

EMORY & HENRY
COLLEGE



Draft Climate Action Plan

Developed by the E&H Climate Working Group for the ACUPCC
Edited by Derek Larimer and Edward Davis
Provisionally accepted by President Rosalind Reichard, January 14, 2010

Note: Therefore this plan is **provisional** while energy audit data remains to be collected.

This Action Plan is not official until adopted by the College Board of Trustees.
Anticipated action by the Board of Trustees: June 2010.

Section 1: Greenhouse Gas

Inventory

I. Goal: To create an annual Greenhouse Gas Inventory that accurately depicts the college's carbon footprint.

Background:

In order to reduce the college's carbon footprint we must have an accurate picture of how much carbon the college is producing. The Greenhouse Gas Inventory is a report covering a twelve month period using data obtained from college business records for each fiscal year. The GHG inventory includes emissions data from three scopes totaling the net GHG emissions for the year. Last fiscal year, 2008-2009, the college had a net emission of 8,489 tons of carbon equivalent. The majority of that, 5,435 tons, was the result of purchased electricity. The total emissions increased from the previous year by 3.9% with increases in purchased electricity and decreases in coal and natural gas usage. If we continue at this rate we will double our carbon footprint in just 18 years. Accompanying the emissions are carbon offsets that the college acquires through a number of avenues. The college farm, woods, and organic garden offset 150 metric tons of GHG emissions. In 2008 Emory & Henry purchased Renewable Energy Credits offsetting a total of 239 tons of GHG. These purchases put the total emissions offset at 389 tons. In a sample of per full-time student GHG emissions data, we found that Emory & Henry ranks 7th and falls just below the average of 9.3 tons of GHG emissions per student.

In conducting the 2009 fiscal year GHG emissions inventory we discovered that certain portions of the data used in the previous year's inventory were incorrect. Upon discovery of the mistakes, and after reviewing data collected in 2008, we replaced the tainted data with correct numbers. The changes in input data for the 2008 inventory slightly altered the emissions calculations for the college, and are shown in the pie charts below.

Definitions:

According to the ACUPCC these are the explanations of each GHG emission scope:

Scope 1 emissions are direct GHG emissions occurring from sources that are owned or controlled by the institution. This includes stationary combustion such as the college's coal fired steam plant, and mobile combustion including emissions from vehicles in the college fleet.

Scope 2 emissions are indirect GHG emissions that are a consequence of activities that take place within the organizational boundaries of the institution, but that occur at sources owned or controlled by another entity. Scope 2 emissions include purchased electricity, and purchased heating.

Scope 3 Emissions are all the indirect emissions not covered in Scope 2. Scope 3 covers emissions due to student and faculty commuting, air travel, and solid wastes.

II. Objectives

1. To submit our Greenhouse Gas Inventory by September 15th of every year to the ACUPCC.

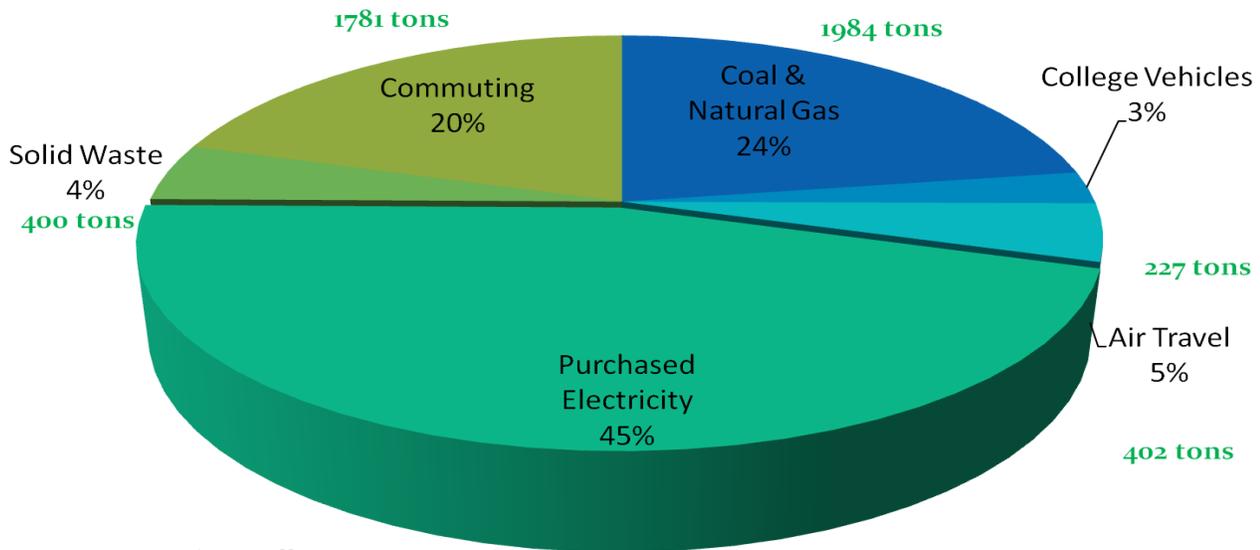
III. Possible Strategies

1. Establish a centralized data collection system for all aspects of the inventory.
2. Create a budget to support a work-study student position each summer to help write the inventory.

