Climate Action Plan

Warren Wilson College

September 20, 2009

Warren Wilson College Climate Action Plan
Prepared by the Greenhouse Gas Emissions Reductions Task Force
To fulfill Warren Wilson College's pledge to the
American College and University Presidents Climate Commitment
Submitted September 15, 2009

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Warren Wilson College
35 36 46 N, 82 26 27 W
Southern Appalachians
Blue Ridge Mountains
French Broad River Basin
Swannanoa Valley
Asheville, North Carolina

Introduction

Mission

The Mission of Warren Wilson College is to provide an education combining liberal arts study, work, and service with a strong commitment to environmental responsibility and experiential opportunities for international and cross-cultural understanding in a setting that promotes wisdom, spiritual growth, and contribution to the common good.

Distinctive Liberal Arts

Warren Wilson College is distinctive among American colleges and universities. Warren Wilson students do not simply study the liberal arts – they engage in them in ways students at most schools could not envision. In majors ranging from the arts to environmental studies, students work in small groups with faculty engaging in classroom, laboratory, and community-based learning. On their campus crews, students work 15 hours per week in jobs across an 1,100-acre campus. They provide service to the region and beyond – not only to meet the 100-hour graduation commitment, but to fulfill their determination to make a difference well beyond Warren Wilson. This learning Triad of academics, work, and service is singular in higher education.

Practice of Sustainability

Sustainability is woven into the fabric of learning at Warren Wilson. It is grounded in a rich history of place and purpose, embedded by generations of community members who have demonstrated the College's fundamental commitment to connect values to action. The practice of sustainability flows from the College's mission, which serves as our compass for responsible citizenship. It is expressed through our unique Triad of engaged learning.

In the record of human history, decision-making that accounts for the future has never been more crucial to life on this planet than now. The Brundtland Commission's seminal work on sustainability in the 1980's revealed that complex issues like environmental degradation, overpopulation, and illiteracy are formed from complex interconnections of economic, environmental, and social/cultural factors. The state of any community's well-being is defined by these factors - how they intersect, and how they effect not just short-term but also long-term quality of life. Based upon their findings, the Brundtland Commission described sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

As a roadmap for community engagement, deep thinking, and accountability to present and future generations, sustainability frames the scope of our concerns at Warren Wilson. As a decision-making tool, sustainability reveals the extent to which the life we choose impacts our global family. We educate for sustainability at Warren Wilson because our mission directs us to prepare students for responsible community engagement that promotes the common good. This type of citizenship demands accountability to future generations.

The majority of students who choose Warren Wilson are attracted to its environmental and sustainability commitments. They *expect* the College to make sustainable choices and often serve as champions of best practices. Students write successful grants to fund real-time monitoring of campus buildings and build circuit boards on their work crews. They petition the College to purchase wind power REC's for annual electric use and are successful. They asked to begin the practice of a greenhouse gas inventory in 2003 and this year, it is students, with staff guidance, who are conducting the College's fifth annual analysis. On weekend service trips, they weatherize the homes of people living below the poverty level and measure the change in emissions and electric bills for the home. Students, through academics, work and service, earn the College the distinction of being a "living laboratory" of sustainability. Through this Triad of engagement, they come to understand that society's problems are complex. Sustainability deepens their inquiry into community well-being and provides them with insight into the root cause of some of our most pressing issues.

Commitments

Warren Wilson College has been evolving its institutional practice of sustainability since its early days as the Asheville Farm School in 1894. The integrity of the landscape and the mission-driven character of the Warren Wilson experience provide a compass for responsible decision-making. The land itself - the 300-acre working farm, 6-acre garden, 700-acre managed forest, and riverine habitat - serves as a living laboratory for the sustainable practices that are brought to life through the Triad.

In recent decades, the College has formalized a number of commitments to environmental responsibility and sustainability and these guide community practices.

- In 1990 the College adopted "pattern language" as the conceptual tool for developing overarching principles to guide decision-making in the following areas: Facilities; Land Use; Purchasing; Landscaping; Native Biodiversity, Wildlife and Fisheries.
- In 1997 the College approved an Environmental Commitment Statement through its shared governance process and endorsed this position:

  One of the major factors that encourages students, faculty, volunteers, and staff to come to Warren Wilson College is the perception that we are an active, participatory community that shares a deep commitment and a passionate concern for the health of our planet. We seek to display and honor that commitment and concern in the way we learn, the way we work, and the way we live. We are interested in conserving resources, reducing waste, and eliminating pollution, but our feelings extend deeper to a recognition that we are also component parts of an interdependent web of social and ecological relationships. The recognition of our membership in this ecological community leads us to reconsider our ideals, values, and organizing principles. Ours is a working landscape, rooted in a particular bioregion, and part of an interconnected, but limited, global commons. We recognize the need to exercise wise use of the resources of the global commons, and, at the same time, the need for a deep, aesthetic, spiritually-based involvement with the community that extends beyond the human inhabitants of Warren Wilson. An essential goal of Warren Wilson College is to develop good environmental citizens who recognize and perform their duties and responsibilities as members of the larger human and ecological communities in which we live. We understand that to fulfill this goal we must institute a process of democratic information acquisition and decision-making which will lead to the development of an effective environmental policy.

- In 2000, Warren Wilson signed the Talloires Declaration, pledging to "create an institutional culture of sustainability."
- In 2003, trustees added "environmental responsibility" to the College's mission statement.
- In 2007, President Sandy Pfeiffer and the President's Advisory Council (PAC) adopted a sustainable decision-making process, committing to an intentional use of these principles for institutional planning.
- In 2007, President Sandy Pfeiffer became a founding signatory of the American College and University Presidents Climate Commitment (ACUPCC) and formally endorsed this statement:

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

  - In 2007, President Sandy Pfeiffer signed a Declaration of Partnership with the City of Asheville to provide support to respective climate commitments.

Climate Change, Sustainability, and Higher Education

Climate change poses one of the most daunting sustainability challenges of our time. Its projected impacts will affect environmental, economic and social/cultural systems world-wide. Only complex problem-solvers capable of synthesizing information across disciplines, will have the skills to effectively address this challenge. Higher education institutions are called upon to develop leaders capable of addressing the complex and global nature of this problem:

> *If the next generation of citizen leaders is to be engaged and committed to leading for the common good, then the institutions which nurture them must be engaged in the work of the society and the community, modeling effective leadership and problem-solving skills, demonstrating how to accomplish change for the common good. This requires institutions of higher education to set their own house in order, if they expect to produce students who will improve society.*
>
> from the Kellogg Report, "Leadership Reconsidered: Engaging Higher Education in Social Change," *A. W. Astin and H. S. Astin, 2000*

> *As new action models arise that involve cross-sector collaboration based on cross-profession expertise for problems that are controversial and systemic, it is difficult to find concepts, frameworks, research findings, or models that integrate knowledge across fields to guide solution-seeking leaders. New research and curriculum development are necessary.*
>
> from the paper, "Moving Higher Education To Its Next Stage: A New Set of Societal Challenges, A New Stage of Life, and A Call to Action for Universities," *R.M. Kanter, R. Khurana, and N. Nohria, 2005*

> *Faced with the complexity of current and future global challenges, higher education has the social responsibility to advance our understanding of multifaceted issues, which involve social, economic, scientific and cultural dimensions and our ability to respond to them. It should lead society in generating global knowledge to address global challenges, inter alia food security, climate change, water management, intercultural dialogue, renewable energy and public health.*
>
> Communiqué from UNESCO's 2009 World Conference on Higher Education, July 2009

Climate Change in the Southeast

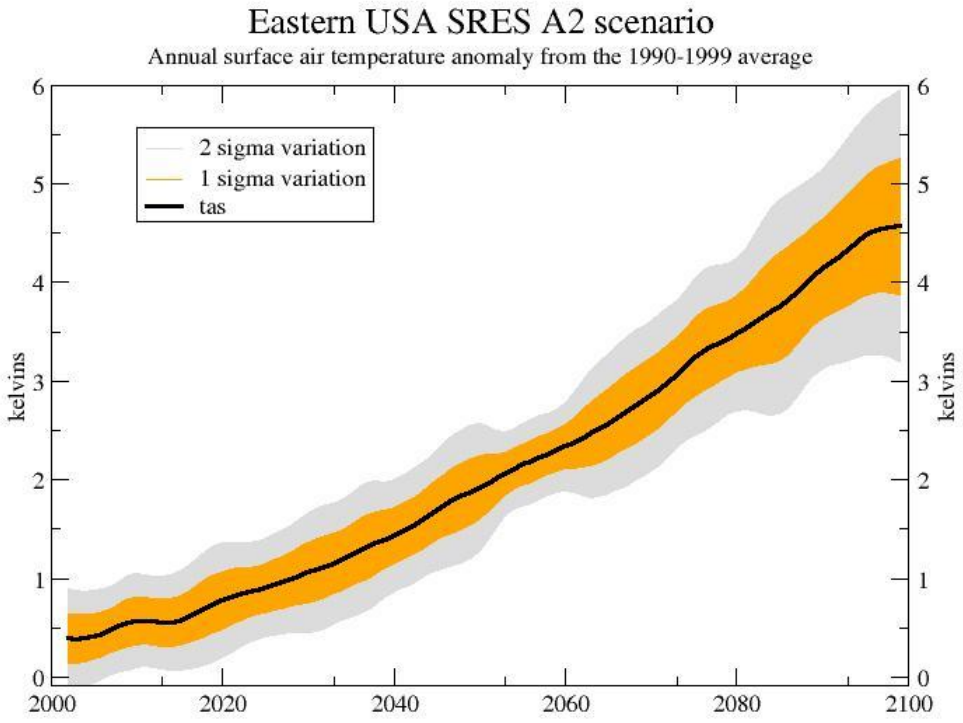
Climate change is exacerbated by increases in greenhouse gas emissions and North Carolina accounts for 2.4% of the total greenhouse gas emissions in the United States. According to a recent report filed by the Department of Environment and Natural Resources Division of Air Quality,

North Carolina's GHG emissions are rising faster than the nation as a whole. From 1990 to 2000, the state's net GHG emissions were up 39% while national net emissions rose by 24%. Net emissions in NC are projected to be 232 MMtCO_{2e} by 2020, 106% above 1990 levels. As one of the fastest growing states in the country, with a projected population of over 13 million by 2030, North Carolina's carbon footprint is expected to remain significant, and the impacts of future climate scenarios will be felt throughout the state.

from www.epa.gov/ttn/chief/conference/ei18/session7/masemore.pdf

The United Nation's Intergovernmental Panel on Climate Change and other experts like the University of Maryland's Center for Integrative Environmental Research (CIER), issue climate projections that are highly variable for our region. According to CIER, "the southeast states may be some of the hardest hit in the nation by climate change. By 2100, there may be as much as a 20% increase in precipitation throughout the region and a rise in heat index of 8 – 15 degrees F." Other studies note precipitation may swing to a 10% decrease. What is certain, though, is that whatever scenario comes to pass, climate changes will alter the traditions, economy, and rich biodiversity of the Southeast.

The following graph illustrates the range for potential temperature increase in the Asheville area (Atlanta's temperature minus Asheville's equals 4.12ºC) with nearly business-as-usual CO_2 emissions. Were Asheville to have the average temperatures of Atlanta, dramatic changes would occur in economic, cultural and environmental ecosystems.



Climate defines life support systems in the Southeast. Here in western North Carolina, at the headwaters for much of the region, we have previewed the effects of drought. From 2005 to 2008, Tennessee, South Carolina, Georgia, Florida, and North Carolina fought for water rights. North Carolina was sued for diverting millions of gallons of water from the Catawba River before it flowed into South Carolina and Georgia disputed its border with Tennessee to gain access to the Tennessee River.

