owned garages. Financial incentives were also recommended, such as a price reduction on registration or for on-street parking permits.

A medium-term goal of the Community Climate Coalition is to work with local partners such as Pittsburgh Region Clean Cities and students at local universities to catalogue what type of incentives could be offered, and to work with the City to explore the feasibility of these incentives for Pittsburgh.

COMMUNITY TRANSPORTATION 2.2:

Enforce Anti-Idling Laws

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Rachel Filippini, Executive Director, Group Against Smog and Pollution, (412) 325-7382, gasp@gasp-pgh.org

The Allegheny County Health Department currently has two anti-idling regulations. School bus regulation became law in October 2004 (Health Department Regulation 2105.91), and Diesel-powered Motor Vehicle Regulation 2105.92 became law in July 2005. This second regulation applies to all other diesel vehicles, including public buses, garbage trucks, and other diesel trucks. A third regulation applies to diesel off-road construction equipment. As of May 2008, this third regulation is awaiting approval by the County Council and Chief Executive.

According to the existing regulations, diesel vehicles cannot idle more than 5 minutes, but there are exemptions, such as in extreme weather or when picking up a disabled person. The regulations are enforced by Allegheny County Health Department Inspectors and local police officers in whose jurisdiction a violation occurs. Enforcement depends greatly on citizen reporting of violations. Citizens can report a violation by calling (412) 687-2243. Penalties are as follows:

- A warning for the first offense;
- A penalty of $100 for the second offense; or
- A penalty of $500 for the third offense, and any subsequent offenses.

According to the EPA, a typical school bus wastes half a gallon of fuel per hour of idling, releasing approximately 11 pounds eCO_2. If we assume that a typical school bus idles for half an hour per school day, then one bus emits almost half a ton of eCO_2 over the course of a school year (180 days). The Pittsburgh City School District operates 350 diesel buses, in addition to gasoline buses and vans. If we assume that each of the diesel buses idles about thirty minutes per

[38] Philadelphia Fry-O-Diesel. (2008). http://www.fryodiesel.com/. Accessed 23 May 2008

school day, 173 tons of eCO_2 is being emitted per school year. This number does not count school bus trips for sporting events, field trips, and summertime usage. As well, there are many private schools utilizing diesel buses within the City.

Enforcing the anti-idling rule city-wide could decrease greenhouse gas emissions significantly and have a positive impact on human health. The Community Climate Coalition should work with GASP and other local partners to help spread awareness of the ordinance and to increase citizen reporting of violations to encourage greater compliance.

COMMUNITY TRANSPORTATION 2.3:

Improve Funding and Efficiency of Public Transit

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: David Wohlwill, Lead Transit Planner, Port Authority, (412) 566-5110, dwohlwill@portauthority.org

Many recommendations at the community visioning sessions included improvements to public transportation. For example, many residents expressed that there are too many "express" and "flyer" buses half-empty going to the suburbs and not enough buses serving the City neighborhoods. Another common complaint was with the current "hub and spoke" routing, by which all buses go through downtown. Meeting participants expressed interest in quicker routes between different areas of the city that do not go through downtown. A role of the Community Climate Coalition in addressing these concerns would be to work with the Port Authority in routing assessments. Perhaps interns from the local universities could complete a comprehensive survey of Port Authority riders, to determine whether the complaints of citizens at community visioning sessions were isolated opinions or widespread concerns. As well, the Community Climate Coalition could reach out to members of the community to present concerns to the Port Authority at its monthly board meetings which are open to the public.

COMMUNITY TRANSPORTATION 2.4:

Expand Fuel Perks Programs to Include Public Transit

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Nathaniel Doyno, Executive Director, Steel City Biofuels, (412) 418-4594, nathaniel@steelcitybiofuels.org

Pittsburgh-based grocery store, Giant Eagle, offers a program to its shoppers to save money on gas purchases. When customers use their Advantage Card, they can earn a ten cent discount off of the price of gasoline for every fifty dollars they spend. The discount can then be used towards fuel purchases at Giant Eagle-owned Get-Go gas stations. Citizens recommended that the Community Climate Coalition work with the grocer to allow shoppers to use their gas discounts towards the purchase of bus passes.

Long-Term Recommendations

It is envisioned that long-term recommendations will be considered within the first five years of this plan and implemented shortly after.

COMMUNITY ENERGY 3.1:

Explore a Peak Pricing Pilot Project

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Kathleen Spees, PhD Student, Electricity Industry Center, Carnegie Mellon University, (412) 445-2694, kspees@cmu.edu; Jeanne Clark, Director of Communications, PennFuture, (412) 258-6683, energyflak@aol.com

While electricity is one of our most vital utilities, most people are unaware of what it takes to provide this essential service to their homes and businesses. Generating and delivering electricity on a hot summer afternoon in Pittsburgh costs a lot more than that same electricity would cost on a cool Saturday night. Electric utilities have mostly been charging something close to a flat rate for electricity service, regardless of season or time of day. In the past 30 years, there have been some experiments with time-of-use pricing, where energy use during certain blocks of time in the day, week, season or year are charged at different rates. Most large commercial and industrial customers are charged these types of prices.

The Electricity Industry Center at Carnegie Mellon University has researched the benefits of using peak pricing. A long-term goal of the Community Climate Coalition is to work with utility companies, the City, and possibly the State, using the findings of the Electricity Industry Center, to implement a pricing program which discourages wasting energy and encourages consumers to conserve energy during peak demand times.

COMMUNITY ENERGY 3.2:

Create Energy Improvement Resources for Landowners

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Community Climate Coalition

Citizens expressed many creative ideas for improving home efficiency by offering educational and financial resources for homeowners. For example, new mortgages for residences could require that applicants attend an energy efficiency training, to learn the benefits of implementing energy saving practices in their new homes. A second recommendation was to offer subsidized energy audits for homeowners. Conservation Consultants Inc. offers this service to low-income homes in specific neighborhoods, depending on funding sources. Participants at the community visioning session recommended that this service be expanded throughout the City and offered to homeowners of all income levels, perhaps on a sliding price scale based on income.

A role of the Community Climate Coalition is to examine this list of recommendations from citizens, explore the feasibility of each, and identify organizations or individuals who are appropriate information contacts for each.

COMMUNITY ENERGY 3.3:

Create City of Pittsburgh Lobbying Effort for State and Federal Government Sustainable Energy Policy and Tax Incentives

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Jeanne Clark, Director of Communications, PennFuture, (412) 258-6683, energyflak@aol.com

Because many energy policy and financial incentives are state programs, rather than local, the Community Climate Coalition should work with the City of Pittsburgh to lobby state legislators and the governor for these types of policies in Pennsylvania. An organization such as PennFuture that is strongly involved with environmental policy and advocacy issues should be able to provide leadership on this recommendation.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 3.1:

Create Policy Incentives for Value-Added Vacant Land Management Strategy Following Building Demolition

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Andrew Butcher, CEO, GTECH Strategies, a.butcher@gtechstrategies.org

Currently, standard protocol for building demolition does not incorporate the true cost of the vacant space left behind (i.e., the cost of maintenance of the vacant space, the negative economic impact of vacancy [30% reduction of the property value of adjacent property], or the limitation placed on future programming on those sites, such as public green space or community gardens). Hence incentives or even mandates would refine demolition protocol to address issues associated with the implementation of green, intermediary strategies on the vacant land. Examples of this may be capping a water line such that it can easily be reopened for community green projects, or greater specification on what type of fill is dumped.

Another such incentive would be to allocate a small portion (5-10%) of demolition funding towards the implementation of value-added, community-based green strategies for the maintenance of vacant land. Hence a demolition job of $5,000 would create $500 for a community fund to kick start land reclamation strategies and community programming.

COMMUNITY RECYCLING AND WASTE MANAGEMENT 3.2:

Establish Pay-As-You-Throw Policies

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Dave Mazza, Regional Director, Pennsylvania Resources Council, (412) 488-7490, davem@ccicenter.org;
Shawn Wigle, Recycling Supervisor, Department of Public Works, City of Pittsburgh, (412) 255-2631, shawn.wigle@city.pittsburgh.pa.us

A "pay as you throw" waste collection system eliminates unlimited waste disposal, providing residents with incentive to limit waste production and increase recycling and composting. A local example is Cranberry Township, a municipality of approximately 8,000 housing units and 23,625 citizens. In November 2004, Cranberry Township established a waste disposal program, called "Collection Connection," which requires customers to pay a base monthly fee, determined by the size of their garbage can. Customers then have the option to purchase tags for extra bags of garbage or larger items that do not fit in their can. This system eliminates

"unlimited service." Users choose between a 35, 64, or 96 gallon garbage can, paid for by Butler County, and owned by Cranberry Township. The monthly fee also includes collection of recyclables and yard waste (8 months of the year).

A tag for an extra bag of garbage costs $0.65. A $4 tag can be purchased to throw away larger "bulk" items, such as a couch, and a customer must call ahead for a special pick-up. A $10 fee is charged for the pick-up of appliances, such as washers or dryers, or refrigerators that have been certified as having Freon removed. Additional benefits of the new waste collection program include new trucks with automated arms to pick up the uniform sized cans and recycling bins, which allows drivers to service more homes, decreasing fuel costs, road and vehicle wear and tear, and even workman's compensation claims.

Collection Connection initially received funding in part from a 902 Grant to help with recycling and composting, allowing the township to pay for the purchase of garbage cans.

Similar programs exist locally in Pine and Marshall Townships. More information is available at *www.cranberrytownship.org* or from Lorin Meeder, Sustainability Coordinator, Cranberry Township (724-776-4806 x1176).

COMMUNITY RECYCLING AND WASTE MANAGEMENT 3.3:

Lobby for a Bottle Bill

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Jeanne Clark, Director of Communications, PennFuture, (412) 258-6683, energyflak@aol.com

The term "bottle bill" is synonymous with a container deposit law. Before disposable cans and plastic bottles were common place, soda and beer companies charged a deposit fee for these products. When a customer returned the empty bottle to the distributor, s/he was refunded the deposit. The bottles were then returned to the manufacturer to be cleaned and reused. When technology advanced so that disposable containers could be cheaply made, this deposit system was no longer necessary. California, Connecticut, Delaware, Hawaii, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont currently have state bottle bills. Benefits of state bottle bills include reduced litter and increased recycling. As well, in some states, unclaimed deposits are used to fund other public programs. Bottle bills have been proposed in Pennsylvania before, most recently in September 2007. The Community Climate Coalition should work with environmental groups who are legislatively active, such as PennFuture, to stay abreast of bottle bill legislation and to mobilize citizens to lobby their representatives.

COMMUNITY TRANSPORTATION 3.1:

Establish Congestion Fees

Projected GHG Reduction: Unknown
Implementation Year(s): 2018
Information Contact: Heather Sage, Director of Outreach, PennFuture, (412) 258-6681, sage@pennfuture.org

A congestion fee is a toll charged to vehicles entering a high traffic area during peak traffic times. The goals of a congestion fee are decreased vehicles coming into the city at peak times, less traffic, reduced emissions, increased usage of transit and non-motorized transportation, and quickened commute time. In 2003, London implemented a successful congestion fee. Several other cities outside the U.S. also use congestion fees to encourage alternative means of travel. In the U.S., New York City has been exploring the potential for a congestion fee for Manhattan since Spring of 2007. The revenue from the charge would go towards improvements to transit and streets. A long-term goal of the Community Climate Coalition is to explore the success of congestion fees in other cities and the potential for implementing one in Pittsburgh. This could incorporate research on the part of an intern from one of the local universities.

COMMUNITY TRANSPORTATION 3.2:

Reestablish Trolley Service

Projected GHG Reduction: Unknown
Implementation Year(s): 2018
Information Contact: David Wohlwill, Lead Transit Planner, Port Authority of Allegheny County, (412) 566-5110, dwohlwill@portauthority.org

The first trolley car lines began operating in the east end of Pittsburgh in 1889.[39] Soon, trolley lines had extended throughout Pittsburgh proper and outlying areas. The trolleys remained popular through World War II, but began to be replaced by motorized buses in the mid-1900s. By the 1980s, all remaining trolleys had been replaced by the light rail "T" which runs through Downtown and to limited locations in the South Hills. While some trolley lines were removed, many were paved over throughout the City. While reinstating

[39] South Pittsburgh Development Corporation. (2008). "Pittsburgh's Trolley History." http://www.spdconline.org/history/Trolleys/Trolley.html. Accessed 23 May 2008.

the trolley service was an extremely popular recommendation at the community visioning sessions, it is listed as a long-term recommendation, because it would require huge infrastructure changes and financial resources. An important role of the Community Climate Coalition could be to facilitate research to provide data on cost feasibility, rider demand, and environmental benefits.

Photo: Maggie Chutz

Chapter 6:

Business Climate Action Recommendations for Pittsburgh

INTRODUCTION

The goal of this document is to recommend actions that can be undertaken to encourage environmental sustainability in Pittsburgh businesses, specifically with the goal of thus reducing the City of Pittsburgh's carbon footprint and contributing to a vibrant economy.

Pittsburgh History

Businesses play an integral part in the City of Pittsburgh's economy and greenhouse gas contribution. As such, businesses are an essential part of the *Pittsburgh Climate Action Plan*. Pittsburgh, Pennsylvania, has long been a leader of industry, producing much of the steel used in World War II and for bridges and structures all over the world. As most of Pittsburgh's steel mills were closed by the early 1980s, the city has long since emerged from its smoky past through a multitude of environmental efforts, notably the remediation of several large brownfields that have provided opportunities for businesses to locate within the City limits. Pittsburgh hosts the headquarters of several large corporations, including Alcoa, U.S. Steel, Highmark, Bayer, Heinz, Mellon Bank, PNC Bank, PPG, Wesco, and Westinghouse. In addition to large companies, Pittsburgh is also home to many family-owned, small, and medium-sized businesses.

Common Questions

Many Pittsburgh businesses are already taking steps towards greater environmental sustainability. In Fall 2007, members of the business community joined community leaders and university representatives to form a network dedicated to exploring sustainability in business. This network, Champions for Sustainability, aims to foster common-sense solutions for businesses in addressing climate change.

Traditionally, environmental performance was enforced by the federal Environmental Protection Agency and the Pennsylvania Department of Environmental Protection. However, many businesses have begun to participate in voluntary environmental programs, such as certification through the International Organization for Standardization (ISO) 9000 and 14000 systems, which provide standardization systems for quality and environmental management.

Numerous businesses are interested in "greening" their ventures, but lack the information necessary to move forward. The most common questions business representatives ask regarding climate change actions include the following, in order of frequency:

1. What is a carbon footprint?
2. How do you calculate a carbon footprint? Who can help my company do this?
3. What is the difference between carbon offsetting and carbon credits?
4. What is carbon offsetting and how does one determine if an offset company is credible?

Through this *Pittsburgh Climate Action Plan*, the Business Sub-committee of the Green Government Task Force seeks to recommend steps to provide relevant information and opportunities to business owners to decrease their climate impact and potentially realize long-term cost savings, thereby improving the bottom line.

RECOMMENDED ACTIONS FOR BUSINESSES

In January 2008, the Business Working Group of the Green Government Task Force came together to develop recommendations for decreasing greenhouse gas emissions from businesses. Many of these recommendations were based on surveys of business owners and managers in December 2007. In May 2008, a focus group of business leaders from around the City revised and augmented this plan.

The recommendations described in this chapter have been divided into short-term (0 to 2 years), medium-term (2 to 5 years), and long-term (greater than 5 years) categories. This categorization allows for implementation of immediate recommended actions while providing extra time to address tougher issues and set ongoing goals.

Short-Term Recommendations

Immediate recommended actions should be the first steps for climate protection by the business community, including the creation of a business sector event, the collection of better information on the needs of businesses, the establishment of a City staff position, the creation of a carbon clearinghouse, and the provision of assistance to businesses completing greenhouse gas inventories.

BUSINESS GENERAL 1.1:

Establish a Pittsburgh Business Climate Coalition

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Business Climate Coalition

A primary short-term goal should be to establish a "Pittsburgh Business Climate Coalition" that will engage as many businesses as possible in the Pittsburgh area. Depending on the future configuration of the Pittsburgh Climate Initiative, the Pittsburgh Business Climate Coalition could be a sub-committee or a standalone entity. To ensure that the Pittsburgh Business Climate Coalition is as valuable to its members as possible, it should encourage collaboration, cooperation, and information sharing.

BUSINESS GENERAL 1.2:

Hold a Business Sector Climate Event

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

A first step towards assisting the business community in decreasing its carbon footprint should be to hold an event for business owners, managers, environmental health and safety staff, and other interested parties to define the opportunities and identify the barriers to implementing carbon reducing strategies. An emphasis will be on practical steps that organizations of various sizes can take to reduce their carbon footprints. This forum will be an optimal setting for businesses to focus on opportunities and innovations and to hear first-hand the concerns of businesses of all sizes regarding climate change impacts.

Businesses of all sizes should be included in this discussion — everyone from small business owners to CEOs of international corporations. Additionally, while the event should be open to all members of the business sector, it should especially be targeted towards those who are not already engaged in the discussions about carbon reductions, environmental activities, and sustainable business operations. By expanding the scope and numbers of local business owners who are making tangible steps towards reducing their carbon footprints, the "Business Sector Event" will help create a larger constituency and support network for future efforts of this kind.

Consequently, the proposed "Business Sector Event" should aim to be an introductory program focused on explaining the challenges and opportunities offered by this *Pittsburgh Climate Action Plan* and other efforts to reduce greenhouse gas emissions. In an effort to "lead by example" and demonstrate some of the ways in which businesses can reduce their climate impacts, the "Business Sector Event" should be a "green event" that is (among other things) climate neutral, as well as incorporate local products, recycled goods, and other sustainable practices.

Since its launch in December 2007, Sustainable Pittsburgh's Champions for Sustainability (C4S) network currently serves over 100 members from the region's business community by convening events on issues related to sustainability, which includes climate change issues. The network hosted an event on March 27, 2008 that focused on how businesses can find opportunities to be innovative in the context of climate change uncertainties and opportunities. As the network provides neutral party support for businesses large and small, C4S will host the "Business Sector Event" with the support of the City and other partners. More information about Champions for Sustainability can be found at *www.c4spgh.org.*

BUSINESS GENERAL 1.3:

Evaluate Businesses' Needs in Relation to Reducing Carbon Footprints

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

To address the climate impact of Pittsburgh businesses, there is a need to conduct further research to expand the recommendations put forth in this *Pittsburgh Climate Action Plan*. This investigation should solicit feedback directly from business owners and managers, which could be implemented in the form of a survey. Such a survey could include questions on what steps businesses are already taking to reduce energy consumption and waste production, and encourage more sustainable practices. The survey could also ask what steps business would be willing to take in the future. It will also be important to determine what barriers might prohibit respondents from taking these steps (e.g., lack of funding or no available staff time).

The first step in acquiring greater knowledge about the state of Pittsburgh businesses' current and possible climate impact reduction efforts will be identifying businesses to which the proposed survey should be sent. Some businesses will be obvious (e.g., members of Green Building Alliance and Sustainable Pittsburgh's Champions for Sustainability network). However, in an effort to reach businesses who may not already be engaged in existing environmental and sustainability efforts, partnerships with the Greater Pittsburgh Chamber of Commerce, Pittsburgh Regional Alliance, trade associations, and the Small Business Development Centers at Duquesne University and the University of Pittsburgh should be considered.

Such a survey can build off of the Workshop Reports Series that Sustainable Pittsburgh's Champions for Sustainability network has produced in order to survey their members on their needs relating to climate change and sustainability. A sample of such a workshop report can be obtained from *www.c4spgh.org/pastevents.html.*

BUSINESS GENERAL 1.4:

Incorporate Sustainable Business Issues into City Government

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org

The *Pittsburgh Climate Action Plan* calls for the establishment of a Sustainability Coordinator position in City government. While a very long-term goal for advancing sustainability of businesses is the creation of a Sustainable Business Coordinator staff position, in the short-term the Business Climate Coalition must work with the City's Sustainability Coordinator and the URA's Sustainable Design Coordinator to ensure that opportunities for businesses to engage in greenhouse gas reduction actions are readily available and feasible. This includes making information available to businesses so they can make informed choices about potential programs and activities based on up-front costs, life cycle costs, environmental benefits, and social benefits.

The potential for using students and interns is great for projects such as the following:

- Research funding and assistance opportunities available to businesses through local, state, federal, and foundation sources. Make this information readily available to businesses through various mechanisms (e.g., website, print, e-newsletter).
- Benchmark Pittsburgh's sustainability versus other cities of comparable size.
- Compile a report of various local, state, and federal tax incentives and building code modifications, including results and costs.
- Evaluate other cities' programs and synergies.
- Identify opportunities for media coverage for businesses regarding sustainability initiatives.
- Compile a "resource manual" for businesses that would define the issue, define the solutions, and identify local, state, and federal resources, with an emphasis towards low cost options first.
- Assess energy conservation, efficiency, and purchasing options for green energy for businesses.

