

# The Evergreen State College

Carbon Neutrality by 2020

Climate Action Plan





## **Carbon Neutrality by 2020**

### **Greenhouse Gas Emissions Reduction and Mitigation Strategic Plan**

Report to the American College & University Presidents Climate Commitment

September 2009



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## Executive Summary

Carbon neutrality is accessible in a variety of ways, but there are at least two fundamental strategic paths. The first path assumes that carbon neutrality is a cost of doing business and approaches the goal by purchasing carbon offsets to zero out normal operational emissions. This strategy places the responsibility for carbon neutrality solely upon the operational side of an institution. The second path assumes responsibility uniformly throughout the institution. This strategy is possibly more difficult, as it requires an active engagement with and exploration of the goal as part of the process. It requires a process of engaging and including key stakeholders, of complementing educational goals, of reaching for widespread campus participation and strategic community partnerships, as well as exploring innovative technical solutions. The second strategy focuses upon reducing overall emissions, throughout the organization, and only then considering offsets for unavoidable greenhouse gas emissions.

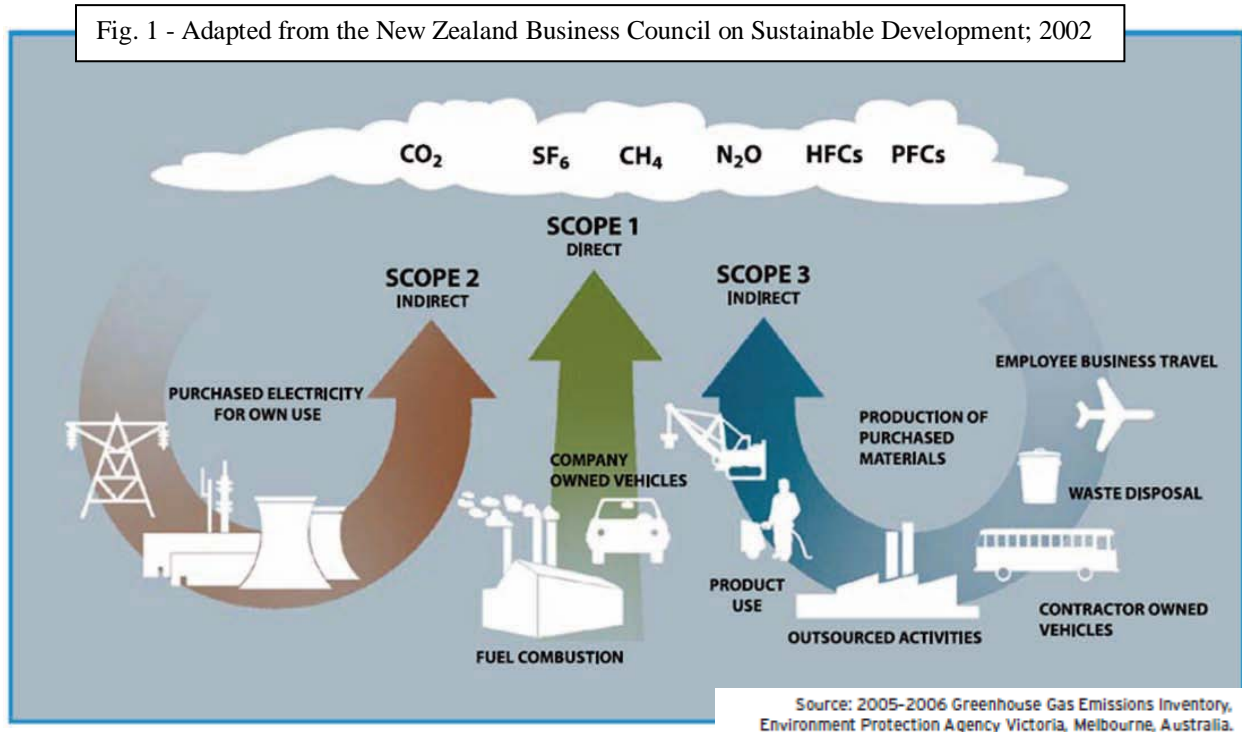
Institutions with sufficient budget or endowment may choose to pursue the first path, and legitimately claim impressive reductions in net carbon emissions. Yet, this solution lacks a large part of the learning and local engagement of the second (longer, more challenging, and arguably more substantive) path. Through this Climate Action Plan, Evergreen is committing to the latter course. We are choosing to be active and engaged.

This plan represents a commitment to an overall approach. It is an articulation of the strategies, tactics, and resources required to succeed on this more complex path as envisioned at this particular point in time. This plan is not an absolute commitment to every tactic or investment noted. There are too many variables in play to fully predict every nuance of the course ahead as we begin the journey. It is, however, a good faith attempt to describe the types and magnitude of changes needed in the coming months and years. The early plan steps are likely to occur as described. Actions scheduled for later years, however, are likely to evolve with changing circumstances and the lessons we learn along the way.

While the goal of carbon neutrality by 2020 will remain constant, the means to that end will be developed and refined, relying in large part on the creative input and collective energy of a broadening base of participants and supporters. This plan is the point of departure for that work.

Evergreen had already embarked on the road to carbon neutrality before it completed its first carbon emissions inventory or signed on to the American College and University Presidents Climate Commitment. Among other actions, Evergreen students voted in 2005 for a continuing clean energy fee per credit that allows the college to purchase 100% of its electricity from renewable sources, thereby eliminating our single greatest source of greenhouse gases. Student supported fees also fund free transit passes, late night transit runs, and the extra renovation steps necessary to take our Campus Activities Building (CAB) from LEED Silver to LEED Gold. Student initiative and engagement have been substantial drivers of our institutional commitment to carbon neutrality and this plan includes multiple processes to include student energy, values, and ideas.

Greenhouse gases are produced in the greatest quantities from combustion of fossil fuels, with additional low-level contributions from industrial chemicals, farmed animals, waste decomposition, and fertilizer use. The standard schema for measuring GHG emissions (also referred to as a carbon footprint) is the Scope 1, 2, & 3 schema indicated below. The nature of scopes 1 & 2 should be immediately apparent. Scope 3 emissions come from activities that occur because of college operations or activities (shipping landfill waste from the Hawks Prairie waste collection center to the Roosevelt landfill over 200 miles away is an example of a scope 3 emissions source). Evergreen’s emissions have been measured as thoroughly as possible to include scope 3 emissions directly attributable to college operations and activities.



Evergreen’s 2005 baseline profile for Greenhouse Gas (GHG) emissions (see below) makes it clear where our focus should be in terms of proportional sources: electricity, space heating, and commuting are our greatest GHG emissions sources, air travel, food, waste, and the rest are substantially less significant. As a result, this plan focuses primarily upon heating and electricity conservation and efficiencies, renewable energy production, and transportation efficiencies.



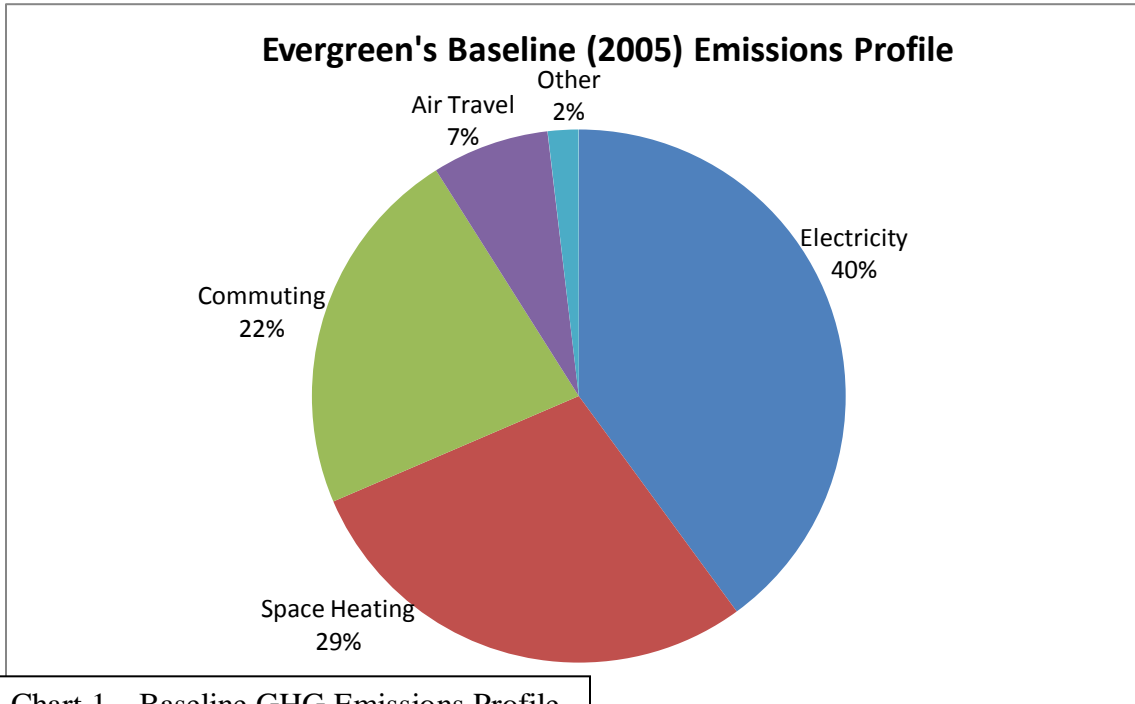


Chart 1 – Baseline GHG Emissions Profile

*Student funded renewable energy certificates guarantee that Evergreen has purchased electricity generated from renewable, non-GHG emitting sources since FY 2005-06. The impact of the students' clean energy fee has been to zero out the GHG emissions associated with a substantial proportion of our campus energy use.*

The following charts (2 and 3) demonstrate that our electrical energy use remains substantial even though our GHG emissions have been reduced. This comparison between energy use and GHG emissions is necessary to remind us that the 'carbon' costs of purchased electricity have been transformed into economic costs through the Renewable Energy Certificate market (roughly \$100,000 per year at 2008 rates). Whether or not this student fee should continue as a long-term strategy for reduction of scope 2 emissions must be discussed and addressed, as indicated later in this climate action plan (FY 2012 – 13).

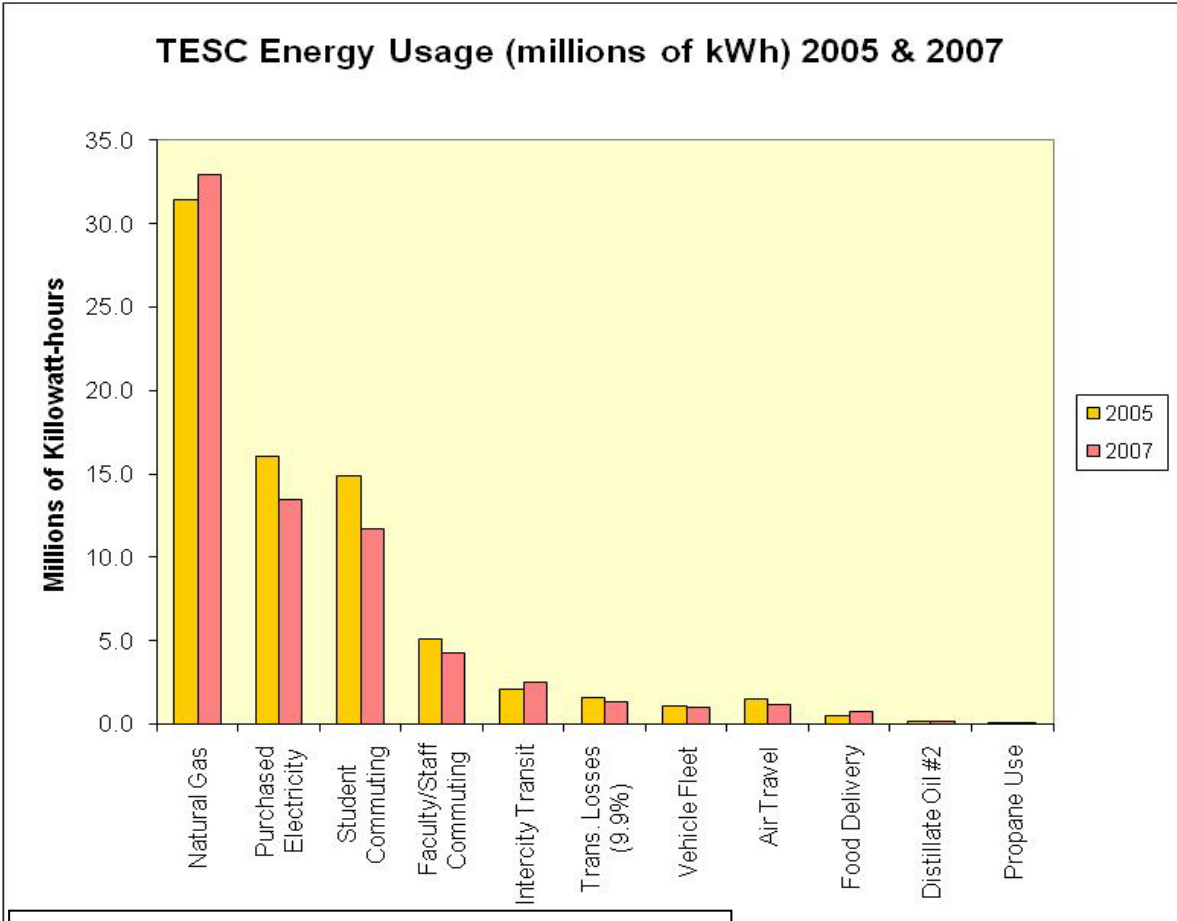


Chart 2 – Comparative Energy Usage; 2005 v. 2007

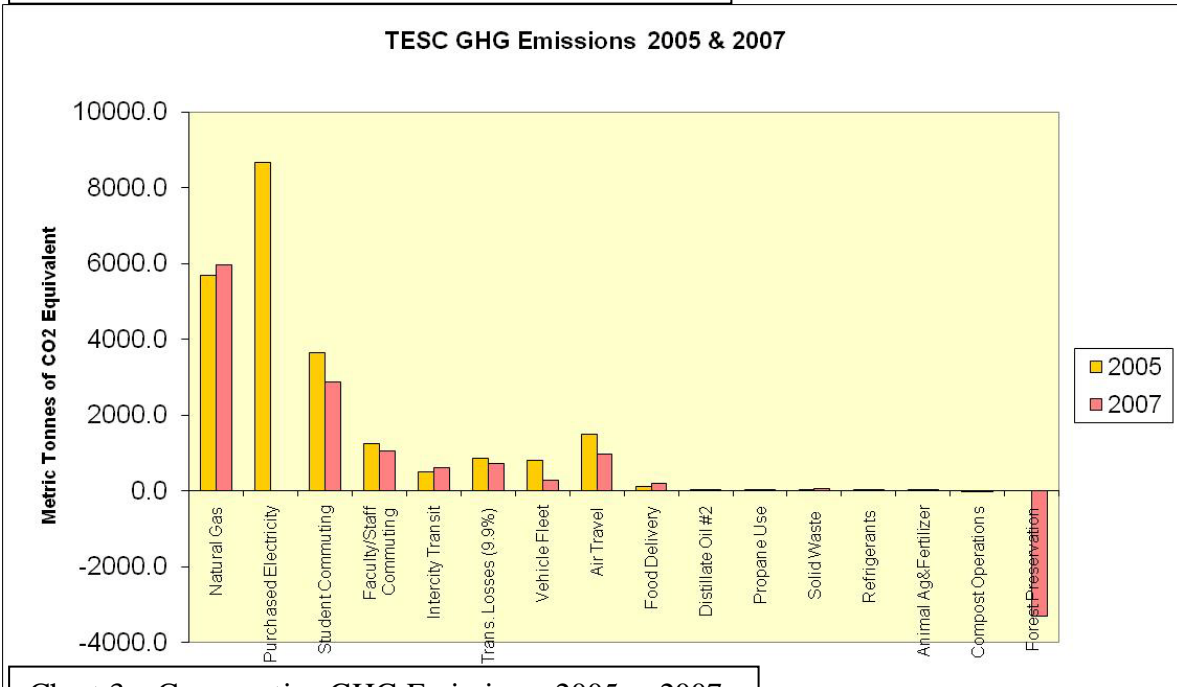


Chart 3 – Comparative GHG Emissions; 2005 v. 2007



It is not enough to transform ‘carbon’ costs into economic costs, nor is that a feasible strategy considering the current state of the national economy. The first step to reducing greenhouse gas emissions is to reduce total emissions overall through energy conservation and efficiency strategies, then replace non-renewable energy sources with renewable sources that do not contribute to atmospheric accumulation of greenhouse gases, and then finally to seek out market-based Renewable Energy Credits, carbon sequestration strategies, and ‘carbon offsets’.

