BLUEPRINT FOR A GREEN CAMPUS:

THE CAMPUS EARTH SUMMIT INITIATIVES FOR HIGHER EDUCATION

A PROJECT OF THE

THE HEINZ FAMILY FOUNDATION

JANUARY 1995

EXECUTIVE SUMMARY

A green campus is one that integrates environmental knowledge into all relevant disciplines, improves environmental studies course offerings, provides opportunities for students to study campus and local environmental problems, conducts environmental audits of its practices, institutes environmentally responsible purchasing policies, reduces campus waste, maximizes energy efficiency, makes environmental sustainability a top priority in land-use, transportation, and building planning, establishes a student environmental center, and supports students who seek environmentally responsible careers.

— Teresa Heinz, Chairman, Heinz Family Foundation

INTRODUCTION

The Campus Earth Summit brought together 450 faculty, staff, and student delegates from 22 countries, 6 continents, and all 50 states at Yale University on February 18-20, 1994 to craft the *Blueprint for a Green Campus,* a set of recommendations for higher education institutions across the globe to work toward an environmentally sustainable future.

The *Blueprint* is based on the principle that as multi-billion dollar consumers of higher education's services, students have the power to demand a more environmentally responsible campus and curriculum. In turn, faculty and staff can influence society by turning out environmentally literate citizens and by demanding environmentally sound goods and services. Since colleges and universities educate most of the people who run society's institutions and train the teachers who educate children, a it becomes clear that transforming campuses into catalysts for environmental sustainability is a very good first step toward changing the world.

Delegates mapped out strategies to implement the *Blueprint* recommendations with environmental leaders such as Teresa Heinz, Amory Lovins, Carol Browner, Denis Hayes, William Reilly, Thomas Lovejoy, Anthony Cortese, David Orr, Stephen Viederman, William McDonough, and Paul Hawken. In a video address, Vice President Gore endorsed the Summit as the campus follow-up to the Rio Earth Summit.

Delegates came a broad range of institutions: Historically Black, Latino, Asian, and Native American colleges and universities; community colleges; both state and private colleges and universities. Delegates drafted the recommendations in diverse teams comprised of faculty, staff, and students.

Building on the draft recommendations, Summit organizers gathered suggestions from delegates, speakers, panelists, and facilitators to produce the final version, the *Blueprint for a Green Campus*. It includes expanded and clarified recommendations, an improved format, contacts for further networking, and case studies of successful programs.

This *Blueprint* is the result of a collaborative process of environmental leaders, students and other higher education stakeholders, and philanthropic and corporate partners. The *Blueprint* reminds us that it will take the sustained effort of society's leaders at all levels to make campuses effective sources of solutions to environmental problems. Taken together, however, the recommendations of the *Blueprint for a Green Campus* will still fall short. It is the hope of the Campus Earth Summit that future campus leaders will uncover new problems, new approaches, new solutions. It is a sign of the importance of these problems that each generation must confront them anew.

THE RECOMMENDATIONS

I. INTEGRATE ENVIRONMENTAL KNOWLEDGE INTO ALL RELEVANT DISCIPLINES.

1) Integrate environmental knowledge into courses in all relevant disciplines. **2)** Include a section in the academic mission statement, such as, "all students, upon graduating, will possess the knowledge, skills, and values to work toward an environmentally sustainable future." **3)** Provide resources for appropriate faculty to integrate environmental issues and perspectives into their existing courses, by developing and launching faculty training programs, holding seminars, and providing funding.
4) Become a signatory to the Talloires Declaration, an international declaration of principles signed by over 150 institutions worldwide dedicated to fostering environmental literacy.

II. IMPROVE UNDERGRADUATE ENVIRONMENTAL STUDIES COURSE OFFERINGS.

1) Assemble a review team of students, faculty, alumni, and outside experts to produce a report on the quality of any existing or proposed environmental studies course offerings. **2)** Publicize, distribute the report, and adopt the recommendations for the environmental studies course offerings. **3)** Make a university commitment to provide funding for the costs of environmental studies courses and administration, and provide resources to hire and appoint faculty members and staff to lead such courses.

III. PROVIDE OPPORTUNITIES FOR STUDENTS TO STUDY CAMPUS AND LOCAL ENVIRONMENTAL ISSUES.

1) Develop classes in which students can obtain academic credit for research on campus and local environmental issues.
2) Make a commitment to use these studies to help formulate more effective, innovative approaches to campus and local environmental issues.

IV. CONDUCT A CAMPUS ENVIRONMENTAL AUDIT.

1) Conduct an annual or biannual review of campus environmental impacts, including, but not limited to: solid waste, hazardous substances, radioactive waste, medical waste, wastewater and storm runoff, pest control, air quality, the workplace environment, water, energy, food, purchasing policies, transportation, campus design and growth, research activities, investment policies, business ties, environmental education and literacy, job placement and environmental careers. **2)** Issue a report providing recommendations for improved performance in each area, ranking priorities for action, and setting goals to be completed by the next audit. **3)** Distribute to all members of the campus community, including trustees, high-level campus officials, staff, faculty, students, alumni, foundation donors, corporate donors, government officials, environmental leaders, community leaders and the public at large.

V. INSTITUTE ENVIRONMENTALLY RESPONSIBLE PURCHASING POLICIES.

1) Include environmentally sensitive specifications in all university goods and services contracts.
2) As an individual institution and through cooperative purchasing agreements with other universities and large institutions, purchase products with high recycled content, produced in an environmentally sustainable manner, which demonstrate maximum durability or biodegradability, reparability, energy-efficiency, non-toxicity, and recyclability. **3)** Require every university department and program to meet university-wide purchasing standards.

VI. Reduce Campus Waste.

1) Establish a program to reduce, reuse, recycle, and compost a high percentage of campus waste. **2)** Increase the percentage reduced, reused, recycled, and composted annually. **3)** Expand the scope of waste reduction programs to include the following: glass, steel/aluminum cans, plastic, food waste, cardboard, bond and computer, paper, mixed paper, magazines, newspapers, construction debris (steel, wood, concrete, asphalt), yard waste, oil, leaves, tires, scrap metal, hazardous chemicals, telephone books, contaminated soil, and mattresses at all areas and facilities of the campus.

VII. Maximize Energy Efficiency.

1) Invest in energy efficient technologies for heating, cooling, lighting and water systems in all existing and future campus buildings and earmark the savings for further improvements in environmental performance. **2)** Install meters to measure the use of heat, electricity, and water by building or department and take ongoing meter measurements to set baseline data and determine progress. **3)** Raise campus awareness about the need for energy conservation and provide incentives for action, such as by establishing campus-wide "Eco-lympics" competitions.

VIII. Make Environmental Sustainability a Top Priority in Campus Land-Use, Transportation, and Building Planning.

1) Incorporate sustainable design principles into existing and future land-use, transportation, and building plans. **2)** In land-use plans, include guidelines to promote compact development for all new campus growth and to insure that any proposed development will not have a negative impact on parks, forests, wetlands, wildlife habitats, agricultural land, watersheds, historic buildings, traffic congestion, or noise and air pollution. **3)** In transportation plans, provide incentives for walking, bicycles, buses or rail, and ridesharing; discourage the use of single-occupancy cars by passing on the full cost of parking to drivers, and link transportation planning to land-use planning. **4)** In plans for building construction or renovation, incorporate guidelines for energy-efficiency, proper ventilation, and non-toxic, environmentally-sound construction materials.

IX. Establish a Student Environmental Center.

1) Provide space, funding, and high-level support for a student environmental center as a durable institution from which to educate the campus and local community about environmental problems and their solutions. **2)** Develop a Center membership program, and use Center-sponsored events and conferences to strengthen the network of students, faculty, staff, and alumni concerned about environmental problems. **3)** If possible, support a full or part-time paid administrator/staffer for the center who can help students channel their interests into substantive reforms on the campus, local, state, national and global levels.

X. Support Students Who Seek Environmentally Responsible Careers.

1) Provide funding and resources to the career placement office for staff to assist student efforts to find careers in organizations working for an environmentally sustainable future, including comprehensive and accessible job and internship listings, alumni contacts, recruitment opportunities, and environmental career guidance. **2)** Provide staff and funding support for students, faculty, and staff to organize an annual "Careers in the Environmental Field" panel that brings environmental leaders and alumni from different sectors (government, business, academia, the media, non-profits), to campus to speak to students about their work.

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BY VICE PRESIDENT AL GORE

DELIVERED (VIA VIDEO) TO THE CAMPUS EARTH SUMMIT

Almost two years ago, the Earth Summit in Rio de Janeiro brought together leaders from all over the world to address global environmental issues. Your Campus Earth Summit has brought together the future leaders of 25 nations in a continuing search for solutions.

Just in our lifetimes—indeed, just in the last ten years—we've seen incredible reasons for hope. The fall of Communism and the destruction of the Berlin Wall, the release of Nelson Mandela after years in captivity, Yitzhak Rabin and Yasser Arafat shaking hands on the south lawn of the White House. Change is possible. We know that, and we can alter our relationship with the world around us to create a sustainable future.

You're beginning that change with a *Blueprint for a Green Campus.* I'm very encouraged that you are thinking so broadly. I'm even more encouraged that you're taking specific steps to bring about change, such as greening your universities. In much the same way, President Clinton and I are taking specific steps with the greening of the White House.

We're also undertaking fundamental change. Once people saw a false choice between the environment and the economy. Now we know that they can go hand in hand and they must. To foster sustainable and strong economic progress in the United States and around the world, we have launched several initiatives, including the President's Council on Sustainable Development. The Council brings together all of the administration officials that deal with the environment with industry representatives, environmental leaders, and the general public in developing practical solutions to the environmental challenges we face. The Council will ultimately present to the President a plan to ensure progress now without compromising our future. The Council will face many challenges, a lot of them similar to your own, as you develop your sustainability plan.

I want you to go forward with hope and dedication and with the knowledge that President Clinton and I strongly support your efforts. Your work is extremely important, not just for this generation but for all those to come. So congratulations on what you're doing. Keep the faith. Keep up the good work and good luck.

PREFACE

BY TERESA HEINZ

CHAIRMAN, HEINZ FAMILY FOUNDATION
REMARKS DELIVERED TO THE CAMPUS EARTH SUMMIT

By way of introduction, I would like to focus your thoughts on the notion of connectedness. The ancient Sufis had a teaching that went something like this: "Because you understand ONE, you think you understand TWO, because one and one makes two. But you also must understand AND."

The lesson is one we must learn about our relationship with the environment. As much as we know about people, and as much as we think we know about the natural world, we still understand little about the nature of our connectedness. It eludes us dangerously. This Summit is really about understanding the AND. People AND the environment. Students AND administrators. Universities AND society.

Colleges and universities wield incredible power—and yet, at least in terms of the environment, most have not wielded it well. Our institutions of higher learning provide the knowledge that will guide future architects, engineers, policy makers, community activists, industrialists, mothers, fathers —potential teachers, all. Nonetheless, with only a few noteworthy exceptions, most colleges and universities fail to educate their students in the environmental ramifications of their fields of study. We will persist in designing buildings that are energy-inefficient, products that pollute, and systems that throw off waste—we will go on doing all these things and more, as long as our educators fail to teach their students that it does not have to be this way. There is a better, and less expensive, way. Ultimately, design is an expression of intent. What is needed is thought and planning about function, aesthetics, conservation, efficiency—in other words, intent.

Universities also have power as major consumers of goods and services. At the Earth Day celebration in Washington in 1990, my late husband Senator John Heinz spoke of "green magic." He meant that every dollar we spend is a kind of vote, and if we spend our money on products that make sense environmentally, those are the products manufacturers will produce.

But there is more to this magic than just that. Analyzing the environmental implications of our behavior often saves money. Yale's switch from incandescent to fluorescent lighting will save the University $3.5 million over the next decade. Converting a single introductory chemistry course to microscale has helped the University of Arizona eliminate 3,600 gallons of hazardous waste and save over $12,000 in disposal costs.

Universities have the opportunity to prove that a new model for environmentalism is possible. In this model, individual action counts. In this model, collaboration, too, is essential. In this model, future professionals are taught that the environmental impact of products and services and systems can be efficiently accounted for in the design phase. In this model, the environment and the economy will be allies, not enemies. In this model, the interconnectedness of things will matter, rather than their separateness.

Student groups traditionally have staked out the moral high ground on environmental issues, and left the messy business of material results to others. We need your idealism, but idealism divorced of pragmatism leads only to gridlock. In just five years, the number of campus environmental groups has grown from a mere handful to some two thousand. What an opportunity we will have missed, if we fail to harness all that energy by focusing it on measured achievement.

Scientists in the academic world have traditionally insulated themselves behind the purity and rigors of their scholastic discipline. They have shied away from muddying their hands in the messy business of the possible and the probable. Their mission is research, proof, and more proof—not application to public policy and real life. But at a time

of crisis such as this, leaving it up to the rest of us to decide what their research means is an arrogance our world cannot sustain. Knowledge for its own sake may be great, but I don't think it is enough, now or ever.

Academics as a whole historically have resisted efforts to increase interaction even between departments. At a time when science is abandoning the Newtonian world-view in which we are all just cogs in the machine, the academic world still clings to it. Engineering, chemistry, biology, physics—they are all sovereign, and heaven forbid that we should ask them to knock down their ivory walls and build bridges instead.

University administrators traditionally have seen themselves as outside the fray. They have businesses to run, budgets to meet, timetables to follow. And while part of their task is to create an atmosphere conducive to learning and debate, they have been loathe to connect the implications of that debate to the way their institutions operate as institutions. These are generalizations, I know. Exceptions exist. By your presence here, I suspect you are among them. But we all must recognize the need we have to work collaboratively, and what an affront that simple statement is to the status quo.

When I was young, I was quite idealistic. I was in university in South Africa before the Sharpeville riots, and we marched against apartheid. We had the freedom in those days to be idealistic and not necessarily to have to produce immediate results. You don't have that luxury. Young people today don't have the luxury of innocence that we did. And that's a sad thing that you have been robbed of—innocence. But the reality is, you don't have the time, the world doesn't have the time, for the sort of idealism my generation enjoyed.

You have to be so much more practical than we had to be at your age. You must look at your idealism and not compromise it. And yet, you must also be wise enough and smart enough and patient enough to know how to go by steps. That may seem like compromise at times, but it's not really. It's discipline. It's like the way a slalom skier works the ice. Every turn is its own increment. It's hard for young people to have to do that. But you must do it, and I have faith that you will do it.

We need idealism AND action. We need knowledge AND policy. We need independent thought AND collaborative action. We need universities that are strong academically AND environmentally. Most of all we need a joint venture of students AND administrators AND academics.

It may seem chaotic to want to blend groups more comfortable with their boundaries than their mutual interests. But students of chaos and complexity know that systems tend to be at their most creative at the edge of chaos. There is no more uncomfortable place to be, but there is no other place to be for people who sincerely want to find solutions.

I would like to leave you with a thought about learning. The Chinese have two symbols for learning—one of which means study, and the other of which means practice constantly until perfect. Thought and action. I hope you will do both. I hope you will think about what you learn from each other, and then go home and practice it—practice, practice, practice until perfect.

HOW TO PUT THE *BLUEPRINT* INTO PRACTICE

While the recommendations are designed to be of interest to the non-expert, the *Blueprint for a Green Campus* is intended for the following audiences:

• **University Presidents, Provosts, Vice-Presidents, Deans, Trustees, and other senior officers (listed as "High-Level Campus Officials")** can learn of the important work already being done by other high-level campus officials at campuses across the United States and around the world.

• **Recycling coordinators, energy managers, facilities managers, dining hall managers, purchasing officials, career service officers and other operational administrators (listed as "Staff")** will find a wealth of specific strategies to study campus environmental impacts, reinvent purchasing, reduce waste, promote energy-efficiency, and design eco-efficient campuses.

• **Faculty members, professors, lecturers, advanced graduate students, and academic program administrators** can also contribute to making campus practices more environmentally responsible, but their primary responsibility is to ensure that every student graduates as an environmentally-literate citizen. Faculty can use the recommendations on integrating environmental knowledge into all relevant disciplines, improving undergraduate environmental studies course offerings, and providing opportunities to students to study campus and local environmental problems. In addition, faculty have a key role in supporting a student environmental center and promoting careers in the environmental field.

• **Student environmental leaders** will discover examples of successful student-led campaigns that can help them channel their energy and enthusiasm for the environment into effective, innovative campus reforms.

• **Alumni, individual donors, foundations, corporations, and other supporters of higher education** will learn about opportunities to encourage universities to be "ahead of the curve" by improving their environmental programs and practices.

• **Business leaders** can learn about the growing university market for green products, and perhaps apply some of recommendations on environmental audits, energy efficiency, or waste reduction to their own corporate practices.

• **Elected and appointed officials, or those people serving as staff or advisors to government officials— whether in the United Nations, the Executive Branch, or the Congress**— will find information on how to develop programs and partnerships with campuses to help move the United States and promote environmental literacy in the United States and throughout the world.

• **Non-profit executives and policy directors at environmental organizations, public policy groups, or think tanks** will discover many new opportunities to build partnerships with campuses.

• **Religious leaders,** especially those with ties to institutions of higher education, can endorse the *Blueprint* recommendations and support their implementation.

• **Journalists**, especially those editors and reporters with responsibility for higher education, environmental, business, or youth/student coverage, can use the *Blueprint* as a source of carefully-edited information about campus environmentalism and can find numerous contacts to assist in researching, producing, or writing articles.

HOW THE *BLUEPRINT* IS ORGANIZED

Each *Blueprint* recommendation is arranged in the following format:

RECOMMENDATION SUMMARY outlines the main points of the recommendation for high-level campus officials.

BASIS FOR RECOMMENDATION provides facts and arguments to build support for the recommendation.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS specifies the specific steps that Presidents, Provosts, Vice Presidents, Deans, Trustees and others have the authority to implement. These recommendations normally call upon such officials to strengthen the college or university commitment to environmental sustainability by changing the university mission statement or policy statement, providing funding and other resources, and making faculty/staff time available.

RECOMMENDATIONS FOR STAFF outlines the opportunities for facilities managers, purchasing officers, recycling coordinators, and other operational administrators. These recommendations usually include measuring and monitoring environmental problems and progress, setting target goals and priorities, building in incentives and accountability, taking actions specific to the problem, educating the community, and coordinating relevant campus individuals and institutions.

RECOMMENDATIONS FOR FACULTY articulates the steps that professors, lecturers, advanced graduate students, and academic program administrators can take.

RECOMMENDATIONS FOR STUDENTS offers proposals primarily intended for undergraduates, although most apply to graduate students as well.

CASE STUDY OF SUCCESS furnishes an example of a successful program on the cutting-edge of campus environmental reform. It should inspire readers by demonstrating that the ideas in the *Blueprint* can be put into action.

COORDINATE WITH ALLIES provides individual and organizational contacts and references to written materials which can supply more topical information. Successful campus environmental reform depends on coordination among campus leaders across the nation and the globe.

I. INTEGRATE ENVIRONMENTAL KNOWLEDGE INTO ALL RELEVANT DISCIPLINES

Colleges, universities, and professional schools educate most of the people who develop and manage society's institutions and train the teachers who educate children from kindergarten through high school, vocational schools and community colleges. For these reasons, universities bear profound responsibilities to increase the awareness, knowledge, technologies and tools to create an environmentally sustainable future.

— Anthony Cortese, CEO, Second Nature
Remarks to the Campus Earth Summit

RECOMMENDATION SUMMARY

1) Integrate environmental knowledge into courses in all relevant disciplines. **2)** Include a section in the academic mission statement, such as, "all students, upon graduating, will possess the knowledge, skills, and values to work toward an environmentally sustainable future." **3)** Provide resources for appropriate faculty to integrate environmental issues and perspectives into their existing courses, by developing and launching faculty training programs, holding seminars, and providing funding.
4) Become a signatory to the Talloires Declaration, an international declaration of principles signed by over 150 institutions worldwide dedicated to fostering environmental literacy.

BASIS FOR RECOMMENDATION

• Since the current educational system favors traditional disciplinary boundaries over interdisciplinary approaches to study, most colleges and universities lack environmentally-oriented coursework outside of environmental studies courses.
• The danger of fixed disciplinary boundaries, as Professor David W. Orr wrote, is that they "teach students to believe that there is such a thing as politics separate from ecology or that economics has nothing to do with physics...Now more than ever we need people who think broadly and understand systems, connections, patterns, and root causes."[i]
• Faculty in many disciplines—whether literature, history, economics, or biology—need training to better understand how they can teach about the complexities of the human relationship with the natural world.
• For example, an economics professor at Tufts University revised his course to include homework problems on articles in the *New York Times* about poaching of elephants for ivory and the debate over grazing fees in the American West. A drama professor revised her theater technology course to teach students about resource flows of chemicals used in theater production.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Become a signatory of the Talloires Declaration, an international declaration signed by over 150 institutions and coordinated by the Tufts University-based Secretariat of University Presidents for a Sustainable Future.
• Include an environmental literacy section of the university academic mission statement, such as "this university expects its students, upon graduation, will have received the knowledge, skills and values to work toward an environmentally sustainable future."
• Appoint an environmental literacy task force including students, faculty, alumni, and high-level campus officials to map out a strategy.
• Provide financial and institutional support to faculty to develop environmental components in existing courses. Make fundraising for environmental literacy programs a top priority.
• Identify a faculty member or core group of faculty to design and implement a faculty training and development program, including panels, discussions, and other opportunities for faculty interaction.
• Publicize environmental curriculum to high-school students through the admissions office to attract top students.
• Form alliances with other universities dedicated to environmental literacy through *Second Nature* and the Tufts University-based *Secretariat of University Presidents for a Sustainable Future.*

RECOMMENDATIONS FOR STAFF

• Educate high-level campus officials about the lessons of example over words. Even if students learn about the need to be environmentally responsible in the classroom, they are most often being educated in institutions that spend their budgets and manage their facilities in ways that are not environmentally responsible.
• Administrators can be teachers too, and role models of environmental stewardship, by educating students and faculty about how the university can embody environmental responsibility in its operations.[ii]
• Assist faculty in developing a course to study campus and local environmental problems.
• Help faculty and students in each academic department to understand the environmental impact of their buildings, facilities, and activities.

RECOMMENDATIONS FOR FACULTY

• Develop and launch training sessions for faculty in all relevant disciplines, working with *Second Nature* or other advisors.
• Discuss with your peers, the faculty in your department, program, or related field, the environmental perspectives and components of your academic field.
• Lobby high-level campus officials to include an environmental literacy section in the university academic mission statement, such as "this university expects its students, upon graduation, will have received the knowledge, skills, and values to work toward an environmentally sustainable future."
• Incorporate environmental curriculum directly into classes. Prioritize introductory courses with high student enrollment.
• Schedule guest lectures on environmental topics.
• Consider making an environmental course, or a course with a focus on environmental topic, part of the "core curriculum" or a distribution requirement.

RECOMMENDATIONS FOR STUDENTS

• Assemble a student advisory panel to 1) help write the environmental literacy section of the academic mission statement; 2) research, write, and publish a course critique rating courses on environmental criteria; and 3) lobby to create new classes on environmental subjects and to infuse environmental knowledge into existing ones.
• Organize a student environmental literacy campaign to educate peers and create the student demand for action.
• Invite faculty to participate in "environmental roundtables" with students and faculty.
• Work with the admissions office to include student-produced materials about all environmental education opportunities.

CASE STUDIES OF SUCCESS

Tufts Environmental Literacy Institute and Second Nature

In 1990 Tufts President Jean Mayer and Dean of Environmental Programs Anthony Cortese launched the Tufts Environmental Literacy Institute (TELI) with the goal that each of the 7,800 students at Tufts would graduate "environmentally literate." The institute's central feature is a two-week intensive summer workshop in which a multidisciplinary group of faculty comes together to learn about environmental literacy. The workshop is designed to increase environmental knowledge and provide a forum for discussing how environmental information can overlap with the goals of specific courses. Environmental specialists from academia, government, industry, and public interest groups lead these workshops and present the science, management, and policy issues associated with topics such as solid and hazardous wastes, global climate change, health and the environment, and ecological economics. After the summer workshop, TELI faculty revise their curricula to integrate environmental issues and perspectives and then teach the revised courses in the following academic year. Revised curricula are reviewed by other TELI faculty and made available to other universities as part of a larger strategy to extend the influence of TELI programs.[iii]

In 1993, Anthony Cortese met with Teresa Heinz, U.S. Senator John Kerry, and educator Bruce Droste to build on the TELI model to launch a new initiative, Second Nature: Education for a Sustainable Future. Second Nature's purpose is to catalyze a worldwide effort to make environment and development concerns a central part of education at all levels. It is only such an effort, Cortese argues, that environmentally sound living will become "second nature" to the next generation of leaders in society. Second Nature will catalyze the development of college and university consortia partnerships to make environment and development a foundation for learning for all students by providing programs to train partnership leaders, financial assistance, ongoing technical assistance in program evaluation and program implementation, and access to educational resources and expertise. Second Nature has teamed up with a consortium of 17 Historically Black Colleges and Universities/Minority Institutions and a consortium of four universities in Brazil to begin training faculty members.

COORDINATE WITH ALLIES

• **Second Nature: Education for a Sustainable Future**, 17 Msgr. O'Brien Hwy.; PO Box 410350, East Cambridge, MA 02141-0004. (617) 227-8888. Contact: Anthony Cortese, CEO. *This new organization is dedicated to assisting universities around the world in their efforts to provide training to faculty members in all relevant disciplines so that their students will graduate as environmentally literate citizens.*

• **Secretariat of University Presidents for a Sustainable Future,** Center for Environmental Management, Tufts University, 474 Boston Avenue, Medford, MA 02155. (617) 627-3486. Contact: Tom Kelly. E-mail: tkelly@oper.cem.tufts.edu. *The Secretariat was established to further the principles and goals of the Talloires Declaration, a set of campus environmental recommendations signed by over 150 universities in 40 countries.*

II. IMPROVE UNDERGRADUATE ENVIRONMENTAL STUDIES COURSE OFFERINGS

The first recognition is that all education is environmental education. By what is included or excluded, emphasized or ignored, students learn that they are a part of or apart from the natural world....Environmental issues are complex and cannot be understood through a single discipline or department....The danger lies in the possibility, even probability, that environmental studies departments will become just another jealously guarded, closed, academic fiefdom, and will fail to catalyze ecological thinking.[iv]

— David Orr, Professor and Author, *Ecological Literacy*

RECOMMENDATION SUMMARY

1) Assemble a review team of students, faculty, alumni, and outside experts to produce a report on the quality of any existing or proposed environmental studies course offerings. **2)** Publicize, distribute the report, and adopt the recommendations for the environmental studies courses. **3)** Make a university commitment to provide funding for the costs of environmental studies courses and administration, and provide resources to hire and appoint faculty members and staff to lead such courses.

BASIS FOR RECOMMENDATION

• Universities can and must be centers for scientific, economic, cultural, political, and ethical understanding of critical environmental issues. Colleges and universities bear tremendous responsibilities to offer focused environmental course offerings to prepare future leaders and solutions designers.
• The demand for students with an environmental studies course background is rising. A large number of companies and organizations need people trained to approach complicated environmental problems such as air and water pollution, handling of solid and hazardous wastes, the long-term management of soils and forests, energy efficiency, the preservation of biological diversity, international environmental negotiations, military conversion, population and sustainable development.
• In examining their college options, high school graduates are increasingly interested in knowing which colleges have strong environmental studies course offerings. Colleges and universities that provide such courses may enjoy a comparative advantage and a reputation for being "ahead of the curve."

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Assemble a review team of students, faculty, and alumni, and outside experts to produce a report on the quality of any existing or proposed environmental studies course offerings. In addition, conduct a study of the strengths and weaknesses of environmental studies courses and programs at other universities.
• Publicize, distribute the report, and adopt their recommendations for the design of new or improved environmental studies courses.
• Make a university budgetary commitment to provide for the costs of environmental studies courses, and provide resources to hire and appoint faculty members and staff to lead such an effort.
• Make environmental studies course offerings a top fundraising priority.
• Provide rewards and incentives for faculty to perform interdisciplinary work on environmental topics.

RECOMMENDATIONS FOR STAFF

• Assist faculty and students in their efforts to study campus and local environmental issues, by delivering guest lectures, supervising research projects, or teaching a research seminar (See Recommendation #3).

RECOMMENDATIONS FOR FACULTY

• Design environmental studies classes focusing on topics such as population, biodiversity, environmental justice, sustainable development, climate change, energy, waste management, public health, natural resource economics, environmental engineering, sustainable design architecture, pollution prevention, land-use, ecosystem analysis, environmental law, urban planning, water resources management, ecology, oceanography, environmental policy formulation, literature of the environment, toxicology, environmental ethics, forestry and national parks management, environmental geology, agriculture, fish and wildlife, technology, and soil resources.
• Include natural sciences, social sciences, and humanities courses as part of any program of environmental studies courses.
• Offer interdisciplinary approaches to environmental topics. For example, incorporate economics, law, biology and other disciplines into a seminar on biodiversity.
• Provide opportunities within any environmental studies course offerings to study campus and local environmental issues (See Recommendation #3).
• Develop students' capacity for environmental problem-solving by teaching analytical approaches such as least cost, life-cycle analysis, full-cost accounting, and policy design, and by providing hands-on research opportunities in which students make policy recommendations to solve a problem.

RECOMMENDATIONS FOR STUDENTS

• Meet with high-level campus officials and relevant faculty members to discuss the creation or improvement of environmental studies courses and to establish an annual student review of the program.
• Move from general concern to lobbying for specific improvements to environmental studies course offerings, whether it is creating an environmental studies center, hiring more faculty, or providing funding to faculty members who take time in the summer to develop new environmental studies courses.
• Identify who on campus has the power to approve further support for environmental studies course offerings (e.g. Provost, Dean, President). Distinguish between primary target, secondary targets.
• Build a group of allies, such as influential alumni and donors, to strengthen your case for environmental studies.
• Demonstrate the student demand for a strong environmental studies course offerings, through such means as petitions, letters to the editor, op-ed pieces, and bringing prominent speakers to campus.
• Design an independent study or student-initiated course in environmental studies. Arrange for a faculty member to serve as an advisor.

CASE STUDY OF SUCCESS

Oberlin College, Oberlin, Ohio

Under the leadership of Professor David Orr, Oberlin College has improved its environmental studies course offerings. The Environmental Studies major, which is usually taken as a second major, now offers over two dozen environment-related natural sciences, social sciences, and humanities courses.[v] All students take Professor Orr's introductory course "Environment and Society" to gain an understanding of theoretical debates, contemporary environmental problems, and possible solutions to these problems. Other courses taught by Professor Orr include "Sustainable Agriculture and Forestry," a colloquium that examines the issues in developing long-term management of agriculture and forests, and "Oberlin and the Biosphere," in which students examine waste management and food, energy, water, and materials flows on the Oberlin campus and then participate in a joint research project. The program also helps students find internships with public agencies, government agencies, corporations, and community groups involved in environmental research, advocacy, and regulation. Students can also contact alumni involved in environment-related careers to discuss career options, educational requirements, and other concerns.

Oberlin is currently considering a plan that includes the construction of an environmental studies center that incorporates the principles of environmental protection into the building itself. The building would be constructed from recycled and non-toxic materials and designed to heat and cool itself, provide its own electrical energy, generate a positive cash flow, recycle all organic wastes, and meet the highest aesthetic standards. The plan would also include additional full-time positions and actively encourage joint positions in demography, humanities, psychology, anthropology, and religion. It also proposes changes in curriculum that would emphasize ecological design.

COORDINATE WITH ALLIES

• **Oberlin College, Environmental Studies Program,** Rice Hall, Oberlin, OH 44074. (216) 775-8312. Contact: Professor David Orr. Professor Orr is author of *Earth in Mind (1994), Ecological Literacy (1992),* and co-editor with David Eagan, of *The Campus and Environmental Responsibility* (1991). *Ask him for a copy of the report conducted on how to improve Oberlin's environmental studies program. The Oberlin study examined undergraduate environmental studies programs at Bowdoin College, Colby College, College of the Atlantic, Colorado State University, Dartmouth College, Harvard University, Massachusetts Institute of Technology, Middlebury College, Mount Holyoke College, Oberlin College, Princeton University, Tufts University, University of California Berkeley, Santa Barbara, Santa Cruz, University of Michigan, University of Vermont, Williams College, and Yale University. Also contact the campuses directly for examples of undergraduate environmental studies programs.*

• **Brown University, Center for Environmental Studies**, Box 1943, Providence, RI 02912. (401) 863-3449. Contact: Professor Harold Ward. Email: Harold_Ward@brown.edu.

• **Second Nature: Education for a Sustainable Future**, 17 Msgr. O'Brien Hwy.; PO Box 410350, East Cambridge, MA 02141. (617) 227-8888. Contact: Anthony Cortese, CEO.

III. Provide Opportunities for Students to Study Campus and Local Environmental Issues

A university's involvement in the stewardship of its place on earth may lead to a healthier environment, but more important, it offers extraordinary opportunities for student learning....No longer just a setting where education happens, the campus becomes a field station for applied scientific study, a place where academic lessons can be grounded in reality....Students are asked to look around them, ask hard questions, voice their concerns, and make a personal contribution toward understanding and improving both the community and the land.[vi]

— David Eagan, Co-Editor, *The Campus and Environmental Responsibility*

Recommendation Summary

1) Develop classes in which students can obtain academic credit for research on campus and local environmental issues.
2) Make a commitment to use these studies to help formulate more effective, innovative approaches to campus and local environmental issues.

Basis for Recommendation

• Courses that take students out of classrooms and into the laboratory of the local community can produce both better scholarship and better campus practices
• By grounding academic study in real-world environmental problems, students can see the relevance of their classwork, and increase their sense of responsibility to produce quality academic work.
• Such courses can help students begin to understand the need for interdisciplinary approaches to environmental problems, while at the same time enhancing their expertise in a particular field.
• While the campus and local community benefit from environmental research, students gain marketable communication and problem-solving skills.
• Student research and recommendations can sometimes identify ways that the university can be more efficient and, in some cases, save money.

Recommendations for High-Level Campus Officials

• Make a public statement about the value of student, faculty, and staff cooperation in studying campus and local environmental issues as a means toward the goal of campus environmental stewardship.
• Award credit for classes and projects focused on campus and local environmental topics.
• Create incentives for faculty to agree to coordinate such projects.
• Create a program to develop campus environmental research and implementation opportunities for academic credit, provide sufficient funding, and appoint a director.
• Engage students, faculty, staff, and alumni to design an effective program.

Recommendations for Staff

• Identify research needs and opportunities.
• Coordinate with faculty and students to design research so that it can be relevant to campus operations.
• Act as a liaison between students, faculty, and high-level campus officials to cultivate and maintain good long-term relations.
• Help design, guide, and seeking funding for projects with faculty.

RECOMMENDATIONS FOR FACULTY

• Work with university operations staff to identify research needs and opportunities.
• Coordinate, document, and publicize a pilot campus and/or community environmental research project that addresses topics such as energy efficiency, waste reduction, and campus planning.
• Encourage students to perform research projects on campus or local environmental problems through existing classes.
• Design new classes that have a campus research focus or component.
• Engage in research with campus applications, such as pollution prevention and resource conservation.

RECOMMENDATIONS FOR STUDENTS

• Lobby faculty, administrators, and high-level campus officials to establish a program that links environmental studies courses to campus practices.
• Work with faculty members, purchasing officers, dining hall managers, physical plant administrators, recycling coordinators, and other staff to identify useful projects.
• Propose campus stewardship research projects as coursework in classes where they are not explicitly offered.

Students can choose appropriate topics, such as:

• Conduct an in-depth audit on one aspect of the campus, such as energy use, waste reduction, or procurement, with a comprehensive audit as a multi-year goal.
• Conduct an architectural assessment of the university, examining how sustainable design principles could be integrated into campus design.
• Study the impact of the university on the local community through its waste management, purchasing, transportation patterns, and other practices.
• Study the environmental history of the campus and local community by focusing on the history of a specific topic, such as food. For example, one course at Yale University, led by Professor William Cronon, studied the economic and environmental impact of the globalization of food production and transport networks over the past 200 years. The students also made recommendations for the campus and city to consider to create a more environmentally sustainable food policy.[vii]
• Publicize campus and local research opportunities to other students.
• Use research to propose recommendations for specific changes in university practices.
• Perform feasibility studies for proposed new campus practices.
• Publicize and distribute findings and solution proposals to the campus community.

CASE STUDY OF SUCCESS

University of Wisconsin-Madison, Madison, Wisconsin

The University of Wisconsin at Madison has created two innovative programs that link students with faculty and administrators to reduce the university's environmental impact. The first project, the Campus Environmental Stewardship Initiative, was created in 1991 by David Eagan to better understand the University of Wisconsin's place in its environment and to assess specific strategies for reducing its impact. Students joined with administrators and faculty to examine the natural history of the campus as well as its physical development over its 140 year history. In addition, students research more traditional areas of concern such as energy efficiency, pesticide use, and solid waste disposal. Students tried to document current practices and campus history but also made recommendations for improved campus practices.

More recently, graduate student Daniel Einstein established the Campus Ecology Research Project, made possible through the assistance of Assistant Vice Chancellor for Facilities Planning and Management. In this program, undergraduates are form a research team with a faculty mentor and a campus staff person. Each team must submit a final report by the end of the year that includes the research findings and recommendations for improving campus policies and practices. For example, one student developed a transportation program which created incentives for students to use mass transit. He set up a "guaranteed ride home" program in which students that take mass transit to school would be reimbursed for a taxi ride home if they had to leave for an emergency. One graduate student studied the university's contract with its waste-paper hauler and discovered that the university could save money by setting up a contract with a different company.[viii]

COORDINATE WITH ALLIES

• **Campus Environmental Stewardship Initiative,** University of Wisconsin-Madison, 70 Science Hall, 550 N. Park St., Madison, WI 53706. (608) 263-5492. Contact: David Eagan. E-mail: Djeagan@students.wisc.edu.

• **Campus Ecology Research Project**, University of Wisconsin-Madison, WARF Building, Room 1069, 610 Walnut St., Madison, WI 53705. (608) 263-3417. Contact: Daniel Einstein. E-mail: Daniel.Einstein@ccmail.adp.wisc.edu.
• **Brown is Green!**, P.O. Box 1491, Brown University, Providence, RI 02912. (401) 863-7837. Contact: Kurt Teichert. Email: kurt_Teichert@brown.edu. *Ask about how Brown University set up its stewardship classes.*
• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It! Ask for sample curricula and case studies demonstrating how diverse campus operations have benefited from student involvement and research. Also order a copy of the forthcoming* ***Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century****, by Julian Keniry,* which profiles staff and administrator environmental leaders.

IV. CONDUCT A CAMPUS ENVIRONMENTAL AUDIT

Faced with urgent and increasing environmental challenges, our educational institutions need to educate and graduate environmental problem-solvers, as well as take responsibility for the ecological impacts of their physical plants. If environmental stewardship is the goal, then auditing the campus environment is an excellent first step toward reaching it.[ix]

— April Smith, author, *Campus Ecology*

RECOMMENDATION SUMMARY

1) Conduct an annual or biannual review of campus environmental impacts, including, but not limited to: solid waste, hazardous substances, radioactive waste, medical waste, wastewater and storm runoff, pest control, air quality, the workplace environment, water, energy, food, purchasing policies, transportation, campus design and growth, research activities, investment policies, business ties, environmental education and literacy, job placement and environmental careers. **2)** Issue a report providing recommendations for improved performance in each area, ranking priorities for action, and setting goals to be completed by the next audit. **3)** Distribute to all members of the campus community, including trustees, high-level campus officials, staff, faculty, students, alumni, foundation donors, corporate donors, government officials, environmental leaders, community leaders and the public at large.

BASIS FOR RECOMMENDATION

• Environmental audits can help a university administration develop an effective environmental policy by pinpointing the most significant impacts and their causes.
• Environmental audits can sometimes result in cost savings for a university by identifying areas of waste and inefficiency. For example, Brown University students examined 2,200 "Exit" signs on campus and found that the school could save $65,000 by replacing incandescents with fluorescent or LED fixtures.[x]
• Support for an environmental audit may enhance a university's public image as a "good environmental citizen."
• Conducting audits can teach students about campus operations, budgetary processes, and administrative decision-making. While finding out about how the campus works, students can learn effective environmental management principles which will carry over to the workplace.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Provide financial support, staff time, and access to information for the environmental audit.
• Form environmental audit councils or advisory boards that include students, faculty, staff; it may be worthwhile to include alumni and community members as well.
• Issue a public statement supporting the environmental audit and asking all campus community members to collaborate with audit coordinators.
• Link the audit to the creation of a university environmental policy statement that calls for environmental knowledge to be the foundation for campus practices.[xi]
• Appoint a university environmental officer to coordinate regular audits, communicate results, and implement recommendations.

RECOMMENDATIONS FOR STAFF

• Collect existing data from past audit research on any aspect of the university's environmental impact through the physical plant office, the recycling department, the purchasing office, and other sources.
• Build a library of audit reports from other campuses.
• Develop a written audit strategy with specific objectives, procedures for measurements, workplan, and timelines.
• Choose specific areas to analyze in depth. Prioritize areas that will have the greatest impact on your campus, local community, and regional environment. Quality is better than quantity, as most groups would be overwhelmed if they tried to analyze the entire campus. Possible areas: solid waste, energy use, water use, and procurement.
• Train students to perform audit research and, if possible, establish work-study or financial aid student jobs for the audit.
• Coordinate a "pilot audit" of a specific area—such as white office paper use—to identify potential problems and demonstrate success.

• Establish task forces for each specific area and coordinate student research.
• Prepare a set of recommendations from the audit. Target them to specific audiences for improved campus practices and obtain commitments from high-level campus officials to implement the recommendations.
• Write a full audit report with an executive summary. Distribute widely on campus and to alumni and local community members.
• Maintain an ongoing education and outreach program for students, faculty, and high-level campus officials.

RECOMMENDATIONS FOR FACULTY

• Offer classes in which students can receive academic credit for audit work as an independent study, thesis topic, or course requirement.
• Provide expertise for audit research.

RECOMMENDATIONS FOR STUDENTS

• Study the university's organizational structure and physical operations system to understand who makes decisions and how facilities are managed.
• Build a group of allies in support of the audit, including high-level campus officials, faculty, staff, students at other schools, student government, alumni, local community members, and high-level campus officials.
• Lobby high-level campus officials and staff to institutionalize an annual or biannual audit, including a paid audit coordinator, student interns and volunteers, and faculty support.
• Perform your own campus environmental audit, if high-level campus support is not forthcoming, and the staff is unresponsive.
• Obtain academic credit or work-study employment for audit work.
• Document your work carefully by keeping detailed files or a computer database.
• Check and double check your sources; gather data several times and from several places.
• Publicize audit findings.

CASE STUDY OF SUCCESS

University of California at Los Angeles, Los Angeles, California

April Smith and a group of graduate Urban Planning graduate students at the University of California at Los Angeles decided to write their thesis on the environmental practices of their campus. For six months they investigated the university's environmental quality by analyzing documents, evaluating campus decision making, reviewing regulatory policies, interviewing campus officials, and researching alternative practices. Their report, *In Our Backyard: Environmental Issues at UCLA, Proposals for Change and the Institution's Potential as a Model,* was the first study to comprehensively examine the state-of-the-environment of a college campus.

The release of their report produced an unanticipated wave of inquiries on and off campus, locally as well as nationally. Based on their experience, the UCLA team developed a student guide, the *Campus Environmental Audit.* As the centerpiece for Earth Day 1990's national student campaign, the audit became a tool for assessing ecological impacts and implementing change at hundreds of schools in the United States and abroad over the next two years. In 1993, April and the Student Environmental Action Coalition published *Campus Ecology,* which represents an updated and expanded edition of the original *Campus Environmental Audit.* In just one year, *Campus Ecology* has emerged as one of the most effective, innovative tools for students, faculty, staff, and high-level campus officials seeking to improve campus environmental quality.

COORDINATE WITH ALLIES

• ***Campus Ecology*** (Los Angeles: Living Planet Press, 1993, by April Smith and the Student Environmental Action Coalition. $17.95 from bookstore or publisher. Available from the **Student Environmental Action Coalition**, P.O. Box 1168, Chapel Hill, NC 27514. (919) 967-4600. Contact: Miya Yoshitani, Executive Director.
• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, D.C. 20036. (202) 797-5435. *Formerly Cool It! Ask for information on past audits, sample workshops, how-to guide, and issue packets that provide more in-depth coverage of specific audit topics.*
• **April Smith, ReThink, Inc.**, (310) 827-1217. *Ask for suggestions from the author of the pioneer campus environmental audit done at UCLA in 1989.*

V. INSTITUTE ENVIRONMENTALLY RESPONSIBLE PURCHASING POLICIES.

Every product we buy, every car or plane we ride, every item we dispose of affects the environment. We are all the cause of the depletion of our world's mineral resources, the warming of the earth's atmosphere, the unrelenting loss of species, the torching of forests, the overgrazing of grasslands, the overharvesting of fish, the contamination of rivers and oceans, and the potentially catastrophic change in the chemistry of our world's atmosphere.[xii]

— Norman Dean, President, Green Seal
Author, *Campus Green Buying Guide*

RECOMMENDATION SUMMARY

1) Include environmentally sensitive specifications in all university goods and services contracts.
2) Purchase products with high recycled content, produced in an environmentally sustainable manner, which demonstrate maximum durability or biodegradability, reparability, energy-efficiency, non-toxicity, and recyclability, as an individual institution and through cooperative purchasing agreements with other universities and other large institutions. **3)** Require every university department and program to meet university-wide purchasing standards.

BASIS FOR RECOMMENDATION

• Colleges and universities spend $146 billion for goods and services annually, giving them tremendous economic leverage over campus suppliers and vendors.[xiii]
• Purchasing with the environment in mind will help create and sustain markets for environmentally sound products. For example, the average university (campus population of 10,000) uses over one million sheets of bond and letterhead paper each month. If 1,000 schools bought recycled paper, they'd provide a market for over a billion sheets of quality paper annually.[xiv]
• Campus policies aimed at purchasing environmentally sound products can often save colleges money. For example, the University of Illinois, population 50,000, spent over $2.5 million for paper products alone. In 1989 the university changed its procurement guidelines. By 1992, 22 percent of the university's paper purchases were recycled. The university found that some paper products (including paper towels, toilet and facial tissue, kitchen wipes, table covers, and computer paper) were 10 percent cheaper than non-recycled products.[xv]
• Environmentally responsible purchasing means including environmental criteria such as toxicity and safety, durability, use of recycled products and non-hazardous chemicals and materials, and reduced energy and water consumption in procurement decisions.
• Green purchasing principles and guidelines can be applied to the following products and services: paper, packaging, cleaning products and devices, custodial services, office equipment, office supplies, grounds maintenance, batteries, lighting, paints, carpeting, furniture, fabrics, fixtures, food service equipment and supplies, water use devices, food and beverages, photocopying, photodeveloping, windows, construction contracts/materials, employee transportation, transportation services, vehicles, motor oil/tires/fuels, appliances, computer software program, audiovisual equipment, film, video, and printing services.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Develop a mission statement concerning purchasing policies. For example:

> University purchasing practices can have a profound impact on the environment. Purchasing with the environment in mind will help create and sustain markets for products and technologies that reduce waste, conserve resources, prevent pollution and enhance worker health. This university is committed to upholding these principles by: 1) Developing guidelines to define what constitute environmentally preferable products, and continually update them as criteria change. 2) Developing performance testing procedures and policies for university departments that would use these products. 3) Developing criteria to be used in product selection, and make these criteria known to suppliers in the bid process. 4) Including the environmental benefits of a product in the cost/benefit analysis. 5) Fostering internal communication and education among university managers and buyers about how to incorporate environmental criteria into the purchasing process.[xvi]

• Support staff efforts to include environmentally sensitive specifications in all university goods and services contracts.
• Require every university department and program to meet university-wide purchasing standards.
• Appoint a campus environmental official or committee (staff, faculty, staff) to monitor and evaluate all purchasing by the university.
• Request regular reports on the progress of purchasing efforts to be distributed to state purchasing departments and national organizations who chart purchasing information.
• Foster internal communication and education among university managers and buyers about how to incorporate environmental criteria into the purchasing process.

RECOMMENDATIONS FOR STAFF

Checklist for Campus Purchasing Representatives

When purchasing, ask these questions of your suppliers. But first, determine if the product or service is truly necessary. Purchasing guidelines will need to be balanced with issues of product performance, cost, and availability.

Waste reduction: Is the product durable? Can it be easily and economically serviced and maintained? Is the product designed to reduce consumption and minimize waste? Is the product reusable? Is the product technically and economically recyclable in your area? Do facilities and internal collection systems exist to recycle the product? Can the product be returned to the supplier at the end of its useful life? Is the product compostable and are systems in place to compost the product on or off-site? Will the product biodegrade over time into harmless elements?

Packaging: Is the packaging necessary? Can it be eliminated? Is minimal packaging used? Is the product packaged in bulk? Is the packaging reusable or recyclable? Are recycled materials used to produce the packaging? What percent post-consumer waste? Can the packaging be returned to the supplier? Is the packaging compostable?

Material source: Are recycled materials used in the product? If so, what percentage? What percentage of post-consumer materials are used? If wood is used in the product, what is its source and how is it harvested? Is the product manufactured from tropical rainforest wood?

Energy efficiency: Is the product energy efficient compared to competitive products? Can the product be recharged? Can the product run on renewable fuels? Does the product require less energy to manufacture than competing products?

Water conservation: Does the product reduce water use? Does the product require less water to manufacture than competing products?

Hazardous materials use and disposal: Does the product use fewer polluting byproducts in manufacturing than competing products? Is the product free of any banned substances? Heavy metals? Volatile organic compounds (VOCs)? Is the product free of toxic chemicals? Is a competitive product available that uses fewer chemicals/pesticides? Does the product require special disposal? Does the produce emit VOCs or other air pollutants? Does the product require special instruction for use in order to protect worker health and safety?

Supplier environmental record: Is the company producing the product in compliance with all environmental laws and regulations? What is the company's record in handling environmental and safety issues? Can the company verify all environmental claims? Does the manufacturer/supplier have a company environmental policy statement? What programs are in place/planned for promoting resource efficiency? Are printed materials available documenting these programs? Has the company conducted an environmental or waste audit? Is the product supplier equipped to bid and bill electronically? Has an environmental life-cycle analysis of the product (and its packaging) been conducted by a certified testing organization, such as Green Seal?[xvii]

IN ADDITION TO ASKING THE ABOVE QUESTIONS, CAMPUS PURCHASING REPRESENTATIVES CAN:

• Include environmentally sensitive specifications in all university goods and services contracts. Examples include: insisting on full disclosure of manufacturer's chemical use and disposal, removing language from bidding specifications that require virgin material, and requiring vendors to minimize packaging, maximize the use of recycled materials in packaging, and take back packaging.
• Encourage cooperative purchasing agreements with other universities and other large institutions to expand the market for environmentally sound products and, with economies of scale, lower their cost as well.
• Centralize purchasing of hazardous materials (paint, cleaners, photographic supplies) and reduce amount purchased whenever possible.
• Sell university used office paper stock directly to recycling companies to reduce the cost of recycled paper.
• Increase, annually, the percentage of post-consumer content in paper and increase the amount of chlorine-free or "unbleached" paper.
• Establish a policy prohibiting the purchase of tropical hardwood products, such as furniture, trellises, and construction materials.

• Purchase alternative fuel fleet vehicles. The University of California at Berkeley purchased four electric buses in the fall, 1993 after examining options including methanol, ethanol, and compressed natural gas vehicles.[xviii]
• Support purchases of food products by companies that are ecologically sensitive, such as certified "dolphin-safe" tuna and organic foods that avoid pesticides.

RECOMMENDATIONS FOR FACULTY
• Research the science, economics, and politics of expanding markets for environmentally preferable products.
• Teach microscale chemistry to reduce the use of chemicals. Also, improve chemical storage, handling and disposal.
• Reduce handouts by using slides, overhead projectors, and electronic mail.
• Print all course materials on double-sided, high-post-consumer content recycled paper.

RECOMMENDATIONS FOR STUDENTS
• Organize high-level campus officials, staff, and faculty to design and implement a environmentally responsible purchasing strategy.
• Research and compare alternative products to identify cost-effective and environmentally-sound purchasing choices.
• Develop a catalog of environmentally preferable products campus and local stores can sell.
• Organize a environmental products section of the university bookstore or any other stores in the area.
• Encourage the student newspaper and other student publications to use recycled, post-consumer content paper.
• Require all student organizations which work with or receive money from student government to use recycled paper and other environmentally sound products.
• Educate other students about the impact of individual purchasing decisions.

CASE STUDY OF SUCCESS
Rutgers University, New Brunswick, New Jersey

Rutgers University has developed a purchasing policy that reduces Rutgers' environmental impact and saves money. All waste disposal, paving, and construction contracts contain environmentally sensitive requirements, according to Kevin Lyons, Senior Buyer and Chair of the Rutgers University Recycling and Source Reduction Committee. Rutgers informs vendors that it will only purchase products that meet certain environmental criteria. Those that do meet the requirements bid for a Rutgers procurement contract. This competition for Rutgers' business drives down prices and stimulates innovation, bringing the cost of these environmentally sound products to very competitive levels.

Rutgers purchasing contracts include both general commitments and specific terms. To begin with, all contracts are expected to meet state government environmental standards. More detailed specifications might read: "Contractor will supply own recycling dumpsters." Or, "it is university policy that all construction debris be recycled. If the contracted vendor who is awarded this contract cannot adhere to this policy, they must contact the university procurement and contracting division immediately to discuss [its] disposal alternative. All recycling data will be accumulated/recorded and submitted to the procurement and contracting division upon completion of this project. Failure to submit recycling data will result in delay on final product."[xix]

Rutgers recently developed an "R-Plan," in which it uses its own university white bond paper waste to manufacture its own recycled content bond/xerographic paper. Kevin Lyons believes that this program will "reduce the cost, per carton, of recycled content paper to equal or less than the cost of virgin paper while the quality of paper will remain very high" since Rutgers is involved directly in its production. Rutgers is also currently investigating the possibility of creating a cooperative buying agreement, in which Rutgers would combine its purchasing power with that of other universities to harness economies of scale and leverage its buying power to bring down the price of recycled content paper.

COORDINATE WITH ALLIES
• **Rutgers University Purchasing Department Recycling and Solid Waste Reduction Committee**, P.O. Box 6999, Piscataway, NJ 08855. (908) 445-5192. Contact: Kevin Lyons. Email: Lyons@Purchasing.Rutgers.edu. *Ask Mr. Lyons, the Chairman of the Committee, for advice on improving campus purchasing policies. Rutgers offers lectures, consultations, and workshops each year in "Environmentally Sensitive Contract Writing" and "Recycling and Economic Development" for people interested in learning more about green procurement.*
• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It! Ask for Purchasing, Energy Efficiency, Waste Reduction, and Landscaping issue packets. Ask for a copy of the forthcoming* ***Ecodemia****, which contains a chapter on instituting environmentally responsible purchasing*

policies for central purchasing, lab purchasing, and bookstore purchasing. Also ask for a copy of ***Students Working for a Sustainable World****, a directory of campus environmental projects that includes information on green purchasing.*

• **Green Seal**, 1730 Rhode Island Ave., NW, Suite 1050, Washington, DC 20036-3101. (202) 331-7337. Contact: Dana Hollish. *Ask for a copy of the* ***Campus Green Buying Guide*** *and information on companies selling environmentally sound products.*

• **Council on Economic Priorities**, 30 Irving Place, New York, NY 10003. (800) 729-4237. *Ask for a copy of* ***Students Shopping for a Better World.***

VI. REDUCE CAMPUS WASTE

We affirm the following principles of waste reduction: design and redesign facilities and technologies to reduce waste; create markets for recyclables; reduce consumption by buying only what is truly needed; pool resources wherever possible; when buying disposables, buy those that are locally recyclable; and establish a dialogue with vendors.[xx]

— Report of the Waste Reduction Strategy Team
to the delegates of the Campus Earth Summit

RECOMMENDATION SUMMARY

1) Establish a program to reduce, reuse, recycle, and compost a high percentage of campus waste.
2) Increase the percentage reduced, reused, recycled, and composted annually. **3)** Expand the scope of waste reduction programs to include the following: glass, steel/aluminum cans, plastic, food waste, cardboard, bond and computer, paper, mixed paper, magazines, newspapers, construction debris (steel, wood, concrete, asphalt), yard waste, oil, leaves, tires, scrap metal, hazardous chemicals, telephone books, contaminated soil, and mattresses at all areas and facilities of the campus.

BASIS FOR RECOMMENDATION

• Campuses around the country have been successful at identifying solid, hazardous, and radioactive waste problems and finding environmentally friendly solutions that save money.
• Solid Waste on campus includes food, non-reusable cups, plates, other eating utensils, non-recyclable paper, throwaway convenience items, yard waste, and more.
• A medium-sized campus, Tufts University produces over 2,000 tons of solid waste per year.[xxi]
• The average American student goes through an estimated 500 disposable cups every year. At the University of Vermont, students calculated that by eliminating polystyrene foam their food service could save $76,000 yearly.[xxii]
• A cost/benefit study at the University of Vermont demonstrated that a composting program could save the school more than $45,000 in just two years.[xxiii]
• In 1989, the University of Colorado at Boulder cut its waste stream by recycling 625 tons of newspaper, glass, aluminum, office paper, cardboard, phone books, batteries, plastics, and yard waste; collecting 300 gallons of used motor oil; gathering 40 cubic yards of used clothing, books, and appliances; and donating 25 boxes of used text books to developing nations. Overall, the University reduced its waste stream by 25 percent, saving the college money in reduced landfill costs.[xxiv]
• Hazardous waste includes toxic substances such as pesticides, paint, turpentine, and chemicals used in biology, zoology, chemistry, photography, and architecture.
• Converting to microscale (miniaturized versions of laboratory experiments) can save chemistry departments an estimated 90 percent in supplies and disposal costs.[xxv]
• Bowdoin College needed to improve the air quality in their aging chemistry building. Rather than incurring the expense of a new ventilation system they decided to change the laboratory program by using microscale methods. The professor published articles describing their new techniques and then wrote a textbook using these methods rather than relying on texts that called for huge chemical quantities.
• In 1987, the University of Wisconsin started using biodegradable scintillation fluids instead of hazardous solvents such as toluene and benzene. Switching to safer fluids has reduced the university's disposal expenses by $45,000 per year.[xxvi]
• Radioactive waste is produced in biomedical classrooms, research, medical therapies, energy, and scientific research.
• Since radioactive materials cannot be destroyed, there are non-radioactive methodologies that accomplish many of the same results as radioactive materials without the health and environmental risks.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Adopt waste reduction as a goal in the university mission statement.
• Issue a statement for annually improving the percentage of the campus waste stream that is reduced, reused, recycled or composted beyond what is mandated by local, state, or federal law.
• Print all materials on double-sided, high-post consumer content recycled paper, with the knowledge that waste reduction efforts by high-level campus officials sets an example for students to help them learn to carry out their lives in an environmentally sustainable manner when they graduate.
• Identify an existing office, or create a new one, to develop, track and publicize waste reduction programs.
• Approve the hiring a university waste reduction/recycling coordinator.

RECOMMENDATIONS FOR STAFF

For all types of waste.

• Prepare easy-to-understand educational materials describing the campus waste management system for distribution to all campus community members.
• Collect data on current and future waste costs for both the university and society to demonstrate that waste reduction can save money.
• Incorporate waste storage and disposal costs into department and research budgets.

Solid waste

Create employment opportunities for students to participate in waste reduction and recycling efforts.
• Promote double-siding on all paper documents.
• Improve email communication on campuses as a non-paper alternative by 1) establishing a campus-wide email system, 2) ensuring that everyone on campus has access to it, 3) providing email trainings, 4) publishing a directory of potential resources, 5) creating a distribution mailing list for all environmentally aware individuals.
• Provide labeled disposal cans/boxes for each category of recyclables in convenient locations.
• Explore the feasibility of co-mingling materials in the campus recycling program.
• Establish food recovery program, where food that is not used is given to homeless shelters or local community centers.
• Compost yard waste and dining hall food waste.
• Work with students to minimize waste when students move in, and when they move out.

