



Norwalk Community College

NCC CARES Progress Report 2009-2014

Sustainability Narrative



NORWALK COMMUNITY COLLEGE

Prepared by NCC's Committee for Active and Responsible Environmental Sustainability (NCC CARES)

NCC Sustainability Narrative: 2009-14

EXECUTIVE SUMMARY

On Earth Day, April 22, 2009, Norwalk Community College President David Levinson signed the American College and University Presidents Climate Commitment (ACUPCC). Since that time, the college, principally through its Committee for Active and Responsible Environmental Sustainability (NCC CARES), has worked to fulfill the two principal ACUPCC commitments of climate neutrality and the integration of concepts of climate change and environmental sustainability into the learning experience of its students. The college has successfully implemented a wide range of actions to address these two overarching goals. While much has yet to be done and a much greater emphasis still needs to be placed on measures that will directly mitigate our greenhouse gas emissions, the college has made important first steps towards fulfilling its climate commitment. Thirty discrete actions have been taken that have not only reduced the college's carbon footprint per square foot of building area, but also increased the number of climate-related course offerings to its students.

Building Efficiency

Even though NCC's overall greenhouse gas (GHG) emissions increased from 2009-12 (Figure 1), the college's *emissions per square foot* of building space have actually *decreased* since 2011 (Figure 2). This decrease can likely be attributed to two factors: 1) a new 55,000 square foot facility, which was opened in 2011, earned a LEED Gold designation. The superior energy efficiency of this building has raised the overall efficiency average of the three campus structures, and 2) the increased usage of high efficiency lighting throughout the campus' three buildings and the installation of an energy management system into one of the older buildings.

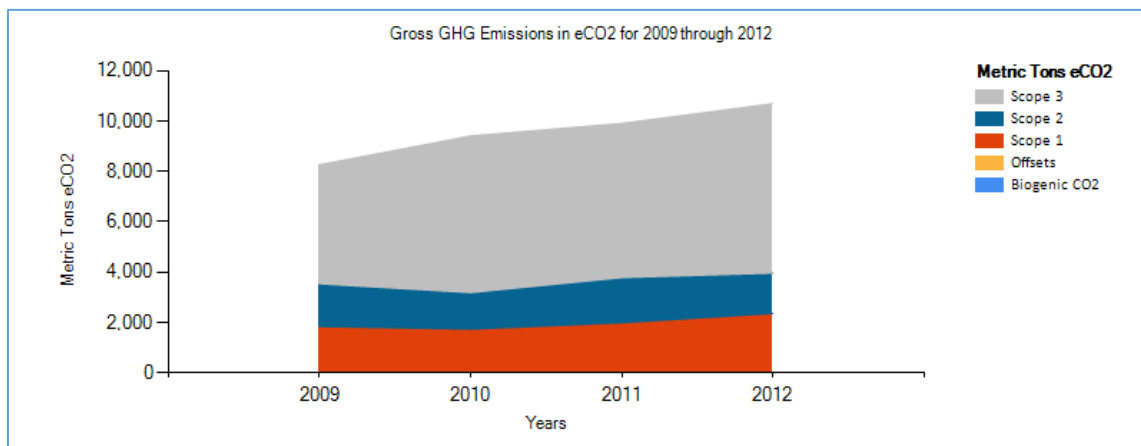


Figure 1: Overall GHG emissions, 2009-12.

[Scope 1](#) emissions are direct GHG emissions from sources that are owned or controlled by the college. Scope 1 includes emissions from fossil fuels burned on site, emissions from college-owned or college-leased vehicles, and other direct sources. [Scope 2](#) emissions are indirect GHG emissions resulting from the generation of electricity, heating and cooling, or steam generated off site but purchased by the college. [Scope 3](#) emissions include indirect GHG emissions from sources not owned or directly controlled by the college but related to the college's activities. Scope 3 GHG emission sources currently required for federal GHG reporting include employee travel and commuting, contracted solid waste disposal, and contracted wastewater treatment.