BUSINESS GENERAL 1.5:

Develop a Carbon Clearinghouse for Businesses

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org;
Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

There is a need for a clearinghouse of climate change information, specifically relevant to businesses. Important sections of this online resource should include:

- Basic climate change information translated into non-scientific language.
- A categorized directory of Greater Pittsburgh businesses and nonprofits that provide clean energy, energy efficiency upgrades, green buildings, and other sustainability services.
- Information on grants and other financial opportunities available to businesses for reducing carbon and energy.
- A best practices guide for businesses, with case studies illustrating success stories from local businesses.
- An online forum and/or blog on which businesses can share experiences and query other local business owners and operators.

The Business Climate Coalition will be tasked with determining an appropriate host for this online resource.

BUSINESS GENERAL 1.6:

Provide Assistance to Businesses for Completing Greenhouse Gas Inventories

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

A greenhouse gas (GHG) inventory calculates the amount of GHG emissions resulting from an organization's energy use, transportation, and solid waste disposal. Because different GHGs have different warming potentials, an inventory can be created using software that reports the results in units of carbon dioxide equivalents. A GHG inventory is an important step in decreasing an organization's carbon footprint because it identifies the sources of GHGs and the contribution of each. Such an inventory can be a low-risk way for a business to get engaged and educated about climate change, while starting to focus its efforts; likewise, a regularly updated GHG inventory allows businesses that have already made environmental improvements to quantify the results of their efforts and identify where additional progress can be made.

Completing inventories can be time-consuming and complex. The Business Climate Coalition should provide assistance to businesses who want to complete GHG inventories by identifying an environmental nonprofit to do so, collaborating with local universities to use graduate students, or providing information about resources that may help them perform or contract out their own GHG inventories.

BUSINESS ENERGY 1.1:

Promote Energy Audits and Retrofits

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org;
Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org

Energy audits of existing buildings can often reveal opportunities for energy savings and reduced costs. A goal of the Business Climate Coalition is to collaborate with local partners to provide outreach and education to the business community on the important benefits of these programs, both to the environment and to the business' bottom line. Money saved can be used to fund further improvement projects. Energy audits are available to small businesses through the state Environmental Management Assistance Program, administered through the Small Business Development Centers at the University of Pittsburgh and Duquesne University. The Coalition could also provide information to businesses of all sizes about the use of energy service companies (ESCOs) and energy performance contracting. As a building becomes "tighter," however, indoor air quality is an important concern. The Coalition will provide resources to businesses to ensure energy efficiency can be achieved without diminishing indoor air quality and occupant health.

BUSINESS RECYCLING AND WASTE MANAGEMENT 1.1:

Encourage Proper Waste Disposal

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Michael Stepaniak, SWPA Household Hazardous Waste Task Force, (412) 488-7452, michaels@ccicenter.org.

While most large companies have programs in place to ensure safe disposal of items such as fluorescent light bulbs,

batteries, and electrical equipment, many small businesses are unaware of the proper disposal techniques for these items. The Business Climate Coalition should provide information on legal requirements and environmental best practices for safe disposal. The Coalition should partner with local organizations such as the SWPA Household Hazardous Waste Task Force, as well as with stores like Home Depot and Lowes to establish collection events and/or drop-off sites for these materials.

BUSINESS TRANSPORTATION 1.1:

Encourage Employee Transit Use

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: David Wohlwill, Lead Transit Planner, Port Authority of Allegheny County, dwohlwill@portauthority.org

The businesses of Pittsburgh should encourage the use of public transit by employees for daily commute. Not only can this improve traffic congestion problems in the City, but it decreases the amount of people driving individually, which decreases greenhouse gas emissions from the City.

The Port Authority of Allegheny County offers a program for employers called Job Perks. Under this program, employers can have transit passes delivered to their place of business each month to sell to their employees out of their pre-tax earnings.

Other steps businesses can take to encourage employees to adopt a more sustainable commuting habit include the following:

- Develop an information center on site to provide bus and T schedules, a list of fares, and a listing of bus stops close to the employment site.
- Allow more flexible schedules so employees can use convenient bus routes.
- Offer an "Emergency Ride Home" program for employees who do not drive, so that in the case of an illness or emergency they can either take a taxi home, or have a co-worker drive them.
- Reimburse the purchase of bus passes through work.

Additional sources of information on successful employee bus programs can be found through the Victoria Transport Policy Institute, at *www.vtpi.org/tdm/tdm8.htm*, or from the New Jersey Department of Transportation, at *www.state.nj.us/transportation/commuter/smartmoves/transervices.shtm* and *www.state.nj.us/transportation/commuter/smartmoves/incentives.shtm.*

BUSINESS TRANSPORTATION 1.2:

Cooperate with the Oakland Transportation Management Association

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Oakland Transportation Management Association, (412) 687-4505

The Business Climate Coalition should partner with the Oakland Transportation Management Association to address traffic and parking issues in this neighborhood of Pittsburgh. More information on the OTMA is available at *www.otma-pgh.org/main/index.asp.*

BUSINESS TRANSPORTATION 1.3:

Encourage Ridesharing

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Commute Info, Southwestern Pennsylvania Commission, 1-888-819-6110, CommuteInfo@spcregion.org, *www.commuteinfo.org*; Lucinda Beattie, Vice President of Transportation, Pittsburgh Downtown Partnership, (412) 566-4190, lbeattie@downtownpittsburgh.com

Ridesharing, which refers to more than one person sharing a ride to work, can decrease greenhouse gas emissions, help to alleviate traffic, and save money for participants. There are steps that businesses in Pittsburgh could take to encourage their employees to rideshare, including the following:

- Provide preferential parking to rideshare vehicles.
- Subsidize parking prices for rideshare vehicles.
- Provide assistance in coordinating rideshares, such as a bulletin board or online sign-up process.
- Establish other benefits to employees who carpool, such as paid time off or cash rewards.

Additional information about the benefits and logistics of ridesharing, including successful case studies, can be found at the following websites:

- Victoria Transport Policy Initiative *www.vtpi.org/tdm/tdm34.htm*
- New Jersey Department of Transportation *www.state.nj.us/transportation/commuter/smartmoves/ridematch.shtm*

  www.state.nj.us/transportation/commuter/smartmoves/vanpool.shtm

  www.state.nj.us/transportation/commuter/smartmoves/prefpark.shtm

BUSINESS SHORT-TERM RECOMMENDATION CONCLUSIONS

The immediate recommended actions represent the first steps towards addressing climate change in the business community. These actions will begin building a Business Climate Coalition, upon which the medium-term recommended actions will depend.

Medium-Term Recommendations

The medium-term recommendations represent actions that should be undertaken 2-5 years into the implementation stage. These recommendations include climate protection in URA projects, creation of a City grant program for businesses for climate protection, training on negotiating green leases, creation of "green business" awards and a green business certification program, and improvement of the City's procurement process and recycling services to assist City businesses.

BUSINESS GENERAL 2.1:

Provide Pittsburgh Small Business Grants

Projected GHG Reduction: Unknown
Implementation Year(s): 2010
Information Contact: Thomas Link, Manager, Business Development Center, Urban Redevelopment Authority of Pittsburgh, (412) 255-6669, tlink@ura.org

Through the Department of Environmental Protection, the Commonwealth of Pennsylvania offers an annual Small Business Advantage Grant (SBAG). Through this program, small businesses can receive up to $7,500 to complete energy efficiency improvements; businesses must match the requested funds at a 1:1 ratio. Examples of funded projects include HVAC upgrades, lighting retrofits, and the purchase of Energy Star appliances. In 2007, 48 small Pennsylvania businesses were awarded SBAGs, amounting to $300,000 distributed.

The SBAG program has been so popular that only a fraction of the applicants receive funding. A similar Pittsburgh Small Business Grant, to provide matching funds to small businesses willing to invest money into energy efficiency and pollution prevention, should be developed and administered by either the City of Pittsburgh or a nonprofit.

BUSINESS GENERAL 2.2:

Establish Training for "How to Negotiate Green Leases"

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: William Cagney, Business Manager and Financial Secretary, International Union of Operating Engineers Local 95, (412) 422-4702, bcagney@iuoelocal95.org

Many Pittsburgh businesses do not own the building out of which they operate. Additionally, if the tenant pays the utilities, the owner of the building has no incentive to pay the capital costs required to perform efficiency upgrades, such as improving insulation, installing new windows, or upgrading lighting fixtures. This situation is particularly problematic in large downtown office buildings. Because energy costs are typically only about 0.6% of the cost of doing business, offices usually do not turn to energy efficiency to cut costs.[40] Instead, since employee salaries are usually the largest fraction of business expenses, they lay off workers or cut wages.[41]

According to *Environmental Design and Construction*, a green lease should have the following features that will maximize a landlord's return on investment while ensuring that tenants receive a high-performance workspace at a competitive price:

- An escalation clause and expense stop clause to reward the landlord for operating a high-performance building.

[40] Building Owners and Managers. (2005). *2005 Experience Exchange Report.*
[41] Alan Whitson, (2006). "Green Lease," *Environmental Design and Construction.* http://www.edcmag.com/CDA/Articles/Column/cc0c0b5ca1e7c010VgnVCM100000f932a8c0. Accessed 28 May 2008.

- An appropriate clause to charge tenants for after hours/excessive energy usage.
- A comprehensive description of building operating costs to protect the interest of both the landlord and tenant.
- Language that allows the landlord to treat the upfront project cost as operating costs, as long as they do not exceed savings.
- A "Right to Audit" clause, which defines the audit process that will protect the landlord from frivolous audits and protect the tenant from overcharges.
- Tenant guidelines that detail the building's sustainable features and benefits, as well as any special operating procedures for maximizing the building's features to create a sustainable workplace.

Green leases for Pittsburgh office buildings would give owners incentives to upgrade their buildings and provide tenants with better workplaces. Unfortunately, not many local businesses, tenants, or building owners are experienced in negotiating such a lease. A role of the Business Climate Coalition should be to provide training for local businesses and building owners who are interested in negotiating green leases.

More information about green leases can be found in the Green Lease Guide, available at *http://eco-efficiency.management. dal.ca/Files/Green_Lease_Guide.pdf*.

BUSINESS GENERAL 2.3:

Establish a Pittsburgh Green Business Climate Award Program

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

To recognize and promote Pittsburgh businesses that are taking steps to reduce climate impacts, the City of Pittsburgh should establish a Green Business Climate Award. Such an awards program could involve many partners, including nonprofit organizations. Having the City of Pittsburgh's support, however, would lend legitimacy to the program.

Example: Go Green Awards, Cambridge, Massachusetts
Established in 1992, the annual Go Green Awards program recognizes businesses for best practices under the categories of Transportation, Waste Reduction, and Energy. Each year, two businesses are recognized in each category: one with 50 or fewer employees and one with greater than 50 employees.[42]

Other cities with green business awards include Boston, Massachusetts, and Kent, Washington. In Pittsburgh, several nonprofits offer awards programs that could serve as a model, including the following:

- Green Building Alliance, Shades of Green Awards
- PennFuture, Green Power Award
- Cool Space Locator, Cool Space Award
- Pennsylvania Resources Council, Annual Awards

BUSINESS GENERAL 2.4:

Develop Sustainable Procurement Practices

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

The purchasing decisions of a business can have significant effects. A role of the Business Climate Coalition is to provide education to businesses on how to make environmentally-responsible purchasing decisions. However, many businesses base purchasing decisions largely on cost, and often the more climate-friendly products are not the least expensive option available. Establishing a purchasing consortium could increase the buying power of member businesses, driving down the prices, while also creating a market for green products. The Clinton Climate Initiative is establishing a cooperative purchasing model for its partner cities. Examples of products businesses could purchase, which could be more sustainable than traditional models, include recycled office paper; recycled toilet paper, tissues, and paper towels; green cleaning products; compact fluorescent light bulbs; and organic/fair trade foods, such as coffee and tea.

BUSINESS ENERGY 2.1:

Promote Energy Star and/or LEED Certified Projects

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org; Eamon Geary, Project Specialist, Green Building Alliance, (412) 431-0709, eamong@gbapgh.org

A goal of the Pittsburgh Business Climate Coalition should be to encourage Energy Star and/or LEED certification for

[42] Cambridge Department of Public Works. (2008). "Go Green Awards." http://www.cambridgema.gov/TheWorks/departments/recycle/gogreen.html. Accessed 29 May 2008.

commercial building projects. The Coalition will collaborate with local partners to provide outreach and education to the business community on the important benefits of these programs, including environmental and financial benefits.

In addition to providing education, the Coalition will work with the URA to alter the disposition process to reduce the cost for land to developers/businesses that are constructing LEED certified buildings. This rate could be adjustable depending on the level of certification achieved. Another option would be for the URA to assist with the cost of various technologies. The Urban Redevelopment Authority of Pittsburgh acquires and resells properties in the City of Pittsburgh to stimulate economic growth. This disposition process could be used as a mechanism to encourage or mandate, environmental sustainability. When the price of a property is being negotiated, a reduction in price could be leveraged for an agreement to receive Energy Star or LEED-certification.

BUSINESS RECYCLING AND WASTE MANAGEMENT 2.1:

Provide City of Pittsburgh Recycling Programs for All Businesses

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Dave Mazza, Regional Director, Pennsylvania Resources Council, (412) 488-7490, davem@ccicenter.org

Per City Code 619, every business establishment located within the City of Pittsburgh must establish a collection system to recycle high grade office paper, plastic bottles, corrugated cardboard, aluminum cans and leaf waste, where applicable.[43] The business is responsible for hauling the recyclables directly to a processor or contracting with a private hauler.

Businesses are required to request assistance in achieving compliance or verify their compliance with the recycling program via a mailed survey, which is available at the following link: *www.city.pittsburgh.pa.us/pw/assets/Commercial_Recycling_Brochure.pdf*

For many businesses, coordinating and financing compliance with the City of Pittsburgh's recycling law can be a hardship. As a result, this Action Plan recommends that the Business Climate Coalition work with the City and organizations like Pennsylvania Resources Council to assist businesses in coming into compliance.

BUSINESS TRANSPORTATION 2.1:

Provide Facilities to Encourage Bike Commuting

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Scott Bricker, Executive Director, Bike Pittsburgh, (412) 325-4334, scott@bike-pgh.org

To encourage employees to use bicycles for part or all of their commute, businesses in Pittsburgh need to provide safe, sheltered areas for storage of bicycles either at secure bike racks or in an indoor storage area. As well, showers and lockers should be provided. If no facilities are available in the building, arrangements could be made with the YMCA or another gym.

Other incentives include "bike pooling" programs and rewards for those who do not drive in to work alone, such as cash rewards, assistance purchasing bikes, reimbursement for bicycle repairs or bicycle/bicycle accessory purchase, free breakfast or snacks, and recognition in internal memos or publications. Currently, the Southwestern Pennsylvania Commission and Bike Pittsburgh are partnering to provide a bike pooling program for the region that includes an "emergency ride home" for people who register for the program and are stranded due to mechanical problems.

The Business Climate Coalition should work with these organizations and new City of Pittsburgh Bike and Pedestrian Coordinator to identify resources for encouraging bike commuting.

More information about bike commuting is available from the Victoria Transport Policy Institute, at *www.vtpi.org/tdm/tdm85.htm*, and from the New Jersey Department of Transportation, at *www.state.nj.us/transportation/commuter/smartmoves /bikepromotion.shtm.*

BUSINESS TRANSPORTATION 2.2:

Obtain Business Memberships to Zipcar

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Jenna Cox, General Manager, Zipcar Pittsburgh, (412) 457-5897

Businesses should enroll in Zipcar, a national car-sharing business. The Zipcars can augment or replace an existing vehicle fleet. A Zipcar membership can save businesses money by reducing the amount paid to own, maintain, and insure company vehicles. As well, the use of Zipcars can alleviate parking expenditures. When employees have

[43] City of Pittsburgh. (2008). Recycling Information. http://www.city.pittsburgh.pa.us/pw/html/recycling.html. Accessed 28 May 2008.

meetings in the City, they can walk or take public transit. The Zipcars can be reserved in advance for meetings and events out of town. Environmental benefits of using Zipcars include the following:

- Older, less efficient vehicles are retired. Zipcars are newer and have more stringent air pollution controls.
- There is less need for parking spaces, which can lead to preservation of green space and a decrease in impermeable surfaces, which helps ease stormwater issues.
- Fewer cars on the road translates to less traffic and congestion. The less time cars spend idling in traffic, the fewer greenhouse gas emissions are released.

More information on the benefits of car-sharing is available from the Victoria Transport Policy Institute, at *www.vtpi.org/tdm/tdm7.htm.*

BUSINESS MEDIUM-TERM RECOMMENDATION CONCLUSIONS

The medium-term recommendations build on the immediate recommendations, continuing to enhance the infrastructure available in the City to support sustainable businesses. The medium-term recommendations are a mixture of support mechanisms, such as grant programs and green lease trainings, and recognition programs, such as the "green business" awards and green certification programs.

Long-Term Recommendations

The Business Working Group of the Green Government Task Force identifies long-term recommendations as those which will be considered within the first five years of this plan and implemented shortly after.

BUSINESS GENERAL 3.1:

Establish a Sustainable Business Seal

Projected GHG Reduction: Unknown
Implementation Year(s): 2015
Information Contact: Matthew Mehalik, Program Manager, Sustainable Pittsburgh, (412) 258-6644, mmehalik@sustainablepittsburgh.org

Pittsburgh needs a certification program for sustainable businesses. The program would recognize businesses that are already taking steps towards sustainability and encourage other businesses to do the same. The program would also promote businesses to make informed purchasing decisions. The "green certification" standard should be developed by an objective advisory board comprised of members of government, environmental organizations, university partners, and/or environmental regulatory agencies. Certified businesses would be promoted on the City's sustainability website and would also be provided a plaque to post at their facilities. As well, certified businesses would have permission to use "Sustainable Business" on their promotional materials.

Example: Bay Area Green Business Program in San Mateo County, California

The Bay Area Green Business Program is a partnership between county and city governments, environmental agencies, and utility companies. The purpose of the program is to recognize and promote businesses that are in compliance with all environmental regulations and that voluntarily take actions to prevent pollution and conserve resources.

More information is available at: *www.recycleworks.org/green_business/index.htm.*

BUSINESS ENERGY 3.1:

Encourage Ongoing Commercial Building Energy Audits and/or Recommissioning

Projected GHG Reduction: Unknown
Implementation Year(s): 2015
Information Contact: Matthew Smuts, Sustainable Design Coordinator, Urban Redevelopment Authority, (412) 255-6430, msmuts@ura.org

Commissioning is a process which verifies that a building's systems are all functioning properly. When they are sold,

existing buildings are often recommissioned. However, many Pittsburgh buildings have not changed hands for many years and have not been recommissioned or audited for energy efficiency.

Recommissioning involves enhancing lighting, building envelope, and heating and cooling systems. The energy savings from recommissioning is typically 5-15%, and about 80% of these savings result from optimizing building control systems. While purchasing new equipment is not usually necessary to reap cost savings, recommissioning can still have high upfront costs in staff time or consultant fees.

The Business Climate Coalition should work with the City of Pittsburgh to develop an incentive or mandate that buildings over a certain size be recommissioned at regular intervals. The coalition should also encourage all buildings to seek recommissioning every five years, or whenever major energy systems or controls are replaced.

The Carbon Clearinghouse recommended previously could provide information about local contractors who assist in this type of auditing. Additionally, the City of Pittsburgh and/or the Urban Redevelopment Authority could provide low-interest loans that help subsidize the upfront costs of recommissioning.

More information on recommissioning and associated energy savings can be found at *www.energystar.gov/ia/business/BUM_recommissioning.pdf.*

BUSINESS TRANSPORTATION 3.1:

Reduce Parking Spaces and Employee Parking Subsidies

Projected GHG Reduction: Unknown
Implementation Year(s): 2015
Information Contact: Business Climate Coalition

Employers can have a positive influence on their employees' parking habits by charging parking fees, which discourage driving alone, or by offering cash rewards for employees who do not drive in and use a parking spot. The Victoria Transport Policy Institute and the New Jersey Department of Transportation provide additional information at the following websites:

- *www.vtpi.org/tdm/tdm26.htm*
- *www.vtpi.org/tdm /tdm8.htm*
- *www.state.nj.us/transportation/commuter/smartmoves/parking.shtm*
- *www.state.nj.us/transportation/commuter/smartmoves/incentives.shtm*

BUSINESS LONG-TERM RECOMMENDATION CONCLUSIONS

Further long-term actions will be based on the implementation of the short- and medium-term actions.