IV. Monitoring

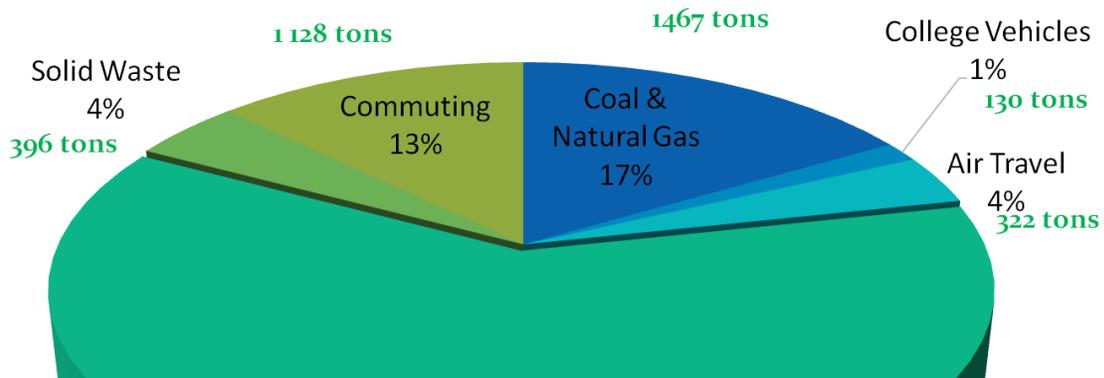
The Climate Working Group uses a spreadsheet called Clean Air Cool Planet, as recommended by the ACUPCC, to calculate the college's GHG emissions. Data gathered from utility and maintenance invoices from the college business office is input into the spreadsheet which calculates an accurate measure of our GHG emissions.

Greenhouse Gas Inventory 2008 Carbon Equivalent of 8648 tons*



*Minus Carbon Offset:
150 tons due to forest growth

Greenhouse Gas Inventory 2009 Carbon Equivalent of 8489 tons*



V. Sources

American College and University Presidents Climate Commitment
<http://www.presidentsclimatecommitment.org/>

Pat Taylor and Sheri Lowery, Business Office

Chad Gentry, Office of Facilities Management

Kevork Horissian, Office of Institutional Research



Section 2: Energy

(under development)

This section awaits completion of the college's ongoing energy audit.

Expected date of completion for this section: April 2010

Provisional



Section 3: Green Building

(under development)

This section awaits completion of the college's ongoing energy audit.

Expected date of completion for this section: April 2010

Provisional



Section 4: Transportation Policy

I. Goals

1. To reduce the amount of greenhouse gasses emitted each year by transportation of students, faculty, and staff including but not limited to commuting, athletic events, on campus driving, and maintenance vehicles.
2. To increase awareness about the impact of wasteful driving both on and off campus
3. To promote alternative means of transportation such as carpooling, bicycling, walking, or college transit system.

Background:

Carbon emissions from transportation add significantly to global warming, and college campuses are no exception. In order to become carbon neutral Emory and Henry College must commit to reducing emissions from the campus fleet, commuting, and on campus driving. Many colleges and universities throughout the United States are working diligently in conjunction with faculty, staff, and students to reduce the amount of driving and emissions contributed by transportation.

Emory & Henry College's carbon footprint includes a major contribution from all the traveling we do. Let's start with the biggest factor: commuting. Total student commuting for 2007-2008 was estimated at about 600,000 miles, faculty commuted about 352,000 miles and staff commuted about 1,665,000 miles. These trips add up to an estimated consumption of 118,000 gallons of gasoline. One result of that fuel combustion is a significant amount of air pollution: 1,058 metric tons of carbon dioxide equivalent.

The college vehicle fleet also has an impact, including mowers, trucks, passenger vans and college cars used for the business of the institution. Their fuel consumption results in an estimated 227 metric tons of carbon dioxide equivalent.

Finally we have regular airplane flights, by faculty and students on college-supported conferences and study abroad trips. These result in 402 metric tons of CO₂ equivalent (all figures are from 2007-2008 academic year). This makes a total of 1,687 metric tons of CO₂, or about 16% of the college's annual greenhouse gas emissions.