This Climate Action plan proposes a wide range of strategies to reach carbon neutrality, which were selected based upon the following criteria:

- An action must be consistent with the mission and values of the college
- It should demonstrate financial efficiencies
- It should have a reasonable ease of implementation
- It should be achievable
- It should advance social, ecological, and economic sustainability
- Our plan should demonstrate flexibility and resilience to future changes

The recommended strategies within this plan focus on:

- Energy efficiency and conservation
- On-site renewable energy production
- Commuting efficiencies and transportation alternatives
- Waste stream management, including purchasing and food management processes
- Building and grounds infrastructure and practices

Our strategic approaches include:

- Technical innovations
- Increasing individual mindfulness and engagement with carbon neutral habits
- Institutional policy and procedural changes

The Climate Action plan sets annual targets for progress in specific GHG categories and spells out specific mitigation strategies within those categories. The plan outlines benefits, barriers, measurements, and tracking for each proposal. It also estimates timelines, costs and simple payback for specific strategies.

It was critical that this climate action plan support the mission and values of the college. Activities such as out-of-state recruiting, study abroad, and paper use, among other key components of higher educational processes, will necessarily continue as a part of normal operations. In the absence of any substantially new transportation and/or communication alternatives it is unreasonable to anticipate a 100% reduction of greenhouse gas emissions from all of our core activities. Therefore, the overall strategy of this plan is to minimize or eliminate as many emissions as possible, and then offset the emissions that remain. Our targeted emissions profile calls for a reduction of approximately eighty-one (81%) percent of our baseline, and offsetting the remainder.

Chart 4 illustrates our planned reductions in GHG emissions by activity of origin. ‘Business as usual’ is projected as a 1% per year increase in emissions.

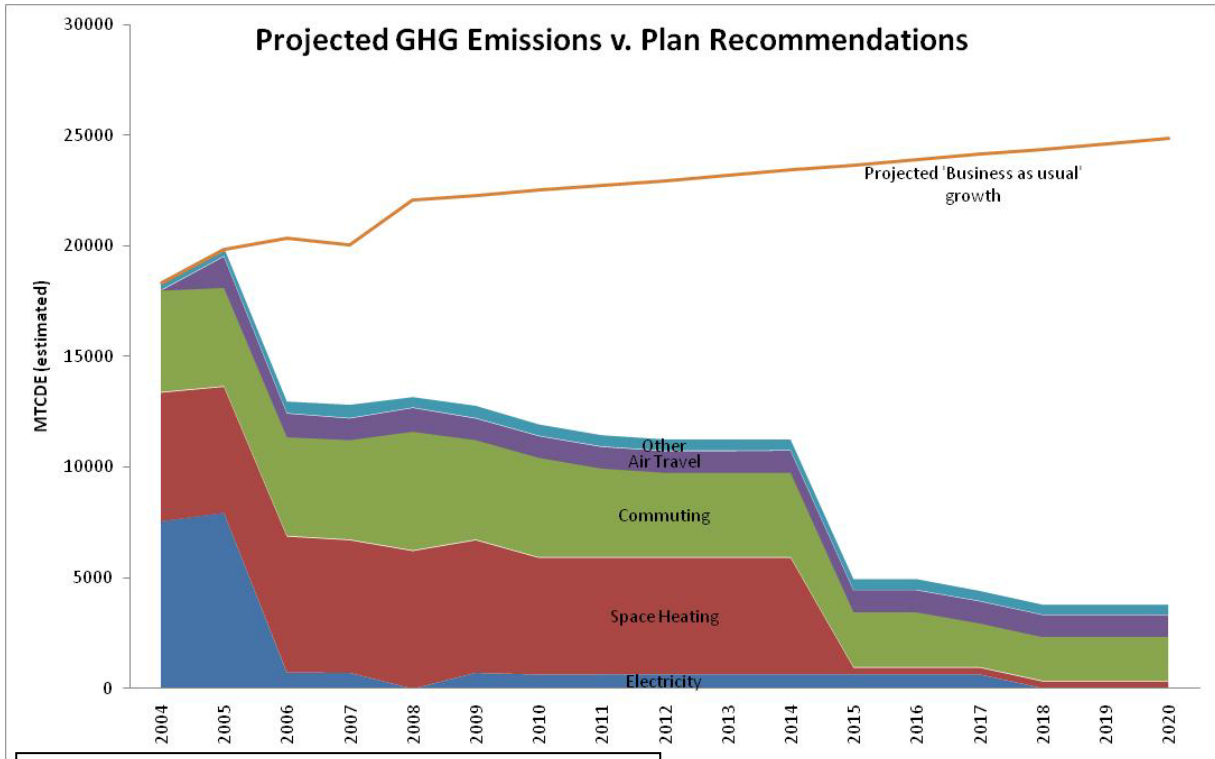


Chart 4 – Planned GHG Reductions by Origin

It is important to note that this plan is a living document that depends on both people and financing for success. While the current draft is comprehensive and has involved dozens of stakeholders, it has not yet been widely shared with the broader campus community at this level of detail. Subsequently, it is subject to modification as we work to engage the community more deeply in the endeavor. In many instances, this will simply be a matter of bringing together many separate groups of individuals passionate about specific aspects of sustainability and the pursuit of carbon neutrality. In other instances, it will require that we broaden the base of participation to ensure success (e.g. in modifying commuting habits).

As with any project, the elements with the highest price tags and/or those that require the biggest changes in personal choices or institutional habits can be the most difficult to implement. These more challenging initiatives may also yield the greatest returns. Bio-mass gasification, for example, (with potential co-generation) is among the most promising large-scale initiative, but it also has the highest initial level of investment (\$12.5 million). On the positive side, the pay-back for this project can be achieved in a relatively short time frame (10 - 15 years). The tables below include summaries of the strategies proposed in this plan, along with estimated implementation costs, payback, and greenhouse gas reductions (Metric Tons of Carbon Dioxide Equivalents).

Table 1 – Strategy Summaries, 2009 - 10

<b>Action</b>	<b>Fiscal Year</b>	<b>Initial Capital Cost (est. \$)</b>	<b>Simple Payback (Years)</b>	<b>Carbon Reduction (MTCDE)</b>
Sustainable Practices Fellow	2009 – 10	0	0	204
Lab II Heat Recovery	2009 – 10	220,000	12	118
Steam Pipe Insulation	2009 – 10	200,000	3	450
Energy Conservation Suite	2009 – 10	50,000	1	590
Demand based Lighting	2009 – 10	20,000	11	20
Solar Photo-voltaic	2009 – 10	N/A	N/A	7
Eco-rep Volunteer Program	2009 – 10	0	0	5
E-procurement System	2009 – 10	40,000	1	undefined
Increase Composting	2009 – 10	To be determined by process	---	---
Improve Waste Diversion	2009 – 10	500	1	31
CAB Renovation to LEED Gold	2009 – 10	13,700,000	N/A*	153
Fleet Upgrade; Phase 1	2009 – 10	3,000	3	6
Re-purpose Lawns; Phase 1	2009 – 10	5,000	6	3

\* Building renovation costs are the result of far more extensive requirements than simply energy conservation and efficiency, so calculation of simple payback based upon energy conservation is inappropriate and misleading.

Table 2 – Strategy Summaries, 2010 – 17

<b>Action</b>	<b>Fiscal Year</b>	<b>Initial Capital Cost (est. \$)</b>	<b>Simple Payback (Years)</b>	<b>Carbon Reduction (MTCDE)</b>
Residential Electrical meters	2010 – 11	21,000	4	43
Update Boiler Controls; Ph. 1	2010 – 11	70,000	20	485
Dedicated Housing Boiler	2010 – 11	1,000,000	7	945
Window Weatherization	2010 – 11	4,000	1	174
Commuting Incentives	2010 – 11	To be determined by process	---	---
Door Weatherization; Ph. 1	2011 - 12	7,000	3	22
Update Boiler Controls; Ph. 2	2011 – 12	30,000	20	400
Bike Rental Program	2011 – 12	1,000	1	3
Student Passport	2011 – 12	0	N/A	190
COM Renovation to LEED Silver	2011 - 12	10,600,000	N/A	165
CRC Lighting	2012 - 13	265,000	25	77
Bio-mass Gasification	2013 - 14	7,000,000	10	5,000
Offset Air Travel	2013 – 14	TBD	---	---
Local Food Purchasing	2013 – 14	0	N/A	12
Fleet Upgrade; Ph. 2	2013 – 14	1,500	3	10
Re-purpose Lawns; Ph. 2	2013 - 14	5,000	10	2
Door Weatherization; Ph. 2	2014 - 15	7,000	3	22
Community Car Share	2014 - 15	TBD	---	Undefined
Fleet Upgrade; Ph. 3	2016 – 17	1,500	1	10
Re-purpose Lawns; Ph. 3	2016 – 17	5,000	10	2
Parking Code Exemption	2016 – 17	0	N/A	0

Table 3 – Strategy Summaries, 2017 – 19

Action	Fiscal Year	Initial Capital Cost (est. \$)	Simple Payback (Years)	Carbon Reduction (MTCDE)
Bio-mass Co-generation	2017 - 18	6,000,000	7	7,000
Explore Restricting Student Vehicles	2017 - 18	0	N/A	Undefined
Acquire Carbon Offsets	2017 - 18	TBD	N/A	N/A
Modify Parking Infrastructure	2017 - 18	TBD	---	---

Goal oriented planning necessarily requires a narrow focus upon the specific activities and procedures pertinent to success. Achieving our goal of carbon neutrality requires a dominant focus upon altering our use and reliance upon fossil fuels. Climate change, however, is an issue that affects all aspects of our world, and true sustainability requires a wide and holistic thought process inclusive of far more than merely energy use.

The Evergreen State College is first and foremost a higher education institution and there are long-term values, priorities, and practices that must be emphasized, in parallel with this plan, as equally critical to our larger perspective sustainability goals. One such practice clearly pertinent to this plan is the preservation and management of our campus woodlands. The woodlands are actively sequestering carbon and, while this sequestration is not a new mitigation or offset within the scope of this plan, long term preservation of the woodlands is critical to preserving the college's carbon neutral footprint.

It is important to recognize that Evergreen's woodlands *do* help alleviate GHG production. This role of campus woodlands is acknowledged on page 43 of the ACUPCC Guidelines. The campus woodlands are sequestering carbon each year, and while such sequestration cannot be considered a saleable offset, it does contribute to Evergreen's overall carbon budget. Growing and maintaining woodlands *does* help reduce carbon dioxide in the atmosphere, and should be counted in Evergreen's carbon budget. Because of the woodlands we have on campus that are sequestering carbon each year, Evergreen should become, in sum total, a carbon *negative*, rather than merely a carbon neutral, campus. Our most recent estimate of carbon uptake in the woodlands suggests that 3300 MTCDE are sequestered per year.

The most effective *carbon sequestration strategy* for the college reserve, based upon recent research performed at Evergreen (<http://academic.evergreen.edu/projects/EEON/>) should be either 1) leaving the forest alone (no active management or timber removal) or 2) no timber removal coupled with active planting of trees in the forest reserve. While these strategies are not directly addressed in this plan, forest management practices do have the potential to significantly alter the college's total carbon footprint.

This plan also includes provisions for educational engagement through academic programs and student projects that will become integral to plan development, implementation, and follow-up.

While the strategic directions outlined in this plan come from the president and vice presidents, the leadership for plan implementation rests with the Sustainability Council (which includes a representative of each vice president and the president) and the Office of Sustainability. Sustainability Council work groups will continue to drive various elements (clean energy, sustainable food practices, alternative transportation, waste reduction and sustainable purchasing, communications). The ultimate success of this plan, however, depends most on widespread engagement throughout the college community and support from beyond the college.

## Introduction

*Evergreen will become a laboratory for sustainability—as demonstrated in our operations, our curriculum, and in the quality of life for our employees and students—and commit to becoming a carbon neutral college by the year 2020...*

*A cross-divisional task force for campus sustainability will steward our work and make Evergreen’s sustainability commitments, practices, and achievements visible to the campus and wider community. Annual sustainability indicators will be monitored each year to benchmark our progress against other campuses.*

The Evergreen State College Strategic Plan - 2007

Evergreen has a firm commitment to a sustainable way of life for our environment, our community, and our people. The college is also committed to leading by example, through our values and our actions, and to facilitating positive change in our world. Evergreen’s updated Strategic Plan includes our goal of carbon neutrality by the year 2020, and this climate action plan was developed by students, staff, and faculty as a roadmap to that goal. While our vision of sustainability is much broader than carbon neutrality the goal and this plan are a part of our commitment to action.