Temperature and precipitation define vital industries. The fastest growing agricultural sector in North Carolina is the nursery industry, now 4th largest in the nation. Its annual revenue of $832 million depends upon a predictable water supply and is highly vulnerable to climate variability. Forest products in the Southeast are a multi-billion dollar industry. Climate change will likely alter tree species, pose increased forest fire risk, encourage an increase in destructive invasives, and possibly render some higher elevation species extinct.

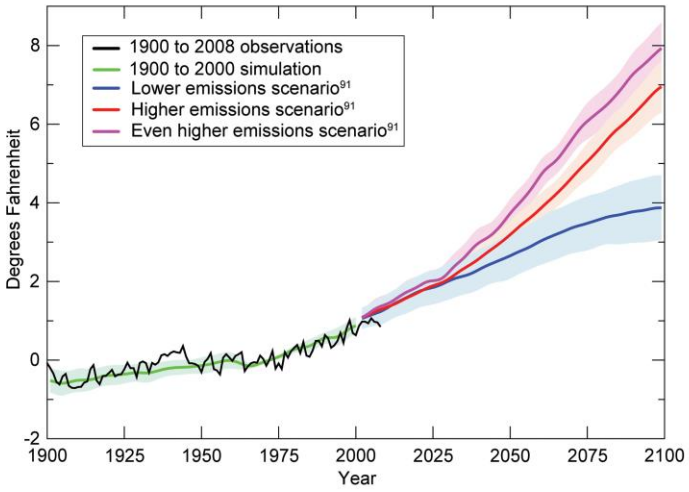
Energy needs are dictated by temperature and population. The Asheville area is expected to grow 29% more by 2030. Though there is talk of the need for a regional conservation ethic, over the past three years, "per customer" electric use in Progress Energy's western North Carolina region has steadily increased. In 2007, Progress Energy supplied 35% of the region's electricity from nuclear and 46% from coal. Coal power generation exacerbates greenhouse gas emissions. Nuclear plants, as currently designed, consume more water than any other form of energy generation thus drought and prolonged heat threaten nuclear energy output. Western North Carolina is charging toward a high-energy-needs future with no long-term regional plan for conservation or significant renewable energy generation.

Climate defines tourism. North Carolina's tourism business is 7th in the nation with revenues of more than $16.51 billion a year. In 2007, in Buncombe County alone, tourism revenue grew to $705 million. Visitors come to this mountain region to hike, fish, view scenic landscapes, raft, and renew. In 2008, drought reduced white water trips for French Broad River rafting companies. Regional studies warn that by 2100, a significant percentage of streams in the region may no longer support certain species of brook trout. River rafting and recreational fishing,multi-million dollar a year industries for western North Carolina, will be affected.

Climate affects air quality. With prolonged heat, stagnant air masses trap airborne pollutants and pose a threat to health. This is a risk at all elevations, but above 4,000 feet, a favorite zone for hikers in western North Carolina, the mixture can be especially potent. In March of 2009, North Carolina's Division of Air Quality cited two areas in Buncombe County above 4,000 ft. for nonattainment of EPA ozone standards– the Great Balsam Mountains and the Black Mountains.

These threats unite us. We are called upon to act in community, and develop mitigation and adaptation plans to build resilient communities capable of withstanding the variability of climate change projections.

What Difference Can We Make?



Smith *et al.*[72]; CMIP3-A[93]

Observed and projected changes in the global average temperature under three IPCC no-policy emissions scenarios. The shaded areas show the likely ranges while the lines show the central projections from a set of climate models. A wider range of model types shows outcomes from 2 to 11.5ºF.[68] Changes are relative to the 1960-1979 average.

In the graph above, we see the potential for wide-scale, global climate disruption due to temperature increases alone (from Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009).

The French dramatist Eugene Ionesco once said, **"**Ideologies separate us. Dreams and anguish bring us together**."** Given the potential scale of climate change impacts, some ask, "What's the point - what real impact can your campus Climate Action Plan have?" We offer the following:

- Imagine the scale of greenhouse gas emissions reductions, and the inspiration to communities nationwide, if most of the more than 3,400 higher education institutions committed to reduce their carbon footprint.
- Consider that for western North Carolina, as annual 4.4 Megawatt electric consumers, a minimum 25% reduction in electric usage at Warren Wilson College can truly help to lessen the need for a new power generation plant in the next few years and provide inspiration to other large-scale consumers to do the same.
- Know that for anyone who undertakes the measurement of their carbon footprint – whether an institution or an individual – the data connect global impacts to personal action. The measurement process in and of itself is a valuable exercise that results in increased awareness.
- Understand that studying regional climate change projections in depth, for any locale in the United States, is a lesson in sustainability impacts and community responsibility.

Warren Wilson College's Climate Action Plan

Overview

In November 2007, President Sandy Pfeiffer commissioned a Greenhouse Gas Emissions Reductions Task Force to fulfill the College's American College and University Presidents Climate Commitment (ACUPCC) pledges and develop a Climate Action Plan (CAP). A cross-sector group of administrators, faculty, staff, students and volunteers, along with a science advisor– an IPCC scientist based at Asheville's National Climatic Data Center – worked together to develop the CAP. The scope of their work follows:

- Benchmark best and most innovative climate action practices;
- Review Warren Wilson's four years of greenhouse gas emissions inventory trends and identify areas for possible reductions;
- Commit to a set of principles and practices as required by the ACUPCC;
- Assess campus resources for climate response in meetings with cross-sector campus constituents;
- Develop a formal partnership with the City of Asheville to fulfill respective climate change goals;
- Engage the campus community in a behavior change survey to help develop prescriptive climate change strategies that would work at Warren Wilson;
- Develop goals and strategies that align with the mission, vision, infrastructure and funding capabilities of the College;
- Identify potential funding sources for strategies;
- Develop a draft Climate Action Plan in February 2009 and post to the College website for public comment;
- Incorporate community suggestions and identify champions in different areas of the College's Triad to lead climate action strategies;
- Further develop campus strategies;
- Circulate the Climate Action Plan for final approval from all sector implementers;
- Secure endorsement from the President's Advisory Council and the President;
- Begin implementation of the Climate Action Plan in fall, 2009.

Warren Wilson's Climate Action Plan is a ***living document***. Although every goal and strategy has been fully vetted and appears to be viable and sound, progress will be monitored quarterly, and the plan will be amended as needed in order to ensure a dynamic, affordable, and effective approach to meet short-term goals and eventually achieve carbon neutrality.

Definition of Greenhouse Gas Emissions

(http://www.epa.gov/climatechange/emissions/index.html#ggo)

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural

processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are as follows:

- Carbon Dioxide (CO_2)**:** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4)**:** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O)**:** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases**:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

Warren Wilson College's Greenhouse Gas Emissions

The benchmark data from which the Climate Action Plan is drawn is the 2007/2008 Warren Wilson College Greenhouse Gas Emissions Inventory. This document marks the fourth consecutive inventory compiled by Warren Wilson students with guidance from faculty and Environmental Leadership Center staff. Starting with this 2007/2008 inventory, Warren Wilson has been using the Campus Carbon Calculator from Clean Air-Cool Planet which measures greenhouse gas (GHG) emissions in pounds or metric tons (MT) carbon dioxide equivalent (eCO_2). Nitrous oxide and methane are more potent greenhouse gases than carbon dioxide in regard to climate change, so by using the measurement of eCO_2, a valid comparison can be made across sources of different types of emissions.

The inventory currently monitors the following sectors: electricity, natural gas, international flights, student and staff/faculty commuting, campus vehicle fleet use, solid waste, farm operations, blacksmithing coke, used motor oil boiler, propane, unrecovered refrigerants, and paper purchasing.

The four-year trend for Warren Wilson College's greenhouse gas emissions follows:

Annual Greenhouse Gas Emissions for Warren Wilson College				
	Carbon Dioxide Emissions (MT)	**Methane Emissions (MT eCO_2)**	**Nitrous Oxide Emissions (MT eCO_2)**	**Total GHG (MT eCO_2)**
2004-2005	4560.5	375.5	45.4	4981.4
2005-2006	5225.1	427.7	53.4	5706.3
2006-2007	4923.0	406.7	49.2	5378.9
2007-2008	5376.4	216.5	76.0	5760.1

The College's emissions result primarily from electricity and natural gas consumption; methane emissions from agricultural operations and landfill solid waste; and nitrous oxide emissions from agriculture.

Scope of Greenhouse Gas Emissions

(from the American College and University Presidents Climate Commitment http://www.presidentsclimatecommitment.org/)

Warren Wilson College defines its emissions and its boundaries in compliance with the GHG Protocol recommended by the ACUPCC.

The protocol for greenhouse gas emissions refers to the measurement of an emissions total contribution to global warming over a certain time horizon resulting from the emission of one unit of gas relative to one unit of carbon dioxide. For example, if methane has a global warming potential of 21 over a 100 year time horizon, it means that over a period of 100 years, 1 lb .of methane has the same impact on climate change as 21 lbs. of carbon dioxide and thus 1 lb. of methane would count as 21 lbs. of carbon dioxide equivalent.

To help delineate direct and indirect emission sources, improve transparency, facilitate fair comparisons, and provide utility for different types of organizations and different climate policies and goals, the GHG Protocol defines three "scopes" for GHG accounting and reporting purposes.

Consistent with the GHG Protocol standards, ACUPCC signatories agree to account for and report on emissions from Scopes 1 and 2.

Scope 1: Direct GHG emissions occurring from sources that are owned or controlled by the institution, including the following:

- On-campus stationary combustion of fossil fuels
- Mobile combustion of fossil fuels by institution owned/controlled vehicles

- "Fugitive" emissions that result from intentional or unintentional releases of GHGs, including the leakage of HFCs from refrigeration and air conditioning equipment as well as the release of CH4 from institution-owned farm animals

Scope 2: Indirect emissions generated in the production of electricity consumed by the institution. Progress Energy's portfolio of sources for electricity generation determines these emissions.

In addition, as specified in the Commitment, emissions from commuting and from air travel paid for by or through the institution are the only Scope 3 emissions sources that signatories are required to report on. However, signatories are strongly encouraged, to the extent practical, to investigate and report on additional Scope 3 emissions, especially those from sources that are large and can be meaningfully influenced by the institution. The following may be included in the emissions inventory: waste disposal; emissions from college-owned forests or agricultural lands; embodied emissions from extraction, production, and transportation of purchased goods; outsourced activities; contractor owned vehicles; and line loss from electricity transmission and distribution.