As we move towards becoming carbon neutral Emory & Henry can look to a model initiative that comes from Cornell University. Cornell administrators have raised parking fees, redrawn parking systems to favor carpooling, and improved the college transit system. To date, the efforts of Cornell University have saved 417,000 gallons of fuel, and 10,000,000 vehicle miles and have cut costs by more than 36 million dollars over twelve years. However, most importantly, the initiatives at Cornell, which may be called modest when compared to more recent carbon neutrality transportation plans, have reduced green house gas emissions by 51,000 tons. Emory and Henry College now has the opportunity to implement a plan that will also save the college fiscally speaking, and environmentally speaking.

Recently Adopted Measures

1. Conversion of Cambridge Street in the Village from vehicle to pedestrian only use.
2. Installation of bike racks at all major buildings and several housing units on campus.
3. Creation of a free bicycle repair service for the entire college community.
4. Dedication of several parking spaces to carpool or alternative fuel vehicles.
5. Purchase and remodeling of a activity bus to run on waste vegetable oil.

II. Objectives

1. **The College will adopt strategies to reduce the greenhouse gas emissions by vehicles, whether used by students, staff or faculty.**
2. **The College will support strategies to increase carpooling, walking, cycling, electric and alternative fuel vehicles, increased Emory housing options and trip reduction.**

III. Potential Strategies

1. Students

1. Include parking violations in an annual report to parents.
2. Increase parking violation fees.
3. Increase the cost of parking permits.
4. Provide rebates or discounts on parking for those who carpool regularly.
5. Increase on-campus housing to encourage students to reside on campus instead of in local apartments
6. Expand the bike path system near campus.
7. Provide free bikes on campus (grants may be obtained from Trek Bicycles).
8. Increase carpool support for commuter students; the college may group commuter students by proximity of residence (Chilhowie-Marion, Abingdon-Bristol) during an orientation session on becoming carbon neutral so that they may get each other's information, facilitating car-pool groups.
9. Provide regular public transit to shopping sites using the College's veggie bus.
10. Utilize online courses in selected cases.
11. Promote local weekend fun and non-car activities such as hiking a biking.

2. Faculty and Staff

1. Provide a carpool support system.

2. Institute a carpooling incentive system rewarding those faculty and staff members that carpool the most often.
3. Create a telework option for some college employees who may be able to work a full day from a computer at home instead of driving to campus.
4. Create a flextime option for some college employees.
5. Build housing on campus or close to campus that staff and faculty members could utilize.
6. Offer an extra day off for those members of the staff or faculty that demonstrate the highest reduction of green house gas emissions.

3. Administration

1. Make selected parking lots limited access at all times of day monitored by a gate system with faculty and staff scan cards.
2. Commit to prioritizing pedestrian and bike facilities in all campus planning.
3. Support greater basic shopping opportunities in Emory through a small grocery, pharmacy, hair salon and a bank.
4. Reward most efficient vehicles with lower cost parking passes.
5. Support passenger rail system for the I-81 corridor that could be utilized by Emory and Henry sports teams to travel to events, as well as students traveling home, and parents traveling to campus.
6. Schedule away sporting events to combine bus commuting to and from events.

IV. Monitoring

1. In order to monitor on-campus driving, a system of gates will monitor selected parking lots that see the highest number of parking violations due to student on campus driving. These gates will have scanners that read cards that will be issued to staff and faculty members that park in the lot.
2. The gate system will decrease the amount of monitoring campus security must do in peak hours of the day, and will enable security officers to spend more time monitoring the un-gated parking lots.
3. The Climate Working Group will conduct annual surveys with students, faculty, and staff to determine the effectiveness of the programs mentioned above.

V. Sources

E&H Greenhouse Gas Inventory 2008

Berea College Office of Institutional Research

Cornell University Office of Sustainability



Section 5: Procurement Policy

I. Goal: to reduce the annual greenhouse gas emissions and other negative environmental impacts resulting from college-related purchases of equipment, supplies and food.

Background:

Emory & Henry College recognizes that one of the most effective ways to be good stewards of the planet is to buy responsibly. All things we buy have an impact on the Earth's resources, through farming, mining or logging, processing, manufacturing, shipping, storing, using, and finally discarding. The energy and resources exploited at each of these stages result in significant impacts, which scientists are only beginning to understand. To reduce these impacts we must follow a careful procurement process.

The College lacks a method for estimating the greenhouse gas emissions that result from purchases of equipment, supplies and food. But increasing efforts to create a universal dataset means that within a few years we can expect to have some kind of measurements. For the moment, we do have some estimates. For example, in 2008 the College used an estimated 39 tons (yes, 39 tons!) of copy paper. Use of that much paper is estimated to release into the atmosphere 229,403 lbs of CO₂ equivalent (CO₂ equivalent is a quantification of greenhouse gas emissions which actually include several different gases.). If we continue to purchase the same amount of paper but switch to 80% post-consumer recycled paper, we'll reduce our GHG emissions by a total of about 77,000 lbs.

