Wake Technical Community College
Climate Action Plan

May 2012

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Executive Summary

Upon becoming a Signatory of the American College & University Presidents' Climate Commitment (ACUPCC), Wake Technical Community College (WTCC) formally recognized the threat of global climate change and accepted responsibility for addressing green house gas (GHG) emissions related to College operations. The Presidents' Climate Commitment obligates signatories to provide a Climate Action Plan to be uploaded into the ACUPCC online reporting system. The plan is available to the public through the ACUPCC website, and captures strategies that the college will commit to implement to achieve a reduction in GHG emissions.

The President's Climate Commitment Steering Committee identified working groups comprised of staff and faculty to develop the climate action plan. The building and grounds working group was responsible for addressing emissions attributed to building and grounds operation and maintenance. A second working group, for Curriculum integration was tasked with generating methods to integrate sustainability across the college curriculum. The transportation group worked to envision ways to reduce emissions as a result of travel.

The buildings and grounds group developed commitments to reduce the energy consumption of campus buildings. Measures such as a solar photovoltaic array, upgrades to existing buildings and a commitment to LEED Silver Certification including a 30% reduction in energy usage for new buildings will be vital in meeting GHG emissions target levels.

Knowledge is a powerful tool and the integration of sustainability across the curriculum will empower students to make behavioral changes in their lives to become healthier and environmentally conscious individuals. The curriculum integration group developed strategies such as professional development instruction for faculty members, incorporating sustainability into student service, honors, and community service projects, and developing a Sustainability Advisory Board to further develop sustainability curriculum.

Scope three emissions resulting from commuting to and from campus by staff, faculty, and students is the largest portion of the GHG emissions for the college. It is also perhaps the most challenging issue to address for the working groups. The transportation working group took the problems associated with travel related emissions to task and proposed several initiatives including promoting rideshare and carpool programs, increasing online course offerings, and investigating reduced fare alternative transportation options.

Introduction

Amidst a long list of global crises, perhaps none is more challenging or imminent than global climate change. Climate change and its effects will not be isolated to the realm of environmentalism. Because climate change poses such complex issues that touch so many entities, we often look to institutions of higher education to educate the forward thinking leaders who must solve the array of problems associated with climate change.

Wake Technical Community College has answered the call to combat climate change by addressing Greenhouse Gas Emissions on campus and ensuring that each student is introduced to sustainable practices. Through this Climate Action Plan, strategies will be outline that will guide the college to a sustainable future that includes reducing GHG emissions to 2005 levels, and eventually to carbon neutrality.

The college has developed the following sustainability mission.

Wake Tech Community College
Sustainability Mission Statement

We understand that a healthy, sustainable society requires citizens who understand the consequences and balances between economic success, social equity and environmental conservation. Wake Technical Community College is therefore committed to promoting a culture of sustainability across the campus and throughout our community.

We will accomplish this by:

- Preparing students as engaged and responsible citizens by integrating sustainability topics, issues and applications into scholarship, career development and student life
- Promoting innovation, stewardship and leadership to transform sustainability principles and policies into effective practices
- Creating partnerships within the larger community that support sustainability principles, goals and practices
- Understanding and employing best practices in campus operations and services
- Acting as a clearinghouse for public education, outreach and resources

Greenhouse Gas Emissions Overview

In 2010 a Greenhouse Gas Inventory was produced by Moseley Architects recording the emissions generated by Wake Technical Community College for the years of 2005-2009. The data from the inventory serves as the benchmark for this Climate Action Plan. Clean Air Cool Planet's Campus Carbon Calculator was used to capture and quantify the emissions data to indicate how many metric tons (MT) of carbon dioxide equivalent ($eCO_{2)}$ was emitted into the atmosphere as a result of the operation of the college.

The chart below summarizes the four year trend for GHG Emissions.