CONCLUSION

The Pittsburgh region is fortunate to have business, research, and nonprofit communities that have a strong base on which to move forward regarding issues of climate change and sustainability. The time is approaching where these synergies can be directed so that the City and region can assess the most strategic ways to accelerate the opportunities for economic development within the challenges of climate change and sustainability concerns. This document suggests several practical steps that can be taken to assess what specific needs the region's businesses express regarding climate change, as well as several strategic actions to take and build quickly off of that knowledge.

The recommendations included in this plan represent only the first steps. As the Pittsburgh Climate Action Plan is implemented, more opportunities for climate protection will present themselves. The current Business Working Group of the Green Government Task Force will, upon adoption of this plan, be augmented with additional members of the business community, City government, universities, and nonprofits, and serve as a steering committee for implementation of this plan.

Photo: Maggie Chutz

Chapter 7:

Higher Education Climate Action Recommendations for Pittsburgh

INTRODUCTION

The City of Pittsburgh, Pennsylvania, is home to many higher education institutions, with nearly 70,000 students taking classes for credit each year. Additionally, over 45,000 students take non-credit classes each year at the Community College of Allegheny County. As well, thousands of employees keep the following higher education institutions running every day:

- Art Institute of Pittsburgh
- Carlow University
- Carnegie Mellon University
- Chatham University
- Community College of Allegheny County
- Duquesne University
- La Roche University
- Point Park University
- Robert Morris University
- University of Pittsburgh

Higher education plays a major role in the Pittsburgh community. Not surprisingly, it also accounts for a large percentage of Pittsburgh's greenhouse gas emissions. The energy used by thousands of students and employees commuting each day, combined with the energy needed to heat and cool buildings, power sophisticated lab equipment, light performance spaces and sports facilities, and power every other function of colleges and universities adds up to a large, yet un-quantified, carbon footprint.

BACKGROUND

Under the auspices of the Pittsburgh Climate Initiative, Pittsburgh's higher education institutions met in June 2007 to discuss their role in *Pittsburgh's Climate Action Plan*. In December 2007, representatives of these schools were invited to participate in a survey of climate protection activities at their respective institutions. The survey allowed respondents to rank their school's commitment to climate change mitigation actions under the following categories:

- Campus Vehicles
- Campus-Wide Initiatives
- Energy Consumption
- Green Building Practices
- Plans for Improvement
- Recycling and Waste Management
- Renewable Energy
- Student Engagement and Education
- Transportation

The results of this survey are provided in Appendix D. Survey participants included the following institutions: Carlow University, Carnegie Mellon University, Chatham University, Duquesne University, Point Park University, and the University of Pittsburgh.

In January 2008, representatives of Carnegie Mellon University, Chatham University, Duquesne University, Point Park University, and the University of Pittsburgh met to share responses to the survey questions and develop recommendations for increasing each institution's environmental sustainability in the future. This "Higher Education" chapter of the *Pittsburgh Climate Action Plan* incorporates the recommendations and categorizes them by implementation periods as follows: short-term (0 to 2 years), medium-term (2 to 5 years), and long-term (greater than 5 years). This categorization scheme will allow more immediate actions to be implemented with relative ease while tougher issues can be set as ongoing goals.

RECOMMENDED ACTIONS FOR PITTSBURGH HIGHER EDUCATION INSTITUTIONS

The following recommendations were developed at a January 2008 meeting with representatives from Carnegie Mellon, Chatham, Duquesne, Point Park, and the University of Pittsburgh. They are separated into the categories of the previously mentioned survey. Additionally, a summary of all the recommendations from the Green Government Task Force Higher Education Working Group are provided in Appendix E.

Short-Term Recommendations

Following are the short-term recommendations that the higher education institutions recommended to be implemented in 0-2 years.

HIGHER EDUCATION GENERAL 1.1:

Establish a Pittsburgh Higher Education Climate Coalition

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Deborah Lange, Executive Director, Steinbrenner Institute for Higher Education and Research, Carnegie Mellon University, (412) 268-7121, dlange@cmu.edu; Lisa Kunst Vavro, Assistant Professor and Director, Landscape Architecture, Chatham University, (412) 365-1882, lvavro@chatham.edu

All colleges and universities in the Pittsburgh area were invited to participate in the Pittsburgh Climate Initiative. However, a smaller group of schools remained involved throughout the lengthy planning process. A primary short-term goal should be to establish a "Pittsburgh Higher Education Climate Coalition" that will engage all higher education institutions in the Pittsburgh area. Depending on the future configuration of the Pittsburgh Climate Initiative, the Pittsburgh Higher Education Climate Coalition could be a sub-committee or a standalone entity.

To ensure that Pittsburgh Higher Education Climate Coalition is as valuable to its members as possible, it should encourage institutional collaboration, cooperation, and information sharing. The first recommended step for the Coalition is to reengage all Pittsburgh higher education institutions by personally inviting all to a Coalition kickoff meeting in Summer 2008.

HIGHER EDUCATION GENERAL 1.2:

Develop College and University Information Sharing

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

Though of varying sizes and foci, Pittsburgh's colleges and universities face many of the same decisions in regards to vendor selection, purchasing, construction and renovation practices, facilities operation, and student engagement. The Pittsburgh Higher Education Climate Coalition should provide a forum for sharing information between the schools. For example, universities that have electric vehicles as part of their campus fleets could provide testimony on the benefits and downfalls of certain models for colleges that are considering purchasing such vehicles. Other information sharing opportunities abound, but might also include green building practices like green roofs, green cleaning, and best practices.

The Pittsburgh Higher Education Climate Coalition should also host or contribute to a single online clearinghouse for information pertaining to Pittsburgh's higher education climate initiatives. This web resource should include information about potential challenges and demonstrated successes in operational, educational, research, and policy-related climate actions.

HIGHER EDUCATION CAMPUS-WIDE 1.1:

Individual Institutions Should Join State and National Level Higher Education Sustainability Organizations

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Higher Education Climate Coalition

There are many state and national organizations dedicated to promoting environmental sustainability in higher education. Most notably, these organizations include the Pennsylvania Environmental Resource Consortium (PERC) and the Association for the Advancement of Sustainability in Higher Education (AASHE). This *Pittsburgh Climate Action Plan* recommends that Pittsburgh's higher education institutions participate in both of these organizations, as well as others that may be applicable to the overall climate objectives.

PERC seeks to provide collaboration opportunities between policymakers and academic institutions around environmental challenges. PERC consists of the following committees: 1) Climate Change and Energy, 2) Greening Colleges and Universities, 3) Human Health and the Environment, and 4) Sustainable Pennsylvania. Carnegie Mellon, Chatham, Duquesne, and Robert Morris Universities and the University of Pittsburgh are currently members of PERC.

AASHE is a national organization that provides services to

encourage sustainability in all aspects of higher education. AASHE assistance includes professional development workshops and trainings, conferences, an online resource center, and a weekly email bulletin with campus sustainability news. AASHE currently only has two members in the Pittsburgh area: Carnegie Mellon and the University of Pittsburgh.

Other potential higher education sustainability organizations of interest to Pittsburgh's colleges and universities include:

- The Association of University Leaders for a Sustainable Future
  www.ulsf.org
- Campus Consortium for Environmental Excellence
  www.c2e2.org
- The Global Higher Education for Sustainability Partnership
  http://webapps01.un.org/dsd/partnerships/public/partnerships/71.html
- The Higher Education Climate Action Project
  www.heclimateaction.org
- The New Jersey Higher Education Partnership for Sustainability
  www.njheps.org
- South Carolina Sustainable Universities Initiative
  www.sc.edu/sustainableu

A short-term goal of the Pittsburgh Higher Education Climate Coalition should be to encourage greater participation by Pittsburgh area higher education institutions in PERC, AASHE, and other similar organizations.

HIGHER EDUCATION CAMPUS-WIDE 1.2:

Explore Resources Available Through Higher Education Professional Organizations

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Higher Education Climate Coalition

Unlike AASHE and PERC, most professional organizations usually do not include environmental concerns as a primary component of their mission. However, most professional organizations related to higher education have begun to address climate change through their activities, and sometimes provide assistance to their member organizations. For instance, the National Association of Educational Procurement (NAEP) provides information for higher education buyers about socially responsible procurement.

The Pittsburgh Higher Education Climate Coalition should investigate higher education-related professional organizations that could be of assistance in incorporating climate actions institution-wide. These potential resources include the following groups:

- APPA: Leadership in Education Facilities (Formerly the Association of Physical Plant Administrators)
  www.appa.org
- National Association of College and University Business Officers (NACUBO)
  www.nacubo.org
- National Association of Educational Procurement (NAEP)
  www.naepnet.org
- The Society for College and University Planning (SCUP)
  www.scup.org

Pittsburgh's higher education institutions should also seek out potential environmental and sustainability assistance available through professional organizations to which the institution or its staff belongs.

HIGHER EDUCATION CAMPUS-WIDE 1.3:

Create a Higher Education Best Practices Guide

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

There exists an established need for a "Climate Protection Best Practices Guide for Pittsburgh Higher Education Institutions." In addition to detailed descriptions of these best practices, the guide should include the most important actions schools can take to reduce their environmental impacts.

This guide should be specific to Pittsburgh area higher education institutions, but should use the existing literature as a reference. Additionally, case studies of Pittsburgh colleges and universities could be included as examples of best practices. Existing best practices guides that may be of assistance in completing this recommendation include the following:

- "New Energy for Campuses: Energy-Saving Policies for Universities and Colleges" Developed by the Apollo Alliance
  www.energyaction.net/documents/new_energy.pdf
- AASHE and Arnold Creek Publications
  www.arnoldcreekproductions.com/SustainabilityHigherEducation.htm
- EPA Environmental Management Systems Guide for Colleges and Universities
  www.epa.gov/region1/assistance/univ/emsguide.html

If necessary, this project could be completed through a student assignment or internship.

HIGHER EDUCATION CAMPUS-WIDE 1.4:

Develop Greenhouse Gas Inventories for Each Pittsburgh College and University

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

A greenhouse gas (GHG) inventory calculates the amount of greenhouse gas emissions resulting from an organization's energy use, transportation, and solid waste disposal. Because different greenhouse gases have different warming potentials, an inventory can be created using software that reports the results in units of carbon dioxide equivalents (eCO_2). A GHG inventory is an important step in decreasing an organization's carbon footprint because it identifies the source and amount of each GHG emitted. Such an inventory can be a low-risk way for an organization to get engaged and educated about climate change, while starting to focus its efforts; likewise, a regularly updated GHG inventory allows organizations that have already made environmental improvements to quantify the results of their efforts and identify where additional progress can be made.

With proper training and adequate time, an accurate GHG inventory could be completed through a student project or internship. A priority of the Pittsburgh Higher Education Climate Coalition should be to assist local colleges and universities in completing their GHG inventories. This central coordination will help ensure that all of the inventories follow a consistent process, thus making the results comparable.

Clean Air - Cool Planet offers free software, training, and support to higher education institutions that want to inventory and report their GHG emissions. CA-CP's expertise has helped over 500 U.S. colleges and universities measure and manage their emissions. More information on Clean Air - Cool Planet's campus initiative is available at *www.cleanair-coolplanet.org/for_campuses.php* or by contacting Jennifer Andrews, Campus Program Manager, at (603) 570-7503.

HIGHER EDUCATION ENERGY 1.1:

Explore Carbon Offsets

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

While reducing energy usage, using cleaner fuels, and better-managing solid waste are some of the most common steps taken to decrease greenhouse gas emissions, it is currently impossible to eliminate institutional greenhouse gas emissions entirely. To address unavoidable emissions, some individuals and organizations purchase carbon offsets, which are credits that allow buyers to pay to reduce carbon in other locales as a means of "balancing" the emissions they create personally. Among other things, carbon credits may be purchased to offset air travel, building operations, and events.

A recent trend among organizations is the purchase of carbon offsets to balance the greenhouse gas emissions produced from hosting large events and conferences. Native Energy and TerraPass are two organizations that sell carbon offsets and invest the money earned into wind farms, biodigesters, and other clean energy projects. Other organizations that sell carbon credits include Climate Trust, My Climate, and Carbon Fund. More information sharing is needed between the members of the Pittsburgh Higher Education Climate Coalition about the costs and benefits of carbon offsetting, as well as about which companies offer the best programs.

Clean Air - Cool Planet's "Consumer's Guide to Retail Carbon Offsets" offers great resources to help guide these discussions and is available at *www.cleanair-coolplanet.org/ConsumersGuidetoCarbonOffsets.pdf*.

Additionally, at many colleges and universities across the country, there is interest in developing local, community-based offset programs. Locally, Carnegie Mellon University (CMU) is exploring the option of selling carbon offsets to its students, employees, and alumni. In theory, members of the CMU community who wanted to purchase carbon offsets for their personal activities (e.g., daily commute, personal travel, and home energy usage) could do so directly from CMU. The University would invest offset purchases into clean energy production on campus and in Western Pennsylvania. Creating a locally-based carbon offsets program would keep carbon offset purchases in Western Pennsylvania, while continuing to build a demand for clean energy and technology projects.

HIGHER EDUCATION TRANSPORTATION 1.1:

Compile Port Authority Transit Information

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

Carnegie Mellon University (CMU) and the University of Pittsburgh (Pitt) are currently the only two colleges or universities that have a bulk bus pass purchase agreement with the Port Authority of Allegheny County. Because transit payment for these programs is specifically designated by a CMU or Pitt ID card, the Port Authority of Allegheny County has the ability to track CMU and Pitt rider information. CMU and Pitt will collaborate to compile information about bus usage resulting from their bulk bus pass agreements. This information will assist Pittsburgh's other higher

education institutions as they assess the potential benefits of participating in a similar program. Additionally, similar to the energy co-op suggested previously, creating a larger collective of Pittsburgh colleges and universities that wants to purchase bulk bus passes may increase the economic and environmental benefit for all.

HIGHER EDUCATION TRANSPORTATION 1.2:

Investigate Zipcar Feasibility

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

The institutions of higher education in Pittsburgh should consider offering Zipcars or another car sharing service on campus. Car sharing makes sense for a university or college community, where students spend most of their time on or around a single campus. In addition to the environmental benefits, many schools have found that car sharing is an effective way to ease parking problems.

Carnegie Mellon University has had two Zipcars on its campus since August 2007.

Institutional Zipcar participation requires a college or university to guarantee a minimum monthly rental in order to have a car placed on campus. Carnegie Mellon has not had to pay the monthly rental because their utilization rate is approximately 85%. However, the rental guarantee has been a preventative factor for some schools. The Pittsburgh Higher Education Climate Coalition should explore the potential of enrolling in Zipcar as a Coalition to decrease the minimum monthly rental requirements.

A January 2008 Zipcar survey found that over 40% of Zipcar members have either sold their personal vehicle or decided not to buy a new vehicle because of their membership.[46] The company estimates that over 50,000 vehicles have been taken off of the road due to Zipcar membership, which is equivalent to each Zipcar replacing 20 privately owned vehicles. The environmental benefits of removing this many cars from the road include the following:

- Older, less efficient vehicles are retired. Zipcars are newer and have more stringent air pollution controls.
- There is less need for parking spaces, which can lead to preservation of green space and a decrease in impermeable surfaces, which helps ease stormwater issues.
- Fewer cars on the road translates to less traffic and congestion. The less time cars spend idling in traffic, the fewer greenhouse gas emissions are released.

Zipcar members also reported that they drove less overall, with some people reducing car usage by as much as 50%. Paying for car usage by the trip encourages people to combine errands and share trips with others. The survey found that an average Zipcar member uses 219 gallons of gasoline less per year than if s/he owned a personal vehicle.

Car sharing also encourages the use of other alternative forms of transportation, such as walking, biking, and using public transit. Zipcar reports that its members have increased public transit usage by 47%, bicycling by 10% and walking trips by 26%. This increased demand and usage of public transportation provides funding for improvements to transit, including increased routing.

While using Zipcar as an individual may not seem very significant, integrating the use of Zipcar into the campus culture can have a considerable impact. For instance, the University of Pittsburgh has an undergraduate student population of approximately 17,000. If only 5% of this student population used Zipcar and avoided driving 20 miles per semester due to their membership, the students would decrease total miles driven by 17,000, translating to an emissions reduction of 14 tons of eCO_2 per academic year. Extending Zipcar use beyond undergraduate students to graduate students, faculty, and staff at all of the schools in Pittsburgh could significantly reduce greenhouse gas emissions from transportation.

HIGHER EDUCATION RECYCLING AND WASTE MANAGEMENT 1.1:

Food Composting Coalition Kick-off Meeting

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Carla Castagnero, AgRecycle, (412) 767-7645, carla@agrecycle.com; Higher Education Climate Coalition

AgRecycle, a Western Pennsylvania company specializing in large-scale composting of organic materials, will soon be expanding its service area to Oakland. Carnegie Mellon University (CMU) is considering participation in food composting with AgRecycle. The company would provide CMU with large bins to place at the University Center loading docks. Pre-consumer food waste from food preparation

[46] Zipcar. (2008). "Environmental and Community Impact." January 2008. http://www.Zipcar.com/press/onlinemediakit/environmental_and_community_impact.pdf. Accessed 28 May 2008.

(e.g., vegetable trimmings and food that cannot be used) would be disposed of in these bins instead of the dumpster. AgRecycle would collect the food waste bins on a weekly basis. A short-term goal of the Pittsburgh Higher Education Climate Coalition should be to organize an informational meeting between AgRecycle and Pittsburgh colleges and universities. The meeting should explore the potential for expanding the Oakland composting program to other colleges, universities, and institutions, thus making the process more efficient and less costly. Inclusion of non-educational organizations like the University of Pittsburgh Medical Center and the East End Food Co-op should also be considered.

HIGHER EDUCATION GREEN BUILDING PRACTICES 1.1:

Expand Online Higher Education Green Building Case Studies

Projected GHG Reduction: Unknown
Implementation Year(s): 2008
Information Contact: Jenna Cramer, Resource Coordinator, Green Building Alliance, (412) 431-0709, jennac@gbapgh.org; Higher Education Climate Coalition

Green Building Alliance (GBA) already provides case studies of green buildings in Western Pennsylvania online *(www.gbapgh.org)* and in their annual *Shades of Green* publication. The Pittsburgh Higher Education Climate Coalition should work with GBA to ensure that accurate and complete information about all higher education green buildings is included online and in *Shades of Green*. GBA can also make certain that this higher education green building information is accessible via the Pittsburgh Climate Initiative website and any future Pittsburgh Higher Education Climate Coalition websites.

Ensuring that there is a single resource for information about Pittsburgh's higher education green buildings will provide publicity for individual and collective efforts, while also allowing Pittsburgh's colleges and universities to serve as a model for higher education institutions.

HIGHER EDUCATION STUDENT ENGAGEMENT AND EDUCATION 1.1:

Catalog Pittsburgh Higher Education Climate Actions

Projected GHG Reduction: Unknown
Implementation Year(s): 2009
Information Contact: Higher Education Climate Coalition

After the local higher education institutions meet to form a coalition as part of the *Pittsburgh Climate Action Plan*, a vital step is to create a single document that catalogues and benchmarks each institution's current activities to address climate change. This document should be updated on a bi-annual basis so that the true costs and benefits of each institution's actions can be determined. This recommendation could be completed as a student project or internship. The individual university and college summaries listed in Chapter 8 and the results of the higher education survey (see Appendix D) should serve as a base for building such a document.

Medium-Term Recommendations

Higher Education Institutions should accomplish the medium-term recommendations within the first 2-5 years of implementation of this plan.

HIGHER EDUCATION GENERAL 2.1:

Establish a Revolving Loan Fund or Alternate Financing Mechanism

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Clean Air - Cool Planet suggests that Pittsburgh's higher education institutions establish a revolving loan fund or alternative financing mechanism for sustainability initiatives. Individually or collectively, Pittsburgh higher education institutions could consider adopting formal policies that allocate some portion (if not all) of identified energy conservation cost savings to fund other energy conservation, energy efficiency, and/or climate-related initiatives. A good example of this type of program is Harvard University's Green Campus Loan Fund, which redirects money saved from energy conservation projects to new energy

projects;[47] this program has a better return on investment (an average of 26% between 2002 and 2007) than the University's endowment.[48] For several decades, these types of funds have proven to be a successful mechanism for financing state and municipal energy projects and are increasingly being used by colleges and universities. A recent report published by AASHE notes the presence of successful funds — each designed with different parameters, starting amounts and goals — at campuses as diverse as the University of Maine, Macalester College, the University of Michigan, and Connecticut College.[49] "Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students"[50] serves as a great source of information and is available at *www.aashe.org/resources/pdf/CERF.pdf.*

HIGHER EDUCATION CAMPUS-WIDE 2.1:

Create Institutional Benchmarks

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

While some colleges and universities in the Pittsburgh area have a long history of environmental actions, others are just commencing their journey towards sustainability. Regardless of current sustainability levels, it is important that all of Pittsburgh's higher education institutions begin tracking the climate change mitigation strategies they employ. This will assist the Pittsburgh Higher Education Climate Coalition in highlighting the significant steps taken and assessing the collective impact of all higher education institutions' actions to reduce greenhouse gas emissions.