Food purchases are one of the biggest contributors to our carbon footprint. Scientists estimate that 30 percent of the world's GHG emissions come from agriculture. There is still much to be done before we can track all the emissions resulting from our purchase of food and beverages. In fact, the Clean Air Cool Planet Calculator which we use to calculate the college's footprint does not yet include food purchases. We do expect our calculations to include food in the future. Therefore, we will want to increase the percentage of our food purchases which can be shown to reduce our impact. A good example is the beef consumed on campus. Although many tons of beef are raised here in Washington County, none of that beef is placed on the tables of our dining hall. Instead, our beef is imported from the western states or even other countries. Finding ways to get more local beef into the dining hall will take time, but the result will be much greater sustainability.

The College has been aware of the need to buy responsibly. The Office of Facilities Management has already made sincere efforts to reduce its environmental impact. This is also true for the President's Office. Because of these efforts, the College can take credit for improving its procurement through several recently adopted actions:

1. Purchase of green cleaning products.
2. Purchase of local, sustainably harvested wood for flooring in Byars Hall.
3. Purchase of 30 recycling bins made of local, sustainably harvested wood.
3. Commitment to purchase such hardwood flooring for Performing Arts Center.
4. Commitment to purchase only Energy Star appliances.
5. Commitment to purchase recycled motor oil.

Definitions:

"Environmentally Preferable Products" are those with a lesser impact on the environment than competing products. This may result from raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, and/or disposal.

"Recycling" means the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products that meet the quality standards necessary to be used in the marketplace.

"Recycled Products" are products manufactured with waste material that has been recovered or diverted from the waste stream. Recycled material may be derived from post-consumer waste (material that has served its intended end-use and been discarded by a final consumer), industrial scrap, manufacturing waste, and/or other waste that otherwise would not have been utilized.

"Practical" means sufficient in performance and not unreasonably expensive.

II. Objectives: The College will seek to purchase, whenever practical:

- A. Recycled products, with the highest possible post-consumer recycled content.
- B. Environmentally preferable products
- C. Local, sustainably harvested wood products
- D. Local, sustainably harvested foods and food products
- E. Energy Star appliances

III. Possible Strategies

A. Recycled content products

1. Copy paper and other office paper with 80% post-consumer recycled content.
2. Paper janitorial supplies, such as hand towels, facial tissue, toilet paper, corrugated boxes, file boxes, and other products composed largely of paper.
3. Re-refined motor oil such as Ecopower from Safety-Kleen.
4. Recycled plastic outdoor wood substitutes including benches, fencing, signs, and posts.
5. Remanufactured toner cartridges and remanufactured or refillable inkjet cartridges.
6. Recycled content construction, building and maintenance products, including plastic, lumber, carpet, tiles, and insulation.
7. Re-refined antifreeze including on-site antifreeze recycling.
8. Re-refined lubricating and hydraulic oils.
9. Re-crushed cement concrete aggregates and asphalt.

B. Environmentally preferable products

1. Janitorial cleaning supplies.
2. Cement and asphalt concrete containing tire rubber, glass cullet, recycled fiber, plastic, fly ash, or other alternative products.
3. Remanufactured paint

C. Local, sustainably harvested wood products

1. Additional recycling bins
2. Flooring in new buildings
3. Cabinets, trim, molding, wainscoting and paneling

D. Local, sustainably harvested foods and food products

1. The College will seek a written commitment from its food service provider to purchase local, sustainable foods whenever practical.

E. Energy Star or otherwise high-efficiency appliances

1. The College will buy Energy Star appliances as older appliances are replaced.
2. When Energy Star appliances are not available, the College will buy appliances with the highest possible efficiency.

F. Responsibilities of Faculty and Staff

1. Maintain and care for equipment and supplies to avoid unnecessary purchases.
2. Procure products in compliance with the Green Procurement Policy.
3. Ensure that procurement documents issued by the college are filled out, and purchased products are properly documented, in order to track changes in our carbon footprint.

Nothing in this policy shall be construed as requiring the purchase of products that do not perform adequately or are not available at a reasonable price. In those instances where it is deemed impractical to procure a recycled-content item, a specific explanation for the finding must be included in the purchasing record.

IV. Monitoring

A. Collaboratively, the Climate Working Group shall prepare and deliver to the President an annual report on the implementation of this policy. The report shall document the types, quantities, and dollar amounts of recycled products purchased in the previous year by the College. The report shall also identify a) instances where this policy is waived or found impractical; and b) barriers to the procurement of products meeting the College's requirements.