Annual Greenhouse Gas Emissions for Wake Tech Community College

Year	Scope one Emissions (MT eCO_2)	Scope Two Emissions (MT eCO_2)	Scope Three Emissions (MT eCO_2)	Total GHG Emissions (MT eCO_2)
2005-2006	803	9,592	25,695	36,090
2006-2007	804	9,592	24,582	34,978
2007-2008	999	9,363	26,367	36,730
2008-2009	1,412	9,804	30,450	41,667
Total	**4,018**	**38,351**	**107,094**	**149,465**

Source: Wake Tech Greenhouse Gas Inventory Narrative

Greenhouse Gas Inventory Scope

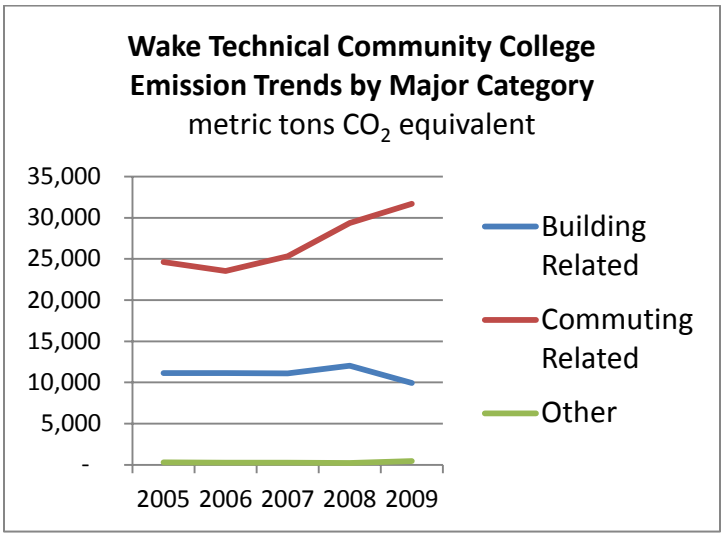
The scope of the inventory was based on guidelines from the ACUPCC. The boundary of the inventory included the Main Campus, the Health Sciences Campus, Northern Wake Campus, Public Safety Education Campus, Eastern Wake Education Center, and the Adult Education Center. WTCC also holds classes at facilities not under the College's operational control and were not included in the inventory.

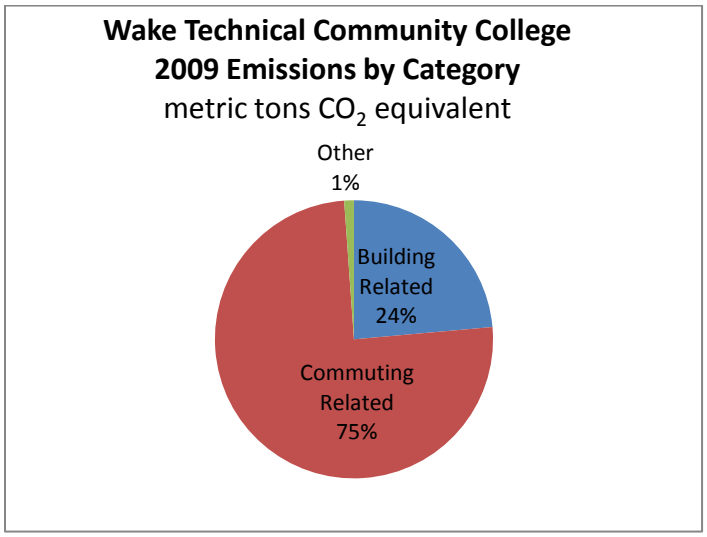
Scope One emissions include those occurring from sources that are owned or controlled by the college. Emissions included in scope one include on-campus stationary combustion of fossil fuels, mobile combustion of fossil fuels by college owned vehicles, and fugitive emissions that may occur as a result of leakage from refrigeration units.

