

Climate Action Plan 2009

Portland Community College

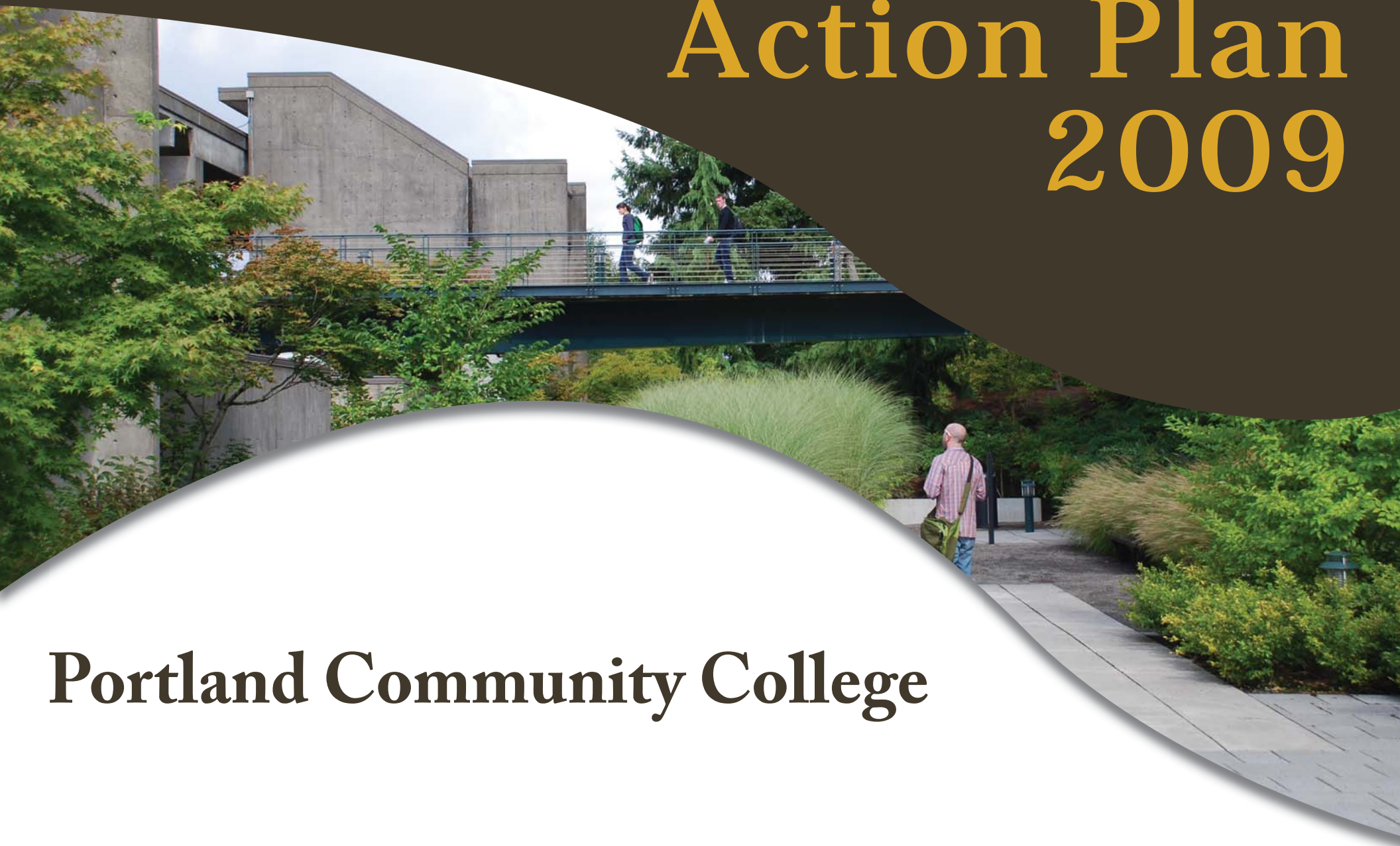


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Executive Summary





Climate change challenges us to re-think and change the way we use energy, consume natural resources, transport goods and people, and educate our citizens. Science data show that, after controlling for naturally occurring warming cycles, human produced greenhouse gas emissions are exacerbating global warming. Most scientists doing research in the field believe the warming of Planet Earth will reach a tipping point at which continued warming will become uncontrollable. At that point, solar warmth will kick off a natural release of greenhouse gases that will amplify the already occurring warming trend. As warming cascades, our environment and life as we know it will be unalterably changed. That tipping point, most scientists believe, is about 3.6 degrees

Fahrenheit which we will reach unless we aggressively begin to reduce carbon consumption within the next few years.

Climate change affects poor countries and poor people most severely, but no one on the planet will be left unaffected. Rising oceans and shrinking glaciers will jeopardize water and food security. Irrigation and potable water will become scarcer. Desertification will increase in the southern regions and climate, weather and ecosystems will change in the northern regions. Acidification of oceans will alter ocean ecology and imperil aquatic species. Water and food security issues and the resulting population movements likely will threaten global political stability.

The consensus of most scientists is that to stop the increase in warming, to avoid reaching the tipping point, we must reduce greenhouse gas emissions by 40% by 2030 and 80% by 2050. A growing segment of the scientific community believes we must reach these goals even sooner.

Responsible environmental stewardship is the key to addressing this problem. We must think differently about how we use natural resources and must challenge ourselves to put those thoughts into practice.

The Portland Community College Board of Directors recognizes the college's leadership responsibilities in the arena of environmental stewardship. PCC's *Sustainable Use of Resources Policy B-707*, adopted by the Board on December 7, 2006, states:

Portland Community College is committed to becoming a leader in academic programs and operational practices that model the sustainable use of resources, so that the needs of current generations are met without impairing the ability of future generations to meet their own needs.

President Preston Pulliams took an important step towards making the policy operational on June 7, 2007, by signing the American Colleges and Universities Presidents Climate Commitment (ACUPCC). Over 600 presidents of postsecondary institutions across the

nation have joined him in signing this commitment. Dr. Pulliams initiated the PCC Climate Energy Leadership Taskforce (CELT) and invested this group with responsibilities to research and recommend carbon emission reduction goals for the college and to develop a plan for achieving these goals. As the CELT was meeting and educating its members about climate change and sustainability during the 2007-2008 academic year, the college undertook its first greenhouse gas emissions audit. Faculty, staff and students worked together to identify and employ valid methodologies to calculate PCC's greenhouse gas emissions. The audit, reporting on 2006-2007 emissions data, was completed in June of 2008.

From September 2008 through July 2009, the CELT involved a broad cross-section of the college community in discussing ideas for reducing greenhouse gas emissions and in determining the feasible emission reduction goals for the college. The taskforce completed and submitted the PCC Climate Action Plan to President Pulliams in August 2009. **PCC's greenhouse gas emission reduction goals incorporated into this plan are:**

- Reduce greenhouse gas emission levels **10 percent** below 2006 levels by **2012**;
- Reduce greenhouse gas emission levels **40 percent** below 2006 levels by **2030**; and
- Reduce greenhouse gas emission levels **80 percent** below 2006 levels by **2050**.

The PCC Climate Action Plan represents a significant commitment by the college to be a regional, state and national leader in the sustainability arena. By evolving our educational offerings, building environmentally responsible facilities, operating our buildings and transportation system with greater energy efficiencies, and making consistent strides in reducing our waste production, the college will model how an institution that serves 90,000 students each year continues to offer high quality, affordable, accessible education while being a good steward of the environment.

Scopes of Carbon Emissions

Upon signing the ACUPCC agreement, PCC committed to completing a

comprehensive inventory of all greenhouse gas emissions within one year and updating the inventory every other year thereafter. The signing also committed the college to complete six "tangible actions" that would move us forward immediately on the road to sustainability. PCC, under the leadership of the District Sustainability Coordinator and the CELT, met these commitments.

ACUPCC recommends that the climate action plan address three "scopes" of emissions. These include:

- Scope 1 emissions, defined as "direct greenhouse gas emissions, occurring from sources that are owned and controlled" by the college;
- Scope 2 emissions, defined as "indirect greenhouse gas emissions generated in the production of electricity consumed" by the college; and
- Scope 3 emissions, defined as "all other indirect emissions—those that are a consequence of the college."

The PCC Climate Action Plan provides objectives and actions (strategies) for emissions that the institution has the most control over; that is, scope 1 and 2 emissions. Scope 3 emissions, primarily carbon produced through commuter travel, will be addressed in a separate action plan. A strategy to develop the scope 3 emissions action plan is set forth in this document.

The PCC Climate Action, as recommended by the ACUPCC, is broken down into seven major areas:

1. Buildings and Energy,
2. Transportation,
3. Consumption and Solid Waste,
4. Food and Agriculture,
5. Sustainability in Education,
6. Community Outreach, and
7. Tracking Progress and Financing.

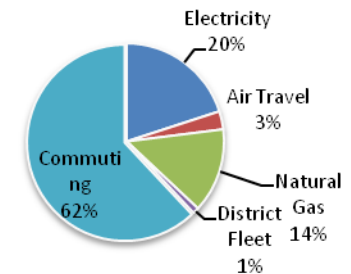
Portland Community College's Climate Action Plan adopted in September 2009, sets forth broad objectives and specific strategies for achieving the college's greenhouse gas emission reduction goals. The plan was submitted to the American Colleges and Universities Presidents

Climate Commitment by President Pulliams on September 15, 2009.

Sources of Carbon Emissions

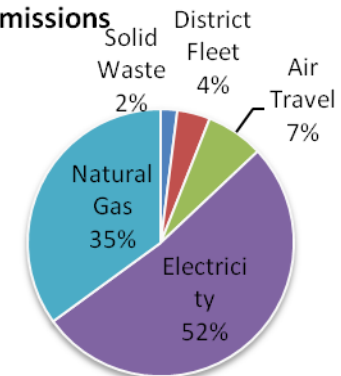
The 2008 PCC greenhouse gas audit found that 20 percent of all PCC carbon emissions were caused by electricity consumption; 14 percent by natural gas consumption; 3 percent by air travel; and 1 percent by the college's district owned fleet. The biggest source of carbon emissions, by far, was produced by our commuting population, accounting for 62 percent of our overall emissions. Reducing commuter-caused emissions will require a plan that engages local and state government and local public transportation providers in a partnership of shared vision and goals. PCC has taken the first steps in securing these partnerships. The pie chart to the right (2008 GHG Audit Findings) depicts our current total carbon emission sources.

2008 GHG Audit Findings



With commuter caused emissions (scope 3) removed from the carbon calculation, the chart titled Controllable Carbon Emissions shows that of the remaining sources of greenhouse gases, energy produced by natural gas is the greatest contributor.

Controllable Carbon Emissions



Portland Community College's Objectives Map to 6 Core Action Areas:



This plan identifies six major categories to put Portland Community College on a path to accomplish the 80 percent carbon reduction goal.

The Plan:

- Establishes an interim goal of a 40 percent reduction below 2006 carbon emissions by 2030.
- Ascertain objectives to achieve the interim goal.
- Focuses on achieving major actions to be taken in the next three years (by 2012) to achieve PCC's first initial milestone of reducing our emissions 10 percent below 2006 levels.

To draft this CAP, Dr. Pulliams hand-picked the membership of the Climate Energy Leadership Taskforce (CELT). This district-wide taskforce is comprised of faculty members, staff and administration. In order to ensure broad-based input to the plan, the Sustainability Coordinator assisted in developing campus-specific CELT sub-committees and category-specific Climate Action Planning groups.

All of these groups assisted in forming the 2012 actions and the 2030 objectives, which make up the carbon emission strategies displayed in this CAP.

The college will:

- Report on college carbon emissions annually.
- Report on progress in achieving major Actions outlined in the CAP.
- Evaluate existing actions and identify new actions every three years.
- Re-examine the established objectives every five years.

Portland Community College is commits to reducing our emissions 10% below 2006 emission levels by 2012, 40% by 2030 and 80% below 2006 levels by 2050.

The following tables detail the six major areas and the corresponding actions to be taken in the next three years (by 2012) to meet the objectives set for 2030. This long-range plan is designed to put Portland Community College on a path to accomplish the eighty percent carbon reduction goal. By the end of calender year 2012, this plan will be updated to include additional actions to meet the 2030 goal.

Buildings and Energy

| 2030 Objectives | 2012 Actions |
|---|---|
| Utilize 1. state of the art control systems district wide to maximize energy efficiency | Retrofit controls in existing buildings on the Sylvania campus by the end of calender year 2010. |
| | Bring in an outside energy consultant to complete an energy audit for all campuses by the end of calender year 2010. |
| | Monitor energy consumption within the Sylvania campus via a web based, real time data collection system as close to the point of use as possible. |
| | As the new energy audit is completed, with the help of an outside energy consultant, begin to compile a list of all retrofits needed on existing buildings district-wide. Complete plan for control retrofitting in existing college buildings district-wide by 2012. |
| Reduce our 2. energy consumption per square foot 50% below 2006 levels | Complete control retrofitting and sub metering in all existing buildings district-wide no later than 2016. |
| | Through increased awareness and outreach of energy use, PCC staff and faculty will decrease consumption by 2012 and beyond. |
| | With new Bond construction, LEED standards and energy efficiencies will be a planning requirement. |
| | Implement energy retrofit recommendations which, combined with retrofitted building controls, will result in increased energy efficiency by 2016 and beyond. |
| Produce 3. 20% of our own energy onsite using renewable energy technology | Research and invest in software that will manage the powering down of the college's computer energy equipment. |
| | At Sylvania campus, invest in cogeneration plant by end of calendar year 2012 and investigate the feasibility and financing on other campuses of technology for generating power in ways that reduce GHG emissions. |
| | The scope of the 2008 Bond consultant teams shall include decision making opportunities concerning the implementation of incorporating renewable energy technologies into new building and remodeling designs. |
| | Research the feasibility and financing of renewable energy technologies on existing buildings district-wide and implement where appropriate by 2012 and beyond. |
| | Research the feasibility and financing of fuel cell and other emerging technologies placement at all campuses. |
| <i>PCC has been committed to sustainability within its building construction for many years. Passage of the most recent bond measure, weighing in at \$374 million, ensures future sustainable building practices. A tangible action within the American Colleges and Unversities Presidents Climate Commitment, PCC has committed to is building all new construction to LEED silver standard or better. Construction of our new Willow Creek facility, under construction, has the potential for LEED platinum.</i> | |

Transportation

| 2030 Objectives | 2012 Actions |
|---|---|
| Develop 4. and implement a commuter-specific climate action plan | Formulate commuter-specific climate action planning committee by the end of 2009 and begin initial planning sessions at the beginning of 2010. |
| | Complete initial draft of commuter-specific action plan by 2012 including Bond approaches. |
| | Develop methodology to purchase carbon offsets for all college air travel and implement by fall term 2010. |
| | Conduct annual commuter surveys of PCC faculty, staff and students to create baseline data. |
| | Work with the College Advancement department, developing surveys in an effort to gather input from the community concerning transportation. |
| Create an 5. emission-free district fleet | Name members of emission-free district fleet committee by end of 2009. |
| | Research different alternative fuel vehicle options to infuse into district fleet by the end of calendar year 2010. |
| | Create a timeline and financing plan, in partnership with other departments, to attain an emission-free fleet by the end of 2011. |
| | Begin to infuse alternative vehicles into district fleet by 2012. |
| | Create, with the assistance of student outreach, a marketing campaign highlighting the alternative vehicles infused into the district fleet on an annual basis. |
| | Reach the benchmark of reducing the emissions of our district fleet 10% below 2006 levels by 2012. |



PCC now offers a free shuttle system to transport students, faculty and staff to all four campuses within the district. Beginning in 2010, the parking and transportation office will be purchasing a new shuttle bus and begin to run a new route in the shuttle system. This is possible because of an increase in student parking fees, for which student government (ASPCC) advocated.

Consumption and Solid Waste

| 2030 Objectives | 2012 Actions |
|---|--|
| Develop a 6. water conservation plan for all campuses | The Resource Conservation Manager will assess our current water consumption, compile a baseline report, set water consumption reduction goals and develop a conservation plan. This report will be updated biennially. |
| | Develop a conservation plan for capturing stormwater. |
| | In new Bond construction, LEED standards and water efficiencies will be a planning requirement. |
| Reduce 7. solid waste generated by 50 percent by improving recycling, reusing and composting strategies | Develop plan for pre-consumer and post-consumer composting at all campuses. |
| | Continue with post consumer composting at Rock Creek and pre-consumer composting at Sylvania and Rock Creek campuses. |
| | Increase outreach and awareness campaign concerning recycling and composting efforts at all campuses in coordination with ASPCC. |
| | Decrease amount of waste hauled to the landfill by PCC's waste hauler. |
| Reduce 8. demand for waste hauling and reduce college resource utilization by adopting a sustainable purchasing policy | Develop and implement a campaign to reduce demand for paper consumption. |
| | Craft sustainable purchasing policy in compliance with OAR's and Board policy by July 1, 2010. |
| | <i>Composting has been an ongoing effort at PCC. Beginning with a grant awarded to Rock Creek campus in 2006, PCC started its first pre-consumer composting effort. Currently, there are pre-consumer composting efforts occurring at Rock Creek and Sylvania campuses. A post-consumer pilot project is in the beginning stages at Rock Creek campus. Recycling efforts have also increased dramatically in 2009, with the implementation of a district-wide, centralized recycling system.</i> |

Food and Agriculture

| 2030 Objectives | 2012 Actions |
|-----------------|--------------|
|-----------------|--------------|

| | |
|---|--|
| Incorporate 9. more sustainable food options district-wide | Make all dining centers district-wide able to accommodate local and sustainable food options as kitchen and cafeteria design are renovated with Bond planning funds. |
| | Work with current vendors to incorporate more cost effective, sustainable and local food option offerings in cafeterias. |
| | Explore partnerships with local food providers and/or local growers throughout the Portland-metro area to include more local and sustainable food options in the cafeterias. |
| | Explore developing curriculum for a transferable, academic program in Sustainable Agriculture. |
| Reduce 10. carbon footprint related to service ware | Conduct a carbon audit of service-ware production and disposal cycle and create plan to reduce service-ware related carbon footprint. |
| | Identify and adopt cost-effective, local and sustainable options for service-ware. |

The Organic Gardening Class, offered by the Biology Department explores their living lab at the Rock Creek Learning Garden.