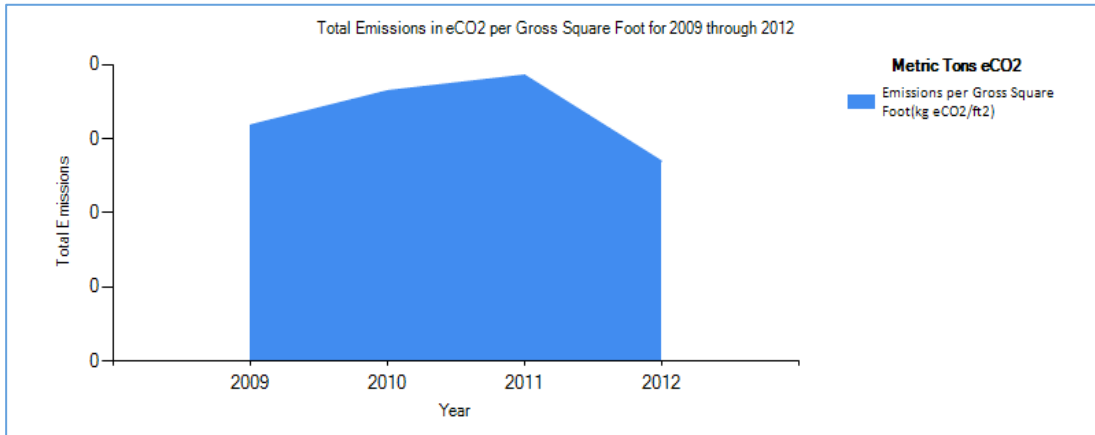


Figure 2 Total emissions in eCO2 per gross square foot, 2009-12.

Environmental Sustainability in Curricula

To address the college's second principal goal of integrating concepts of climate change and sustainability into its students' learning experience, NCC has increased its offerings of courses that focus primarily on issues of climate change and environmental sustainability (Figure 3). The chart below shows the increase in the number of course sections that address issues of sustainability as their *primary learning outcome*. There are five of these courses that fall into two main disciplines: environmental science (ES) and sustainable building construction (CTC).

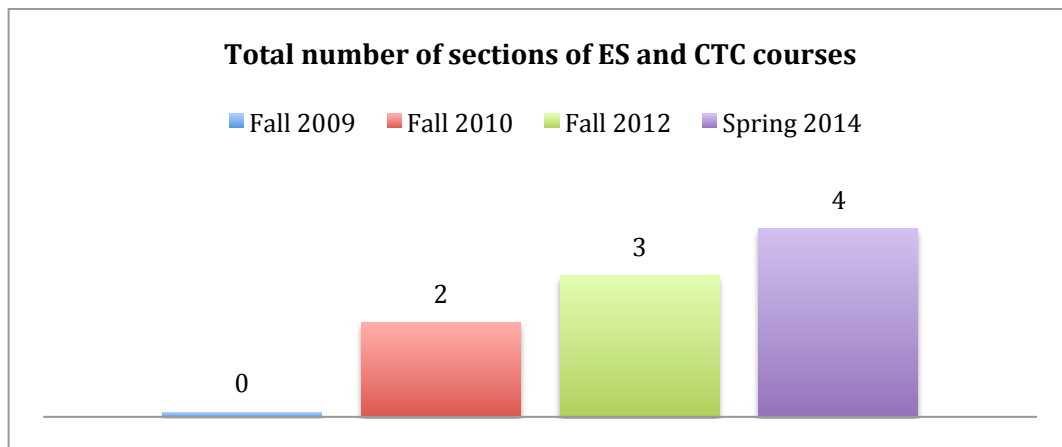


Figure 3 Total number of environmental science and sustainable construction technology courses by section. The environmental science courses include BIO 180, Principles of Environmental Science and BIO 181, Environmental Science. The construction technology courses include CTC 130, Alternate and Renewable Energy; CTC 131, Building Efficiency Auditing; CTC 132, Sustainable Energy for Residences and Businesses.

In addition, through NCC CARES' Integrating Environmental Sustainability Across Disciplines (IES) program, the college has encouraged its entire faculty to integrate concepts of climate change and environmental sustainability into their courses. In the past year, faculty members from such varied disciplines as history, philosophy, English as a second language, culinary arts, business marketing, graphic arts, sociology, and speech communication have done so (Figures 4 and 5). To receive IES recognition, the faculty member is required to devote a minimum of one session (one hour and twenty minutes) per semester to environmentally related content. At the end of the semester, the participating the faculty member submits a document(s) to demonstrate the students' learning in this area. These submissions may come in various formats, including, but not limited to, essays, presentations, portfolios, and exams.