Scope 3: Refers to all other indirect emissions that are a consequence of the activities of the institution but occur from sources not owned or controlled by the institution. Warren Wilson measures the following *Scope 3* emissions:

- Waste disposal
- Commuting to and from campus on a day-to-day basis by students, faculty, and staff (this does not include student travel to and from campus at the beginning and end of term or during break periods)
- Travel for business of the College
- Travel related to all International Programs

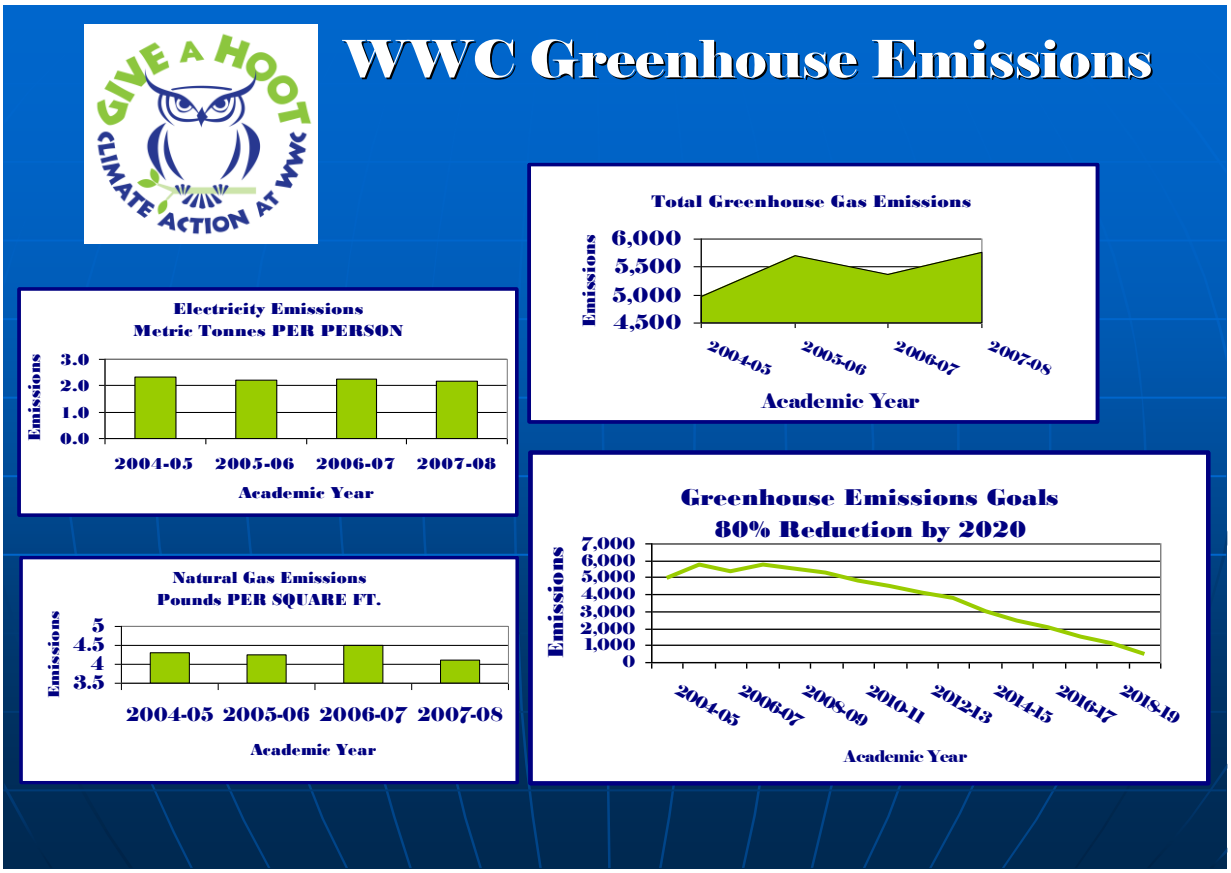
Scope 3 emissions to be considered in the future at Warren Wilson include the following:

- Examination of food purchasing practices through the Sustainable Foods Policy Task Force that, at some point, will measure and set forth goals for reduction of the carbon footprint of the food supply chain to be included in the College's annual greenhouse gas emissions inventory
- Research to determine the carbon value of the College's 700 acres of managed forest and 300 acres of agricultural lands using the GHG Protocol's Land Use, Land-Use Change, and Forestry Guidance for GHG Project Accounting, which provides guidance to ensure that reductions from forest lands are real, lasting, and "additional"

Signatories are encouraged to track and report their emissions to the fullest extent practical. However, consistent with the rules for participation in the Chicago Climate Exchange and the California Climate Action Registry, participants may designate small emissions sources that are difficult to track as de minimis and exclude them from the inventory, provided that the emissions sources collectively comprise less than 5% of the institution's total GHG emissions.

Warren Wilson commits to declare certain emissions sources as de minimis using rough, upper-bound estimates to ensure that these emissions sources do in fact contribute less than 5% of the institution's total emissions.

Warren Wilson Greenhouse Gas Emissions Trends and Challenges

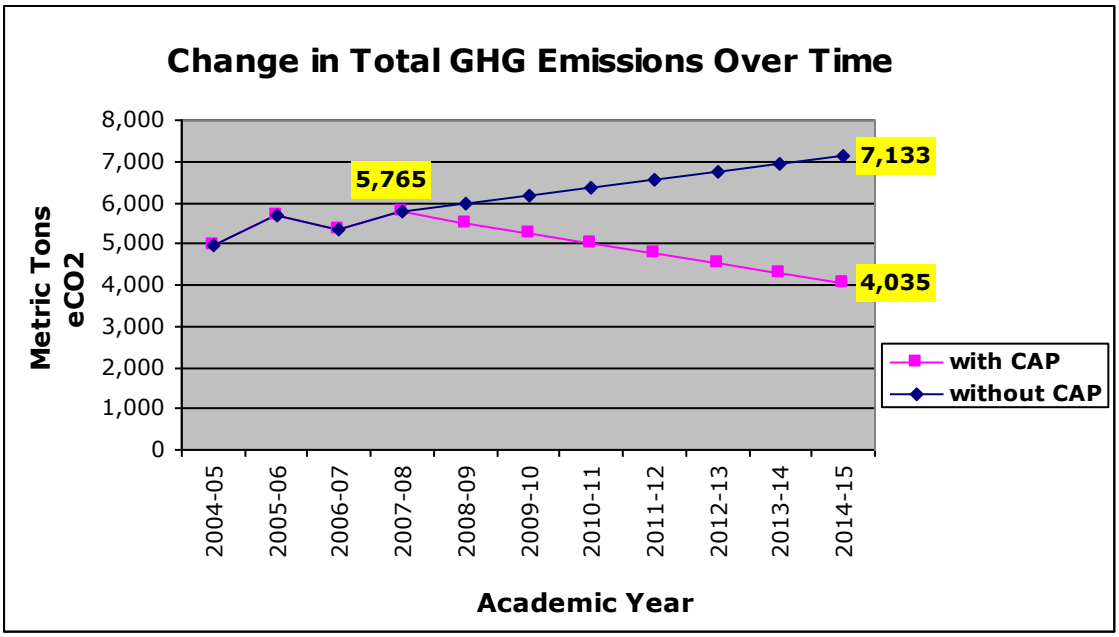


Climate Action Plan Timeline and Goals

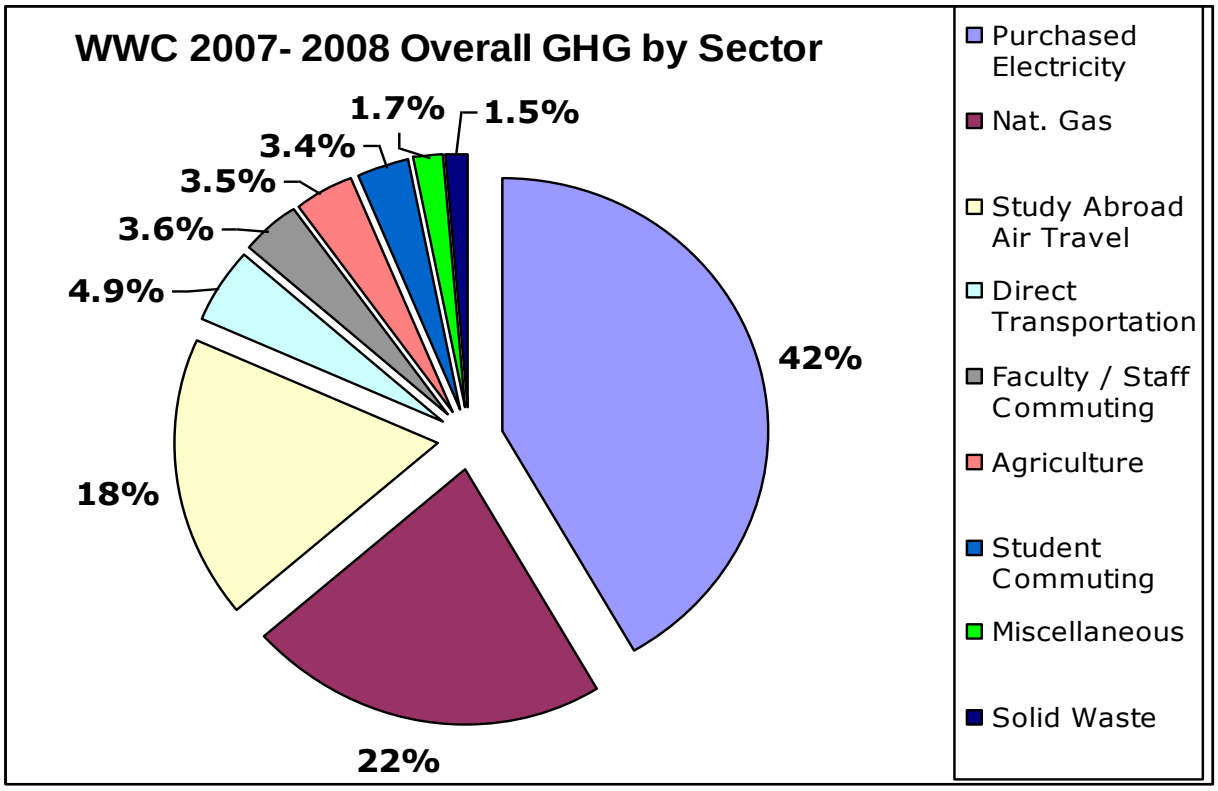
Reduce Warren Wilson's overall greenhouse gas emissions to 80% less than its 2007/2008 emissions by 2020 in pursuit of an eventual carbon-neutral footprint

Phase 1. ***30% Greenhouse Gas Emissions Reduction from 2007/2008 levels during the period 2009/2010 to 2014/2015 which has the potential for a savings in expenditures of $367,847***

Greenhouse Gas Emissions Goals 2009/2010 – 2014/2015



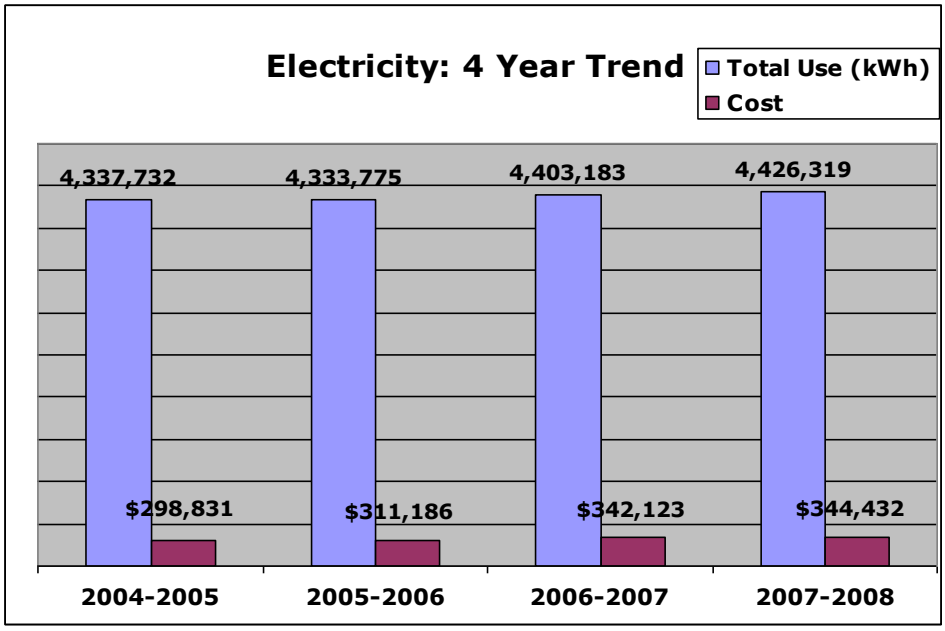
Baseline for Phase 1 Goals
Greenhouse Gas Emissions Distribution by Sector