PCC's Food Services department has made great strides in sustainability in the last 15 years. Currently, the Food Services department offers many local and sustainable food options in PCC's dining centers. We offer locally produced beef and sustainable drink options. We use local ingredients in our baking. Produce from both Sylvania and Rock Creek's Learning Gardens are served in their respective cafeterias. PCC's service ware offerings are made out of compostable materials and are being composted at one of our campuses.

Sustainability in Education

| 2030 Objectives | 2012 Actions |
|---|---|
| Increase 11. sustainability infused curricula and green technology options at PCC. | <p>The Sustainable Practices for Academics and Resources Council (SPARC) will convene for the first time in fall 2009. This committee comprises faculty and staff from many different disciplines and will serve as a clearing house for sustainability-related academic programs and curriculum and will make periodic updates to the President's Cabinet.</p> |
| | <p>Explore the development of a graduation requirement or outcomes in sustainability.</p> |
| | <p>Begin the first environmental studies sustainability class at PCC by Spring 2010.</p> |
| | <p>Implement the following degree options:</p> |
| | <p>Building Commisioner Training- Facilities Maintenance Technology</p> |
| | <p>Green Building Inspection- Building Inspection Technology</p> |
| | <p>Green Roof and Wall Construction and Maintenance- Building Construction Technology</p> |
| | <p>Civil and Mechanical Sustainable Engineering Technology- Electronic Engineering Technology</p> |
| | <p>Sustainability Management- Business Management</p> |
| | <p>Explore the development of an energy efficiency technician degree certificate.</p> |
| | <p>Explore the development of an academic Sustainable Agriculture program.</p> |
| | <p>Explore offering LEED certification education and accreditation courses.</p> |
| | <p>Work towards integrating sustainability into the curricula throughout all the disciplines.</p> |
| | <p>In revising the colleges' strategic plan, review measureable outcomes that will comply with Board policy B707.</p> |

The PCC educational departments are committed to do our part in the battle to combat climate change and to position our students to take advantage of a growing global market for alternative energy and other green technology areas. Currently, we are developing sustainability-infused curricula as well as green technology offerings that are meeting emerging employment needs.

Community Outreach

2030 Objectives

2012 Actions

Increase 12.
PCC
sustainability
awareness
throughout
the community

Provide educational resources to support community members to incorporate sustainability into their lives.

Organize various college departments and offices to collaborate on ways to educate the public on sustainability.

College Advancement will develop a plan to publicize PCC's sustainability efforts.

Work with community to ensure access to quality green jobs (green job training programs as a pathway to a skilled workforce in a green economy).



Community education offers many classes on sustainability topics to the community on a regular basis. Annual Earth Day events are held at all four major campuses and are open to all members of the community. The annual Harvest Festival is a family-friendly event which is open to all members of the community and showcases many different elements of campus-based sustainability at our Rock Creek campus. The annual Water Festival is an event for fourth and fifth graders at Sylvania campus and highlights water conservation as an important element to everyday life.

Background



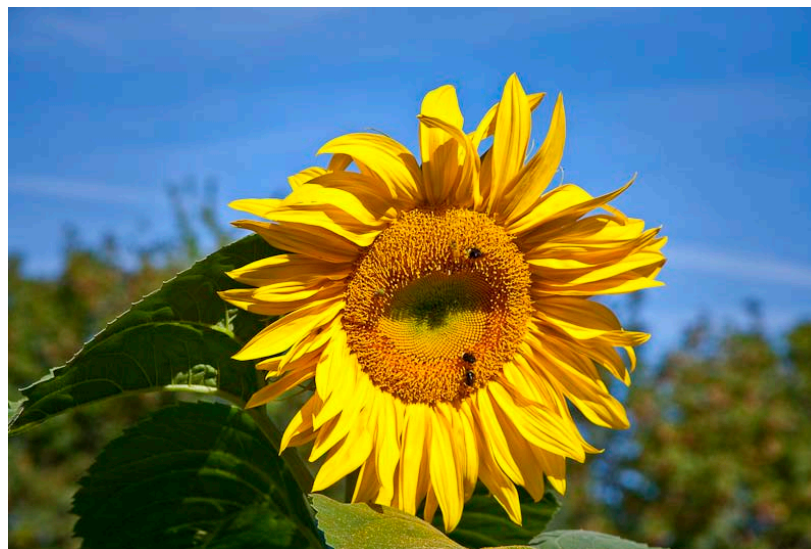
Sustainability Background

In December 2006, the PCC Board of Directors passed the *Sustainable Use of Resources Policy* (Policy B-707). The Sustainable Use of Resources Policy states that “Portland Community College is committed to becoming a leader in academic programs and operational practices that model the sustainable use of resources, so that the needs of current generations are met without impairing the ability of future generations to meet their own needs.” After the passage of B-707, District President Preston Pulliams joined hundreds of other college and university presidents, becoming the 290th signatory of the ACUPCC.

In late 2007, Dr. Pulliams convened the CELT to act as the ACUPCC planning organization. CELT is co-chaired by the Sylvania Campus President and the Director of Physical Plant and is supported by the PCC Sustainability Coordinator. The committee includes the Vice President of Finance, District Transportation Manager, Operations Managers and other staff and students. During 2008, PCC achieved two of the three ACUPCC requirements. First, PCC met several of the short term ‘tangible actions’ required by the ACUPCC. Second, a detailed GHG audit was completed by a Rock Creek Student Leadership Team under the guidance of the Sustainability Coordinator and the Director of Physical Plant.

After a year of studying climate change issues, the CELT commenced drafting the Climate Action Plan for PCC. In the spring of 2009, campus-based CELTs created and served as avenues for all faculty, staff and students to voice their opinions concerning PCC sustainability. The information that was gathered during these forums, informed the plan. To refine the ideas garnered from the campus category-specific Climate Action Planning sub-committees

were formed. These sub- committees, working with the Sustainability Coordinator, combined with input from various departments and the consistent leadership of the Climate Energy Leadership Taskforce, drafted PCC’s first Climate Action Plan. This plan is meant to serve as a working document, and will be updated on a rolling basis.



Upon signing the ACUPCC, PCC committed to 6 of the 7 tangible actions presented by the ACUPCC. An update of these actions are listed below:

- 1. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council’s LEED Silver standard or equivalent:** PCC has adopted LEED Silver standard for the \$374 million capital expansion program that was passed by voters in 2008. All capital construction

estimates include these standards. In addition, we are currently in design of a new facility that is on target to achieve LEED Platinum standard.

2. **Adopt an energy-efficient purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist:** PCC's purchasing rules mirror the State of Oregon's Administrative Rules requiring the purchase of Energy Star efficiency appliances. In addition, within this CAP, the Purchasing Department has committed to crafting a sustainable purchasing policy in compliance with the Oregon Administrative Rules and PCC Board policy by July 1, 2010.
3. **Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution:** PCC has a very active Transportation Demand Management Program that consists of intra-campus shuttles, carpooling and mass transit subsidies. PCC also provides free electric car recharging stations at its campuses. In addition, the Parking and Transportation office will be purchasing a new shuttle bus as well as begin to run a new shuttle route in partnership with Tri-Met (Portland's local public transportation provider) in 2010.



4. **Within one year of signing this document, begin purchasing or producing at least 15 percent of our institution's electricity consumption from renewable sources:** PCC has begun buying Wind Power Green Tags for some of its electrical use. We are also actively studying retro-fitting an existing building with solar technologies. All new construction by PCC will require that 1.5 percent of the direct construction cost be spent on solar technologies.
5. **Establish a policy of a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested:** An endowment for sustainability is being discussed by the PCC foundation.
6. **Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste:** Because of staffing, PCC was not able to participate in the RecycleMania competition of 2009. However, PCC has made considerable efforts towards reducing our waste production. Multiple waste audits have been completed at all four major campuses, two large E-waste recycling events have occurred on the Sylvania campus and a reusable mug program is up and running at all four major campuses. In addition, PCC's first centralized recycling system is up and running as of summer term 2009.

During the beginning planning stages of this CAP, state and city GHG reduction goals were assessed. The state of Oregon has set their carbon reduction goals as follows:

- By 2010, arrest the growth of Oregon's GHG emissions (including, but not limited to CO₂) and begin to reduce them, making measurable progress toward meeting the existing benchmark for CO₂ not exceeding 1990 levels.
- By 2020, achieve 10% below 1990 GHG levels.
- By 2050, achieve a "climate stabilization" emissions level at least 75% below 1990 levels.

Being a leader in higher education as well as an ACUPCC signatory, PCC was interested in setting lofty, but attainable GHG reduction goals. Albeit the state's GHG reduction goals are commendable, but the college was looking for a more aggressive approach. In summer 2009, the city of Portland published a draft Climate Action Plan. Within that draft, the city established GHG reduction goals. These goals are outlined below:

- By 2010, reduce GHG emissions 10% below 1990 levels.
- By 2030, reduce GHG emissions 40% below 1990 levels.
- By 2050, reduce GHG emissions 80% below 1990 levels.

The CELT reviewed both of these sets of GHG reduction goals. The city of Portland's GHG reduction goals were attainable, but 2010 was rapidly approaching at the drafting of our CAP. After careful consideration, the CELT recommended the following GHG reduction goals for PCC:

- Reducing our carbon emissions 10% below 2006 levels by 2012.
- Reducing our carbon emissions 40% below 2006 levels by 2030.

- Reducing our carbon emissions 80% below 2006 levels by 2050.

Mitigation Strategies



Mitigation Strategies

The ACUPCC describes campus emissions as Scope 1, Scope 2 and Scope 3 emissions. As defined earlier in the plan, PCC's CAP is solely focused on Scope 1 emissions, defined as "direct GHG emissions, occurring from sources that are owned and controlled by the institution," and Scope 2 emissions, defined as "indirect emissions generated in the production of electricity consumed by the institution." Although PCC's Climate Action Plan is not focused on Scope 3 emissions, they are defined by the ACUPCC as "indirect emissions that are a consequence of the activities of the institution." Four of the seven categories of the Climate Action Plan are direct contributors to GHG emissions. A background of each section, immediate action items and long-term objectives are defined below.

Buildings and Energy

Background

Upon becoming a signatory to the ACUPCC, PCC committed to a LEED Silver building standard for all new construction. In fall 2008, a \$374 million capital expansion program was passed by the voters of the district. The passage of this Bond ensures all new PCC constructions will be built with the most environmentally-conscious efforts behind them.

Currently, the PCC Willow Creek building construction project, located at the Willow Creek transit center in Beaverton, is under construction and is planned to become PCC's first LEED certified building. The Willow Creek project was developed in close conjunction with Tri-Met to ensure that PCC students and employees have easy access to mass transit systems such as the Max and bus lines. Willow Creek's architects and PCC project

managers are seeking LEED points in the areas of alternative transportation, water reduction and energy conservation. At least 10 percent of the building will be made from recycled materials, and the facility will include several points for indoor environmental quality. LEED standard projects such as Willow Creek are an exciting move toward achieving sustainability and carbon neutrality.

At Rock Creek campus, the new Veterinary Technology kennel is fitted with solar thermal panels. The panels were paid for by the Rock Creek student government "Green Initiative Fund." This fund has since been expanded to a district-wide effort and is discussed in the later Financing section. The solar panels were funded by an increase in student fees and bolstered by green tag sales (PCC Green Commuter stickers). Green Tags were sold through the ASPCC student government. However, due to decreasing Green Tag sales, ASPCC along with the Sustainability Coordinator are actively researching other options for carbon offsets. The thermal solar panels purchased with this fund will be used to heat dog and cat



bath water and to heat the water in the restroom.

At Sylvania campus in the spring of 2009, Gerding Edlen, a development company, approached administrative and campus-based staff with a very exciting project. (www.oregon.gov) As part of the American Recovery and Reinvestment Act, the federal government has set aside approximately \$37 billion in competitive dollars to help states recover from the recession. Gerding Edlen proposed a project to the Sylvania campus to transform the campus, which comprises 50 percent of the entire district, into a “net-zero campus.” One accepted definition of net zero adopted by the National Renewable Energy Laboratory (NREL) includes meeting all energy demands with energy generated on site, whether from renewable or traditional fuel sources. A very comprehensive plan, composed by the team at Gerding Edlen, was presented to administrators and staff at Sylvania campus. A major highlight of this plan was replacement of the boilers on Sylvania campus with a cogeneration plant. The installation of a cogeneration plant, in lieu of boiler replacement, would yield a reduction of 2,817 tons of CO₂ annually, equivalent to a 15 percent reduction in carbon emissions district-wide.ⁱ

Immediate Action Items and Long-Term Objectives

2030 Objective 1.

Utilize state of the art control systems district wide to maximize energy efficiency.

Actions to be taken before 2012

- (i) Retrofit controls in existing

buildings on the Sylvania campus by the end of calendar year 2010. This action item will be funded from the state stimulus package as well as the Bond.

- (i) Bring in an outside energy consultant to complete an energy audit for all campuses by the end of calendar year 2010. Funding for this action item will be provided by capital projects funds.
- (ii) Monitor energy consumption within the Sylvania campus via a web-based, real time data collection system as close to the point of use as possible. This action item will be funded through capital projects funds.
- (iii) As the new energy audit is completed, with the help of an outside energy consultant, begin to compile a list of all retrofits needed district-wide. Complete plan for control retrofitting in existing college buildings district-wide by 2012. The Bond will serve as the funding source for this action item.



equipment. Technology Services will serve as the funding source for this action item.

2030 Objective 2.

Reduce our energy consumption per square foot 50% below 2006 levels.

Actions to be taken before 2012

- (i) Complete control retrofitting and sub metering in all existing buildings district-wide no later than 2016. This action item does not require additional funding.
- (ii) Through increased awareness and outreach of energy use, PCC staff and faculty will decrease consumption by 2012 and beyond. This action item does not require additional funding.
- (iii) With new Bond construction, LEED standards and energy efficiencies will be a planning requirement. The Bond will be the funding source for this action item.
- (iv) Implement energy retrofit recommendations which, combined with retrofitted building controls, will result in increased energy efficiency by 2016 and beyond. Capital projects funds as well as the Bond will serve as the funding source for this action item.
- (v) Research and invest in software that will manage the powering down of most college computer energy

2030 Objective 3.

Produce 20% of our own energy onsite using renewable energy technology.

Actions to be taken before 2012

- (i) At Sylvania campus, invest in cogeneration plant by end of calendar year 2012 and investigate the feasibility and financing on other campuses of technologies for generating power in ways that reduce GHG emissions. State stimulus monies, capital projects funds as well as the Bond will serve as funding sources for this action item.
- (ii) The scope of the 2008 Bond consultant teams shall include decision making opportunities concerning the implementation of incorporating renewable energy technologies into new building and remodeling designs. The funding source for this action item will be the Bond as well as third-party contracting.
- (iii) Research feasibility and financing of renewable energy technologies on existing buildings district-wide and implement where appropriate by 2012 and beyond. This action item does not require additional funding.

- (iv) Research the feasibility and financing fuel cell and other emerging technologies placement as well as availability of fuel at other campuses. This action item does not require additional funding.

Transportation

Background

PCC's Transportation department currently serves as a member of the Oregon Department of Transportation (ODOT) Electric Vehicle Charging Station Committee. Recently, the Sylvania Dean of Instruction, partnered with the Parking and Transportation department, submitted a grant proposal for 16 electric vehicle charging stations to be installed throughout the district. PCC is still waiting to hear if we were awarded this grant.

In 2007, a comprehensive transportation study was completed by an outside agency, Nelson/Nygaard Consultant Associates. The purpose of the transportation study was to provide the transportation department with direction for the college's shuttle and parking services, including a focus on sustainability. The findings and conclusions found within this study have played a key role within current alternative transportation planning sessions.

In 2007, the PCC Parking and Transportation department purchased a "Smart Car" that is used by the department for intercampus travel. It is a Mercedes Benz model and is

categorized as an "Ultra Fuel Efficient Vehicle." The PCC Smart Car gets up to 60 mpg and sports a "Sustainability...we're all about that" logo on the door panel. The smart car has been used as a centerpiece at events such as Focus the Nation, Earth Day and the Clean Water Festival. The car is very visible on camps and has become an icon of sustainability and ultra efficient technologies at PCC.

To promote transit ridership PCC allows any faculty or staff member, including casual employees, to purchase a monthly Tri-Met bus pass on a pre-tax basis. For the average employee, this would reduce the cost of the pass by approximately 22 percent. This incentive is also available to students, but on a limited supply.

The Parking and Transportation department are strong supporters of alternative transportation. Currently, the Parking and Transportation department offers a free intra-campus shuttle system to all faculty, staff and students. Increased ridership has caused the department to expand the current shuttle system. Beginning in 2010, Parking and Transportation, working in conjunction with Tri-Met, will be purchasing a new shuttle bus and will be incorporating a new route for the shuttle to travel.



Immediate Action Items and Long-Term Objectives

2030 Objective 4.

Develop and implement a commuter-specific climate action plan

The climate action plan was formulated with baseline data that did not include greenhouse gas emissions caused by commuting by faculty, staff and students. It is PCC's commitment to reducing the emissions caused by commuting to and from campuses considerably by 2030.

Actions to be taken before 2012

- (i) Formulate commuter-specific climate action planning committee by the end of 2009 and begin initial planning

sessions at the beginning of 2010. This action item does not require additional funding.

- (ii) Complete initial draft of commuter-specific action plan by 2012 including Bond approaches. This action item does not require additional funding.
- (iii) Develop methodology to purchase carbon offsets for all college air travel and implement by fall term 2010. This action item will be funded through a department assessment for air trips.
- (iv) Conduct annual commuter surveys of PCC faculty, staff and students to create baseline data. The funding for this action item will come from the Parking and Transportation department.
- (v) Working with the College Advancement office, develop surveys in an effort to gather input from the community concerning transportation. The funding for this action item will come from the College Advancement office.

2030 Objective 5.

Create an emission-free district fleet

PCC owns over 90 district vehicles. These vehicles are updated as needed and their carbon emissions comprise 4 percent of our overall controllable greenhouse gas emissions. The Manager of Central Distribution Services is committed to making his fleet carbon neutral.