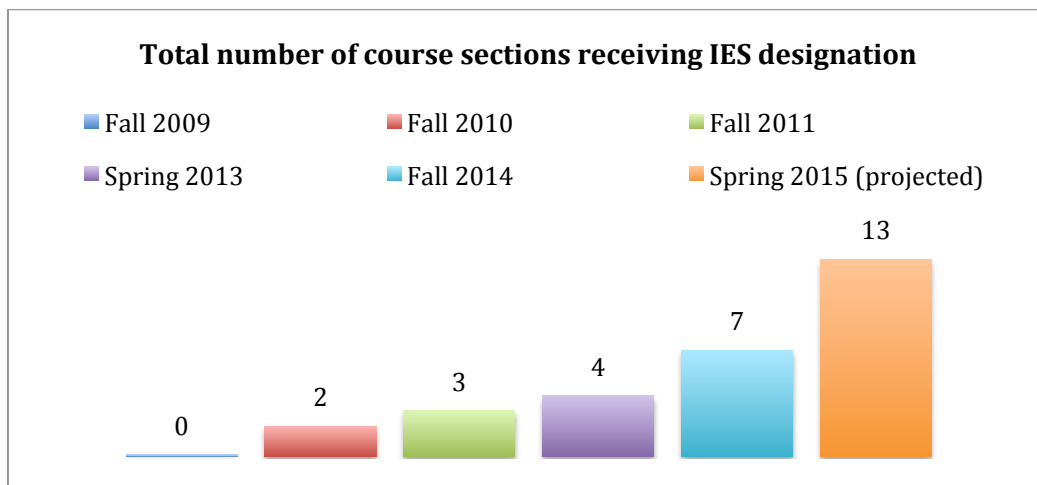


Figure 4 The total number of sections in credit-bearing courses that have received the IES designation.

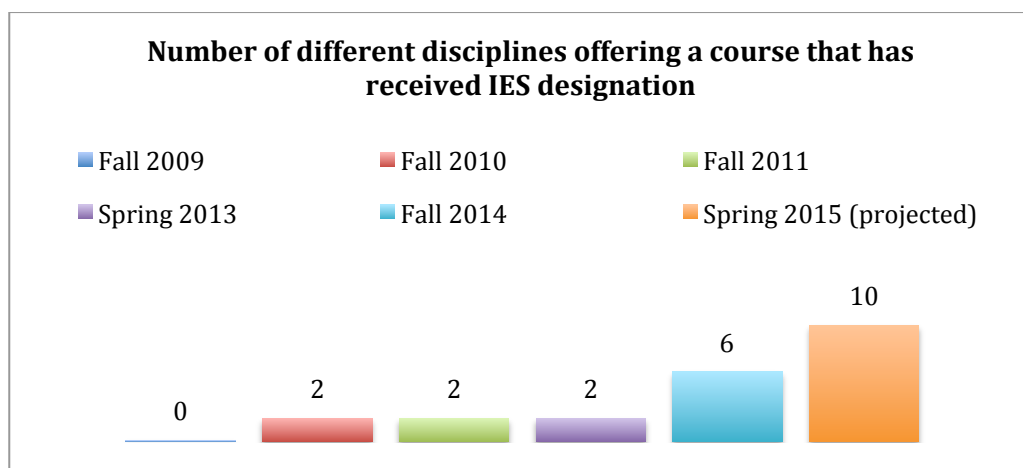


Figure 5 The total number of different disciplines offering a course that has received the IES designation. For spring '15, those disciplines will include biology, construction technology, history, philosophy, English as a Second Language, culinary arts, business marketing, sociology, graphic arts, and freshman seminar.

NARRATIVE OF ACTIONS

NCC's Climate Action Plan (CAP), which was adopted in 2012, is divided into seven areas that are identified in the schematic below (Figure 6). The five areas that are placed horizontally relate, broadly speaking, to buildings and behaviors. More specifically, they detail how to make our buildings—and the products and items found in them—more energy efficient and environmentally friendly. The horizontal items also address student, faculty, and staff behaviors: how we travel back-and-forth from our homes to the college, what we do with leftover containers and food scraps, how we use photocopy machines and printers, etc. These five items are placed in a rough order of priority from the most urgent priorities (bottom of diagram) to the longer-range goals (top). The items that are placed vertically on the right of the diagram focus on two other important issues: education and equity. These are areas that the college will begin addressing immediately and will continue to address over time.