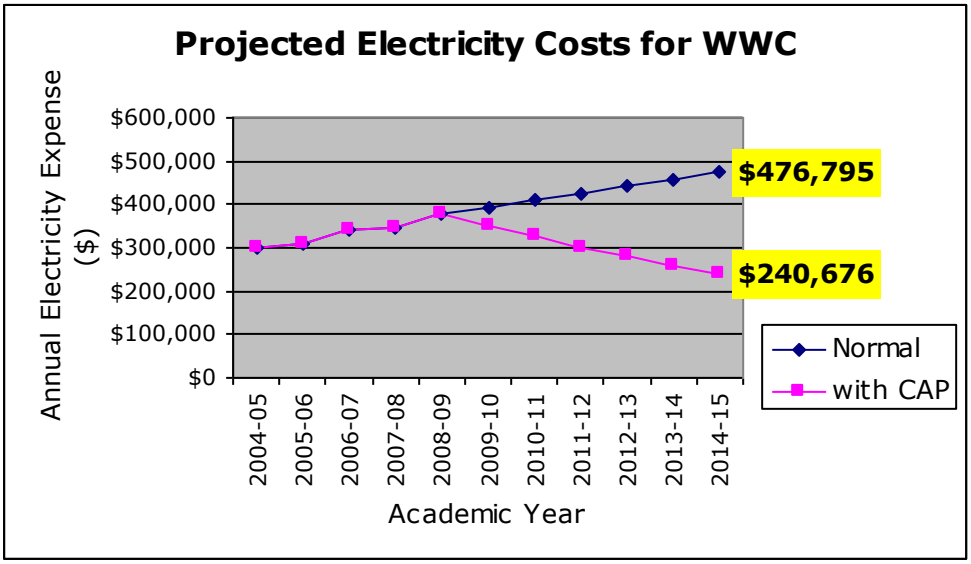
Goal 1. Electricity

25% total reduction in electricity use campus-wide based on a combination of behavior changes and retrofits. Electricity represents 42% of the College's total greenhouse gas emissions. Achievement of this goal will result in an overall 10.4% greenhouse gas emissions reduction from Warren Wilson's 2007/2008 total and a potential savings in expenditures of $236,119.

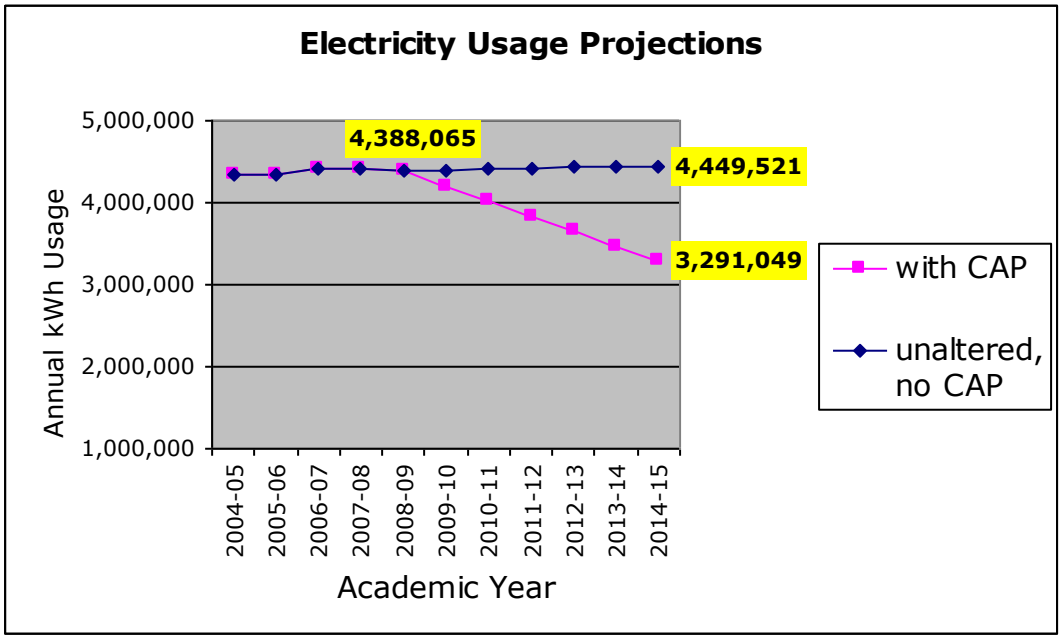
Electricity: 4 Year Trend



Projected Electricity Costs



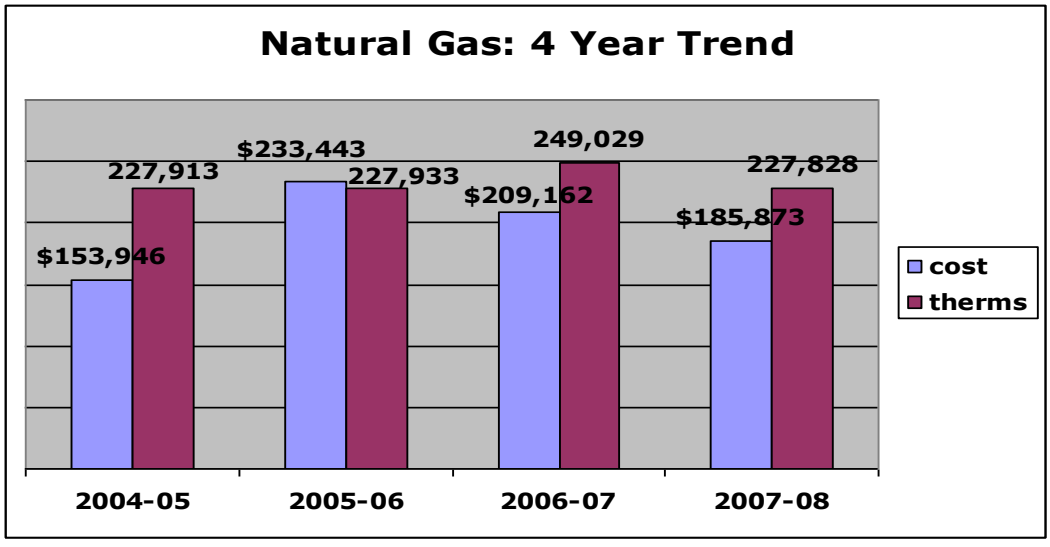
Projected Electricity Usage



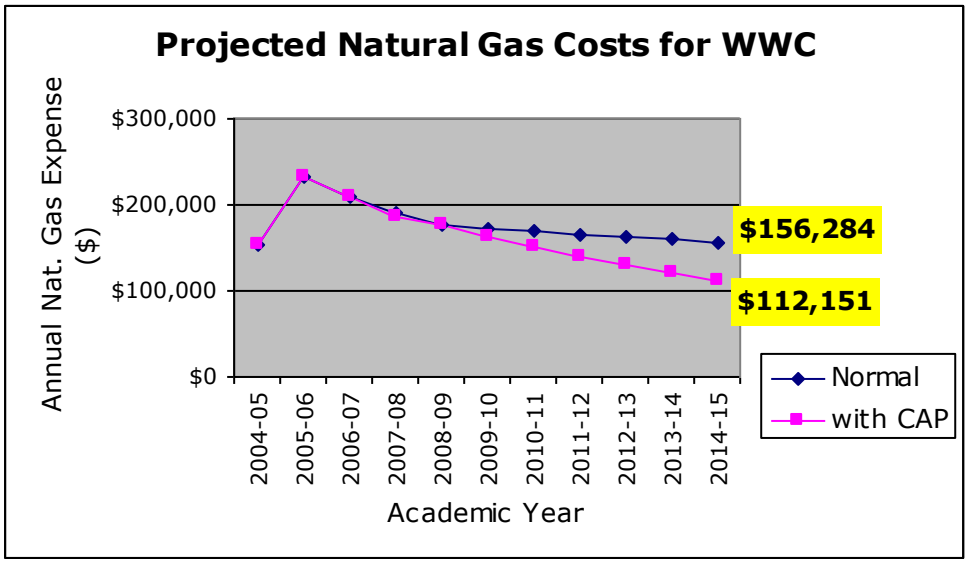
Goal 2. Natural Gas

20% reduction in natural gas carbon emissions based on gradual upgrades of heating/cooling systems to geothermal, solar thermal, and other high functioning systems. Natural gas represents 22% of the College's total greenhouse gas emissions. Achievement of this goal will result in an overall 4.3% greenhouse gas emissions reduction from the College's 2007/2008 total and a potential savings of $44,133.