Actions to be taken before 2012

- (i) Name members of emission-free district fleet committee by the end of 2009. This action item does not require additional funding.
- (ii) Research different alternative fuel vehicle options to infuse into district fleet by the end of calendar year 2010. The funding for this action item will come from the Parking and Transportation department as well as the Central Services department.
- (iii) Create a timeline and financing plan, in partnership with other departments, to attain an emission-free fleet by the end of 2011. This action item does not require additional funding.
- (iv) Begin to infuse alternative vehicles into district fleet by 2012. This action item does not require additional funding.
- (v) Create, with the assistance of student outreach, a marketing campaign highlighting the alternative vehicles infused into the district fleet on an annual basis. The funding for this will come from the Parking and Transportation office, the Marketing department and the Student Activities Fund.
- (vi) Reach the benchmark of reducing the emissions of our district fleet 10% below 2006 levels by 2012. This action item does not require additional funding.

Consumption and Solid Waste

Background

As of 2009, waste audits have been completed at the Cascade, Sylvania, Rock Creek and SE Center campuses. Copies of these audits are attached to the CAP as an appendix. These waste audits provided considerable amounts of data which resulted in the Sustainability Coordinator compiling enough baseline data to make a recycling recommendation to Physical Plant.

This recommendation resulted in the newly implemented, district-wide, centralized indoor recycling system. This system is complete with centralized, indoor recycling bins located throughout the district, pictorial signage and custodial staff training. The signs were designed by the Sustainability Coordinator in collaboration with ASPCC and campus-based Green Teams. The signs are pictorial in an effort to bridge language barriers. This recycling system is in its final planning stages, as outdoor waste stations have been placed in key locations throughout the district already. These outdoor stations were manufactured from 100% recycled lumber and are color coded to accommodate glass, mixed recycling and garbage.

In October 2008, the PCC Sustainability Coordinator and the Food Services Manager collaborated on the development of two “mug boards” that are located outside of the dining center on the Sylvania campus. Mugs were donated by the Sylvania Environmental Center through an “ugly mug” contest. This project has been duplicated at Cascade, Rock Creek and SE Center campuses. Food Services has noted a marked increase in reusable mug usage, and deems this project successful.



Members of the Sylvania Green Team, along with the Sylvania campus president, go through trash for a waste audit on campus.

The Rock Creek Loop is a pre-consumer food waste diversion and garden program that was funded by a 3-year grant from Washington County Department of Environmental Quality (DEQ). This project was awarded a \$12,000 DEQ grant in late 2006, and a unique feature of the program design was to integrate multiple disciplines into the project. Chemistry, Building Construction Technology and Environmental Studies are all involved in this project currently. Rock Creek-based Food Services currently separates its pre-consumer (before it hits the plate) waste out of the kitchen and places the waste into buckets behind the kitchen. The Rock Creek Sustainability Coordinator along with an AmeriCorps volunteer transport the waste to the on-site worm bin.

Currently, an average of 650 pounds of pre-consumer waste per month is being diverted from the landfill via 40,000 worms residing in the worm bin. Once the vermicomposting (worm composting) has produced compost, the compost is then harvested and transported to the Rock Creek Learning Garden. Once in the Learning Garden, the compost is placed on vegetables that are grown for the cafeteria on-site which provides essential nutrients to the vegetables. The vegetables are then harvested and transported without fossil fuels to the cafeteria where they are served. This program was featured in the Oregonian as well as the Association for Advancement of Sustainability in Higher Education bulletin.

Rock Creek is also piloting the first post-consumer (after it has hit the plate) composting system on site. The Rock Creek Campus Operations Manager assisted in purchasing the composting bin and has also dedicated staffing to maintaining the bin. At Rock Creek campus, we are composting our service ware along with the post-consumer waste that we generate. The compostable service-ware will be discussed in more detail in the Food and Agriculture section.

Sylvania campus is in the beginning stages of a pre-consumer worm composting program. The program is modeled after Rock Creek campus program and is being spear-headed by the Environmental Center Coordinator. The Sylvania Environmental Center was recently awarded a \$1,200 grant from the Portland Bureau of Planning and Sustainability to build a new vermicomposting bin. A maintenance plan is in the works for the new composting system at Sylvania and will be piloting in fall term 2009.

Cascade campus has made large strides in their efforts towards reduction in consumption of solid waste. Prior to the installation of the centralized, district-wide recycling system, Cascade ASPCC had a

recycling expert assess the campus and bring recycling boxes to all common areas. As these receptacles were not durable, PCC replaced them with plastic bins. The Green Team at Cascade campus also made a video to encourage recycling on campus.

The Central Distribution Services department is a unique area to PCC. All major purchases come through this department and then are distributed to their appropriate locations. However, the Central Distribution Services department also houses used but still usable items to be reused throughout the district. Computers, desk chairs, televisions, white boards and the like are housed in this department. PCC employees are able to access these worn items free of charge instead of purchasing all new items. This is a sustainably-conscious program at PCC.

The PCC Print Center has begun carrying 30% post-consumer recycled paper which is available on print orders and for departmental purchasing. In 2008, all colored paper carried in the print center contains at a minimum, 30% post-consumer content.

Immediate Action Items and Long Term Objectives

2030 Objective 6.

Develop a water conservation plan for all campuses.

PCC is located in the rainy Northwestern United States, where the average yearly rainfall is 36 inches per year. Being able to capture the stormwater that falls throughout the district is no easy task, but it is a necessary charge. Offsetting our water costs by reusing of stormwater is in discussion.

Actions to be taken before 2012

- (i) The Resource Conservation Manager will assess our current water consumption, compile a baseline report, set water consumption reduction goals and develop a conservation plan. This will be funded through existing funds.
- (ii) Develop a conservation plan that explores stormwater capturing. This will be funded through existing funds.
- (iii) With new Bond construction, LEED standards and water efficiencies will be a planning requirement.

2030 Objective 7.

Reduce solid waste generated by 50 percent by improving recycling, reusing and composting strategies.

Recycling, composting and reusing strategies have long been areas that PCC has dedicated resources to. Pre-consumer waste is composted at two campuses currently and a centralized recycling system has been introduced district-wide.

Actions to be taken before 2012

- (i) Develop plan for pre-consumer and post-consumer composting at all campuses. This action item will be funded through existing funds.
- (ii) Continue with post-consumer composting at Rock Creek and pre-consumer composting at Sylvania and Rock Creek campuses. This will be funded through existing funds.

- (iii) Increase outreach and awareness campaign concerning recycling and composting efforts at all campuses in coordination with Associated Students of PCC (ASPCC). This will be funded via ASPCC funds.
- (iv) Decrease amount of waste hauled to the landfill by PCC's waste hauler. Funding for this action item will come from existing funds.
- (v) Develop and implement a campaign to reduce demand for paper consumption. The funds for this action item will come from existing funds.



2030 Objective 8.

Reduce demand for waste hauling and reduce college resource utilization by adopting a sustainable purchasing policy.

Purchasing encompasses many sects of the PCC community. Within the Food Services department, when cost effective, local products are sold within our dining centers. These products come at a cost fiscally, but at a significant reduction in carbon emissions. The same can be said for the Physical Plant department, which shows tremendous strides in supporting our local economy.

Actions to be taken before 2012

- (i) Craft sustainable purchasing policy in compliance with the Oregon Administrative Rules' and PCC Board policy by July 1, 2010.

Food and Agriculture Background

Food Services has been involved in sustainable purchasing, waste reduction and campus-based food sourcing for over 15 years. Food Services carries local and organic beverages, food products and bakes with locally made flour. Compostable, sugar-based service ware is served in the cafeterias. An experimental post-consumer composting pilot project is taking place at Rock Creek. As this project progresses, baseline data will be collected in order to replicate the project at other campuses within the district.

Food Services has taken an active role in reducing the amount of waste produced by the dining centers throughout the district. Pre-

consumer composting efforts are occurring at two campuses, with the help of Food Services. Active participation in “mug board” projects at all four major campuses has significantly reduced the amount of disposable cups in the dining centers. The Food Services department also serves produce grown in the Rock Creek and Sylvania Learning Gardens.

In September of 2007, the campus Green Team and the Child Development Center at Sylvania campus took initiative and formed a committee dedicated to developing a Learning Garden at Sylvania campus. Interested participants joined in the committee and through collaboration, the garden idea quickly sprouted into reality. The Sylvania Learning Garden participants are the Child Development Center, Environmental Chemistry, Interior Design, Biology, Gerontology, Food Services and the Sylvania Environmental Center. In 2009, with the help of the Environmental Center Coordinator, plans began formulating for expansion of the Learning Garden to accommodate more space to grow food for the Sylvania cafeteria as well as a dye garden.

The Rock Creek Learning Garden was formulated in 2006. At its inception the Learning Garden was run by a volunteer Learning Gardens Coordinator. The Learning Garden acted as a “living lab” for the Learning Gardens Coordinator. Pre-school children, service-learning students, classes, staff, faculty and students assisted with the development of the Learning Garden. The Learning Garden expanded to accommodate more space to grow produce for the cafeteria, create community plots for staff and faculty and to expand the Organic Gardening Class’ garden area.

Immediate action items and long-term objectives

2030 Objective 9.

Incorporate more sustainable food options district-wide

Food Services has made great strides in their sustainability efforts at PCC. Currently, our Food Services department offers local and organic beverages and food products, many of the products made in-house contain local ingredients and two of our dining centers serve produce grown from our Learning Gardens.

Actions to be taken by 2012

- (i) Make all dining centers district-wide able to accommodate local and sustainable food options as kitchen and cafeteria design are renovated with Bond planning funds. This action item will be funded via increases in retail product prices and the 2008 Bond.
- (ii) Work with current vendors to incorporate more cost effective, sustainable and local food option offerings in dining centers. This will be funded via the Food Services department.



- (iii) Explore partnerships with local food providers and/or local growers throughout the Portland-metro area to include more local and sustainable food options in the dining centers. The Food Services department will provide funding for this action item.
- (iv) Explore developing curriculum for a transferable, academic program in Sustainable Agriculture. Funding for this action item will be provided by the Sustainable Practices and Resources Council as well as the general curriculum fund.



Students of the Organic Gardening class point to sprouting seedlings in the Rock Creek Learning Garden.

2030 Objective 10.

Reduce carbon footprint related to service ware

Currently, the Food Services department serves compostable service ware. The plates and bowls are composed of compostable, sugarcane materials. The cutlery served is based from potato starch. A pilot post-consumer composting project is underway at Rock Creek campus. Conversations about implementing post-consumer composting projects on other campuses are taking place.

Actions to be taken by 2012

- (i) Conduct a carbon audit of service-ware production and disposal cycle and create plan to reduce service-ware related carbon footprint. The funding for this action item will be provided by the Food Services department as well as the Sustainability Coordinator.
- (ii) Identify and adopt cost-effective, local and sustainable options for service-ware. Funding for this action item will be provided by campus-based sustainability efforts as well as the Sustainability Coordinator.

i. Appendix E: The E6 Net Zero Project

Education and Community Outreach



Education and Community Outreach

PCC prides itself on being an accessible, affordable, higher education institution. Being located in Portland, which has been voted as the “greenest city in America” by Popular Science magazine, it only seems natural to offer sustainable educational options that support the workforce needs of renewable energy providers located in the City of Portland. Through promoting and providing partnerships with local



businesses and organizations, PCC is able to not only provide educational opportunities but we are also able to provide training to potential employees of local businesses. The purpose of this section of the CAP, within the implementation guide of the ACUPCC, is to “describe plans to make climate neutrality and sustainability a part of the curriculum and/or other educational experience for all students as well as actions to expand research, community outreach and/or other efforts toward the achievement of climate neutrality.”

As PCC is a community college, we do not have research areas that are applicable to this section of the CAP. Therefore, this section will

discuss our current educational and community outreach efforts within sustainability as well as describe our future plans to further infuse sustainability into our educational offerings and community outreach efforts. Within the Sustainability in Education section of this CAP, many of our current educational offerings dealing with sustainability are listed along with a description of each. The background information, immediate action items and long-term objectives for both sections are listed as well.

Sustainability in Education

Background

To help guide PCC sustainability and green technology curricular activities the PCC Cabinet has established a district-wide academic sustainability task group, titled “Sustainable Practices and Resources Council” (SPARC). It is charged to:

- Encourage the active sharing of information for all curriculum related initiatives,
- Coordinate potential grant efforts,
- Coordinate the design and development of curricula,
- Act as a single point of reference for facilities-related initiatives,
- Serve as a single point of reference in response to both internal and external queries, and

- Maintain a historical record of PCC's efforts in green technologies.

Architecture

This two year degree (A.A.S) develops design and technical skills needed in the career of Residential, or Home Design. Skill sets developed are also applicable to working with architects as a Drafter. The broad-based curriculum emphasizes technical skills as related to construction documentation, building systems and codes, sustainable design principles, and CAD.

Sustainable design and construction concepts are embedded in all applicable courses, including Design, Building Systems, and Residential Codes. Sustainable content includes energy efficient design and analysis, passive solar design, sustainable materials analysis and selection, daylighting design, alternative energy sources, water harvesting concepts, and embodied energy and cost benefit analysis.

The Sustainable Building Certificate builds on the Architectural program by combining additional coursework in sustainable design, products, materials, and construction with Environmental science, sociology and ethics. These courses add both depth and breath in the area of sustainability, and are taught by highly qualified instructors from the fields of architecture, and construction, who have specialized training in sustainable design practices.

Automotive – Alternative Fuels

Automotive service technicians inspect, test, diagnose, repair and supervise the repair of mechanical and electrical systems on hybrid and electric automobiles and light trucks.

Other responsibilities may include accounting, record keeping, sales, customer relations and management.



Building Construction

This program is designed to help students develop the technical qualifications and life skills needed to enter the construction industry, as well as to help those currently in the construction trades upgrade and learn new skills. Options include Residential Construction, Design/Build Remodeling and Construction Management. A requirement of all three options is BCT 206

Sustainable Construction Practices. Other sustainable or "Green Building" classes such as Alternative Building Design and Construction, Residential Green Roofing and Building Science are offered as electives, and sustainable & energy efficient building practices are a thread running through all of the construction classes.

Chemistry

Chemistry is the fundamental science of matter – its structure, composition, and transformations. As such, chemistry has wide applications in all the physical, biological, and behavioral sciences, as well as in the emerging field of Green Technology. Chemistry is involved

in solving some of the most pressing problems facing our society today, such as environmental problems, medical issues, dwindling energy resources, the need for new and better materials, and worldwide food shortages. Chemistry classes are also integrated into some of the new PCC Green Technology options.

Civil/Mechanical Engineering Technology

Civil Engineering Technology Graduates help design better bridges, keep our drinking water safe, or prevent industrial pollution. Mechanical Engineering students learn to use math, science and communications to solve real life problems in climate control systems, manufacturing, and improving energy efficiency. Civil and Mechanical Engineering courses are included in the EET Renewable Energy Systems option.

Electronic Engineering Technology -- Renewable Energy Systems

The Renewable Energy Systems (RES) training is preparing technicians for solar power, wind power, fuel cell and other renewable energy fields. Graduates of this degree can be hired to work as technicians in wind manufacturing/servicing areas, solar manufacturing and installation, as well as fuel cell manufacturing. Graduates can also assist engineers with solar systems design projects or design in many other renewable energy areas.

Engineering

Portland Community College offers freshman and sophomore courses in chemical, civil, computer, electrical, environmental, industrial, manufacturing and mechanical engineering tailored to the needs of students transferring to several university programs. Engineering classes are also

integrated into some of the new PCC Green Technology options.

Facilities Maintenance

The Facilities Maintenance Technology (FMT) and Industrial Technology (IT) programs, students learn the skills and concepts necessary to install, operate, maintain and repair piping and mechanical systems in residential, large commercial, medical, institutional and industrial buildings. Sustainable and healthy green building practices are incorporated throughout facilities classes. Students also learn troubleshooting skills, problem-solving methods and electrical concepts, which are critical to large employers. Building Commissioning followed by stand alone classes; Air Quality for the Indoors, Smart Building Controls, Building Power Cost Management, Solar Electric Panel Sizing, Installation of Photovoltaic Panels, and Commissioning of a Solar Electric System are all 70% plus hands on and sustainable green courses taught by veterans technicians in their fields.

Interior Design

Students of Interior Design at Portland Community College are concerned with creating interior environments which support and enhance the lives of their clients. Our students learn to develop a methodology of programming for client needs that encompasses aesthetics, sustainable design practices, design history, color, light, furniture and kitchen design and bath design for residential remodels. Students attain a commitment to incorporate energy saving strategies, healthy indoor air quality, resource conservation and waste reduction within the study of residential interior design.

Micro Electronics Engineering Technology – Options in Solar Manufacturing



Microelectronics Technology - options in Solar Manufacturing program allows students to enter the world of solar cell (photovoltaic) manufacturing, providing the opportunity to learn the entire process of fabrication, metrology, testing and quality control. AAS students will learn to maintain and repair the complex, automated equipment used in producing the cells.

Community Education

A wide array of non-credit Green Living courses are offered in urban farming, water conservation, solar enhancements, non-toxic interior design materials, waste minimization, reducing their carbon footprint and natural building. These courses help community members save money, conserve

resources and build skills while enhancing environmental awareness

Community Education offers non-credit professional development with sustainability themes, including a “Solar, Thermal and Electric Systems Installer Series” through a successful community partnership with local business, Mr. Sun Solar. Customized Workforce Training, in partnership with the Westside Transportation Alliance, offers a “The Regional Travel Options Training Series” that explores alternatives to single-driver commuting for local businesses and organizations.

The Sustainability in Education portion of the CAP has been presented at the Studien Forum Berlin E.Z. as a part of an international conference entitled, “Germany as a Model? The Environmental and Energy Strategy.” Four faculty members from PCC attended this conference and the Sylvania Dean of Science and Technology gave his presentation on current and developing green technology educational offerings at PCC.

Immediate Action Items and Long-Term Objectives

2030 Objective 11.

Increase sustainability-infused curricula and green technology options at PCC.

PCC has made tremendous strides in green technological offerings within the institution, often times in partnership with local job providers. As an example, PCC currently offers a Certificate of Completion in Solar Voltaic Technology. This specific education option feeds directly into employment opportunities at Solar World,

a new solar cell manufacturing facility located in Hillsboro. PCC's students have access to Solar-World manufactured and donated solar cells within the labs in our Solar Voltaic Technology program. Solar World, in turn, serves on the Industry Advisory Board of the Microelectronics Technology department.