This plan provides a series of strategies and actions designed to reduce and otherwise mitigate the college’s greenhouse gas emissions. It is built on Evergreen’s longstanding and widespread environmental initiatives, on foundational work done over the past year by Evergreen’s Sustainability Council and work groups from that council, and on graduate program research involving students from both environmental studies and public administration. The planning process included campus-wide interviews with Evergreen State college students, faculty, and staff, as well as extensive research into greenhouse gas reduction practices.

Response to climate change is not something to be delegated to a single department, for it falls within the purview of all departments. It took a multi-departmental, multi-disciplinary team to create this plan, and it will require a similar team and broad community engagement to implement it. It will take a far greater team to address the global nature of climate change, and we hope that our plan will assist in that process. The Evergreen State College has acknowledged and accepted its responsibility to be an active leader in climate change solutions. We will lead by example through our own actions and processes. We will educate our students on the values and actions that can make a positive difference. We will engage our community to create collaborative local and regional climate action teams. We will seed and encourage hundreds, perhaps even thousands of new teams as our graduates spread out around the world.

As with any process, the plan is just the beginning and it is likely to evolve. This plan calls for 10 years of substantial and dedicated work to achieve our goal. The Office of Sustainability, the Sustainability Council, and council workgroups will be actively involved in this process, but our success will be determined by our engagement with our greater community. It is our goal, therefore, to lead, but also to involve our community in positive solutions to climate change.



Everyone contributes to global warming and climate change, and everyone working together can create the solutions we need.

*"Sustainability isn't just a bandwagon we're hopping onto. It's woven into the very fabric of our identity, and history, as an institution."*

Thomas "Les" Purce, President, The Evergreen State College – 2007

## About the College

The Evergreen State College has been a leader in environmental education since its founding. In 1972, the college started an organic farm and agriculture program. Over 70% of the college's 1,000 acres has been maintained as undeveloped forest to serve as a learning and research resource, and the college has community and teaching gardens that date back to the early 1980's. Evergreen also completed construction of Washington State's first publicly funded LEED Gold building in 2004.

Evergreen is a progressive, public liberal arts and sciences college founded in 1967 in Olympia, Washington. Evergreen has established a national reputation for leadership in developing innovative interdisciplinary, collaborative and team-taught academic programs. We have a vibrant undergraduate program, a graduate program, and seven public service centers that constitute a unique academic setting. Evergreen values a student-centered learning environment, a link between theory and practice, and a multicultural community of diverse faculty, students, and staff working together. Current enrollment is approximately 4,400.

The college formed a Sustainability Task Force in 2005, which spent the next two years evaluating our status and creating plans for an institutional infrastructure to support long term sustainability. Also in 2005, Evergreen students created a self-imposed fee per credit to purchase Renewable Energy Credits, guaranteeing that the college is powered by 'green' energy. Funds raised by the fee also support other clean energy initiatives through a student administered grant program. Recently, we have extended our commitment to sustainability beyond the classroom and the campus through educational programs and symposia to engage our regional community with responses to climate change. Evergreen's current greenhouse gas emissions total about 5 metric tons (of carbon dioxide equivalence) per student per year, which is less than half the national average for colleges and universities.

The college has also taken a number of other steps towards carbon neutrality:

- All campus appliances are Energy Star certified
- Lighting has been changed over to energy-efficient compact fluorescents
- Campus heating and cooling systems have been upgraded for higher efficiencies
- 5 gasoline-powered vehicles have been replaced with 100% electric vehicles
- We purchase 100% post-consumer waste recycled, chlorine free paper for all campus printing
- We have local and organic food purchasing priorities with our food-service vendor
- Waste collection includes single-stream recycling
- All food service areas use compostable plates, cups, napkins, and utensils
- Campus catering provides waste free events
- Campus residences have a student-centered Greener Living Program
- We have volunteer driven collection stations for office composting

Evergreen's commitment to a sustainable environment and way of life for ourselves and for generations to come is reflected in our values, our actions, and our engagement with our regional, national, and inter-national community.

## Emissions Inventory

Evergreen’s baseline greenhouse gas emissions (FY 2005) are characterized below in Chart 5. Emission quantities are normalized as Metric Tons of Carbon Dioxide Equivalents (MTCDE).

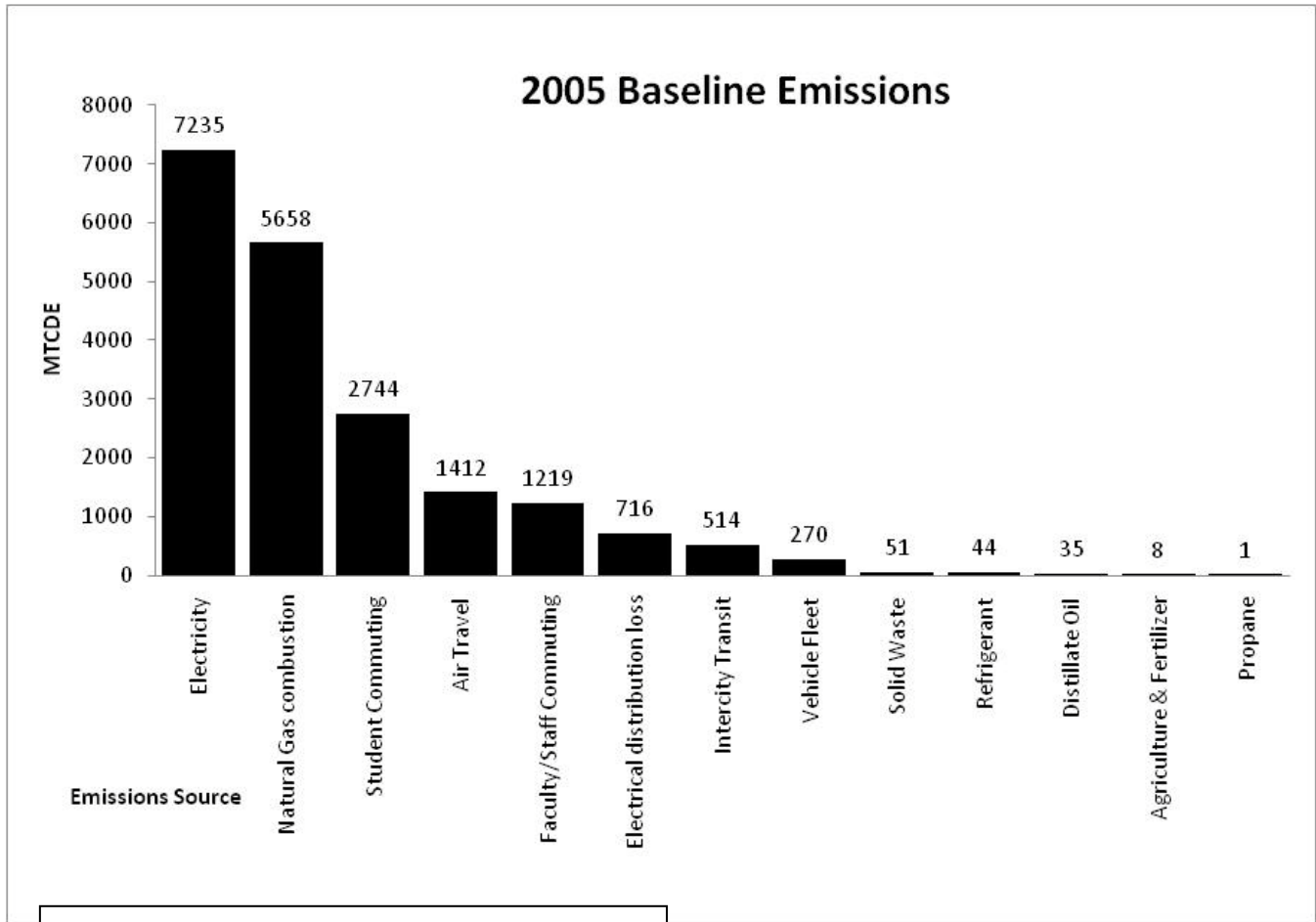


Chart 5 – Baseline GHG Emissions by Source

Sixty-nine (69%) percent of the college’s baseline emissions originate from campus heating (natural gas, distillate oil, and propane) and purchased electricity; twenty-nine (29%) percent are attributable to commuting and transportation (see Chart 6). As a result, the reduction and mitigation strategies in this plan focus predominantly upon heating and electrical conservation and efficiencies, renewable energy production, and transportation efficiencies.

It was critical that this climate action plan support the mission and values of the college, recognizing that activities such as out-of-state recruiting, study abroad, printing and paper use, among other key components of the educational process, will necessarily continue. In the absence of any substantially new transportation and communication alternatives it is unreasonable to anticipate a 100% reduction of greenhouse gas emissions. The overall strategy of this plan is to minimize or eliminate as many emissions as possible, and then offset the emissions

that remain. The college's targeted emissions profile calls for a reduction of approximately eighty-one (81%) percent of our baseline (Chart 7), and offsetting the remainder.

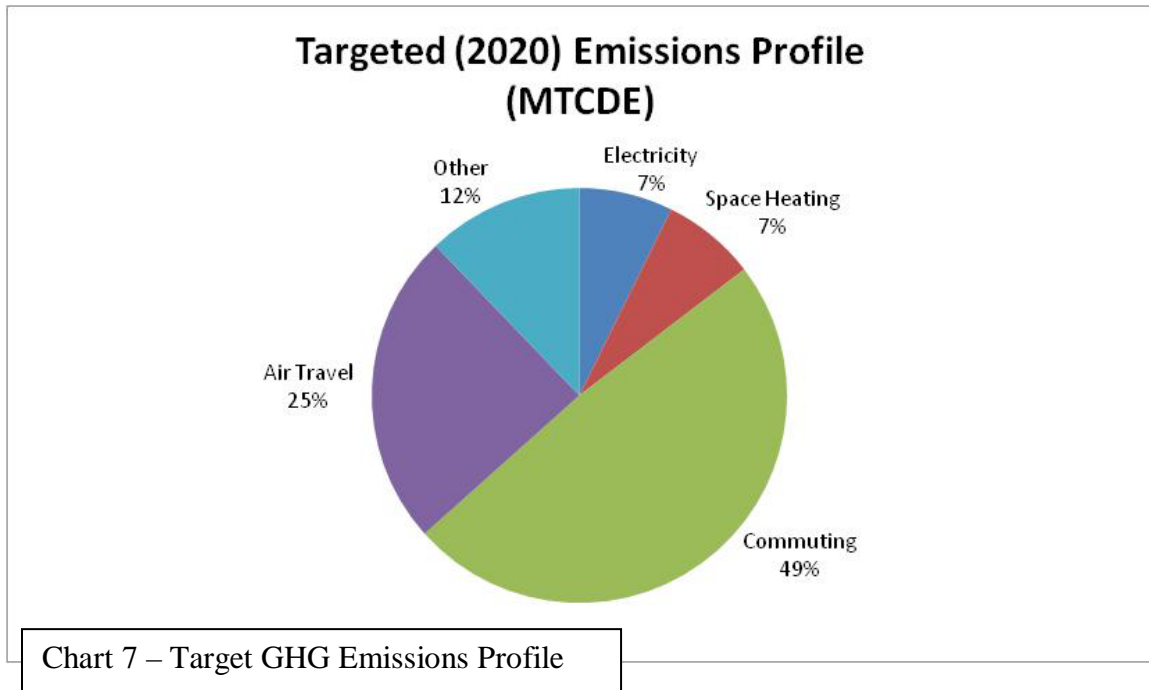
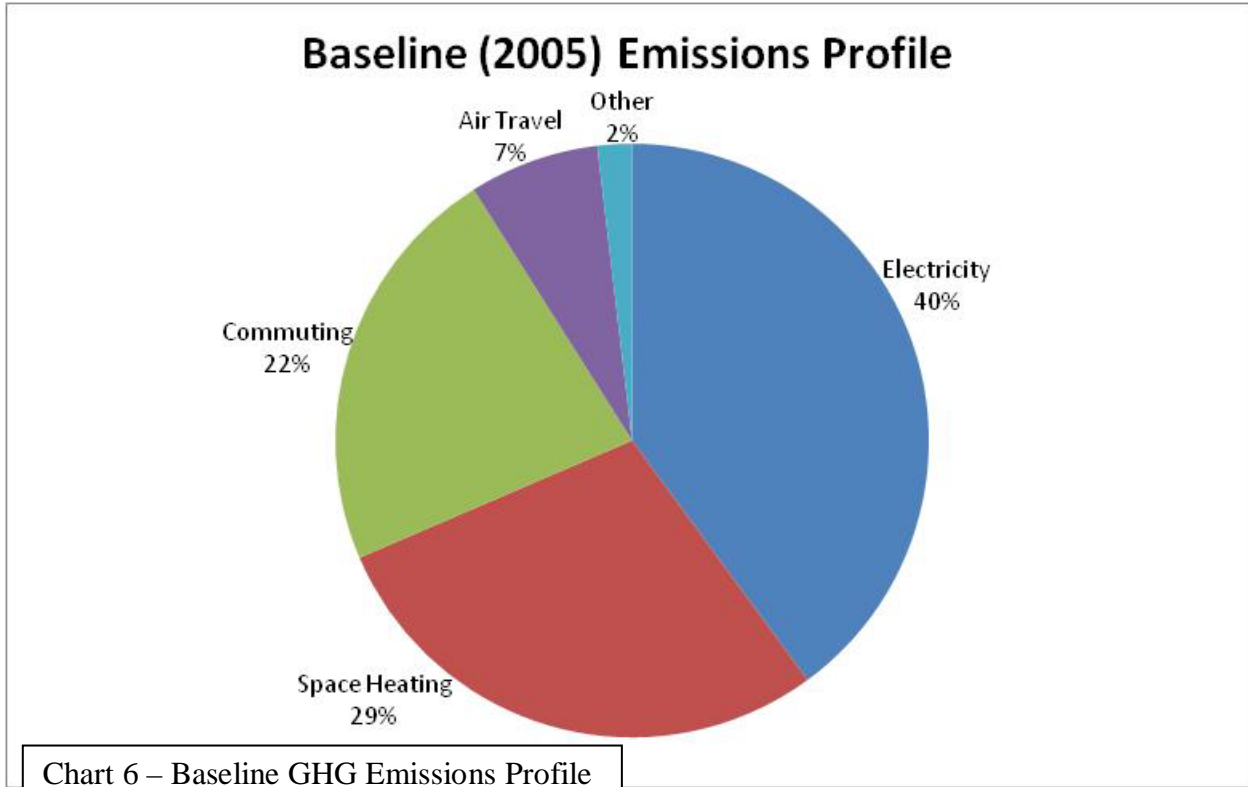


Chart 8 shows the college’s anticipated reduction in emissions (values for years 2005 through 2008 are actual, all others are estimated projections).