There are several existing tools for tracking environmental performance that may be of assistance in creating benchmarks for Pittsburgh's higher education institutions; these include the following:

- AASHE Sustainability Tracking, Assessment and Rating System
  www.aashe.org/stars/documents/STARS_0.5.pdf
- Campus Safety, Health, and Environmental Management Association (CSHEMA) Benchmarking
  www.cshema.org/leadership/research.cfm
- College and University Self-Tracking Tool
  www.c2e2.org/cgi-admin/navigate.cgi

HIGHER EDUCATION ENERGY 2.1:

Establish Energy Conservation Behavioral Change Programs

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Opportunities to pursue behavioral energy conservation programs on campuses abound. Energy conservation activities often provide cost savings that can be reinvested in capital-intensive efficiency or renewable energy-oriented efforts. To ensure that energy conservation savings are indeed reinvested, institutional policies need to be established.

HIGHER EDUCATION ENERGY 2.2:

Institute Widespread Thermostat Adjustments

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Slight adjustments to indoor temperatures can result in energy savings and GHG emissions reductions. At the University at Buffalo (SUNY), annual savings from energy conservation efforts alone total $9 million. The University determined that each degree of unnecessary heating and cooling costs $100,000 a year, and adjusted baseline temperature settings accordingly. They have since instituted policies in which an altered summer dress code allows for higher summer thermostat settings (76 degrees), while in the winter deans must request off-hour additional heating if it is required by academic programs.[51]

HIGHER EDUCATION ENERGY 2.3:

Institute Unplug It Programs

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Plug loads from task lighting, computers, and office equipment contribute to approximately 25% of total electrical consumption on college and university campuses. Many schools have run successful campaigns asking students,

[47] Harvard University. (2008). "Harvard Green Campus Initiative." http://www.greencampus.harvard.edu/gclf/achievements.php. Accessed 28 May 2008.
[48] The Harbus. (2007). "Harvard Green Loan Fund Generates Greater Returns than Endowment." November 5, 2007. http://media.www.harbus.org/media/storage/paper343/news/2007/11/05/GreenLiving/Harvard.Green.Loan.Fund.Generates.Greater.Returns.Than.Endowment-3077151.shtml. Accessed 10 March 2008.
[49] Harvard University. "Green Campus Loan Fund." http://www.greencampus.harvard.edu/gclf/achievements.php. Accessed 1 March 2008.
[50] The Association for the Advancement of Sustainability in Higher Education. (2008). "Creating a Campus Sustainability Revolving Loan Fund." www.aashe.org/resources/pdf/CERF.pdf. Accessed 28 May 2008.
[51] The Apollo Alliance. (2008). "New Energy for Campuses." http://www.energyaction.net/documents/new_energy.pdf. Accessed 28 May 2008.

staff, and faculty to put equipment on surge protectors and unplug the entire surge protector when it is not in use. At the University of New Hampshire, programs asking campus community members to unplug equipment before leaving for Thanksgiving break saved over 159,000 kilowatt-hours (kWh) of energy, $22,721 in energy and water costs, and over 50 metric tons of emissions of eCO_2 during Fall 2006.[52]

HIGHER EDUCATION ENERGY 2.4:

Apply Energy Star Computer Settings[53]

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

An overall institutional policy regarding sleep, hibernate, and other energy management options for campus computers can be a very effective tool for managing energy use and conservation on college campuses. The University of Wisconsin-Oshkosh (UW Oshkosh) is one of many success stories regarding campus computer power management. UW Oshkosh computer labs used to keep all personal computers powered on 24 hours a day to accommodate students and nightly software updates. Using built-in functions and a free network tool provided by EPA, UW Oshkosh was able to place 485 computers into a low-power "sleep" mode, continue regular updates, and save over $9,000 annually (at 5 cents/kWh).

HIGHER EDUCATION ENERGY 2.5:

Create and Participate in Energy Competitions

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

To date, no Pittsburgh higher education institutions have implemented on-campus energy reduction competitions. However, energy reduction contests, especially in dorms, have consistently been shown to stimulate substantial emissions reductions and cost savings at higher education institutions across the country. When done well, these competitions can help shift the campus culture to one which emphasizes and educates consistently around the value of conservation. The potential for competitions is discussed in more detail below, under Student Engagement and Education recommendations.

HIGHER EDUCATION STUDENT ENGAGEMENT AND EDUCATION 2.1:

Participate in Student Environmental Competitions: RecycleMania Competition

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Friendly competition can be a significant motivator for encouraging behavior change. For example, the annual RecycleMania competition pits American colleges and universities against one another in a contest to see which can recycle the most and reduce overall waste. Carnegie Mellon University currently participates in this contest, which is held for one week at the end of January or beginning of February. The Pittsburgh Higher Education Climate Coalition should coordinate student and facilities groups at all Pittsburgh colleges and universities for future competitions. As a result, schools will compete not only in the national contest, but amongst one another to see which school can decrease their solid waste the most. If possible, recognition should be arranged for the winning school by the City of Pittsburgh and/or Pennsylvania Resources Council.

HIGHER EDUCATION STUDENT ENGAGEMENT AND EDUCATION 2.2:

Student Environmental Competitions: Energy Efficiency Competitions

Projected GHG Reduction: Unknown
Implementation Year(s): 2011
Information Contact: Higher Education Climate Coalition

Similar to recycling competitions, energy efficiency competitions between dormitories on a single college campus have been proven as a successful way to encourage students to conserve energy on campus. While the competition typically only covers one week to one month, helping students recognize the energy demand associated with some of their daily activities encourages them to rethink their energy choices year-long. A potential difficulty with effectively organizing such a competition is that not all dormitories are sub-metered to allow for comparable energy usage.

An energy efficiency campaign has the potential to be more effective if it involves all of Pittsburgh's higher education institutions. The Pittsburgh Higher Education Climate

[52] AASHE Bulletin. (2006). "The Association for Sustainability in Higher Education." December 14, 2006. http://www.aashe.org/archives/2006/06_12_14.php. Accessed 28 May 2008.
[53] U.S. Environmental Protection Agency. (2008). "Computers on 24/7 Awaiting Updates But Wasting Energy?" Energy Star Program. http://www.energystar.gov/ia/products/power_mgt/UofWisc_CPM_casestudy.pdf. Accessed 20 February 2008.

Coalition should solicit the City of Pittsburgh's support for such a competition and provide information about it on the respective schools' websites, as well as in other media.

More information is available on the AASHE website at *www.aashe.org/competitions.*

HIGHER EDUCATION STUDENT ENGAGEMENT AND EDUCATION 2.3:

Increase "Social Marketing"

Projected GHG Reduction: Unknown
Implementation Year(s): 2012
Information Contact: Higher Education Climate Coalition

Clean Air - Cool Planet also recommends that Pittsburgh's higher education institutions increase "social marketing." Social Marketing is increasingly recognized as an important component of successful energy conservation programs.

As part of a successful social marketing campaign, students at local higher education institutions might be encouraged to work with campus staff to conduct research and experimentation to identify the most effective messages and marketing approaches for students, staff, and faculty. This type of assistance could be facilitated through student projects and/or internships that could also assist in implementing awareness and outreach campaigns. Developing an effective outreach program may incorporate creating templates that can be used by primary campus groups: student life/residence hall staff, first-year student orientation, students, staff, faculty, alumni, and donors. These templates could be developed for each individual college or university or there could be a common version disseminated for all members of the Pittsburgh Higher Education Climate Coalition.

For more information, see "Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing" by Doug McKenzie-Mohr.

Long-Term Recommendations

It is envisioned that long-term recommendations will be considered within the first five years of this plan and implemented shortly after.

HIGHER EDUCATION ENERGY 3.1:

Explore Real-time Energy Monitoring

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Higher Education Climate Coalition

Clean Air - Cool Planet recommends that Pittsburgh's higher education institutions explore real-time energy monitoring on each individual campus. Real-time energy monitoring tools have been shown to be very effective in driving behavioral change. An example of successful real-time energy monitoring occurred during a 2005 Oberlin College energy competition.[54] Students from Pittsburgh area colleges and universities could work independently or in collaboration on a project to develop real-time energy/greenhouse gas monitoring systems for Pittsburgh higher education institutions. Colleges and universities could also collaborate on developing effective outreach campaigns that utilize these resources. In the Oberlin example, the systems were developed by students and faculty as part of the curriculum; there are also several turnkey systems such as "Building Dashboard" which can be purchased from and serviced by national vendors.

HIGHER EDUCATION ENERGY 3.2:

University Energy Co-op

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Higher Education Climate Coalition

The City of Pittsburgh recently conducted a reverse auction to purchase electricity. In an effort to save money, the City invited other entities to collectively purchase electricity. All groups who bid with the City were required to purchase 10% renewable energy. Even though the groups purchased more

[54] Oberlin College Campus Resource Monitoring System. (2008). "Rationale for Real-Time Display of Resource Use." http://www.oberlin.edu/dormenergy/news.htm. Accessed 28 May 2008.

expensive renewable energy to meet 10% of their demand, they received a better energy rate and saved money by buying collectively as a cooperative electricity purchase. A long-term goal of the Pittsburgh Higher Education Climate Coalition should be to purchase electricity collectively, a process that will allow each institution to purchase a higher percentage of renewable energy while decreasing or maintaining current electricity costs.

HIGHER EDUCATION ENERGY 3.3:

Hire an Energy Conservation Programs Coordinator

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Higher Education Climate Coalition

The "Community" and "Business" chapters of this *Pittsburgh Climate Action Plan* respectively recommend establishing full-time Sustainability Coordinator and Sustainable Business Development Coordinator staff positions within City of Pittsburgh government. Similarly, the "Higher Education" chapter of the *Pittsburgh Climate Action Plan* recommends that a professional be employed to coordinate energy conservation programs in Pittsburgh's higher education institutions. Current college and university staff members do not have enough time to dedicate to coordinating efforts across institutions. The coordinator could be a grant-funded private consultant, staff of a nonprofit, or part of the municipal government.

HIGHER EDUCATION TRANSPORTATION 3.1:

Collective Negotiations with the Port Authority of Allegheny County

Projected GHG Reduction: Unknown
Implementation Year(s): 2014
Information Contact: Higher Education Climate Coalition

Carnegie Mellon University (CMU) and the University of Pittsburgh (Pitt) have previously negotiated a flat fee with the Port Authority of Allegheny County (PAT) so that all of their students and employees ride for "free" on Pittsburgh public transit with their school/employee ID cards. This program has resulted in a high public transit usage by CMU and Pitt students, faculty, and staff, thus reducing the portion of these schools' carbon footprints associated with transportation. Other Pittsburgh higher education institutions have not been able to take advantage of such a program because PAT has not found it economically beneficial to negotiate additional bulk transit rates. Pitt and CMU, however, have a contract with PAT that allows them to continue to subsidize public transit. A long-term goal of the Pittsburgh Higher Education Climate Coalition should be to negotiate with PAT as a collective so that all Pittsburgh colleges and universities can take advantage of subsidized public transit, which has economic, environmental, and social benefits not only for Pittsburgh's higher education institutions, but also for Greater Pittsburgh. In attaining this goal, the Pittsburgh Higher Education Climate Coalition may also consider partnering with some of the larger non-educational institutions in Pittsburgh to increase the size of the collective's negotiating power. Eventually, smaller businesses might also be considered as additions to the negotiating collective.

HIGHER EDUCATION RECYCLING AND WASTE MANAGEMENT 3.1:

Implement a Food Composting Program

Projected GHG Reduction: Unknown
Implementation Year(s): 2013
Information Contact: Higher Education Climate Coalition

In November 2006, Pennsylvania Resources Council published a food waste composting feasibility study. The feasibility study assessed composting at five food processing facilities in Pittsburgh, including Carnegie Mellon's University Center and Chatham University. For the purpose of the study, food waste was designated as Green, consisting of plant-based food without dairy, meat, or oils, or Yellow, made up of all other food waste except grease. For the CMU University Center, 358.33 pounds of Green waste and 284.66 pounds of Yellow waste were collected per day. For Chatham, 140.8 pounds of Green and 188.7 pounds of Yellow waste were collected per day. These numbers represent both pre- and post-consumer wastes, and equal an average of 486 pounds of food waste produced per day. Assuming that only half of this waste comes from pre-consumer food preparation, and that this number holds true for five days a week, the average Pittsburgh higher education institution would produce nearly 40,000 pounds of food waste over the course of an eight month school year. For every 20 tons of pre-consumer food waste that is composted instead of sent to a landfill, 18.6 tons of eCO_2 are avoided. If the ten Pittsburgh higher education institutions listed in the Introduction composted 40,000 pounds, or 20 tons of food waste per year, eCO_2 emissions would be reduced by 3,720 tons. Schools which implemented post-consumer composting programs could reduce emissions further.

Photo: Maggie Chutz

Chapter 8:

Existing Climate Protection Activities of Pittsburgh's Higher Education Institutions

All Pittsburgh higher education institutions have existing climate protection activities of some sort. A brief summary of each of these activities is provided below for each of the colleges and universities who were integrally involved in the Pittsburgh Climate Initiative. This compilation should be used as the basis for developing a more comprehensive benchmark of Pittsburgh's higher education climate efforts, as recommended above.

CARNEGIE MELLON UNIVERSITY

Carnegie Mellon University's (CMU) primary driver of sustainability activities is the Green Practices Committee, which has been active since 1998. This group of faculty, staff, and students meets monthly and has several subcommittees.

Energy

CMU has engaged in lighting retrofits to decrease campus energy usage. While energy conservation is recommended on campus, there is not an official program. The majority of CMU's energy is provided by the Bellefield Steam Plant, which will be upgraded for greater efficiency after the University of Pittsburgh moves its steam operations into a new facility in 2008. Carnegie Mellon also purchases enough renewable energy, primarily local Pennsylvania wind, to meet 16% of campus demand. There is currently no plan for the University to purchase carbon offsets, though development of a local carbon offset program is being explored, as mentioned in the "Higher Education Energy 1.1: Explore Carbon Offsets" section above.

Recycling and Waste Management

CMU Recycling has been moderately successful and operates at a steady rate of 19%. Carnegie Mellon currently participates in the nation-wide recycling competition RecycleMania, mentioned above under Student Environmental Competitions. CMU is also considering initiating a new composting project with AgRecycle. AgRecycle would provide containers into which dining services staff can empty pre-consumer food waste; the company would periodically collect the food waste and deliver it to their composting facility in Washington County. Exploring the opportunity for other Pittsburgh higher education institutions to participate in this food waste collection program is included in the Recycling and Waste Management recommendations. CMU has also decreased its overall solid waste volume through the use of auger compactors that crush and reduce large and bulky wastes, which it has found to provide more benefits than hydraulic compactors.

Greenhouse Gas Inventory

While Carnegie Mellon has not completed a full campus greenhouse gas inventory, a fifth-year student project scheduled for Fall 2009 will complete CMU's first energy audit. A member of Facilities Management has also completed a greenhouse gas inventory for parts of the University, including electricity and steam use. Building sub-metering is also in progress where possible. Additionally, an Engineering and Public Policy project class is exploring options for decreasing the University's carbon footprint based on effectiveness, feasibility, and cost. The results of this project will eventually be incorporated into a University-wide climate action plan. Finally, climate protection concerns will be incorporated into the University's strategic planning process.

Green Buildings and Renovations

Since 2003, Carnegie Mellon has made a verbal commitment that all new buildings and renovations will pursue a minimum of LEED Silver certification. Per Table 7, CMU currently has a variety of green buildings on campus.

In addition, CMU has more than seven green roofs on its buildings. A solar installation at 300 South Craig Street generates 10% of the building's power. The 2005 CMU Solar Decathlon House has been installed and generates all of the buildings energy, as well as some excess energy that is used on campus.

TABLE 7: CARNEGIE MELLON UNIVERSITY GREEN BUILDINGS

CARNEGIE MELLON UNIVERSITY BUILDING	GREEN BUILDING CERTIFICATION SYSTEM	LEVEL
300 South Craig Street	LEED for New Construction	Silver
407 South Craig Street	LEED for New Construction	Silver
Carnegie Mellon Cafe	LEED for New Construction	*Registered*
Collaborative Innovation Center	LEED for Core and Shell	Gold
Doherty Hall (Phase II)	LEED for Commercial Interiors	*Registered*
Henderson House	LEED for New Construction	Silver
Stever House (formerly New House Residence Hall)	LEED for New Construction	Silver
Posner Center	LEED for New Construction	Certified
Robert L. Preger Intelligent Workplace	N/A	Sustainable Architecture Research and Green Building Testing Ground
School of ComputerScience Complex	LEED for New Construction	*Registered*
Solar House	N/A	2005 Solar Decathlon Entry for Pittsburgh Synergy Group

Transportation

Efforts to encourage carpooling have been minimally successful for CMU faculty and staff. No such efforts have been aimed at undergraduate or graduate students. However, as discussed in recommendations Higher Education Transportation 1.1 and 1.2, CMU subsidizes public transportation and on-campus Zipcars; the University also encourages bicycling. Carnegie Mellon also provides a shuttle for students and employees; these vehicles use 20% biodiesel. Additionally, CMU's police vehicles are flexfuel, which means that they can run on either E85 (an 85% ethanol, 15% gasoline blend) or pure gasoline. CMU's on-campus vehicle fleet also features electric Club Cars, an electric Ford Think, and an electric Gem car.

Student Organizations

Carnegie Mellon's active environmental student organization is Sustainable Earth. The University also has active chapters of Net Impact in the business school and Engineers for a Sustainable World. Additionally, in Fall 2005, CMU started an "eco-reps" program that provides peer-to-peer education about environmental concerns.

CHATHAM UNIVERSITY

Chatham University's foundational focus is the environment. Currently a strong environmental curriculum exists as it is home of the Rachael Carson Institute. In addition, the environment is one of the three major "Mission Initiatives" in a new board-approved Strategic Plan that includes an institutional commitment to provide adequate resources for these initiatives.

Energy

Chatham University purchases 15% of its electricity from renewable sources through Renewable Choice, which supplies electricity using credits from wind and other renewable sources. Implementation of additional energy conserving programs includes an ongoing boiler and window replacement program for the 39 acre campus. Over 90% of campus boilers have been updated and are under five-years-old. Currently under investigation for energy conservation are possible uses for heating and electric motor control systems, as well as the design of low maintenance landscapes in certain areas of the campus to include a number of "no mow" zones.

Recycling and Waste Management

Chatham University maintains a campus-wide recycling program which includes a role for student administration. New recycling bins have been placed throughout Chatham's campus. As an extension of the recycling program, Chatham University's food service vendor, Parkhurst, has implemented a long list of environmentally friendly policies including the use of nearly 100% of compostable disposables. Virtually all of the "plastics" used (clamshell take-outs, knives/forks, lids, etc) are corn-based products. In addition, Parkhurst uses local, responsibly produced foods where feasible.

Chatham is considering a possible campus-wide ban on plastic bottles in the near future.

Greenhouse Gas Inventory

Chatham University has instituted a committee comprised of faculty, staff, and students that is actively focused on the American College & University Presidents Climate Commitment, a pledge from presidents and chancellors of

higher education institutions who are committed to reducing greenhouse gas emissions by implementing short- and long-term climate action plans. As of June 2008, the other college in the Pittsburgh area that had signed this commitment was Washington & Jefferson. Currently, this committee is primarily focused on completing the University's first GHG emission baseline inventory.

Green Buildings and Renovations

One of Chatham's residence halls, Rea Hall, is an environmentally themed residence hall for students with environmental interests. Specifically, Rea Hall has low-flow/assisted flush toilets and low-flow shower heads. The plan is to extend coverage of low-flow/assisted flush toilets and low-flow shower heads to other resident halls, if the prototypes in Rea Hall are successful.

Chatham University continues to require low VOC paints and environmentally friendly cleaning products throughout its campus. Rehabilitations of historically significant structures including the historic green roof on the Mellon Administrative Building have extensively used recycled materials. Chatham also has an ongoing boiler and window replacement program for the campus with over 90% of campus boilers updated and under five-years-old.

Even though 32 acres of Chatham's campus constitute an arboretum, landscape maintenance is performed with only organic pesticides, herbicides, and fertilizers. This creates certain challenges relating to weeds, etc. These challenges have principally been met with additional resources of student workers.

Future building upgrades may include structural enhancements ranging from interior weather films to additional green roofs and a commitment to LEED certification for rehabilitations and new structures.