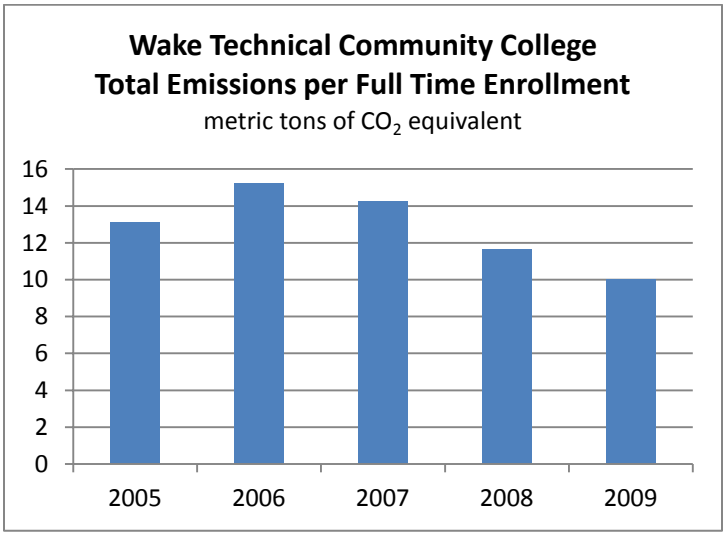
Scope Two emissions are indirect emissions generated in the production of electricity consumed by the college.

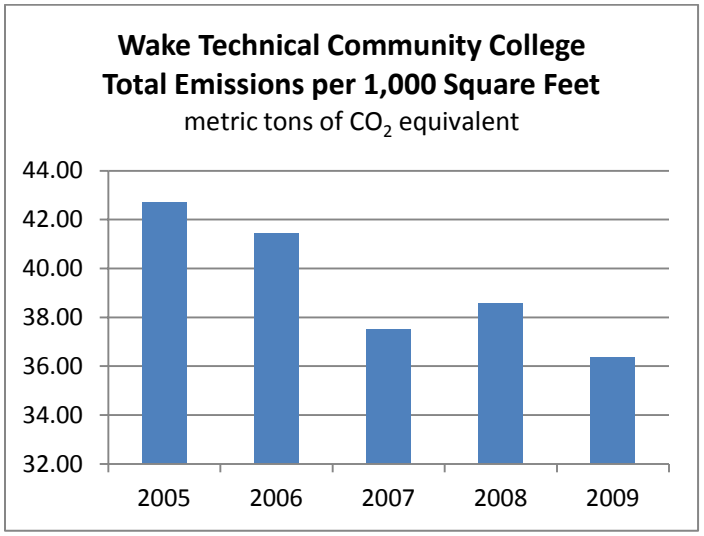
Scope Three emissions are all other indirect emissions that are a consequence of the activities of the college, but occur from sources not owned by the college. Scope three emissions include waste disposal, student, staff, and faculty commuting, college business travel and student travel related to college sponsored trips.

Greenhouse Gas Inventory Results









Source: Wake Tech Greenhouse Gas Inventory

Carbon Reduction Strategies for Energy Use in Buildings and Operations

As identified in the Greenhouse Gas Inventory prepared by Moseley Architects and approved by Wake Tech in September 2010, carbon emissions created by Scope One and Two energy usage activities represented 25% of 2009 greenhouse gas emissions.

Mitigating these emissions will require a series of full-scale mechanical and electrical renovation projects, typically performed every 20 years, which represents the typical life expectancy of building energy systems.

In addition, the College is planning to install 213 kw of photovoltaic panels on the roofs of Buildings A and D at its Northern Wake Campus in 2012. It is expected that this system will offset greenhouse gases by 1.65% over the base year 2008-09. Wake Tech's Climate Action Plan Buildings and Grounds Working Group is recommending the following goals and actions to reduce campus-related energy use.

Goals

- Reduce energy use on campus by performing full-scale mechanical and electrical renovations to building energy systems. Energy consumption will be reduced by 20% for each system renovated. By scheduling renovations over a 20-year period, Wake Tech will reduce per-person, energy-related, direct-carbon emissions on Wake Tech-owned campuses by an average of 1% each year for years 2012-2032, for a total reduction of 20%.
- Promote energy efficiencies and system upgrades on campuses leased by Wake Tech.
- Increase the use of renewable energy sources such as photovoltaic panels, to offset the greenhouse gases generated by the College.
- All new construction will be built to LEED Silver minimum standards with an expected energy use of 30% less than the current campus energy use rates.