The CAP contains 26 outcomes and 59 strategies to achieve those outcomes. The overall goal of NCC is to become climate neutral—defined as emitting no net greenhouse gases—by the year 2025. This Narrative of Action will detail 30 actions the college has taken over the past five years that attempt to address those outcomes and to reach our goal of climate neutrality.

NCC Climate Action Plan Schematic

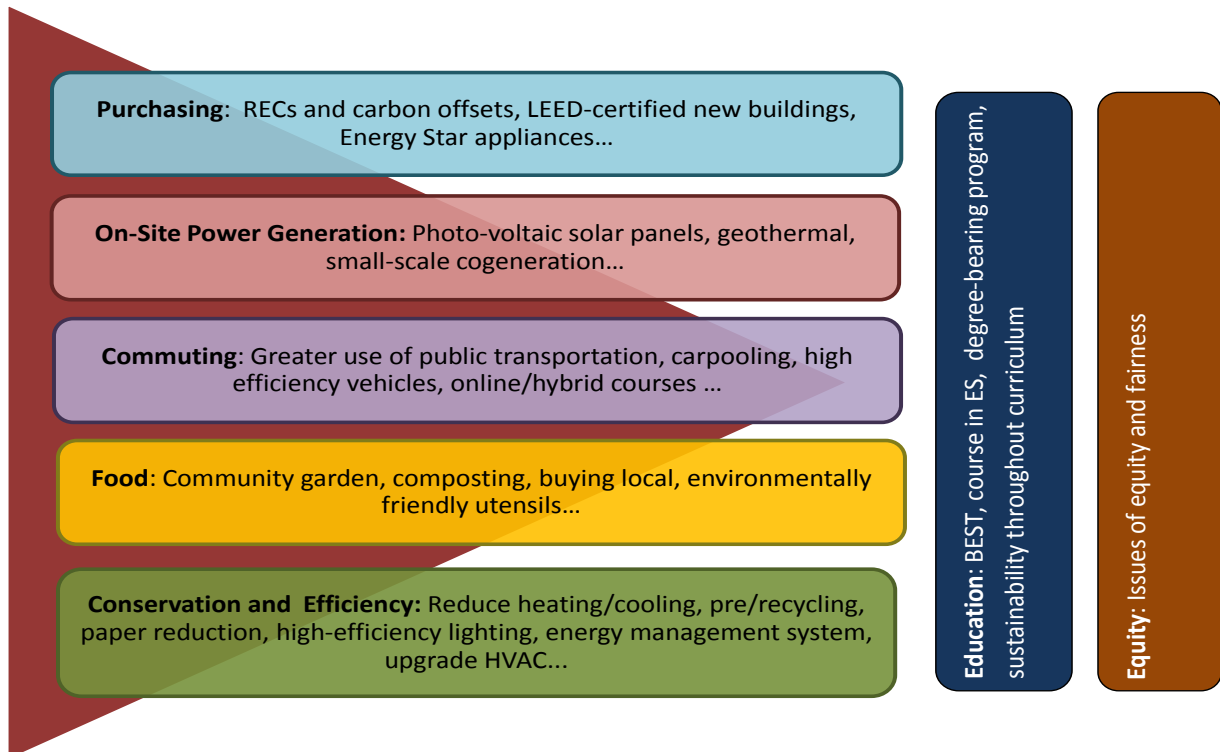


Figure 6 Areas of Focus in NCC's Climate Action Plan



CONSERVATION AND EFFICIENCY

Action #1: Affixed signage to over 250 paper, bottle & can, and waste bins throughout the campus in 2012-13. (CAP Strategy 1.1: Increase visibility of recycle bins—both paper and plastic/cans.)

Detail: Student World Assembly, NCC Chapter (SWA-NCC) members affixed signage to both the bin itself and the wall above the bin. After the signage had been affixed, the percentage of improperly disposed items decreased from 28% to 12%. By volume, the percentage of improperly placed items dropped to less than 5%. Over the winter recess of 2014, vandals removed much of the signage from the bins and the walls. The college is currently pricing new bins for recycling and waste.