Transportation

Chatham University encourages the use of public and shuttle transportation for faculty, staff and students. Chatham participates in a continuous loop shuttle service between Chatham, CMU, and the University of Pittsburgh. This service is free for all students, faculty, and staff. In addition, the University offers deeply discounted bus passes for public transportation available to students, faculty and staff. These constituencies can obtain a bus pass for $30 per semester. In comparison, a full-price bus pass costs $75 per month. In addition, Chatham's Rea Hall houses the bicycle co-op, an entirely student generated effort that performs bicycle repairs while encouraging the use of bikes.

A future endeavor under consideration is the possible use of Zipcars and the extension of shuttle routes.

Student Organizations

Several environmental groups exist at Chatham University. The most active student group is Green Horizons. In addition, a committee comprised of faculty, staff, and students is actively focused on the Presidents Climate Commitment.

A possible new Master's program in sustainability is being considered as well as a longer-term establishment of a remote site (or even full campus) devoted to environmentalism.

DUQUESNE UNIVERSITY

Energy

In 1997, Duquesne University installed a natural gas-fired cogeneration plant. The plant produces approximately 80% of the campus' electricity, as well as steam for heating. In addition, the school has shown a dedication to energy efficiency through lighting retrofits, installation of occupancy sensors, reflective roof coatings, and other improvements. Duquesne also purchases the remaining 20% of its electricity demand from renewable energy sources.

Recycling and Waste Management

Recycling at Duquesne has been moderately successful. The University feels that a successful program must be developed and monitored by the institution with the support of students. Duquesne's recycling program is established in one building at a time, and Facilities Management evaluates each floor to properly lay out receptacles. Additionally, waste compactors are used across campus; two of these compactors are solar-powered.

Greenhouse Gas Inventory

Two energy performance contracts have been implemented since 1996. Duquesne completed its first greenhouse gas inventory in 2007. Although the University is pleased with its estimated emissions per student, it wants to better refine its data to allow greater confidence in the results. More information about transportation is required, as that accounts for nearly one-third of emissions.

Green Buildings and Renovations

Duquesne recently finished construction on its first LEED registered building, the Power Center. Duquesne has also made a commitment that all future new construction will be LEED certified. LEED certification is also being considered for future renovations. Duquesne currently does not have any green or vegetated roofs, but has been using roofing materials that reflect sunlight to reduce cooling requirements.

Transportation

Per the results of the Duquesne University GHG inventory, Duquesne recognizes that transportation is a significant contributor to its overall carbon footprint. Because Duquesne owns all of its own parking along Forbes Avenue, the University can offer parking to students, faculty, and staff at a very cost-competitive price. As a result, the incentive for Duquesne affiliates to use alternative transportation has not been great. The University is attempting to encourage car and van pooling.

The Port Authority of Allegheny County has refused to negotiate a subsidized transit program with Duquesne (similar to the deals it has negotiated with CMU and Pitt). However, Duquesne is exploring other possible mechanisms for reduced bus pass rates for its students. The University will begin hosting Zipcars on campus in Summer 2008. To improve its campus vehicle fleet, the University is interested in learning more about Club Cars.

Student Organizations

Although Duquesne has an undergraduate environmental club, Evergreen, and a Net Impact chapter, the administration reports that student interest in greening the University has typically been unreliable from year to year.

POINT PARK UNIVERSITY

Energy

Point Park University has increased energy efficiency across its campus by completing lighting retrofits in existing buildings. In addition, the University has installed an energy management system with evening cutbacks to reduce energy use in non-residential buildings overnight when few students are using them. Point Park does not purchase renewable energy or carbon offsets.

Recycling and Waste Management

Point Park has installed new recycling containers on every floor of its academic buildings. However, a successful recycling program cannot rely entirely on student efforts, but incorporate efforts by the institution. Point Park does not currently compost any waste.

Greenhouse Gas Inventory

Plans to complete a greenhouse gas inventory for Point Park University are still in the discussion phase. There are no plans currently to sub-meter buildings or to create a climate action plan.

Green Buildings and Renovations

Point Park University is in the final stages of completing its new dance complex, which is LEED registered. While the school does not have a formal commitment to LEED certification for future buildings and renovations, they are committed to using best practices, such as green cleaning and the use of low or no-VOC paints. These best practices are included in Point Park's in-house and external specifications. The University does not have any green roofs and given that Point Park is a very urban campus located in Downtown Pittsburgh, green space and landscaping are irrelevant on a large scale.

Transportation

Point Park has not developed a program to encourage carpooling for faculty, staff, or students. However, shuttles from parking in outlying areas to the Point Park University Playhouse (which is located in Oakland, not Downtown) have been minimally successful. The University has not yet taken steps to encourage bicycling or the use of alternative vehicles.

Student Organizations

In Fall 2007, a Point Park student club related to environmental issues was formed. The University is also working to establish a committee to address climate change and the environment. Although Point Park University is just starting to address climate change, it is attempting to take major steps to decrease its own greenhouse gas emissions and those of the city as a whole.

UNIVERSITY OF PITTSBURGH

The University of Pittsburgh has long been committed to advancements in sustainability and green initiatives. Significant strides have been made in sustainable design and construction, energy conservation, pollution/emissions reduction, recycling, and greening of the campus. Academic programs related to sustainability have been incorporated into the curriculum, including the Mascaro Sustainability Initiative in the University's Swanson School of Engineering. With representation from faculty, staff, and students, the Sustainability Subcommittee of the University Senate Plant Utilization and Planning Committee meets regularly to discuss and recommend sustainable initiatives. The Committee recently developed a "Draft Statement on Sustainability" which will go to the University Senate for adoption in Spring 2008.

Energy

The Facilities Management team at the University of Pittsburgh (Pitt) is dedicated to ongoing energy efficiency. This dedication has included lighting upgrades, installation of occupancy sensors in common areas, expansion of the

central chilled water and steam systems to eliminate stand-alone chillers and boilers, sub-metering of buildings for electricity and steam, and energy/heat recovery in mechanical upgrades.

One of the most significant environmental improvements Pitt has made is the commissioning of a new steam plant that will accommodate the Oakland facilitates of both the University of Pittsburgh and the University of Pittsburgh Medical Center (UPMC). The new plant will include six state-of-the-art, ultra-low emission natural gas boilers, with oil backup. The University estimates that carbon dioxide (CO_2) emissions resulting from steam production will be reduced by 46% once steam production moves from the Bellefield Steam Plant (currently shared with Carnegie Mellon University, the Carnegie Museums, and other Oakland institutions) to their new steam plant. The plant will also significantly reduce NO_X emissions, as the new plant is permitted to operate below nine parts per million. University of Pittsburgh is the only university in the Country to have a plant permitted at this ultra-low NO_X limit.

While the University of Pittsburgh encourages energy conservation, there is not an official policy to do so. A comprehensive building automation system has been installed and controls many University buildings to better manage energy usage. Combined with other energy conservation initiatives, the automation system has resulted in cost avoidance of over $21 million in energy costs over the past decade, which has allowed the University's energy expenditures to remain relatively stable despite rising utility costs and system expansion. While research buildings can be more difficult to manage than traditional academic buildings, Pitt's goal is to implement automation systems in 85% of its building square footage. The University does not currently purchase renewable energy or carbon offset credits.

Recycling and Waste

The University of Pittsburgh's recycling program has been improving annually. Pitt currently recycles construction waste and is developing specifications that will require outside contractors to recycle construction waste as well. The University also has a resale warehouse that decreases the amount of usable goods sent to landfills. In addition, landscaping waste is composted. Overall waste volume is reduced by the use of compacters across the campus, and some recycling of cooking oils occurs.

Greenhouse Gas Inventory

While the University has not completed a greenhouse gas inventory, a comprehensive energy audit was completed in 2001. That study identified $6 million of "low hanging fruit" energy conservation projects that had a five-year or less payback period. University of Pittsburgh has implemented these projects and has been successful in reducing energy usage and costs. Although the school does not have a defined schedule for completing energy audits, it is in the process of developing a model for continual auditing of energy consumption. The model includes significant investment in steam and electric metering systems to assess real-time energy usage for each building.

Green Buildings and Renovations

The University of Pittsburgh has one LEED certified building, the McGowan Institute, which is LEED-NC, Gold. Pitt pursues LEED certification on a project by project basis, but has not adopted an overall commitment to LEED certification for all buildings. However, many sustainable standards have been incorporated into their professional design standards, which are designated in the University of Pittsburgh design manual with a green leaf symbol.

Most building projects moving forward are primarily renovations, many of which are in research facilities, so even pursuing Energy Star certifications for these buildings can be difficult. The forthcoming renovation of Benedum Hall will be LEED certified, as will the Mascaro Sustainability Initiative (MSI) addition to Benedum Hall. Pitt is also interested in pursuing LEED-EB for their Sennott Square building.

In terms of green roofs, the addition to Falk School will include a green roof and the MSI addition might also. A new University of Pittsburgh acquisition, the University Club, is currently being renovated and the school is salvaging and recycling as much material as possible.

University of Pittsburgh has also undertaken a program to increase green space and plant low-maintenance groundcover on hillsides to reduce mowing. The school has also planted additional trees across campus.

Transportation

The University has been moderately successful in encouraging carpooling. Incentives include reduced price parking permits for carpools and rides home if a carpool leaves before one of its members is ready. These carpooling initiatives have been more successful with staff and faculty than with students. In addition, as discussed in the "Transportation" section, Pitt subsidizes public transportation for its students, staff, and faculty, who receive University of Pittsburgh identification cards. The University also offers shuttles for University of Pittsburgh affiliates. The University has not taken any steps to green its vehicle fleet, maintenance vehicles, and/or motor pool.

Student Organizations

The University of Pittsburgh has an environmental organization, Free the Planet, an Environmental Committee of Student Government, and a chapter of Engineers for a Sustainable World.

EXISTING HIGHER EDUCATION CLIMATE ACTIVITY CONCLUSION

The above summaries are an impressive compilation of the hard work universities and colleges in Pittsburgh are performing to achieve environmental benefits and cost savings. However, the recommendations included in this document are a reminder that there are still many steps to be taken towards reducing greenhouse gas emissions in Pittsburgh higher education institutions. An overarching goal of the Pittsburgh Higher Education Climate Coalition will be to serve as a body for bringing recognition to Pittsburgh's institutions of higher education, while providing a forum for the schools to share information, and encourage and inspire one another to greater environmental sustainability.

Photo: Maggie Chutz

Appendix A

Recommendations from Community Visioning Sessions

PITTSBURGH CLIMATE INITIATIVE COMMUNITY VISIONING SESSIONS

In 2007, the Pittsburgh Climate Initiative held a variety of community visioning sessions in neighborhoods around the City of Pittsburgh. The objective of these meetings was to inform Pittsburghers about the harmful effects of greenhouse gases and to hear citizens' suggestions about how Pittsburgh's government, residents, businesses, and higher education institutions could take action to lessen the impact on our local economy and human wellbeing. The neighborhoods, dates, and locations of these Pittsburgh Climate Initiative community visioning sessions are summarized in Table 8.

Table 8: PITTSBURGH COMMUNITY CLIMATE MEETINGS

PITTSBURGH NEIGHBORHOOD	DATE	LOCATION
Brookline	September 12	St. Mark's Evangelical Lutheran Church
Downtown	September 11	Trinity Cathedral
East Liberty / Highland Park	August 16	Union Project
Greenfield	September 6	Magee Recreation Center
Mount Washington	August 15	Sullivan Hall, St. Mary on the Mount
North Side	September 4	Allegheny Unitarian Universalist Church
South Side	August 14	Brashear Center
Squirrel Hill	September 5	Wightman School

Recommendations from 2007 Community Visioning Sessions

The following list includes every recommendation made by community members who attended a community visioning session. Recommendations marked with an asterisk (*) indicate activities that the City of Pittsburgh or other organizations within the City of have already fully undertaken as of June 2008.

Energy Recommendations

- Offer more incentives and education programs for residents on sustainable energy projects.
- Improve education on the importance of HVAC maintenance.
- Teach about conservation in all aspects of school (e.g., gym, art, science, etc.).
- Use the Mayor of Pittsburgh's 311 number (or a different phone number) as a resource to call for questions about environmental issues.
- Provide education/tools for businesses/organizations (e.g., subsidized energy audits by City of Pittsburgh Sustainability Office).
- Create a group of stakeholders who should be involved in implementing climate protection activities.
- Get youth involved in implementing the *Pittsburgh Climate Action Plan.*
- Develop an energy resource guide for City of Pittsburgh residents.
- Create a sustainability page on the City of Pittsburgh website.*
- Create an entire Office of Sustainability in Pittsburgh City government.
- Hire a City of Pittsburgh Sustainability Coordinator.
- Shutoff faxes, computers, and other electronic equipment at the City-County building at the end of the day.
- Install lighting occupancy sensors in all City of Pittsburgh buildings.
- Upgrade City buildings' lighting using an Energy Service Company (ESCO).

- Install occupancy sensors in City of Pittsburgh-owned community buildings.
- Offer tax abatement, matching funds, or other financial incentives to improve residential and/or commercial energy efficiency.
- Provide reimbursements for low income families for energy efficiency improvements.
- Provide incentives for landlords who make energy improvements, but do not reap benefits because tenants pay utility bills.
- Mandate that tax-exempt institutions meet the same energy efficiency and/or green standards set for City of Pittsburgh buildings.
- Provide incentives for nonprofit organizations to implement energy efficiency improvements (e.g., perhaps direct funding from City, as tax-incentives do not help them).
- Replace outdated building codes that slow the process for home improvements.
- Adopt a city-wide renewable energy portfolio standard.
- Supplement the Governor's energy independence initiative locally.
- Require LEED certification for all new buildings that are publicly funded.
- Provide incentives for solar installation.
- Install solar panels on City of Pittsburgh buildings.
- Install solar collectors on large buildings.
- Provide incentives to update old buildings.
- Mandate that homeowners who are approved for a mortgage must attend a class on energy efficiency.
- Provide better bank loan rates for energy efficiency improvements.
- Ban incandescent lights in city, state, and/or country.
- Create a sense of competition regarding energy efficiency for commercial and residential sectors.
- Require "big box" stores to follow green building principles.
- Provide assistance to small businesses in making energy improvements.
- Coordinate collective energy purchasing for small businesses.
- City should lobby for better energy policies to provide funding for energy efficiency.
- Build a green casino and a green arena.
- Have Planning Commission adopt green policies.*
- Adopt more efficient HVAC systems.
- Adopt a sliding scale for electricity costs (e.g., net metering).
- Make electricity more expensive after a threshold amount.
- Promote wind power.
- Cleanup the existing power plants.
- Explore carbon capture technology for power plants.
- Increase nuclear power.
- Explore benefits and downfalls of coal gasification.
- Install wind turbines on ridges, bridges, and in the water.
- Port of Pittsburgh Commission is trying to raise money to improve locks and dams; can we couple this with a hydro power project?
- Provide cleaner municipal tap water to eliminate the need for bottled water.
- Determine whether park fountains and drinking fountains need to run all the time.
- Look at what other cities are doing to get ideas for other climate actions and improvements.
- Increase green workforce by working with unions or trade schools to train workers to use new technology.
- Provide incentives for restaurants to participate in a municipal biogas program.
- Involve public schools in this planning.
- Install more efficient lighting at sports fields.
- Use a search engine with a black screen (as opposed to a white screen, like Google, which uses more energy).
- Participate in EPA's "Change a Light Day." *
- Always purchase Energy Star certified appliances and other products.
- Install LED streetlights/traffic lights. *
- Maintain current streetlights (malfunctioning photocells keep streetlights on all the time).
- Inventory streetlights to determine if the City could use fewer.
- Ensure sports field lights are not on when no one is playing.
- Establish solar arrays on all City buildings.
- Create City of Pittsburgh Planning Department guidelines for solar/wind.
- Explore cogeneration as a more efficient use of energy and heating.
- Involve the Allegheny County; look at regional scale.
- Use LED lights powered by solar panels.
- Encourage people to attend public hearings.
- Establish State mandates that energy efficiency improvements will not result in an increased property assessment tax (e.g., for 5 years; grandfather this exemption to the new owner if building is sold within 5 years).
- Explore the Ventura County, California, model where local utility companies subsidize compact fluorescent light bulbs.
- Get Duquesne Light to put boxes on specific appliances so you can see how much electricity they are using; shut those items off during peak hours.
- Make it impossible for window companies to manufacture and sell the cheap windows; make it mandatory to have high efficiency windows.
- Install solar powered security lights (e.g., at City parks).
- Increase urban farming or urban forestry.
- Increase number of green roofs.
- Install rubber sidewalks *(www.rd.com/content/best-boulevard-bounce-rubber-sidewalks).*
- Do not install more asphalt parking lots.
- Promote green space.
- Preserve and plant trees in the City.
- Have greater regulation of utility company tree removal.

- Knock down dilapidated houses and give lots to neighbors for yards with the stipulation they must be kept as green space.
- Grow bio-energy plants.
- Grow plants that specifically sequester carbon.
- Turn abandoned parking lots into green spaces.

Transportation Recommendations

- Increase sustainability education, starting with K-12.
- Educate a generation of people, so all they know is to "do the right thing" and they can influence their parents.
- Create educational campaigns for citizens.
- Reroute traditional "hub and spoke" Port Authority routing.
- Avoid half-full Express Flyers heading to the suburbs, while other patrons have to wait 0.5 to 1 hour for a bus to get home within the City.
- Establish more buses, routes, and times.
- Market the bus better; post the routes and times at all bus stops.
- Expand mass transit to fringe-city residents.
- Develop rapid transit to the East.
- Provide operational funding for mass transit.
- Hire an overall planner for county and region transportation.
- Revisit mass transit routes for efficiency/logic.
- Restore old trolley system.
- Install light rail or Maglev system, which could connect to other cities.
- Allocate funding for bike lanes on busways and all new roads.
- Market Pittsburgh as a "bike city"; get bike manufacturers involved.
- Increase bike racks on buses.
- Provide city-wide bike rentals, so you do not have to take it back to the same place you rented it from.
- Require parking lot owners to provide bike racks.
- Provide shower and locker facilities for people who bike in to work.
- Establish a City bike and pedestrian manager. *
- Add more pedestrian walkways and bridges.
- Turn alleyways into bike paths.
- Install bike elevators, which are similar to ski lifts, so cyclists do not have to push bikes up steep hills.
- Create community competitions with incentives and rewards.
- Establish an incentive program like Giant Eagle's Fuel Perks that offers a discount for public transit.
- Encourage employers to offer refunds to employees for public transit fees.
- Offer parking incentives for alternative fuel vehicles (either hybrids or high efficiency).
- Require City to use as high of a blend of biofuels as possible.
- Use biodiesel for public transit.
- Provide an HOV exemption for alternative fuel vehicles and hybrids.
- Require all gas stations in the City to sell biofuels.
- List locations of biofuel stations on City website.
- Produce an alternative fuel map.
- Research the best fuels for decreasing carbon emissions.
- Provide incentives to get engines older than 1993 off the roads.
- Require recreational boats to meet low emission and/or alternative fuel standards.
- Look for multiple options/analysis of cost-benefit of alternative fuels.
- Include biofuel use as a requirement for companies who want to contract with the City — not just construction work, but any job that requires the use of fuel.
- Make Zipcars available for rental. *
- Provide better promotion/education of Zipcar.
- Make all Zipcars hybrids.
- Develop anti-idling laws. *
- Tax people who do not carpool into the City.
- Allow/encourage telecommuting and ridesharing (all employers).
- Provide consistent city-wide, day-long wireless internet access so people can work from where they are.
- Hold a competition for our colleges/universities to develop new transportation alternatives.
- Provide tax incentives for purchase of hybrid and alternative fuel vehicles.
- Provide incentives for alternative fuel businesses.
- Provide tax incentives for businesses whose employees bike to work.
- Provide plug-ins for electric cars, like parking meters, at businesses.
- Install solar panels on business awnings to charge meters for plug-in of electric cars.
- Electric hookups for diesel vehicles to eliminate idling.
- Establish mandatory emission off-setting for the municipal fleet.
- Create an emissions aggregation program.
- Develop a travel offset program similar to Washington D.C.'s for visitors to Pittsburgh.
- Utilize congestion fees like London and New York City.
- Mandate offsetting for suburban commuters driving in.
- Create a fee for use of the HOV lane as a single passenger — the money could support public transportation; rates could vary depending on congestion; maybe use EZ Pass.
- Offer priority parking for hybrids in parking authority garages.
- Improve bike trails (especially through the Strip and Lawrenceville).
- Improve land use; stop sprawl; create zoning that makes it easier for people to use transit.
- Mandate that the City buy the smallest/most fuel efficient cars available.
- Create a small business education partnership/network to

share information on transportation programs and incentives.
- Streamline the Pennsylvania Department of Transportation (PennDOT).
- Install solar panels on transit systems.
- Establish a maximum number of parking spaces in City.
- Reduce the number of "No Turn on Red" signs.
- Coordinate street signals to eliminate stopping at every light and idling.
- Create traffic signal priority for buses in busy areas.
- Reduce left turns for city fleet (UPS did this and saved a lot of fuel).
- Develop/enforce anti-idling laws.