Timetable to Implement Strategies

System renovations: 2012-2032
Photovoltaic installation on North Campus: 2012

Progress tracking

1. Using data from calendar year 2010 as a baseline, progress will be measured by tracking a reduction in total kBtu/sf/year and kBtuh/FTE/year.

This information will be collected once each year as part of Wake Tech's Annual Energy Use report to the State Energy Office.

Specific strategies

Strategy	Outcome	Measurement
Install 213 kw solar PV panels, North Campus	Reduce carbon emissions by reducing purchased electricity	Reduced purchased electricity and carbon emissions by 1.65% over the base year 2008-09
Renovate energy-using systems, as scheduled, in buildings owned by Wake Tech	Reduce electricity use by average of 1% per year, 20 years	Reduce per-person electricity use by a total of 20% over 20-year period
Promote energy efficiency and upgrades to systems in buildings leased by Wake Tech	Reduce electricity use, carbon emissions, and costs to Wake Tech	Reduce per-person and per-square-foot electricity use by 5% over 20 years

Carbon Reduction Strategies for Transportation

As identified in the Greenhouse Gas Inventory prepared by Moseley Architects and approved by Wake Tech in September, 2010, carbon emissions created by Scope Three transportation activities (specifically, commuting by students and employees) represented 75% of 2009 greenhouse gas emissions.

Mitigating these Scope 3 emissions will require a combination of policy changes, commuting alternatives, and education to foster shifts in behavior. Wake Tech's Climate Action Plan Transportation Integration Working Group is recommending the following goals and actions to reduce campus-related traffic by reducing the use of single-occupant commuter vehicles.

Goals

- Using a combination of transportation strategies, increased efficiencies and class/work schedules, Wake Tech will reduce per-person, transportation-derived, indirect carbon emissions on Wake Tech campuses by 5% each year for years 2012-2018.
- Using a combination of transportation strategies, increased efficiencies and class/work schedules, Wake Tech will reduce per-person, transportation-derived, indirect carbon emissions on Wake Tech campuses by 10% each year for years 2019 - 2030.

Timetable to Implement Strategies

Phase 1: 2012-2013
Phase 2: 2014 and ongoing

Progress tracking

1. Using data from January 1, 2012, as a baseline, progress will be measured by tracking a reduction in total vehicle miles traveled (VMT). Total VMT is defined as the total number of students plus employees (faculty + staff) on all Wake Tech campuses, multiplied by the average miles traveled to and from campus.

This information will be collected three times each year (May 15/Spring semester, August 15/Summer semester; and January 15/Fall semester usage).

Additional measurements will include increases in the number of students and faculty in online-only and hybrid (in-class plus online) courses; decreases in the number of parking spaces available as a function of square footage and turnover on all campuses; increased ridership on mass transit; decreases in directly financed travel for employees; increase the employees' use of alternative fuel cars by adding these cars to the fleet; and usage statistics for planned electric-vehicle charging stations.

Specific strategies

Phase One (2012-2013)