Figure 7 Former SWA-NCC President Jake Savona affixing label to a recycling bin

Action #2: Held events to promote awareness of climate change and sustainable practices. (CAP Strategy 1.4: Increase awareness

of energy and resource conservation, waste management, and recycling on campus.)

Detail: Since 2008, SWA-NCC has partnered with the college's honor society Phi Theta Kappa (PTK), the HASTA Club and the Building Efficiency and Sustainable Technology (BEST) program to organize a week of events that both increase awareness of environmental sustainability issues and take concrete actions to reduce the college's carbon footprint. Nationally and internationally-recognized individuals have been keynote speakers during the college's Earth Week celebrations, including Christiana Figueres (2008), current Executive Secretary of the United Nations Framework Convention on Climate Change; Ana Lappé (2012), author of best selling book *Diet for a Hot Planet*; and L. Hunter Lovins (2013), author, activist and an icon in the environmental movement. The BEST program has also sponsored a speaker and film series.

Action #3: Partnered with CT Rides, a Department of Transportation (DOT) program that promotes public transportation and ride sharing. (CAP Strategy 1.4: Increase awareness of energy and resource conservation, waste management, and recycling on campus. Introduce through curriculum changes, specifically in College Forum and Freshman Seminar, but in other courses as well.)

Detail: In February 2012, NCC partnered with CT Rides, a program funded by Connecticut's DOT. CT Rides was created to promote transportation alternatives and more environmentally friendly modes of commuting for Connecticut residents, businesses, and employees. In April 2014, NCC CARES, CT Rides, and the coordinator of NCC's College Forum courses met to discuss how the college could make students more aware of sustainable commuting options. It was agreed that a CT Rides representative would visit each College Forum and Freshman Seminar course and present public transportation and ride-sharing options to the students.

Action #4: Made presentations on NCC's recycling program and public transportation commuting options at New Student Orientations, 2012-present. (CAP Strategy 1.5: Introduce energy and resource conservation, waste management, and recycling on campus in orientation sessions for students, faculty, and staff.)

Detail: SWA-NCC officers and a CT Rides representative made presentations at the college's New Student Orientations, describing NCC's sustainability efforts and also explaining how the college's recycling system works. The presentation also provided information on how students could utilize public transportation to commute to and from NCC. In addition to linking to the CT rides online rideshare program, NuRide operates a rewards program that gives points to individuals who choose "green" commuting options. Those points can then be redeemed at area restaurants, stores, museums and other attractions. After the orientation, bus and train schedules were distributed, and eligible students were assisted in enrolling in the CT Rides Awards program.



Action #5: Participated in RecycleMania, 2009-2013. (CAP Strategy 1.6: Develop campaigns that promote recycling through competitions, etc.)

Detail: SWA-NCC participated in the RecycleMania competition for five years. RecycleMania is a nationwide friendly competition between colleges and universities to increase recycling on campuses and to raise awareness of the importance of recycling.

Action #6: Installed an energy management system on East Campus. (CAP Strategy 3.1: Install energy management systems on both East and West Campus.)

Detail: Installation of a new Energy Management System (EMS) on the East Campus has allowed Norwalk Community College to do the following to save energy thereby reducing energy output while cutting down on energy costs (we could do none of these things before the installation of this unit).

- 1) Scheduling of units on/off time:
 - a. HVAC air handlers can be set to turn on and off at specific times and we can adjust these times as needed. Right now the air handlers go off at 10:00 p.m. and come back on at 4:00 a.m.
 - b. The lights can be scheduled to turn on and off at specific times of the day.
 - c. There is a dawn sensor so that if the lights are scheduled to go off at a particular time and the sensor detects light at an earlier time, it will turn off the lights before the scheduled time.
 - d. Chilled water/hot water pumps can be scheduled to optimize on/off times.
- 2) Outside air dampers can be set so that on days that the outside temperature is between 50° and 65° the system will use outside air for cooling instead of turning on air conditioners.
- 3) There is a humidity sensor which will close the dampers so that no outside air comes in when the humidity is above 65° (this can be set to any number). Due to this feature, the A/C does not have to work overtime cooling down and de-humidifying hot, humid air coming from outside.

- 4) The EMS allows the compressors to be set for staging. We now have two compressors with two stages each for a total of four stages. So, instead of running two compressors with two stages total, we can run one compressor with two stages and turn off the second compressor until it is needed again.

Action #7: Implemented ePortfolio usage through a series of faculty workshops. (Strategy 2.3: Have faculty and staff use online programs, such as Google Docs, SharePoint, etc. to share documents and forms.)

Detail: Beginning in fall 2009, a series of faculty workshops have been given to encourage the adoption of ePortfolios by faculty.

Action #8: Installed water coolers with bottle-filling stations. (CAP Strategy 2: Decrease paper, water, and energy usage.)

Detail: Three water coolers that have bottle-filling features have been installed in high-traffic areas on campus. Through December 2014, the bottle-filling stations have prevented an estimated 250,000 plastic bottles from ending up in landfills.

Action #9: Installed Variable Frequency Drives (VFD). (CAP Strategy 2: Decrease paper, water, and energy usage.)

Detail: Installed VFDs on hot water pumps allowing regulation of the speed and torque of these pumps to vary output as needed, which also conserves energy.

Action #10: Installed waterless urinals in the Science, Health and Wellness building. (CAP Strategy 2.5: Install 'low-flow' faucets and flushometers, and waterless urinals in all bathrooms, laboratories, and kitchens on campus.)

Detail: Waterless urinals were installed in the construction of the LEED Gold Science, Health and Wellness building, which opened in August 2011.

Action #11: Replaced older less efficient lighting with more efficient lighting. (CAP Strategy #3.2: Increase energy efficiency throughout campus. Swap out lighting fixtures for more energy efficient lighting.)

Detail: All classrooms and offices on East Campus have been retrofitted with energy efficient lights. On the West Campus, lighting has been replaced in D wing hallways.

- 1) The bulk of the lighting retrofits that were completed for NCC's first Letter of Agreement with Connecticut Light and Power included the replacement of T12 lamps with T8 lamps. For each T12 lamp that is replaced with a T8 lamp, NCC realizes a 35% reduction in energy usage.



Figure 8 LED lighting in East Atrium

- 2) NCC Maintenance department continues to retrofit the East Campus and West Campus replacing T12 lamps with T8 lamps.

Action #12: Installed occupancy sensors and a two-tier lighting system. (CAP Strategy #3.3: Increase energy efficiency throughout campus. Install occupant sensors in rooms and various locations on campus to reduce lighting/heating/air-conditioning when unoccupied.)

Detail: 1) Occupancy sensors are being installed in locations that do not yet have them. Most recently, occupancy sensors were installed in north and south wings for the first, second, and third floors of the East Campus. On the West Campus, occupancy sensors have been installed in B and D wing hallways.

2) Classroom lighting upgrades include two-tier lighting so that on bright days the lights can be dimmed to increase energy efficiency and reduce energy costs even more.

Action #13: Installed LED lighting in parking lot and sidewalk. (CAP Strategy #3.5: Increase energy efficiency throughout campus. Install more efficient LED exterior lighting in parking lots and along sidewalks.)

Detail: Sidewalk/parking lot ballard lighting has been replaced with LED (Light-Emitting Diode) lights.

Action #14: Replaced older vending machines with more energy-efficient ones. (CAP Strategy #3.2: Increase Energy Efficiency Throughout Campus.)

Detail: Vendors have replaced older vending machines with newer more energy efficient ones.



FOOD AND FOOD SERVICE

Action #15: Implemented organic farming principles and a permaculture facility. (CAP Strategy 4.1: Continue to develop organic farming principles and a Permaculture Facility for NCC students and Norwalk residents to use.)

Detail: Under the direction of biology Prof. J. McMenamin-Balano, the college has prepared the ground for, planted, tended and then harvested six organic gardens around the campus beginning in 2009 and continuing through the present. Produce from the garden has been used in the college's culinary arts program. Planned expansion of the West Campus will require identifying other garden/cultivation sites and is underway. It is expected that this will increase efficiency of the cultivation processes at the college.



Figure 9 Culinary Arts students harvesting from one of NCC's organic gardens

Action #16: Implemented a composting program, 2009-14. (CAP Strategy 5.1: Continue to develop composting program.)