Waste Recommendations

- Expand the types of items collected curbside; include catalogues, cardboard, etc. *
- Encourage litter clean-ups to separate out recyclables.
- Expand hours and locations for city drop-off recycling.
- Enforce recycling laws for all Pittsburgh entities, including residents, business, universities, and apartment buildings.
- Guarantee that haulers do not landfill recyclables.
- Encourage retailers to buy products with recycled content.
- Instate a bottle bill.
- Provide incentives for businesses to recycle.
- Get PNC Park, Heinz Field, and other large venues to recycle *; engage sports teams.
- Make recycling available at all community fairs and summer festivals.
- Offer Abitibi Retriever Paper Recycling in Pittsburgh. *
- Adopt the European Model of Recycling — nine different categories of recycling and easy to access drop-off sites (e.g., on each block) instead of curbside pickup.
- Recycle oil, antifreeze, and tires.
- Hard to recycle items/household hazardous waste: Better publicity on how to dispose of household hazardous waste and hard to recycle items; hold waste collections that are not on Saturdays; have regular times you know you can take your waste to drop-off locations.
- Create a City-sponsored consumer education guide about where to buy reusable and recycled products; could be combined with the city recycling guide.
- Compost leaves the City collects from streets.
- Compost Christmas trees. *
- Process organic waste with worms.
- Compost waste from restaurants and landscaping, then sell to landscapers.
- Provide free bins and education for residents/businesses to compost.
- Provide recycling bins at City parks and in business districts.
- Install garbage cans like those on Mt. Washington that have a separate top section for recyclables throughout the city.
- Shopping bags: grocery stores should give away canvas bags, or sell them cheaply, charge a fee for plastic bags; citizens need to recycle plastic bags.
- Eliminate the use of Styrofoam.
- Encourage events that highlight the reuse of items, such as the Construction Junction Salvage Arts Festival.
- Provide education, starting in pre-school, on all aspects of sustainability.
- Make manufacturers use less packaging.
- Use more local foods.
- Explore life cycle analysis.
- Improve labeling of goods.
- Use towels at gyms versus paper towels.
- Ban water bottles (like San Francisco).
- Harvest landfill gas.
- Establish resource recovery facility.
- Implement a zero-waste sorter.
- Establish a pay-as-you-throw garbage rate.
- Identify waste materials to reconvert to fuel.
- Collect used oil from restaurants for biofuels.
- Support second-hand stores.
- Encourage use of reusable containers at restaurants.
- Educate consumers.
- Collect lint from laundromats (just an example of the little things that can add up).
- Can the City use the fallen trees in parks, instead of cutting up for mulch?
- Make sure colleges and universities reuse/recycle demolition waste.
- Get colleges and universities to collect student discards from end of the year move-out. Either donate to disadvantaged or store for incoming students in Fall.
- Create market for used and recycled goods.
- Encourage Freecycle, an internet group to list items you want to give away for free to someone who can use them.
- Install Big Belly trash cans.

Miscellaneous Recommendations

- Install more pervious parking lots.
- Construct more buildings like the proposed Phipps Conservatory and Botanical Garden education building, which is pursuing the Living Building Challenge.
- Get the politicians to make sustainability part of their campaigns.
- Educate Pittsburghers about climate change and what they can do about it.
- Create better knowledge transfer between universities and City government (and vice versa).
- Create better public relations between City and citizens.
- Create jobs through energy efficiency.
- Establish stricter compliance for storm and sanitary sewer infrastructure.
- Encourage the reuse of rainwater wherever possible.

Appendix B

Existing Climate-Related Organizations In Pittsburgh

EXISTING PITTSBURGH ORGANIZATIONS ADDRESSING CLIMATE CHANGE

The following is a partial listing of existing Pittsburgh organizations that are addressing climate change with a variety of activities. It is the intention of the Pittsburgh Climate Initiative to continue updating this list as the number of climate action recommendations implemented within the City increase.

10,000 Friends of Pennsylvania

10,000 Friends of Pennsylvania is an alliance of organizations and individuals dedicated to land use policies and actions that will strengthen Pennsylvania's communities, protect environmental quality, conserve fiscal resources, and preserve rural and heritage resources. The organization provides education and research on policies that support their goals to:

- Revitalize existing communities and business districts;
- Strengthen local, regional, and Commonwealth land use planning and consistency of implementation through legislation, education, and incentives;
- Encourage future development near existing infrastructure;
- Reduce traffic congestion and air and water pollution;
- Provide housing for people of all ages and incomes in our communities;
- Protect historic, natural, agricultural, and recreation areas; and
- Reduce land and resource consumption.

Contact:
Grant Ervin, Pittsburgh Policy Director
425 Sixth Avenue, Suite 1740
Regional Enterprise Tower
Pittsburgh, PA 15219
(412) 471-3727
ervin@10000friends.org
www.10000friends.org

Allegheny CleanWays

PA CleanWays' mission is to eliminate illegal dumping and littering in Pennsylvania. In order to achieve this goal, the organization organizes cleanups in local communities, provides public education on the environmental costs of littering and illegal dumping, and undertakes beautification projects on former dumpsites.

Contact:
Mary Wilson, Executive Director
33 Terminal Way
Pittsburgh, PA 15219
(412) 381-1301
pacw_ac@hotmail.com
www.pacleanways.org/allegheny

Allegheny Land Trust (ALT)

Allegheny Land Trust aims to work with local citizens to protect land in and adjacent to Allegheny County that contributes to the scenic, recreational, educational, and environmental wealth of our communities. In cooperation with community groups, ALT builds and maintains hiking trails at its wildlife preserves to enable people of all ages and backgrounds to learn about the wild and enjoy a sense of wilderness close to home.

Contact:
Roy Kraynyk, Executive Director
The Car Barn Shops
409 Broad Street, Suite 206A
Sewickley, PA 15143
(412) 741-2750
rkraynyk@alleghenylandtrust.org
www.alleghenylandtrust.org

Audubon Society of Western Pennsylvania (ASWP)

The mission of ASWP is to inspire and educate the people of Southwestern Pennsylvania to be respectful and responsible stewards of the natural world. The ASWP works toward this mission by providing year-round nature and environmental education programming to students, children, families, adults, and teachers. The organization also manages two nature reserves in Southwestern Pennsylvania.

Contact:
614 Dorseyville Road
Pittsburgh, PA 15238
(412) 963-6100
www.aswp.org

Affordable Comfort, Inc. (ACI)

Affordable Comfort seeks to advance the performance of residential buildings through unbiased education, so that every family has a home that is energy efficient, durable, comfortable, healthy, and safe, and every community has access to and values skilled home performance services.

Contact:
Helen Perrine, Executive Director
32 Church Street, Suite 204
Waynesburg, PA 15370
(724) 627-5200
hperrine@affordablecomfort.org
www.affordablecomfort.org

Bike Pittsburgh

Bike Pittsburgh advocates for the use of bicycles as a clean, green, and healthy alternative form of transportation. They advocate for a change in the infrastructure of the City of Pittsburgh to allow for the acceptance and safety of bicyclists. The organization acts as an educational resource and provides a variety of useful information such as a climate change fact sheet entitled "The Bicycle - Seven Wonders for a Cool Planet." Through education programs, Bike Pittsburgh encourages the visibility of the environmental benefits of bicycling, including the reduction of carbon dioxide emissions attributable to transportation in the City of Pittsburgh.

Contact:
Scott Bricker, Executive Director
33 Terminal Way
Pittsburgh, PA 15219
(412) 325-4334
info@bike-pgh.org
www.bike-pgh.org

Citizens for Pennsylvania's Future (PennFuture)

PennFuture works on policy advocacy to replace outdated, dirty sources of power with clean, renewable, and local electricity. This includes fighting for a reduction in factory farm and vehicular pollution through such projects as the Pennsylvania Clean Vehicles Program. PennFuture also provides legal assistance for enforcing government policy changes to mitigate pollution. A notable example is their advocacy for the passage of a new law that requires the state's electricity providers to supply increasing amounts of renewable energy to their customers. In utility cases, PennFuture has won $80 million to support clean, renewable electricity; they also won a federal court lawsuit to clean up Pennsylvania's cars and trucks and reduce smog. Since 2007, all of PennFuture's operations and activities have been climate neutral.

Contact:
Sharon Pillar, Western Pennsylvania
Global Warming Outreach Coordinator
425 6th Ave., Suite 2770
Pittsburgh, PA 15219
(412) 258-6680
pillar@pennfuture.org
www.pennfuture.org

Clean Water Action

Clean Water Action is a national organization of diverse people and groups working together to assure supplies of clean, safe, and affordable water for all Americans, now and in the future; prevent health-threatening pollution at its source; build an economy based on environmentally safe jobs and businesses; and empower people to take charge of their environmental future. To reach these goals, Clean Water Action organizes grassroots coalitions and campaigns to solve environmental and community problems, and works to elect progressive and pro-environment candidates at every level of government.

Contact:
Myron Arnowitt, Pennsylvania State Director
100 Fifth Avenue, #1108
Pittsburgh, PA 15222
(412) 765-3053
pittcwa@cleanwater.org
www.cleanwater.org

Conservation Consultants Inc. (CCI)

CCI focuses on energy conservation education in Western Pennsylvania. CCI's Energy Conservation Program includes residential energy audits, which serve to advise residents on how to reduce their energy consumption; CCI completes 5,000 audits per year. CCI built and operates the CCI Center, which houses several environmental nonprofit organizations on Pittsburgh's South Side. The CCI Center is certified Gold under the LEED for Existing Buildings standard, and is used as a tool to educate the public about green buildings and technologies. In 2008, CCI received the Governor's Environmental Excellence Award for their educational programs with high school and college students focusing on renewable energy technologies.

Contact:
Ann Gerace, Executive Director
64 South 14th Street
Pittsburgh, PA 15203-1548
(412) 431-4449
anng@ccicenter.org
www.ccicenter.org

Construction Junction

Construction Junction is committed to environmental stewardship in waste prevention through the practice of reuse. Construction Junction accepts donations of building materials, which it then resells. This practice reduces the burden on landfills and helps conserve natural resources by reducing the energy use and pollution associated with manufacturing new materials. Construction Junction also offers recycling services for Freon appliances, non-Freon appliances, and scrap metal; it also serves as a drop-off station for the City of Pittsburgh's recycling program.

Contact:
Mike Gable, Executive Director
214 North Lexington Street
Pittsburgh, PA 15208
(412) 243-5025
mgable@constructionjunction.org
www.constructionjunction.org

East Liberty Development, Inc. (ELDI)

ELDI is a nonprofit community development corporation that focuses on the East Liberty neighborhood of Pittsburgh. In fostering the revitalization of East Liberty, ELDI has implemented a multi-year design and redevelopment plan, which includes Mellon's Orchard South, a LEED for Neighborhood Development pilot project. ELDI is also developing a green corridor and advocating for bike lanes on Liberty Avenue.

Contact:
Nathan Wildfire, Sustainable Policy Coordinator
Liberty Bank Building, Suite 201
6101 Penn Avenue
Pittsburgh, PA 15206-3924
(412) 361-8061
nathan.wildfire@eastliberty.org
www.eastliberty.org

Friends of the Pittsburgh Urban Forest

Friends of the Pittsburgh Urban Forest is an environmental nonprofit organization dedicated to enhancing the City's vitality and to being part of the solution to global warming by restoring and protecting City trees. Current projects for Friends of the Pittsburgh Urban Forest include tree tenders, a tree care course, an Arbor Day celebration, city-wide pruning, and a future tree nursery. Besides training volunteers to prune small City-owned trees, Friends provides technical support and resource materials for local schools to teach students about the important role trees play in stormwater management, cooling cities, sequestering carbon dioxide, enhancing community life, and improving air quality. By the end of 2008, Friends hopes to establish a local street tree nursery in Lawrenceville with a potential capacity of 30,000 trees.

Contact:
Danielle Crumrine, Executive Director
6101 Penn Avenue, Suite 201
Pittsburgh, PA 15206
(412) 362-6360
pittsburghurbanforest@gmail.com
www.pittsburghforest.org

Friends of the Riverfront

Friends of the Riverfront has been involved in creating nearly all of the trails along Pittsburgh's rivers. Through intense collaboration with community partners, government officials, and a diverse volunteer base, Pittsburgh's rivers and riverfronts have been transformed from industrial wastelands to international examples of environmental renewal.

Contact:
Thomas Baxter, Executive Director
33 Terminal Way
Pittsburgh, PA 15219
(412) 488-0212
friends@friendsoftheriverfront.org
www.friendsoftheriverfront.org

Green Building Alliance (GBA)

Green Building Alliance is a nonprofit organization that advances economic prosperity and human wellbeing in Western Pennsylvania by driving market demand for green buildings and green building products. In its 15th year, GBA has been a national pioneer, and continues to lead change in our region as the core green building catalysts – a desire for environmentally sound materials and minimal impact, healthy indoor environments, and financial payoff in reduced energy, water and other operating costs – cascade across every aspect of the built environment, from offices, retail stores and other commercial spaces to schools, hospitals, and homes. GBA's own offices are located in the River Walk Corporate Center, a historic warehouse that demonstrate how Pittsburgh's industrial past can be transformed into a newer, greener future. The GBA office is a demonstration location for many local, recycled, and reused green building products, which assist in reducing greenhouse gas emissions associated with transporting new products or disposing of used materials. GBA's office also features multiple energy efficiency measures that help reduce its impact on climate change.

Contact:
Rebecca Flora, Executive Director
333 East Carson Street, Suite 331
Pittsburgh, PA 15219
(412) 431-0709
info@gbapgh.org
www.gbapgh.org
www.pa-greenbuildingproducts.org

Group Against Smog and Pollution (GASP)

GASP is a nonprofit organization in Southwestern Pennsylvania that works for a healthy and sustainable environment. Founded in 1969, GASP focuses on Pittsburgh-area air quality issues with education, litigation, and policy creation. Through education, encouragement, and implementation, GASP advocates for the reduction of diesel emissions from sources such as school buses and Port Authority transit.

Contact:
Rachel Filippini, Executive Director
Wightman School Community Building
5604 Solway Street, #204
Pittsburgh, PA 15217
(412) 325-7382
gasp@gasp-pgh.org
www.gasp-pgh.org

Grow Pittsburgh

Grow Pittsburgh funds and oversees a variety of urban agriculture projects, focusing on community involvement and the production of local food. With regard to climate change, urban agriculture has a major opportunity to reduce greenhouse gas emissions by using small-scale, low energy production practices and eliminating the need for long distance, carbon-emitting transportation methods. Grow Pittsburgh's urban farming programs, such as the Edible Schoolyard, use simple farming strategies that feature low gasoline and fertilizer usage and a low carbon impact. Grow Pittsburgh also continues to incorporate green technologies like biofuel and solar power, which help increase local awareness about these opportunities.

Contact:
Miriam Manion, Executive Director
400 North Lexington St., Third Floor
Pittsburgh, PA 15208
(412) 473-2542
info@growpittsburgh.org
www.growpittsburgh.org

Growth Through Energy and Community Health (GTECH) Strategies

GTECH Strategies merges community development and principles of sustainability into a synthesized model for sustainable community development. GTECH's vision is to establish a fundamental shift in urban revitalization by bundling environmental stewardship and innovation with economic development. GTECH utilizes vacant land as a mechanism to extend the "green economy" opportunity into marginalized neighborhoods. Currently, GETECH has biofuel crop projects on 15 acres of vacant, blighted, or abandoned land in five Pittsburgh communities; these projects have the potential of producing 1,500 gallons of vegetable oil for biodiesel.

Contact:
Andrew Butcher, CEO
butcher.drew@gmail.com
www.gtechstrategies.com

Nine Mile Run Watershed Association

The mission of the Nine Mile Run Watershed Association is to ensure the restoration and protection of the Nine Mile Run watershed through citizen engagement, demonstration projects, and advocacy. At the core of this mission is the belief that people are inextricably linked with the natural environment. The choices people make, such as how to treat their lawns and gardens, what to buy, what to throw away, and what cars to drive, have a profound effect on the environment.

Contact:
Brenda Smith, Executive Director
707 South Trenton Avenue
Pittsburgh, PA 15221
(412) 371-8779
info@ninemilerun.org
www.ninemilerun.org

Pennsylvania Association for Sustainable Agriculture (PASA)

PASA works to increase the number of farms and the economic viability of existing farms in Pennsylvania by building markets for local and sustainably produced food, providing educational programs and opportunities for new farmers, and providing information and education on farmer-developed value-added products. PASA also increases consumer awareness about health and safe food through advocating, educating, and networking with hunger and food advocacy groups throughout the state.

Contact:
Greg Boulos, Western Regional Director
Western Regional Office
650 Smithfield St., Suite1160
Pittsburgh, PA 15222
(412) 697-0411
greg@pasafarming.org
www.pasafarming.org

Pennsylvania Biodiversity Partnership (PBP)

The Pennsylvania Biodiversity Partnership brings together organizations and individuals with diverse interests and backgrounds to promote the conservation of native species and their habitats. PBP members represent conservation and environmental organizations, government agencies, business and industry, scientists and academic institutions, educators, sportsmen, and private landowners. PBP's mission is to conserve biodiversity statewide by fostering communication and cooperation among everyone in Pennsylvania concerned with natural resource values. The organization educates people about the importance of biodiversity, advises state agencies and encourages them to take a leadership role in the conservation of biodiversity, promotes voluntary conservation on private lands, and advocates for both public and private biodiversity long-term conservation initiatives.

Contact:
Sue A. Thompson, President and CEO
16 Terminal Way
Pittsburgh, PA 15219
(412) 481-4100
pbpinfo@pabiodiversity.org
www.pabiodiversity.org

Pennsylvania Environmental Council (PEC)

With offices in the Southwest, Southeast, Central, Northeast, and French Creek areas of Pennsylvania, PEC uses innovation, collaboration, education, and advocacy to protect and restore the natural and built environments. PEC relies heavily on private sector, government, community, and individual partners to help them improve the quality of life for all Pennsylvanians.

Contact:
Davitt Woodwell, Vice President, Western Region
22 Terminal Way
Pittsburgh, PA 15219
(412) 481-9400
dwoodwell@pecpa.org
www.pecpa.org

Pennsylvania Resources Council (PRC)

Established in 1939, PRC is one of oldest local citizen action environmental organizations. PRC focuses on waste reduction and recycling, in addition to litter and visual blight prevention, watershed awareness, and composting. PRC has offices in Pittsburgh and Delaware County.

Contact:
David Mazza, Executive Director
64 South 14th Street
Pittsburgh, PA 15203
(412) 488-7490
davem@ccicenter.org
www.prc.org

Pittsburgh Downtown Partnership

The Pittsburgh Downtown Partnership strives to make Downtown the premier location to live, work, shop, dine, play, and visit. The organization works toward this goal by cleaning public spaces, providing safety liaison assistance, supporting improvements and marketing Downtown, and by forming partnerships with businesses, nonprofits, and property owners.

Contact:
Michael M. Edwards, President and CEO
Ewart Building, First Floor
925 Liberty Avenue
Pittsburgh, Pennsylvania 15222
(412) 566-4190
medwards@downtownpittsburgh.com
www.downtownpittsburgh.com

Pittsburgh History and Landmarks Foundation (PHLF)

PHLF is a grassroots, nonprofit, historic preservation organization, which has shown that architectural landmarks and historic neighborhoods are community assets and that historic preservation can be a catalyst for urban renewal. By exploring and discovering local history and architecture, people are more likely to preserve older buildings and thoughtfully consider the impact of new building proposals.Through student/teacher workshops, tours, exhibits, and a variety of educational programs, PHLF encourages people to notice and appreciate historic buildings, parks, public spaces, bridges, and streets that make up the City of Pittsburgh and its neighborhoods, composing the special character of the Pittsburgh region.

Contact:
Louise Sturgess, Executive Director
100 West Station Square Drive, Suite 450
Pittsburgh, Pennsylvania 15219
(412) 471-5808
louise@phlf.org
www.phlf.org

Pittsburgh Parks Conservancy

The Pittsburgh Parks Conservancy, in partnership with the City of Pittsburgh, works to restore, renew, revitalize, and preserve Pittsburgh's four large parks: Frick, Highland, Riverview and Schenley. Restoration efforts are conducted with environmental sensitivity and respect for the parks' historic landscape design and the recreational needs of modern users.

