Elon University

Climate Action Plan

Spring 2010

Executive Summary

Elon University believes that one of the most pressing issues facing students, indeed all citizens, today is global environmental change. It is imperative that we teach our students about environmental change, human interactions with the earth and how they can be good stewards of this earth so that our mission of producing "global citizens and informed leaders motivated by the common good" is accomplished. This belief and vital mission is what led President Lambert to create an Environmental Advisory Council in 2004 with faculty, staff and student representation. After researching environmental sustainability, including Elon's current practices and additional opportunities, the Council created Elon's Sustainability Master Plan. The overarching goal of Elon University's Sustainability Master Plan (2006-2007) is "to minimize our impact on the global environment by establishing a carbon neutral university." The target for doing so was identified as within the next 30 years, so by 2037.

As an important step toward reaching carbon neutrality, Elon's first greenhouse gas (GHG) emissions inventory was conducted for fiscal year (FY) 2008 and serves as the baseline from which to measure reductions in emissions. The net GHG emissions for FY 2008 were 40,951 metric tons of carbon dioxide equivalents (MTCDE). The largest contributor to emissions was energy consumption at 56.2% of emissions followed by transportation with 40.9% of emissions. In FY 2009, net GHG emissions decreased by 3.72% to 39,428.5 MTCDE. Energy consumption remained the largest contributor to emissions at 55.8% of emissions with transportation next at 40.9% of emissions. The decrease in emissions was mainly due to a decrease in energy consumption.

In the past 10 years, Elon University's campus has grown by about 1 million square feet; the student and faculty and staff populations have increased, as well. The campus will continue to grow, which will inherently affect the university's GHG emissions and make reductions in emissions more challenging. Taking into consideration an estimated growth rate of 3%, emissions in 2037 are projected to be 93,034 MTCDE. This is the business as usual (BAU) case without implementation of reduction strategies. It clearly indicates the need to quickly begin emission reduction projects and continue them to work toward the goal of carbon neutrality. The BAU case also highlights the importance of planning for carbon neutrality with future campus expansions.

Emission reduction strategies and goals have been identified in four categories: energy, transportation, solid waste and other sources (fertilizer application, refrigeration and wastewater). Future technologies will also contribute to Elon's long-term emission reductions. Energy and transportation are the primary focus given they are the main contributors to Elon's emissions. Energy strategies include energy efficiency and conservation in existing buildings, energy conservation through behavior modification, green building, standards and policies, green information technology, renewable energy and the Renewable Energy and Energy Efficiency Portfolio Standard (REPS) in North Carolina.

Transportation strategies address the following sources of transportation emissions: commuting, the university fleet, faculty/staff and athletic team travel and study abroad. Strategies for commuting include increasing the use of alternative transportation and increasing the fuel efficiency of commuter vehicles. Improving the fuel efficiency of the university fleet is the primary strategy for the university fleet. Strategies for faculty/staff and athletic team travel include virtual meetings, alternative transportation and scheduling. Study abroad is one category of emissions that will not be actively reduced. However, there are steps that can be taken to educate students about the impact of study abroad, to develop creative ways to offset study abroad travel emissions and to identify logistical opportunities for efficiency.

Offsets are a necessary component of reaching carbon neutrality. However, Elon intends to utilize offsets *only* after reducing emissions on campus as much as possible through the strategies outlined in this plan. Offset strategies will be investigated to identify the best options taking into consideration the desire for high-quality offsets that are as local as possible.

The goals identified for each emission category are summarized in Table 1. The reduction goals are per emission category from 2037 emissions.

Emission Category	**Reduction Goal**
Energy Reductions	
Energy Efficiency and Conservation (includes T&D)	20%
Energy Conservation through Behavior Modification	10%
Green Building	4%
Renewable Energy	30%
Renewable Energy & Energy Efficiency Portfolio Standard	25%
Future Technologies (based on 2037 projected total)	12%
Transportation	
Commuting – Alternative Transportation	20%
Commuting – Fuel Efficiency of Commuter Vehicles	40%
University Fleet	40%
Faculty/Staff and Athletic Team Travel	14%
Study Abroad	0%
Solid Waste	80%
Other Sources (fertilizer, refrigeration, wastewater)	60%

Table 1: Summary of Reduction Goals

If the strategies outlined are implemented and the goals above met, Elon's gross emissions are estimated to be about 32.2% *lower* in 2037 than in FY 2008. Projected 2037 emissions will be reduced by approximately 65,238 MTCDE or 70%. During this time, the campus is estimated to grow over 2 million square feet.

The remaining amount (27,668 MTCDE) will need to be offset to achieve carbon neutrality. Of the remaining amount, 19,156.9 MTCDE is projected to be emissions from study abroad travel. Using a rough estimate of $15/ton in 2008 with a 5% yearly increase, it would cost Elon approximately $1.71

million to purchase offsets for the remaining emissions in 2037 to reach carbon neutrality. A yearly offset purchase will be necessary to maintain carbon neutrality.

Near-term interim emission reduction targets for net emissions will guide Elon's progress toward the goal of carbon neutrality in 2037. These targets calculated from a FY 2008 baseline are as follows:

2015 – 5%

2020 – 18%

It is important to note that there are many factors that could affect Elon's carbon emissions and the ability to meet the goals and interim targets set forth in this plan. Most notably, campus growth estimates and economic conditions. Additionally, many of the goals identified are dependent upon factors outside of the university's direct control. Periodic reviews and updates will be necessary to take evolving external factors and emerging technologies into consideration.

Further incorporating sustainability and climate change into education, research and community outreach will contribute toward creating a culture of sustainability, which will foster emission reduction efforts. To that end, several recommendations have been made, such as investigating the development of a peer education program on sustainability for faculty and staff, investigating the feasibility of a new major in sustainability or sustainability science or studies, creating an award for outstanding research in sustainability-related research and strengthening and further developing community service opportunities related to climate change and sustainability through the Kernodle Center for Service Learning and Office of Civic Engagement.

This plan will be funded through several mechanisms, such as annual capital project requests for efficiency improvements, third party partnerships for large projects and rebate and grant programs (when applicable). It is also recommended that creating a Green or Sustainability Fund dedicated to emission reduction and sustainability projects be investigated. The progress of this plan will be tracked through Elon's annual GHG emissions inventory. As previously noted, Elon will continue to develop strategies and stay abreast of new technology developments as well as other external factors, which could further emission reduction goals, and revise this initial Climate Action Plan accordingly.