Actions to be taken by 2012

- (i) The Sustainable Practices for Academics and Resources Council (SPARC) will convene for the first time in fall 2009. This committee comprises faculty and staff from many different disciplines and will serve as a clearing house for sustainability-related academic programs and curriculum and will make periodic updates to the President's Cabinet. The funding for this action item will be provided by the Office of Academic and Student Affairs (OASA) as well as existing funds.
- (ii) Explore the development of a graduation requirement or outcomes in sustainability. OASA as well as existing department budgets will fund this action item.
- (iii) Begin the first Environmental Studies sustainability class at PCC by Spring 2010. This action item will be funded via curriculum and campus-based funds
- (iv) Implement the following degree options: --
 - Building Commissioner Training: this will be housed in the Facilities Maintenance Technology department
 - Green Building Inspection- this will be housed in the Building Inspection Technology department
 - Green Roof and Wall Construction and Maintenance: this will be housed in the Building Construction Technology department

-Civil and Mechanical Sustainable Engineering Technology: this will be housed in the Electronic Engineering Technology department

-Sustainability Management: this will be housed in the Business Management department

This action item will be financially supported by curriculum and campus-based funds.

- (v) Explore the development of an Energy Efficiency Technician Degree/Certificate. This will be funded through curriculum and campus-based funds.
- (vi) Explore the development of an academic Sustainable Agriculture program. This will be funded through curriculum and campus-based funds.
- (vii) Explore offering LEED certification education and accreditation course. This will be funded through curriculum and campus-based funds.
- (viii) Work towards infusing sustainability throughout curricula. Curriculum and campus-based funds will be the funding source.
- (ix) In revising the college's strategic plan, review measureable outcomes that will comply with Board policy B707. Existing funds will provide financial support to this action item.

Community Outreach

Background

Annually, Rock Creek ASPCC along with Rock Creek Sustainability, partner to put on the Harvest Festival. The Harvest Festival is a family-friendly event in which Rock Creek reaches out to the community of Washington County with a fun, free event. Face painting, hay rides and a "pick your own pumpkin" activity are just a

sample of what Rock Creek offers at the Harvest Festival. Having this event on an annual basis for over 15 years has not only allowed Rock Creek to create a partnership with our neighbors, but has also allowed Rock Creek to showcase its sustainability efforts. Tours of the “no-waste Loop” as well as the Learning Garden are offered as well.

Earth Day events are held on an annual basis at all four campuses throughout the district. Campus-based Green Teams have assisted in organizing these events, as well as ASPCC. In 2008, Cascade campus organized an outreach event in which representatives from outside organizations were invited to showcase their business and interact with faculty, staff, students and neighbors of the Cascade campus. SE Center had its first Earth Day celebration in 2008, which was organized by the campus-based ASPCC Student Sustainability Senator. Highlights of this event were a film festival, a waste audit and the unveiling of the campus’ first “mug board”. Sylvania campus held a very successful event completed with local beverage vendors, local alternative builders and a “pot your own plant” session, courtesy of the Environmental Center-led Learning Garden interactive table. Rock Creek held its first Earth Celebration event in 2009. This event was held on the Saturday after Earth Day. The event was scheduled at this time in order to provide an opportunity to community members, faculty, staff and students that work during the week, to participate in Earth Day celebrations. This event, in its first year, was quite successful. Presentations on local foods, food preservation and composting were a part of the event as well as representatives from local restaurants and non-profits. Live music was performed and Environmental Studies faculty members led an invasive plant removal session in the Environmental Studies Center as well as a wildflower walk. Many events on campuses are open to the public and advertise in local publications.



Rock Creek ASPCC participated in the Association of College Unions conference entitled “Tending the Global Garden”. Sustainability was the theme.

Building relationships with neighborhoods that PCC impacts directly is crucial to the college’s overall mission. When we create synergistic partnerships with our neighbors and provide outreach concerning lessening our impact on the earth to our fellow citizens, behavior change may or may not ensue. If we can, as a higher education institution, serve as a model of sustainability to our neighbors, behavior change can and will ensue.

Immediate Action Items and Long Term Objectives

2030 Objective 12.

Increase PCC sustainability awareness throughout the community.

PCC has many long-standing relationships in our district. The college takes much pride in is to improving and maintaining these relationships, with neighborhood organizations, local businesses and non-profit agencies among other community partners.

Actions to be taken by 2012

- (i) Provide educational resources to support community members' efforts to incorporate sustainability into their lives. The funding for this action item will be provided by general department and curriculum funds.
- (ii) Organize various college departments and offices to collaborate on ways to educate the public on sustainability. This action item has been funded by the Climate Energy Leadership Taskforce.
- (iii) College Advancement will develop a plan to publicize PCC's sustainability efforts. The College Advancement office will be the funding source for this action item.
- (iv) Work with community to ensure access to quality green jobs (green job training program as a pathway to a skilled workforce in a green economy). The funds for this action item will be provided by existing budgets, the Institutional Advancement office, general curriculum and campus funds as well as Central Workforce Training.

Tracking Progress and Financing



Tracking Progress and Financing



Tracking Progress

PCC has dedicated human resources to the development of sustainability since 2006. A part-time, campus-based Sustainability Coordinator is housed at Rock Creek campus as well as a part-time, campus-based Environmental Center Coordinator at Sylvania campus. The Environmental Center Coordinator focuses on supporting instruction and co-curricular activities while the campus Sustainability Coordinator focuses on operations.

A district Sustainability Coordinator is housed in the Physical Plant. This Sustainability Coordinator deals with all aspects of PCC sustainability: energy use, community outreach, education, solid waste consumption. The position has a large role in developing, implementing, monitoring and updating the Climate Action Plan.

In the coming months, a Resource Conservation Manager will be hired. The role of this Resource Conservation Manager will be to monitor energy consumption, assist with revamping the operations of the Physical Plant to reduce overall energy consumption district-wide. As this Resource Conservation Manager is hired, the role of the district Sustainability Coordinator will shift to focus more on education.

All four of these resources will assist in the tracking progress of our Climate Action Plan. As an ACUPCC signatory, we are committed to “(describing) how the institution will track its progress in achieving the goals set out in the rest of the plan.” As previously stated within the CAP, we are committing to three tracking progress goals. These goals are to:

- Report on college emissions annually. An annual updated GHG audit will be submitted to the Association for the Advancement of Sustainability in Higher Education (AASHE) website.
- Evaluate existing actions and identify new actions every three years. The CAP is a workable document, designed to be continually updated. As established action items are completed and as new technologies become available, the CELT with the assistance of the Sustainability Coordinator will revisit and augment the Climate Action Plan.
- Re-examine the established objectives every five years. Established objectives within the CAP may be completed before the 2030 goal, or the college may chose a different route toward our established 2030 goal. In either scenario, the established objectives within the CAP will be revisited

every five years by the CELT with the assistance of the Sustainability Coordinator.

Financing

During the planning stages of the CAP, a Climate Action Planning Financing committee was developed. The purpose of this committee was to establish tangible funds to every action item stated in the CAP. This is to ensure the establishment, development and completion of each immediate action item. Within the Mitigation Strategies of the CAP, financing of each immediate action item is discussed. An overview of funds per action item for each section of the CAP is listed below:

Buildings and Energy Funding Sources:

- State stimulus monies
- Bond dollars
- Capital projects funds
- Existing funds
- Third party contracting

Transportation Funding Sources:

- Existing funds
- Department assessment for air trips
- Parking and Transportation Office
- College Advancement Office
- Central Services Department
- Grants
- Student Activities Fund

- Marketing Department

Consumption and Solid Waste Funding Sources:

- Existing funds
- Associated Students of PCC (ASPCC)

Food and Agriculture Funding Sources:

- Increases in retail prices
- Bond dollars
- Food Services Department
- Curriculum monies
- Sustainable Practices for Academics and Resources Council (SPARC)
- Sustainability Coordinator
- Campus-based Sustainability Coordinator

Sustainability in Education Funding Sources:

- SPARC
- Existing funds
- Curriculum monies
- Campus monies

Community Outreach Funding Sources:

- Curriculum monies
- Department funds
- CELT funds
- College Advancement Office
- Existing funds
- Institutional Advancement funds

- Campus monies
- Central Workforce Training funds

Another potential source of funding is the newly formed Green Initiative Fund. The Green Initiative Fund (TGIF) provides funding for projects which “green” our campuses and reduce the college’s impact on the environment. TGIF allocates funds to projects that increase the amount of renewable energy used on campus, increase energy efficiency and reduce the amount of waste created by our college. Portions of the fund will support education initiatives and student internships. As a district, the students of PCC proposed and passed increasing the Student Activity Fee (SAF) to support green/sustainable initiatives. This increase in the SAF will result in \$75,000 available to the TGIF within its first year.



The highest achievement that PCC staff and faculty can offer our students is displayed here, graduation.

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Linda Gerber: CELT Co-Chair and Sylvania Campus President

Tim Donahue: CELT Co-Chair and Director of Physical Plant

Grant Bennett: College Architect

Keith Gregory: Interim CELT Co-Chair and Manager of Maintenance and Grounds

Randy McEwen: District Vice President

Wing-Kit Chung: Vice President Administrative Services

Cherie Chevalier: Associate Vice President Finance

Christine Chairsell: Vice President Academic and Student Affairs

Kristin Watkins: Associate Vice President College Advancement

Steve Hopf: Purchasing Manager

Sharlene Norton: Supervisor of Telecommunications

Preston Pulliams: District President

Dana Peterson: Financial Management Analyst

John Garner: Manager Parking and Transportation Services

Michael Kuehn: Transportation Coordinator

Linda Eden: Director of Auxiliary Services

Dianna Benting: Manager Food and Vending Services

Sylvia Welch: Director of Affirmative Action

Ken Nelson: Central Distribution Services Manager

Luis Menchew: Web Services Manager

Erin Stanforth: Sustainability Coordinator

Scott Huff: Cascade Dean of Instruction

Lonn Aldridge: Cascade Physical Plant Manager

James Bowles: Director, Margaret Carter Skills Center

Lutgarda Cowan: Writing Faculty

Kate Dins: Division Dean of Arts and Professions

Gary Eaton: Cascade Technology Solutions Services Manager

Kendi Esary: Cascade Student Leadership Coordinator

Tony Gerner: Cascade Reference Librarian

David King: Cascade Student Body President

Carol Littleton: Cascade student

Tracy Parker: Cascade Student Sustainability Senator

Chelsea Peil: ASPCC Officer

Roberta Richards: Cascade Library Technician

Shari Rochelle: Health Education Faculty

Bill Rude: Groundskeeper

Jan Underwood: Spanish Faculty

Kate Carney: ESOL Faculty

Dale Hanson: Rock Creek Physical Plant Manager
 Terry Lookabill: Farm Manager
 Margie Fyfield: Rock Creek Science and Technology Division Dean
 Dorina Cornea: Microelectronics Faculty
 Mandy Ellertson: Rock Creek Student Leadership Coordinator
 Kevin Lien: Biology Faculty
 Tom Robertson: Biology Faculty
 Eric Kirschner: Microelectronics Faculty
 Spencer Hinkle: Building Construction Technology Faculty
 Keven Caldwell: Landscape Technology Faculty
 Loretta Dike: Administrative Assistant
 Birgitte Ryslinge: Rock Creek Dean of Instruction
 Michelle Luff: Rock Creek Advisor
 Tom DeSpain: English Faculty
 Jim Johnstone: Ceramics Faculty
 Kelly Marks: Rock Creek Coordinator Campus Operations
 Craig Londraville: Rock Creek Campus Technology Services Manager
 Christine White: Rock Creek Groundskeeper

 Julie Wolleck: Community Education Program Coordinator
 Carol Martin: Community Education Program Coordinator
 Larry Holmberg: SE Center Manager Information Technology
 Neely Wiek: SE Center Administrative Assistant
 Rebecca Robinson: SE Center Faculty
 Craig Kolins: SE Center Dean of Instruction
 Frank Harris: SE Center Lead Custodian
 Nan Poppe: SE Center Campus President

Tamara Spycher: SE Center Student Leadership Coordinator
 Carly Vollet: SE Center Faculty
 Jim Wetmore: Recycling Technician
 Bret Cody: Sylvania Campus Electrician
 Bill Stauffer: Sylvania Physical Plant Manager
 Joshua Liebschutz: Environmental Center Coordinator
 April Fong: Biology Faculty
 Linda Degman: Associate Director of Bond Project
 John McKee: Sylvania Science and Technology Division Dean
 Lucy Currey: Sylvania Campus Technology Services Manager
 Russell Banks: Marketing and Communications Manager
 Katherine McDonald: Sylvania Publications Specialist
 Tony George: Print Center Manager
 Jeff Triplett: Sylvania Dean of Instruction
 Linda Fergusson-Kolmes: Biology Faculty
 Greg Gerstner: Civil Mechanical Engineering Faculty
 Sanda Williams: Electronic Engineering Faculty
 Stephen Arthur: Sylvania Clubs and Programs Specialist
 Toby Dittrich: Physics Faculty
 John Richardson: Sylvania Lead of Mechanical Systems
 Kim Smith: Sociology Faculty
 John Gwaltney-Beaumont: Grounds Foreperson

A special thank you to the Graphic Design Team as well as the Climate Action Planning Team that composed the City of Portland Climate Action Plan. The design and text of your plan was inspirational and influential on PCC's own Climate Action Plan.

Appendix A

A-1: City of Portland Climate Action Plan

Greenhouse Gas Educational Tool



SOLAR RADIATION POWERS THE CLIMATE SYSTEM.

SOME SOLAR RADIATION IS REFLECTED BY THE EARTH AND THE ATMOSPHERE.

INFRARED RADIATION IS EMITTED FROM THE EARTH'S SURFACE.

ABOUT HALF THE SOLAR RADIATION IS ABSORBED BY THE EARTH'S SURFACE AND WARMS IT.

THE GREENHOUSE EFFECT

Some of the infrared radiation passes through the atmosphere and is absorbed by the Earth's surface, and much is absorbed by greenhouse gas molecules and clouds. The effect of this is to warm the Earth's surface and the lower atmosphere, creating the climate system that has allowed life to exist on Earth.

APPENDIX 1



CLIMATE CHANGE OVERVIEW

THE GREENHOUSE EFFECT

Climate change is driven by the greenhouse effect, a natural phenomenon essential to life as we know it. Without the greenhouse effect, the Earth would be permanently icy and inhospitable. Water vapor, carbon dioxide and other gases in the Earth's atmosphere act like a blanket over the Earth, absorbing some of the heat from the sunlight-warmed surface of the Earth instead of allowing it to escape into space (see Figure 18). Increasing the amount of these gases, called carbon emissions, in the atmosphere essentially makes the blanket thicker — and warmer. This warming is accompanied by changes in precipitation patterns, increased frequency and intensity of storms, wildfires, droughts and floods, rising sea level, changes in water quality and substantial changes in habitats, including the range of pests and diseases.

CARBON DIOXIDE AND OTHER CARBON EMISSIONS

Fossil fuels such as coal, gasoline, diesel, fuel oil and natural gas are made of carbon that has been stored underground for millions of years. Burning fossil fuels to generate electricity, manufacture goods, grow food, heat our homes and power our vehicles transforms this stored carbon into the gas carbon dioxide, which is then released into the atmosphere. Changing patterns of land use and land cover, primarily the burning and destroying of forests and the conversion of wildlands to farmland or housing, also release carbon dioxide from carbon stored in plant matter and soil. Further, by reducing the number of trees and plants that otherwise would remove carbon dioxide from the atmosphere through photosynthesis, such land use changes reduce the planet's capacity to absorb carbon dioxide. As a result of these activities, global atmospheric concentrations of carbon dioxide have increased by more than 30 percent over the past 150 years.

Carbon dioxide comprises almost 85 percent of U.S. carbon emissions, but it is not the only greenhouse gas of concern. Methane, nitrous oxide and halocarbons are also increasing in the atmosphere as a direct result of human activities. Methane

emissions, which account for eight percent of U.S. emissions, result primarily from raising livestock and waste disposal in landfills, where putrescible — rotting — waste generates methane. Soil management practices and application of fertilizers are the principal cause of nitrous oxide emissions, which represents five percent of U.S. emissions. Halocarbons, which include chlorofluorocarbons, hydrochlorofluorocarbons and perfluorocarbons, are synthetic gases produced during industrial processes such as cement manufacturing and aluminum smelting. These carbon emissions, though a smaller percentage of total emissions, all exert a more powerful greenhouse effect than carbon dioxide. (See “Units of Measurement for Carbon Emissions” in Appendix 3 for more information.) Reducing emissions of these gases is thus a critical component of climate protection.

SCIENTIFIC AUTHORITY

The United Nations Environment Programme and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) in 1988. The IPCC remains the primary authority on global climate change, receiving the 2007 Nobel Peace Prize for its work in the field.

The latest IPCC report, released in 2007, concludes that:¹

- Human activity has increased atmospheric concentrations of carbon dioxide, methane and nitrous oxide to levels not seen in the past 650,000 years.
- There is over 90 percent certainty that most of the warming of the climate is due to human activity.
- Humans have set in motion a warming of the climate and rising of sea levels that will continue for centuries, but the amount of warming and sea level rise will be determined by human activity in the coming years.
- To minimize the extent of climate change, global carbon emissions must peak no later than 2015 and decline 50 to 85 percent from 2000 levels by 2050.

In January of 2008, the IPCC Chair, Rajendra Pachauri, suggested that the world had just seven years to stabilize carbon emissions.²

IMPACTS

Portland, Multnomah County and the entire Pacific Northwest will feel the impacts of global climate broadly and deeply. Since 1900, the average temperature in the Pacific Northwest has increased by 1.5 degrees Fahrenheit. In the next century, the warming is expected to accelerate and increase at least three times as quickly.³ In the last century, glaciers on Mt. Hood shrank by more than one-third.⁴ Melting ice on this iconic mountain, while one of the more visible impacts of climate change, will not impact people’s daily lives in the way that will other, less immediately apparent changes.

The Pacific Northwest will experience more warming in summer, and nights will cool off less than they do today. Increased urbanization and population growth, with their related roads and rooftops, will exacerbate the urban heat island effect, increasing local temperatures even more. Winters will likely be wetter and summers drier. As shown in Figure 19, these changes, coupled with higher temperatures, will likely mean higher river flows in the spring, when water is already abundant, and lower flows in the summer, when surface water is badly needed for drinking, irrigation, hydropower and salmon.