Contact:
Meg Cheever, President and CEO
2000 Technology Drive, Suite 300
Pittsburgh, PA 15219
(412) 682-7275
info@pittsburghparks.org
www.pittsburghparks.org

The Pittsburgh Project

The Pittsburgh Project has served Pittsburgh's most vulnerable residents for 23 years. The organization operates a progressive series of afterschool programs for young urban students; deploys over 2,500 people annually to perform free home repairs for Pittsburgh's in-need elderly homeowners; outfits college students for urban service and leadership; and spearheads economic development and anti-violence efforts in Pittsburgh.

Contact:
Saleem Ghubril, Executive Director
2801 North Charles Street
Pittsburgh, PA 15214
(412) 321-1678
sghubril@pittsburghproject.org
www.pittsburghproject.org

Pittsburgh Region Clean Cities

Clean Cities, a program of the U.S. Department of Energy, aims to advance the energy, economic, and environmental security of the United States by supporting local decisions that adopt practices to reduce the use of petroleum in the transportation sector. The goal of this national program is to reduce petroleum consumption by 2.5 billion gallons by 2020 through greater use of mass transit, replacement of petroleum for transportation with alternative fuels, and the use of fuel-efficient vehicles.

Contact:
Nathaniel Doyno
214 North Lexington Street
Pittsburgh, PA 15208
(412) 418-4594
coordinator@cleancities-pittsburgh.org
www.cleancities-pittsburgh.org

Rachel Carson Homestead

The Rachel Carson Homestead Association preserves, restores, and interprets Rachel Carson's birthplace and childhood home to the public. The organization also designs and implements education programs and resources in keeping with Carson's environmental ethic, particularly to live in harmony with nature, preserve and learn from natural places, minimize the effect of manmade chemicals on the natural systems of the world, and consider the implications of human actions on the global web of life.

Contact:
Patricia M. DeMarco, Executive Director
613 Marion Avenue, Box 46
Springdale, PA 15144
(724) 274-5459
pmdemarco@rachelcarsonhomestead.org
www.rachelcarsonhomestead.org

RiverQuest

RiverQuest is a nonprofit educational organization that operates a river learning center for students, teachers, and the Southwestern Pennsylvania community. RiverQuest's educational philosophy is "Tell me, I'll forget; Show me, I might remember; Involve me, I'll understand." RiverQuest offers educational services in two general categories that support this philosophy. Formal education programs for students and teachers in elementary through high school provide innovative river-based experiential education programs that motivate students to learn, enhance school curricula by linking classroom theory to real world applications, improve critical thinking and cooperative learning, and instill a new understanding and appreciation for the region's waterways. Public programs and summer camps present educational and interpretive opportunities for the public to learn about and experience the natural beauty and rich history of Pittsburgh's waterways. These programs also strive to instill in the public a new understanding and appreciation of the rivers that will ultimately result in a new sense of stewardship towards them.

Contact:
Karl A. Thomas, Executive Director
1501 Reedsdale Street
The Cardello Building, Suite 2001
Pittsburgh, PA 15233
(412) 231-2712
www.riverquest.org

Sierra Club

The mission of the Sierra Club is to explore, enjoy, and protect the wild places of the earth; practice and promote the responsible use of the earth's ecosystems and resources; educate and enlist humanity to protect and restore the quality of the natural and human environment; and use all lawful means to carry out these objectives. The Allegheny County Sierra Club office focuses on educating and engaging community members in local environment issues. As part of the Cool Communities campaign, Sierra Club works with cities, counties, boroughs, and townships to decrease their global warming emissions.

Contact:
3109 Forbes Avenue, Suite 100
Pittsburgh, PA 15213
(412) 802-6161
www.alleghenysc.org

Slow Food Pittsburgh

Slow Food is an international educational organization dedicated to the revival of the kitchen and the table as centers of pleasure, culture, and community. Slow Food is dedicated to the invigoration and proliferation of regional, seasonal culinary traditions; to the stewardship of the land and ecologically sound food production; and to leading a slower and more harmonious life. Slow Food Pittsburgh offers a variety of events from simple tastings to restaurant dinners to community support events; all have an educational component.

Contact:
sfpinfo@slowfoodpgh.com
www.slowfoodpgh.com

Southwestern Pennsylvania Commission (SPC)

The Southwestern Pennsylvania Commission is the region's forum for collaboration, planning, and public decision-making. As the official Metropolitan Planning Organization (MPO) for the ten-county Southwestern Pennsylvania region (which includes the City of Pittsburgh and the counties of Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Washington, and Westmoreland), SPC is responsible for planning and prioritizing the use of all state and federal transportation funds allocated to the region, establishing regional economic development priorities, and providing a wide range of public services.

Contact:
Jim Hassinger, President and CEO
425 Sixth Avenue, Suite 2500
Pittsburgh, PA 15219
(412) 391-5590
comments@spcregion.org
www.spcregion.org

Steel City Biofuels

Steel City Biofuels is a nonprofit organization dedicated to building the awareness, policy, and infrastructure necessary for the widespread production and use of biofuels in Southwestern Pennsylvania. The organization provides education, demonstrations, research, and advocacy surrounding biofuels, working with diverse partners including farmers, schools, nonprofits, community organizations, businesses, and government.

Contact:
Nathaniel Doyno, Executive Director
214 North Lexington Street
Pittsburgh, PA 15208
(412) 418-4594
nathaniel@steelcitybiofuels.org
www.steelcitybiofuels.org

Student Conservation Association (SCA)

SCA is a national conservation force of college and high school volunteers who protect parks and restore the environment. In an effort to connect young people to the land, SCA members work every day as rangers, researchers, and educators. SCA has three Pittsburgh Region programs: the Conservation Leadership Corps, Summer Commuter Crews, and Green Cities Sustainability Corps. The Green Cities Sustainability Corps is a pilot project that uses a team of college students to assist the City of Pittsburgh in developing and implementing sustainable policies and actions.

Contact:
SCA Three Rivers
Investment Building
234 4th Ave. Suite 2100
Pittsburgh, PA 15222
(412) 325-1851
csembrat@thesca.org
www.theSCA.org

Sustainable Pittsburgh

Sustainable Pittsburgh advocates for clean and sustainable communities and businesses in the Pittsburgh Region. The organization aims to integrate economic prosperity, social equity, and environmental quality by bringing sustainable solutions to local communities and businesses. In 2007, Sustainable Pittsburgh committed to making all of its offices and conferences climate neutral.

Contact:
Court Gould, Executive Director
425 Sixth Avenue, Suite 1335
Pittsburgh, PA 15219
(412) 258-6644
cgould@sustainablepittsburgh.org
www.sustainablepittsburgh.org

TreeVitalize Pittsburgh

TreeVitalize Pittsburgh is a joint project of Allegheny County, the City of Pittsburgh, the Pennsylvania Department of Conservation & Natural Resources, and the Western Pennsylvania Conservancy. Working in partnership with community groups, nonprofit organizations, and municipal agencies, TreeVitalize will plant 20,000 trees throughout the Pittsburgh region by 2012. As of June 2008, 250 trees have been planted and an additional 750 will be planted by the end of 2008. In addition to street tree plantings, TreeVitalize Pittsburgh also enables Friends of the Pittsburgh Urban Forest to train tree tenders and provide ongoing community support.

Depending on species, age, location, and type of soil, a tree can sequester 3 to 48 pounds of CO_2 per year.[56, 57] By planting 20,000 trees, the TreeVitalize program can offset greenhouse gas emissions from the City by up to 60,000 to 960,000 pounds CO_2.

Contact:
Marijke Hecht, Director
800 Waterfront Drive
Pittsburgh, PA 15222
(412) 586-2396
mhecht@paconserve.org
www.treevitalizepgh.org

The Union Project

Through the restoration and reuse of the abandoned former Union Baptist Church, the Union Project provides a neighborhood space for artists, community builders, and people of faiths to connect, create, and celebrate. Key to meeting its mission and focusing on sustainability, the Union Project houses enterprises dedicated to place-based efforts to transform communities and their residents through economic and community development opportunities, hands-on service to cultivate investment and leadership, and the formation of constructive relationships among neighbors.

Contact:
Maria Pranzo, Executive Director
801 North Negley Ave
Pittsburgh, PA 15206
(412) 363-4550
maria@unionproject.org
www.unionproject.org

Urban Foodworks

Urban Foodworks promotes sustainable, local food systems and the social and environmental benefits that result from the relationships made between communities and their food sources. As industrial agriculture is a major contributor to carbon emissions, their work is closely tied with the mitigation of climate change. Using a team of sustainability strategists, local food promoters, and urban ecology experts, Urban Foodworks promotes renewal of the urban ecosystem through sustainable agriculture and local food production

Contact:
Megan Cook
(412) 867-0946
info@urbanfoodworks.org
www.urbanfoodworks.org

Venture Outdoors

By increasing participation in outdoor recreational activity, Venture Outdoors seeks to create a sense of community among participants and foster a better understanding of and a deeper appreciation for the environment and wilderness among Western Pennsylvania residents and visitors. As this region works hard to maintain and/or grow its population base while stimulating economic development, Western Pennsylvania's many outdoor attractions can provide a focal point of activities and pride for residents and visitors alike.

Contact:
Sean Brady, Executive Director
304 Forbes Avenue, Second Floor
Pittsburgh, PA 15222
(412) 255-0564
sbrady@ventureoutdoors.org
www.ventureoutdoors.org

[56] Sampson, Neil and Dwight Hair. (1996). "Forests and Global Change." *Forest Management Opportunities for Mitigation of Carbon Emissions.* Volume 2, Washington, 1996.
[57] Nowak, David et al. (2002). *Brooklyn's Urban Forest.* U.S. Department of Agriculture, Forest Service, Northeastern Research Station. NE-290. http://www.fs.fed.us/ne/syracuse/Pubs/Downloads/gtrne290.pdf. Accessed 6 June 2008.

Western Pennsylvania Conservancy (WPC)

The Western Pennsylvania Conservancy protects, conserves and restores land, water, and wildlife for the benefit of the region's diverse plants, animals, and ecosystems. Through science-based strategies, collaboration, leadership, and recognition of the relationship between humankind and nature, WPC achieves tangible conservation outcomes for present and future generations. WPC operates facilities across Western Pennsylvania in Pittsburgh, Union City, Blairsville, Mill Run, Middletown, Clearville, Ridgway, and Ligonier.

Contact:
800 Waterfront Drive
Pittsburgh, PA 15222
(412) 288-2777
info@paconserve.org
www.paconserve.org

Appendix C

Pittsburgh Neighborhood Organizations

As a city with 90 officially recognized neighborhoods (and several other unrecognized ones), Pittsburgh is a city of neighborhoods.[58] Many of Pittsburgh's neighborhoods have one or more community organizations that provide neighborhood services. These Pittsburgh neighborhood organizations are listed in Table 9.

Table 9: CITY OF PITTSBURGH NEIGHBORHOOD ORGANIZATIONS

CITY OF PITTSBURGH NEIGHBORHOOD	NEIGHBORHOOD ORGANIZATION	WEBSITE
Allentown	Allentown Civic Association Allentown Community Developement Corporation	www.allentownalive.org
Banksville	Banksville Civic Association Blitz on Banksville	
Beltzhoover	Beltzhoover Citizens CDC	
Bloomfield	Lower Bloomfield Unity Center Bloomfield Business Association Bloomfield-Garfield Corporation	www.shopbloomfield.com www.bloomfield-garfield.org
Brookline	South Pittsburgh Development Corporation	www.spdconline.org
City-Wide	Citizens Against Litter Community Technical Assistance Center Pittsburgh Community Reinvestment Group	www.citizensagainstlitter.org www.ctaconline.org www.prcg.org
Downtown	Pittsburgh Downtown Partnership	www.downtownpittsburgh.com
East Liberty	East Liberty Development, Inc. The Kingsley Association Mellon's Orchard Neighborhood Association	www.eastliberty.org www.kingsleyassociation.org
Friendship	Friendship Development Association	www.friendship-pgh.org
Garfield	Garfield Jubilee Association	www.garfieldjubilee.org
Greenfield	Connect Greenfield Greenfield Organization	www.connectgreenfield.org www.greenfieldorg.com
Hazelwood	Hazelwood Initiative, Inc.	www.hazelwoodhomepage.org

[58] City of Pittsburgh, Pennsylvania. "Neighborhood Map List." City of Pittsburgh Maps. http://www.city.pittsburgh.pa.us/cp/html/neighborhood_map_list.html. Accessed 19 May 2008.

Table 10: CITY OF PITTSBURGH NEIGHBORHOOD ORGANIZATIONS

CITY OF PITTSBURGH NEIGHBORHOOD	NEIGHBORHOOD ORGANIZATION	WEBSITE
Highland Park	Highland Park Community Development Corporation Highland Park Community Club	www.hpcdc.org www.highlandparkpa.com
Hill District	Dinwiddie Community Alliance Hill District Consensus Group	
Homewood	Rosedale Block Cluster, Inc.	www.rosedaleblock.org
Lawrenceville	Lawrenceville Corporation Lawrenceville United	www.lawrencevillecorp.com www.lunited.org
Morningside	Morningside Area Community Council	www.morningside-pa.org
Mount Washington	Mount Washington Community Development Corporation	www.mwcdc.org
Northside	Allegheny West Civic Council Brighton Heights Citizens Federation Brightwood Civic Group Central Northside Neighborhood Council Fineview Citizens Council Northside Chamber of Commerce Perry Hilltop Citizens Council Spring Garden Neighborhood Council Spring Hill Civic League	www.alleghenywest.info www.brightonheights.org www.centralnorthside.com www.northsidechamberofcommerce.com www.shcl.org
Oakland	Oakland Business Improvement District Oakland Community Council Oakland Planning and Development Council	www.oaklandbid.org www.oaklandplanning.org
Regent Square	Regent Square Civic Association	www.regentsquare-rsca.org
Shadyside	Shadyside Action Coalition	www.shadysideaction.org
South Side	South Side Chamber of Commerce South Side Community Council, Inc. South Side Local Development Company South Side Slopes Neighborhood Association	www.southsidechamber.org www.southsidecommunitycouncil.org www.southsidepgh.com www.southsideslopes.org
Squirrel Hill	Squirrel Hill Urban Coalition	www.shuc.org
Strip District	Neighbors in the Strip	www.neighborsinthestrip.com
Uptown	Uptown Community Action Group	www.outreach.duq.edu/uptownaction.html
West End	West Pittsburgh Partnership	www.westpittsburgh.org

Appendix D

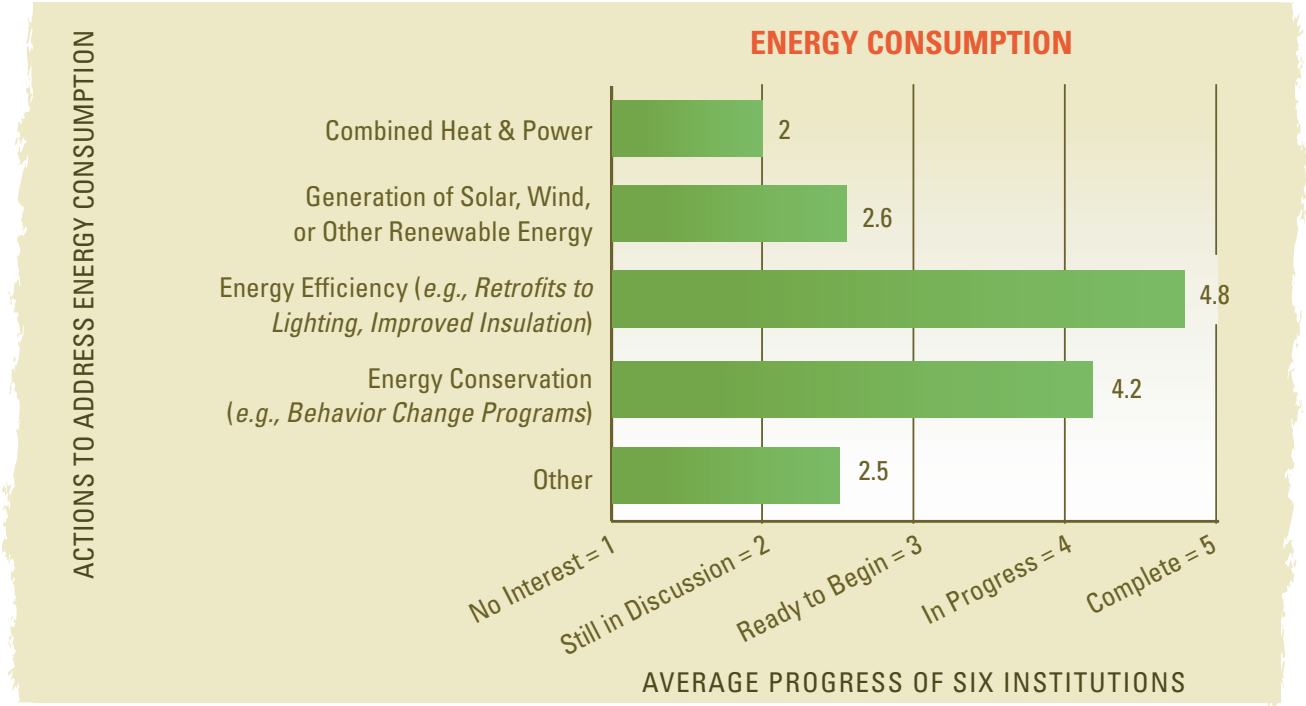
Pittsburgh Higher Education Institution Survey Results

In December 2007, representatives from Carlow University, Carnegie Mellon University, Chatham University, Duquesne University, Point Park University, and the University of Pittsburgh were invited to participate in a survey of climate protection activities at their respective institutions. The online survey allowed respondents to rank their school's commitment to climate change mitigation actions under the following categories:

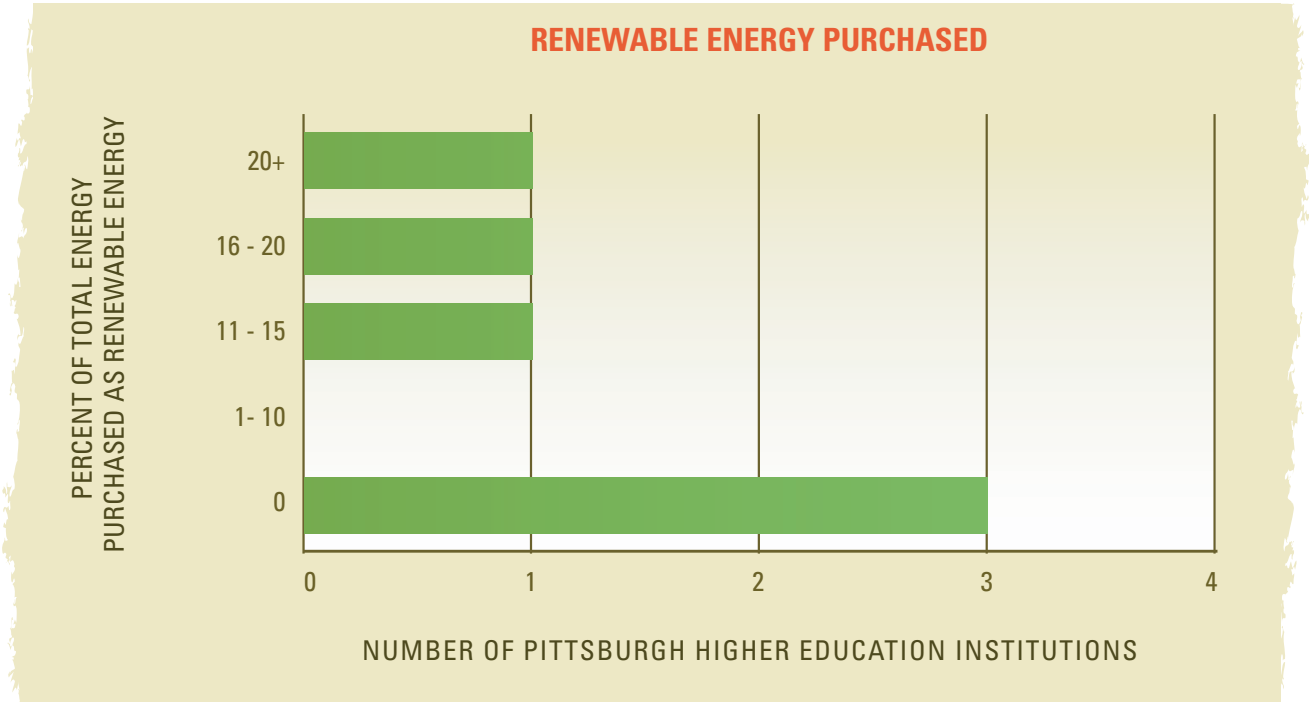
- Campus Vehicles
- Campus-Wide Initiatives
- Energy Consumption
- Green Building Practices
- Plans for Improvement
- Recycling and Waste Management
- Renewable Energy
- Student Engagement and Education
- Transportation