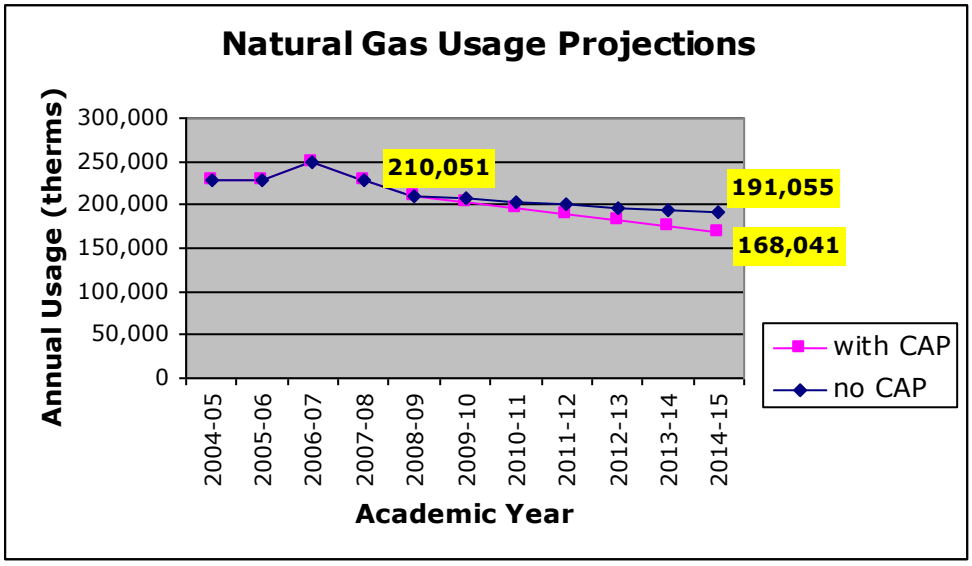
Natural Gas: 4 Year Trend



Projected Natural Gas Costs



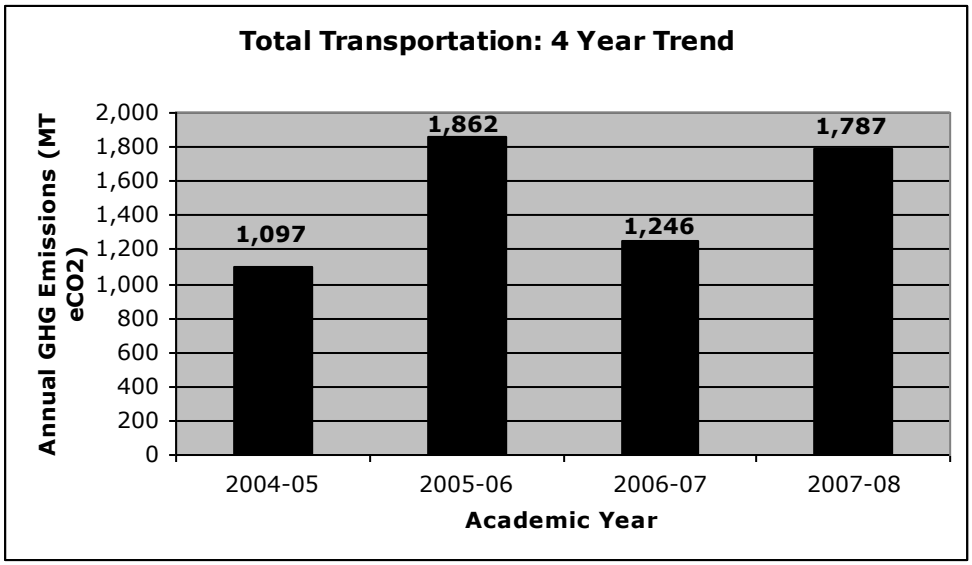
Projected Natural Gas Usage



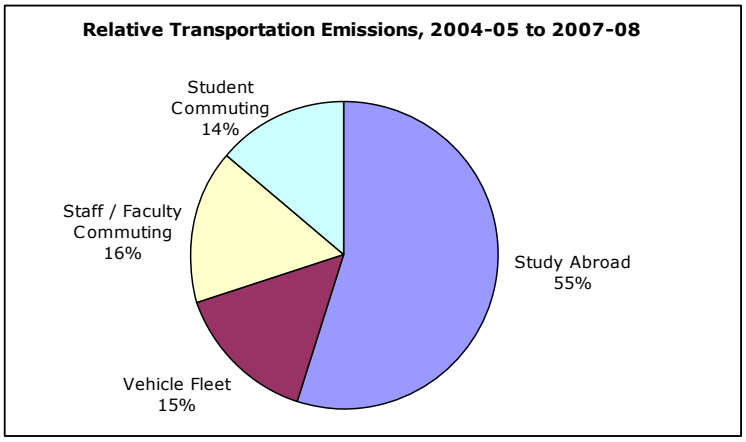
Goal 3. Transportation

50% total reduction in transportation carbon footprint based upon fleet upgrades, alternative transportation, voluntary reduction in commuting footprint, voluntary use of carbon offsets for faculty/staff/students and international travel, and more efficient use of vehicles for Service Learning and campus Work Crews vehicles. Transportation represents 30% of the College's total greenhouse gas emissions. Achievement of this goal will result in an overall 15% greenhouse gas emissions reduction from the College's 2007/2008 total and a potential savings in expenditures of $87,595.

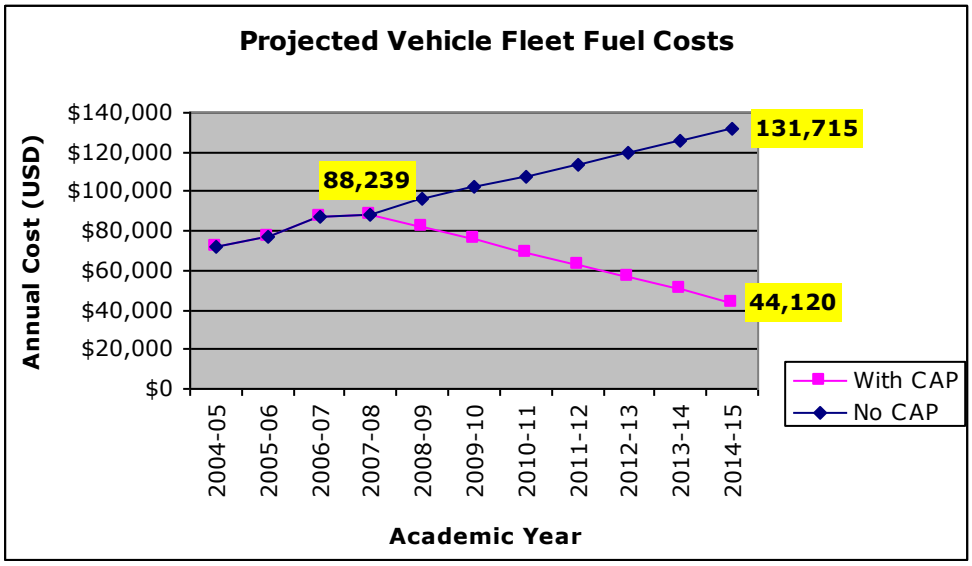
Transportation: 4 Year Trend



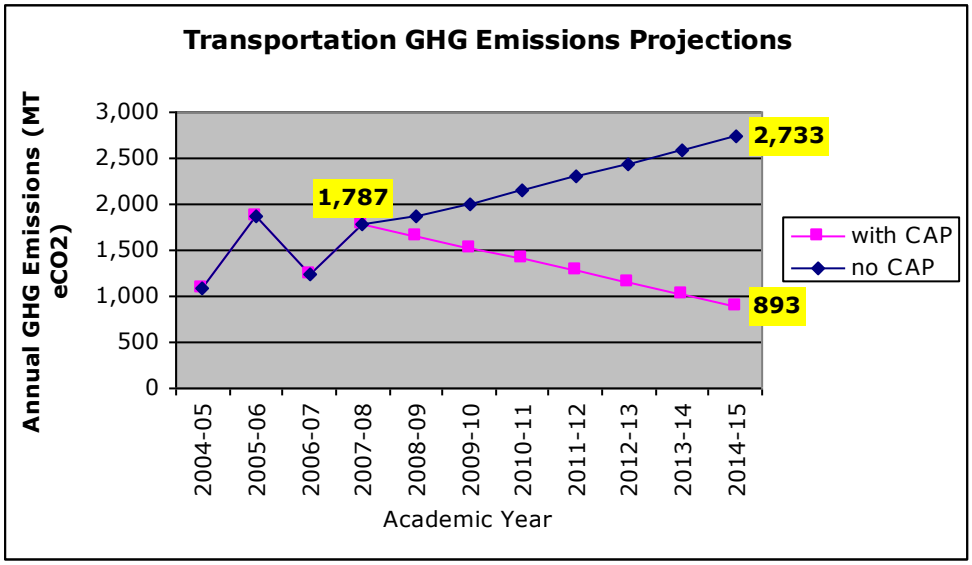
Distribution of Transportation Emissions



Projected Fleet Fuel Costs

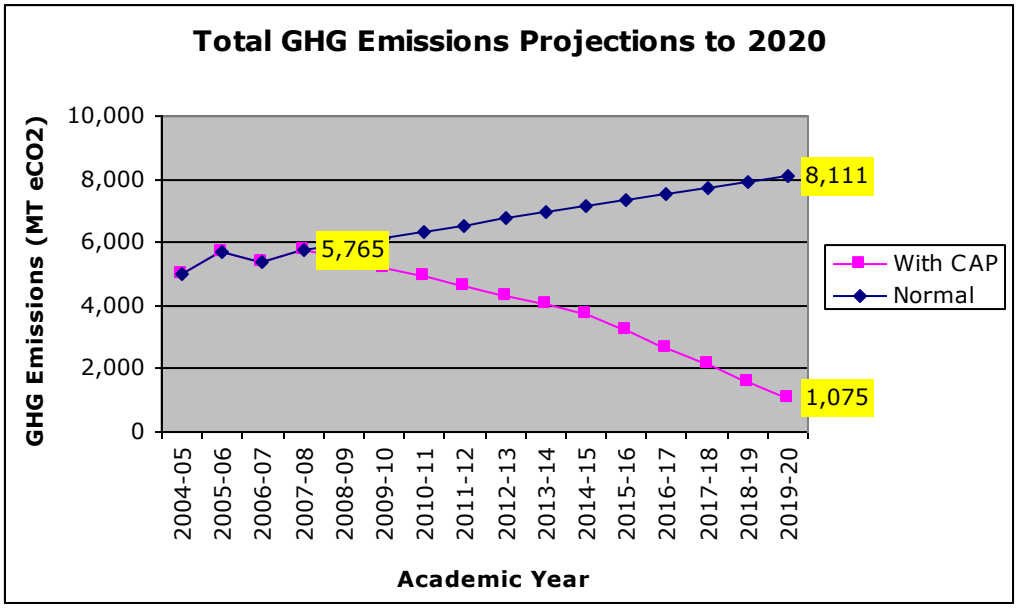


Projected Transportation Emissions



Phase 2. ***Achieve additional 50% greenhouse gas emissions reduction for the period 2015/2016 to 2020/2021 with strategies to be determined by 2014/2015.***

Total Emissions Projections to 2020



Climate Action Plan Strategies

What is it that is causing us to systematically emit ever more CO_2 into the atmosphere? It is the same thing that causes us to emit more and more of all kind of wastes into the biosphere, namely our irrational commitment to exponential growth forever on a finite planet subject to the laws of thermodynamics. If we overcome the growth idolatry we could then go on to ask an intelligent question like, "How can we design and manage a steady-state economy, one that respects the limits of the biosphere?" Instead we ask a wrong-headed, growth-bound question, specifically; "By how much will we have to increase energy efficiency, or carbon efficiency, in order to maintain customary growth rates in GDP?

excerpt from economist Herman Daly's keynote address at Headwaters Gathering, Warren Wilson College, March 2009

I. Behavior Change

Greenhouse Gas Emissions Task Force, Environmental Leadership Center, Dean of Student Life, Campus Bookstore, Presidents Advisory Council, Water and Energy Efficiency Crew, Work Program

Overall

- Conduct behavior change surveys prior to the development of the Climate Action Plan and throughout the implementation phases to inform strategies and support successful outcomes
- Hold focus groups during the year to monitor progress and community consciousness
- Appoint campus-wide "Climate Action Ambassadors"
- Brand the Climate Action Plan as the "Give A Hoot" campaign, building on the significance of Warren Wilson's mascot – the owl
- Consider enrolling community in pledges or commitments
- Create ongoing communication tool for the community to recommend new behavior change strategies
- Recognize and reward results
- Conduct on-going behavior change education
- Publicize and promote use of the Green Event Guide, Green Office Guide, and Green Living Guide campus-wide and ensure all division leaders work toward positive choices for events and purchases
- Work with Residential Life Staff to develop strategies for Climate Action success

First Year Orientation

- Distribute cfl's, orient new students to the Climate Action Plan, and provide material to support the "Five Ways to Green Your Dorm Room" at first year dorm check-in
- Provide Green Walkabout for all new staff, faculty and students to introduce them to best practices campus-wide and orient them to the Climate Action Plan
- Conduct evening skits for new students during Orientation Week on responsible/sustainable decision-making, "Greening Your Room," recycling, and more

Residential Life

- Develop model dorm room
- Make energy audits available for dorm rooms

- Make a YouTube “Green Dorm Room” Video
- Limit use of personal dorm refrigerators
- Make clotheslines accessible for all dorms
- Conduct dorm energy challenges
- Conduct a “Layers are Awesome” fashion show as part of the “Turn Down the Heat” initiative
- Educate about social justice issues related to energy use
- Conduct “Phantom Load Duty” as part of nightly dorm rounds
- Conduct “engagement programs” to build strong community around a sustainability ethos:
    - Adopt a garden plot
    - Hold community bike rides to service projects
    - Provide activities that connect with the natural world
    - Engage in sustainability-focused service projects
    - Buy dorm snacks/food that support sustainability values
    - Conduct 'Fix Your Stuff' workshops to help students learn how to keep things operable and cut down on waste/consumption

Tools to Encourage Campus Participation

- Educate students by conducting a dorm room energy audit of RA/RD rooms to establish them as demonstration sites for best energy practices for residents
- Provide Dorm Energy Use workshop for early dorm-wide meeting
- Launch a campus-wide education campaign in the fall of 2009 – “Five Things You Can Do” – and brand the campaign with a slogan and a logo campus-wide
- Develop a Climate Action website in Phase 1, with updates on progress, resources for change, real-time monitoring display, personal carbon calculator, and quarterly building reports
- Create a central campus “thermometer” display with high community visibility to track progress
- Update the community regularly through Student Caucus and Staff Forum Report to the trustees via trustee meetings
- Distribute Pattern Language principles campus-wide
- Present Climate Action Plan goals and strategies at new faculty and staff orientation, faculty body, and work crew supervisor retreats
- Post bi-weekly “GHG” comic strip in bathroom stalls
- Make real-time monitoring displays highly visible in all buildings and at website Market alternative transportation options
- Post Climate Action “Tip of the Week” on the College’s Inside Page
- Provide monthly progress report to Staff Forum and regular reports to Student Caucus
- Distribute quarterly energy use report for every campus building
- Make energy trend usage information easily available to the community
- Develop model academic building