Strategy	Outcome	Measurement
Provide students and employees with more information about transit options, ridesharing and close-to-campus housing.	Reduce VMT by using website to encourage the choice of more-efficient options for transit and housing	Track bus ridership figures; analyze survey results
Install electric-vehicle plug-in stations on the North Campus	Provide visible statement of Wake Tech's commitment to energy efficiency	Measure hours/kWh that charging stations are in use
Provide preferential parking and infra-structure to encourage use of low-emission vehicles and ridesharing.	Provide visible statement of Wake Tech's commitment to energy efficiency	Overall reduction in VMT
Promote individual behaviors that reduce vehicle use (walk/bike, eat lunch on-site)	Promote awareness and behavior change; reduce VMT by encouraging the choice of more-efficient options	Overall reduction in VMT
Encourage positive behavior changes through curriculum integration and education	Using course curricula and steps outlined in the Curriculum Integration Plan, reduce VMT by effecting positive change in individuals' choices of transportation alternatives	Overall reduction in VMT
Set aside additional preferential parking for motorcycles and motor scooters	Encourage use of more efficient vehicles that use smaller parking spaces	Overall reduction in VMT
Encourage staff and faculty to combine activities, consolidate meetings and trips, and use conference-call technology	Improve overall efficiency and reduce VMT	Track reduction in directly financed travel miles and costs
Expand number of courses offered as online-only or hybrid (online plus classroom)	Reduce number of student/faculty trips to campus	Track increases in number of students/faculty in online courses
Improve course scheduling to run related courses back-to-back	Reduce number of student/faculty trips to campus	Overall reduction in VMT
Improve completion rates and offer more completion points through stackable credentials	Reduce the number of students repeating courses	Track the increase of students successfully completing courses with the highest failure rate
Provide reduced-fare public transit options for students and employees	Encourage use of public transit, reduce VMT	Number of reduced-fare passes distributed; overall reduction in VMT
Establish clear policies and encourage appropriate telecommuting for staff	Reduce vehicle emissions by reducing trips to campus	Overall reduction in VMT
Integrate campus staff initiatives to reduce VMT with student activity group (Students for	Create opportunities for engagement with students; leverage student	Overall reduction in VMT; increased student

Environmental Education)	efforts for WT initiatives	involvement and awareness

Specific strategies

Phase Two (2014 and ongoing)

Strategy	Outcome	Measurement
Install and promote the use of a comprehensive rideshare/carpooling program	Reduce VMT by students and employees	Collect rideshare data from online application: student/staff participation, VMT and CO2 reduction
Work with Capital Area Transit to expand bus stop locations, routes and park-and-ride lots to better serve Wake Tech students and employees on all campuses, and from campus-to-campus	Reduce emissions by improving transportation options for students and employees	Overall reduction in VMT; inclusion of WT in as participating member in regional planning
Expand Wake Tech's role in regional transit planning with Capital Area Transit (city) and Triangle Transit (regional)	Ensure that Wake Tech's transit needs are considered in future planning	Overall reduction in VMT; inclusion of WT as participating member in regional planning
Make transportation planning a priority in locating and constructing new college facilities (e.g., locate near transit and housing)	Reduce future emissions by providing transportation options for students and employees	Overall reduction in VMT
Promote expansion of bikeways, safe bike lanes on public roads, and the use of bicycles for commuting to campuses	Reduce emissions by providing transportation options for students and employees	Overall reduction in VMT; measure increase in bikes on campuses
Continue pursuing grants to help address transportation solutions	Obtain resources to continue sustainability planning and results	Acquisition of resources; overall reduction in VMT
Measure and monitor commuter patterns on all Wake Tech campuses	Contribute key metrics to support regional as well as internal planning processes	Overall reduction in VMT; coordination of efforts across campuses
Transition campus fleet vehicles from fossil fuel to clean-energy fuels	Reduce emissions using clean-fuel technology	Track miles traveled by clean-fuel vehicles

Curriculum Integration

Goals

1. Integrate climate and sustainability issues into the curriculum at Wake Tech to promote awareness, knowledge and action;
2. Encourage innovation in green practices and technologies;
3. Provide opportunities for employment; encourage community involvement; and
4. Create climate-solution leaders.

Timetable

Integrating sustainability into the curriculum is an ongoing process, already underway.

- Phase 1 (2012-2013) requires an inventory of the current courses to identify those that are "sustainability focused" and those that include "sustainability content," plus a program of professional development to raise awareness among faculty and staff, thus providing the tools for faculty to bring sustainability into the classroom.
- Phase 2 (2014 - ongoing) includes the development of new courses and the re-alignment of current curricula. Wake Tech will also assess progress, provide ongoing professional development, and continue to refine curricula for existing and new courses as the integration of sustainability across the curriculum becomes "business as usual."