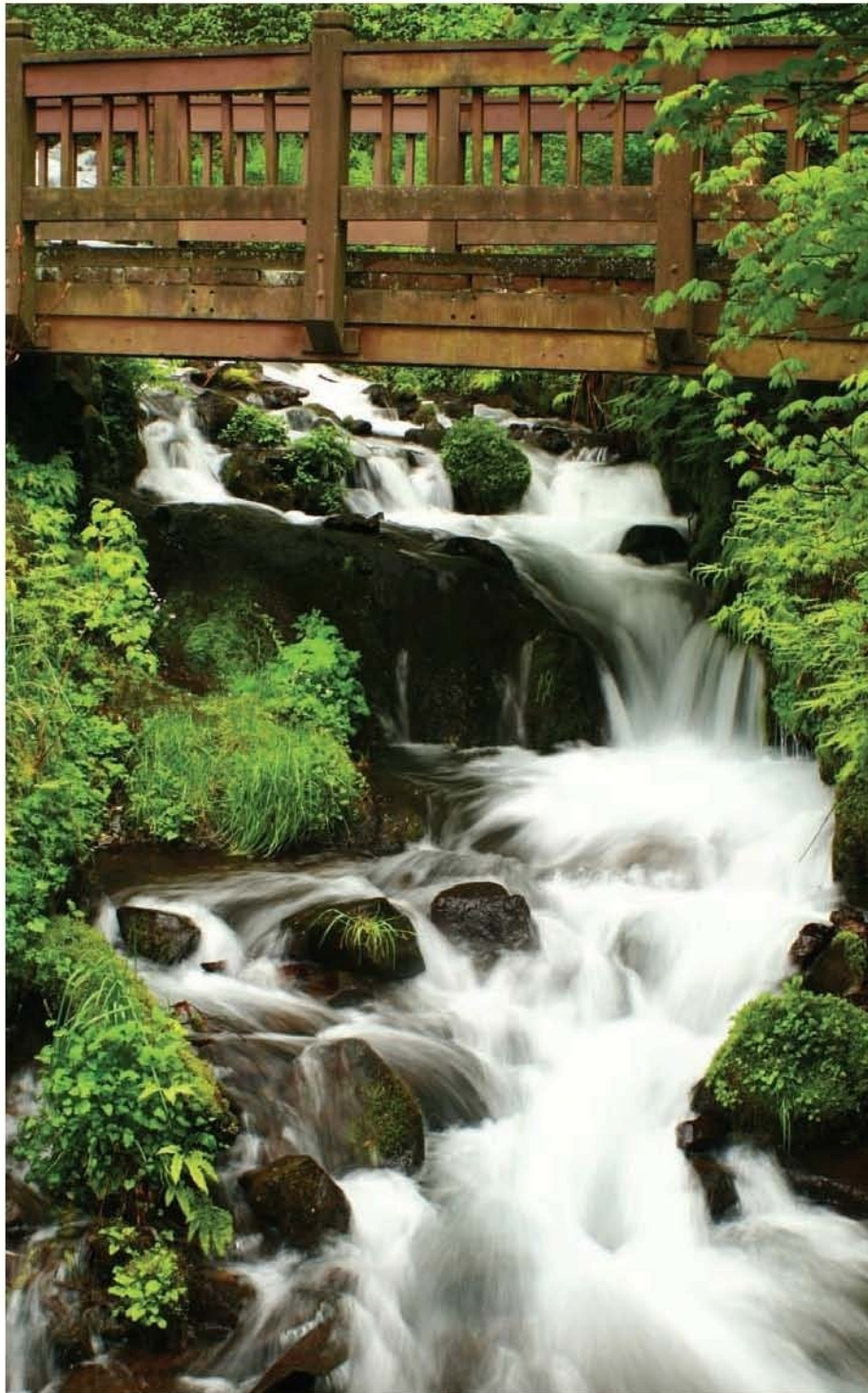
The region’s landscapes are at risk. Forests, a cornerstone of the economy and environment, are particularly vulnerable. Drought, fire, pests and disease are likely to increase. Oregon’s beaches are threatened by rising sea levels, stronger storms and increased coastal flooding and erosion.

1 Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report*.

2 Pachauri, Rajendra K. “How Would Climate Change Influence Society in the 21st Century?” Lecture delivered at Massachusetts Institute of Technology, January 29, 2008.

3 University of Washington Climate Impacts Group, <http://cse.washington.edu/cig/pnwcc/cc.shtml>.

4 Jackson, K. M. and A. G. Fountain. “Spatial and morphological change on Eliot Glacier, Mount Hood, Oregon, USA.” *Annals of Glaciology*, 46, 222-226.

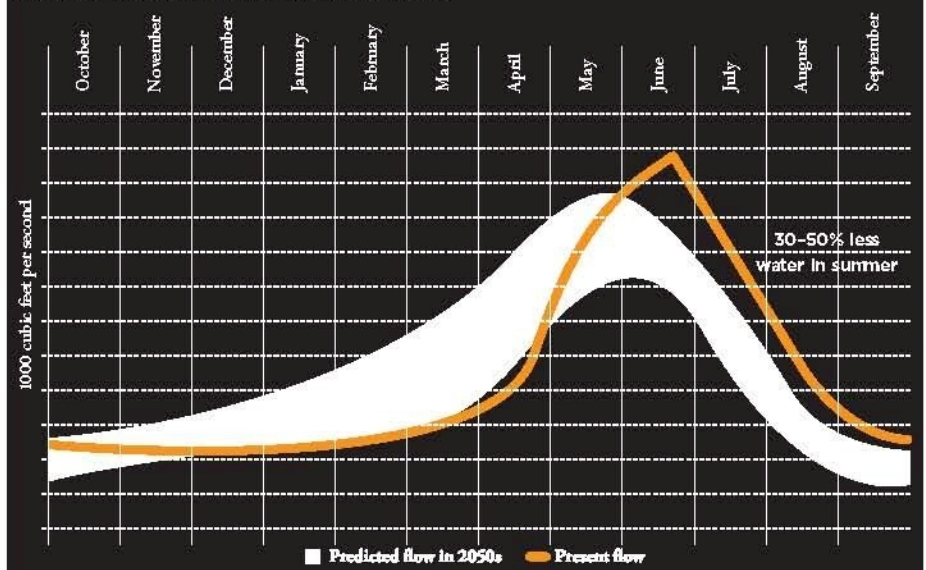


Climate change also poses a significant challenge to public health. Rising temperatures may be accompanied by increased incidents of diseases such as cholera and weather-related mortalities. Rising temperatures are a specific concern for seniors, who are particularly vulnerable to heat stroke — especially in this region, where most homes do not have air conditioning. Additionally, mental health problems such as anxiety and post-traumatic stress syndrome may increase to the extent that people migrate from increasingly inhospitable climates to the temperate Northwest.

This summary is by no means an exhaustive survey of potential climate impacts. Additional information can be found at the following:

- Intergovernmental Panel on Climate change (IPCC) — www.ipcc.ch
- U.S. Climate Change Science Program — www.climatechange.gov
- Oregon Climate Change Research Institute — oregonstate.edu/groups/geco/pages/OCCRI.html
- University of Oregon Climate Leadership Initiative — climlead.uoregon.edu
- State of Oregon Climate Change Portal — www.oregon.gov/ENERGY/GBLWRM/Portal.shtml
- University of Washington Climate Impacts Group — ces.washington.edu/cig

FIGURE 19
PACIFIC NORTHWEST RIVER FLOWS



University of Washington Climate Impacts Group

Appendix B:

- 2006 Greenhouse Gas Audit
- American Colleges and Universities President's Climate Commitment

CO2 Emissions Inventory Updated June '08

Preliminary Results Completed by Environmental Science students: Tammi Monday, Yvonne Norman, and Amber Morgan. April 2007

| Sources of CO2 in 2006 | Tons |
|------------------------|--------|
| Solid Waste | 191 |
| Fleet | 716 |
| Air Travel | 1,280 |
| Electricity | 9,811 |
| Commuting | 29,923 |
| Natural Gas | 6,691 |

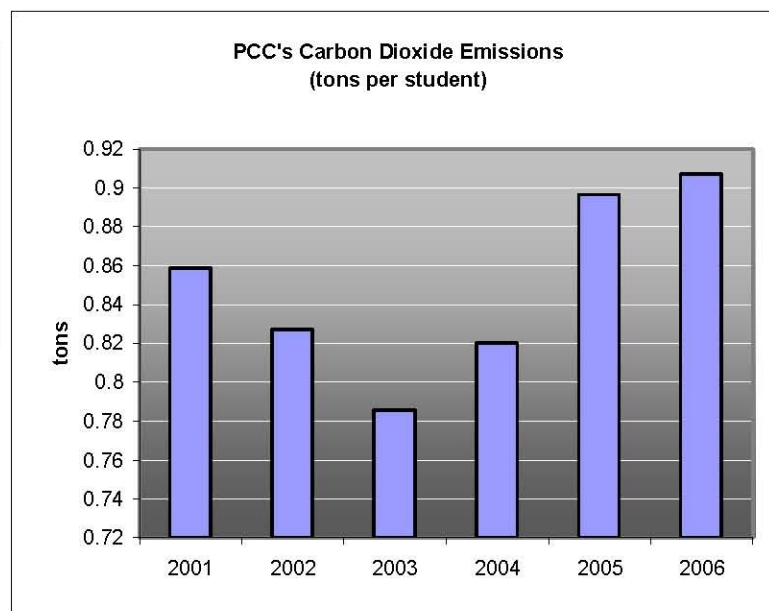
Note: When the Transportation study is complete, data from FY06&07 will present the most complete picture of PCC's emissions. Some categories were assigned low estimates to account for missing data 00-05 (see notes). This may be the most comprehensive study of CO2 emissions ever completed by a college campus.

Thanks to Randy McEwen, Steve Sivage, Wing-Kit Chung, John Garner, Ken Nelson, Teri Hunt, Jill Dunaway, Institutional Effectiveness, Grant Bennett, Dmitry Tropets, Terri Lookabil

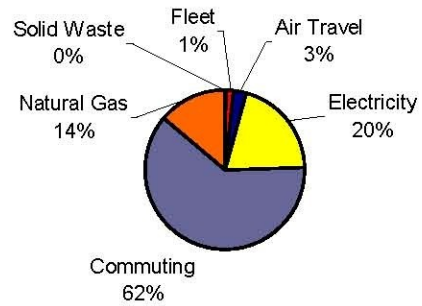
| Tons CO2 | | | | | | | | | | |
|----------|-------------|-------------|-------|---------|------|-------------|-------------|-------------------|--------|-------------|
| Year | Electricity | Natural Gas | Fleet | Commute | Air | agriculture | solid waste | total metric tons | US ton | pounds/ft 2 |
| 2001 | 8771 | 5872 | 647 | 32394 | 778 | 28 | 170 | 48,660 | 54,500 | 67 |
| 2002 | 8930 | 5274 | 795 | 36427 | 778 | 29 | 170 | 52,403 | 58,692 | 72 |
| 2003 | 8271 | 4684 | 769 | 36978 | 778 | 28 | 170 | 51,678 | 57,880 | 69 |
| 2004 | 8655 | 5324 | 840 | 32910 | 958 | 28 | 170 | 48,885 | 54,752 | 56 |
| 2005 | 9571 | 6447 | 883 | 30002 | 962 | 28 | 180 | 48,072 | 53,841 | 54 |
| 2006 | 9811 | 6691 | 716 | 29923 | 1280 | 28 | 191 | 48,640 | 54,476 | 53 |
| % Growth | 12% | 14% | 11% | -8% | 65% | -2% | 12% | 0% | 0% | -21% |

| | Physical size | # students | | | |
|------|---------------|------------|-----------|--------|--------|
| | | full-time | part-time | summer | total |
| 2000 | 1,604,015 | 10,056 | 29,614 | 23,011 | 62,681 |
| 2001 | 1,604,015 | 10,486 | 29,614 | 23,364 | 63,464 |
| 2002 | 1,613,015 | 12,579 | 31,626 | 26,753 | 70,958 |
| 2003 | 1,642,235 | 12,832 | 32,107 | 28,728 | 73,667 |
| 2004 | 1,935,784 | 11,965 | 30,403 | 24,385 | 66,753 |
| 2005 | 1,977,274 | 12,003 | 25,020 | 23,018 | 60,041 |
| 2006 | 2,022,598 | 12,390 | 23,214 | 24,439 | 60,043 |

| Conversion Factors: | |
|---------------------|---------|
| pounds/metric ton | 2204.62 |
| long tons/short ton | 1.12 |

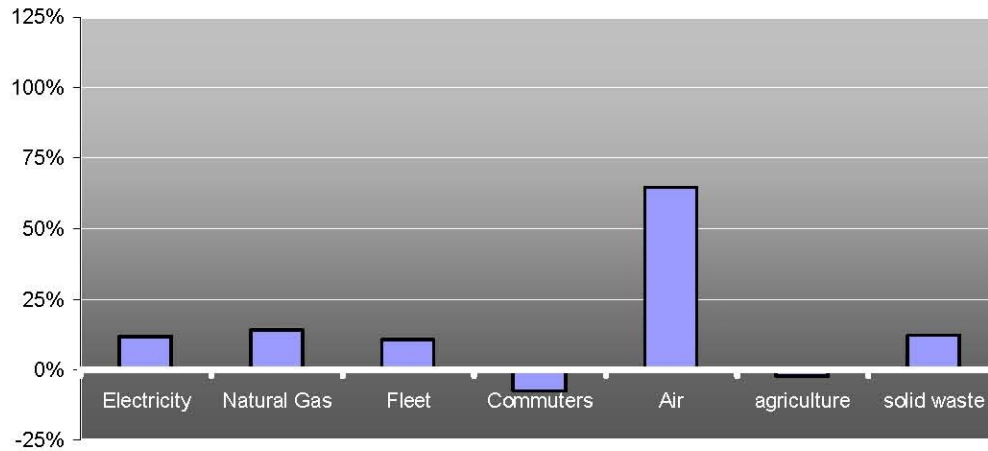


**Sources of PCC's Carbon Dioxide Emissions
(2006)**

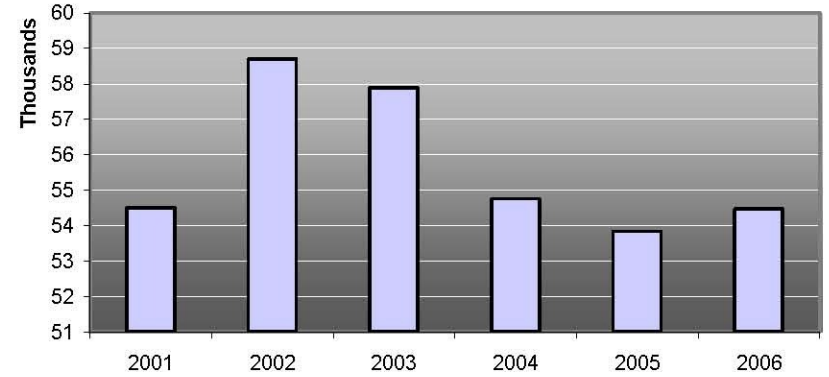


| tons/student |
|--------------|
| 0.858747641 |
| 0.827133598 |
| 0.785695072 |
| 0.820211585 |
| 0.896740152 |
| 0.907290255 |
| 6% |

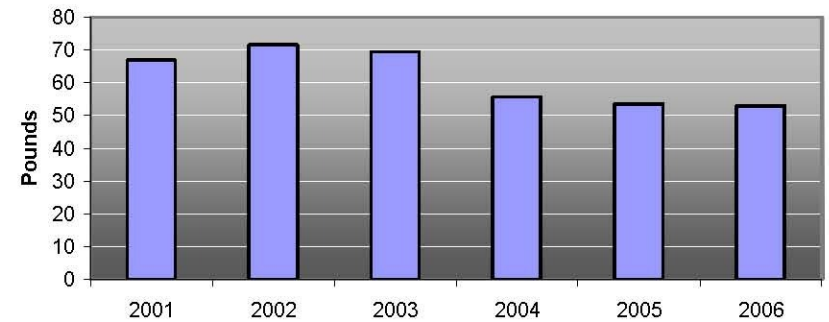
Estimated Change in Carbon Dioxide Emissions 2001-06



**PCC's Total Carbon Dioxide Emissions
(tons)**



**PCC's Carbon Dioxide Emissions
(pounds per square foot)**



American College & University Presidents Climate Commitment

We, the undersigned presidents and chancellors of colleges and universities, are deeply concerned about the unprecedented scale and speed of global warming and its potential for large-scale, adverse health, social, economic and ecological effects. We recognize the scientific consensus that global warming is real and is largely being caused by humans. We further recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest, in order to avert the worst impacts of global warming and to reestablish the more stable climatic conditions that have made human progress over the last 10,000 years possible.

While we understand that there might be short-term challenges associated with this effort, we believe that there will be great short-, medium-, and long-term economic, health, social and environmental benefits, including achieving energy independence for the U.S. as quickly as possible.

We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality. Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities.

Accordingly, we commit our institutions to taking the following steps in pursuit of climate neutrality:

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.
 - a. Within two months of signing this document, create institutional structures to guide the development and implementation of the plan.
 - b. Within one year of signing this document, complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.
 - c. Within two years of signing this document, develop an institutional action plan for becoming climate neutral, which will include:
 - i. A target date for achieving climate neutrality as soon as possible.
 - ii. Interim targets for goals and actions that will lead to climate neutrality.
 - iii. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.
 - iv. Actions to expand research or other efforts necessary to achieve climate neutrality.
 - v. Mechanisms for tracking progress on goals and actions.

(continued)

2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.
 - a. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.
 - b. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.
 - c. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.
 - d. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution.
 - e. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.
 - f. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.
 - g. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.
3. Make the action plan, inventory, and periodic progress reports publicly available by providing them to the Association for the Advancement of Sustainability in Higher Education (AASHE) for posting and dissemination.

In recognition of the need to build support for this effort among college and university administrations across America, we will encourage other presidents to join this effort and become signatories to this commitment.