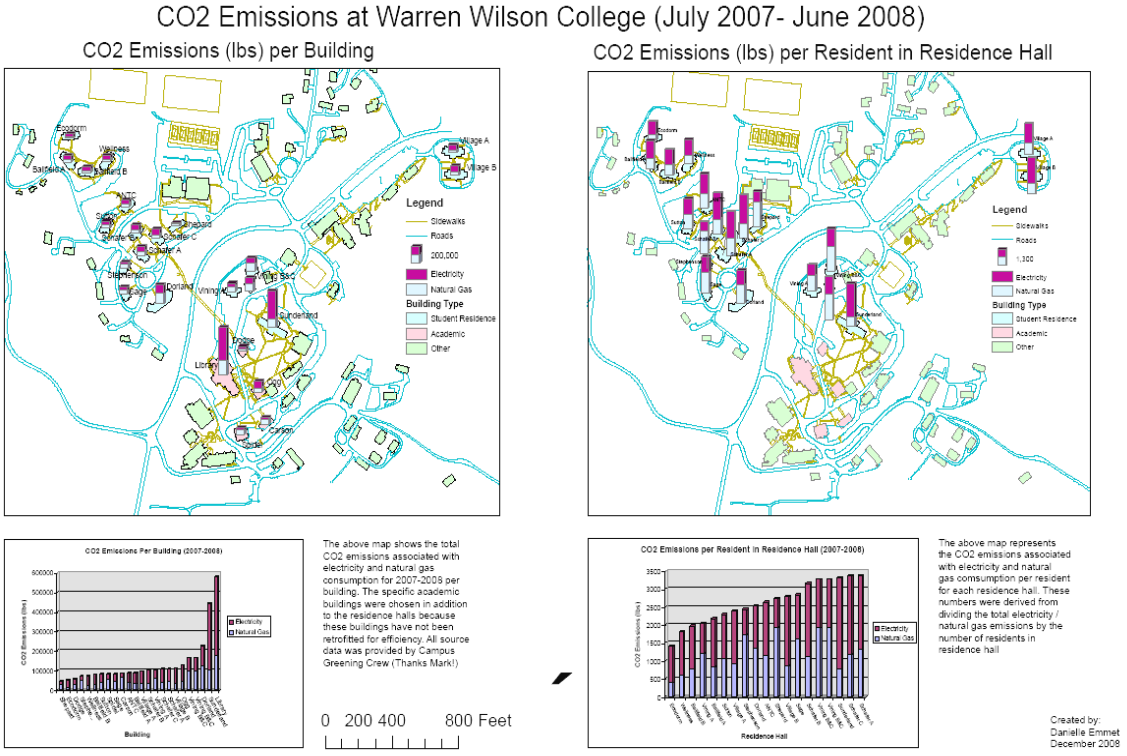
- Encourage Work Supervisors to work with their crews to research and adopt best practices
- Partner with the Sustainable Foods Policy Task Force to reinforce selection of low-impact food choices
- Ensure Campus Store sells cfl's and powerstrips at reduced cost and is supported to make sustainable purchasing choices

II. Campus Operations

Director of Facilities Management and Technical Services, Director of Recycling and Waste Management, Purchasing, Computer Services, Campus Bookstore, Auto Shop, International Programs, Land Managers, Forestry Program, Sodexo Dining Services, Land Use Committee, Buildings and Grounds Committee, Sustainable Foods Task Force, GHG Task Force, GIS Crew, Environmental Leadership Center, Water and Energy Efficiency Crew

Built Environment

Nearly 30% of Warren Wilson's core campus buildings are LEED certified or have green features. Many buildings are in need of energy efficiency improvements.



Built Environment
Goals for 2009/2010

- Experiment with temperature setbacks in buildings in evenings and during break for all buildings capable of this action
- Regulate zone temperature in buildings with wide temperature disparities
- Use infrared camera and blower door tester to continue to inspect individual campus buildings for insulation needs as part of a 10-year program, starting this year with College rental properties
- Conduct light bulb audit of campus and relamp incandescents to cfl's or LED's .
- Consider participation in Progress Energy's delamping program.
- Conduct campus-wide investment grade audit to search for greater efficiencies
- Gradually retrofit targeted high usage buildings with possible engagement in performance contracting to make the retrofits affordable
- Install real-time monitoring in as many buildings as possible using the grant-funded circuit board and visual displays secured by a Warren Wilson student
- Document cost of all energy-saving changes to the built environment to measure return on investment re energy performance and cost
- Include facilities long-term needs in strategic planning process
- Retrofit all college rental properties to align them with the mission and values of the Climate Action plan as part of a 10-year program starting this year

Goals for 2010 – 2014

- Install power strips campus-wide to save 10% in phantom energy
- Install motion detector lights in some hallways
- Install additional ceiling fans
- Verify performance for energy-savings installations (like ENERGY STAR fixtures)
- Regulate thermostats for building comfort and install zone thermostats where possible
- Purchase large refrigerators for dorms to reduce use of individual units.

Computing Services

- Continue to encourage campus to shut down computers when not in use Continue to shut down computers in labs nightly which can represent a $50 to $70 energy savings annually per computer
- Convert to laptops when possible for 50% reduction in energy use
- Develop Sustainable Computing Policy
- Educate Community to enable energy savings settings on individual computers used on campus

Food Systems

- Sustainable Foods Policy Task Force will guide food purchases for the College in collaboration with dining services provider Sodexo
    - Determine a "points" formula and set percentage goals that increase each year for the amount of food purchased that meets the "points" requirement.
    - Increase this base point criteria over time (e.g., setting goals to increase the percentage of fruits, vegetables, and juices that come from the region; awarding points for local foods that are certified sustainable or organic by select outside benchmarks)
- Continue to provide a Community Supported Agriculture program to encourage (CSA) for faculty, students and staff
- Continue to raise and sell antibiotic-free, hormone-free, grass-fed beef and pork poultry and eggs; maximize sustainable production to offset food imports
- Continue to provide herbal products made from campus Garden herbs
- Hold "Everyone Cooks" – a weekly sustainable foods cooking class for the campus community
- Phase out use of trays in cafeteria
- Encourage the "Clean Your Plate" program to minimize waste
- Continue to compost food waste from the cafeteria through use of the Green Drum and consider need for increasing the College's food composting capability
- Distribute Green Event Guide campus-wide to encourage sustainable food practices at all College events on and off campus

Green Events

- Encourage all divisions campus-wide to adopt Green Event Guidelines, posted on-line, for all College internal and external College events
- Educate the public about Green Event practices by communication either on the invitation or at the event that details the "green" aspects of the event
- Encourage College staff to demonstrate best sustainable practices when traveling

Green Office/Printing

- Encourage offices campus-wide to adopt Green Office Guidelines
- Continue to consider best practice purchases for paper and inks at the College Print Shop
- Honor College's ENERGY STAR purchase policy for printer and copier purchases campus-wide
-

- Shift to on-line systems for payroll, budget reports, as planned in the College's Accounting Office, to result in significant savings of resources, time and money usually spent on paper, envelope and labels
- Continue to encourage offices campus-wide to follow the Publication Guidelines found on-line
- Whenever possible, use FSC certified paper for the external publications of the College

Land Use

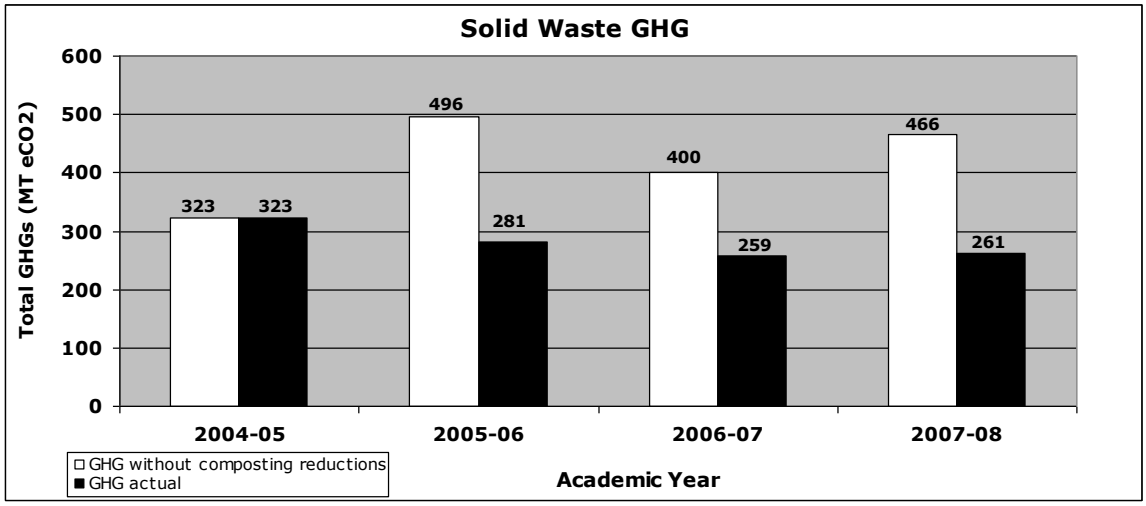
- Honor Land Use Pattern Language Principles
- Produce a Campus Master Plan to inform all future land use decisions at the College
- Develop a pattern book of best practices for land management and the built environment
- Include sustainability as a framework for decision-making in all Land Use Plans
- Reduce emissions through Native Landscaping practices and honor Landscaping pattern language principles
- Continue to apply sustainable gardening principles and water conservation actions at the College Garden
- Continue to monitor emissions at College Farm while also monitoring organic matter
- Continue to improve water conservation measures for watering of livestock and irrigation; drill wells to reduce the use of municipal water
- Define and support sustainable forestry practices for the College's 700-acre forest that integrate carbon sequestration capacity into the management plan
- Hold the preservation of cultivated land as one of our highest principles and explore conservation easements to demonstrate this; insure all future development planned for non-agricultural land

Purchasing

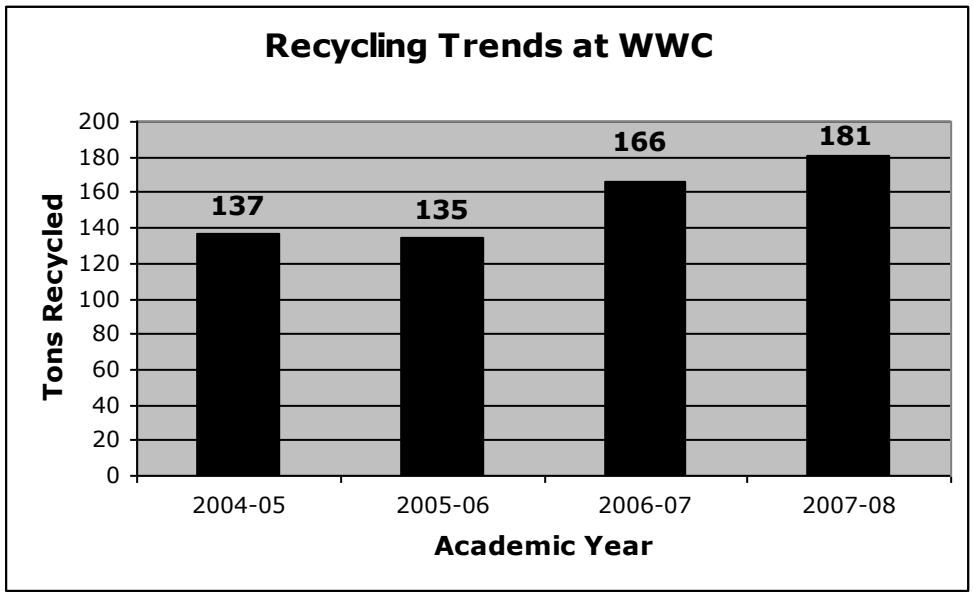
- Develop centralized purchasing so green vendors/preferences are easily accessible to the campus community and economies can be realized through bulk orders starting 2009/2010 (Purchasing)
- Circulate Purchasing Pattern Language campus-wide and re-emphasize the ENERGY STAR purchasing policy starting 2009/2010 (Purchasing)
- Encourage Campus Store purchases that meet sustainability best practices as recommended in AASHE's STARS assessment guide (Campus Store)