The survey questions and the average responses for each question are summarized below:

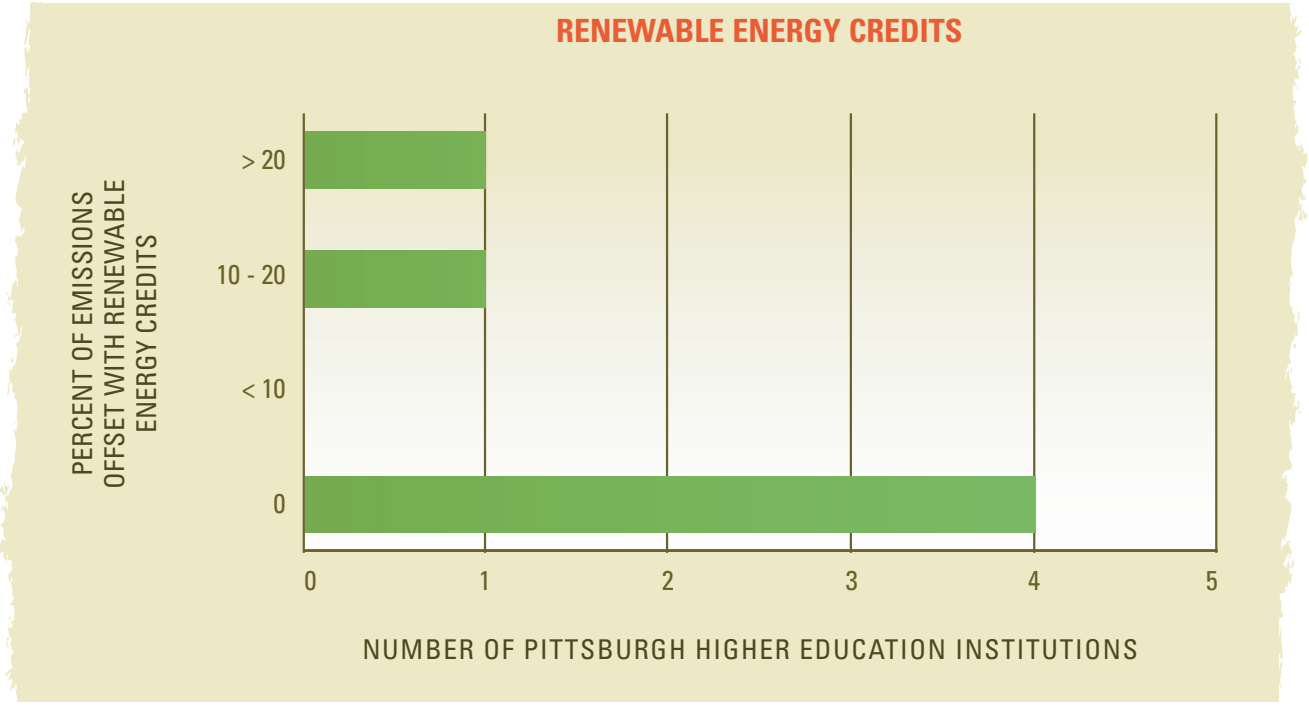
1. Has your institution engaged in any of the following to address energy use?



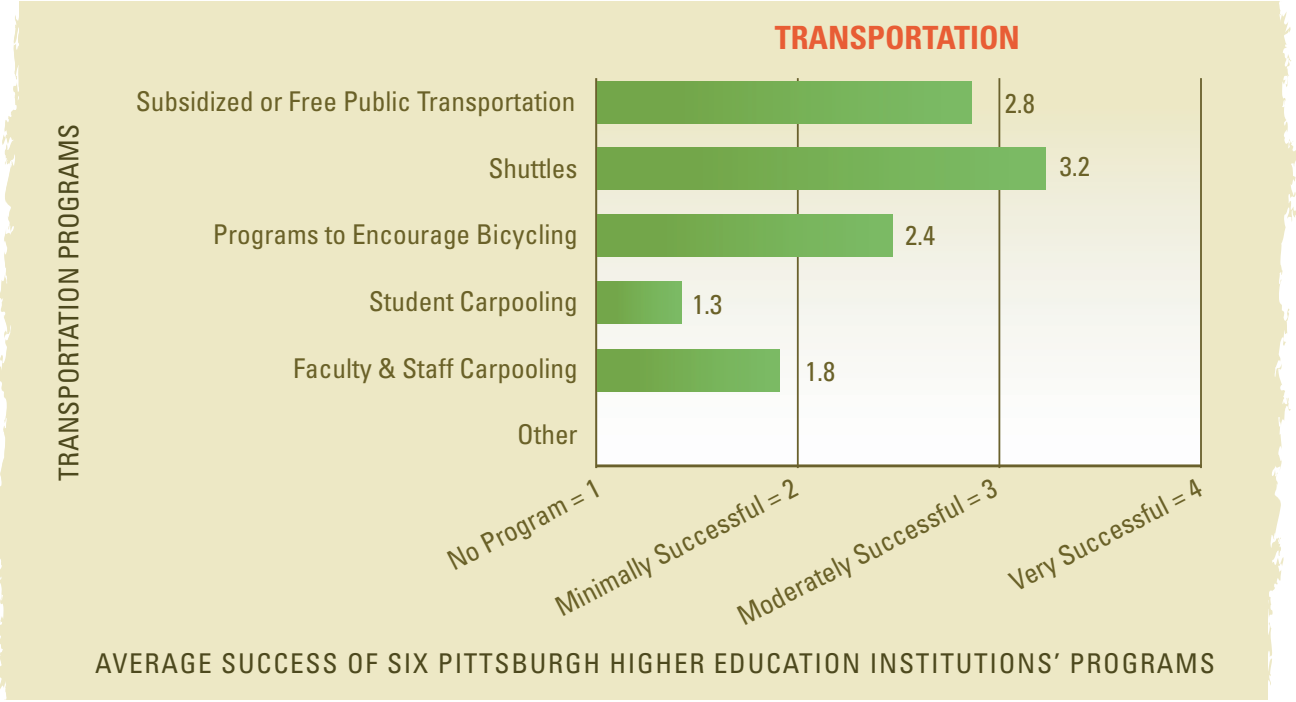
2. How much renewable energy does your institution purchase?



3. What percent of emissions does your institution offset by purchasing renewable energy credits?

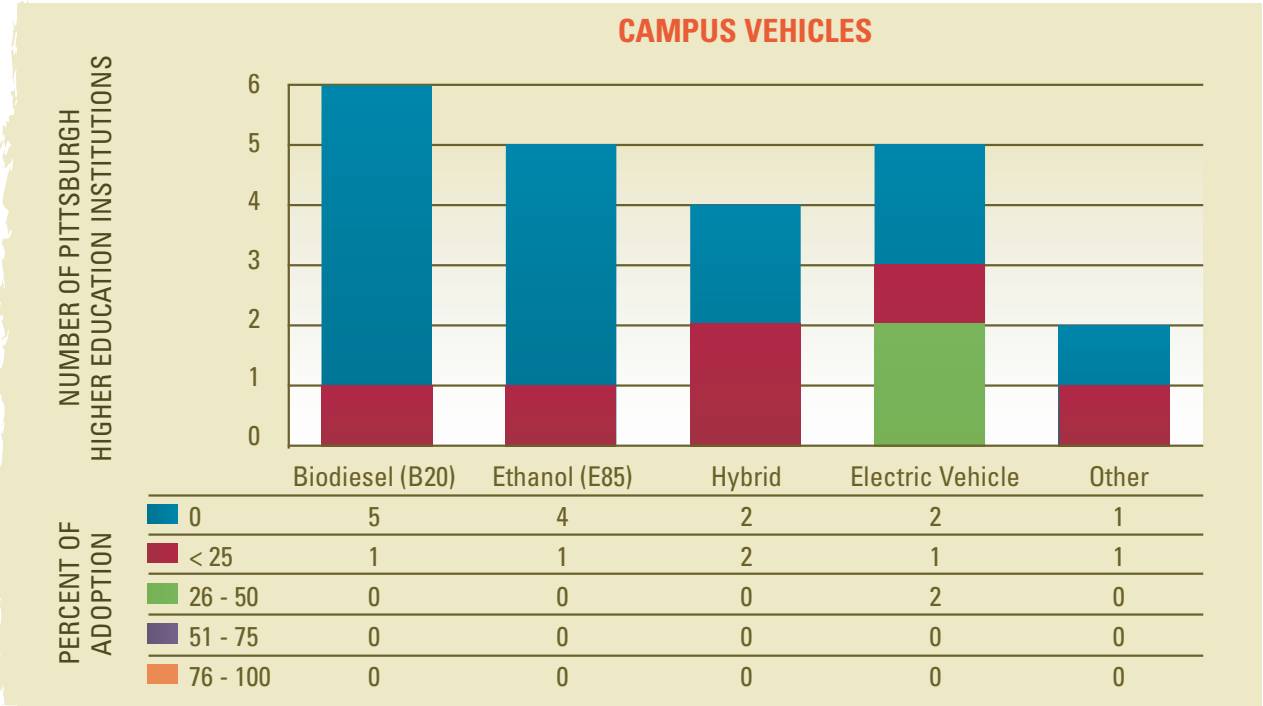


4. How successful has your institution been in gaining "buy-in" to the following transportation options?

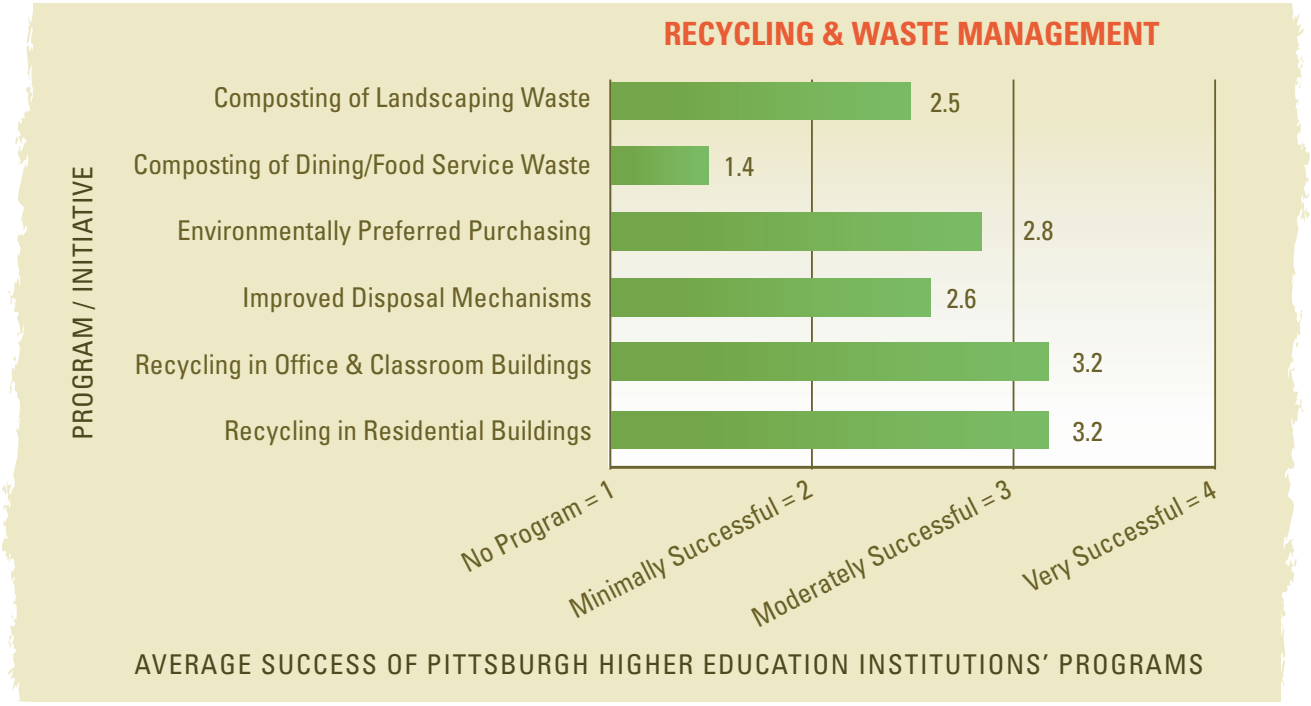


AVERAGE SUCCESS OF SIX PITTSBURGH HIGHER EDUCATION INSTITUTIONS' PROGRAMS

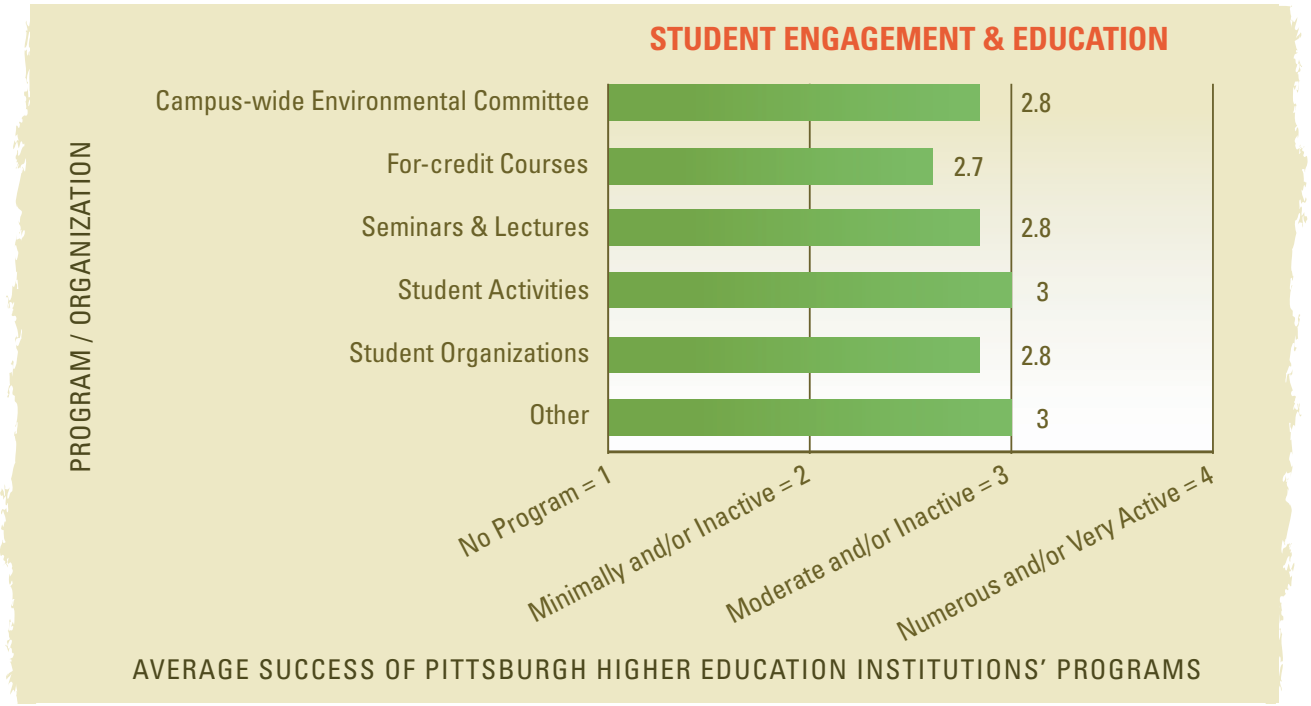
5. How successful has your institution been with the introduction of alternative fuel vehicles in your motor pool and maintenance fleets?



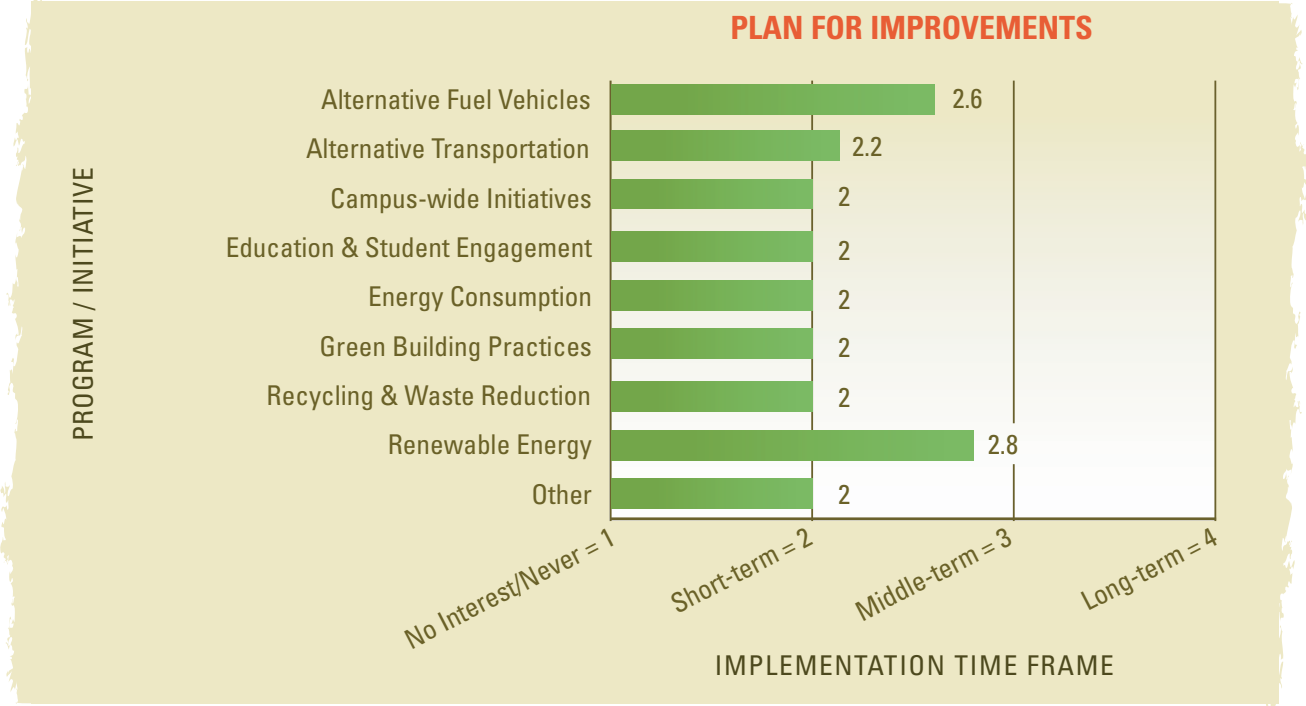
6. How successful has your institution been in waste reduction and recycling initiatives?



7. How do you "get the word out" about the importance of the environment (and the role that each of us play) to students, staff, and faculty?



8. Where do you think your institution should invest time and resources to minimize your carbon footprint?



Appendix E

Green Government Task Force Higher Education Working Group Recommendatons

Table 10: GREEN GOVERNMENT TASK FORCE HIGHER EDUCATION WORKING GROUP RECOMMENDATIONS

	SHORT-TERM (0-2 YEARS)	MEDIUM-TERM (2-5 YEARS)	LONG-TERM (>5 YEARS)
Campus-Wide Initiatives	• Engage all higher education institutions in Pittsburgh region in climate efforts. • Develop a forum for regular information exchange between higher education institutions. • Local colleges and universities should become active in state and national-level sustainability organizations. • Educate higher education professional organizations about climate efforts (NAEP, NACUBO). • Create a local higher education best practices climate guide. • Conduct greenhouse gas emission inventories for all institutions.	• Benchmark greenhouse gas emissions for all local higher education institutions using a standard methodology.	
Education & Student Engagement	• Catalogue and publicize the student-driven activities on each campus.	• Encourage and support student-based recycling and energy efficiency competitions.	

Table 10: GREEN GOVERNMENT TASK FORCE HIGHER EDUCATION WORKING GROUP RECOMMENDATIONS

	SHORT-TERM (0-2 YEARS)	MEDIUM-TERM (2-5 YEARS)	LONG-TERM (>5 YEARS)
Energy Consumption	• Encourage existing and/or create new carbon offset programs.	• Explore, develop, and implement behavior change energy conservation programs.	• Consider hiring an inter-university Energy Conservation Program Coordinator.
Green Building Practices	• Publicize existing and future campus green building projects on online and in print.		
Recycling & Waste Management	• Meet collectively with AgRecycle to learn about implementing a food waste composting program.		• Implement food composting programs on all campuses.
Renewable Energy			• Explore, develop, and implement an inter-university energy co-op focused on renewable energy.
Transportation	• Compile data on university use of Pittsburgh transit system (expand on data already assembled by Carnegie Mellon). • Make the case for on-campus Zipcars and collective university Zipcar memberships.		• Create a higher education collective to negotiate with the Port Authority of Allegheny County for discounted rider programs.