Detail: The college's composting program operated from 2009-14. Starting in 2015, composting plans will center on recycling of the landscaping debris and designing a collection stream from culinary arts that reduces that perception of "unsightliness."

Action #17: Established a farmer's market on campus. (CAP Strategy 6.1: Increase purchasing of local, organic, Fair Trade, and sustainably harvested foods.)

Detail: Acting on behalf of NCC's Wellness Committee, Interim Assistant Director of Wellness T. Griese arranged to have a farmer's market at NCC from October 28 to November 25, 2014. The market was located on the front lawn of the West Campus on Tuesdays, from 11 a.m. to 3 p.m. Gazy Brothers Farm, located at 391 Chestnut Tree Hill Rd. in Oxford, Connecticut, provided fresh fruit, vegetables and herbs, many of the fruits coming from neighboring farms working cooperatively. Ed Gazy is the owner of this fourth generation family farm that has been "Feeding Families Freshly for Ninety Years," utilizing an integrated pest management program, which reduces the amount of pesticides, fertilizers, and other chemicals to ensure healthy plants and flavorful produce. Gazy Brothers Farm also offers a Community Supported Agriculture option. Two of Ed and wife Lexi's children, Roseanne and Dominic, ran the market at NCC. The market will start up again in late spring 2015.



COMMUTING

Action #18: Added commuter shuttle bus service between the NCC campus and the Norwalk MetroNorth train station. (CAP Strategy 8.2: Increase number of student, faculty and staff using public transportation.)

Detail: Negotiations between CARES and the Norwalk Transit District in 2010 resulted in a new shuttle bus service that runs between the college and the Norwalk MetroNorth train station during peak commuting hours. The shuttle bus service complements existing regular bus service.

Action #19: Held preliminary discussions with Norwalk Transit District concerning the implementation of a subsidized low-cost bus pass system for students, faculty and staff. (CAP Strategy 8.3: Provide a free or low-cost bus pass to students, faculty, and staff.)

Detail: In July 2012, representatives of NCC CARES met with officials from Norwalk Transit District to discuss the feasibility of a bus pass system for NCC students, faculty, and staff. The district suggested that a contract between the University of Bridgeport (UB) and the Greater Bridgeport Transport Authority (GBTA) be used as a model for such an agreement. The UB/GBTA contract calls for GBTA to provide 2,000 yearly bus stickers to UB at a cost of \$120,000 annually. The stickers are to be adhered to the back of the student ID. Currently, CARES is working to procure funding for this service.

Action #20: Installed two charging stations for electrical vehicles (EVs). (CAP Strategy 10.2: Increase use of hybrid, electric, and other high-efficiency vehicles for commuting to campus.)



Figure 10 Charging stations for electrical vehicles adjacent West Campus

Detail: NCC CARES, in coordination with E. Gribin's BEST program, applied for and was awarded a grant from Connecticut's Department of Energy and Environmental Protection (DEEP) to install two charging stations for EVs. NCC was the only community college in the state to win this competitive grant. The charging stations were installed over the summer of 2014, and a ribbon-cutting ceremony was held in September 2014. The charging stations are free to all EV owners in the state.

Action #21: Established walking routes around the campus and "Wellness Walks."

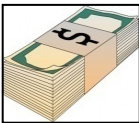
Detail: Under supervision of Director P. Gallo, the Department of Exercise Science and Wellness has created walking routes and "Wellness Walks" around the campus that encourage faculty, staff, and students to exercise regularly and walk instead of driving between campus buildings.



ON-SITE POWER GENERATION

Action #22: Applied for a grant for solar panels. (CAP Strategy 11.2 Install 309,992 sq. ft. of photovoltaic solar panels.)

Detail: NCC took part in a Zero Renewable Energy Credits (Z-REC) lottery program created by Connecticut Light and Power in winter 2014. NCC expects to be awarded at least two renewable energy credits for small (<100kW) solar PV projects on campus.



PURCHASING

Action #23: Constructed a 55,000 sq. ft. Science, Health and Wellness building to meet LEED (Leadership in Energy and Environmental Design) Gold specifications. (CAP Strategy 13.1: Any new construction will meet a high level of environmental sustainability.)

Detail: Initial blueprints for the construction of a new Science, Health, and Wellness building called for a facility that would not meet even the lowest of LEED designations. NCC students, faculty, and staff—spearheaded by NCC's chapter of the Student World Assembly—challenged this design and were successful in getting the building redesigned so that it would meet LEED certification. Dean R. Ellis' efforts were instrumental in attaining the LEED Gold designation.



Figure 11 LEED plaque certifying NCC's HS&W building has met USGBC's Gold standard

Action #24: Continued purchasing of only Energy Star appliances. (CAP Strategy 14: Purchase only appliances that carry the Energy Star label.)

Detail: Since 2009, all appliances purchased by NCC have met the Energy Star designation.

Action #25: Purchased paper with high-recycled content. (CAP Strategy 15.1: Environmentally friendly computers and paper with high-recycled content.)

Detail: Beginning in 2013, the college has purchased paper with a 20% or higher recycled content.



CURRICULUM

Action #26: Continued and expanded the Building Efficiency and Sustainable Technology (BEST) program. (CAP Strategy 18.1: Continue to strengthen the Building Efficiency & Sustainable Technology [BEST] Certificate Program.)

Detail: NCC's BEST program is the only building efficiency program that was originally funded by the state to continue to provide services. Additionally, the program's director E. Gribin has developed the Building Energy Worker Training (BEWT) certificate program, which is an accelerated, targeted program that prepares students for the developmental math and communication skills they will need to perform multiple jobs in weatherization, home performance, and sustainable building.

Action #27: Created the Integrating Environmental Sustainability (IES) Across Disciplines program. (CAP Strategy 20.1: Integrate concepts of sustainability and climate change into curricula across all disciplines.)

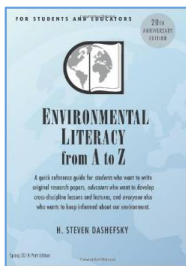


Figure 12
Environmental Literacy from A to Z by NCC Prof. Steve Dashefsky

Detail: Under the direction of Prof. S. Dashefsky, CARES has instituted a program that will integrate concepts of climate change and environmental sustainability into disciplines across the curriculum. Courses will earn the IES designation if that course contains a minimum of one session (one hour and twenty minutes) of environmentally related content per semester. At the end of the semester, faculty who wish to receive this designation provide evidence that the course meets the requisite content. Subsequently, a subcommittee of CARES reviews the “deliverables” and decides on the request. During the first semester, the following courses received the IES designation: HIS 201, U.S. History; PHL 101, Intro to Philosophy; ESL 142, Reading/Writing IV; FS 101, Freshman Seminar. Instructors for culinary arts, business marketing, sociology, and graphic arts courses have indicated they will apply for the IES designation in spring 2015.

Action #28: Developed a Waste Water Management degree program. (CAP Strategy 22.1: Offer an Associate of Arts/Science degree program in Environmental Sustainability.)

Detail: Prof. E. McCance developed a grant proposal for a Waste Water Management degree program. Currently the proposal has been tabled in favor of developing a more

general environmental science transfer degree program. In the meantime, an environmental science advising track has been developed to guide students interested in pursuing environmental careers.

Action #29: Developed an interdisciplinary (IDS) course “Environment, Climate and Society.” (CAP Strategy 20.1: Integrate concepts of sustainability and climate change into curricula across all disciplines.)

Detail: Prof. R. Emigh developed an interdisciplinary course designated IDS 235, “Environment, Climate and Society.” The course was approved by the Social and Behavioral Science department, the Curriculum Committee, and the College Senate. It was offered for the first time in spring 2013. Due to low enrollment, the course was cancelled. The course will be offered again in fall 2015.



EQUITY AND GOVERNANCE

Action #30: Inquired about salary and working conditions of employees who work at the college, but are not directly employed by the college (CAP Strategy 25.1: Ensure the lowest-paid college employees, as well as workers employed by private contractors to work at the College, do not receive substandard compensation nor be exposed to unhealthy substances in the execution of their labor.)

Detail: A letter of inquiry has been sent to the Dean of Administration requesting information on the salary and benefits of individuals who work at the college, but do not receive compensation directly from the college. This includes workers who are employed by private contractors who perform various functions at the college, such as interior cleaning, snow and leaf removal, and bookstore services.

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