Signed,

President/Chancellor/Signatory

President/Chancellor/Name

College or University

Date

Please send the signed commitment document to:

AASHE Climate Commitment

1000 Connecticut Avenue, NW

Washington, DC 20037-2120

Phone: 202-462-1100

Fax: 202-462-1610

or email to climate.commitment@aashe.org

Appendix C:

- Cascade Campus Waste Audit
- Rock Creek Campus Waste Audit
- Sylvania Campus Waste Audit

Portland Community College Cascade Campus Waste Audit

November 15th, 2007



Conducted by the Cascade Green Team

Green Team Members: Lutgarda Cowen, Jan Underwood, Kalyn Brewer, Beth Flynn, Zeke Martin, Christa Behlke, Marissa Johnson, Alethea Johnson, and Rosie Sweetman.

With help from Pete Chism, Noelle Studer, Alliyah Mirza, Tim Lynch and anonymous students.

The following people/organizations donated the use of canopies and equipment: Cascade Physical Plant, ASPCC, Roberto Suarez, Judy Preston.

Contacts:

Rosie Sweetman
Pete Chism

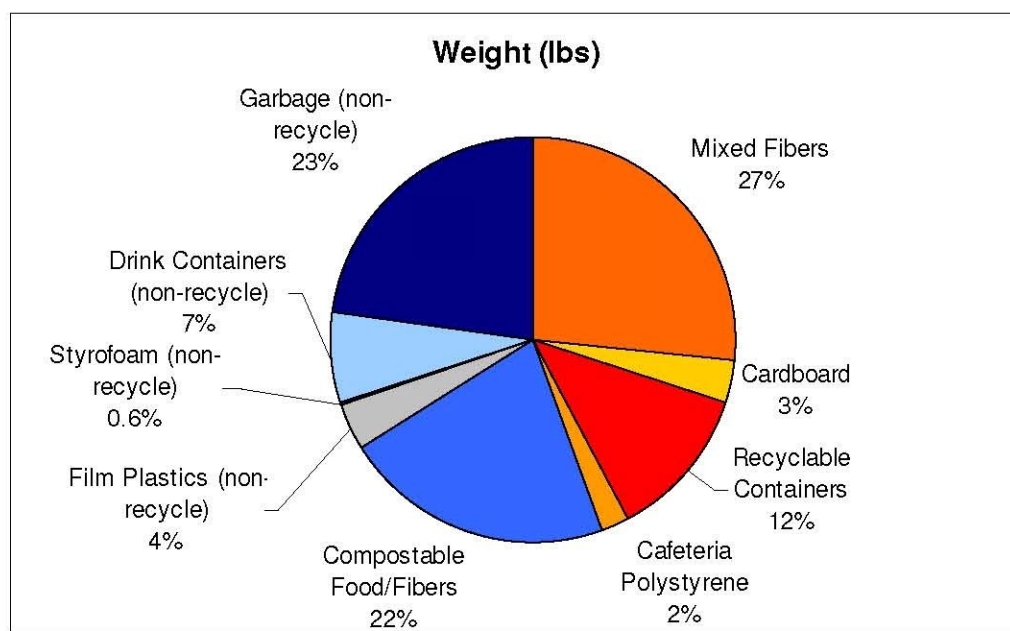
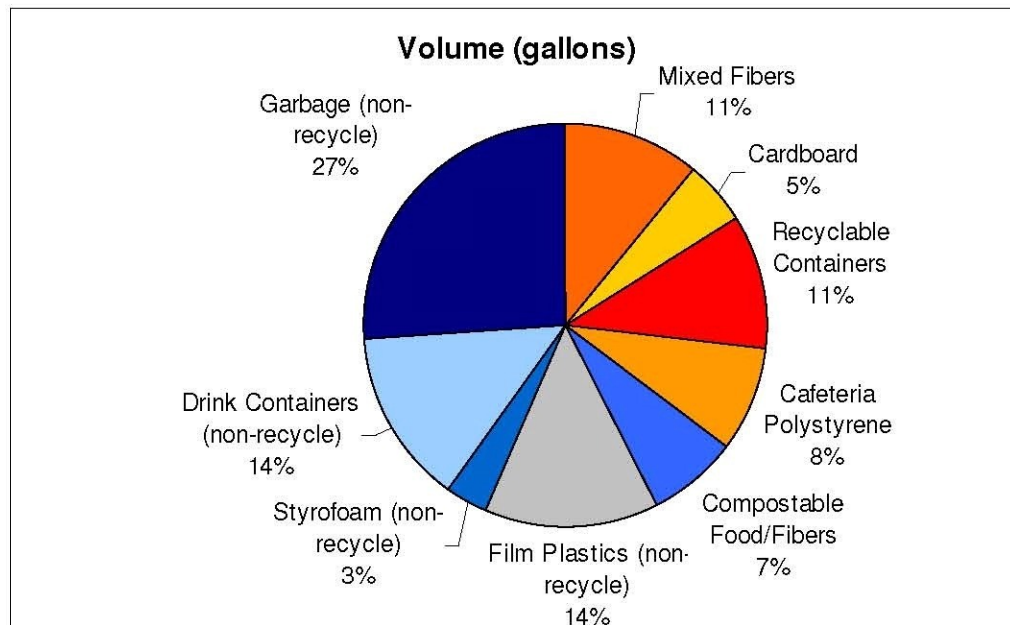
Resource Conservation Specialist
Office of Sustainable Development

503-978-5225
503-823-7652

www.pcc.edu/sustain

Overall Findings

With a few easy steps, Cascade Campus has the potential to reduce its waste significantly. If all recyclables accepted by Waste Management (PCC Cascade's waste hauler) were recycled, the amount of garbage by volume would decrease by 27%; the weight would be decreased by 42%. This would consist of recycling all paper, cardboard, plastic and glass bottles and aluminum cans. Non-recyclable containers (coffee, soda and soup cups) made up 14% of the waste stream, by volume. These are avoidable with the use of a re-usable mug. Also film plastics made up 14% of the waste stream, by volume. These are primarily from garbage liners, multiple bags found in the dumpster were extremely low and therefore more and/or bigger liners are used than necessary.



Recommendations

1. **Place a recycling bin next to every garbage can.** This includes outside, in-classrooms, in hallways, in the cafeteria and more. The purpose of this is to provide every person with the opportunity to recycle each time he/she disposes of a material.
2. **Encourage re-usable mugs and/or containers.** This could be in the form of a monetary incentive for using a mug and/or and monetary disincentive for using a disposable. These should be advertised well through signage and verbal reminders to customers.
3. **Reduce the size of garbage liners and the frequency of service.** Many large, nearly empty plastic garbage liners were found during the waste audit.
4. **Improve signage and outreach.** Limit confusion by providing clear signage of what is recyclable and what isn't.
5. **Implement central recycling station in large offices.** This will save the Recycling Technician time to empty more recycling bins elsewhere on campus, rather than spending time emptying each person's individual recycling box. Each person could empty his/her box in the central area when it gets full.
6. **Hire a part-time staff to help out with recycling.** This would make it feasible to maintain and expand the recycling system to classrooms, outdoors and elsewhere on campus.

Glossary:

Cafeteria Polystyrene: The cafeteria buys polystyrene plates, clear containers and black utensils through Recycling Professionals Inc. This material has been used at the Cascade cafeteria for past 12 years and has never successfully been recycled. Barriers to creating a workable recycling system include clear signage, contamination by food, napkins etc., an open campus/cafeteria, and a general understanding that everywhere else in Portland polystyrene is non-recyclable. Note : Polystyrene and Styrofoam are the same material and the names can be used interchangeably; Styrofoam is a registered trademark name by the Dow Chemical Company for its expanded polystyrene.

Cardboard: Corrugated cardboard boxes used for shipping and packaging. It is easily recycled in the cardboard bin outside the Student Center building behind the cafeteria.

Compostable Food/Fibers: Food, food-soiled paper, yard trimmings, coffee grounds, products made from corn cellulose (i.e. eco-tainers, bio-plastics) and other easily degradable material.

Containers (recyclable): Includes plastic bottles and tubs, glass containers, aluminum cans, steel cans, drink boxes, and aseptic containers.

Drink Containers (non-recyclable): Coffee cups, soup cups, soda cups and other containers made from non-recyclable material.

E-waste: Any electronic material in the waste stream. Electronic waste generated on campus would most likely be things like printers, copiers, monitors, telephones, batteries and cell phones

Film Plastics: In this waste audit the entire film plastics category consisted of clear plastic garbage bags. It could of also included grocery and sandwich bags as well as shrink wrap, plastic pallet wrap, and bubble wrap.

Garbage: Waste that has no alternative method of disposal other than the landfill.

Mixed Fibers: Paper material such as office paper, newspaper, paper board/soft cardboard, folders, scrap paper, sticky notes, shredded paper, paper bags, envelopes, and all other non-corrugated cardboard.

Recycling Technician: A hired employee in the physical plant who oversees recycling on both Cascade and Sylvania campuses. Currently the Recycling Technician is Jim Wetmore. He can be contacted at jwetmore@pcc.edu or at (503) 977-4304

Styrofoam: Expanded polystyrene used for packaging (often referred to as block Styrofoam and is also used as material for drinking cups.

Waste Management: PCC Cascade's current waste hauler. WM hauls yard debris, recycling and garbage from Cascade campus. WM charges PCC per dumpster instead of per weight of garbage. The recycling service is free.

Data

| Material Type | Box 1 | | Box 2 | | Box 3 | | Box 4 | | Totals | |
|---------------------------------------|-------|---------|-------|---------|-------|---------|-------|---------|--------|---------|
| | Vol. | Net Wt. | Vol. | Net Wt. | Vol. | Net Wt. | Vol. | Net Wt. | Vol. | Net Wt. |
| Mixed Fibers | 16 | 12.5 | 14 | 14.9 | 14 | 11.4 | | | 44 | 38.8 |
| Cardboard | 14 | 4.3 | 7 | 0.4 | | | | | 21 | 4.7 |
| Recyclable Containers | 15 | 5.9 | 14 | 8.88 | 14 | 2.9 | | | 43 | 17.68 |
| Cafeteria Polystyrene | 6 | 0.4 | 14 | 1.5 | 14 | 1.3 | | | 34 | 3.2 |
| Compostable | | | | | | | | | | |
| Food/Fibers | 14 | 7.7 | 14 | 23.2 | | | | | 28 | 30.9 |
| Film Plastics (ie. Clear bags) | 14 | 1.4 | 14 | 1.1 | 14 | 0.4 | 14 | 2.1 | 56 | 5 |
| Styrofoam (block, cups) | 14 | 0.6 | | | | | | | 14 | 0.6 |
| Drink Containers (non-rec) | 14 | 2.5 | 14 | 2.4 | 14 | 2.1 | 14 | 3.2 | 56 | 10.2 |
| Garbage (non-recycle) | 14 | 4.5 | 14 | 4.4 | 14 | 1.9 | 14 | 5.1 | 105 | 32.5 |
| Garbage (continued) | 14 | 6.7 | 7 | 2 | 14 | 2 | 14 | 5.9 | | |
| Miscellaneous Category | | | | | | | | | | |
| Microwave | 14 | 41.1 | | | | | | | 14 | 41.1 |
| Parking Passes | 14 | 14.4 | | | | | | | 14 | 14.4 |

Volume measured in gallons

Weight measured in pounds

Washington County Recycle at Work Program

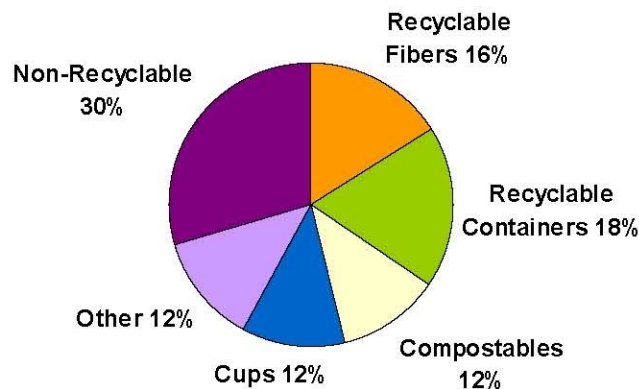
Business Waste Characterization Report:

Portland Community College Rock Creek Campus

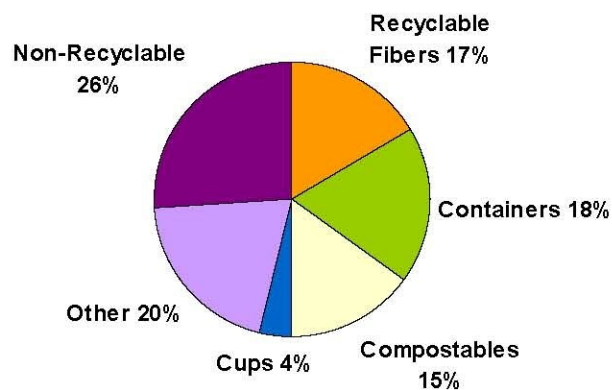
| Site Information: | |
|--------------------------------|---|
| Organization | Portland Community College |
| Facility | Rock Creek Campus |
| Contact Person | Noelle Studer, Dale Hanson |
| Phone | 503.614.7635 |
| Waste Haulers | Garbarino: Jeff Garbarino |
| Waste Sort Information: | |
| Date of Sort | 19-01-2006 |
| Jurisdiction | Washington County |
| Evaluator | Elizabeth Freeman |
| Sort Conducted by | Dan Blue, Elizabeth Freeman, Alexa Pengelly, Renee Garrels, Noelle Studer, PCC Students (Glory Coates, Nick Engelfried, Abe Potter) |

Overall Findings:

Rock Creek Campus has the potential to reduce its waste stream by more than half. 34 percent of dumpster contents are easily recyclable (paper & beverage containers). Another 36 percent is compostable or could be avoided (“other” refers to Styrofoam, metal, wood, etc.). 30 percent is non-recyclable (restroom waste, etc.). With so much of Rock Creek’s waste composed of light weight/high volume materials like coffee cups, cardboard, paper, bottles, and cans, well over half of dumpster volume at PCC-Rock Creek is divertible, or preventable through education and awareness.

Chart 1. Rock Creek Campus Waste by Volume

Disposable cups comprise 12 percent of waste by volume and 4 percent by weight. Observing results by weight, 74 percent of dumpster contents are recyclable or divertible and 26 percent is non-recyclable. “Other” contains dense materials such as construction and metal/wood waste, making up a greater portion of waste by weight.

Chart 2. Rock Creek Campus Waste by Weight

Appendix B PCC - Rock Creek 19-Jan-06**Sample 1, Administration Building/Science (Bldg 7/9)**

| Material Type | Sub Category | Volume | % of Subcategory Volume | % of Total Volume | Net Wt. | % of Subcategory by Weight | % of Total by Weight |
|---------------------------|--------------------|--------|-------------------------|-------------------|---------|----------------------------|----------------------|
| Recyclables | | | | | | | |
| Fibers | | gal. | gal. | gal. | lbs. | lbs. | lbs. |
| | Mixed Fibers | 38.5 | 79% | 13% | 21.3 | 94% | 13% |
| | OCC | 10.5 | 21% | 4% | 1.35 | 6% | 1% |
| Total Fibers | | 49 | | 17% | 22.65 | | 14% |
| Containers | | | | | | | |
| | Plastic Bottles | 24.5 | 52% | 8% | 9.45 | 18% | 6% |
| | Aluminum Cans | 3.5 | 7% | 1% | 0.7 | 1% | 0% |
| | Glass Bottles/Jars | 10.5 | 22% | 4% | 14.85 | 28% | 9% |
| | Film Plastics | 8.85 | 19% | 3% | 28 | 53% | 18% |
| Total Containers | | 47.35 | | 16% | 53 | | 33% |
| Compostable Fibers | | | | | | | |
| | Foods/Fibers | 42 | 100% | 14% | 23.45 | 100% | 15% |
| Total Compostables | | 42 | | 14% | 23.45 | | 15% |
| Other | | | | | | | |
| | Coffee Cups | 42 | 28% | 14% | 8.95 | 15% | 6% |
| | Latex Gloves | 10.5 | 7% | 4% | 4.2 | 7% | 3% |
| | Styrofoam | 3.5 | 2% | 1% | 0.1 | 0% | 0% |
| | Non Recyc. | 96.5 | 63% | 33% | 47.3 | 78% | 30% |
| Total Other | | 152.5 | | 52% | 60.55 | | 38% |
| Totals | | 290.9 | | | 159.7 | | 100% |

Sample 2, Cafeteria (Bldg. 3)

| | | | | | | | |
|---------------------------|--------------------|-------|------|-----|-------|------|------|
| Recyclables | | | | | | | |
| Fibers | | gal. | | | lbs. | lbs. | lbs. |
| | Mixed Fibers | 24.5 | 78% | 11% | 28.05 | 87% | 20% |
| | OCC | 7 | 22% | 3% | 4.15 | 13% | 3% |
| Total Fibers | | 31.5 | | 14% | 32.2 | | 23% |
| Containers | | | | | | | |
| | Plastic Bottles | 14 | 36% | 6% | 3.15 | 28% | 2% |
| | Aluminum Cans | 3.5 | 9% | 2% | 0.4 | 4% | 0% |
| | Aseptics | 3.5 | 9% | 2% | 0.9 | 8% | 1% |
| | Glass Bottles/Jars | 3.5 | 9% | 2% | 1.85 | 16% | 1% |
| | Film Plastics | 14 | 36% | 6% | 5 | 44% | 4% |
| Total Containers | | 38.5 | | 17% | 11.3 | | 8% |
| Compostable Fibers | | | | | | | |
| | Foods/Fibers | 49 | 100% | 21% | 41.35 | 100% | 29% |
| Total Compostables | | 49 | | 21% | 41.35 | | 29% |
| Other | | | | | | | |
| | Coffee Cups | 24.5 | 22% | 11% | 1.55 | 3% | 1% |
| | Sheetrock | 7 | 6% | 3% | 4.15 | 7% | 3% |
| | Ceramics | 7 | 6% | 3% | 32.65 | 56% | 23% |
| | Styrofoam | 24.5 | 22% | 11% | 1.55 | 3% | 1% |
| | Non Recyclables | 49 | 44% | 21% | 17.95 | 31% | 13% |
| Total Other | | 112 | | 48% | 57.85 | | 41% |
| Totals | | 231.0 | | | 142.7 | | 100% |