Progress tracking

Success of curriculum integration strategies will be measured by completing the tasks as described in the timetable; increasing the number of courses identified as sustainability-focused or containing sustainability content; and reviewing the results of surveys of students and faculty to determine awareness of sustainability-related issues, interest in "green" education and job-training programs, and career-placement results.

Additional success measures will include overall reduction in energy use and corresponding increase in efficiencies, as measured by BTUs per person (students + employees).

Specific strategies

Phase One (2012-2013)

Strategy	Outcome	Measurement
Inventory current curricula to determine which courses are "sustainability focused" or include "sustainability content;" identify these in course catalog and descriptions	Establish baseline of current courses	Quantity of courses identified
Provide professional development training each semester for all faculty (how to integrate sustainability into the classroom) through seminars and regular communications about resources	Generate interest, raise awareness, provide specific skills needed for curriculum development	Regularly survey faculty to determine effectiveness of PD training; identify additional development needed
Through professional development and communications, encourage faculty to add sustainability preferences to student service, community service and honors projects	Students will increasingly choose sustainability-focused projects	Survey faculty and/or students to quantify number of projects
Make resources on sustainability a priority for library acquisitions; communicate new acquisitions	Ensure that resources are available for faculty and students to study, learn, engage and develop relevant skills to solve problems and develop new careers	Inventory and track increases in available library resources
Acquire, schedule, promote regular showings of sustainability-focused films; encourage student participation in reading groups and learning communities.	Educate and engage faculty and students; inspire debate that leads to solutions	Tally numbers at film showings; survey to learn effectiveness
Create annual sustainability awards for faculty, students and staff	Raise awareness and recognize those who make outstanding contributions to solving challenges	Track numbers of eligible entrants and projects
Engage students in project-based learning activities such as building a CO2 "cube" structure on campus	Engage students and faculty in a hands-on learning experience that demonstrates carbon-footprint impacts and raises awareness of responsibilities and consequences.	Survey students and staff
Engage students in WT sustainability efforts and on-campus facilities and grounds projects	Increase student involvement and engagement with real-world sustainability projects	Track efficiencies recommended and created by students
Create sustainability mission statement and logo	Raise awareness; brand Wake Tech as a sustainability-focused, future-forward college	Successful introduction and use of the logo and mission statement
Re-organize the Wake Tech web site to create a sustainability portal; and ensure that Wake Tech's innovation, leadership, commitment and "green mission" are all regularly and	Create a sustainability portal, act as a clearinghouse for resources and information, and raise awareness within the Wake Tech	Successful completion of re-design; track visitor and use statistics

reliably communicated to the college community and the public	community as well as the general public	
Create permanent Sustainability Advisory Board (administration/faculty/students)	Continue to initiate projects, monitor and manage Climate Action Plan	Monitor, track progress of completed initiatives

Phase Two (2014-ongoing)

Strategy	**Outcome**	**Measurement**
Create two new General Education courses on sustainability for curriculum students	Raise awareness and provide a baseline learning experience to foster innovation and understanding of sustainability in economic, environmental and social spheres	Successful introduction of new courses; number of students competing course requirements; feedback from students and faculty
Create additional specific green-topic courses for curriculum and continuing education courses	Offer students the opportunity to learn and develop skills that will allow them to choose and enter sustainability-focused careers	Successful introduction of new courses; number of students competing course requirements; feedback from students and faculty
Continue to offer and expand professional development training for faculty	Provide specific skills needed for curriculum development	As above
Continue to review and evaluate implemented strategies from Phases 1 and 2	Ensure that Phase 1 and Phase 2 strategies are successful	As above
Encourage creation of "eco-representatives" among students, to serve as liaisons between student/staff/faculty groups	Raise awareness of challenges and develop solutions across various groups to improve WT efforts	Number of students participating; number of positive changes to policies and practices