Recycling

4 Year Trend in Solid Waste Greenhouse Gas Emissions



4 Year Trend in Tons Recycled



- Study and implement LEED EB waste management procedures
  - Utilize LEED EB MR Pre 1.1 Source Reduction & Waste Management Waste Stream Audit to create a campuswide baseline waste audit
  - Utilize Waste Audits to accomplish the following:

        - Identify Recycling Centers in need of improvement with cabinetry, signage, new bins, etc
        - Create info displays or other educational opportunities for campus
        - Identify source reduction strategies for campus
        - Attain/Maintain an overall Recycling Rate of 50%
    - Use LEED EB MR Pre 1.1 Source Reduction & Waste Management: Storage & Collection, and ensure compliance campuswide.
        - Includes crew goal to maintain signage and bin inventory at all recycling locations
    - Use MR Credit 1.1 & 1.2: Construction, Demolition, and Renovation waste Management.
        - Work with carpentry, campus support, and other FMTS crews to develop a program to divert a minimum of 75% of all construction debris from landfill
    - Educate students and staff about recycling procedures
        - Participate in Freshman orientation & RD training
        - Utilize MCP's as a form of communication to help with problems or encourage good recycling practices
        - Conduct Earth Week Activity
        - Utilize waste audits to create site-specific educational strategies
    - Improve opportunities for outdoor recycling
        - Identify Priorities for bin placement
        - Set up at least one new/improved outdoor recycling center annually
    - Complete Annual Report
        - Analyze to determine what projects/processes worked and didn't work in the previous year
        - Utilize to determine priorities for following year
        - Continue to improve accuracy of report
            - Track Wood Shop weights
            - Improve weight estimates
        - Determine best way to make information available to campus
        - Modify to reflect LEED waste management reporting
- Maintain Campus Surplus Program
- Maintain Campus Composting Program
    - Acquire permanent permit
    - Evaluate need for secondary composter & research possibilities
- Develop opportunities that support the Triad Mission of the College
    - Continue to offer and improve tours of recycling facility to schools and groups
    - Complete at least one service activity annually as a crew
    - Continue to find ways to integrate students academic interests with crew activities
        - Compost program/research
- Attend conferences that are work, academic, and career-oriented

Transportation

Buildings and Grounds Committee, Environmental Leadership Center, Business Office, Global Studies Dept.,

Transportation sources accounted for 29 percent of total U.S. greenhouse gas (GHG) emissions in 2006. Transportation is the fastest-growing source of GHGs in the U.S., accounting for 47 percent of the net increase in total U.S. emissions since 1990. Transportation is also the largest end-use source of CO_2, which is the most prevalent greenhouse gas. These estimates of transportation GHGs do not include emissions from additional lifecycle processes, such as the extraction and refining of fuel and the manufacture of vehicles, which are also a significant source of domestic and international GHG emissions (http://www.epa.gov/oms/climate/basicinfo.htm). At Warren Wilson, Transportation accounted for 30% of all campus greenhouse gas emissions in 2007/2008.

- Scope 1: 4.9% campus fleet use
- Scope 3: 18% International Programs
- Scope 3: 3.6% faculty/staff commuting
- Scope 3: 3.4% student commuting

- Distribute Sustainable Vehicle Policy to all budget managers
- Implement sustainable travel practices to minimize the College's carbon footprint whenever possible
- Monitor work crew use of on-campus vehicles campus-wide through quarterly energy reports and encourage decreases where possible
- Support certification of carbon offset project in Panama, established through the Global Studies program, for possible future carbon offsets for international travel at Warren Wilson; provide ongoing faculty and student engagement with this program to assist in this process
- Improve documentation system for business travel at the College
- Consider planned obsolescence for campus fleet
- Continue to subsidize free rides for all campus community on the Asheville Public Bus that stops on campus several times each day
- Examine whether to continue to support a partnership with UNC Asheville for access to Zimride – a Facebook-based ride sharing system
- Consider setting aside prime parking spaces for carpoolers
- Consider foot/bicycle paths to the College's residential neighborhoods
- Provide incentives and organizational tools for carpooling to campus such as GIS carpool maps

III. Carbon Offsets

Environmental Leadership Center, Facilities Management and Technical Services

- Consider the purchase of carbon offsets as a transient measure to neutralize unavoidable carbon footprint

- Consult with the College's GHG Science Advisor at the National Climatic Data Center to keep to keep abreast of the most current research on carbon offsets
- Purchase green-e certified, wind power REC's for 100% of annual KW use and determine what percentage can legitimately be counted as a carbon offset to assist with the impact of International Programs
- Select certified, verifiable carbon offset projects, with positive local and relevant international social justice impacts, to recommend to faculty, students and staff, especially those who travel on International Programs
- Seek grants to fund potential annual offset purchases by the College
- Provide web-based calculator for community to easily determine their transportation carbon emissions
- Purchase carbon offsets for speakers at campus events whenever possible

IV. Curriculum/Educational Experiences

Environmental Leadership Center, Academic Affairs, Work Program, Service Learning, Student Life

It is time for our educators, especially at the university level, to get off the sidelines as spectators and into the game as participants. If Paul Hawken is right - that only business can lead - who will prepare tomorrow's business leaders to lead responsibly? You and your associates! Environmental and social responsibility are critical – as much as financial responsibility. So, challenge the status quo that, today, is preparing leaders to lead irresponsibly, because vast ignorance of the problem is allowed to abound. If your job is to dispel ignorance, then put ecological and social ignorance at the top of your priorities. Let your research help define the path society should choose for <u>survival</u> of homo sapiens, not its extinction, and the preservation of those other 30 million species.

Ray Anderson's Commencement Address, Warren Wilson College, May 2008

Warren Wilson's Triad of academics, work and service, its shared governance, and its Student Life programming form the structure for the experiential learning that defines the Warren Wilson liberal arts experience. Students engage in the Climate Action Plan through the Triad.

Most students who apply to Warren Wilson say they were drawn by these top three qualities: environmental leadership, community, and sustainability. They score higher than their peers at other liberal arts colleges for the strength of their passion to change the world. Warren Wilson students *expect* to learn to address pressing societal issues like climate change. And they expect to work for this change now, while undergraduates.

Shared governance offers all members of the community the opportunity to participate in community decision-making. The community has provided detailed input for the Climate Action

Plan through a public comment period and cross-sector representation on the Greenhouse Gas Emissions Reductions Task Force.

Students serve on every committee of the College – from the Sustainable Foods Policy Task Force, to the Buildings and Grounds Committee, the Land Use Committee, the Marketing Committee and more. Citizenship skills and institutional understanding are developed through this service. Students will participate in the following educational plan to support the College's climate action goals.

Academics

Director of Sustainability Education, Chemistry Department, Chief Sustainability Official, GHG Task Force

- Invite the increasing numbers of faculty who discuss some aspect of sustainability in their courses to consider a more formal placement of this topic in their syllabi
- Implement the Chemistry Department's new strategic plan that includes energy as a required area of competency; three chemistry courses will cover the science of climate change
- Continue to involve faculty and their classes in the implementation and further development of the Climate Action Plan

- Plan for the following climate change studies:
    - Behavior change response to the Climate Action Plan (psychology department)
    - Carbon sequestration studies for campus lands (forestry and chemistry)
    - Carbon offsets as economic development initiatives (global studies)
    - GIS presentations of the College's Climate Action Plan progress
- Ensure that the more than 60% of all Warren Wilson students who take Introduction to Environmental Studies, where they study climate change, are encouraged to support the Climate Action Plan
- Provide stipends for faculty to participate in Warren Wilson's new, grant-funded interdisciplinary sustainability curriculum, to focus on Energy and Climate in 2010/2011
- Invite faculty to a discussion about the interdisciplinary aspects of the climate change challenge

Work

Dean of Work, Chief Sustainability Official

- Formally enlist all work crew supervisors to support the Climate Action Plan

- Continue to encourage students to champion best practices on their work crews; through their direct action, proposals have been written throughout the years that have established the vegetarian Cowpie Café, the green standards for the EcoDorm, the Recycling Program, the EcoTeam outreach program, the EcoDorm's permaculture, the Green Drum Composter, Real-Time Monitoring, and many other best practices
- Encourage work crew supervisors to engage their crews in appropriate activities that support the College's climate action commitments; for example, the Campus Greening Crew conducts the Greenhouse Gas Inventory and creates monitoring tools; the INSULATE! Crew weatherizes the homes of people living below poverty level; the Water And Energy Efficiency Crew conducts energy and water consumption audits campuswide and implements savings measures; the Energy Audit Crew installs real-time monitoring units in campus buildings; the Electric Crew conducts campus-wide lighting audit; the Recycling Crew's operation was recognized as number one in waste management in the Carolinas and in higher education in 2008; student crews constructed the College's first LEED Gold building; the Autoshop Crew retrofit lawnmowers to run on propane,; the Landscaping Crew practices native landscaping principles; the Computer Crew shuts down all campus lab computers at night and adjusts all campus computers for sleep feature; the Dining Services Crew purchases local foods and caters events "green;" the Farm and Garden Crews implement water conservation and sustainable agriculture practices; the Purchasing Crew support sustainable purchasing principles
- With support from the Work Program Office, assist students to attend conferences off-campus related to their campus work in such fields as environmental journalism, renewable energy, the local foods movement, LEED practices in the built environment, etc.
- Offer scholarships for on-campus HERS certification training (Home Energy Rating System Raters) and BPI (Building Performance Analysts) for staff and their student crews to prepare them to better implement best practices campus-wide

Service

Dean of Service, Chief Sustainability Official

- Foster student understanding of sustainability as a framework through which to address community problems through a formal reflection process that examines the complex roots of these issues
- Continue to develop service opportunities in areas of student interest; to date, 60% of the projects students choose focus on environmental or social justice issues, many of which are related to climate and energy impacts like weatherization of homes of people living in poverty, engagement in affordable housing issues in the region, rebuilding communities in Louisiana and Mississippi, and assisting with community gardens to enhance local food production
- Continue to refine the newly formed program, "Wilson Cares," and encourage students to form issue-based concern groups around regional climate change impacts

Student Life

Dean of Student Life, Environmental Leadership Center Education Director

- Continue to update "The Green Living Guide," with recommendations for best climate action practices, and make it available on-line for all students
- Continue to engage all first year students in workshops, orientation sessions, and skits that introduce sustainable, responsible decision-making and enlist their participation in the Climate Action Plan
- Support Residence Life staff to help launch the College's "Give a Hoot - Five Things You Can Do" campaign for climate action
- Support the theme-based EcoDorm staff to further develop the educational value of the residence hall
- Continue to circulate the student-written energy usage manuals for the LEED-certified EcoDorm and the two Village dormitories to new residents
- Strengthen Wellness programming to foster sustainable lifestyle practices and responsible community engagement

Additional Educational Experiences

Environmental Leadership Center, President's Advisory Council

- Continue to provide paid Summer Sustainability Internships for Warren Wilson students who are interested in working for organizations that address climate change and alternative energy such as the National Climatic Data Center, the City of Asheville Sustainability Office, the Smithsonian Environmental Research Center, and Dogwood Alliance
- Facilitate meaningful participation for Warren Wilson student associations and networks to participate each year in national climate action conferences targeted to students
- Develop policy in 2009/2010 to guide the College's support for student attendance at these conferences
- Continue to provide grant opportunities (see Funding Section) that encourage all Warren Wilson students to develop new and effective ways to address climate action on campus

