

# No Time to Waste: Sustainability in Higher Education

## Laura Settle, Carsten Braun, Westfield State College

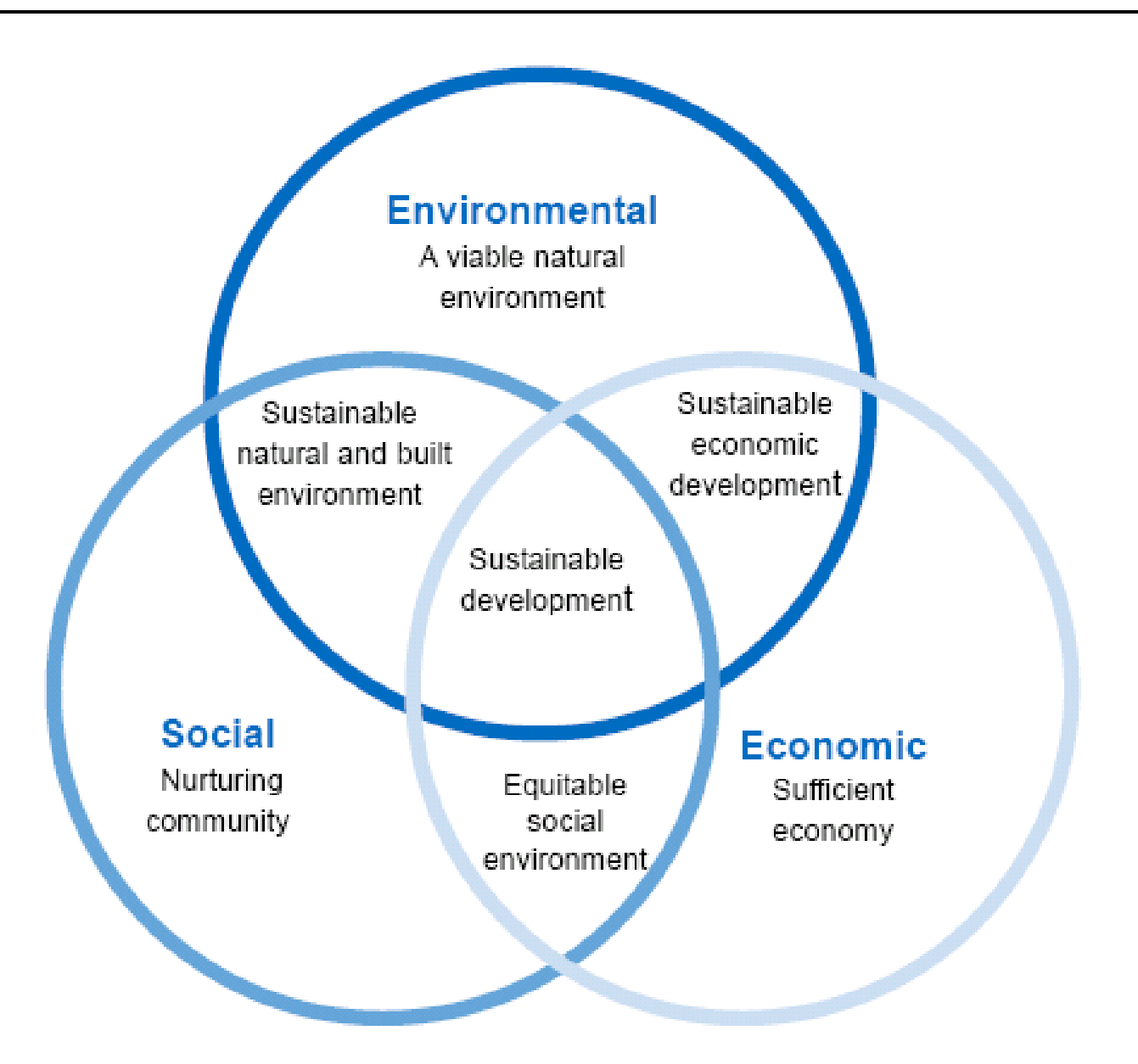
### Case studies from the top 20 green Colleges/Universities

#### Abstract

The current generation of students and educators has an important job at hand: to reduce the greenhouse gas emissions being released into the atmosphere and lead the world in the fight against global warming. In this study, fifteen of the 'top-green' colleges from the United States, Canada, and United Kingdom were surveyed as case studies to assess how they integrate sustainability into their curriculum while operating a green and energy-efficient campus. A number of common themes emerged, such as food services, transportation, and energy conservation. I also evaluated Westfield State College and Bridgewater State College in the context of these case studies and make recommendations to improve campus sustainability. My recommendations are achievable and range from getting students more aware of sustainable practices they can perform on their own to changing the way we use energy as a whole on our campuses and within our community.

#### What is Sustainability in Higher Education?

Sustainability in higher education intergrades sustainable practices into the classroom where hands on research and field work not only educate the students but also allow the students and faculty to be at the forefront of achieving sustainability for their own college/university. Sustainability in Higher Education is important because this generation of students is faced with the challenge if sustainability, no matter what professional field they enter, in order to solve the global warming crisis. Incorporating sustainability into college curriculum fosters a leadership role for building a sustainable future for the entire planet.



<http://www.ciria.org/complianceplus/images/sustainability2.gif>

The figure above shows how sustainability is the balance of economic growth and human rights, while conserving the environment from negative economic impacts.



<http://confluence.engin.umich.edu/>

#### College of Atlantic (Bar Harbor, Maine)

- First College/University to achieve carbon neutrality.
- During the fall of 2007 COA reduced all its electricity emissions, reducing all the colleges' green house gases by 22%. On December 19th 2007, COA offset all of the colleges remaining emissions, fulfilling its net zero pledge.
- All of the colleges' energy was created from a low-impact hydroelectric generator in Maine.
- COA also signed a 10 year contract with Endless Energy Corporation for electricity from their wind power farm.
- COA's energy is offset by the purchasing of Renewable Energy Certificates an out of state, wind power source.
- COA has its own certified organic farm called Beach Hill Farm. This farm produces crops such as potatoes, carrots, onions and apples and feeds not only the students at COA but also the surrounding community.
- All other food is from Maine co-ops or local and organic farms. Meat is 90% free range and locally grown.
- Buildings that are currently under construction strictly follow green building standards.
- Compact fluorescent light bulbs are replacing incandescent light bulbs.
- All wood products, whether being used in construction or simple a chair, are from sustainable managed forests.
- COA is a huge supporter and promoter of recycling. In 2005 they held their first Zero-Waste graduation.
- All COA waste is composted and all office paper is 100% recycled, including ink cartridges as well.
- Office supplies are purchased through sources that recycle and offer environmental certificates with their products.
- When COA cleans its campus they use all biodegradable materials and hydrogen peroxide cleaner.
- curriculum that focuses on human impacts on the environment, COA allows you to create your own course of study where environmental and social issues are at the center of the curriculum.
- Courses prepare students to develop and utilize solutions to environmental and social problems.
- Students and faculty spent over a year studying the carbon-offset market and chose to work on The Climate Trust project. The Climate Trust project will reduce the amount of time cars spend idle on roads by managing stop lights and traffic flow in Portland, resulting in reduced carbon emissions equivalent to taking more than 34,000 cars off the road for a year.

<http://www.coa.edu/html/sustainability.htm>

#### Middlebury College (Middlebury, Vermont)

- Plans to be carbon neutral by 2016.
- New biomass plant that is powered by woodchips.
- Uses stream generated by their physical plant to Co-generate electricity.
- As the college builds and or renovates, installation of the most efficient energy system is taken into account.
- Energy-saving contest among residence halls, a campaign to reduce the average temperatures of buildings by 2 degrees.
- The reduction of water consumption--Low flow shower heads have been installed in every building on campus
- Annual Environmental Fair that provides students with information on water conservation.
- purchases food in bulk and locally, when possible, to reduce packaging waste and shipping occurrences.
- They compost most of their food waste, and offer no paper or disposable dinner wear at the dining hall.
- The college donates extra pre-consumer food to local community groups.
- Middshift, a Middlebury College student organization, presented a written proposal on its carbon neutrality initiative to the board of trustees which later resulted to the formation of the Carbon Neutrality Advisory Group (CNAG), occupied by students and administration to further develop a final written report exploring potential ideas, costs, and risks of achieving carbon neutrality over the next 8 years.
- Middlebury College has signed the American College and University Presidents Climate Commitment.
- In order to get students active in Middlebury's goal of becoming carbon neutral, they must be educated on the subject matter.
- Middlebury offers a major of Environmental Studies (ES).

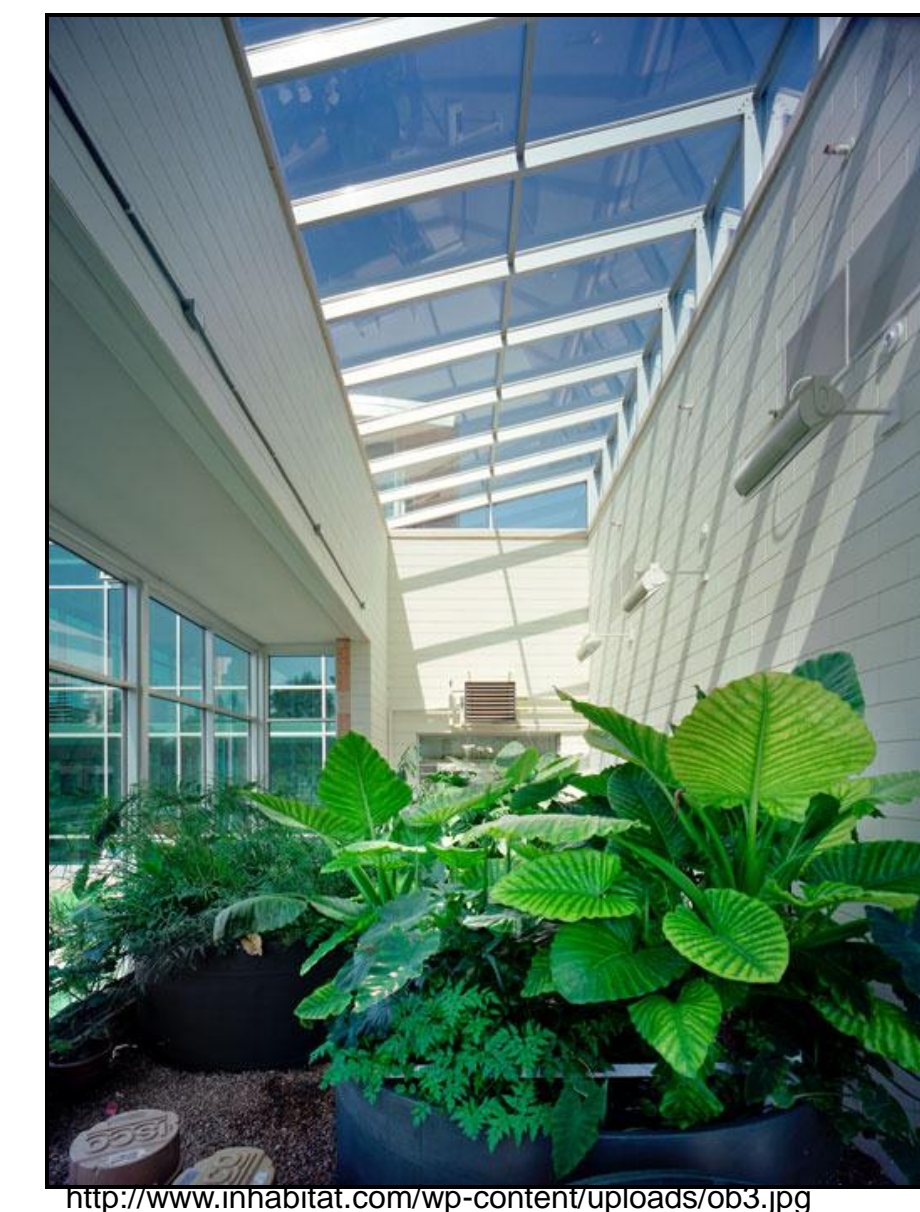
<http://www.middlebury.edu>

#### Evergreen State College (Olympia, Washington)

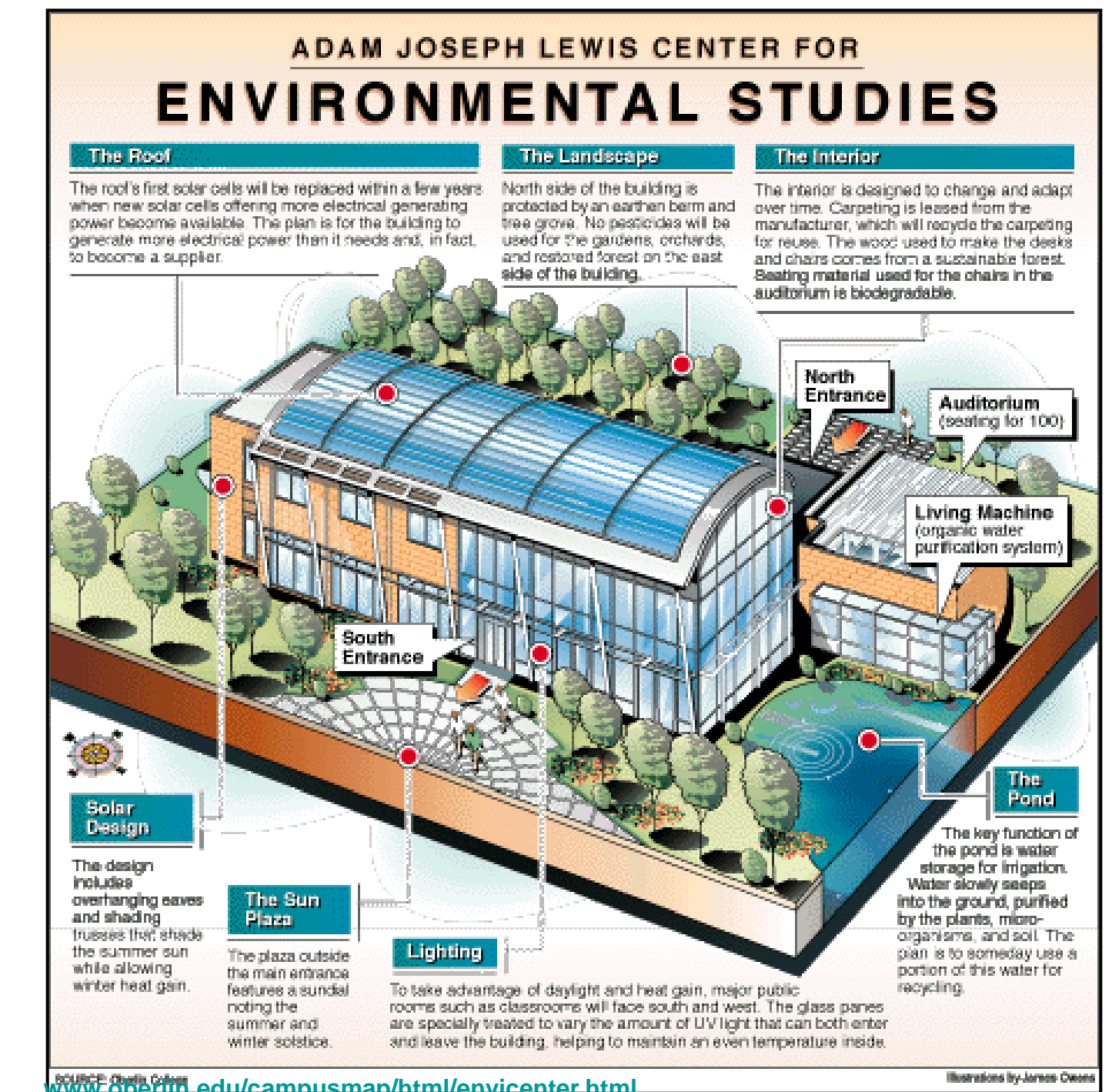
- Plans on being carbon neutral by 2020 and has initiated a plan to achieve that goal.
- Evergreen has completed its first comprehensive greenhouse gas inventory
- Recycling, buying local/organic food, using recycled supplies and an on campus organic farm.
- A self imposed student fee allows all of Evergreens electricity to come from "green" sources (being wind power, solar power, geothermal power, hydropower, and gas from various form of biomass).
- Evergreen applies a portion of the new student based fee to buy green tags so that the utility provider can pay for the more expensive renewable energy sources. Green power costs are a combination of regular generated electricity plus a premium (green tags) representing the additional cost of green power. Evergreen purchases green tags from the Tacoma City Light to offset Tacoma's electricity with green power.
- Evergreen built Washington's first L.E.E.D. gold certified building: The building is divided into five sub-buildings, called clusters. The original lay out of these clusters allows natural light to reach 94% of the interior of the buildings, and also makes natural ventilation possible. The structure of the building is mainly made up of concrete made from recycled material. Concrete also keeps the building cooler in the summer and warmer in the winter. Hot water heaters are placed under windows to provide heat on cold days. Under most windows in the building trickle vents provide an inflow of fresh air through adjustable slots. The trickle vents allow outside air in, replacing it. Recycled carpet tiles, made from 45% recycled nylon and need no adhesive to hold them down, are using in the rooms. Motion sensors are used in all rooms and automatically turn off lights when no active is taking place in a given room. Almost half of the Seminar II roof consists of planted area to absorb rainfall and slow down the runoff of the rest. Green roofing helps protect streams, fish, and land from erosion.
- Evergreen has a compost facility designed and built entirely by staff and students. This compost facility offers excellent hands on work in sustainable agriculture. Composting recycles organic material to produce a beneficial, nutrient-rich soil amendment, and keeps the most readily biodegradable portion of the waste stream from entering the landfill, where decomposition can create a greenhouse gas known as methane. Red worms are used in the composition process and students must constantly monitor the temperature and food source of the worms

#### Oberlin College

- Oberlin's environmental studies program presents an wide spread approach to the study of human interactions with the environment through different outlooks of the humanities, social sciences, biology, and physical sciences.
- The Adam Joseph Lewis Center for Environmental Studies (AJLC) was designed to mimic the closed cycles of natural ecosystems through restoration of native aquatic ecosystems (wetland pond) and on site waste water treatment. Inside the AJLC is what is called The Living Machine; an ecologically engineered system that combines elements of convention waste water with purification processes of wetland ecosystems to clean and reuse the buildings waste water. The Living Machine removes organic waste, nutrients, and pathogens that are harmful to humans and surrounding aquatic ecosystems. The water cleaned by The Living Machine is reused in the buildings toilets and landscape. A team of students operate and maintain The Living Machine, allowing them to apply the science of the biological process of the system to their learning. Not only does this building provide ample educational tools it is made almost entirely of recycled material and generates its own energy. Coupled up with energy efficient lighting, heating and appliances, photovoltaic panels on the roof of AJLC use the suns energy to meet a significant fraction of the buildings' energy needs. These materials/creative solutions include recycled wood, carpet panels, recycled steel, the utilization of natural light, energy efficient lighting, triple paned windows, and acoustical panels made from agricultural straw waste, and even a table made from the remains of a local bowling ally lane.
- 150 environmental sensors they have been installed in several of the dormitories. The web-based system monitors and displays electricity energy and water consumption in dormitories. It allows students to read interpretable real-time feedback and become aware of their consumption of energy as well as the resulting carbon emissions and motivates the students to conserve resources.
- Approximately 50% of the college's electricity comes from green sources. The green power is a combination of recovered landfill gas and environmentally receptive hydroelectric power.
- Oberlin College utilizes its landscape to work parallel to its curriculum. Students and facility have constructed ecosystems that simulate native northern Ohio ecosystems and incorporate plants that can be cultivated and used for food.
- Green landscaping educates students on urban agriculture, diverse native forests, wetland vegetation, responsible storm water management and storage and restoration of indigenous ecosystems.



<http://www.inhabitat.com/wp-content/uploads/063.jpg>



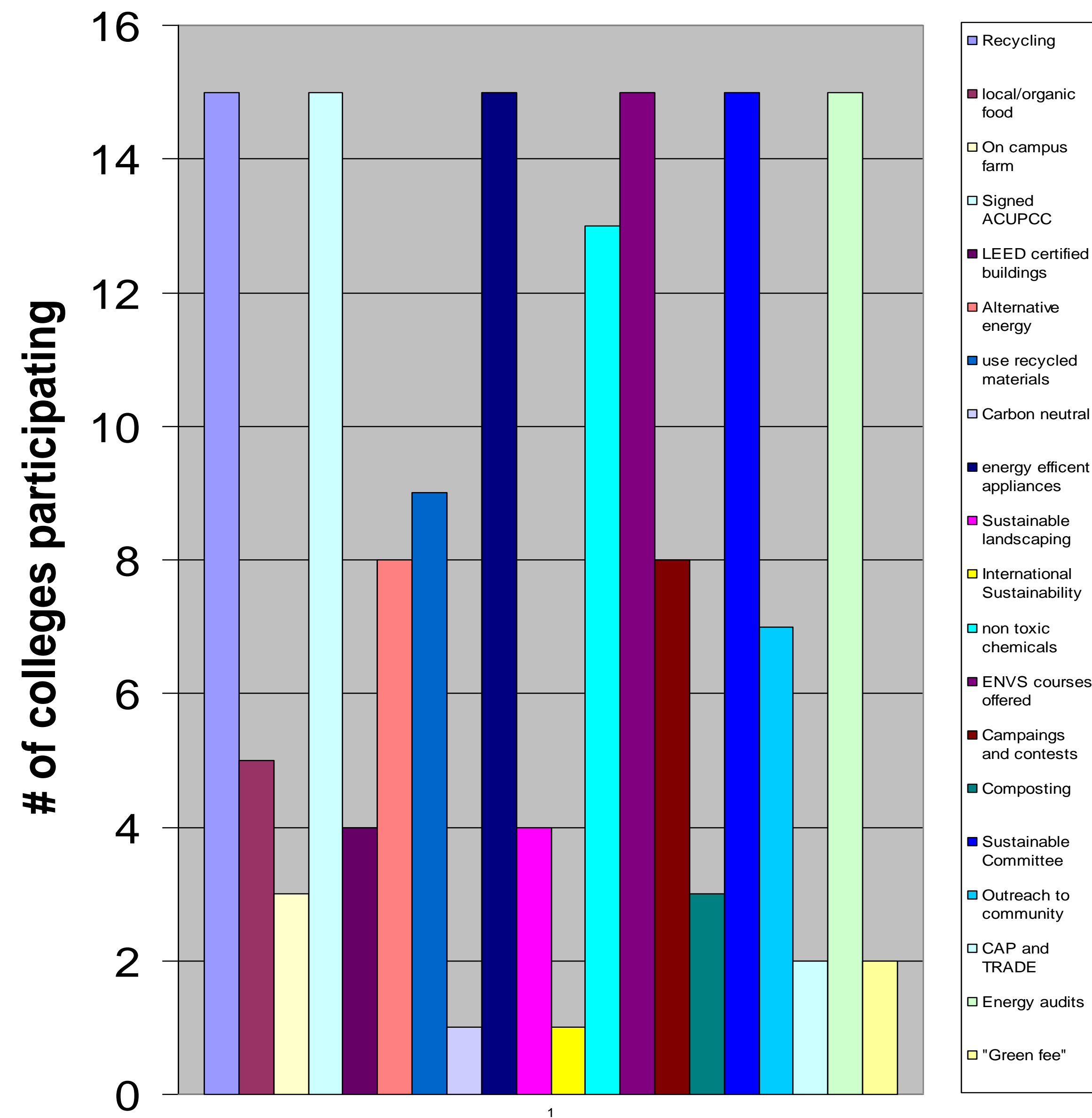
#### Green roofing at Evergreen State College



[www.greenroofs.org/.../index.php?page=evergreen](http://www.greenroofs.org/.../index.php?page=evergreen)



# Sustainable Practices at the Top 15 Green Colleges



The graph above shows the common themes of sustainability that the Top 15 green colleges/universities participate in and shows how many colleges (out of 15) are involved in each practice.

## Common Themes

The Top 15 Green Colleges were involved in many of the same green practices, illustrating a trend of effectiveness these practices had on not only the colleges/universities but the environment and communities' local and remote. The top trends that all of the top 15 green colleges/universities participated in were that they all has signed the ACUPCC, they all recycled religiously, they all used energy efficient appliances, they all conducted energy audits to know and understand their current emissions, they all had an active sustainability committee of some sort on campus and most importantly they all offered a wide variety of Environmental Studies courses and majors. Most of the colleges used non-toxic chemicals when cleaning, and about half the colleges used some source of renewable energy, built with and used recycled materials, held campaigns and contests to get the student body active in sustainability along with the local community. Some practices less than half of the colleges participated in include: on campus farm, CAP and TRADE "green" fee, and LEED certified buildings.

## Recommendations for a Green Westfield State College

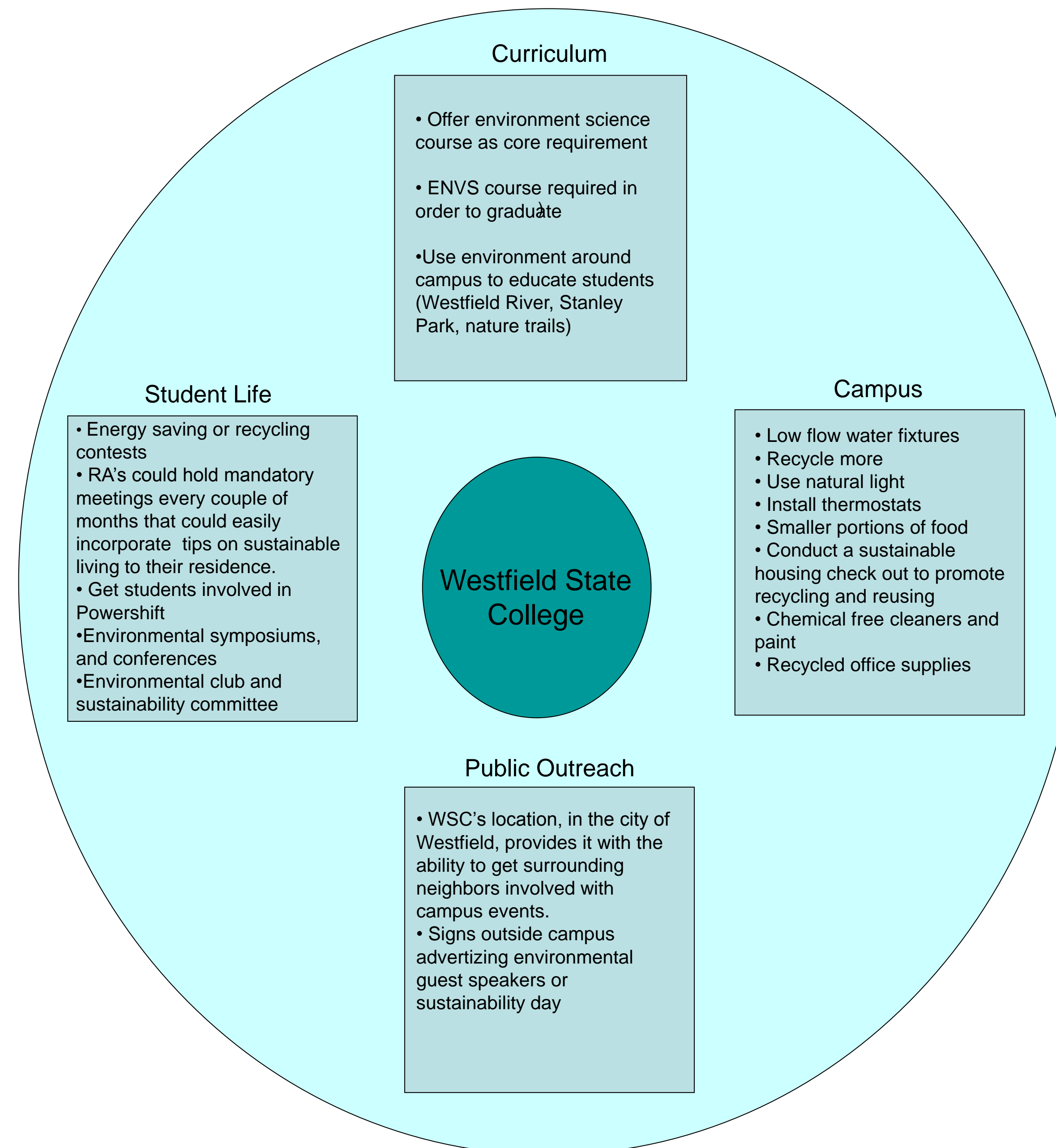
For the past two years I have had the opportunity to live on the campus of Westfield State College and work towards a bachelor degree in Environmental Science. After being educated on environmental issues and sustainable practices as well as researching the top 15 green colleges, there several ways WSC could change to become a more sustainable college. It is obvious that WSC does not have the financial means and reputation as some of the top green colleges do. However, even small inexpensive steps can make a big difference.

Living on campus has given me great insight about the lifestyle of college students. I have noticed about 80% of the windows in Davis Hall, where I live, are open year round, due in part to the over heating of the building. The student have no control of the heat and are forced to waste a large about of energy. If WSC turns down their thermostats a few degrees we could cut our emissions down considerably. In the bathrooms the showers heads and faucets blast out a considerable amount of water, that can get exruciating hot. Water heaters can be turned down and low-flow shower heads and faucets could replace the existing ones. The dorms on campus supply students with recycle bins, but maybe half the students use them. Also, at the end of the school year large dumpsters are placed outside each dorm and filled to the brim with not only trash but recyclables, clothes and furniture that could be recycled or donated. WSC could conduct a sustainable housing check out to promote recycling and reusing. Like other green colleges the resident halls at WSC could conduct energy saving or recycling contests, to promote sustainable living. Resident Assistance's hold mandatory meetings every couple of months and could easily incorporate tips on sustainable living to their residence.

In the computer labs and offices the printers could be set to print double sided and use low ink and on each computer desktop a list of simple steps to reduce and reuse could be applied, and changed with up coming "green" events. At the Dinning Commons on Campus I see wasting at its greatest. The servers pile on food resulting in mass amounts of uneaten food that is thrown away. If the servers were told to serve smaller portions less would be wasted. Also the DC could donate extra food that might be wasted, to local community groups. The DC also uses a lot of Styrofoam products; they either need to purchase more reusable dinning utensils or have strict rules on leaving the DC with their utensils, so that no Styrofoam is needed. However WSC does have a sustainable food service, Sodexo, who prides themselves on promoting local, organic, and healthy ingredients grown through sustainable practices. The DC is beautifully built with large wall to wall windows and sky lights, however WSC does not utilize the natural light and instead all lights are kept on 24/7. The DC could turn off all its lights during the day to save a significant amount of energy. Also to promote saving energy the DC could be lighten up by candles a few times through out the year, along with other campaigns campus wide, to make students more aware of the benefits of saving energy.

The most important task in becoming a green college is educated the students and providing them with the skills needed to become leaders in the fight again global warming. WSC currently offers a major and minor in Environmental Science, however the major consists of a small amount of students and class options are limited. If WSC could get enough staff they could make it mandatory to take at least one ENVS class in order to graduate, this would highly educate the students on sustainability and could lead them to even major in ENVS. To fund green practices and changes on campus a "green fee" could be added to the tuition and in most cases financial aid will accommodate fee increases, for those who receive financial aid.

In conclusion, after researching the top 15 Green colleges and Universities I learned many useful ideas that Westfield State can use to reduce its carbon footprint. Although WSC doesn't have the funding for CAP and TRADE or to help China become sustainable, we do have a diverse and educated student body and staff. The main thing WSC needs to accomplish is getting students aware and involved. Living with students at WSC further convinced me that not many students understand just how strongly global warming is effecting the environment, politics, and human rights. I believe if we come together as a college and community, not just ENVS majors, we can start on the path to become a sustainable college.



greenjersey.org



http://www.voxenergysolutions.com/images/266\_SolarPanels.jpg