Sample 3, Shop Area (Bldg. 2)

| Material Type | Sub Category | Volume | % of Subcategory by Volume | % of Total Sample by Volume | Net Wt. | % of Subcategory by Weight | % of Total Sample by Weight |
|---------------------------|--------------------|--------|----------------------------|-----------------------------|---------|----------------------------|-----------------------------|
| Recyclables | | | | | | | |
| Fibers | | gal. | | | lbs. | lbs. | lbs. |
| | Mixed Fibers | 42 | 75% | 15% | 18.65 | 83% | 13% |
| | OCC | 14 | 25% | 5% | 3.8 | 17% | 3% |
| Total Fibers | | 56 | | 20% | 22.45 | | 16% |
| Containers | | | | | | | |
| | Plastic Bottles | 14 | 29% | 5% | 5.65 | 31% | 4% |
| | Aluminum Cans | 3.5 | 7% | 1% | 0.15 | 1% | 0% |
| | Glass Bottles/Jars | 3.5 | 7% | 1% | 4.25 | 23% | 3% |
| | Film Plastics | 28 | 57% | 10% | 8.1 | 45% | 6% |
| Total Containers | | 49 | | 18% | 18.15 | | 13% |
| Compostables | | | | | | | |
| | Foods/Fibers | 10.5 | 100% | 4% | 5.15 | 100% | 4% |
| Total Compostables | | 10.5 | | 4% | 5.15 | | 4% |
| Other | | | | | | | |
| | Coffee Cups | 24.5 | 15% | 9% | 4.15 | 4% | 3% |
| | Metal | 10.5 | 6% | 4% | 19 | 20% | 13% |
| | Sheetrock | 14 | 9% | 5% | 14.9 | 15% | 10% |
| | Wood Waste | 24.5 | 15% | 9% | 15.05 | 16% | 11% |
| | Wiring | 3.5 | 2% | 1% | 2.7 | 3% | 2% |
| | Misc Electrical | 3.5 | 2% | 1% | 1.7 | 2% | 1% |
| | Non Recyclable | 84 | 51% | 30% | 39.05 | 40% | 27% |
| Total Other | | 164.5 | | 59% | 96.55 | | 68% |
| Totals | | 280.0 | | | 142.3 | | 100% |

Sample 4, Parking Lot and Bus Stop

| Material Type | Sub Category | Volume | % of Subcategory by Volume | % of Total Sample by Volume | Net Wt. | % of Subcategory by Weight | % of Total Sample by Weight |
|---------------------------|-----------------|--------|----------------------------|-----------------------------|---------|----------------------------|-----------------------------|
| Recyclables | | | | | | | |
| Fibers | | gal. | | | lbs. | lbs. | lbs. |
| | Mixed Fibers | 3.5 | 100% | 5% | 1.2 | 100% | 5% |
| Total Fibers | | 3.5 | | 5% | 1.2 | | 5% |
| Containers | | | | | | | |
| | Plastic Bottles | 7 | 29% | 11% | 1.9 | 42% | 7% |
| | Aluminum Cans | 3.5 | 14% | 5% | 0.4 | 9% | 2% |
| | Film Plastics | 14 | 57% | 21% | 2.25 | 49% | 9% |
| Total Containers | | 24.5 | | 37% | 4.55 | | 17% |
| Compostable Fibers | | | | | | | |
| | Foods/Fibers | 0 | | 0% | 0 | | 0% |
| Total Compostables | | 0 | | 0% | 0 | | 0% |
| Other | | | | | | | |
| | Coffee Cups | 10.5 | 27% | 16% | 2.45 | 12% | 9% |
| | Non Recyclable | 28 | 73% | 42% | 18.15 | 88% | 69% |
| Total Other | | 38.5 | | 58% | 20.6 | | 78% |
| Totals | | 66.5 | | | 26.4 | | 100% |

Grand Totals

868.4

471.1

Business Waste Characterization Report

Portland Community College – Sylvania Campus

Waste Evaluator: Ronda Chapman

Date: March 2, 2007

Hauler: Waste Management

Waste Sort Conducted By:

Students: Adam Clark, Frederike Eyster, Lyn Parmeter, Laurel Rivera, Graham Seaton, and Christina Yugay.

Instructors: April Fong, Linda Fergusson-Kolmes, Josh Liebschutz, and Kim Smith.

Methodology:

Serving approximately 25,000 students, Sylvania is PCC's largest campus. On March 2, 2007, Sylvania students and staff took a 300.75 pound random sample (Figure 1) of waste from six dumpsters located throughout the Sylvania campus. A representative sample of roughly 10% of each dumpster's contents was removed and taken to a loading dock for analysis. The materials were sorted into four general categories and fifteen sub-categories (Appendix A). These material groups were then weighed and cataloged. The resultant findings and recommendations follow¹.



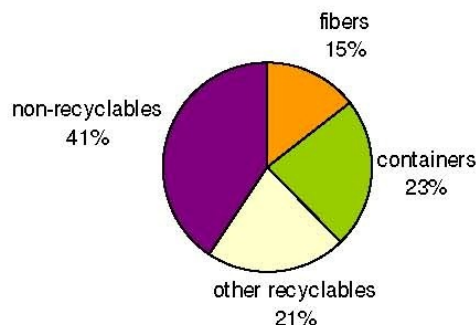
Figure 1. Waste Sort Participants

Findings:

The four general categories of materials were:

- Recyclable Fibers (newspaper, corrugated cardboard, mixed paper)
- Recyclable Containers (aluminum/steel/tin, plastic, glass, aseptics, and plastic bags/film),
- Other Recyclables (scrap metal, electronic waste, wood, and compostable fibers/food),
- Non-recyclables (garbage: bathroom litter, disposable coffee containers, disposable food containers).

Figure 2 shows the percent by weight of each of these four categories. By looking at the materials this way it is easy to identify the portion of the waste stream that may be recyclable.



¹ Note: Both the findings and recommendations are cited in terms of weight, not volume. The weight of a material is not always representative of the material's volume. Weight data may also be skewed by liquid contamination within the sample. These circumstances are noted where they are relevant to the findings

Thirty-one percent of dumpster contents is easily-recyclable beverage containers and paper/cardboard. An additional 32 percent could be avoided with improvements in Sylvania's recycling program. Altogether, waste could be readily reduced by 63 percent.

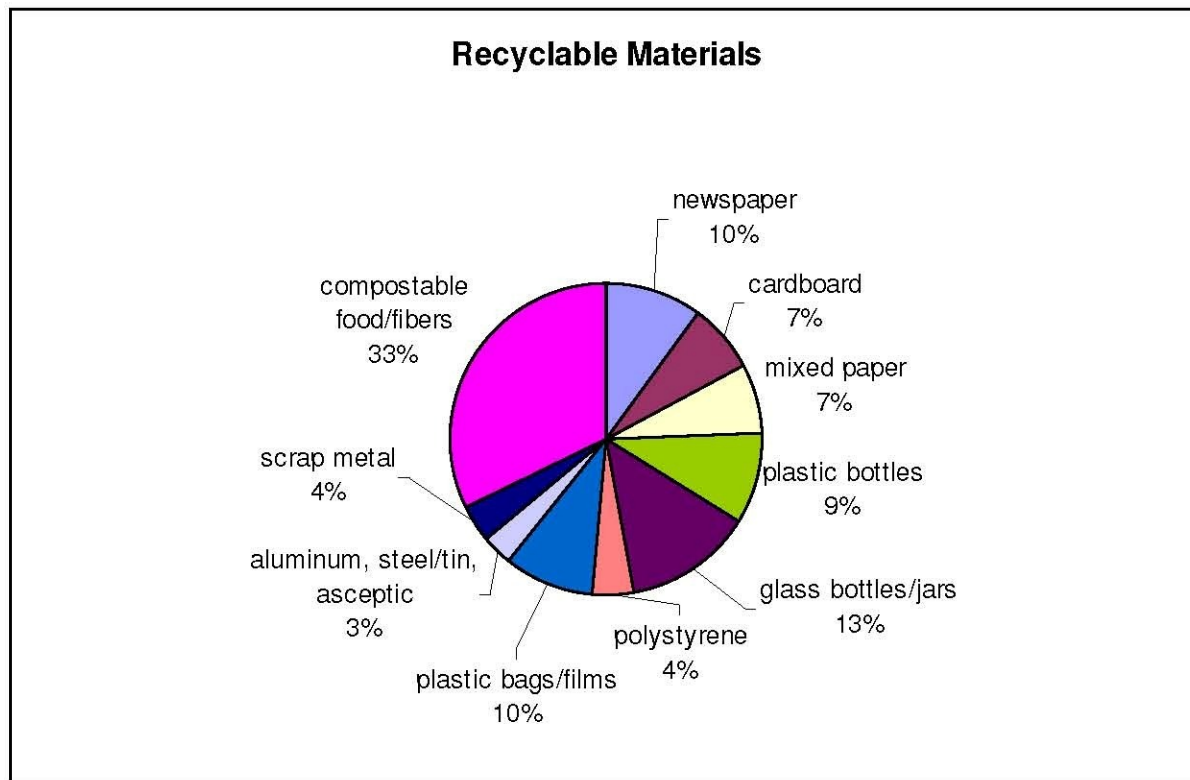


Figure 3 provides a detailed breakdown of the recyclable materials found in the waste stream.



Figure 4: Compostables



Figure 5: Polystyrene



Figure 6: Glass

Compostable materials (Figure 4) was the largest waste category by weight. These materials make up the “wet waste,” which is expensive to haul and dispose at the transfer station. Six pounds of recyclable polystyrene from the cafeteria was collected. Glass bottles made up 13% of the sample. A 41-pound printer was originally included in the sample, but was removed from aggregate data because this is not typically representative of PCC Sylvania's trash.



Figure 7. Electronic Waste

The non-recyclable category comprised only 37%, or, 105 pounds of the total 260 pounds assessed. It is worth noting that 30 pounds of the sample was non-recyclable containers. These containers were food and beverage containers, which indicates the opportunity to institute campus-wide changes to decrease these particular materials. **Figures 9 and 10** illustrate these findings.



Figure 9: Plastic Containers



Figure 10: Disposable Coffee Cups

The following is a list of the total weight and percentage that each of the four categories contributed.

Table 1. Total composition of sample analyzed.

| TOTAL COMPOSITION | | |
|-------------------------------|-------|-----|
| RECYCLABLE FIBERS | lbs | % |
| newspaper | 15.5 | 5% |
| cardboard | 11.3 | 4% |
| mixed paper | 11.1 | 4% |
| RECYCLABLE CONTAINERS | | |
| plastic bottles | 14.6 | 5% |
| glass bottles/jars | 20.5 | 7% |
| polystyrene | 6.3 | 2% |
| plastic bags/films | 14.7 | 5% |
| aluminum, steel/tin, aseptic | 4.6 | 2% |
| OTHER RECYCLABLES | | |
| scrap metal | 5.9 | 2% |
| compostable food/fibers | 49.9 | 17% |
| electronic waste ² | 40.5 | 13% |
| NON-RECYCLABLES | | |
| non-recyclable containers | 29.8 | 10% |
| other | 76.05 | 25% |

² The electronic waste in this case was one piece of equipment. However, it demonstrates the need to educate staff on opportunities to divert electronic waste from the waste stream and to a recycling system.

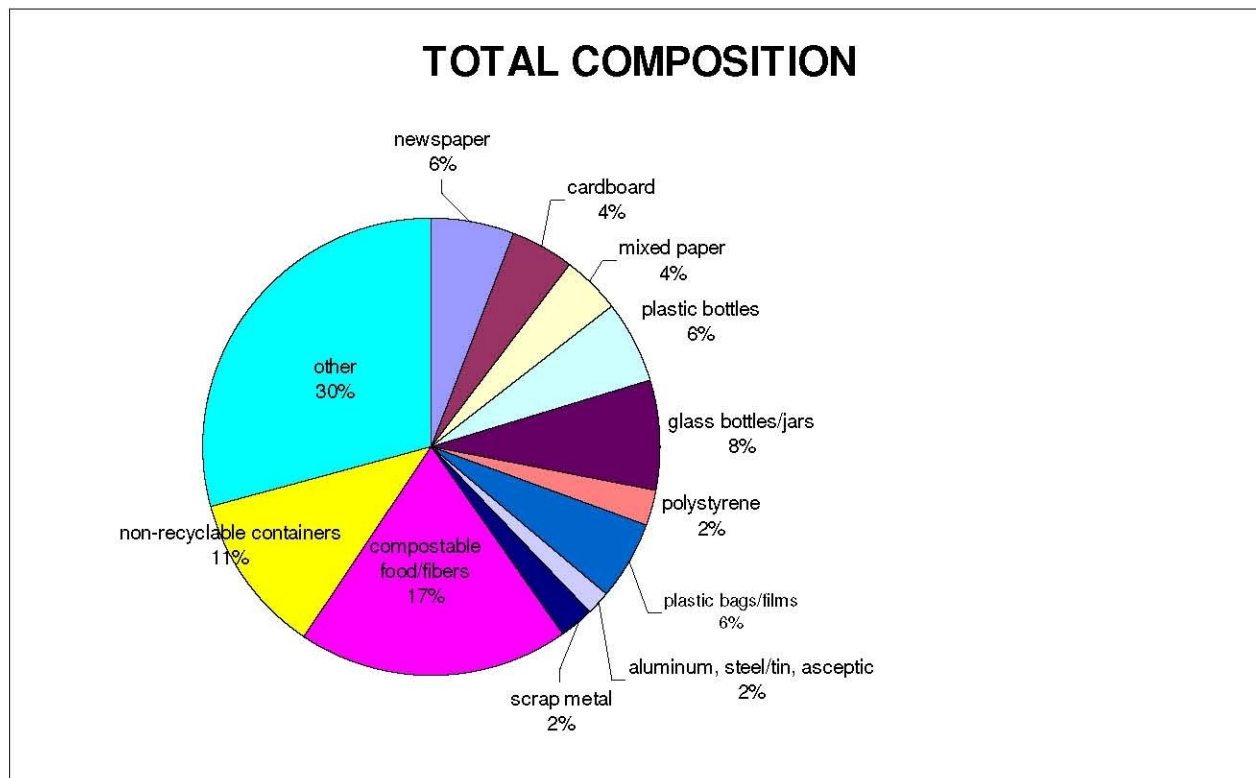


Figure 11. Total Composition of sample analyzed.

RECOMMENDATIONS

Based on the evaluation, the waste evaluator makes the following recommendations to increase recycling rates and reduce waste for the PCC-Sylvania campus.

- Increase the number of uniform recycling containers and signage throughout the campus. Although there is currently a recycling system in place, the amount of recyclable materials found in the garbage indicates the need to increase opportunities for staff, students, and campus visitors to engage in the practice.
- Educate students and staff on the need to decrease usage of disposable beverage containers. The coffee vendors on campus already make it a policy to provide a discount for those who use durable coffee containers. It is a valuable message to get across through various means of communication: campus campaigns, raffles, achievement awards, school newspaper, etc. Including durable water containers as part of the campaign is also worth while. The number of plastic water bottles was significant for that category as well.
- Consider instituting a compost program. There are now more opportunities available to support composting efforts and many college campuses throughout the nation are becoming involved. The amount of compostable food and fibers was significant, as was the amount of disposable food containers. Implementing a compost program could address both of these issues by including the use of biodegradable food containers, eliminating the need for separation of food containers and food. It is recognized that this action may be a costly one in its beginning stage, however, the long term effects make it worth investigating.

Appendix A: Glossary of Sort Categories

Aluminum/tin/steel cans: Containers made of aluminum, tin and steel including containers for beverages and other materials.

Compostables: Any materials such as food, food-soiled paper, or yard trimmings. This also includes waxed cardboard boxes, drink cups, and coffee grounds.

Corrugated cardboard (OCC): Corrugated boxes used for shipping and packaging materials.

Electronic Waste: Computers, computer equipment, fax machines, and most other technological equipment common in offices and schools.

Glass bottles/jars: Containers made of glass exhibiting a neck or threaded top. This category excludes light bulbs, flat glass, and drinking glasses.

Mixed paper: Office paper, paper board/soft cardboard, folders, scrap paper, sticky notes, shredded paper, paper bags, and all other non-corrugated cardboard.

Newspapers: Any materials printed on newsprint type paper.

Non-recyclable containers: Included containers not made of metal or glass or plastic. Examples include coffee cups, carry out food containers, water and soda cups. These materials are known as “true waste” because there are currently no recycling options for these materials.

Other non-recyclable materials: All other non-container materials that can not be recycled including non-compostable food waste, plastic utensils, bathroom paper towels, ballasts, and plastic trays. These materials are also known as “true waste” because there are currently no recycling options for these materials.

Plastic bags/film: All bags including grocery, trash, and sandwich bags. Also includes shrink wrap, plastic pallet wrap, and bubble wrap.

Plastic bottles: Plastic containers with a neck, including containers for beverages and other fluids.

- Institute an electronic waste collection area or room. It is very common for institutions to upgrade their technological equipment as the need presents itself, however the proper disposal of unwanted equipment is vital.
- Reduce size and frequency of garbage bag usage. There were several very large, nearly empty plastic bags found in the sort. The fact that plastic film constituted only five percent of the waste stream is misleading due to the percentage being based on *weight not volume*. This is an education effort that needs to be communicated with the janitorial staff and facilities.
- Consider working closely with your garbage hauler. The campus is very large and your garbage hauler may be able to provide you with monthly or quarterly waste reports. These reports could provide you with recycling weights, garbage weights, and a break down of materials collected. Such a report would allow PCC to monitor the campus' behavior and provide insight on ways to improve and cut costs.

