
Towards carbon neutrality and environmental sustainability at CCSU

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Abstract

Purpose – The purpose of this paper is to provide information about past and present efforts undertaken at Central Connecticut State University (CCSU) to reduce its carbon footprint and to institute a campus culture centered on the principles of environmental sustainability. Provide some recommendations to other institutions of higher education interested in reducing their own carbon footprint.

Design/methodology/approach – This manuscript will first discuss past attempts at implementing ecologically sustainable practices at CCSU. Then, it will speak about current successes and close with a discussion about future goals for the university.

Findings – Instituting carbon neutrality and sustainability programs at institutes of higher education requires support from the faculty, administration, students, and facilities management staff.

Practical implications – The information in this paper will provide useful information to other institutions of higher education that are seeking to institute carbon reduction and sustainability programs.

Originality/value – This paper is original in that it provides details about CCSU's carbon neutrality efforts and recently initiated sustainability program that only someone intimately involved would know. Its value lies in helping others know of methods that have been successful in reducing a campus' carbon footprint.

Keywords Carbon, Recycling, Energy management, Universities, United States of America

Paper type Case study

I. Introduction

Global climate change is one of the most critical issues facing the inhabitants of Earth today (Schneider *et al.*, 2002). It has been demonstrated that human activities are resulting in ever increasing contributions to the heat-trapping greenhouse gases of the Earth's atmosphere (Baumert *et al.*, 2005; Speth, 2004). The USA is the highest total greenhouse gas emitter, accounting for 20.6 percent of the world's total emissions in 2000 (6,928 million metric tons of carbon dioxide equivalent) (Baumert *et al.*, 2005). The governmental and institutional entities of the USA have an ethical responsibility to address this challenge, to ensure that our generation significantly reduces its carbon footprint so that future generations can enjoy a stable environment and flourishing existence.

There are more than 4,000 post-secondary schools in the USA (Smith, 1993), with approximately 25 million students enrolled at these institutions. College campuses contribute significant amounts of carbon dioxide and other greenhouse gases to the atmosphere that feed the global climate change crisis. Since the 1960s students and



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staff members at many of these institutions have promoted and participated in efforts to reduce their campus carbon and overall ecological footprints (Venetoulis, 2001). These efforts have waxed and waned, and as of late are coming back again. Throughout the years, campuses have continued to grow, as has their use of electronic devices (Rappaport, 2008). Many of the larger universities produce greenhouse gas emissions equivalent to small cities (Knuth *et al.*, 2007).

Colleges and universities have missions that encompass a moral responsibility to institute sustainable practices and to address global climate change (Knuth *et al.*, 2007; Filho, 2000). Likewise, their mission to educate tomorrow's leaders enables them to have a significant, positive impact on efforts to reduce humanity's climate footprint (Orr, 1991; Rappaport and Creighton, 2007). In addition to the educational impacts, universities also hold significant financial influence. Some universities have endowments that rival the total gross domestic product of nations the size of Chile (US Department of Education, 2007). With their access to tomorrow's leaders and their buying power, universities have it within their ability to lead the nation in addressing the global climate change crisis.

This paper is about Central Connecticut State University's (CCSU) past, present, and future efforts to reduce its carbon footprint and instill a culture of environmental sustainability. The observations and views shared here are those of a faculty member who was appointed by the president to the university's Sustainability Council (SC) and is founder and faculty chair of the CCSU Global Environmental Sustainability Action Coalition (GESAC), a group of students, faculty, administrators, staff, and alumni whose mission is:

[...] to educate, empower and motivate the CCSU community; civic, business, and political leaders; and Connecticut residents to embrace our ethical responsibility as global citizens to adopt a sustainable lifestyle.

The hope is that the information and thoughts shared here will help others in their efforts to move their institutions of higher learning towards better environmental stewardship and leadership.

II. Central Connecticut State University attributes

CCSU is located in New Britain, Connecticut, a city with a population of approximately 72,000 (Figure 1). The campus is located less than 15 minutes from Hartford, Connecticut and New York City and Boston are within a 90 minute drive.

CCSU was founded in 1849 and is the oldest public institution of higher education in Connecticut. The campus sits on 165 manicured acres. It is accredited by the New England Association of Schools and Colleges and is classified as a Master's College and tier I University by the Carnegie Institute. CCSU offers 100 majors in more than 80 fields, with academic programs at both the undergraduate and graduate level. During the 2007-2008 academic year, there were 432 full-time faculty members, 78 percent of whom possessed the terminal degree in their field, and approximately 453 part-time instructors (Table I). CCSU is home to nine residence halls that provide housing for approximately 20 percent of all students.

III. The road previously traveled

In 1969, a year before the first Earth Day, CCSU students and faculty hosted "Tree Frog Day". This may be one of the first known organized sustainability initiatives to

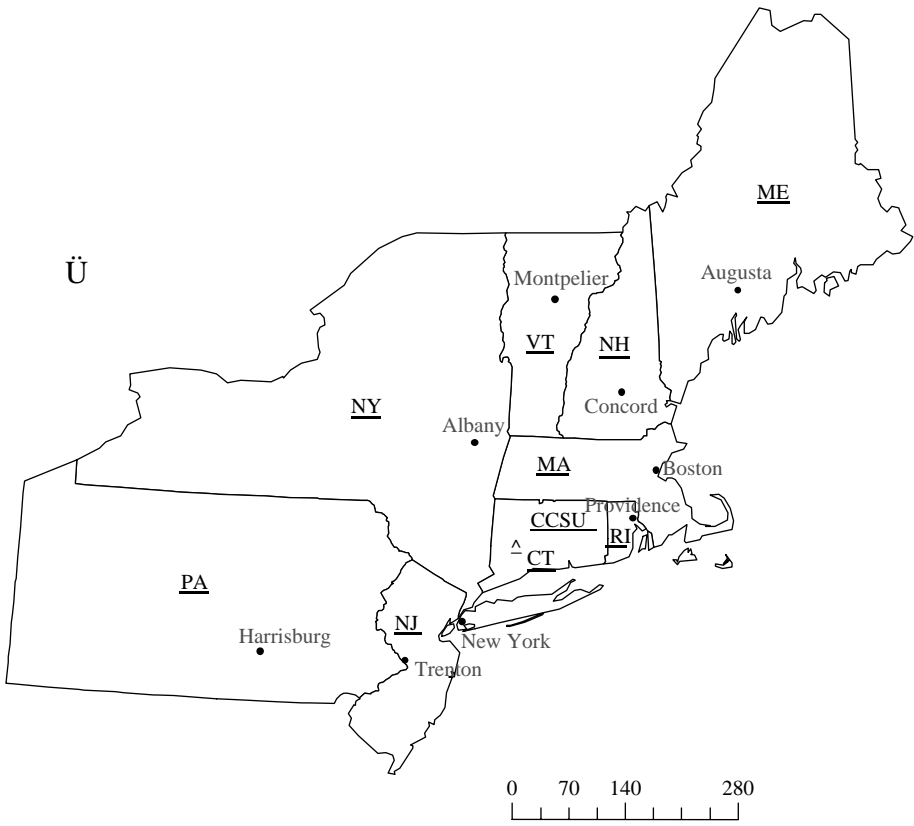


Figure 1.
Location of Central
Connecticut State
University

Note: New Britain, connecticut

Category	Quantity
Campus size (acres)	165
Residence halls	9
Office and classroom buildings	32
Full-time faculty	432
Part-time faculty	453
Full-time students	7,636
Part-time students	3,885
Undergraduate students	9,203
Graduate students	2,318

Table I.
Central Connecticut State
University
by the numbers

Note: Spring 2008

have taken place on campus. Since then, student groups, particularly the CCSU Geography Club, have sporadically hosted Earth Day events on campus throughout the years; but it was not until recent times that an upsurge of support for sustainability has taken hold at CCSU.

In 2007, CCSU completed an audit of the environmental impacts of campus operations and administrative instruments (i.e. energy use, air emissions, green house gas emissions, solid waste disposal, recycling, water use, purchasing standards, hazardous waste, chemical waste, building design standards, construction standards, property maintenance, landscaping, pesticide use, transportation systems, and food services). One of the main findings of this audit was the realization that CCSU has been involved in sustainability and carbon reducing initiatives for years.

One of these efforts was the construction, in 2003, of a new state-of-the-art Energy Center with cogeneration capabilities. This energy plant is more efficient and cleaner-burning than the 50-year-old facility it replaced and therefore emits significantly less carbon into the atmosphere.

As of 2006, CCSU had a recycling rate of 31 percent. Had it participated, this would have placed it in 13th place out of the 45 colleges that participated in the 2006 nationwide competition called Recyclemania. However, at this time, recycling was still severely lacking in offices, classrooms, and residence halls.

CCSU has also experienced some pitfalls when it comes to recycling. One problem was that recycling efforts have been run by kind-hearted student volunteers who had other responsibilities – classes, jobs, exams, families, etc. As a result, these recycling efforts usually resulted in unintended lapses. Ultimately, all the early efforts to recycle on campus failed.

CCSU has been successful in reducing its carbon footprint in other ways. Some of the buildings on campus have energy efficient lighting, motion-sensored fixtures, and daylighting. Also, prior to the completion of the 2007 audit, CCSU had already enacted water conservation measures across campus, installing water meters at each building and parking garage. About 56 percent of all residence hall rooms have low-flow shower heads, faucets, and toilets.

IV. Current pathways

CCSU's current journey towards climate neutrality began immediately after the kick-off event for focus the nation that took place in early September 2006. Focus the nation was a major educational initiative that coordinated teams of faculty and students at over a thousand colleges, universities, and high schools in the USA, to collaboratively engage in a nationwide, interdisciplinary discussion centered on the theme of "Stabilizing the Climate in the 21st Century."

Immediately upon returning to campus from the kick-off event, the author founded the CCSU Climate Action Coalition (CAC), a group of students and faculty whose goal it was to educate and motivate governmental officials, university and civic leaders, and all citizens to eliminate human contributions to global climate change. Within weeks thereafter, at the end of September 2006, CCSU President Jack Miller convened the President's Advisory Committee on Environmental Sustainability (PACES), to which the author was appointed (Table II). The mission of PACES, as stated by President Miller, was to:

[...] seek to have the University community embrace environmental sustainability as an institutional way of operating. We will work to minimize our impact on the environment so that we leave a better and more balanced ecosystem. We are committed to the principles of Leadership in Energy and Environmental Design (LEED), addressing green space preservation and developing a campus-wide recycling program. The committee will

endeavor to have the University nationally recognized as a leader in environmental sustainability.

In late November 2006, President Miller became the fourth university president in the USA to officially endorse focus the nation. Shortly thereafter, he also agreed to serve as the Honorary Chair of the CAC. Then, in mid-March 2007, the author was chosen by The Climate Project (founded by Vice President Al Gore) to serve as a “climate change educator.” Around this time the author created a new course offering at CCSU called Energy Resources and Climate Change. Following through with their missions, the CAC and PACES began hosting meetings and discussions, and presenting at numerous events on and off-campus about global climate change and environmental sustainability.

In August 2007, President Miller became a charter signatory of the American College and University Presidents Climate Commitment. As such, he has committed CCSU to doing its part to address global warming by agreeing to neutralize greenhouse gas emissions generated from campus operations. Since signing this agreement, President Miller has made it a goal of the university to accelerate research and educational efforts aimed at empowering our students and the citizenry of Connecticut with the knowledge they need to help re-stabilize the Earth’s climate. At the end of January 2008, the CAC hosted the Inaugural Global Environmental Sustainability and Climate Change Symposium: Raising Awareness and Promoting Change. This event was coordinated with simultaneous teach-in efforts at more than 1,800 other venues across America. The CCSU Symposium was one of the largest in the nation. Nearly, 2,000 students, faculty, and citizens from throughout New England came to engage political, business, civic, and academic leaders in discussions about environmental sustainability and global warming. At the conclusion of this event the CAC realized its organization was about more than just climate change and amended its name to the CCSU GESAC.

In March 2008, PACES submitted the “CCSU Institutional Plan for Environmental Sustainability” to President Miller. He endorsed this plan and sustainability has become a part of the university’s mission. As such, CCSU has been given the charge to consider how it can reduce its consumption of natural resources to lessen the impact of overconsumption typical of developed countries (Baltz, 1999). Since then, recycling containers have been placed in every building on campus for the collection of aluminium cans, glass bottles, and mixed paper. A major emphasis of the plan is to move CCSU towards carbon neutrality.

Resource	Internet address
CCSU Environmental Sustainability Council	www.ccsu.edu/ccsusustainability/
CCSU Global Environmental Sustainability Action Coalition	www.ccsu.edu/gesac
American College and University Presidents Climate Commitment	www.presidentsclimatecommitment.org/index.php
Focus the Nation	www.focusthenation.org

Table II.
CCSU environmental
sustainability
information

By June 2008, President Miller had changed PACES from a temporary “committee” to a standing “council” of key stakeholders in CCSU sustainability. During Summer 2008, a committee created by the CCSU Dean of Graduate Studies was charged with developing the “rationale for a Master’s degree in global sustainability” (The committee submitted its report in late August 2008) Also during the Summer 2008, CCSU purchased two hybrid vehicles for use by university faculty and staff.