V. Funding Climate Action Goals

Environmental Leadership Center, Business Office, Advancement Office, Business Department, Academic Affairs, Work Program

- Achieve the Climate Action goals as a priority of the College's new strategic plan

- Engage Advancement in fundraising to improve campus energy efficiencies
- Continue to explore participation in the Clinton Climate Initiative and in Performance Contracting with ESCO's as a means to make facilities upgrades affordable.
- Continue to partner with regional organizations to fund Climate Action projects with revenue and in-kind contributions (e.g., Progress Energy funded the College's energy audit equipment this past year; the National Climatic Data Center has assisted with Warren Wilson's design of a GHG regional databank; the City of Asheville will share in grant-seeking to scholarship the College's HERS training planned for the fall)

Innovation and Education Funds

Vice President for Academic Affairs, Environmental Leadership Center, Dean of Work

- Incentive Faculty with a stipend for participation in the College's 2010/2011 interdisciplinary Energy and Climate curriculum.
- Provide student grants up to $500 through the **President's Climate Action Fund** to support their innovative design of campus projects that demonstrate solutions to emissions reductions challenges
- Continue to provide **Campus Greening Seed Grants** for students who may apply for up to a $300 grant to fund campus projects that demonstrate innovative solutions to environmental sustainability challenges
- Continue to **support** students to attend **conferences and trainings** to further their work skills; as an example, students attended the National Conference of Environmental Journalists in 2008, which focused on climate change. As a result they crafted radio essays about climate change for the College's public radio show – the *Swannanoa Journal*.
- Continue to assign revenue from the College's donor-funded, grid-tied solar array (with KW's sold to NC Green Power) to the **Community Sustainability Fund**; this donor-approved fund supports projects that have regional outreach and teach sustainable practices re emissions reductions
- Budget for electricity, natural gas, and fleet fuel use per capita each year; initial revenue saved as a result of the Climate Action Plan will be transferred at year-end to a **Campus Sustainability Fund** to support future campus energy reduction measures
- Assign net revenue from the Home Energy Rating Systems (HERS) and Building Performance Analyst (BPI) to **scholarships** for Warren Wilson staff and students to attend these trainings

Return on Investment

Director of Facilities Management and Technical Services, EnvironmentalLeadership Center, Business Faculty

- Measure financial savings annually that result from Climate Action Plan reductions while understanding that in order to achieve deep retrofits extended payback periods of up to 10 years may be needed
- Build on our Return On Investment (ROI) profile of campus LEED buildings to measure long-term cost of investments in building retrofits and other energy savings measures compared to long-term benefits; with metering in place for each campus building, documentation available for usage changes in each building (including the cost of the changes), and an annual greenhouse gas inventory that tracks usage by building and maps trends over time, the ROI will eventually be easily calculated
- Demonstrate economic return to secure greater support for future investments in energy reduction projects

VI. Monitoring

Environmental Leadership Center/Campus Greening Crew, Water and Energy Efficiency Crew, GHG Task Force

- Input electricity, natural gas, and fuel use monthly using ENERGY STAR software
- Produce annual Greenhouse Gas Emissions Inventory using Clean Air – Cool Planet tools
- Develop and issue quarterly energy usage reports, with historical trend comparisons, for all building managers and work crew supervisors on campus
- Post these reports at the College's Climate Action website
- Monitor progress toward Climate Action Plan goals and review value of strategies with quarterly Greenhouse Gas Emissions Task Force meetings
- Install real-time monitoring units across campus (funded through student grant writing efforts) with web-based visual displays available to campus in real-time
- Conduct dorm room audits to assist students in monitoring value of energy reduction measures
- Develop public displays that monitor progress toward Climate Action goals throughout campus
- Report progress on Climate Action goals in the College's Annual Sustainability Report
- Partner with Sustainable Foods Policy Task Force to develop protocols to monitor food footprint
- Continue to use AASHE's STARS assessment to monitor sustainability progress on campus

VII. Outreach

Environmental Leadership Center, Office of the President, Service Learning

Climate Change Awareness As the only institution in the region with an annual greenhouse gas emissions inventory, Warren Wilson serves as a community advisor to organizations that aspire to this task

Community-Based Research Warren Wilson faculty, staff and students engage in community- based research projects in many areas of climate change from impacts of energy costs on low-income homeowners, to air and water quality, effects of unplanned growth on regional energy needs, and health issues

Community Service Warren Wilson leaders will continue to serve on boards and advisory councils for effective sustainability organizations in the region

EcoTeam curriculum developed in partnership with the Jane Goodall Institute's *Roots & Shoots Program*, taught by Warren Wilson students to more than 1,200 regional third graders each year will add a new lesson in 2010, funded by Progress Energy, and developed in partnership with Asheville-Buncombe Technical College's Global Sustainability Institute, on "Climate and Energy"

Green Walkabout Hundreds of visitors take this campus tour each year to visit best practice sites for land, recycling, and the built environment; the Green Walkabout inspires individuals, higher education institutions, faith and living communities, hospitals, agencies and businesses to learn about the value and the implementation strategies for innovation and best sustainable practices

Mountain Green, a year-round College outreach initiative to promote sustainable community development that includes the following:

- Annual conference to encourage the ethos and the practices that will support the development of sustainable communities in western North Carolina, with seminars conducted by experts in energy, tourism, and the built environment;
- Monthly Mountain Green sustainability seminars on campus by experts in sustainable development practices; "Sustainable Community Certificate of Participation" awarded at year end to participants who attend at least eight of sessions;
- INSULATE! program: Warren Wilson students work with community volunteers to weatherize the homes of citizens in Buncombe County living below the poverty level,

conducted in partnership with Community Action Opportunities, Asheville GO, the Council on Aging, the Homebuilders Association, the City of Asheville, Mountain Housing Opportunities, and Progress Energy; students also track greenhouse gas emissions savings from each home and promote the model nationally; five other colleges are adopting the INSULATE! model. (http://www.warren-wilson.edu/~ELC/New_ELC_Website_/insulate/about.php for more information)

- HERS (Home Energy Rating System Raters) and BPI (Building Professional Analyst) training site: In response to the regional demand for INSULATE! and other weatherization programs, and the need to provide "green" job training to meet this demand, Warren Wilson will offer HERS and BPI certification trainings in 2009/2010

Partnerships

- City of Asheville: Warren Wilson has a formal climate change partnership with the City that includes ongoing collaboration and resource sharing to achieve respective GHG reduction and sustainability goals; provide internships for WWC students; engage in national speaker collaborations; etc
- National Climatic Data Center: One of the Center's IPCC scientists serves as official science advisor to the College's partnership with the City and to Warren Wilson's greenhouse gas emissions inventory; another Asheville-based IPCC scientist is a frequent speaker on campus and has assisted with the College's educational outreach to other higher education institutions
- Progress Energy: Warren Wilson serves on its Citizens Energy Advisory Council developed to define an alternative to another power plant in the region; Progress Energy has funded the purchase of the College's energy audit equipment and supported the development of a new energy and climate curriculum for Warren Wilson's EcoTeam program for third graders
- Internship Partners: The College has numerous partners who offer summer internships for students in the area of sustainability and climate change, from renewable energy companies, to the National Climatic Data Center. (See http://www.warren-wilson.edu/~ELC/New_ELC_Website_/internship.php)
- The Wilderness Society and *Orion* magazine: The College has a formal partnership with these organizations to offer Headwaters Gathering … Southern Appalachia at the Crossroads – an annual conversation with national experts about climate change and sustainability
- Mountain Green Partners: the Mountain Green Steering Committee is comprised of leaders from the Chamber of Commerce, the region's economic agency Advantage West, the Community Foundation, and regional developers and realtors who support the annual Mountain Green initiative at Warren Wilson, providing educational outreach that fosters sustainable community
- National Wildlife Federation: the College has partnered with this organization to bring higher education institutions to campus to discuss climate change and take a Green Walkabout and this collaboration may continue

Service Learning Warren Wilson students participate in more than 5,000 hours of environmental community service each year; many students serve organizations focused on climate change adaptation and mitigation

Speaker Series Warren Wilson will continue to host national experts for public talks about sustainability, environmental leadership, and climate change

Swannanoa Journal, a public radio program that is researched, written and recorded by Warren Wilson students and broadcast weekly on two public radio stations, with a five-state outreach; a significant number of the broadcasts will continue to focus on all the sustainability impacts of climate change

VIII. Policies, Principles, and Administration

Chief Sustainability Official, President's Advisory Council, Environmental Leadership Center

- College's Chief Sustainability Official reports to President, chairs the Greenhouse Gas Emissions Reductions Task Force, and serves on the President's leadership team – the President's Advisory Council
- Environmental Leadership Center monitors commitments and conducts community outreach
- Climate Action Plan builds upon the legacy of the College commitment to stewardship and best practices.
- College's Mission, Vision, and Core Values call for environmental responsibility
- Charter signatory of the American College and University Presidents Climate Commitment
- Signatory of the Talloires Declaration
- President's Advisory Council has made a formal decision to engage in Sustainable Decision-Making
- College's Environmental Commitment Statement, voted on through shared governance, calls for best practices
- Pattern language adopted by Warren Wilson in the early 1990's established principles for Land Use, Native Landscaping, Native Wildlife and Biodiversity, and Purchasing
- Internal College policies support climate action:
    - Minimum LEED silver design standards for all new construction;
    - Sustainable vehicle policy
    - Minimum annual purchase of at least 15% of total KW use in renewable energy credits
    - ENERGY STAR purchases where available

IX. Renewable Energy

Environmental Leadership Center, Facilities Management and Technical Services

- Seek funds to install solar thermal on appropriate buildings
- Continue to pursue installation of demonstration rooftop wind turbine
- Continue to manage 13KW, grid-tied solar array to generate revenue for community projects
- Explore funding and location possibilities to expand grid-tied solar generation to reduce the need to purchase offsets
- Study efficacy of geothermal systems on campus
- Study production of biogas from farm waste with student/faculty team
- Continue to purchase certified REC's from wind power for 100% of annual campus electricity usage

X. Research

Environmental Leadership Center, Advancement, Academic Affairs, Forestry Program, multi-disciplinary faculty, community partners

- Work with Advancement to fund faculty, student and staff research related to climate change
- Initiate carbon sequestration research on the campus' 700-acre forest through the Sustainable Forestry and the Chemistry Program; according to the EPA, in the US, forests and agricultural soils account for a significant removal of CO_2 from the atmosphere, representing 11 percent of total gross US CO_2 emissions in 2000; Warren Wilson's forest likely constitutes a significant carbon sink for the College
- Seek assistance from the US Forest Service, Oak Ridge National Laboratory and the National Climatic Data Center to measure the College's carbon sink
- Consider third-party verification for the College Forest's carbon sequestration to offset the College's international travel
- Conduct a Biogas study of the College's agricultural operations
- Continue to work with the IPCC scientists at Asheville's National Climatic Data Center to stay abreast of current research
- Encourage student research projects in climate change and mitigation via student grant programs (see Funding section)
- Cultivate student interest in using the capstone Natural Science Seminar research required of all science majors to investigate climate change issues on campus and in the region
- Engage the business and economics department in Return on Investment research for energy reduction initiatives campus-wide
- Continue to engage psychology faculty in research on campus related to behavior change and climate action
- Collect and publicize faculty and student research on issues related to climate change

Give A Hoot Energy Awareness Day, September 7, 2009
Campus Greening Crew

www.warren-wilson.edu/~elc/sustainability/energy.php