V. Sources

Laura Pruitt and Chad Gentry, Office of Facilities Management.
Green Procurement Policy of Rutgers, The State University of New Jersey, recognized as an outstanding model by the American College and University Presidents' Climate Commitment.



Section 6: Waste & Recycling Policy

I. Goal: Emory & Henry students, faculty and staff will seek to reduce their material resource consumption and waste production and to increase the portion of college waste that is recycled.

Background:

One of the ways our college's carbon footprint can be easily reduced is by simply using less stuff – we are voracious users of paper, but also soap, cardboard, trash bags, and various plastic and aluminum disposables. We produce a remarkable amount of trash each year. In the academic year 2008-2009 we produced a carbon equivalent of **396 tons of trash**. When this was deposited in the regional landfill, it began to produce atmospheric methane, a major greenhouse gas, and it will continue to produce carbon for many years, unless the landfill is able to begin trapping methane gas. Such trapping has been developed for a number of U.S. landfills, and will hopefully one day be adopted at our regional landfill. In the meantime, we have good reason to reduce our landfill-bound waste by recycling, reuse and reduction.

We have already reduced our total trash volume by recycling about 15% of our solid waste. This includes office paper, cardboard, plastic, tin and aluminum. We have also reduced our waste volume by renovation of a bus to run on the college's waste vegetable oil. But we lack a serious recycling system at present, and many students, faculty and staff are either unaware or unhelpful in our effort. Large campus events are not yet incorporating our recycling program, so that tons of cans, bottles and other recyclable materials go to the landfill.

We now recycle 3 new categories: paper, cardboard, and steel/plastic. The first dumpster accepts cardboard, paper bags, inter-office envelopes, tissue boxes, cardboard cup holders, paper towel rolls—staples and rubber bands are okay. The second dumpster accepts office paper (any color), envelopes (even ones with windows), brochures, pamphlets, magazines (no plastic covering), newspapers, phonebooks—staples and rubber bands are okay. The third dumpster accepts tin cans (labels okay but please rinse out), aluminum, plastic (#1's and 2's—lids and labels can stay on).

But the potential is clear. We have only been working seriously on campus-wide recycling for about two years. Paper, our largest recyclable category, is being collected more effectively each year. Aluminum will not be a major part of our recycling; it was once recycled at a very good rate (perhaps 40%) through student and community volunteers. But aluminum has been largely replaced by plastic on campus, and the volume of plastic is much greater than aluminum ever was. The current aluminum recycling, less than 200 pounds per month, is through Emory United Methodist Church, with student and community members, and the funds raised go to the Meadowview Health Clinic to help poor families.

Meanwhile, we have, for the first time, a company collecting our paper for recycling. Waste Management Incorporated comes to campus to collect plastic, tin, paper, magazines and cardboard. Unfortunately we are forced to pay for that service, so the college is not receiving a financial benefit from its recycling program.

A highlight of our recycling program is our unique set of 30 recycling bins made locally from local, sustainably harvested wood. These were designed and produced in conjunction with Clinch Valley Millworks of Richlands, Virginia. We believe they are the only bins of their kind in the country. Their design allows easy identification of where to place trash, plastic/tin, aluminum and paper. We have also placed plastic recycling bins in all the student residence halls. We participate annually in a waste minimization program sponsored by "Recyclemania," a national competition.

II. Objectives. The college should:

- 1. Consider reusability, durability and reparability of products prior to purchase.**
- 2. Have the staff conduct routine maintenance on equipment to increase its useful life.**
- 3. Adopt a paper use reduction plan, asking all employees to avoid unnecessary paper use.**
- 4. Set increasing targets for recycling solid waste, eventually reaching a goal of 50%.**
- 5. Set increasing targets for recycling other waste, such as motor oil, batteries and food waste.**
- 6. Adopt a strategy to maximize the reuse of vegetable oil in college vehicles.**

III. Potential Strategies

1. Reusability, durability and reparability of products: The college might ask the food service to avoid the use of disposable utensils, plates and cups if at all possible, or, once we have a composting system, to use compostable versions. The Mercantile might promote reusable containers, such as drink bottles. Facilities Management might have a policy of buying equipment known to be longer lasting, all other things being equal, since such equipment may save money and avoid waste production in the long run.

2. Maintenance of equipment: The college may increase the training and support of staff to maintain equipment, since high quality maintenance programs are known to significantly increase the life of equipment such as vehicles and large machines.

3. Paper use reduction plan: The college should increase its paper reduction campaign, which includes: encouraging default double-sided printing, narrow margins, electronic document transfer and storage, electronic support systems like Angel, and other measures. The college may choose to promote a paperless office policy for certain offices. The college may promote greater faculty use of electronic media support for their courses.

4. Recycling 50% of solid waste by weight. Given that office paper, magazines and cardboard constitute perhaps 25% of all the college's solid waste, and these are now recyclable, we should be able to target these materials for focused recycling efforts. The same may be said for plastic, aluminum and tin, which may be another 5% of our solid waste. Food waste is more difficult to recycle (compost) once it is mixed with other solid waste, but if we can avoid that mixing, we may be able to reduce our waste hauling considerably. One of the biggest challenges is the amount of non-recyclable waste, such as plastics other than #1 and 2, anything soiled by food such as wrappers, Styrofoam,

5. Recycling other waste: Facilities Management is already recycling its used motor oil. That office has recycled 920 gallons of oil since January of 2006, or about 400 gallons per year. The college even recently found a supplier of recycled motor oil: EcoPower, by Safety-Kleen. It is an eco-friendly motor oil - recycled and twice refined, using up to 85% less energy to produce than that produced from crude oil. Batteries are being recycled in two main academic buildings, but many students and faculty are unaware of this option. The college should educate the entire community about its battery-recycling program. Composting of food waste is relatively simple and affordable. Examples of such systems can now be found on a number of college campuses. Community members at a recent forum expressed considerable interest in such a system. It has the added benefits of sequestering carbon and providing a valuable input for the college landscaping staff and the Environmental Studies Program's organic garden.

6. Reuse of vegetable oil: The college Outdoor Program renovated an activity bus to run on used vegetable oil collected from the college food service. That activity bus has now been driven several thousand miles, across ten states, and is very popular with the student body. In the near future, the college may be able to use that vehicle for more activity trips, and an additional vehicle might be acquired.

Sources:

Chad Gentry, Facilities Management Office.

<http://www.safety-kleen.com/products/OilProducts/Pages/EcoPower.aspx>



Section 7: Carbon Offset Policy

I. Goal: to offset a portion of the college's greenhouse gas emissions through a variety of certified and well-documented approaches.

Background:

Emory & Henry College will not likely be able to completely eliminate all carbon emissions over the next thirty years. Like many colleges, therefore, we will therefore have to attempt to "offset" some emissions through a variety of means. To offset carbon is to arrange to reduce emissions somewhere else when you cannot reduce them onsite. In our case, it means that if we cannot eliminate emissions from a given building, we obtain or purchase a carbon offset for that amount. This can be done through forest growth on lands owned by the college, by composting food waste and/or other waste. It can even be done indirectly, by purchase of renewable energy credits or other carbon offsets.

The College is currently able to offset some of its emissions through the maintenance of a healthy and growing forest. In the 2007-2008 inventory, we calculated that 150 tons of carbon are sequestered annually by our 50 acres of forest. In the 2008-2009 we calculated the same offset from forest growth. In addition we were able to offset 239 tons of carbon equivalent due to the purchase of 346,423 Kwh of renewable energy credits for Byars Hall (35% of that building's annual energy use).

Widespread concern about the legitimacy of carbon offsets has led the ACUPCC to develop a cautious approach to the acceptance of such methods for reducing a college or university's carbon footprint. Laura Hainsworth and James Warden have researched the topic for the Climate Working Group and concluded that there may be no perfect guarantee that the offsets any institution purchases are actually performing the service claimed. There is also an ethical issue here: saying that you have offset your carbon emissions is rather like saying that you can keep on cheating on your wife because you paid a preacher to save other souls from such behavior. However, given the likelihood that certified and authenticated carbon offsets themselves will have important positive benefits, and given that the college will likely be unable even in fifty years to reach zero carbon emissions, we expect the college to have no better method of zeroing out its emissions contribution.

II. Objectives: For those emissions that cannot be finally eliminated, the College will arrange for carbon offsets, whenever practical, through:

A. Management of college-owned forest

The college currently owns about 50 acres of forest, unmanaged except in that it is now informally protected from any significant extraction, including livestock grazing, fuel wood

collection and logging. As recently as fifteen years ago these woods were used as a source of firewood, and a 30-acre section was grazed by cattle on a regular basis. But now the college maintains this forest in a de facto policy of informal protection, where it is used as a learning laboratory for ecology, botany and environmental courses. The estimate of carbon sequestration for our 2008-2009 inventory was carried out by botanist Chris Yarnes of our biology department.

David Brown, an Environmental Studies intern, and Prof. Chris Yarnes took 12 randomly located transects in the college's 50 acres of forest land, each 30 by 10 meters, and then calculated the diameter base height of trees in those transects. They then applied a model for biomass estimation from:

J. G. Martin et al. 1998. Above-ground biomass and nitrogen allocation of ten deciduous southern Appalachian tree species. *Canadian Journal of Forest Research* 28: 1648-1659.

Their conclusion was that the forest is sequestering approximately 150 tons of carbon per year. An additional two acres of college land set aside as the Biology Department's Ecology Preserve has not yet been studied, but we hope to be able to estimate its carbon sequestration soon.

B. Management of college-owned organic farmland

The college owns and manages 71 acres of land organically, with 70 acres of cropland and pasture, and about 0.5 acres of garden. Studies have shown that organic agriculture is currently sequestering carbon at significant levels (Pimentel et al 2005). We expect that within a few years colleges and universities that own organically managed lands will be able to get credit for the carbon sequestered on those lands.

C. Develop a composting system

Food waste is a significant but unquantified portion of the college's monthly waste production. It is also a missed opportunity. Good quality compost is priced higher than ever, often at more than \$1 a pound. This is because it dramatically increases the quality of a garden or farm soil. It also sequesters carbon which we are currently sending to the regional landfill (and therefore adding to our carbon footprint). Getting a system for compost production will be a challenge, but many systems have been successfully adopted on other college campuses. Given the space available behind the Van Dyke cafeteria, and the skills of our staff, we should be able to install a compost system at relatively low cost.

D. Purchase of renewable energy credits

The college has already begun purchasing renewable energy credits as part of its commitment to certify the renovated Byars Hall as a LEED Silver building. The purchased credits, of over 300,000 Kwh, account for an estimated 35% of that building's annual energy use, or the 239 tons of carbon equivalent. This is only a small percentage of the roughly 8000 tons of carbon equivalent released in 2008-2009, but it is nonetheless

important. The purchased credits were certified by a third party, e-Green, which was recommended by the ACUPCC.

E. Purchase of other carbon offsets

A number of individuals, businesses and even colleges and universities have begun purchasing carbon offsets other than renewable energy credits. Such offsets include the protection of tropical forests and other natural habitats from logging or other develop, reforestation projects, and the improvement of efficiencies in energy systems that use fossil fuels.

III. Possible Strategies

A. Acquire more forest through donation or purchase

The college has in the past periodically been offered land properties in lieu of a cash or stock donation. The college has also purchased lands, the largest such purchase occurring in 2003, when the 160-acre farm was purchased, essentially doubling the college's total area. About 30 acres of the college's forested property is on that recently-acquired farm. Since acquiring that land, the college has been able to manage it organically. In the future, the college may develop some of that farmland into athletic fields and parking lots. But other lands may be acquired as part of a strategy for outdoor education, environmental research, but also for increased carbon sequestration.

B. Acquire more organic farmland through donation or purchase

The college may be able to acquire more farmland, which, if managed organically, would add significantly the college's carbon sequestration, as well as enhancing several of our educational programs.

C. Establish conservation easements to legally protect these lands in perpetuity

One way of supporting our long-term sustainability will be to recognize the need to protect some college land from development. When we seek to sequester carbon in the future, we'll be fortunate if we have signed conservation easements, which will provide legal protection for a forest or farm from development in perpetuity. Most such conservation easements contain exceptions to allow a few scattered buildings and a small road through a property. Given the college's master plan and its expectation of reaching a certain stable size in the future, committing to the protection of some of its land seems preferable for the sake of aesthetics and student quality of life. In the effort to become more sustainable, we see that conservation easements may also help us reach our goal.

D. Adopt a plan to compost 50% of food waste by 2015.

A composting system has double benefits: it reduces the amount of trash that must be hauled away at a cost of several hundred dollars per month, and it provides a valuable soil improvement to the campus landscape, including flower beds, perennial shrubs and the organic garden. Given the relatively low cost of building a compost system, this should be considered a top priority.

E. Adopt a plan for purchasing reliable renewable energy credits and other carbon credits

The college already has a commitment to buying renewable energy credits for one building (Byars Hall), and it may be possible and helpful to find donors willing to give specifically to such credits for other buildings or other components of our carbon footprint. This could be included in the master plan as one effective way to address our carbon footprint.

IV. Monitoring/Reporting

The Climate Working Group will work to guarantee that any carbon offsets are accounted for accurately. This may be done through a scientific assessment (of our forest's carbon sequestration, for example), by a third-party certifier such as e-Green, or through some other reliable quality control.

V. Sources

http://www.carbonfund.org/site/pages/how_it_works/

L. Hainsworth, Chemistry Department and Environmental Studies Program.

Dirk Wilmoth, Business Office.

J. G. Martin et al. 1998. Above-ground biomass and nitrogen allocation of ten deciduous southern Appalachian tree species. *Canadian Journal of Forest Research* 28: 1648-1659.

Pimentel, D., P. Hepperly, J. Hanson, D. Douds & R. Seidel. 2005. Environmental, energetic and economic comparisons of organic and conventional farming systems. *Bioscience* 55: 573-582.

Section 8: Academics Policy

I. Goal: to educate faculty, staff and students on how we can reduce the College's annual greenhouse gas emissions and other negative environmental impacts.

Background:

Emory & Henry College is committed to EDUCATING this community about the need for sustainable practices in all areas of society. Our Methodist affiliation calls us to be good stewards of the Earth. Our college is also committed to service to this Appalachian region, which cannot be healthy if its ecosystems are not, all of which starts with basic awareness of what we are doing wrong. This requires a comprehensive education plan.

We have had an Environmental Studies major since 1996, and we have at least 120 students in ENVS courses each year. These students have gone on to careers in a variety of environmental fields, including law, wildlife management, hazardous waste management, water conservation and protection, forestry, agribusiness, and energy research. We are a major source of environmental workers in our region.

Our program in Environmental Studies has always had a service component, so that communities in the surrounding region have benefited from clean-ups, monitoring and educational outreach of various kinds. We have had students speak or present displays on environmental themes in area schools, at area festivals, and at area conferences.

But this is not an adequate approach if we are to reach our goal of a sustainable community. Education must become more broadly oriented and more diffused. First we must recognize that academic disciplines are artificial and arbitrary. Cross-disciplinary thinking and action is necessary for a healthy learning community. We seek a unified co-learning community committed to sustainable living, in which the principles required for a healthy planet are incorporated into all courses in one way or another.

The College is proud of having **already adopted a number of educational activities:**

Orientation Green Olympics – all first-year students participate in this event before school begins, and it involves detailed information about sustainability practices on campus.

Sustainability Signs – a variety of signs about sustainability practices have been placed on campus, mostly near recycling bins, and these signs are seen by hundreds of students a day.

Green Questions Link on college webpage – if clicked, this link allows anyone to email suggestions or questions to the Sustainability Coordinator.

Green Service Projects – About four courses each year require students to participate in service projects that raise sustainability awareness among students and community members.

Organic Local Food Cookout - this event each fall is sponsored by both the Eco-house and the E&H Greens, and it raises awareness of sustainability issues among faculty and students

Green Lyceums – every year at least one lyceum has a sustainability focus. In the fall of 2009, a guest speaker will talk about computer modeling of global climate change.

Green Service plunge – Each fall during orientation at least 20 first-year students are able to participate in a service project that relates to sustainability, such as

Eco-Houses – There are two dorm houses where students commit to living by principles of sustainability, reducing as much as possible their energy and water use and other impacts.

Regular Green News Articles – Many issues of the school newspaper have articles on our sustainability projects, and these are read by a significant number of students.

II. Objectives:

- A. Integrate our curriculum into the college's sustainability commitment.
- B. Increase faculty and staff awareness of the need for sustainability as a community priority.
- C. Increase the use of sustainable practices as a habit among all community members.

III. Potential Strategies

A. Curricular Strategies

Build faculty commitment to sustainability

Seek to create a required course on sustainability for all students AND

Seek to incorporate sustainability into as many courses as possible -

Summer faculty development grants to introduce sustainability principles across the curriculum

Summer workshops toward this goal

Make President's statements into regular feature of campus – she would give Greenie award

Commit to teaching environmental aspects in the required wellness course

Education department should be major focus – since K-12 is where sustainability begins

Outdoor program: incorporate green education

Create a faculty green lunch group

Support from a coalition of nearby colleges – multi-institution learning community with a bi-annual meeting

B. Awareness Strategies

1. General Media Campaign

Signs

College's webpage - Expanded green link

Newspaper - Weekly green column

Radio station – Regular show and weekly promotion

Media Campaign content:

The holistic benefits of all our green choices

Thermostats

Water conservation

Reduce-Reuse-Recycle

Bicycling and Walking

2. Staff Awareness

Green-themed staff in-service – workshop on things they can do – on new policies
Educate all staff about how to handle new “green” equipment (thermostats, energy monitors)

End of school-year free market for staff or students to promote reuse

Broaden the garden volunteer force among staff

Train Admissions staff to give tours that promote green aspects

3. Student-Faculty-Staff Practices

Student and Faculty-oriented Promotions

Paper use reduction campaign – students and faculty

Cafeteria-centered campaign to decrease take-out use

Ask Student Government to appoint a sustainability committee or at least a green officer

Green Homecoming with local, grass-fed beef burgers offered

Competition and other incentives among dorms to conserve

Campaigns each semester to promote bicycling and walking for faculty, students, staff

Contest within the Art Dept to create art (sculpture) promoting awareness

Church-based educational campaign about earth stewardship

Use sporting events as opportunities for education – recycling mainly

IV. Monitoring

V. Sources:

Maggie Graham, University of Virginia

University of Buffalo Sustainability Office