On September 15, 2008 the newly created CCSU SC submitted CCSU’s first greenhouse gas emission inventory to the Association for the Advancement of Sustainability in Higher Education. This marked a cornerstone in CCSU’s steps towards carbon neutrality, as it was the first time that the university took stock of the assessment of its carbon footprint. This inventory established the carbon benchmark, the point from which the institution can truth check its journey.

CCSU took many strides toward carbon neutrality during 2008. In total of 1,720 new recycling containers were placed throughout campus and a new system was instituted by facilities management staff for the collection and recycling of corrugated cardboard at all university buildings. These new recycling processes are expected to result in the collection of approximately 100 additional tons of recyclables per year, which will equate to a reduction of approximately £654,800 of carbon emissions (US EPA, 2008). The facilities management division purchased two Toyota Prius hybrid vehicles resulting in the reduction of approximately £585 of carbon emissions per year (US EPA, 2008). Another program that has been instituted by the facilities management division is their “Green Payday” program. On paydays, they let their fleet of vehicles lie idle and walk to all their functions. This results in the elimination of approximately 300 miles of driving each payday (7,800 miles per year), reducing the campus’ carbon emissions by £6,620 per year (US EPA, 2008). Also worth noting is the one metric ton of carbon offsets that were provided to CCSU by Sterling Planet™ in January 2008 – the first carbon offsets ever received by CCSU. Other measures realized on the CCSU campus during fiscal year 2008 include the installation of 46 new low-flow shower heads in two of the residence halls, 151 low-flow sink facets in various campus buildings, and the installation 108 low-flush toilets in various campus buildings. The carbon reduction realized by these retrofits has yet to be calculated. One of the most significant accomplishments was the adoption of new campus building construction standards that require new buildings meet LEED standards (Kates *et al.*, 2005). This is particularly significant considering that approximately 40 percent of all carbon dioxide emissions produced in the USA comes from buildings (Bowyer, 2007; Sackett, 2007).

V. The road ahead

CCSU is pressing on, with new goals and aspirations that will continue to take it further down the road toward becoming a carbon neutral and sustainable campus. For the upcoming academic year, CCSU has set the following goals:

- Request the hiring of a campus sustainability coordinator.
- Create a campus sustainability education campaign and web site.
- Increase waste reduction, reuse, and recycling systems throughout campus.
- Implement “green” catering and food services options.
- Install rainwater holding tanks throughout campus that can be used to irrigate campus grounds.

- Meet the next goals of the Presidents Climate Commitment (i.e. develop a climate action plan with target date and steps to achieve university climate neutrality).
- Address the “green” personal transportation needs of CCSU community members.

The goal for CCSU sustainability, as stated by one of the SC co-chairs Professor Abigail Adams, is “small footprint, big contribution.” This contribution includes sustainable infrastructures and innovations, policies and institutional practices; graduates and public professionals who will help future generations not only meet their needs, but thrive.

In closing, here are some recommendations. First, make sure that your facilities division shares ownership and credit for campus sustainability efforts. This step is both practical and just. The facilities employees are the ones in the front lines, implementing and operating many of the sustainability measures. It is important to bring faculty and facilities staff together in this effort, to bridge the gap that often separates these two groups on a college campus.

Second, be sure to get the support of the campus administration and student leaders. At CCSU, it was a real plus to have the support of President Miller. Because of this commitment, we had staff and a budget.

Third, be patient. Most of the changes required are not technical fixes. Many of the challenges related to creating an environmentally sound campus are socio-cultural in nature, requiring change in human practices (Hartmann, 2004). To achieve this, the SC had an inclusive membership, consisting of members from all sectors of the campus community and also from the town (New Britain, Connecticut) as well as major vendors. The SC has made all decisions to date by consensus. As a result, the SC has been able to address some real areas of contention and difference, and still come to agreements that all members could support.

Last, beat your own drum. Be sure to publicize your successes to the campus community and beyond. It helps you gain recognition, acknowledgement, and credibility. This is important when you are seeking to change embedded socio-cultural processes. It is essential for other organizations and universities to learn about what you are doing. It gives them confidence to strike out with their own efforts to institute efforts to reach carbon neutrality and environmental sustainability.

The author has found that serving on the SC and the GESAC has been inspirational. New alliances and friendships have been formed on campus and throughout New England that have resulted in more opportunities to add a deeper shade of green to campus operations and student learning.

While CCSU, like many universities throughout the USA, has taken steps to measure and reduce its carbon footprint, there is still much work to be done. For colleges and universities to realize their carbon neutrality goals, they will have to change systemically.

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