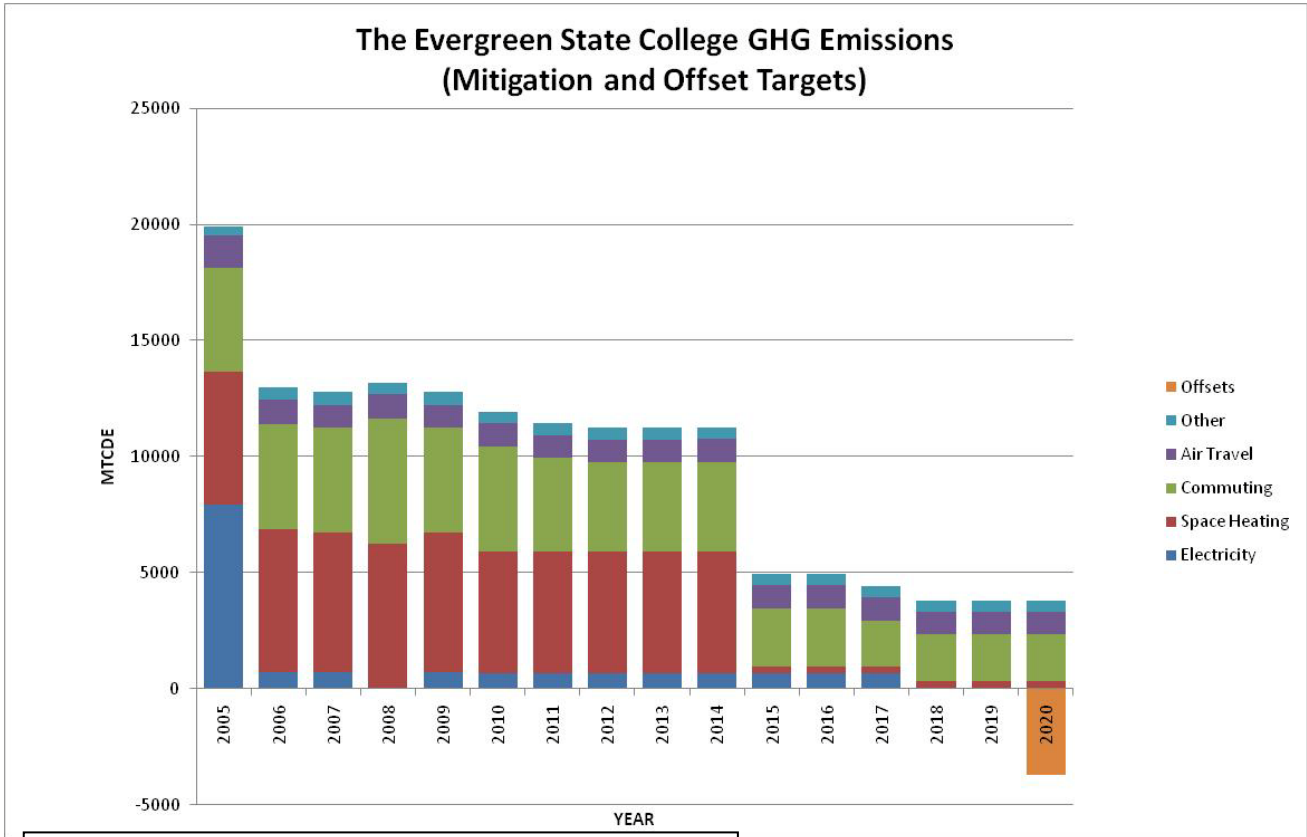


Chart 8 – Anticipated GHG Emissions Reductions

2006 – Purchase of Renewable Energy Credits ensures no GHG emissions from purchased electricity (excepting electrical transmission/distribution losses).

2009 – 2017 – Implementation of multiple energy conservation and efficiency strategies, along with commute trip reduction incentives and strategies create small reductions in energy use and associated GHG emissions.

2015 – Activation of Bio-mass gasification, a carbon-neutral renewable energy system, reduces our dependence upon natural gas for space heating. Some emissions remain as a result of periodic maintenance on the system (natural gas remains our back up for space heating) and transportation of bio-mass fuel from the source to the college.

2018 – Activation of Bio-mass co-generation, on-site electrical generation, reduces our dependence upon purchased electricity. (Alternatively, investment in a long-term renewable energy strategy through Puget Sound Energy similarly reduces GHG emissions.)

2020 – Irreducible GHG emissions are neutralized by acquisition of carbon offsets, or possibly through the establishment of new on-site carbon sequestration strategies.

The following sections detail our strategic plan for achieving carbon neutrality by 2020.

## Mitigation and Remediation of Greenhouse Gas Emissions

Evergreen's mitigation strategies were selected based upon the following criteria:

- An action must be consistent with the mission and values of the college
- It should demonstrate financial efficiencies
- It should have a reasonable ease of implementation
- It should be achievable
- It should advance social, ecological, and economic sustainability
- Our plan should demonstrate flexibility and resilience to future changes

The specific strategies are focused on:

- Energy efficiency and conservation
- On-site renewable energy production
- Commuting and transportation alternatives
- Waste stream management, including purchasing and food management processes
- Building and grounds infrastructure and practices

Our strategic approaches include:

- Technical innovations
- Individual behavioral changes
- Institutional policy and procedural changes

The college has already implemented many energy conservation and efficiency measures, including:

- Heat recovery from boiler exhausts and some lab exhausts
- Upgrading to high efficiency motors and variable frequency drives
- Converting from constant to variable volume reheat systems
- Upgrading nearly all campus lighting to higher efficiency bulbs
- Removal of nearly all water cooled appliances
- Installation of R134A, variable speed drive chillers
- Installation of reflective roofs and green roofs during construction and renovations
- Reduced irrigation coverage, and addition of a weather station to irrigation control
- Participation in a demand reduction program with our Electrical utility that has enabled real-time monitoring and assessment of energy use
- Replacing some campus fleet vehicles with 100% electric vehicles
- Office occupancy sensors for lighting control in renovated buildings
- Renovating, Building, and Maintaining to LEED standards

The college took an early adaptation step in the fall of 2005 when Evergreen students voted, with over 90% in favor, for a self-imposed clean energy fee (\$1.00 per credit per quarter) to purchase Renewable Energy Certificates (REC's) annually from Evergreen's energy providers (Puget Sound Energy in Olympia and Tacoma Public Utilities for the Tacoma campus). Because of the Clean Energy Initiative, Evergreen can currently claim that 100% of our purchased electricity has come from green, renewable sources since October, 2005.



Other early adopted strategies at Evergreen include:

- The college has been using 100% post-consumer recycled paper campus wide since July of 2008
- All disposable food service items, with the exception of coffee cup lids, are compostable
- We have established a waste diversion stream for compostable items
- Faculty are experimenting with paperless classrooms

Our long-term plan does rely upon carbon offsets to mitigate those emissions that may not be reduced without significant impact to the mission and values of the college. Offsets (the purchase of carbon credits) shall only be applied to those emissions that cannot be otherwise reduced or replaced while meeting the college's core mission. Because of the relative newness of carbon offsets and the offset market, we can expect multiple changes between today's products and those that will be available 5 to 10 years from now, particularly in terms of availability and cost. It is for this reason that offsets are currently undefined in terms of cost or type, and we will rely upon a disappearing task force to study the current market and make recommendations when it is time to make those decisions.

The following table summarizes all of the mitigation strategies called for within this plan. Specific details by strategy are then available in this section, sorted by biennium and fiscal year.

Carbon Neutrality by 2020

<b>2009 - 10</b>	<b>2010 - 11</b>	<b>2011 - 12</b>	<b>2012 - 13</b>	<b>2013 - 14</b>	<b>2014 - 15</b>	<b>2015 - 16</b>	<b>2016 - 17</b>	<b>2017 - 18</b>	<b>2018 - 19</b>
Sustainable Practices Fellowship	Site specific Electrical Metering	Door Weatherization (1)	CRC Lighting	Bio-mass Gasification	Door Weatherization (2)		Fleet Upgrade (3)	Bio-mass Co-gen	Modify Parking Infrastructure
Lab II Heat Recovery	Update Boiler Controls (1)	Boiler Controls (2)		Offset Air Travel Emissions	Community Car Share Program		Re-purpose Lawns (3)	Restrict Student Vehicles	
Steam Pipe Insulation	Dedicated Housing Boiler	Student Bike Rental Program		Local Food Purchasing			Parking Code Exemption	Acquire Carbon Offsets	
Energy Conservation Suite	Window Weatherization	Student Passport		Fleet Upgrade (2)					
Demand Based Lighting	Commuting Incentives	COM Renovation to LEED Silver		Re-purpose Lawns (2)					
Solar PV Array									
Eco-Rep Volunteers									
E-procurement									
More Composting									
Reduce Waste									
CAB Renovation to LEED Gold									
Fleet Upgrade (1)									
Re-purpose Lawns (1)									
<b>COMMUNITY</b>	<b>ENGAGEMENT:</b>								
Parking Review Board - CTR Incentives		Renewable Energy DTF	Lawn Planning	Car Share DTF	Parking Infrastructure DTF	Bio-mass Co-gen Planning	Carbon Offsets Study DTF		
Composting Practices DTF			Carbon Offsets DTF						
Lawn re-purposing DTF									

Table 2: Mitigation Strategies and Community Engagement Processes by Fiscal Year.

**Strategies and Process**

**2009 - 2011 Biennium**

	<b>Strategy</b>	<b>Year</b>
Energy Efficiency	Sustainable Practices Fellow	2009-10
	Lab II Heat Recovery	2009-10
	Steam Pipe Insulation	2009-10
	Energy Conservation Suite	2009-10
	Demand based Lighting	2009-10
	Electrical Metering	2010-11
	Update Boiler Controls; Ph. 1	2010-11
	Dedicated Housing Boiler	2010-11
	Window Weatherization	2010-11
Renewable Energy	Solar Photo-voltaic Array	2009-10
Alternative Transportation	Commute Trip Reduction Financial Incentives	2010-11
Food and Waste	Eco-rep Volunteer Program	2009-10
	Green Purchasing	2009-10
	Increase Composting	2009-10
	Improve Waste Diversion	2009-10
Buildings and Grounds	CAB Renovation	2009-10
	Fleet Upgrade; Phase 1	2009-10
	Re-purpose Lawns; Phase 1	2009-10

<b>Campus Community Engagement</b>	<b>Year</b>
Commuting efficiency incentive strategies	2009-10
Composting practices	2009-10
Lawn re-purposing planning	2009-10



## Solar Photo-voltaic renewable energy generation - 2009-10

9 kWh array mounted on Library

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Renewable energy source, very low maintenance, very low operating cost installation.	Low solar radiation levels during most of the year.	Electrical output across the year for future solar feasibility studies.

**Action Steps:** This installation was completed as part of the Library remodel in early 2009.

Solar is not currently an economically feasible or reliable source of renewable energy on campus. This pilot project, however, will enable long term study of power output over time to inform future solar power feasibility studies as the technology costs and efficiencies improve.

The panels are producing power, and we expect to have the ability to easily monitor their output by September, 2009.

## Sustainable Practices Fellowship – 2009-10

A graduate fellowship position charged with the implementation of targeted efforts to promote sustainable practices among faculty, staff, students, and visitors that result in decreased energy usage. This position would collaborate with and support the Resource Conservation Manager.

Benefits	Barriers	Measurement & Tracking
<p>Communication, engagement, and educational outreach about technical actions taken to improve energy conservation and renewable energy use on campus.</p> <p>The Resource Conservation Manager would benefit greatly from collaborative support to create behavioral changes in faculty, staff, students, and visitors that result in decreased energy usage.</p>	<p>Salary contingent upon PSE grant and energy cost savings.</p>	<p>Energy savings.</p> <p>Behavioral changes.</p>

### Action Steps:

1. Identify funding source
2. Define job description
3. Hire student for academic year fellowship
4. Review impacts and savings annually

This position is dedicated to bridging the gap between technical and behavioral energy conservation strategies. It could come in the form of a graduate fellowship, a work-study position, or an Independent Learning Contract with a dedicated faculty sponsor (following the model of Paul Butler’s “geology for travelers” course offering). The position could be funded through additional PSE RCM program grant funds, or through a Clean Energy Fund grant to create a student position. Position duties would primarily consist of creation and implementation of campaigns aimed at modification of individual habits, as pertains to energy use habits, as well as gathering data to determine the effectiveness of their efforts.

The Sustainable Practices position is intended to work alongside the college engineer to complement the technical conservation work in Facilities with targeted efforts to change practices in faculty, staff, students, and visitors that result in decreased energy usage.

## Lab II Heat Recovery – 2009-10

Add heat recovery coils to Lab II exhaust air.

Benefits	Barriers	Measurement & Tracking
Recovers heat that would otherwise be exhausted, thereby improving energy efficiency and reducing heat production costs.	Installation expense.	Installation completion.  Heat return from recovery coils.

### Action Steps:

1. Secure ESCO or capital budget funding
2. Complete installation
3. Monitor and review after first year of operation

This project calls for installing heat recovery coils in the exhaust air systems. The Lab buildings are served by 100% outside air supply fans, and two 100% exhaust air fans. Because of the danger of recovering the exhaust air from the Labs, all of the heat is ejected to the outside when it is exhausted. The heat recovery coil would allow for this heat to be captured by the coil and transferred to another coil located in the air intake system, requiring less heat production up front from the boilers. This project has been recommended by our ESCO (McKinstry) as an economic conservation measure.

## Steam Pipe Insulation - 2009-10

Add or upgrade steam pipe insulation to reduce transit loss in the heating system.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Improved energy efficiency in campus heating system, reduced heat demand and associated reductions in GHG emissions and generation costs.	Cost; materials and labor.	Project completion.

### Action Steps:

1. Secure ESCO or capital budget funding
2. Survey insulation status of all steam pipes
3. Install necessary insulation

The heat delivered from a boiler via steam pipes is often lost in transit and reduces overall heating efficiency. Losses from un-insulated pipes can amount to 10 – 20% of the total heating load. Insulation of these pipes will cut these losses by up to half (5 – 10%).



## Energy Conservation Suite – 2009-10

Adjust facilities heating and cooling practices to improve energy efficiency.

Benefits	Barriers	Measurement & Tracking
Reduced heating and cooling demand resulting in reduced GHG emissions and long term costs.	Implementation costs.  Community expectations of constantly conditioned building air.	Facilities practices and policies.  Feedback from users of building space.

### Action Steps:

1. Reduce baseline building temperatures
2. Slow return air fans to 50% during low occupancy periods
3. Shut down inflow fans when unneeded
4. Economize winter discharge air temperature settings
5. Reduce operating steam pressure
6. Manage steam flow and condensate to ensure full return

These combined incremental measures can result in a cost and energy savings of approximately 10%. Each of these measures saves money and energy by consuming less natural gas to heat water in the utilities plant. These projects have the potential to cause some discomfort for building occupants, though the moderate capital cost, quick simple payback, and reduction in scope II emissions make them very feasible. Because of a need for user feedback, this project is scheduled as a behavior project, meaning work should begin immediately, but full results may take a few years.

## Need and Demand Based Control of Grounds and Stairwell Lighting – 2009-10

Install demand and programmable lighting controls for need-based efficiencies.

Benefits	Barriers	Measurement & Tracking
Eliminate lighting power demands when stairwells are not used, and during late night/early morning on the grounds.	Capitol cost.	Installation progress.

### Action Steps:

1. Secure utility rebate and funding
2. Install bi-level stairwell lights and on-demand control sensors
3. Install centralized grounds lighting controller and adjustable lights
4. Establish lighting schedule adjusted to need

A survey of three buildings - the Library, LAB I, and the CRC revealed the potential for savings through the use of bi-level stairwell lights, which partially illuminate unoccupied stairwells. A student performed stairwell survey revealed that they are not heavily used. Some of the stairwells had limited access, including an emergency exit stairwell in the library (north end of the computer lab). These stairwells are fully lit but seldom occupied. The stairwells surveyed were illuminated by T8 fluorescent fixtures (64 watts each) without bi-level controls. Replacing these fixtures with a bi-level T8 system would reduce greenhouse gases by over 12 MTCDE per year and save over \$1800 in annual avoided electricity purchases<sup>1</sup>.

Over-illumination at night has been identified as an unnecessary use of energy. A central control system can be used to control grounds lighting and reduce the energy use. A survey of the upper campus and southern parking area revealed 140 metal halide ground lights (100 watt each) and 33 large metal halide aerial highway lights (est. to be 400 watts each). This project presumes a lighting regime that reduces overall lighting use by 45%: turn on illuminating lights 100% from dusk to 11pm, dim to 50% of full brightness between 11pm and 12am, dim to 10% of full brightness between 1am and 4am, and return to 80% brightness between 4am and dawn. These upgrades would reduce greenhouse gas emissions by over 32 MTCDE per year and save over \$4700 in avoided electricity purchases<sup>2</sup>.

<sup>1</sup> Calculations made by Seattle City Light's lighting retrofit spreadsheet

<sup>2</sup> Calculations made by Seattle City Light's lighting retrofit spreadsheet

## Eco-reps Volunteer Program – 2009-10

Recruit faculty, staff, & students (with an emphasis upon first-year students) to organize and promote sustainable habits in their class, office, or residence. The Eco-reps would help spread information on energy saving and waste reduction strategies appropriate for Evergreen. Eco-reps would promote resource conservation of all kinds - reduce waste generation, encourage energy reduction strategies, and help build a sustainable community on campus.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Inter-personal level emphasis upon behavior changes to impact energy usage, resource sharing, and waste diversion.</p> <p>An improved sense of community on campus among faculty, staff, and students.</p> <p>Valuable user-level feedback to the Sustainability and Facilities Offices on how waste and energy reduction strategies are, or are not working.</p> <p>A campus support and information dissemination network capable of giving a personal voice to sustainability initiatives.</p>	<p>Training and facilitation support required of Facilities and Sustainability Office staff.</p> <p>Staff time to create web based resources for the Eco-reps.</p> <p>Inability of faculty and staff to accept any additional responsibilities.</p>	<p>Number and placement of volunteers.</p> <p>Waste diversion, energy use, transportation habits, resource sharing, and other sustainable behaviors within Eco-rep territories.</p> <p>Efficacy of education, training, and behavior change practices.</p>

### Action Steps:

1. Define formal practices, training, and goals
2. Start a best practices and resource repository
3. Recruit Volunteers (use existing volunteers as a base)
4. Establish training schedule
5. Establish measurement criteria and goal oriented competitions
6. Establish regularly scheduled review meetings and celebrations
7. Establish on-going recruitment process
8. Review progress annually

Program training meetings should be scheduled quarterly, and program introductions should be included in all new student, faculty, and staff orientations. Scheduled monthly meetings or events provide a means for Sustainability Office staff to disseminate new information and recognize

accomplishments. Eco-reps will also have an opportunity to raise questions and share solutions and ideas with each other.

It would be advantageous for the eco-reps to meet regularly to share problem-solving techniques and to meet with the Director of Sustainability for continuing education on the full range of sustainability programs offered on campus. The meetings could be catered lunch events, in reward for these volunteers' efforts. Tufts University has produced an Eco-representatives Manual that may be used as a model and starting point for the Evergreen program (<http://www.tufts.edu/tuftsrecycles/staffandstudentresources.html>).

## Environmentally Preferable (Green) Purchasing Program – 2009-10

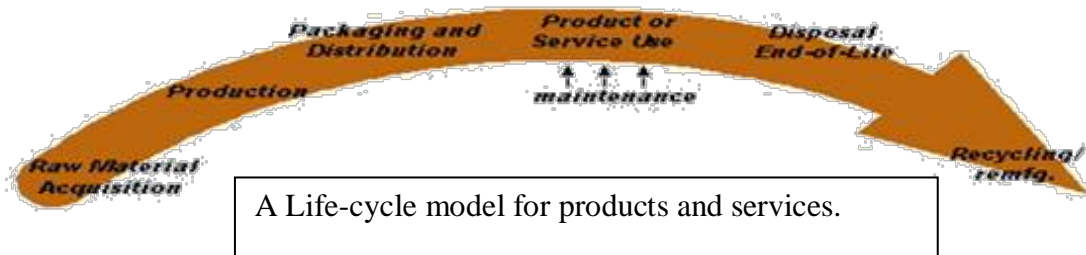
Procurement of products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Reducing the distance goods are shipped as well as reducing the number of daily incoming deliveries and outgoing shopping trips will contribute to the reduction of the college’s carbon footprint. E-procurement will play a big part in identifying vendors within our own region from whom we can purchase goods and services, thus eliminating unnecessarily long distance shipping from around the country.

Benefits	Barriers	Measurement & Tracking
<p>Participating and contributing to a greater regional and national emphasis upon sustainable manufacturing, shipping, and lifecycle design of products.</p> <p>Reducing our contribution to manufacturers who don’t follow environmentally preferred practices.</p>	<p>Acquisition cost.</p> <p>User learning curve.</p>	<p>Lifecycle analyses of college purchases.</p>

### Action Steps:

1. Choose and acquire an E-procurement system
2. Implement
3. Review progress and impacts annually
4. Involve Environmental Health and Safety in product approval for capital projects

Environmentally Preferable Purchasing (EPP) or Green Purchasing may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service. Green Purchasing is making an educated and conscious decision to buy products with considerations for environmental, social, and economic impacts.



**Increase on-Campus composting – 2009-10**

Increase campus compostable waste diversion.

**COMMUNITY ENGAGEMENT** – form student, staff, faculty Disappearing Task Force to study waste stream to compost diversion and assist the college with adopting a best-fit solution.

The options detailed below were developed by an engaged group of students and staff from Aramark, Residence and Dining, and the Organic Farm. A final choice of strategy must also include custodial and facilities staff who may be involved in long-term implementation.

**Option A: Increase on-Campus composting – 2010 - 11**

Upgrade on-campus composting facility at the Organic Farm to manage expanding residential compost program and develop institutional capacity to expand our partnership with Silver Springs Organics, or a similar commercial composting facility for compostable products and food waste from Dining Services locations.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>All campus produced compostable product can be diverted to a local facility to be made into certified organic compost.</p> <p>Most cost effective method for managing both food and compostable waste.</p> <p>Continued support for our education-based on-campus compost facility at the Organic Farm.</p>	<p>Identifying who is in charge of management of compostable product in-building (both food and wares).</p> <p>Space allocation for Silver Springs Organics dumpsters.</p> <p>Continued staff support, either student or otherwise, for the Organic Farm Compost Facility.</p>	<p>Quantity of waste diverted to Organic Farm and Silver Springs.</p> <p>Cost savings through diverting compostable waste from landfill.</p> <p>Success of Residential Compost Program.</p>

**Action Steps:**

1. Continue education campaign to increase composting with in-coming residents
2. Create internal ownership of compost collection and management, develop procedures, and train staff
3. Develop waste sorting and disposal practices through community engagement processes
4. Develop compostable waste collection practices and procedures through community engagement process
5. Divert waste stream and use savings for student or temporary staff employment
6. Address and adopt effective compost waste shipping practices
7. Acquire equipment and worms to update Organic Farm Compost Facility
8. Review cost savings and compostable material allocation annually

Evergreen currently composts food waste from residential campus at the Organic Farm through the Greener Living Program amounting to an estimated 480 gallons (1,440 – 2,160 pounds) per week. The Organic Farm Compost Facility was designed for educational purposes and is scaled to manage only a portion of the food scraps from campus. The Organic Farm facility cannot manage compostable wares due to the process required to decompose them. Silver Springs is the closest commercial facility, and our current partner, capable of composting these items. Thus, there are two distinct compost streams on campus.

Student volunteers, the RAD sustainability coordinator, and RAD student facilities manage the residential compost program. Responsibilities include development and implementation of educational campaigns to ensure proper disposal and separation of compostable products, regular collection, evaluation, and record keeping. The Organic Farm compost staff collects compostable materials from residential campus and transports it to the Organic Farm where it is converted into compost for use by the Organic Farm and community gardens. Recent budget cuts, however, have reduced the farm staff and their ability to maintain regular collections and composting practices.

Dining Services and upper campus have been composting food scraps and compostable products (corn straws, paper plates, PLA cups and coffee cups) through Silver Springs Organics commercial composting facility since September 2008. The volume produced exceeded our 700 gallon (6,000 pound) allotment per week during AY 08-09, illustrating that there is a high potential for more landfill waste diversion. It is estimated, by reviewing weights, volumes, and cost of disposal from AY 08-09 that the college saved over \$9,000 by diverting food scraps and compostable wastes to Silver Springs instead of the landfill.

Silver Springs Organics uses a technically advanced and high-heat system to manage various compostable products to make certified organic compost for sale to the public. Their facility requires constant monitoring and has the capacity to manage waste from over 5 counties in the South Sound Area. In order to be successful the Silver Springs compost collection program on upper campus needs regular attention and management, though by who remains in question. ARAMARK has agreed to manage the food waste bins in the kitchen and cafeteria to ensure proper composting practices.

**Option B: Create On-Campus Composting Facility – 2013 - 14**

Build Campus Vermicompost Facility to manage 100% of campus food waste at a location off-farm, as part of a closed-cycle campus waste diversion efforts.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>All campus compost can be diverted a short distance for treatment, without excess transportation emissions or costs.</p> <p>A dedicated composter would ensure program continuity and provide additional student learning opportunities in vermicompost and expanded composting practices.</p>	<p>Start up costs for facility construction, and a facility operating cost of \$30,000/year.</p> <p>Identifying space to construct the facility off of the Organic Farm and near Dining Services Facilities.</p> <p>Vermicompost not likely to decompose compostable bio-ware. May need to continue partnership with a commercial composting facility.</p>	<p>Quantity of waste diverted to compost and subsequent cost savings.</p> <p>Quantity of compost produced and quantity sold to the community.</p> <p>Quality of compost for sterility and organic certification.</p>

**Action Steps:**

1. Hire a professional consultant (possibly Dan Holcombe of Oregon Soil Corporation) to assist with design and planning of on campus facility
2. Address and adopt sorting/waste disposal practices
3. Address and adopt compost waste collection practices and procedures
4. Construct composting facility
5. Divert waste stream and use savings for dedicated staff
6. Acquire equipment and hire full-time staff member
7. Create market for compost and re-invest earnings in infrastructure
8. Review annually

In order to manage 100% of campus compostable waste, a new facility managed by full-time staff would need to be constructed. Through previous examination by students, staff and faculty a vermicompost facility would best suit the needs of the new facility. Managing campus generated, compostable waste on campus will cut transportation emissions and disposal costs. After four years the facility could be self-sustaining, start-up costs aside. The vermicompost facility would need to be staff managed and could include opportunities for student workers and part-time volunteers, can be incorporated into academic programs, and will help further Evergreen’s goal to become a Zero Waste campus by 2020.



## Improve waste management and diversion – 2009-10

Reduce landfill bound waste stream by 10%, annually, to an ultimate goal of 70% reduction over fiscal year 2008 quantities.

Benefits	Barriers	Measurement & Tracking
<p>Less landfill waste will reduce associated GHG emissions from transportation and landfill decomposition.</p> <p>Reduced waste stream will result in fewer waste handling (trucking and tipping) costs and fees.</p>	<p>Requires individual habitual behavior changes as well as institutional waste collection and handling process changes.</p>	<p>Landfill waste quantity measurements.</p> <p>Recycled material and compostable waste quantities.</p>

### Action Steps:

1. *Coordinate with Composting DTF.*
2. Improve collection/disposal station signage and appearance (standardized, descriptive, pictorial)
3. Incorporate new student, faculty, and staff waste diversion training into orientations
4. Involve Eco-Reps in localized training, monitoring, and institutional feedback
5. Adjust collection processes to include sorted compostable waste
6. Expand compostable collection stations across the entire campus
7. Eco-Reps manage local station competitions for most effective sorting and waste diversion
8. Research and develop relationships with more local/regional recycling processors to reduce recycling stream that is shipped overseas
9. Audit and review annually

Waste reduction is a vital focus in order to reduce Evergreen’s overall carbon emissions. Any solid waste disposed of in a landfill will eventually emit methane gas. Although smaller amounts are emitted than from other activities, methane is a more potent greenhouse gas than carbon dioxide (about 23 times as strong). Also, by providing students, faculty, and staff hands-on opportunities of decreasing their carbon footprint, (for example, by recycling or composting) there is an increased chance of creating environmentally friendly habits. Those who become engaged with environmentally friendly habits will be more likely to become supporters for a sustainable campus culture.

A part of this strategy is to increase individual awareness of the amount of waste being produced. There is currently no effective means to track how much each area of the college is contributing to the waste stream. Because of that, it would be difficult to begin offering incentives to get staff and students to reduce waste production at Evergreen. This strategy will make it possible to implement incentives for waste reduction and disincentives for waste generation. Several times a year staff estimate the volume of waste collected from each site. Then, using conversion factors located on the Recyclemania website an estimate of the weight of the waste could be generated.

Generating an estimate of the weight of waste collected would be useful for converting waste to dollars consumed to dispose of that waste and for finding the amount of carbon released by that amount of waste.

The amount of waste and recycling collected would then be posted at the site. The community would then be aware of whether the amount of waste/recycling produced is affected by education campaigns or waste reduction competitions. This tool would be useful during RecycleMania and during resource-reducing competitions that could be held throughout the year.

## Campus Activities Building Renovation to LEED Gold – 2009-10

Renovate Campus Activities Building to LEED Gold during capital improvement project.

Benefits	Barriers	Measurement & Tracking
<p>Improved energy efficiency and associated cost savings.</p> <p>Reduced carbon emissions associated with the construction, operation, and maintenance of the building.</p>	<p>Costs and inherent limitations may prevent achievement of LEED Gold certification.</p> <p>LEED Silver is our minimum expectation.</p>	<p>Attention to planning and construction process.</p> <p>Follow up analysis of building performance and efficiencies.</p>

### Action Steps:

1. This project began in June, 2009
2. Facilities follow and report on progress
3. Project completion report or story to the community
4. Annual analysis and review of performance

The Campus Activities Building (CAB) was originally built in 1972 and is currently 122,238 square feet. The renovation includes modifying 94,000 square feet of existing building and adding approximating 14,500 square feet of new construction on to the building. The renovation of the Campus Activities Building will need to be aggressive in reducing its carbon limits to offset the added square footage and the energy required for the additional square footage. The CAB is due for renovation, so ensuring that the building is built to LEED gold will help reduce the carbon for the renovation and addition.

The CAB remodel will increase activities and areas for students to hang out on campus. Student participation on this project has pushed for the new CAB to be built to a LEED Gold standard, which will significantly reduce carbon emissions from the building. The renovated CAB will be a source of pride for The Evergreen State College.

## College Fleet Replacement; Phase 1 – 2009-10

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.</p> <p>Lower fuel/operational costs and reduced GHG emissions.</p> <p>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options.</p>	<p>Greater initial costs at moment of purchase.</p>	<p>Product research for best possible replacements at time of need.</p>

### Action Steps:

1. Schedule replacement of vehicles in need of replacement with electric vehicles
2. Change one tractor to biodiesel fuel
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This strategy (in three phases) can reduce the ground maintenance vehicle and equipment fleet’s carbon footprint by 2/3, which is 26 tons of GHG annually, or roughly 0.1% of The Evergreen State Colleges’ total emissions. This is the first of a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

## Re-purpose Lawns; Phase 1 – 2009-10

Reduce maintenance requirements of existing lawns, with native plants or re-forestation.

Benefits	Barriers	Measurement & Tracking
<p>Re-purposed landscape can require little to no fertilizer and maintenance with gasoline powered equipment.</p> <p>Tree and plant growth enhances carbon sequestration.</p>	<p>Initial costs of acquiring and planting native plants and trees.</p> <p>Loss of useable lawn space for events and community activities.</p> <p>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established.</p>	<p>Carbon sequestration studies of new growth and changes, year to year.</p> <p>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots.</p>

### Action Steps:

1. **COMMUNITY ENGAGEMENT** – Solicit community input and participation in design of re-purposing plan and schedule for lawns north of Library, adjacent to Longhouse, and around the renovated CAB, in conjunction with an educational program (this process should include reference to expertise in and discussion of efficient carbon sequestration, as well as environmental and maintenance impacts)
2. Acquire native stock plants per plan in conjunction with an educational program; possibilities include edible perennials.
3. Plant and begin plan implementation in conjunction with an educational program
4. Maintain and monitor until established in conjunction with an educational program

Lawns can be traced back to aristocratic estates from the middle ages, and are labor intensive by nature. We currently utilize GHG intensive equipment to facilitate lawn management on campus. Lawns comprise at least 10 percent of the grounds and built environment but account for roughly 30 percent of ground maintenance emissions. This phased in strategy proposes to remove and replace 12 acres or 30% of lawn area over the next 11 years. Incorporating additional native plantings, gardens, storm water ponds, and gathering places into the campus landscape will not only reduce carbon, but strengthen the campus community. Replacing lawns with properly designed native landscaping, hardscapes, and/or gardens can decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and ecosystem services, and more accurately reflect the character and history of The Evergreen State College.

## On Campus Dorm Metering - 2010-11

Install metering technology for campus housing and other new or remodeled buildings.

Benefits	Barriers	Measurement & Tracking
Discrete monitoring allows for direct feedback of energy usage and enables behavioral education , awareness, and adjustment among energy users.	Cost and technology.	Installation completion.  Regular monitoring of energy usage, correlations with activities, user feedback to develop energy efficient behaviors.

### Action Steps:

1. Secure Clean Energy committee or other source grant
2. Identify best fit monitoring technology
3. Install
4. Include Eco-Rep volunteers, Sustainable Behavior Fellow, and educational programs in monitoring, user feedback, and energy use/behavioral correlations

Providing energy consumption metrics by building will help create positive connections between user actions and energy demand, along with the associated GHG emissions.

Research shows that occupant decisions can account for 50% of a building's energy use.<sup>3</sup> While residents living on campus do not pay for their energy use directly, and thus no financial incentive exists for the practice of energy saving behaviors, research has shown that individuals who report a connectedness with nature are very likely to make environmentally beneficial decisions (Mayer and Frantz, 2004).

Peterson, et al. (2007) report that, at Oberlin College, dorms that exhibited the highest reduction rates were freshman dorms for which high-resolution (real-time) energy data was available (55% during the two week competition period). This makes the A, B, C, and D dorms prime candidates for installation of this technology.

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<sup>3</sup> Schipper, 1989 from Peterson et al: Dormitory residents reduce electricity consumption when exposed to realtime visual feedbacks and incentives. International Journal of Sustainability in Higher Education. Vol. 8 No. 1, 2007 pp. 16-33

## Upgrade Boiler Controls; Phase 1 - 2010-11

Replace manual boiler controls with programmable controls.

Benefits	Barriers	Measurement & Tracking
Enhanced heating efficiency and reduced fuel costs.  Enhanced operational safety.  Improved operability and monitoring.	Cost of implementation.	Completed installation.

### Action Steps:

1. Secure capital budget financing
2. Select and install control system
3. Dedicate housing boiler, steam runs, and controls during upgrade
4. Review and report

The Evergreen State College has two primary boilers. One is used full-time for the school's heating needs, while the second is used as a backup. When the primary boiler suffers a mechanical failure, or is shutdown for routine maintenance, the second is fired up and brought online to fulfill the existing heating demand. The current boiler controls are more than 40 years old. These controls are critical for a HVAC system of this magnitude to heat and cool buildings efficiently, both in terms of time, duration, and temperature. The steam availability is also critical to the operation of power plants and a reliable, powerful boiler control system can only ensure an adequate supply.

The *2009-2011 Preservation Reduction Plan* has allocated \$1,050,000 for upgrading the controls on Evergreen's heating system, Boiler #1 and Boiler #2. A new control system uses sophisticated control schemes integrate boiler and turbine controls and allows efficient management of load, furnace pressure, drum level, and the combustion process. The fully automated boiler control process enables access to more data, lowers costs, and enhances the safety of the plant. Safety is improved through greater accessibility to essential information, such as alarms and diagnostics.

## Dedicate a Boiler for Housing Service - 2010-11

Establish a dedicated boiler/heating system for campus housing.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Enhanced heating efficiency and reduced fuel costs.	Cost of implementation.	Completed installation.

### Action Steps:

1. Dedicate housing boiler, steam runs, and controls during installation of new controls
2. Review and report

The boilers in Evergreen's Central Utility Plant supply heat and hot water for the entire campus, including heat for hot water and dryers to housing in the summer months. In addition, in the winter the steam is provided to heat housing and there is significant line loss through the steam line. Installation of a dedicated boiler for housing will significantly reduce the demand on the larger Utility Plant boilers and supply efficiency for housing.



## Window weatherization - 2010-11

Sealing dorm and housing windows to reduce loss of conditioned air from inside to out.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Reduce loss of energy used for heating/cooling and associated cost savings.</p> <p>Create more comfortable housing environment.</p>	<p>Material and installation costs.</p>	<p>Percent of exterior windows sealed.</p>

### Action Steps:

1. Secure ESCO or energy efficiency grant funding
2. Implement weatherization
3. Replace and upgrade windows as appropriate

Weatherizing the windows on lower campus will reduce the loss of conditioned air from inside environments. Most occupants living in the dorms have at least one window at their control, plus common areas. There is currently no weather stripping on these windows. In lieu of completely replacing these mostly single-pane windows, an effective interim strategy will be to weather-strip them to reduce air leaks. This, coupled with a cost effective replacement strategy involving double or triple paned, argon filled, reinforced windows would greatly boost the efficiency of space heating, as well as occupant comfort on lower campus. Occupants have direct control of the heat in their rooms, so this would likely have the effect of a decrease in heating demand.

## Commute Trip Reduction Financial Incentive Strategies – 2009-11

Use parking fee structure and/or procedures to incentivize alternatives to single occupancy vehicle use.

Benefits	Barriers	Measurement & Tracking
<p>Financial incentive to carpool and disincentive for single occupancy vehicles.</p> <p>May increase parking revenue available for transportation related programs.</p>	<p>May adversely affect low-income staff and students unable to live close to campus.</p> <p>Requires public comment and involvement as part of the decision making process.</p>	<p>Commuting behavior surveys and observational measurements.</p> <p>Total permit and pass sales.</p>

### Action Steps:

1. **COMMUNITY ENGAGEMENT** – Begin public opinion and information process through Parking Review Board to redefine rate structure
2. Alter parking permit rates or processes as determined in review process
3. Monitor and Review resulting behavior quarterly

Changing the parking fee rate structure may affect commuting behavior, as well as generate revenue that can be applied to Commute Trip Reduction Programs. The cost of a yearly transit pass is \$360 (\$30 dollars a month) while the price of a yearly parking pass is \$120 (2008 prices). The Campus Master Plan calls for an equivalence between the price of a college parking pass and an Intercity Transit pass to strengthen the benefits associated with using mass transit. All parking rates should be reviewed, including daily and two-hour passes. Research on the parking prices of other Washington State educational institutions has revealed that Evergreen’s rates are lower than all others. Adjusting our rate structure accordingly may also generate revenue necessary to enable parking services to efficiently track our transportation associated statistics. Accurate data will allow us to adjust our alternative transportation strategies effectively, as needed, and involve the operational aspect of Parking Services in our learning laboratory.

Along with the increase in parking passes we would like to reward the community with a decreased price in car pool parking. Car pooling/rideshare is an effective way to reduce single occupancy trips to campus. Carpools are currently rewarded with preferential parking, but adjusting the rate structure will demonstrate that Evergreen financially rewards community members who carpool. Additional discount incentives may be possible for alternative fuel vehicles.

An increase in parking prices can drive demand for carpooling and reinforce beneficial commuting behavior. If our restructured rates are effective in reducing single occupancy vehicle trips to campus, we could have significant impact on our emissions due to commuting.

**Strategies and Process**

**2011 - 2013 Biennium**

<b>Strategy</b>		<b>Year</b>
Energy Efficiency	Door Weatherization; Ph. 1	2011-12
	Boiler Controls; Ph. 2	2011-12
	CRC Lighting	2012-13
Alternative Transportation	Bike Rental Program	2011-12
	Student Passport Program	2011-12
Buildings and Grounds	COM Renovation	2011-12

<b>Campus Community Engagement</b>	<b>Year</b>
Renewable Energy Strategy(s)	2011-12
Lawn Re-purposing Planning	2012-13
Carbon Offsets Study Group	2012-13



## Door weatherization; Phase 1 - 2011-12

Add and/or repair insulating gaskets on doors around campus.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Reduced heat or cooling loss through air leaks around exterior doors, resulting in energy savings.	Expense for materials and installation.	Percent of exterior doors sealed.  Heating/cooling energy requirements.

### Action Steps:

1. Line up PSE or ESCO funding
2. Implement weatherization
3. Inspect and maintain annually

We estimate that campus buildings lose about 10% of their heating energy through building envelopes. Leaky exterior door seals are a significant factor in that loss. This project includes sealing up and fixing doors that perform inefficiently and the installation of insulating gaskets on outlet plates throughout campus.

## Upgrade Boiler Controls; Phase 2 - 2011-12

Replace manual boiler controls with programmable controls.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Enhanced heating efficiency and reduced fuel costs.  Enhanced operational safety and monitoring.	Cost of implementation.	Completed installation.

### **Action Steps:**

1. Secure capital budget financing
2. Select and install control system
3. Review and report

## Bike rental program; including bikes and a paid mechanic – 2011-12

Provide bicycles for rent and mechanical support.

Benefits	Barriers	Measurement & Tracking
Provides a simple transportation alternative to driving for students living on-campus.	Implementation, maintenance, and staffing costs.	Actual use, including distances travelled, when and why in order to maximize program fit with actual needs.

### Action Steps:

1. Use parking pass fee excess to fund start up bikes and bike staff hours
2. Start pilot project at campus residence halls, with on-campus residential students
3. Monitor and review (involve educational programs)
4. Increase program, as appropriate, as parking fee funds become available
5. Monitor and review (involve education programs)

The Bike rental program through the bike shop would ensure availability of bikes and enable more students to commute by bike. If 50 students that drive alone shift to bike commuting, it will reduce CO<sub>2</sub> emissions by 1% compared to 2005 levels. This bike share program can be introduced incrementally, introducing 5 bikes a year, for example, over the next two years as a pilot program.

Bicycles and parts are procured through the impoundment of abandoned bicycles on campus. If a bicycle remains unclaimed after the designated notice and waiting period, it is turned over to the bike shop to be used for the bike rental program.

Representatives from the student run bike shop, parking services, and residence and dining, along with the student alternative transportation coordinator should all be involved in this collaborative program.

## Expand 'Passport' Program to include Students - 2011-12

Provide students with an opportunity to gain free occasional parking through regular use of transportation alternatives.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Encourages and rewards habitual use of alternative transportation when commuting.	Lost parking fee revenue.	Student awareness and use of program.

### Action Steps:

1. Ensure parking budget excess and ability to absorb costs, or seek a grant for start up
2. Research feasibility of using existing student ID cards for tracking purposes (in conjunction with a computerized tracking program)
3. Offer Passport program to students
4. Monitor and review usage
5. Audit and review annually

The Passport Program was established to provide incentives to campus community members who utilize alternative transporting options. Presently, it is only available to staff and faculty and it offers them 36 days of free parking a year, 12 days per quarter, for using an alternative daily commute. If expanded to students, the program would reward students with free parking for using alternative transportation for their commute. This can be the first program sponsored by the institution that rewards alternative commuters among the students. Establishing stronger incentive programs has been targeted by the Climate Action Planning graduate students as a much needed step in building effective alternative transportation habits in the future.

## Communications Building Renovation to LEED Silver – 2011-12

Renovate Communications Building to minimum LEED Silver certification

Benefits	Barriers	Measurement & Tracking
Improve energy efficiency and reduce environmental impact of construction and maintenance.	Capital project cost.	Attention to planning and construction process.  Follow up analysis of building performance and efficiencies.

### Action Steps:

1. Begin planning and design (2009)
2. Secure capital budget (2010)
3. Begin construction (2011)
4. Monitor and review annually

The Communication Building was erected in 1977 and is approximately 121,513 square feet. In conjunction with the college’s goal for carbon neutrality the Communication Building is due for a renovation. Projected uses for the building will be for performance and lecture spaces, conference programs and receptions, interdisciplinary labs, and faculty offices. Since building remodels and renovations is something that needs to take place as the college ages, ensuring that the new designs are built to LEED Silver versus conventional building standards will be an easy source of carbon reductions for the college as buildings are updated.

Currently, the Communications building is estimated to use 1,227,281 kWh of electricity and 8,506 MMBTU of Natural Gas annually. This causes 546.7 tons of carbon greenhouse gas emissions to be emitted from the Communications Building alone. In the remodel design, 90,000 square feet of the building will be up for remodel. Major components for this project will include the heating and ventilation, plumbing and pipe fixtures, fire protection, lighting and electrical power, floor, wall, and ceiling finishes, doors and door hardware, and security for the building. If the building is renovated to LEED Silver standards, it could reduce the greenhouse gas emissions by up to 30 percent. This would shrink the carbon footprint of the building by 165.8 tons to a total of to 380.9 tons of carbon.



## Campus Recreation Center Lighting – 2012-13

Replace current, always on, lighting with on-demand lighting.

Benefits	Barriers	Measurement & Tracking
Reduce unnecessary power demand from lighting unused space.  Improves lighting efficiency.	Cost of changeover to new light fixtures and on-demand sensors.	Project completion.

### Action Steps:

1. Secure funding or combine project with other CRC renovations
2. Replace lights, install on-demand sensors
3. Review and report

Gymnasium lights (currently 126 400 watt metal halide lamps) run constantly while the College Recreation Center (CRC) is open. The lights are on 15 hours a day during the week, 10 hours on Saturday, and 5 hours on Sunday (current CRC operating hours), regardless of user occupation. It takes five minutes for the existing metal halide lights to strike and illuminate the space – an unacceptable cost to occupant time and safety. Replacing the 400 watt metal halide fixtures with lower wattage, high output T5 fluorescent fixtures and adding occupancy sensors to the fixtures will significantly reduce the power demand from those lights.

## Renewable Energy Disappearing Task Force - 2011-12

### ***COMMUNITY ENGAGEMENT:***

The Renewable Energy disappearing task force is required to study current renewable energy options and best practices, effect community engagement, acquire community opinions, and recommend future action steps pertaining to on-site energy generation, renewable energy credits, and the student clean energy fee.

The task force should include representatives from the Clean Energy Committee, the Geoduck Student Union, Facilities, faculty, and others as determined by the Sustainability Council.

The task force recommendations will be due to the Sustainability Council by April, 2012.

## Re-Purposing Lawns Plan Review – 2011-12

### ***COMMUNITY ENGAGEMENT:***

The Sustainability Council, along with the Campus Land Use Committee (CLUC), must engage the campus community in a review of Phase 2 plans for re-purposing lawns to reduce maintenance and improve natural function of the space.

This review should inform and, if necessary, adjust re-purposing plans scheduled for FY 2013-14.

Final recommendations are due to the Council in April, 2012.

## **Carbon Offsets Study Group – 2012-13**

### ***COMMUNITY ENGAGEMENT:***

Form a disappearing task force to study carbon offsets and the offset market, engage the campus community in a value-based discussion of offsets, and make recommendations for the college's acquisition and use of carbon offsets to compensate for non-reducible GHG emissions.

This task force may be associated with, or even result from the re-definition of, the Renewable Energy DTF.

The study group's recommendations are due to the Sustainability Council by April, 2013.

**Strategies and Process**

**2013 - 2015 Biennium**

<b>Strategy</b>		<b>Year</b>
Energy Efficiency	Door Weatherization; Ph. 2	2014-15
Renewable Energy	Bio-mass Gasification	2013-14
Alternative Transportation	Offset Air Travel	2013-14
Food and Waste	Increase Local Food Purchases	2013-14
	Fleet Upgrade; Phase 2	2013-14
	Re-purpose Lawns; Phase 2	2013-14
Buildings and Grounds	Community Car Share	2014-15

<b>Campus Community Engagement</b>	<b>Year</b>
Parking Infrastructure Study	2014-15



**Bio-mass Gasification – 2013-14**

Install on-site biomass gasification reactor system to replace dependence upon natural gas.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Substantial renewable energy heating system.</p> <p>A carbon neutral process, with substantial impact on reduction of GHG emissions.</p> <p>Reliance upon local energy resources; keeps energy \$ within the local/regional economy.</p> <p>Fuel and operating costs are expected to be substantially less than the cost of natural gas.</p> <p>Potential, as a large customer, to create local jobs and have a positive impact on local forest management practices.</p>	<p>Large initial infrastructure investment.</p> <p>Local fuel sources and suppliers must be developed.</p> <p>New facilities staff and procedures must be developed.</p>	<p>Actual energy production and costs vs. actual natural gas costs.</p> <p>Fuel sourcing and forest management practices.</p> <p>Carbon cycle analysis: from sequestration during tree growth to emissions and retention in ash.</p> <p>Economic study of fuel supply market and regional impacts.</p>

**Action Steps:**

1. Secure capital budget funding through stimulus funding, partnership with the State, ESCO funding, and/or grants
2. Plan installation (incorporate educational programs)
3. Develop fuel supply source(s) through DNR, Correctional Industries, and local forest product companies (incorporate educational programs)
4. Install Plant
5. Revise Utility Plant procedures and add bio-mass staff
6. Bring plant on line
7. Review and revise procedures
8. Incorporate education programs in plant operations and fuel supply sourcing

The most mature and feasible on-campus energy generation strategy available at this time is biomass gasification. This process involves high temperature gasification of chipped plant material, which feeds into a combustion process. Biomass gasification systems are currently available in the market and can replace natural gas.

The gasification process heats the biomass to extremely high temperatures to create syngas, which can then be burned to heat our campus boilers. Biomass gasification is considered to be carbon neutral because the amount of carbon released during harvest, transportation and gasification of the fuel crop is sequestered by the crop itself, creating a discrete carbon cycle.

**Offset Air Travel – 2013-14**

Create a carbon mitigation fund to offset GHG emissions originating from air travel.

Benefits	Barriers	Measurement & Tracking
Does not adversely restrict or inhibit normal college operations and programs. Travel to distant locations will remain a necessity, and air travel remains the most effective means.	Financial resources to purchase offsets.	Annual air miles travelled.

**Action Steps:**

1. **COMMUNITY ENGAGEMENT** – Establish a funding model through an engaged stakeholder process; fees on travel programs, clean energy grants, and other means should be explored
2. Select an offset provider through reference to the Carbon Offsets study group report
3. Create an air travel education report including full cost disclosure (GHG emissions, travel costs, offset costs, fees, etc.) for feedback to regular users in conjunction with an educational program
4. Review and publish report annually

Carbon offsets through a carbon mitigation fund are the most realistic means to offset CO<sub>2</sub> emissions when a significant reduction cannot be made without significantly impacting the mission and function of the college.

Some reductions in actual travel may be possible, but substituting or significantly reducing emissions from air travel is very challenging. We believe that we can encourage changes in behavior, but should not mandate them. We recommend an emphasis on education and full disclosure of all travel costs (including carbon and offset costs), inviting faculty, students, and staff to adjust their travel needs appropriately.



## Increase Local and Organic Food Purchasing – 2013-14

Increase local and organic food purchases by 10% of total food purchases.

Benefits	Barriers	Measurement & Tracking
<p>Reduced GHG emissions associated with transportation, cooling, and storage of non-local food.</p> <p>Increase support and stimulation of local food economy.</p>	<p>Must be negotiated into ARAMARK contract.</p> <p>Costs may be greater, and supply stability may be less.</p> <p>Food service and consumers must adapt to a more regional and seasonal food supply.</p>	<p>Actual purchases, sources, and types.</p> <p>Food preparation and consumption impacts and responses.</p>

### Action Steps:

1. Define ‘local’ and ‘organic’ criteria satisfactory to our specific circumstances
2. Prepare purchasing case, including sources and availability
3. Negotiate requirements into Aramark contract
4. Monitor and review (involve educational programs)

Evergreen’s Sustainability Task Force set a goal in 2007 for Dining Services to be purchasing 40% of their food from local, organic, or local organic sources by 2010, a goal that ARAMARK, our food service provider, gladly accepted. ARAMARK, purchases 32% of its food from local, organic, or local organic sources. As of academic year 2008-09, ‘local’ is defined as within the Pacific Northwest with emphasis upon purchasing as locally as possible. Organic food is raised with more sustainable, less fossil-fuel intensive methods. The Greenery (campus dining hall) serves about 1000 people per day, so changes in food operations will have a positive impact on many people - raising their awareness to multiple sustainability issues while educating about seasonality, organic and local food, and the importance of developing a sustainable food system. ARAMARK has the final say on purchasing decisions, but they have shown significant interest in working to increase local and organic purchasing throughout their contract.

*Transporting food consumes a vast amount of fossil fuels. Domestic agricultural products total 566 billion tonmiles, or 20 percent of the commodity transport with the United States. A rough estimate predicts that 120 million tons of CO<sub>2</sub> emissions are directly attributable to domestic food transport each year, and U.S. imports and exports likely account for an additional 120 million tons. (Food and Water Watch Fact Sheet)*

Food transport is a part of our Scope 3 greenhouse gas emissions that Evergreen feels can be impacted. Purchasing Certified Organic foods ensures reduced use and ingestion of chemical fertilizers for both farm workers and guests in dining services. Developing local food partnerships enhances local food security and develops strong relationships between The Evergreen State College and the local community. We have yet to exhaust purchasing opportunities from the on-campus Organic Farm or other local organic farms within our ‘local’ range.

## College Fleet Replacement; Phase 2 – 2013-14

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.</p> <p>Lower fuel/operational costs and reduced GHG emissions.</p> <p>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options.</p>	<p>Greater initial costs at moment of purchase.</p>	<p>Product research for best possible replacements at time of need.</p>

### Action Steps:

1. Evaluate and schedule vehicles in need of replacement or conversion
2. Evaluate and select best market alternative fuel options
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This strategy (in three phases) can reduce the ground maintenance vehicle and equipment fleet’s carbon footprint by 2/3, which is 26 tons of GHG annually, or roughly 0.1% of The Evergreen State Colleges’ total emissions. This is the second in a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

**Re-Purpose Lawns; Phase 2 – 2013-14**

Reduce existing lawn with native plants to begin re-purposed landscaping.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Re-purposed landscape can require little to no fertilizer and maintenance with gasoline powered equipment.</p> <p>Tree and plant growth enhances carbon sequestration.</p>	<p>Initial costs of acquiring and planting native plants and trees.</p> <p>Loss of useable lawn space for events and community activities.</p> <p>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established.</p>	<p>Carbon sequestration studies of new growth and changes, year to year.</p> <p>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots.</p>

**Action Steps:**

1. Design re-purposing plan and schedule in conjunction with an educational program
2. Acquire native stock plants/trees per plan in conjunction with an educational program
3. Plant and begin re-forestation in conjunction with an educational program
4. Maintain and monitor (in conjunction with an educational program) until established

This phased-in strategy proposes to remove and replace 12 acres of lawn. Re-purposing should decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and eco-system services, and reflect the character and history of The Evergreen State College.

## Community Car Share Disappearing Task Force – 2013-14

Form a disappearing task force to study, make recommendations, and plan a car share program for the campus with consideration of possible collaboration(s) with local community partners, or other state agencies.

Items of study include:

- Users – who are they, how often, what are they willing to pay?
- Partners – who else has this need and is willing to participate?
- Maintenance/ownership responsibilities
- Liability – insurance costs and legal responsibilities
- Program structure; including fees, registration, rules and restrictions
- Marketing and promotions – how to register and engage users?
- Implementation plans

DTF members should include, at minimum:

- Students
- Motor Pool staff
- Residence staff
- Faculty
- Community members
- (optionally) Local transit or transportation authority representatives

The task force recommendations are due to the Sustainability Council by April, 2014.

## Door weatherization; Phase 2 – 2014-15

Add and/or repair insulating gaskets on doors around campus.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
Reduced heat or cooling loss through air leaks around exterior doors, resulting in energy savings.	Expense for materials and installation.	Percent of exterior doors sealed.  Heating/cooling energy requirements.

### Action Steps:

1. Line up PSE or ESCO funding
2. Implement weatherization
3. Inspect and maintain annually

We estimate that campus buildings lose about 10% of their heating energy through building envelopes. Leaky exterior door seals are a significant factor in that loss. This project includes sealing up and fixing doors that perform inefficiently and the installation of insulating gaskets on outlet plates throughout campus.

## Community Car Sharing Program - 2014-15

Partner with other public and private entities to establish a car share system based in Olympia and easily accessible from campus.

Benefits	Barriers	Measurement & Tracking
Provides cost effective, short term use rental vehicles for students and the community with infrequent travel needs.	Liabilities and vehicle maintenance.	Monitor usage levels.

### Action Steps:

1. **COMMUNITY ENGAGEMENT** - Establish a DTF to study feasibility, define interested users, scope out partners, make recommendations, and establish implementation plan
2. Establish liabilities
3. Market and promote
4. Establish program
5. Monitor and review

A community car share allows users to rent vehicles at a low rate for hourly or daily use. Similar to FlexCar, a community car share allows more local control of rates and systems. A FlexCar system cost the providers (such as a University) about \$1000 a month per vehicle on average. Conversely, community car share systems, such as in Bellingham, cost significantly less per vehicle.

## Parking Infrastructure Study Group – 2014-15

Form a group to study parking infrastructure changes, engage the campus community in a value-based discussion of changes, and make recommendations for changes in parking infrastructure.

Items of study include:

- Current and projected usage
- Infrastructure economic, environmental, and GHG costs
- Total parking capacity and desired capacity
- Local code requirements driving built capacity
- Alternative transportation infrastructure, such as charging stations
- Implementation plans

DTF members should include, at minimum:

- Students, Faculty, and Staff commuters
- Parking Services staff
- Facilities and Residence staff
- Community members
- Local transit or transportation authority representatives

The task force recommendations are due to the Sustainability Council by April, 2015.

## **Strategies and Process**

### **2015 - 2017 Biennium**

<b>Strategy</b>		<b>Year</b>
Buildings and Grounds	Re-purpose Lawns; Phase 3	2016-17
	Fleet Upgrade; Phase 3	2016-17
	Parking Code Exemption	2016-17

<b>Campus Community Engagement</b>	<b>Year</b>
Bio-mass Co-generation Planning	2015-16
Carbon Offsets Study Group	2016-17





**Re-purpose Lawns; Phase 3 – 2016-17**

Reduce existing lawn according to plans.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Re-purposed landscape will require little to no fertilizer and maintenance with gasoline powered equipment.</p> <p>Tree and plant growth enhances carbon sequestration.</p>	<p>Initial costs of acquiring and planting native plants and trees.</p> <p>Loss of useable lawn space for events and community activities.</p> <p>Will require more maintenance labor during initial planting and growth seasons until new plantings are firmly established.</p>	<p>Carbon sequestration studies of new growth and changes, year to year.</p> <p>Potential for student salvage of local plants from new development around the county and relocation into re-forested lawn plots.</p>

**Action Steps:**

1. Follow re-purposing plan developed in 2013 and schedule in conjunction with an educational program
2. Acquire native stock plants/trees per plan in conjunction with an educational program
3. Plant and begin implementation in conjunction with an educational program
4. Maintain and monitor (in conjunction with educational programs) until established

This phased-in strategy proposes to remove and replace 12 acres of lawn. Re-purposing should decrease carbon intensive maintenance, create learning opportunities, increase on campus carbon sequestration and eco-system services, and reflect the character and history of The Evergreen State College.

### College Fleet Replacement; Phase 3 – 2016-17

As equipment ages repair or replace with purchase of more efficient models, electric models, or conversion to Bio-diesel.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Older energy intensive, high emissions vehicles are replaced with new alternative fuel vehicles when decommissioned.</p> <p>Lower fuel/operational costs and reduced GHG emissions.</p> <p>Potentially expensive fleet replacement is aligned with necessary replacement and an opportunity to take advantage of the newest alternative fuel options.</p>	<p>Greater initial costs at moment of purchase.</p>	<p>Product research for best possible replacements at time of need.</p>

**Action Steps:**

1. Evaluate and schedule vehicles in need of replacement or conversion
2. Evaluate and select best market alternative fuel options
3. Replace miscellaneous older lawn equipment with higher efficiency equipment

This is the third in a three-phase strategy requiring utilization of electric vehicles, a gradual introduction of Bio-diesel, and an increasing efficiency standard in lawn maintenance equipment.

## Exempt Campus from Thurston County Parking Requirements – 2016-17

Apply for and acquire variance from code requirements to add parking in conjunction with renovations or new construction.

Benefits	Barriers	Measurement & Tracking
<p>Supports the shift of emphasis upon an alternative transportation paradigm.</p> <p>Reduces parking lot maintenance costs and storm water runoff.</p> <p>Increases carbon sequestration on campus.</p>	<p>Thurston County zoning code requirements for parking availability; will need to plea to County Commissioners.</p>	<p>Parking lot capacity; transit and carpool usage.</p>

### Action Steps:

1. Create transportation master plan to accommodate new community mobility needs through 2030
2. Work with County to receive 100 year variance/exemption on parking requirements
3. Create monitoring plan to mitigate possible overflow parking impacts on roads

Exemption from County parking requirements is an important step in reducing our impact on the regional environment, and in shifting the way we accommodate the car. Currently, we must add several hundred spaces when new buildings are erected. Similarly, when buildings are renovated we also must add spaces or apply for a one-time variance from the County.

Currently Evergreen’s parking lot encompasses 1,965 spaces. During peak demand only 1,420 spaces are utilized and 545 spaces remain vacant (2006 Master Plan). Despite Evergreen’s objective of reducing the number of SOV’s commuting to campus Evergreen provides an abundance of spaces for student commuters. Currently 4,500 students attend Evergreen and around 80% commute to campus (2006 Master Plan).

Continued accommodation for the car is obviously not the best choice, both financially and environmentally. Exemption from future parking requirements will allow us to handle vehicles as we see fit and as our needs change.

## **Bio-mass Co-Generation Study and Planning Group – 2015-16**

Form a group to study the feasibility of bio-mass co-generation for renewable production of electricity on-site, engage the campus community in a discussion of renewable energy production, and make recommendations for implementation of a renewable energy plan for purchased electricity.

Task force recommendations are due to the Sustainability Council by April, 2016.

### **Carbon Offsets Study Group – 2016-17**

Re-form a group to review and study carbon offset strategies, to engage the campus community in a value-based discussion of offsets, and to make recommendations for the college's acquisition and use of offsets.

Recommendations are due to the Sustainability Council by April, 2017.

**Strategies and Process**

**2017 - 2019 Biennium**

<b>Strategy</b>		<b>Year</b>
Renewable Energy	Bio-mass co-generation	2017-18
Alternative Transportation	Restrict student vehicles	2017-18
Buildings and Grounds	Modify parking infrastructure	2018-19
OFFSETS	Acquire carbon offsets	2017-18



**Bio-mass Co-generation - 2017-18**

Install bio-mass gasification co-generation system to replace dependence on purchased electricity.

<b>Benefits</b>	<b>Barriers</b>	<b>Measurement &amp; Tracking</b>
<p>Substantial renewable energy electrical generation system.</p> <p>A carbon neutral process, with substantial impact on reduction of GHG emissions.</p> <p>Reliance upon local energy resources; keeps energy dollars within the local/regional economy.</p> <p>Fuel and operating costs are expected to be substantially less than the cost of purchased electricity.</p>	<p>Large initial infrastructure investment.</p> <p>May need new facilities staff and procedures.</p>	<p>Actual energy production and costs vs. actual electric costs.</p> <p>Economic study of fuel supply market and regional impacts.</p>

**Action Steps:**

1. Secure capital budget funding through stimulus funding, partnership with the State, ESCO funding, and/or grants
2. Plan installation (incorporate educational programs)
3. Install Co-generation Plant
4. Review Utility Plant procedures and revise if necessary
5. Bring plant on line
6. Review and revise procedures
7. Incorporate education programs in plant operations and fuel supply sourcing

## Restrict Student Cars – 2017-18

Restrict car use and type on campus and provide alternative transportation training and support for students living on campus.

Benefits	Barriers	Measurement & Tracking
Restricts automobile usage and encourages development of alternative transportation commuting habits.	Student expectations, special needs, and emergency needs.	Monitor usage of transportation alternatives.

### Action Steps:

1. **COMMUNITY ENGAGEMENT** – Ensure sufficient transportation alternatives, access, and training are available
2. Develop freshman orientation training in alternatives in conjunction with educational program
3. Establish stakeholder input and review process to inform decision-making
4. Implement vehicle policy
5. Monitor and evaluate transportation habits in conjunction with educational program
6. Review



## Modify Parking Infrastructure - 2019

Reduce non-permeable parking surface area by removing and/or planting over unneeded spaces and/or otherwise modify parking infrastructure based upon DTF recommendations.

Benefits	Barriers	Measurement & Tracking
<p>Supports the shift of emphasis upon an alternative transportation paradigm.</p> <p>Reduces parking lot maintenance costs and storm water runoff.</p> <p>Increases carbon sequestration on campus.</p>	<p>Initial costs of space removal.</p> <p>Thurston County zoning code requirements for parking availability.</p>	<p>Plant growth and sequestration.</p>

### Action Steps:

1. Refer to Parking Infrastructure DTF recommendations for determination of actual strategy; potentially plant over or dig out parking surfaces
2. Plan distribution of space removal
3. Implement removal

## Academic Involvement

Approximately 32% of The Evergreen State College coursework, at both undergraduate and graduate levels, have a sustainability focus, and another 12% include sustainability as a related subject. Thirteen (13%) percent of student organizations and a student run business on campus are focused upon sustainability and climate change issues. The Sustainability Council and workgroups all contain student representatives, and at least one student group, the Clean Energy Committee, is responsible for supporting campus activities through a grants program.

This climate action plan will be incorporated into the academic experience at Evergreen through three distinct contexts:

### 1) Inclusion into curriculum and course work.

All curriculum planning at Evergreen begins with the Faculty, who have the freedom to create and design the academic content of their courses. Faculty collaborate to develop team-taught, interdisciplinary programs, using Summer Institutes to plan future courses as well as finalize their integrated curricula. The Summer Institutes are the best time to inform faculty of emerging study interests and learning opportunities that they may choose to focus upon, or include in future courses.

**Representatives from the Sustainability Office and Council will regularly attend Summer Institutes and present faculty with an update on the climate action plan strategies, progress, and upcoming actions so that the faculty will be aware of upcoming opportunities for experiential learning and involvement. They will also promote sustainability themes at Planning Unit meetings.**

### 2) Individual Learning Contracts

An Individual Learning Contract (ILC) is negotiated between a student and faculty/staff sponsor who has knowledge in the area to be studied. In consultation with the sponsor, the student initiates the agreement to undertake work at an advanced level, develop specific learning goals, and identify and complete learning activities. The sponsor agrees to provide appropriate oversight, support, and advice. Individual Learning Contracts are an ideal mechanism for students to engage with the climate action plan, with either staff or faculty sponsors.

**The Office of Sustainability is a highly visible point of contact for most students interested in the study of climate change and climate action initiatives. This office will maintain a database of faculty and staff interested and able to accept an ILC, along with the currently active plan strategies. This database will be publicly available for students seeking the focused learning opportunities offered through the learning contracts. This information will also be shared and coordinated with the Community Opportunities Database (CODa), the Center for Community Based Learning and Action (CCBLA), and the Graduate program Directors.**

### 3) New Student Orientation

**Representatives from the Sustainability Office and Council will regularly attend new student orientations (undergraduate and graduate levels) and other events as appropriate to present an overview of the college's climate action plan strategies, progress, and upcoming actions so that incoming students will be aware of ongoing opportunities for experiential learning and institutional involvement.**

The following thematic areas are recommended as bases from which to explore specific experiential learning opportunities within this plan:

- **Sustainable Habits and Practices Strategies**
  - Eco-reps volunteer program
  - Environmentally sustainable purchasing program
  - Sustainable practices fellowship position
  - Increasing on-campus composting
  - Improving waste management and diversion
  - Commuting Trip Reduction incentives
  
- **Applied Technology Strategies**
  - Lab II heat recovery
  - Steam pipe insulation
  - Energy conservation suite
  - Door and window weatherization
  - Demand based grounds and stairwell lighting
  - CRC lighting upgrade
  - Bio-mass gasification
  - On campus dorms electrical metering
  - Dedicated housing boiler and new boiler controls
  - Bio-mass co-generation
  
- **Capital/Infrastructure Changes**
  - CAB renovation
  - Fleet upgrades; all phases
  - Lawn re-purposing; all phases
  - Bike rental program
  - COM renovation
  - Offset air travel
  - Modify parking infrastructure
  - Community car share
  
- **Policies and Processes**
  - Altering parking permit policies
  - Increase local and organic food purchasing
  - Restricting student vehicles
  - Thurston County planning and parking exemptions

- **Annual Measurements and Assessments**
  - Annual carbon (GHG emissions) inventory
  - Track and review implementation effects
  - Research new technology, innovations, and adaptations available in the market pertinent to the college's work with Renewable Energy, Alternative Transportation, Purchasing, Food, Waste Diversion, etc.
  - Telling the story; journalistic, documentary, and media presentations on what is being accomplished and learned

## Community Outreach

The Evergreen State College currently has a high level of involvement with our local community through training institutes for college level faculty (Curriculum for the Bioregion), student volunteers and interns working with local organizations through the CCBLA (Center for Community Based Learning and Action), and our South Sound Climate Action Series symposia, as well as many individually organized collaborations between faculty, staff, and students and our local communities. These existing structures and relationships can be utilized to engage our greater community with the process and progress of our climate action steps.

Community outreach for the purposes of this climate action plan will focus on the following steps:

- Dedicated pages for progress reports on our Sustainability web site, including listings on our events calendar and blog announcements, also posted pages containing our annual carbon inventories, and a ‘sustainability dashboard’ of key indicators.
- Training and progress reports provided by Office of Sustainability staff covering climate action steps and accomplishments for the Curriculum for the Bioregion, the CCBLA, and appropriate academic programs focused on community engagement.
- Continuing the Climate Action Series symposia which engage with elected officials and staff from Thurston County, our local cities, local organizations, state agencies, and many other cities around Puget Sound.
- Maintaining a catalog of work completed in the local community, in conjunction with CCBLA and the Graduate programs. This catalog, of project reports, papers, and Masters Theses to be available as a reference for students and local communities pursuing climate action goals.

## Financing

Financing strategies and options may necessarily change over the course of this plan. The various financing strategies, however, fall into the following general categories:

### Low to no start-up costs, activities supported by savings in energy or waste disposal \$:

- Sustainable practices fellow
- Eco-representatives volunteer program
- Increase composting
- Improve waste diversion
- Re-purpose lawns; all phases
- Commuting incentives
- Bike rental program
- Student passport
- Local food purchasing priorities
- Restrict student vehicles

### Initial costs covered by verifiably consistent energy savings; ESCO or energy rebate financing

- Lab II heat recovery
- Steam pipe insulation
- Energy conservation suite
- Demand based lighting
- Fleet upgrade; all phases
- Update boiler controls; all phases
- Dedicated housing boiler
- Window weatherization
- Door weatherization
- CRC lighting

### Capital budget items included in Master Plan

- CAB renovation to LEED Gold
- COM renovation to LEED Silver

### Other:

- Residential Electrical metering – clean energy or energy conservation grant
- E-procurement ‘Green’ Purchasing – operations budget request
- Bio-mass gasification – to be determined
- Offset air travel emissions – to be determined by DTF
- Community car share – to be determined by DTF
- Parking code exemption – potentially a student contract or academic project
- Bio-mass co-generation – to be determined
- Acquire carbon offsets – to be determined by DTF
- Modify parking infrastructure – to be determined by DTF and the Sustainability Council

## Measurement and Tracking

The Office of Sustainability, including the Sustainability Council and council workgroups will provide the structure for regular review, planning, implementation or monitoring, and reporting on progress. The Office and Council will also provide the primary avenue for engagement with faculty (for curriculum planning), students, and our local community.

The Plan review process will proceed on a quarterly basis, as follows:

**July** – Review final progress reports on prior FY progress; prepare an annual report (by September) to be delivered to the Board of Trustees and senior staff, and to be posted on the Sustainability web site for access by the entire college community.

**October** – Quarterly review of progress reports on implementation, community engagement, and disappearing Task Forces; analyze, plan, and adjust (where appropriate) current implementation strategies.

**January** – Quarterly review of progress reports on implementation, community engagement, and disappearing Task Forces; analyze, plan, and adjust (where appropriate) current implementation strategies.

**April** – Review Climate Action Plan and progress to date, begin planning for the impending new Fiscal Year and issue a planning report by June.

Individual progress reports, Council reports, and updates to the Climate Action Plan will be published on the web each quarter for community access.

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