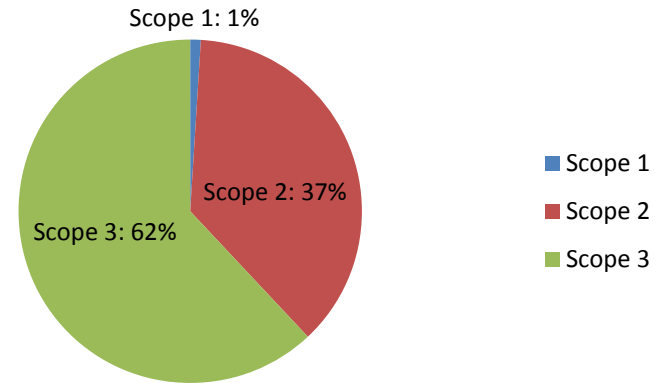
Appendix D:

- Table D-1: Graph of Scope 1, Scope 2 and Scope 3 Greenhouse Gas Emissions
- Table D-2: Carbon Emissions per Square Foot
- Table D-3: Carbon Emissions per Person
- Table D-4: PCC Carbon Emission Trajectory under Climate Action Plan

Table D-1

| |
|---|
| PCC's Scope 1 emissions are defined as direct emissions from our district fleet and solid waste production. |
| PCC's Scope 2 emissions are defined as indirect emissions from our electricity, gas consumption and air travel. |
| PCC's Scope 3 emissions are defined as indirect emissions from faculty, staff and student commuting. |

Carbon Emissions by Scope



Carbon Emissions per Square Foot

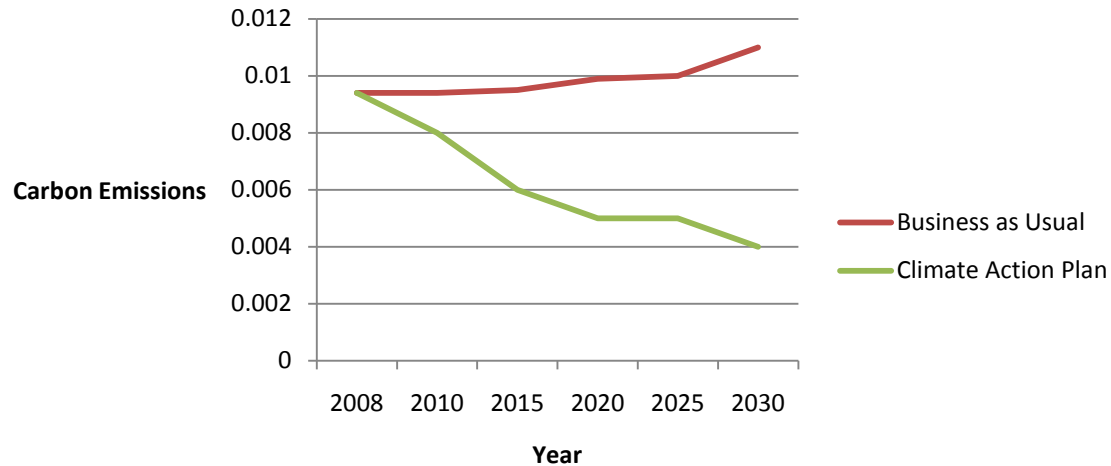


Table D-2

Note: This graph showcases PCC's carbon emissions per square foot. New construction has been taken into account per these calculations.

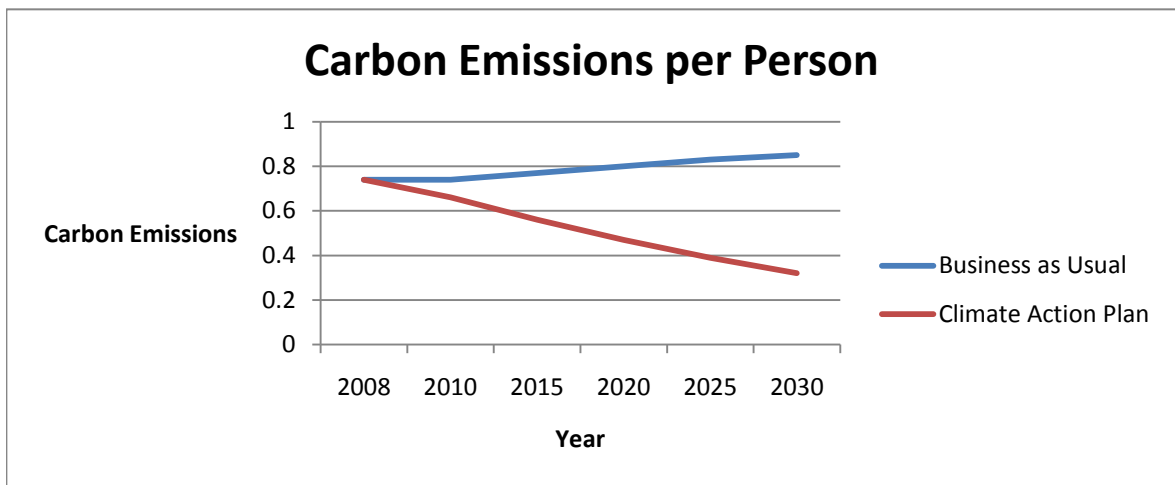


Table D-3

Note: This graph showcases PCC's carbon emissions per person. Population increase has been taken into account per these calculations.

PCC Carbon Emissions Trajectory under Climate Action Plan

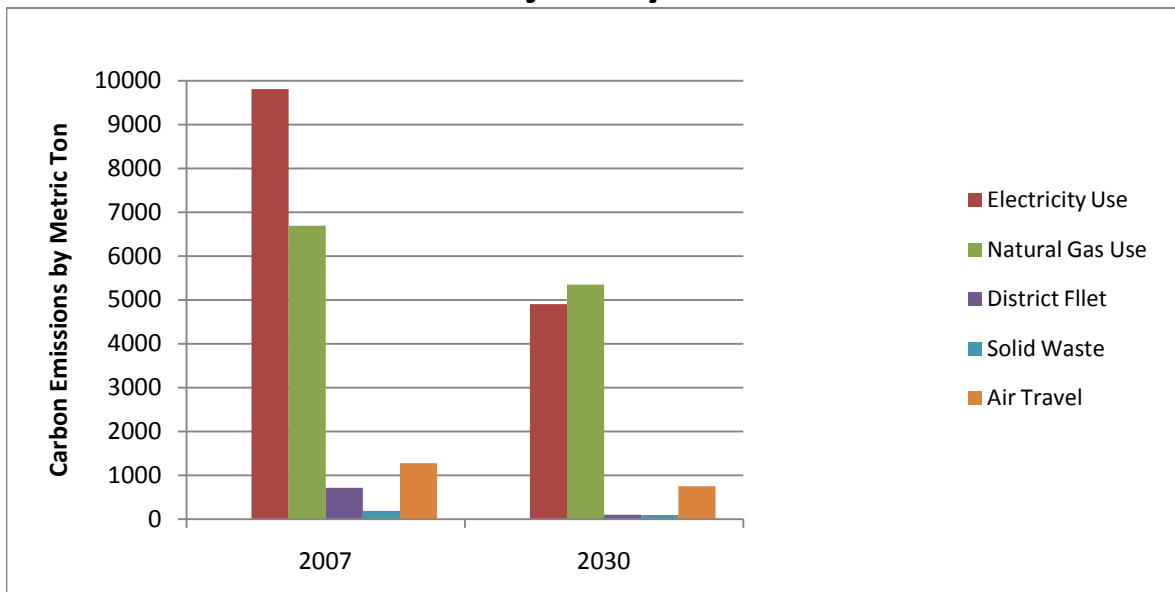


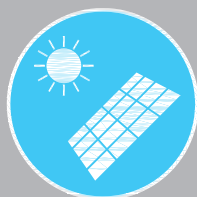
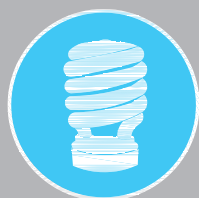
Table D-4

Appendix E:

- E6 Net Zero Report: PCC Sylvania

THE E⁶ NET ZERO PROJECT:

Portland Community College
Sylvania Campus



Section 1: Executive Summary



Today at Portland Community College (PCC), the opportunity is near to achieve transformational changes—changes that address important issues and not simply the urgent ones. Now is a defining moment that could solidify the legacy of PCC as a national leader in sustainable education and as a cornerstone of the community.

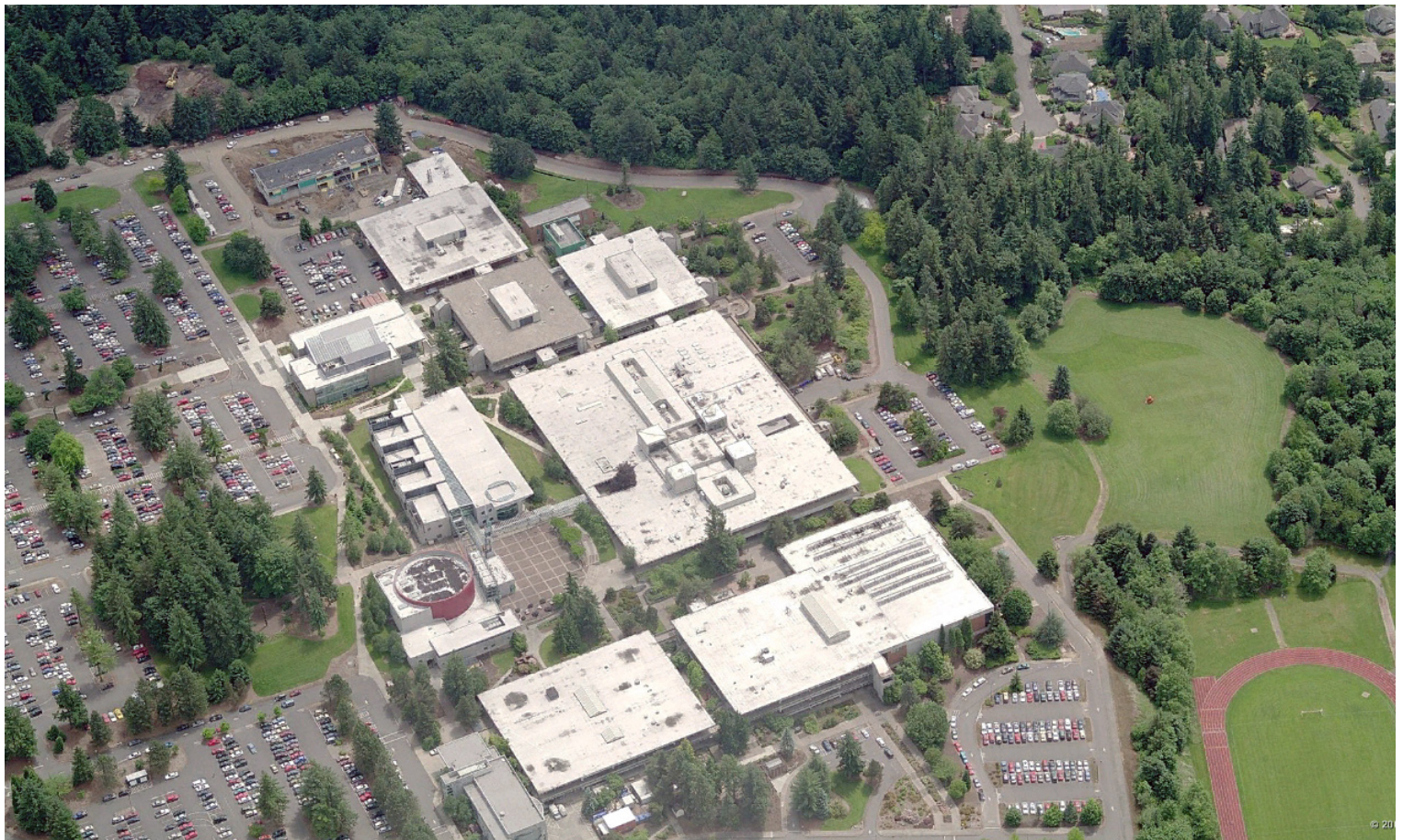
The E6/NetZero proposal is a model of innovative strategies and practices to simultaneously address climate change, environmental stewardship and green workforce development. E6/Net Zero looks to significantly reduce the college's contributions to global warming while creating immediate and future green jobs and training students for employment in those jobs. The Sylvania campus becomes a curriculum model that capitalizes on the retrofit for educational purposes, recreating the campus as a living lab for career technical, science and other discipline areas. Students in PCC's green technology programs will engage directly during planning and construction phases and will complete their programs with direct, hands-on experience, prepared to enter the workforce. The E6/NetZero project will be well-documented, and this documentation will become course material used by future students. The E6/NetZero renovations will be designed to maximize the visibility of the project, resulting in a one-of-a-kind campus where students can observe and analyze data.

The Sylvania Campus is PCC's oldest and largest campus, designed and built in an era when sustainability was not a significant consideration. With the initiation of the E6/Net Zero Project for the Sylvania Campus, PCC has shown that it recognizes its stewardship role and is looking to the future. The E6/Net Zero Project will comprehensively renovate the aging campus using a strategy that focuses on:

- E1 -- Energy Creation
- E2 -- Energy and Natural Resource Conservation
- E3 -- Environmental Stewardship
- E4 -- Employment Stimulus
- E5 -- Education to Prepare Workers for Green Jobs
- E6 -- Effective and Efficient Use of Project Funds

Achieving net zero at the scale of a single building is a challenge. Achieving net zero on an entire campus is a phenomenal undertaking. As we begin to map out this path toward a net zero campus, we begin first by imagining how a sustainable campus might look. Imagine a place where all of the **ENERGY** used is generated from renewable sources on campus. Imagine a place where all of the **WATER** used is from rainwater and treated recycled water. Finally, imagine a place where **CARBON** emissions are eliminated.

At the Sylvania campus, achieving net zero today **IS POSSIBLE**, and it could be a first in the nation. This can be accomplished through a combination of cutting-edge and innovative technologies, combined with overall campus conservation strategies to include:



- Solar photovoltaic (PV) system
- Waste to energy system with a fuel cell that produces electricity
- Closed loop geothermal system combined with a new centralized chilled water plant
- On-site water harvesting and treatment
- HVAC control upgrades
- Envelope improvements
- Plumbing fixture replacements

Altogether, these strategies result in a **\$1.6 million reduction** in purchased energy, with the potential for up to **\$300,000 in annual income** from surplus energy created on-site through renewable sources.

The benefits of the E6/Net Zero project extend beyond the carbon reductions and energy cost savings, to generate **1,206 green jobs** and to interface directly with training for family wage jobs provided at the Sylvania campus in four critical areas of green technology: renewable energy, transportation, sustainable building and manufacturing, along with curriculum currently in development in facilities maintenance, building inspection, green roof and wall construction, and business management.

As a place of learning, PCC offers a variety of traditional education opportunities. Additionally, the campus has a role to teach through its actions. Those actions affect not only the students, faculty and staff but also the community at large. These impacts go beyond the walls of the classroom, to make this community in which we live a better place, a healthier place, and a leader in sustainable environments.

E6/Net Zero - Report Summary

Gerding Edlen Sustainable Solutions and its team conducted a thorough assessment of current building and site conditions at Portland Community College's Sylvania campus and provided a series of recommendations for achieving a Net Zero campus, as well as a minimum 50% reduction in energy use and cost, water consumption and carbon emissions, as well as a feasibility study of achieving LEED Platinum certification. The Sylvania campus seeks to become the first "Net Zero" campus in the country, with all of its energy needs met by renewable sources, all its non-potable water needs met by rainwater harvesting and treated recycled water, and 100% of its carbon emissions associated with energy use eliminated.

This Net Zero project can be completed via a combination of energy reduction, energy supply, and site resource management strategies including:

Solar Photovoltaic (PV) System

All building rooftops would be covered with PV panels to generate clean electricity on site. The array could be owned by PCC or a third-party, in which case PCC would enter into a power purchase agreement at a fixed rate for the power generated. The 2 MW system would meet approximately one-third of the campus' electric needs (post building efficiency improvements) and alone provides a 9% campus-wide carbon emissions reduction.

Combined Heat and Power - Waste to Energy System with a Fuel Cell

An anaerobic bio-digester breaks down human, food and woody debris waste to generate methane. The methane becomes the fuel source for a fuel cell. The fuel cell envisioned for the campus would generate clean electricity in excess of what the campus requires, meaning PCC would sell excess electricity to the utility. The waste heat from the electric production of the fuel cell would be captured and used to provide for building heating hot water. Large volumes of waste are required to allow for the fuel cell to meet the campus electric demand; therefore, additional volumes of waste would be required to ensure the fuel cell does not revert to the natural gas back-up fuel source. Examples of additional sources of waste are mining the city sewer system for waste solids or used cooking oil from fast food restaurants.

Closed Loop Geothermal Combined with Centralized Chilled Water

The campus' current boiler plant would be replaced with a geothermal system that uses the variance in the earth's temperature to provide heat for building heating systems in the winter and allows for the rejection of excess heat during cooling cycles in the summer. Currently, cooling systems are decentralized. Retrofitting the campus to a centralized chilled water plant would be required in order to make this strategy effective. When in heating mode, this system would supplement the waste heat captured from the waste to energy system. Building facade improvements would become economically viable given the significant reduction in cooling load these improvements would provide, thereby dramatically reducing the first cost of the chilled water plant.

Building-Wide HVAC and Controls Upgrades

Building-wide improvements were identified primarily with regard to HVAC and control systems. Specific recommendations were also provided in several buildings, such as the natatorium where regulating humidity and temperature for optimal user comfort has proven challenging and costly. It was noted that simultaneous heating and cooling was present in most of the buildings. Many buildings still have pneumatic controls, and sub-metering is proposed throughout the campus for natural gas use which will allow for accurate tracking of natural gas consumption from the central plant to each building.

Rainwater Harvesting, Wastewater Treatment and Stormwater Management

A combination of rainwater harvesting, wastewater treatment and stormwater management strategies allows the campus to achieve a Net Zero water balance (with the exception of potable water demand which cannot be met with reclaimed or treated water per State health regulations). Rainwater is captured from building rooftops and routed to a cistern for reuse in the buildings or to meet irrigation needs. Similarly, an onsite wastewater treatment plant would remove solids from sewage leaving the campus and redirect it to the bio-digester for the fuel cell, and treat the sewage water for reuse. This treatment plant would be either a membrane bioreactor (a more mechanical system) or a living machine (a plant-based system). Swales in the main drive isles and green streets throughout the campus would serve to detain and treat surface stormwater runoff.

In addition to outlining a feasible Net Zero strategy, the study focused on identifying a minimum 50% reduction in energy, water and carbon and addressed the feasibility of achieving a LEED Platinum certification for the campus. A number of factors were considered in the analysis, such as the affect on operations some of the proposed improvements would have for the College as well as the remaining useful life of existing equipment on campus.

A series of package options that achieve increasingly greater levels of savings were put forth in the E6/Net Zero report. While Net Zero is feasible today, these package options can also build upon one another, resulting in a phased approach to Net Zero. One key strategy present in each of the package options leading up to Net Zero is the use of a 1.1 MW generator for combined heat and power production in lieu of the fuel cell and geothermal systems. Since the generator operates similarly to the boilers currently serving the campus, this is a cost-effective and low-risk way to retrofit the central plant while achieving significant energy savings and carbon emission reductions.

The package options and their respective benefits are outlined below:

