

**THE ROLE OF SUSTAINABILITY
IN HIGHER EDUCATION**

A POSITION PAPER

by

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Originally written Spring 2008 Semester
SUNY Empire State College

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The Role of Sustainability in Higher Education

Introduction

“Campuses are the laboratories that invent the future.”

*Thomas Kimmerer, Co-founder, Association for the Advancement of
Sustainability in Higher Education*

Colleges and universities occupy a unique niche in our society. We often think of them as the places where young people pursue their educations, graduate and then enter the work force. But, they are much more. With populations the size of small cities, their infrastructures and all the encompassing demands, their own governing bodies, medical facilities, and law enforcement officials, they function as small nation states. Cornell University, for example, has 30,000 students, faculty and staff populating 800 buildings on over 17 million square feet of real estate on 11,000 acres of land all worth over \$4 billion on the main campus. (Shelley) Also unique to the disposition of colleges and universities is that their populations (present largely by choice) have predictable needs and requirements to carry out their missions. How these services are provided is what determines a university's relationship within the natural world, i.e. how sustainable it is.

Fritjof Capra writes of how living systems are comprised of nests within nests of increasing complexity; cells make up organs which make up organisms which make up populations. Similarly, “grounding metaphors are nested within deeper layers of metaphorical thought that encode the living and mostly taken for granted history of the cultural group.” (Bowers, Education 92) These metaphorical thoughts underlie the principles of, and are passed on through, our educational systems along with our relational perspectives. In deep ecology, a term coined by Norwegian philosopher Arne Naess, these guiding metaphors are fueled by norms. (Sessions 98) Norms are the absolutes or the foundations of belief or value systems which, taken together, form paradigms. According to Douglas Bogen, “dominant values tend to direct where our society is heading as a whole.” Paradigms when viewed at the societal scale feed into the predominant culture and how it operates within and relates to ecosystems (85).

The modern dominant paradigm in the US is the mechanistic and dualistic framework established in the Middle Ages, which heavily influenced thought during the Industrial Revolution. While the Industrial Revolution brought modern conveniences to a hardworking human race, many did not comprehend the destructive byproducts occurring in its wake. However, the increase of human population, coupled with the advent of higher impact technology has given humans the ability to irreparably harm our life support system. Given the current state of the world's environment and stability, I argue here that higher education has a duty to work towards finding solutions to ecological problems and restoring a sustainable balance to human activities. Reasoning for this stems not only from the moral imperative perspectives (such as the Golden Rule) but also those ranging from basic survival to national security. Buckminster Fuller said that, "We live in the age of maximum immorality where it is cheaper to burn our savings account (fossil fuels) than it is to harness income." However, as he pointed out, punishment causes panic. In my own words, don't put the environmental offenders down, (as has been the traditional environmentalist way), educate them up.

Institutions of higher education are where leaders of future generations are shaped and as French tells us, "it is very unsettling...to be forced to consider the idea that the formation of human consciousness through training in literature, philosophy, history, religion and related disciplines may in fact inculcate values and behaviours that jeopardize the continuation of life itself." (Schultz 61) What students learn and how they learn it can either continue the paradigm that has at once led to widespread material gain and higher standards of living, and environmental destruction, or they can set a course for change which will allow us to capture the best of both worlds and move into a post-modern paradigm. Given that colleges and universities are living institutions, they have the ability to make needed changes in response to new information. In many institutions of higher education the shift toward an environmentally sustainable paradigm has already begun. (Ford 7) Examples of this work will be given throughout the paper.

For this paper, I will look at sustainability's place in academia, how it applies to the modern university and how it can apply to Empire State College. In the first part, I will

give a brief summary of the background and historic role of higher education and how it has served society. This gives us insight into past expectations and what can realistically be expected in the future. This leads into a discussion of where and how university operations, both academic and logistic, intersect with the environment. In conclusion, I will review Empire State College's state of sustainability and propose a set of recommendations for consideration, followed by an overview of related organizations. Note: In speaking of the various colleges and universities, on occasion, I will use the American term "school," which refers to these institutions of higher education.

The Role of Education in Society

Education in its broadest sense is the vehicle used to convey the knowledge of one generation to the next. Skills, traditions, systems, mechanics and so on are shared in order to carry on life. Education is also viewed, and rightfully so, as a tool of empowerment and social change. Knowledge is power. Today more people and of a greater diversity than ever in history seek higher education, and the reasons are still the same. What are students being empowered to do and are they being educated to cope with social changes or even to work for change when it is needed? Like economics, education can be viewed from the micro to macro scales, whether it is the advancement of the individual or the betterment of society. To serve the greater societal good, education must provide the individual with the proper tools to take a contributing place in the fabric of community. Kneller tells us that, "To educate men wisely we must know what we educate them to become." (Kneller, Introduction 1)

Given the power of knowledge and that ideas are significant in shaping society, colleges and universities have the unique task of training their scholars in the most ethical ways possible. Early schools in the United States were founded on the liberal arts approach to education which, with its inherent interdisciplinary approach is, "the traditional prescription for making broad and well-rounded men (sic)." (Sessions 137) In "Ethics in Higher Education", James T. Laney tells us that:

In the beginning...education was synonymous with the

common good...schools would that the commonwealth would be enhanced, the public good would be served. ...The curriculum was designed to make students better persons, inculcated with a high sense of purpose that would lead to their assuming a place in society in which they could contribute to the welfare of all.

Religious influences were inextricable in the founding of many universities such as Harvard which, while not affiliated with any particular religious sect, counted many ministers among its early alumni. (<http://www.news.harvard.edu/guide/intro/index.html>, accessed January 31, 2008) Yale's founding charter grants that, "through the blessing of Almighty God (students) may be fitted for Publick employment both in Church and Civil state." (<http://www.yale.edu/about/history.html>, accessed January 31, 2008) Since their founding, many universities have broken ties with not only the church, but also the state. (May 58) This allowed greater academic freedom, but may have also removed a potentially vital sense of higher purpose.

The onset of the Industrial Revolution also brought about changes in society's demands on education. In the wake of the growth of factories, industrial processes and economies, universities came to serve the economy by providing a trained work force. As Kneller puts it, higher education became the "knowledge industry, investing in human capital." (Kneller, Philosophy 6) Today, getting a job (or a better job) is often one of the reasons cited for pursuing a degree. "Better job" is a value-laden term that often means higher paying. This has led to a narrowing of the uses of education to primarily serving the economic sector, and to the dual ends of industrialization: great material wealth and severely degraded ecosystems. In another work by Kneller, wealth is defined in two parts; "(1) the total value of all goods at hand at a particular time and (2) reproducible assets – the stock of goods from which income may flow. It includes all resources..." (Kneller, Economic 4) This includes natural resources, through which all other wealth is built.

In *On the Meaning of the University*, McMurrin points out that "Fundamental changes in the culture...entail correlative changes in the principles of education that are authentic responses to the concrete conditions of that society" (4). The idea that we humans have outgrown our ecosystems is new information that calls for many changes or a paradigm shift in education, bringing in considerations for the Earth. Why should

we care about the environment? As noted above, the applications of education and industrialization have led to great material wealth, but have also led to a great diminishment in our reproducible assets or natural resources. Paul Ehrlich likens our biological wealth or natural resources to “safe deposit boxes in a vast bank called Nature” (Beattie and Ehrlich 3) Without restorative measures or sustainable practices, the speed of natural processes cannot keep pace with that of industry. Over the long term this is not viable and is a threat to the survival of humans and life as we know it.

In *The Uses of Schooling*, Broudy notes that education responds to the demands of the culture for its people to have a vocation or job, self-cultivation or development and the responsibility of citizenship. (80) Citizenship embodies the duties one carries within a community. Citizenship and its inherent responsibilities are one area where we can see the links to the natural world. Community includes not just our human neighbors, but also the ecosystem we are embedded in, and all the other creatures within it. What sort of neighbors are we within our ecosystem? Almost daily, news stories about human induced environmental ills chronicle the side effects of our mass industrialization and globalization that have led to acidification, eutrophication, deforestation, land degradation, desertification, species extermination, water depletion and salinization. And that is just the short list. This makes us not only bad neighbors, but also puts us on a collision course with our own destruction.

The Earth is in the midst of what many biologists call the Sixth Great Extinction. The previous five extinctions happened eons ago, and each time it took the Earth millions of years to rebuild its biodiversity. These earlier episodes were caused by events such as volcanic eruptions, meteors striking the Earth and other climate altering events. Today's anthropogenic factors (including climate change) are driving extinctions to occur at 1,000 to 10,000 times faster than the rate of the past 60 million years; much faster than nature can regenerate. (<http://www.earthpolicy.org/Updates/Update35.htm#top> accessed December 12, 2005) Nature's biodiversity yields free “public goods” that are irreplaceable such as fresh air, fresh water and the framework for life. Whit Gibbons gives us the example of how extinctions have a broader impact by using the analogy of a building made of bricks. While removing a few bricks (or organisms) from a structure may not bring it down, the overall building is weakened and increasingly smaller threats

cause greater damage. (Gibbons, p. xiii)

Global climate change and environmental degradation are not just about “others.” It is about our own survival. Pim Martens, in a study on human health and climate change, notes that as “a counter-effect of economic development, health impairments have started to occur as the result of deteriorating global environmental conditions. ...human-induced climate change and stratospheric ozone depletion are now threatening the ecological support systems upon which human life depends.” (1) Human progress has advanced in a period of relatively predictable and stable climate conditions. Wide fluctuations in temperature variations stress ecosystems and farm crops in particular, which can lead to decreased yields and productivity. Resulting food supply shortages have drastic effects on human populations as we have seen in countries such as Ethiopia. (de Waal 112)

Bogen describes how “vital reciprocity” links the rights and responsibilities of the individual and society to the health of our natural world. (134) What we do to nature we do to ourselves as individuals and a species, in the short and long run.

In “Teaching for Survival”, Mark Terry outlines these four roles for education:

1. Socialization
2. Vocational
3. Liberal
4. Transformative

Again we see the need for citizenship or socialization, for employment or vocation and the liberal role of education. Transformative education is that which aims to make a shift in the student's world and self perceptions. Colleges and universities are particularly well positioned to host the dialogs necessary to create what Nel Noddings calls “centers of care” by examining connections between our own and societal well-being. (Kohli 135) Well-being, we have already noted, hinges upon the health of our planet's ecosystems.

According to their mission statement, the environmental think-tank Schumaker Society states we must, “emphasize that humanity can't do this in isolation. Long-term thinking and action, and connections to other life-forms are crucial.” (“Sustainable Education” 2001) Education is the key to producing citizens knowledgeable in ways to conduct sustainable lives and create an environmentally sustainable society. In the next

section, I will look at how some universities are beginning to imbue graduates the skills to develop ecosystem-human balance.

Models of Sustainability

Another myth related to perceptions of the university is that of the Ivory Tower as a place where intellectuals gather, unfettered by mundane concerns and isolated from society, to seek knowledge. However, colleges and universities exist as real communities, embedded within human and natural communities, and affecting real and far-reaching impacts. The two overarching connections that link universities with the natural world are operations and academic curricula. In a report called the “State of the Campus Environment,” published in 2001, the results of a study conducted by the National Wildlife Federation gave a view of sustainability practices at colleges and universities across the United States. Nearly 900 respondents answered a broad range of questions in the following categories:

Operations:

1. Waste stream management
2. Energy
3. Land use and planning
4. Transportation
5. Water

Academics:

1. Faculty training
2. Curriculum concepts and integration
3. Student opportunities

The answers to these questions revealed that colleges and universities nationwide were working to improve their sustainability through management practices and education. This work has continued and public demand has grown to the point where college rankings now include sustainability ratings. (NYT, 7/28/08) This paper will include many

examples, often drawn from Cornell University, my current employer.

In many instances, university operations stand in the background disconnected from the academic side. However, the two can be joined, producing significant opportunities for interdisciplinary and sustainability education. In Beyond the Modern University, Ford calls for education that is place-based, biocentric and social, localized, and promotes rootedness. (97) In the next section I will look at how this can be achieved through university expenditures, food sourcing and buildings.

Colleges and universities are significant economic engines. In 1999 the annual operating budgets of the 4100 institutions of higher education in the US totaled \$200 billion. (http://www.secondnature.org/efs/efs_part_two.htm accessed February 22, 2008) In 2005 Cornell University accounted for \$3.3 billion in economic activity and provided over 36,000 jobs in New York state. (Appleseed 8) A perfect example of sustainability in practice can be seen in university dining halls. Cornell has 31 dining facilities on campus and spends roughly \$9 million a year for food. In 2006 Cornell directed its produce supplier to source 20 percent of its food from within a 100-mile radius. Cornell raised the percentage of its budget spent on local food expenditures from 7 to 23 percent and is aiming for 30 percent. (Koyanagi) The effects are not just measured in dollars, but also in lowered environmental impacts, including a concept called food miles.

Food miles is the measurement of how far food travels from the farm to the plate. In 2003, an Iowa State University study revealed that locally sourced food traveled an average of 56 food miles while conventionally sourced food travels an average of 1,494 miles, a 27-fold difference. (Pirog 2) This same study found that agriculture directly and indirectly accounts for 20 percent of greenhouse gases generated through growing, fertilizing, harvesting, shipping, processing and packaging. And we haven't even started cooking yet. Trucking food from distant locations makes it not only an anonymous and faceless commodity but also less nutritious. Most produce begins losing nutritional value and freshness the moment it is picked. The farther it travels, the more nutrition is lost. As one of many examples of how ecosystem health parallels human health, locally sourced food becomes a regionally and culturally relevant source of better nourishment.

On many campuses some amount of food can be grown right on site. At Dilmun

Hill, a 12-acre student-run organic farm on Cornell's campus, students gain multi-faceted, hands-on educational experiences through work/practice and study/theory of operating a farm and a small farmers' market. This also ties into Ford's concept of education for rootedness. In working with the land educates students on what one can expect a region and climate to produce and when. In our instant gratification culture, participating in the cycles of seed to harvest can also foster the development of deeper perspectives and appreciation.

Woodrow Wilson said, "First we shape our buildings, then they shape us." In buildings we are born, live, work, eat, pray, sleep, study, and often we die in them. Architect Bill McDonough gives the analogy of buildings as trees saying,

"If we think about a tree as a design, it is something that makes oxygen, sequesters carbon, fixes nitrogen, distills water, provides a habitat for hundreds of species, accrues solar energy, makes complex sugars and food, creates micro-climates, self-replicates. If we think about designing a building like a tree, that is interesting. If we think about designing a city like a forest, that is more interesting."
(McDonough, 2000)

Also as a tree, a building would provide for its needs and those of its inhabitants for lighting, heating, structural needs, and so on, from local sources. In the fall when a tree loses its leaves they provide mulch fertilizer, and insulation for the tree roots and other organisms to feed on. Based on nature's model, we see how there is no waste in an ecosystem. However, unlike the leaves of a tree, many byproducts of our activities are of no use to other members of our ecosystems, an unsustainable situation.¹ Work on campuses has begun to mitigate building impacts, and I will look at Cornell's example next.

Cornell, with its history as a land grant university, has recently stepped up its commitments to sustainability. The recent efforts were kicked off by the 2004 State of the University address from former president Jeff Lehman calling for "sustainability in

¹ A building in America can be expected to put out an average of four pounds of garbage per human per day. Building construction and demolition accounts for 28 percent of municipal solid waste, amounting to 136 million tons per year (<http://www.usgbc.org/NewsPressReleaseArchiveDetails.aspx?ID=2812>, accessed February 18, 2008)

the age of development.” In 2005, Vice President of Finance, Steve Golding hired sustainability coordinator Dean Koyanagi, whose primary focus is operations. Among Koyanagi’s first hurdles was setting the stage for green building and the creation of a living learning laboratory that embodies a culture of sustainability. In March 2006, The Cornell Green Building Guidelines (CGBG) were published. The guidelines “are an adaptation and modification of guidance from various sources, including LEEDTM-NC (version 2.2); New York State Executive Order 111 ‘Green and Clean’ State Vehicles and Buildings Guidelines, 2nd edition (E.O. 111); the University at Buffalo High Performance Building Guidelines, and the State of Minnesota Sustainable Building Guidelines (MSBG).” (CU Sustainable Design Guide & Templates - May 06.pdf) For example, as Cornell tears down old buildings and continues expanding, the Green Building Oversight Committee works to ensure that the campus sustainable design guidelines are implemented. The CGBG document tailors the aforementioned green building policies to Cornell's unique disposition of having both private and state entities.

LEED was developed by the non-profit US Green Building Council (USGBC) and stands for Leadership in Energy and Environmental Design. The USGBC provides independent certification that building projects include efforts to mitigate environmental impacts. Ratings range from basic certification to the highest level – platinum – based on criteria in siting, water efficiency, energy and atmosphere, materials and resources, indoor air quality and innovation in design. (LEED Design Checklist <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220> accessed 2/18/05). While LEED's primary focus is the construction phase of buildings, New York Executive Order 111, a mandate signed by Governor Pataki in 2001, is focused on the operations side. With the goal of reducing energy costs by, among other methods, lowering emissions 35 percent by 2010 from 1990 levels, E.O. 111 also promotes higher efficiency of building mechanical operations.

In the Green Cities course at Cornell University, visiting lecturer Rob Young taught students to look at cities through a “green lens” to reveal their relationship with the environment. This same perspective can also apply to buildings and campuses. Green buildings can mitigate environmental impacts, provide savings in operating costs and living laboratory settings replete with opportunities to integrate academics and

operations, again, two elements that normally do not interact. Immersion learning in a setting that includes photovoltaics, grey water systems, compost bins and non-toxic materials offer multi-layered sustainability education experiences. The green-built Adam Joseph Lewis Environmental Studies Center at Oberlin College in Ohio embodies what Professor David Orr calls the “pedagogy of architecture.” (Sterling 73) It offers place-based education and what Barbara Clark describes as the optimal learning experience, one that involves multiple parts of the brain in integrative education. (Bowers, Education 96) The sustainable living learning laboratory can feed into and draw from curricula where students learn how to harvest food and other life necessities from an ecosystem without destroying it. (97)

Operations provides the framework within which students (and all humans) can function sustainably, but without the accompanying education to flesh out the experience, only part of the picture is visible. Traditional college majors come with prerequisite courses such as writing and science or biology, what I call “gateway” courses which must be passed through on the way to the courses of the discipline or major. While English 101 helps provide writing skills that carry us through our education, disciplines such as business management, policy studies or law rarely draw upon the sciences in later years. Hence a cross-pollination that would allow concerns for the environment does not exist. In the next section, I will look at sustainability curricula proposals and models.

If, as Kneller tells us, “theories of reality are related intimately to theories of science,” (Kneller, Education 6) it becomes hard for an average person or college graduate to determine what is sustainable when the biological sciences are not applied throughout. A tree becomes merely a measure of board feet and not the home/food/living entity as ecosystem community member that it truly is. The growth of sustainable societies necessitates the integration of ecological concepts throughout the curriculum. Author and educator Bill McKibben likens the need for sustainability to permeate all learning to the way “Both the civil rights and feminist movements focused attention on the need to change the content of curriculum at all levels of education...” (McKibben, 2007) As mentioned earlier, education is the vehicle through which cultural codes and norms are passed down from generation to generation. In critiquing

curriculum with an eye towards ecological stewardship it becomes apparent, as David Orr says, that “all education is environmental education.” (90)

Education is needed to foster a transformation from human dominated or anthropocentric ecosystem management to membership or partnership in a system. This is brought about through interdisciplinary and deep learning. What elements need to be changed in education? It needs to be:

1. Place-based, as was discussed previously in the operations section. This does not mean adopting a provincial outlook.
2. Interdisciplinary, investigating environmental impacts through all perspectives.
3. Initially transformative, allowing for perception shifts towards partnership/membership and citizenship in ecosystems.
4. Restorative, returning health, regrowth and vitality to natural systems.

An example of how this could all work together would be to take a business modeling class. The students have been charged with starting a factory to make wooden widgets. From a place-based, ecological perspective, everything from the siting of the factory to sourcing the wood, would involve by-passing ecologically fragile (forest) areas and endangered species. Through a holistic perspective students would examine the conditions of the labor used to obtain the wood, the chemical make-up of finishes used, allow for and promote regeneration of the area logged, engineer manufacturing to limit output to biodegradable by-products while minimizing waste. This approach results from a transformation from human-dominated or anthropocentric ecosystem management to membership in the system.

Transformational learning is brought about through interdisciplinary and deep learning. Per Warburton, “Although it has general pedagogical significance, deep learning is particularly crucial in the case of sustainability education where holistic insight and an ability to organise and structure (seemingly) disparate types of information into a coherent whole is central to the whole exercise” (45) The Liberal Studies model at SUNY Empire State College trains students to formulate theories in this way, offering a framework very conducive to fomenting a shift toward education for

sustainability. Founded in 1971, ESC pioneers a learner and place based educational mission. In the next section I will look at what ESC already has to offer in the realm of sustainability and suggestions for next steps.

Empire State College, SUNY and Sustainability

Empire State College serves a population of about 17,000 students and is unique in that it has 35 satellite offices throughout New York state, much like an extension program. ESC is a college within the State University of New York system which has 64 campuses statewide. With a distributed and decentralized structure ESC carries out its educational mission close to where students live, which can allow for place-based education. SUNY as a system and ESC have both joined the Association for the Advancement of Sustainability in Higher Education (AASHE) the mission of which will be discussed in detail later. ESC has also recently welcomed a new president. Faculty and staff at ESC began a multi-faceted discussion with the inaugural meeting of the Environmental Impact Committee in June, 2007. This retreat brought together representatives from all sectors of the college. The group began looking at the need for information about many current practices such as student and faculty travel, operations, academics and how to assess their sustainability. In this section I will look at the areas covered by the Environmental Impact Committee, ESC's current operations and academic offerings and make recommendations to strengthen these efforts.

In strategizing on all issues the EIC brainstormed short-term and long-term objectives, while realizing a need to gather information on current practices. I would add that they also have ongoing successes to build upon. Subcommittees were formed with the intention to also include other staff, faculty, administration and students to work in the areas of:

1. Structure and Infrastructure
2. Processes/Daily Work
3. Travel
4. Students

5. Academic Programs
6. Information and Communication
7. Other Communities
8. Politics and Policy

Looking at the big picture, the EIC decided they needed presidential support, a web presence, funding to support their endeavors and the incorporation of sustainability into the college's strategic plan.

Structure and Infrastructure Subcommittee

In a conversation with Dr. William Ehmann, executive assistant to the ESC president, he begins by pointing out that the brick and mortar footprint of the school is currently small. Many of its offices are co-located in buildings with others such as bank offices in the Ithaca location. ESC is in the midst of planning and constructing new buildings on other school campuses, beginning with the Long Island and Genesee Valley Regional Centers. In doing so, the college will have to pay attention to its sustainability practices as it increases its footprint. New buildings and renovations are to be silver-rated by LEED standards which covers material use, both raw and re-used. One past example of ESC's work in green building is the transformation of the 111 West Building in Saratoga Springs. The building had been a grocery store when ESC acquired the space. Redesign and construction to turn it into offices involved the use of recycled materials and the installation of a geothermal heat pump system. ESC is a part of the SUNY system, and these green building and energy conservation practices have brought sustainable practices and LEED requirements to the State University Construction Fund guidelines. (Ehmann)

SUNY's primary approach to sustainability has been a part of concerns regarding fuel and energy costs and the educational system has "made a commitment to assume a national leadership role in energy and sustainability – through the transformational integration of research, teaching and practice." (Conference Program, November 2007)

The SUNY Energy Strategic Task Force is comprised of 18 energy and physical plant managers and administrators from throughout the SUNY system. With nearly half a million students, SUNY is “the second largest energy consumer in New York State with approximately \$300 million in combined utility costs,” and thus particularly vulnerable to disruptions and fluctuations in energy supplies and prices. (March, 2007 Task Force Report) Many of the policy recommendations made by the energy task force concern leveraging buying power to control costs, decreasing risks in a deregulated market, reducing demand, and increasing energy independence through the use of renewables and combined heat and power plants. Aggressive goals, such as incorporating LEED principles and efficiency targets that often exceed the requirements of E.O. 111 have also been put forward. The task force approach and report are the templates upon which other SUNY sustainability initiatives are to be based.

Processes/Daily Work Subcommittee

While building standards and codes go far in helping to mitigate the environmental footprint of a building, other long-term effects are also felt once a building is inhabited. As discussed in the first part of this paper, day-to-day operations have significant environmental impacts, particularly in the creation of garbage. One key issue recognized by the ESC Environmental Impact Committee is the need to gather significant information regarding the practices at the various satellite offices around the state. Again according to Dr. Ehmann, while there is individual commitment, there is no institutional commitment to ensuring that recycling is facilitated at all of the regional offices. At the Saratoga Springs offices, for example, a staff volunteer gathers the materials and takes it to the local recycling center. Here we see a clear example of the need for a policy or standard operating procedure. Even when space is not owned, leases can be negotiated to include agreements to facilitate environmental practices. Custodial staff contracts can be written to stipulate that recycling and composting services are offered, along with the use of non-toxic, biodegradable cleaning products. These practices contribute to the creation of zero-waste offices.

Landlords can also be encouraged to use sustainable landscaping methods, which includes a polyculture of native, edible, perennial plants, integrated pest management and tree placement for summer cooling. Move-in or renewal leases can stipulate that non-toxic, low VOC (volatile organic compound) paints and finishes such as AFM Safecoat be used in turn-over work. Flooring can also be done sustainably through the use of natural, renewable materials such as jute or bamboo. Interface, a carpet company, has designed a system that offers carpet as a service. Carpet is laid in tiles so that when high traffic areas wear out, only those tiles are replaced instead of the entire room. The company is working to reclaim and recycle all of its carpet following a concept called Cradle-to-Cradle. All of these options can be sought in landlord-tenant contract negotiations, many of which are already included in ESC leases.

Electronic equipment poses a large environmental problem, from resource extraction, production, usage and ultimate disposal. Purchasing standards can be set to stipulate that Energy Star™ products are to be used. Printers and copiers should have duplex or double-sided options. When older single-sided options are still in use, scrap paper can be used for printing of internal paperwork and drafts. Disposal of outdated equipment can be tricky as reclamation options differ from place to place. Transfer stations and salvage collectors can help ensure that parts are recycled and reclaimed. In this regard, if there is not a viable option in the community, partnerships with other offices/businesses can be initiated to seek solutions. Per Chris Rounds, life cycle analyses are being done with all equipment purchased at ESC. Again per McDonough, "...we need new intentions for our future where materials are seen as things that are highly valuable and need to go in closed cycles-what we call cradle to cradle, instead of cradle to grave." (11th)

Mention in the EIC report was also given to the idea of going to more paperless options for document transfer and storage. In a 2005 study done by Lawrence Berkeley National Laboratory, "Total power used by servers represented...(in capacity terms) about five 1000 MW power plants for the U.S. and 14 such plants for the world. The total electricity bill for operating those servers and associated infrastructure in 2005 was about \$2.7 B and \$7.2 B for the U.S. and the world, respectively" (Koohey) In a world

facing energy, economic and environmental crises, the options for electronic storage vs. paper storage should be approached with much forethought.

Travel Subcommittee

Travel can be broken down into two areas, daily commute and business travel, which includes the sustainability practices at the destination. First, I will look at ways to offer more sustainable commuting and daily business options through a planning perspective. When searching for office space, preference should be given to rent in buildings situated near mass-transit lines. Siting offices in mixed-use zoning areas with other amenities such as restaurants, day-care and grocery stores, reduce the need for cars to accomplish household errands. Semester kick-offs for a few programs involve travel to hotels throughout the state for residencies. Travel to and from residencies and other meetings can be arranged so that car-pooling or mass transit use is encouraged. As with the rented office spaces, residency hotels can be chosen by their adherence to environmentally sound criteria. Questions for conference coordinators to ask include: are sites easily accessed by public transport, do they use disposables or durable place settings for group meals, do they provide pitchers of water instead of individual plastic bottles, do they serve local organic food? Is composting available for waste food?

There is a hospitality industry membership organization called the "Green" Hotels Association® that has researched environmentally friendly and water saving products that they offer through a catalog. Products range from low-flow faucet aerators to cards that customers can use to indicate that they do not wish to have their linens changed daily. (www.greenhotels.com, accessed April 12, 2008) If a particular hotel is not a member, the association has devised a 43-point questionnaire, adapted from one produced by the National Recycling Coalition of Alexandria, Virginia. (See Appendix A) This questionnaire can be adapted to ESC criteria and sent by residency or conference coordinators to perspective hotels to assess their sustainability.

Students & Academic Programs Subcommittee

While the EIC separated the concepts of student resources and academic programs, I have combined them here because it is difficult to talk about one without addressing the other. Empire State College, by virtue of its inherent culture of learner-based education along with its liberal arts curriculum, has tremendous potential to educate for sustainability. David Orr states that, "Real learning is participatory and experiential. The flow can be two ways between teachers who best function as facilitators and *students who are expected to be active agents in defining what is learned and how.*" (my emphasis) (91) The Center for Graduate Programs liberal studies curriculum begins with three core classes, Seminar in Liberal Studies, Models of Critical Inquiry, and Perspectives on Interdisciplinary Study. These classes, respectively, teach students the meaning of a liberal arts education, how (r)evolution in societal thought happens relative to the structure of paradigms, and how to design a major through an interdisciplinary liberal arts perspective. In understanding the liberal arts model, one understands how to approach a subject from many disciplines and the connections between them, the same model for comprehension of sustainability.

In a United Nations report, *Interdisciplinary Approaches in Environmental Education*, the authors note that "More and more learners also exist through their rejection of schooling; many students refuse to 'play the game' when faced with a juxtaposition of disciplines, each with its own progression, goals and structure that leave no room for either the learner's motivations or concerns about the environment in which they are plunged" (9). Weston contends that teachers ought to open up possibilities to students, giving them the room to expand their "imagination and passions" rather than follow pre-set activities (42). One of ESC's greatest strengths is its learner-based approach to education, which engages students as the active participants in creating their educational experience, thus allowing the expansion of their minds. Murray and Murray report that "research shows that open-ended enquiry-based learning techniques are useful for promoting sustainability values with in educational programmes" (285). In providing mentors/professors as facilitators, ESC opens the space for new ideas, such as a sustainable world, to be created. Supporting this approach with the faculty who

possess a diverse range of environmental knowledge allows students to create courses in their interest areas in relation to sustainability.

Sustainability can be approached as primary or ancillary course content. I have compiled a partial list from the March 2008 Center for Distance Learning on-line catalog, 2008 Adirondack Residency offerings and Graduate Course listings websites, of courses that infuse sustainability as substantial element or focus. (See Appendix B). This list is partial in that it does not capture the self-designed courses of study. An exemplary course that teaches students how to approach environmental issues is Dr. Marlene Hurley's *Environmental Science*. Per her description:

“This group study provides a basic understanding of environmental science, the environmental issues that are important in today’s society, and possible future impacts from environmental problems. Environmental science is 'an interdisciplinary study of how the earth works, how we interact with the earth, and how we can deal with the environmental problems we face' (Miller, 2007, p. 1). Students...will not only learn the basic elements of major environmental problems, but they will study the problems through a variety of approaches (e.g., problem-based learning). Problem-based learning (PBL) works best when students work in groups to research problems, find a solution, and report the solution both orally and in writing. Problems will be selected from local problems or from one of the textbooks.”

This course covers multiple perspectives over time, is place-based, and is transformative in that students learn to become problem solvers rather than passive witnesses of environmental degradation.

Courses do not have to solely focus on sustainability; they can provide another dimension of the sustainability awareness by using nature themes in readings and/or case studies. For example, a discussion of how nature is portrayed in modern art contrasted to how it was viewed in the past or in relation to other elements might be included in an art history class. Discipline oriented curricula can also include environmental themes successfully. Early childhood education courses might include studying how children with natural playgrounds fare in sciences and biology versus those who have only blacktop. In my degree plan, my mentor and I designed a course

on energy, which allowed me to look at many aspects of the field, including the impacts solar, coal and nuclear energy have on the planet. These examples can lead students more subtly into interdisciplinary perspectives on their place in the environment.

Having learning centers around the state offers the opportunity for place-based education. Coupled with the tools of service courses and open-space learning and place-based education is yet another avenue to educate and benefit society at the same time. One example would be to teach students how to gauge the sustainability of a place by conducting an assessment of their regional office. Students could work independently to study individual aspects such as paper use and its life cycle analysis, for example. They could also work in teams, in a capstone style course, to produce overall assessments on everything from electrical usage to toxic waste management, to commuting patterns. Cornell has a service oriented course titled *Environmental Stewardship in the Cornell Community*, in which "Each student undertakes an original project to improve the environment at Cornell while working with a faculty adviser and the Cornell infrastructure." Oral presentations are given at the end of the semester and are open to the community.

Information and Communication Subcommittee

Environmental Impact Committee members have begun the task of collecting information on sustainability and best practices as well as a list of media resources, to catalog what is already in place. Additionally, the group has called for the need to disseminate information in the form of a web presence and "celebration stories" in ESC publications. Stories highlighting students and alumni who are leaders in the field can inspire the broader community to action. Local media as well as larger outlets such as *The New York Times* and *Wall Street Journal* may also carry relevant stories, particularly if the work relates to a greater trend. The EIC noted the need to identify environmental academic publications in the library collections, offering sources of information and a potential place for publication of qualified student and faculty papers. Students in some schools have created their own publications, with an editorial board

and faculty advisor.

Orientation for new employees and students is a great opportunity to introduce the College's "culture of sustainability" with give-aways such as a regionally relevant tip sheet, and commuter mugs. It is important when brainstorming ideas for these gifts to seek functional pieces that are not likely to become "dust-catchers". While these measures look at the supply side, demand must also be cultivated. Sustainability requirements can be incorporated into job descriptions and performance evaluations. For example, in assessing performance at my current job, criteria include the application of affirmative action principles. Similarly sustainability criteria such as waste minimization and energy efficient workplace management could also be reviewed. Such requirements would lead to a need, and hence demand, for information.

Other Communities Subcommittee

In setting goals, the EIC subcommittee that looked at other communities and acknowledged the need to build relations with internal as well as external constituents. An example of an internal constituent is the Genesee Valley Sustainable Living Interest Group, started by professor Lorraine Lander. Currently the group list-serve provides a forum for information exchange and they have plans to have activities in the future. The group is comprised of a mix of faculty, staff and administrators. External constituents may include the community in which the student or school is embedded. The town of Caroline, just outside of Ithaca, NY hosted the *Lighten Up Caroline* campaign that has drawn student and community volunteers from all over the region to make and distribute a cloth grocery bag with a CFL lightbulb, and other small tools for sustainability. Two great advantages of this gift package were the raising of awareness and the forming of ties between communities.

Other communities can include other schools. Middlebury College in Vermont has established a biomass cooperative with SUNY's Environmental Science and Forestry school to explore the potential use of biomass energy. (www.aashe.org accessed 4/1/2008) Given the size of the SUNY system, a tremendous wealth of

information and experience can be tapped to enhance sustainability education and practices. In November 2007, SUNY sponsored a state-wide conference in Saratoga Springs, entitled *Exploring the Nexus of Energy, Environment, Economic Development and Education*. Energy crises and now global warming tend to be the gateways into sustainability discussions. Paul Hawken reminds us that the economy is the child of the environment which is also the parent of energy. These problems we are facing are termed the "3E Crisis," the answer to which lies in the 4th "E", education. Partnerships between schools can be a force multiplier.

While both the SUNY group and the ESC group looked at key partnership building, only ESC included alumni. Environmentally-minded alumni can be an overlooked resource as it is perceived that they often go into low-paying fields and do not give back to the alma mater. Regardless of financial status, given the devotion to the planet that many environmentalists operate from, these alumni can offer great gifts in terms of intellectual depth, volunteer time, and connections. UC Berkeley has an alumni association called BEAN, the Berkeley Environmental Alumni Network. Since 2004, through BEAN, alumni have been able to donate their time and money towards greening the university. In October 2002, Yale announced the creation of the Yale Green Fund and established it as a fundraising priority. Funds raised will support campus environmental initiatives developed by the Provost's Advisory Committee on Environmental Management. (<http://www.yale.edu/opa/v31.n8/story1.html> accessed 4/17/08)

Politics and Policy Subcommittee

The first recommendation made by the Politics and Policy subcommittee is obtaining the reauthorization of the EIC. It is important that the volunteer roles, as well as the overarching network, are formalized. Former Cornell University sustainability intern Garrett Meigs also recommends the establishment of a directory of staff and faculty involved in sustainability, that other staff members can consult for information (11). Because the workplace already calls for balancing many priorities, service on the

committee should be viewed by supervisors as a vital contribution to the overall well-being of the college. Such service can also offer the added dimensions of purpose and variety to the daily work experience. Establishment of overall policies calls for the buy-in from top leadership; something the EIC will have to work on with Empire State's incoming president.

The EIC also recommends the inclusion of sustainability principles in the school's strategic plan. The current strategic plan covers years 2006-10, so the timing is perfect to work on influencing the vision of the next plan and making it greener. Looking at the current plan, it is easy to see how sustainability can fit into the target areas of raising enrollment and fostering student success. In managing and increasing enrollment, ESC can market its existing strength of interdisciplinary education, coupled with a great wealth of professors knowledgeable in sustainability issues. As global climate change trends continue ahead of projections and a green jobs bill works its way through the US Congress, ESC can position itself as being ahead of the pack in the ability to educate a workforce prepared to deal with the issues and fill these jobs.

Empire State, unlike most colleges, works with many mid-career people who typically have little or no environmental education. These students often hold influential leadership roles and must adapt to the new information needed in response to calls for more sustainable work practices. Relative to the strategic plan's goal of promoting student success; sustainability oriented courses can engage students on multiple levels, bringing them into more direct contact with others. Studying at ESC can be isolating, due to the lack of classroom interactions. When taking place-based or problem-oriented courses, students are able to look outward from their books, engage with the community, apply knowledge, and bring "classmates" into their experiences. Involving others can provide inspiration to continue working.

Sustainability should also figure prominently in SUNY's next master plan, for all the reasons outlined in the first section of the paper, and also because it is consistent with state requirements. SUNY is governed by New York State Education Law, and Section 351 states:

"In fulfilling this mission, the state university shall...share the expertise...with the business, agricultural, governmental,

labor and non-profit sectors of the state through a program of public service for the purpose of enhancing the well-being of the people of the state of New York and in protecting our environmental and marine resources."

SUNY's current master plan covers 2004-2008 and is concentrated on the General Education Assessments and students' ability to cultivate understanding of scientific methods used to explore, develop hypotheses, measure and collect data, evaluate and analyze evidence within their subject areas. GEA requirements cover subjects such as mathematics, social sciences and western civilization according to the aforementioned criteria. While this is the base template, sustainability concepts can be incorporated through requirements that students acquire the capacity to understand their subject matters in relation to the natural world.

As mentioned earlier, sustainability initiatives should be designated as a fund-raising priority. Funds can be used to support projects that have a return on investment through savings generated. The Harvard Green Campus Initiative has created the Green Campus Loan Fund which is a \$3 million interest-free revolving loan fund. Its purpose is:

The loan fund was designed to (1) motivate faculty and staff to engage in actions to minimize the environmental impacts of the University; (2) remove an excuse or impediment (e.g., lack of funding) for beneficial projects with longer-term paybacks; and (3) facilitate the peer-to-peer education opportunities that compliment many of the innovative projects financed through the fund.
(<http://www.greencampus.harvard.edu/gclf/> accessed 4/20/08)

Requirements for projects include that they must reduce the environmental impact of the university and have less than a 5- to 10-year payback. Money for sustainability start-up projects can also be established as an annual fund. Annual funds are unrestricted current-use funds that are applied, often at the discretion of a dean, to areas of greatest need. A sustainability annual fund can provide bridge funding to get a project going, before it becomes an official budget line item.

Overall Recommendations

The Environmental Impact Committee identified the action plan of collecting information and data, which can lead to the development of a benchmarking process. Neither the EIC nor the SUNY reports advocate for the creation of a sustainability coordinator position. Creation of progress tracking tools and a coordinator are essential to charting a destination and piloting the journey. According to Dr. Ehmann, the SUNY administration has been considering the hiring of sustainability coordinators for each location, but at the time of our communication, he was skeptical that this was going to make it through budgetary processes. (email, March 2008) ESC and SUNY both host many faculty, staff, students and alumni knowledgeable in fields related to sustainability. However, the scope and complexity of work necessary to create sustainable institutions cannot be carried out solely by unsupported volunteers, in addition to their regular duties. Sustainability coordination typically requires a full time position, with support staff, to prioritize work, ensure links are made among various campus entities (particularly between operations and academics), to centralize benchmarking and track progress, provide oversight and give a unified voice for sustainability initiatives. In a report from the Spring 2005 Campus Sustainability Summit at Cornell University, every stakeholder group, unanimously, recommended the creation of a coordinator role (Meigs 11).

As mentioned above, Empire State College and the SUNY system are both home to a large body of intellectual wealth in the subject of sustainability. This includes professors, library resources and course offerings. There is, however, no overarching approach to the subject. General education standards are set through the SUNY system and administrators making those decisions should be encouraged to create a sustainability literacy requirement which could be launched through a freshman reading project. Graduate students can be introduced to the basic tenets of sustainability through a short course within their research area. ESC and SUNY possess the resources to create a new degree plan or major in sustainability that would link the related courses together in a formalized way. The business world is seeking partnerships with environmentalists in ways it never has. (Whitman, 2007) A degree in

sustainability can lead to work in many fields.

Partnerships for Sustainability in Higher Education

In this next section, I will look at the recent history of the movement advocating for sustainability in higher education and the organizations created to support it. Throughout history, many scholars have called for a greater educational focus on the natural world. Within the past twenty years numerous organizations have been founded, and charters and proclamations have linked sustainability with academia. Four of groups pioneering the relatively recent movement are introduced below.

Magna Charta Universitatum, 1988

In September, 1988 a group of European university rectors gathered in Bologna, Italy to acknowledge the commonalities among their institutions and to celebrate the 900th anniversary of the University of Bologna. The resulting *Magna Charta for European Universities* acknowledged the universities' place in society, the importance of academic freedom and, "that universities must give future generations education and training that will teach them, and through them others, to respect the great harmonies of their natural environment and of life itself." (<http://www.magna-charta.org/home2.html> accessed 4/30/08) While the environment gets a mention initially, follow up Magna Charta conferences and organizations have not appeared to address the issue. This September 2008, a twenty-year anniversary signing of the agreement will be held in Bologna. It will be interesting to see if the environment will move to the forefront of discussions.

Talloires Declaration, 1990

In 1990, university presidents and chancellors met in Talloires, France to address the need for environmental management specialists and overall knowledge of societal

impacts on the environment. The resulting report called for the increase in environmental literacy in fields such as engineering, social sciences, health and management as well as for schools to become environmentally sustainable themselves. At the end of the conference, the Talloires Declaration was created outlining a ten-point action plan which has served as a template for other such documents, including the Halifax Action Plan in 1991, the Kyoto Declaration of the International Association of Universities in 1993 and the Student Charter for a Sustainable Future in 1995. The Association of University Leaders for a Sustainable Future serves as the secretariat for the declaration which also brings the issues of social justice and economic viability into the sustainability discussion. As of April 21, 2008, 368 university presidents and chancellors from forty countries have signed on. The declaration and 10 Point Action Plan is attached as Appendix C. (<http://www.ulsf.org/about.html> accessed 4/21/2008)

Agenda 21, 1992 & The United Nations Decade of Education for Sustainable Development, 2003

To follow up the 1992 Earth Summit in Rio de Janeiro, Brazil, the UN Committee on Sustainable Development was formed as a governmental body to look at best practices. In addressing issues of development and the environment, the committee found that gender equity, literacy and poverty issues also need to be examined. Education was discussed as the mechanism central to sustainable development and Agenda 21 lays out the action plan for the world's governments and citizens to promote education for sustainability. (5) In 2003 the UN Educational, Scientific and Cultural Organization announced the Decade of Education for Sustainable Development (DESD) which spans from 2005 to the year 2014. The DESD goal is to “integrate the principles, values, and practices of sustainable development into all aspects of education and learning.”

http://portal.unesco.org/education/en/ev.php-URL_ID=27234&URL_DO=DO_TOPIC&URL_SECTION=201.html accessed 4/30/08) In the US, the University Leaders for a Sustainable Future and other non-profit groups based in Washington DC launched a nation-wide, multi-sector umbrella organization called the US Partnership. This group began as a grassroots response to the lack of leadership,

from the Bush administration, on the DESD initiative. The US government is not a formal partner and hence, there is no funding from the UN for work done here. The partnership, which is now incorporated as a non-profit, is broken out into sector teams including one for higher education. Sector teams are decentralized and autonomous in their work. (Roth, 2008) The Partnership website, like those of the other organizations mentioned here, provides a wealth of information on how to implement sustainable practices in education.

Association for the Advancement of Sustainability in Higher Education, 2006

AASHE was founded in 2006 to promote sustainability in all sectors of higher education, including governance, operations, curriculum, research and professional development. It also serves as a professional organization for campus sustainability coordinators. The group evolved out of work conducted by Second Nature, the Consortium for Environmental Education in Medicine, and the Education for Sustainability Western Network. In 2007, AASHE created the American College & University Presidents Climate Commitment (ACUPCC) to create a high-profile effort to address global warming issues “by garnering institutional commitments to neutralize greenhouse gas emissions, and to accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth’s climate.” Due to their regional and national efforts AASHE has engaged over 500 presidents, including Empire State College’s president, who have signed the commitment. The climate commitment is attached as Appendix D.)

<http://www.presidentsclimatecommitment.org/html/about.php> accessed 4/30/08)

Conclusion

Regarding sustainability, paradigm shifts and education, Douglas Bogen foretold in his 1985 thesis that, “The pattern projects another turning point in the relatively near

future.” (40) This prediction proved accurate and a reorientation towards a more sustainability society has begun at many pioneering institutions of higher education. As is typical with large societal shifts, this one has begun to take hold as the crises of energy, the environment and the economy converge and the old answers fail to address the new questions. Slower evolutionary processes are giving way to the need for revolutionary leaps forward to address immediate concerns. Empire State can and should continue to formalize work being done in academic and operations management sectors to achieve sustainability at the college. Formalizing the volunteer Environmental Impact Committee, creating a sustainability coordinator position, and leveraging its liberal arts, learner based curricula for sustainability education will allow ESC to continue pioneering educational trends, leading the way to a more sustainable society.

The shifts we are experiencing in the world today have been referred to by some business people as the next industrial revolution. It is an encouraging time to be a part of the sustainability movement, knowing that many opportunities exist to work for real and lasting changes. The challenges before us demand an in-depth and broad-spectrum knowledge on the system dynamics and natural processes that make up our world. Through our education systems, knowledge must be shared of not only how to make a living, but also how to preserve life. Armed with the strength of education and fueled by a desire to better the world, the next generation of leaders can create a world more hospitable to all children of creation.

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APPENDIX A Sustainability Related Courses at Empire State College

Center for Distance Learning Course listings:

ART-224754 Exploring Place: Arts (4 cr)

Liberal Study Upper Level

Meets General Education Requirement In: The Arts-Full

This is an advanced-level research course in which students, with guidance from the instructor, propose and carry out their own semester-long, self-directed, in-depth research agendas.

Thinking of place as a community in a geographical location or physical environment, this interdisciplinary course seeks to offer an opportunity for a place-based approach to the arts. Explore artistic expression in and/or about the place you live (or some other place of interest), whether you define that place as a neighborhood, a whole village or town or city, a geographical region or a watershed. Research, for example, art about a particular place, local museums, graffiti, billboards, yard decorations, regional dance traditions, local music or regional crafts. Examine a variety of critical methodologies from the arts and related fields of cultural criticism to understand local/regional artistic expression and the creative process inherent within.

Collaborate with other students interested in the arts, culture, history and environmental history to learn concepts for thinking about place as a process, as a coming together of nature and culture, of the local and global and of issues ranging from gender, class, ethnicity and the environment to modernization, conservation and preservation. Design and share with peers the results of your own projects about artistic expression and the place you are interested in. "Visit" one another's place online as part of a cross-place comparison. Some of the reading materials for this course have been predetermined and are available at the bookstore. However, each student, in consultation with the instructor, will be responsible at the outset of the course for proposing a set of individualized, place-specific research topics that will comprise the bulk of their work throughout the term. (For example, a project might require acquiring a scholarly book and a popular book about your place in order to analyze and compare how they represent its landscape.) **Each student will be responsible for acquiring (borrowing or purchasing) in a timely fashion the books and materials necessary for these projects. Such materials are not available at the bookstore.**

Students and mentors should note that the highly-individualized approach of this course can enable students to develop projects that support a particular personal interest or degree program need that is not directly motivated by an interest in the arts per se. For example, a student who is interested in gender studies could choose to develop their projects in this course entirely around the question of women artists in his or her community. Or, a student in Community and Human Services could focus for the entire term on the role of regional arts organizations on the well-being of his or her local community.

Important Note: this course overlaps with Exploring Place: Humanities and Exploring Place: History. No more than **one** of these three should be included in a degree program.

NATURE IN AMERICAN HISTORY (HIS-243544)

Liberal Study Upper Level

Credits: 4

Meets General Education Requirement In: American History

Explore the history of the changing relationship between American culture and its environment, especially as that relationship has been manifest physically (as "nature," the ecosystems we've inhabited, which have been changed by our activity) and conceptually (as "nature," a concept that has a history and evolution of its own and which has entered into the thinking of philosophers, economists, poets, artists, legislators, environmentalists, biologists, etc.) Become familiar with the main eras and episodes of American history as they relate to American culture's grounding in nature: the European encounter with a (supposedly) virgin wilderness; the rapid exploitation of resources that accompanied westward and industrial expansion; the closing of the frontier and the development of resource conservationism; continued industrialization of the nature-culture relationship through nearly a century of war; the modern tension between economics and a concern for ecological health and balance. Through readings, discussions, writing and other study activities, learn a basic narrative of the American experience by tracing the nature-culture relation over time and trace the complex interaction between the character of that relationship and contemporaneous political, social, economic and cultural changes. Study the work and historical context of such influential thinkers as Henry David Thoreau, John Muir, Gifford Pinchot, Aldo Leopold, Theodore Roosevelt, Rachel Carson. In addition, participants will engage in a practical component of study by learning to read contemporary American landscapes for what they record of cultural, social, land-use and ecological history – a basic element of environmental literacy that has been neglected in our era.

WORLD POPULATION (HIS-243314)

Liberal Study Upper Level

Credits: 4

Acquire a broad background understanding of the United States and world population, including the causes and consequences of its growth. Learn about the three primary demographic processes -- fertility, mortality and migration -- that are at the heart of population questions. Learn how to locate demographic data sources online, including U.S. Census Bureau sources. Apply your understanding of world and U.S. population and population processes to related issues such as U.S. Census 2000, overpopulation, undocumented international migration, social security, or ethical questions about population policy; to issues less directly related to population, such as natural resource exhaustion, environmental degradation, or business and economic development.

Prerequisites: prospective students should have some coursework in the social sciences and be able to perform elementary algebraic calculations. No knowledge of

statistics or calculus is necessary.

GLOBAL CLIMATE CHANGE (SMT-272114)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

There is little doubt that the Earth's climate is changing due to the influence of human activities. In this course students will explore the evidence that climate change is occurring, how human activities have affected this process, the primary forces influencing the Earth's climates, and what steps can be taken to adapt to or mitigate these changes.

This course fully meets the General Education requirement in Natural Sciences.

ECOLOGY, ADAPTATION AND SUSTAINABLE DEVELOPMENT (SMT-271504)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

This course provides a comprehensive, clear and engaging introduction to human ecology, biological adaptation, cultural adaptation and sustainable development. Included are studies of the organization and function of ecosystems, the interactions of human social systems with them and how social institutions and processes contribute to, or conflict with, sustainability. The readings concentrate on how humans affect global ecosystems and how these changes impact our health, behavior, social and cultural life. The course will integrate long-standing ecological principles with more recent case studies that focus on achieving ecologically sustainable development. The coursework includes concepts that can be applied in our individual and collective lives to pursue a promising and secure future. This material is a thought provoking exercise aimed at sensitizing the students via case studies on biological and cultural adaptations from different parts of the world. By pursuing this course, students will also be able to investigate ecological principles relevant to global concerns and will be able to cultivate values that prepare them as informed and responsible global citizens.

This course fully meets the General Education requirement in Natural Sciences.

ENERGY: THE ISSUES AND THE SCIENCE (SMT-271544)

Liberal Study Lower Level

Credits: 4

In this world, energy is crucial for events of any kind. The existence of life, the origin of civilization, and our modern society are all based on the capture and flow of energy. However, as the largest user of fossil fuel energy with the highest per capita consumption in the world, the current patterns of energy use in the United State are without question unsustainable over the long term and raise critical questions of self-sufficiency and global impact.

This course will discuss fundamental energy science principals in the context of chemistry, biology, and physics. The study will examine the origin and flow of energy through the system, what it does, and its ultimate fate. The course will further explore current issues in energy including the economics of energy production, how public policy on energy will impact our everyday life, how the environment is effected by energy consumption, and how new technologies can help achieve a sustainable energy policy. Students in this course will be challenged to critically examine the use of energy in our society and to formulate a personal understanding of this complex issue.

ETHNOBOTANY (SMT-272054)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

Our human ancestors depended on plants for food, shelter, medicine, and clothing. Plants also had a key role in religion and mythology. Knowledge of plants and their uses was vital for survival for early peoples, and many cultures today still depend on plants for many of their resources. In this course, students will learn about plant biology and the role of plants in societies throughout the world. Ethnobotanical field methods will be introduced and students will engage in field/practical activities. Other topics for exploration and discussion will include conservation, sustainable development, bioprospecting, and intellectual property rights.

This course fully meets the General Education requirement in Natural Sciences.

BIOLOGY OF ECOSYSTEMS (SMT-272204)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

Gain an understanding of and appreciation for fundamental themes of biology through the study of plants, insects and living organisms in ecosystems. Learn about the importance of biodiversity and the complex interdependence and interaction between plants and animals in a healthy ecosystem. Develop a conceptual framework that will enable you to apply what you learn to critical examinations of complex ecological issues.

While some background in biology will be helpful, there are no specific prerequisites for this course.

More information can be found at:

<http://www1.esc.edu/personalfac/jbyrnes/ecology.htm>.

This course fully meets the General Education requirement in Natural Sciences.

WINTER ECOLOGY (SMT-272514)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

There are elements of secrecy and risk embedded within a winter landscape that seemingly belies the change of seasons and the progression of living things. Yet to the observant, winter is replete with beauty, movement, and life. This course explores the vast intricacies of nature that encapsulate winter, drawing upon the sciences and our individual experience to reveal its pattern. The peculiar adaptations of plants and animals (including humans) to the cold will be understood from the constraints and opportunities afforded by the physical environment. The tutor will emphasize the student's own development as winter interpreters through a sequence of exercises and inquiry, including descriptions of the landscapes that surround us.

This course fully meets the General Education requirement in Natural Sciences.

PLANT ECOLOGY (SMT-273524)

Liberal Study Upper Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

Plant ecology is the scientific study of interactions that determine the distribution and abundance of plants within the environment. This course will introduce students to the fundamental principles and concepts of plant ecology through an examination of plants within the environment. Topics will include: the individual plant and how it interacts with its environment; population biology; communities -- how populations of different plant species interact; from ecosystems to landscapes; and global patterns and processes of plant ecology. Some of the subjects covered are unique to plants, such as photosynthesis and the ecology of plant-soil interactions. Other topics, such as resource and mate acquisition, emphasize the distinctive ways plants (in contrast to mobile animals) deal with their environments. Human environmental influences on plants are covered.

This course fully meets the general education requirement in Natural Sciences.

Prerequisites: Biology of Ecosystems or equivalent.

CONTEMPORARY ENVIRONMENTAL ISSUES

Liberal Study Upper Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

This interdisciplinary course examines a broad range of contemporary global environmental issues, such as biodiversity, pollution, population growth, and global warming, and focuses on how those big issues might affect us locally. It develops students' environmental literacy and enables them to take part in informed debate and action. It explores environmental materials in a variety of media and teaches students how to navigate these materials; how to analyze and evaluate information; how to

balance information from a variety of scientific and nonscientific, objective and subjective sources; and how to develop arguments surrounding environmental problems.

Prerequisites: An understanding of basic environmental issues and concepts such as would be gained in a lower-level ecology course, e.g., "Biology of Ecosystems"

This course fully meets the General Education requirement in Natural Sciences.

ORNITHOLOGY (SMT-274534)

Liberal Study Upper Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

Ornithology is an upper level biology course with a full lab component, that will build on knowledge obtained in introductory biology courses. It will reinforce students' understanding of basic anatomy and physiology, evolution and ecology. It will then expand their knowledge with an in-depth study of the biology of birds, including avian form and function, behavior and migration. Students will discuss the roles of birds in ecosystems and the importance of conservation efforts to preserve habitats. Students will learn to identify birds by characteristics such as size, shape, color, markings, flight patterns, habitat and behavior. They will also be required to learn to identify birds by call and song. Students will keep a journal of sightings throughout the course.

Prerequisites: One of the following courses (or similar learning/understanding): Biology of Ecosystems or another lower-level biology course that includes a significant environmental science component.

This course fully meets the General Education requirement in Natural Sciences.

Social Theory, Structure & Change no sustainability related courses

Courses for the Center for Graduate Programs:

LABOR

LAB-630532 OCCUPATIONAL HEALTH AND SAFETY IN THE MODERN WORKPLACE - 3 credits

The purpose of this course is to understand the place of occupational health and safety in the modern workplace. The student will gain insight into the economic, political and social forces that impact worker health and safety. Through directed readings and a major research project the student would develop an in-depth knowledge of the health and safety issue of his or her choice. Some possibilities for this project are ergonomics, indoor air quality or violence. Contact the tutor for a list of materials.

LAB-630536 ENVIRONMENT, LABOR AND THE COMMUNITY - 3 credits

This course will explore the economic, political and social forces that influence the environmental policies of labor unions and community organizations. The student will study worker and community struggles for environmental quality, as well as corporate threats that make coalitions difficult. In a major research paper the student will develop an in-depth understanding of the environmental issue of his or her choice. Some possibilities for this project are environmental justice, toxic waste or lead contamination.

LIB-640504 MODELS OF CRITICAL INQUIRY: ENVIRONMENT AND SOCIETY – 3 credits

This track of Models of Critical Inquiry will focus on the relationship of culture to nature as that relationship has evolved, and continues to evolve, in history. In particular we'll look at the paradigm shift by which we may (yet) give up the notion that we can infinitely manipulate, control, and exploit natural processes for economic benefit. Students share a common core of readings on paradigm change and environmental history, then read a book from a list of works on Peak Oil, and complete a research paper on an environmental problem or issue area of their choice.

LIB-640570 ECOLOGICAL ECONOMICS – 3 credits

This course examines the emergent new paradigm in economic theory, ecological economics, which (unlike the prevailing neoclassical model of economics) takes seriously the laws of thermodynamics, and sees economic activity as taking place within (and as exchanging matter and energy across a boundary with) a larger environment. Following closely the structure of a new text, Daly and Farley's *Ecological Economics: Principles and Applications*, and drawing on additional readings, the course covers this difference in theoretical perspective and then applies this new perspective to traditional economic theory and to the micro- and (especially) macro-economic problems that economics customarily addresses. The text and course also address many issues that traditional economics usually shunts aside as being beyond the purview of economists: issues in distribution of wealth (and in negative environmental impacts), and in general the integration of politics and economics in a new approach to political economy. This is an online course, with enrollments of undergraduates in Empire State College's International Program--you'd be taking the course along with senior economics majors in Tirana, Albania and Prague, Czech Republic. (Because the European academic calendar differs from our own, some calendar adjustments will be necessary.) Enrollment is open to International Program students first, with a few places available to graduate students.

MGT-651602 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY - 3 credits

The purpose of this course is to study theories in ethics and apply them to achieve an understanding of moral philosophy with regard to the social responsibility of business and specific problems and issues facing business today. These issues include, among others, the rights and obligations of employers and employees; hiring, firing and discrimination; gathering, concealing and gilding information; and issues in dealing with foreign cultures. Students will consider how organizations can be guided toward fulfilling their social responsibilities.

MGT-651615 BUSINESS SUSTAINABILITY - 3 credits

The overall purpose of this course is to examine issues of business sustainability - the long term, overall impact of a company's actions on the environment. This course will explore the concept of business sustainability and how to evaluate how it is being proactively integrated into core business systems and strategies. The aim of this course is to better prepare managers to deal with this strategic issue. Students will have the opportunity to evaluate the state of environmental practice in their functional areas of expertise, e.g. marketing, finance, accounting, operations, and examine the complex environmental issues facing leaders in today's global marketplace.

Courses where sustainability could easily be integrated

INTERNATIONAL POLITICAL ECONOMY (BME-214424)

Liberal Study
Upper Level
Credits: 4

Learn about growing interdependence of global economic and political problems over last 25 years. Explore why the current set of global problems cannot be understood as just international politics or international economics. Focus on a complex multidisciplinary approach provided by international political economists to study the causes and effects of globalization of markets. The topics include the nature and main theories of international political economy; the national systems of political economy; the evolution of international trade; the evolution of international financial system; the state and multinationals; the state and economic development; the political economy of regional integration; the nation-state in the global economy; the governance in the global economy.

Prerequisites: A previous course in economics or equivalent is recommended.

EXPLORING PLACE: HUMANITIES (CUL-224764)

Liberal Study Upper Level
Credits: 4
Meets General Education Requirement In: Humanities

This is an advanced-level research course in which students, with guidance from the instructor, propose and carry out their own semester-long, self-directed, in-depth research agendas.

Thinking of place as a community in a geographical location or physical environment, this interdisciplinary humanities course seeks to offer an opportunity for a place-based approach to cultural studies. Explore culture of and/or about the place you live (or some other place of interest), whether you define that place as a neighborhood, a whole village or town or city, a geographical region, or a watershed. Research, for example, literature about a place, local literary or other cultural genres or practices such as song texts sung at local coffee shops, regionally published poetry, essays in local newspapers, proverbs of community elders, local storytellers, regional foodways, or local festivals. Examine a variety of humanities methodologies from the language arts,

literature, communications, folklore and cultural anthropology, for engaging with representations of place and place-based cultural practices.

Collaborate with other students interested in culture, the arts and history to learn concepts for thinking about place as a process, as a coming together of nature and culture, of the local and global and of issues ranging from gender, class, ethnicity and the environment to modernization, conservation and preservation. Design and share with peers the results of your own projects about culture and the place you are interested in. "Visit" one another's place online as part of a cross-place comparison. Some of the reading materials for this course have been predetermined and are available at the bookstore. However, each student, in consultation with the instructor, will be responsible at the outset of the course for proposing a set of individualized, place-specific research topics that will comprise the bulk of their work throughout the term. (For example, a project might require acquiring a scholarly book and a popular book about your place in order to analyze and compare how they represent its landscape.) **Each student will be responsible for acquiring (borrowing or purchasing) in a timely fashion the books and materials necessary for these projects. Such materials are not available at the bookstore.**

Students and mentors should note that the highly-individualized approach of this course can enable students to develop projects that support a particular personal interest or degree program need that is not directly motivated by an interest in the humanities per se. For example, a student who is interested in Labor Studies could choose to develop their projects in this course entirely around the question of "working class culture" in his or her community. Or, a student in Community and Human Services could focus for the entire term on the role of regional cultural organizations on the well-being of his or her local community.

Note: this course overlaps with Exploring Place: Arts and Exploring Place: History. Students interested more in the artistic cultural aspects (including visual culture, say, or music) of place should take Exploring Place: Arts. No more than **one** of these three should be included in a degree program.

URBAN STUDIES (HIS-243304)

Liberal Study Upper Level

Credits: 4

Using a multidisciplinary approach, explore aspects of urban society including: historic emergence of cities across the world; urban development and growth in the U.S.; diversity of U.S. urban/suburban life; contemporary world-wide urbanization; urban geography and environment; urban political economy, public works, planning; culture, aesthetics, architecture; and prospects for the future. Gain a sound grasp of contemporary thinking and research on urban society, particularly in the U.S., and the intellectual tools to apply this knowledge to topics in the student's own particular area of scholarly interest.

Prerequisites: students should have taken at least two courses in history, sociology,

anthropology or political science and be prepared for upper-level work.

THE UNITED STATES (HIS-241214)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: American History

Examine the social, economic and political development of the United States from the colonial period through the Civil War. Study the growth patterns of four centuries, formative years in which many of the characteristics of the contemporary United States took shape.

This course fully meets the General Education requirement in American History

MODERN RUSSIA: BUILDING A CIVIL SOCIETY (HIS-243384)

Liberal Study Upper Level

Credits: 4

Study modern Russia from the fall of Czarist Russia to the Bolsheviks and the rise and fall of the Soviet Union. Examine the current difficulties in creating a democratic society in Russia and become aware of the conditions facing the Russian citizenry in light of the Soviet legacy.

THE FUTURE OF BEING HUMAN (SMT-272334)

Lower Level

Credits: 4

The 21st century is upon us, no longer a futuristic sci-fi fantasy. The goal of this course will be to read current scholarly viewpoints on the question of being human and to discuss the implications for our future as humans in times of unprecedented scientific discovery, technological advancements, and medical breakthroughs. DNA and cloning technologies exist, as does the cyborg--the machine-extended human being. What is in store for humanity? Our growing technological powers have given us an increasing ability to not only change the world around us, but ourselves as well. Activities will help students wrestle with some of these implications through discussions, a pro-con debate, field research and an optional activity in "Second Life."

Prerequisites: It will make the models explored in this course easier to understand if a student has completed their general education requirement in mathematics.

HUMAN BIOLOGY (SMT-272364)

Liberal Study Lower Level

Credits: 4

Meets General Education Requirement In: Natural Sciences

Pursue a systematic study of the major systems of the human body and understand the relationships between structure and function in living organisms. Includes fundamental concepts and principles of chemistry and biology, including cells and tissues, necessary

for understanding the major topics. Study systems of the human body -- nervous, endocrine, reproductive, circulatory, immune, respiratory -- in detail.

Provides for critical reading and interpretation of scientific text and information as well as greater understanding of facts, concepts and principles in biology related to contemporary issues in health, medicine, biotechnology and human behavior. There is no laboratory component in this course.

Note: this course has a required CD-ROM component.

This course fully meets the General Education requirement in Natural Sciences.

2008 Adirondack Residency offerings:

American Environmental History

Tutor: Karen Garner

This course considers broadly the interaction between humans and nature on the North American continent, from Paleo-Indian cultures crossing the Siberian land bridge in 15,000 BCE, to the contemporary globalized consumer culture inhabiting the United States. This study focuses on the key turning points of U.S. environmental history, identifies the historical forces behind physical transformations of the environment, and contrasts the *ideas* about the environment held by Native American peoples and Euro-American peoples during the 17th, 18th, 19th, and 20th centuries. This course combines critical reading, writing, and discussion to illuminate the elements of evidence, values, and interpretation in the study of environmental history. This course fully meets the general education requirement in American history.

Climate Change, Globalization and Social Equity

Tutor: Chris Rounds

This study explores the boundary between concern for the global environment and concern for the welfare of the global poor. It explores the nature and impact of globalization in the context of climate change and the roles both rich and poor play in that process. Students will read two texts and will then explore specific aspects of the issues raised by the authors in the context of a 'developing' country or region chosen in consultation with the tutor. This course meets the SUNY general education requirement for Other World Civilizations and Social Science.

Looking at Nature Through Digital Photography

Tutor: Alan Stankiewicz

A visual "voice" is an important tool in interpreting your environment; a photograph can transform the everyday. Combined, they can inspire and educate. This course utilizes principles and concepts of digital photography while looking at the beauty of nature. Students will learn to compose a strong photograph and explore trends in environmental photography and nature documentaries. We will apply the skills and concepts to the

Adirondack landscape and in the final, required nature portfolio. No previous photographic experience needed; access to a digital camera required. This course meets the SUNY general education requirement for the Arts.

Ecopsychology

Tutor: John Eisner

The relationship between humans and nature has changed dramatically, with important implications for mental health, physical well-being and sustainability of society and the Earth. This study explores the multiple underpinnings of Ecopsychology, which emphasizes our connection with nature, from inner psyche to ecosystem. Topics include evolutionary foundations of the human-environment relationship; cross-species and developmental perspectives; from egocentricity to ecocentricity; mourning and fear to healing and celebration; the prevailing beliefs about human roles; spirituality and nature; and Deep Ecology. This course meets the general education requirement for social sciences.

Ethics, Humanities, Environment, Economics: Compatible or Contradictory?

Tutors: Duncan RyanMann and Wayne Ouderkirk

Is environmental sustainability possible without economic disaster? Is business a critical agent in achieving sustainability? Is concern for the environment any concern of business? Is business the environmental problem? What is the role of public policies in aligning business goals and the environment? This study examines competing paradigms of economics and business to identify their strengths and weaknesses in the effort to create a sustainable society. The course will argue in favor of the model proposed by ecological economics. Our perspective will be interdisciplinary, with elements of philosophy (ethics), economics and business all contributing. This course meets the SUNY general education Humanities requirement.

Iroquois Cultural Botany

Tutor: Drew Monthie

Indigenous peoples relied heavily upon plants for food, medicine and spiritual practices. This interdisciplinary study looks at the cultural botanical practices of the Iroquois peoples who inhabit New York state. Many of the plants used by the Iroquois also have uses in modern medicine, due to the presence of compounds such as alkaloids and terpenes that may interact significantly with human body chemistry. We will explore Iroquois cultural use of plants and historical plant medicine, and the implications for modern culture and medicine. This course meets the SUNY general education requirement for Natural Science and Other World Civilizations.

Root, Word and Ritual: The Power of Nature, Traditions and Storytelling

Tutor: Elaine Handley

Through the ages, peoples' inner lives—their hopes, fears beliefs and sense of identity—were translated into words and ritual, usually in relation to the natural world. In this course, students will learn further about this powerful conjunction of nature, ritual and story, in Native American cultures and rediscovered traditions. Students will reflect on their own lives in terms of these three elements and observe the ways our present culture uses or rejects traditions having to do with nature, stories, and rituals. Texts will include fiction, non-fiction, and poetry. This course meets the SUNY general education humanities requirement.

The Science of Global Environmental Change

Tutor: Marlene (Chris) Evans

This study explores our amazing but dangerous planet, examining processes and impacts that threaten human habitats. Attention is given to relationships between terrestrial and oceanic processes and global climate change; the science of violent weather events (e.g., hurricanes); tectonic processes that produce earthquakes, volcanoes, landslides and tsunamis. Other topics include physical and social impacts of climate change; ozone depletion; flood impacts on coastal settlements; glacial melting; changes in ocean processes; and global fresh water resources. Rooted in earth and atmospheric sciences, this course helps the student develop an understanding of nature's threats. This 4 credit lower level course meets the general education requirements for Natural Science.

ENVIRONMENTAL FIELD OBSERVATION

(2 credits, introductory, Natural Science)

Instructor: Nikki Shrimpton

This study allows students to learn, and practice, techniques for observing and recording ecosystem features and processes. Students also learn about the methods ecologists use to answer questions about the natural environment. Student groups will engage in several field exercises to investigate the different ecosystems present at camp – forest, bog, meadow and lake. Each student will complete a final paper focusing on one of the topics introduced at the residency. Students can elect to participate for credit, or as noncredit observers. The time at the pre-residency is spent mostly out in the field. **Students must have the ability to undertake at least two miles of hiking on forest trails.** This course fully satisfies the general education requirement in natural sciences.

RUMINATIONS ON DEER

(2 credits, advanced, Humanities)

Instructor: William J. Ehmann

From our backyards to our grocery stores, and from insurance company board rooms to Camp Huntington/ Raquette Lake, deer are inextricably part of our lives. This advanced level pre-residency course explores persistent ecological, cultural, and spiritual connections between humans and deer in North America, including indigenous

and immigrant points of view. The dominant learning mode will be group discussions supplemented by lecture segments, video presentations and brief field walks. Describing deer is different than the essence of deer, but students will engage in a suite of class experiences to get close to this essence. Learning activities include online discussions of our text **prior to the residency**; oral and written work at the pre-residency itself; and a final paper.

WATERSHEDS OF THE ADIRONDACKS

(2 credits, advanced, Natural Science)

Instructor: Marlene Evans

This course will use map study and other sources to examine the natural characteristics of the five watersheds (drainage basins) of the Adirondacks that attract recreational use and development. Watershed formation and function will be explored, as will drainage basin characteristics, including the role of topography and man-made alterations. We will conduct aerial observation via a short seaplane ride over selected lake systems of central Adirondacks, which will require an additional \$50.00 fee. This course is limited to five students, who must sign a waiver.

APPENDIX B Meeting Planner's Questionnaire for "Green" Lodging Establishments

From www.greenhotels.com

Item/Question	Yes	No	Example(s)
Does your property regularly purchase reusable and durable products?			
Does your property regularly purchase products that can be recycled?			
Does your property regularly purchase recycled products?			
Does your property have an in-house recycling program? If yes, what materials are collected for recycling?			
Does your property have a recycling program which allows guests to participate? If yes, what materials are included?			
Does your property recycle any other materials (linens, phone books, oil, pallets, batteries, etc.)?			
Will your property provide recycling bins for our meeting? Circle which materials we will have recycling bins for: aluminum, glass, newspaper, white paper, plastic, steel cans			
Will your property commit to seeing that the above items collected from our meeting are actually recycled?			
Does your property have a contract with recycling hauler/s or business/es?			

Does your property donate, sell, or recycle old "durables" (i.e., furnishings, etc.)?			
Will your food and beverage services use reusable items such as cloth, glass, ceramic, etc. rather than disposable items such as styrofoam or plastic for our meeting?			
Will your property serve food buffet-style? One large plate? Without garnishes?			
Will your property use cream pitchers, sugar pourers and washable spoons rather than individual creamer and sugar packets, etc. for our meeting? Jelly servers rather than individual packets? Other?			
Will your kitchen purchase fresh rather than packaged produce?			
Are vegetarian or vegan menus available?			
Does your property purchase and serve beverages from a dispenser or in returnable refillable containers?			
Who pays for bottle deposits--the client or the property?			
Does your property donate leftover food to a local non-profit organization?			
Will you provide cloth rather than disposable table drapes for display tables?			
Will you provide meeting tables WITHOUT tablecloths?			

Does your property have props, decorations, foliage or centerpieces that we can use?			
Will your property use chips or coins rather than disposable paper tickets for coat checking and auto parking?			
Does your property have guestroom dispensers for soap and shampoo?			
Is your property willing to remove all small plastic amenity bottles from the guestrooms which our participants will occupy?			
Does your property give guests a choice on having bath linens exchanged?			
Does your property offer guests a choice on having bed sheets changed?			
Do guestrooms have low-flow showerheads? Low-flow sink aerators?			
Will pitchers of water be placed on the tables rather than prepouring glasses of water?			
Will you use insulated water containers to keep the water cold longer?			
Will you use water from a cooler rather than using ice?			
Will you use leftover water and ice to water plants and replenish fountains?			

What other water conservation measures have been taken?			
What are you doing to reduce dry cleaning and laundry paraphernalia?			
Does your property offer double-sided copying at a reduced rate?			
Do doors to your meeting rooms open and close silently, without any sound?			
At the close of our meeting, is your property willing to distribute meeting materials and sample products left behind to a local charity that can put them to good use?			
What percentage of your property's lighting is fluorescent?			
Do meeting rooms have dimmers on lights?			
Do meeting rooms have windows for natural lighting?			
What other energy conservation measures have been taken?			
What other conservation measures have you incorporated?			
Is your property a member of "Green" Hotels Association®?			
Has your property contacted "Green" Hotels Association® (713/789-8889, green@greenhotels.com) for information regarding being "green"?			

Is there anything further in regard to being "green" that your property will offer us?			
Property Name:			
Address:			
Contact:	e-mail:		
Phone:	Fax:		

APPENDIX C The Talloires Declaration

We, the presidents, rectors, and vice chancellors of universities from all regions of the world are deeply concerned about the unprecedented scale and speed of environmental pollution and degradation, and the depletion of natural resources.

Local, regional, and global air and water pollution; accumulation and distribution of toxic wastes; destruction and depletion of forests, soil, and water; depletion of the ozone layer and emission of "green house" gases threaten the survival of humans and thousands of other living species, the integrity of the earth and its biodiversity, the security of nations, and the heritage of future generations. These environmental changes are caused by inequitable and unsustainable production and consumption patterns that aggravate poverty in many regions of the world.

We believe that urgent actions are needed to address these fundamental problems and reverse the trends. Stabilization of human population, adoption of environmentally sound industrial and agricultural technologies, reforestation, and ecological restoration are crucial elements in creating an equitable and sustainable future for all humankind in harmony with nature.

Universities have a major role in the education, research, policy formation, and information exchange necessary to make these goals possible. Thus, university leaders must initiate and support mobilization of internal and external resources so that their institutions respond to this urgent challenge.

We, therefore, agree to take the following actions:

1. Increase Awareness of Environmentally Sustainable Development

Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

2. Create an Institutional Culture of Sustainability

Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward global sustainability.

3. Educate for Environmentally Responsible Citizenship

Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.

4. Foster Environmental Literacy For All

Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.

5. Practice Institutional Ecology

Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.

6. Involve All Stakeholders

Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.

7. Collaborate for Interdisciplinary Approaches

Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.

8. Enhance Capacity of Primary and Secondary Schools

Establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment, and sustainable development.

9. Broaden Service and Outreach Nationally and Internationally

Work with national and international organizations to promote a worldwide university effort toward a sustainable future.

10. Maintain the Movement

Establish a Secretariat and a steering committee to continue this momentum, and to inform and support each other's efforts in carrying out this declaration.

Creators and Original Signatories

Jean Mayer, President
Tufts University, U.S.A.
(Conference Convener)

Pablo Arce, Vice Chancellor
Universidad Autonoma de Centro America, Costa Rica

L. Ayo Banjo, Vice Chancellor
University of Ibadan, Nigeria

Boonrod Binson, Chancellor
Chulalongkorn University, Thailand

Robert W. Charlton, Vice Chancellor & Principal
University of Witwatersrand, South Africa

Constantine W. Curris, President
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l'Academie de Paris, France

Mario Ojeda Gomez, President
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Calvin H. Plimpton, President Emeritus
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Wesley Posvar, President
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T. Navaneeth Rao, Vice Chancellor
Osmania University, India

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Pavel D. Sarkisov, Rector
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Stuart Saunders, Vice Chancellor & Principal
University of Cape Town, South Africa

Akilagpa Sawyerr, Vice Chancellor
University of Ghana, Ghana

Carlos Vogt, President
Universidade Estadual de Campinas, Brazil

David Ward, Vice Chancellor
University of Wisconsin-Madison, U.S.A.

Xide Xie, President Emeritus
Fudan University, People's Republic of China

APPENDIX D American College & University Presidents Climate Commitment

We, the undersigned presidents and chancellors of colleges and universities, are deeply concerned about the unprecedented scale and speed of global warming and its potential for large-scale, adverse health, social, economic and ecological effects. We recognize the scientific consensus that global warming is real and is largely being caused by humans. We further recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest, in order to avert the worst impacts of global warming and to reestablish the more stable climatic conditions that have made human progress over the last 10,000 years possible.

While we understand that there might be short-term challenges associated with this effort, we believe that there will be great short-, medium-, and long-term economic, health, social and environmental benefits, including achieving energy independence for the U.S. as quickly as possible.

We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality. Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities. **Accordingly, we commit our institutions to taking the following steps in pursuit of climate neutrality:**

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.

- a. Within two months of signing this document, create institutional structures to guide the development and implementation of the plan.

b. Within one year of signing this document, complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.

c. Within two years of signing this document, develop an institutional action plan for becoming climate neutral, which will include:

i. A target date for achieving climate neutrality as soon as possible.

ii. Interim targets for goals and actions that will lead to climate neutrality.

iii. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.

iv. Actions to expand research or other efforts necessary to achieve climate neutrality.

v. Mechanisms for tracking progress on goals and actions.

2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.

a. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.

b. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.

c. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.

d. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution

e. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.

f. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.

g. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.

3. Make the action plan, inventory, and periodic progress reports publicly available by providing them to the Association for the Advancement of Sustainability in Higher Education (AASHE) for posting and dissemination.

In recognition of the need to build support for this effort among college and university administrations across America, we will encourage other presidents to join this effort and become signatories to this commitment.

Signed,

***The Signatories of the American College & University
Presidents Climate Commitment***