Hazardous and radioactive waste

• Educate the campus community to minimize the drain disposal of chemicals and the use of toxic substances in automotive shops, research labs, the classroom, and janitorial services.
• Take steps to reduce or eliminate hazardous and radioactive materials on campus, while complying with and exceeding existing safety laws concerning the use, handling, and disposal of radioactive materials.
• Reduce hazardous wastes and properly dispose of materials from servicing university vehicles, recycling waste oil, used batteries, and solvents.

RECOMMENDATIONS FOR FACULTY

• Follow waste reduction and recycling guidelines.
• Encourage academic departments to work with the recycling coordinator to reduce waste.
• Incorporate the study of waste reduction into teaching and research.
• Convert chemistry labs to microscale.
• Supervise courses that study waste reduction and recycling.
• Print course materials and photocopied course packets on double-sided, high-post consumer waste content, recycled paper.
• Give and accept assignments on email or on re-used paper.

RECOMMENDATIONS FOR STUDENTS

• Raise campus awareness about the need for waste reduction by 1) organizing a "Carry-Your-Own-Garbage" week, in which students (and, if possible, faculty and staff too) agree to carry their accumulated garbage all week to see how much is produced; 2) educating first-year students about the campus recycling programs as soon as they arrive; 3) preparing and distributing a short manual on what individuals can do in their daily lives; and 4) conducting a public "waste sort" at a central campus location to demonstrate how much and what type of waste is normally produced.
• Promote the use of reusable mugs by giving away or selling the mugs to members of the campus community and organizing discounts at local and campus stores when the mugs are used.
• Work with managers of the university bookstore and other local stores to reduce waste by 1) establishing a bag return program (in which there is a small refund for returning the bags); 2) eliminating the use of junk ads in store bags; 3)

promoting the use of cloth bags instead of disposable bags; 4) encouraging the sale of goods with less packaging; and 5) creating a market for used books and other items.
• Organize a pilot program for materials that the university will not recycle. Often successful, student-initiated pilot recycling projects are assumed by the university as a permanent program.
• Create waste reduction competitions, such as between dormitories, fraternities, sororities, clubs, academic departments, graduate schools, or universities.
• Organize an adopt-a-campus program, in which campus groups or departments adopt a section of the campus and make sure waste is being reduced, reused, or recycled.
• Organize a "goodwill day" at the end of each semester to collect discarded goods and give to the Salvation Army or a similar organization.
• Discourage excessive postering.

CASE STUDY OF SUCCESS

University of Colorado, Boulder, Colorado

One of the first and best campus waste reduction and recycling programs in the country is C.U. Recycling, which was begun in 1976 at the University of Colorado at Boulder. The program—which is overseen by the University of Colorado Student Union and staffed by a recycling services director, students, and community service volunteers—collects separated recyclables from every campus building. To reduce the amount of waste generation, the university is training its staff to use electronic mail, encourages double-sided copying, as well as the use of recycled paper products, reusable mugs, retreaded tires, and washable dishes. The program is supported by an extensive public education campaign, which includes press releases, public service announcements, newspaper articles, and audio-visual materials, as well as orientation for incoming freshmen. Future plans include a household-hazardous-waste reduction campaign, alternative chemical-waste disposal, and increased recycled product procurement.

COORDINATE WITH ALLIES

• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It! Ask for the books,* ***Campus Ecology***, ***Ecodemia*** (forthcoming), *and* ***Students Working for a Sustainable World*** *(a directory of campus environmental projects) for information on waste reduction.*
• **College and University Recycling Caucus**, University of Colorado at Boulder, UMC 331, Campus Box 207, Boulder, CO 80309. (303) 492-8307. Contact: Jack DeBell, Recycling Coordinator. *Mr. DeBell can provide information on campus recycling programs across the country. Ask for "The State of Campus Recycling," which includes articles, how-to guides, and resource lists.*
• **Tufts University CLEAN Project.** (617) 627-5675. Contact: Sarah Hammond Creighton. *Ask about the Environmental Protection Agency (EPA)-funded study of Tufts potential for waste reduction.*

VII. MAXIMIZE ENERGY EFFICIENCY

Since 1979 this country has gotten about four and a half times as much new energy from savings as from all net increases in energy supply put together....You can now save twice as much electricity as you could five years ago at only a third the cost.[xxvii]

— Amory Lovins, Rocky Mountain Institute
Remarks to the Campus Earth Summit

RECOMMENDATION SUMMARY

1) Invest in energy efficient technologies for heating, cooling, lighting and water systems in all existing and future campus buildings and earmark the savings for further improvements in environmental performance. **2)** Install meters to measure the use of heat, electricity, and water by building or department and take ongoing meter measurements to set baseline data and determine progress. **3)** Raise campus awareness about the need for energy conservation and provide incentives for action, such as by establishing campus-wide "Eco-lympics" competitions among dormitories, departments, or schools.

BASIS FOR RECOMMENDATION

• Increasing the efficiency of present and future heating and cooling systems, improving insulation, increasing efficiency of building scheduling on nights, weekends and holidays, using alternative transportation, and planting trees to provide cooling in the summer and windbreaking in the winter, are all ways campuses can save money and be more environmentally sound:

• In the 1980s, State University of New York at Buffalo (SUNY) analyzed its energy use patterns and found that the campus produces 313,900 tons of carbon dioxide (CO_2) emissions each year, equivalent to 10.5 tons for every student, faculty, and administrator on campus. SUNY then launched a comprehensive energy-efficiency program in 1982 and has saved $3 million a year on its utility bill.[xxviii]

• Reducing room temperature by one degree Fahrenheit saved 20,000 gallons of fuel and $8,000 annually at Connecticut College.[xxix]

• Yale is nearing completion of a $550,000 project to change its lighting from incandescent to fluorescent bulbs where possible. Since fluorescent lighting is about five times more efficient than incandescent, the project will pay for itself in two years and is expected to save Yale about $200,000 per year after that.[xxx]

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Hire an energy manager to initiate and coordinate efforts to promote energy-efficiency.

• Allocate funds for capital expenditures to increase efficiency. Consider several possibilities: 1) investing endowment funds; 2) taking out loans for capital expenditures on efficiency whose interest is less than the annual savings from decreased energy use; and 3) allocating funds saved from efficiency investments among i) capital expense suppliers, ii) the most efficient energy users, and iii) a fund for future capital expenditures for energy-efficiency that have longer payback times.

RECOMMENDATIONS FOR STAFF

• Install meters to measure use of heat, electricity, and water by building or department and take ongoing meter measurements to set baseline data and determine progress.

• Install efficient heating, cooling, lighting and water fixtures in all new buildings and retrofit inefficient fixtures in all existing buildings.

• Create incentives for energy-efficiency by billing individual departments for heat, electricity and water use.

• Develop a long-term plan to incorporate safe and renewable energy sources such as photovoltaics, cogeneration and wind into the campus supply.

• Monitor the campus regularly for water and thermal leaks, lighting efficiency (new and retrofit), and equipment selection, maintenance and use. Repair or insulate in response to findings.

• Develop coordinated heating, cooling, energy and water use practices to conserve resources. For instance, heat, cool and light buildings only when people are there; plant native plants that require only the amount of water that falls as rain; and irrigate grounds, if necessary, when evaporation is minimal.

• Convert fleet vehicles to electric or natural gas fuels or directly purchase or lease such vehicles.[xxxi]

• Inspect and maintain auto emissions control devices on fleet vehicles.

RECOMMENDATIONS FOR FACULTY

• Conduct research and teach about energy efficiency.
• Encourage students to perform solution-oriented research on campus energy use for academic credit.

RECOMMENDATIONS FOR STUDENTS

• Launch an awareness campaign describing how energy is currently used and how students can use energy more efficiently
• Establish a "Green Cup" or "Eco-Lympics" competition in which dormitories, departments, graduate schools, or universities compete to reduce energy use the most and award prizes taken out of dollar savings.

CASE STUDY OF SUCCESS

Brown University, Providence, Rhode Island

As a medium-sized university with over 5,000 undergraduates and graduate students, the energy resources consumed annually at Brown University are substantial and expensive. Each year Brown consumes 55 million kilowatt-hours of electricity, 23,000 barrels of heating oil, and 204 million cubic feet of natural gas, costing more than $6 million.[xxxii]

In 1991, Brown created the Brown is Green (BIG) program to investigate the potential for minimizing both energy consumption and the associated economic and environmental costs of day-to-day campus activities. BIG's first project was to incorporate an energy efficient lighting scheme in dormitory renovations, which now saves over $16,000 annually. Another early project was to hire a paid student intern investigate energy consumption in campus buildings. The intern discovered that laboratories were significantly overlit and that occupants tended to leave lights on unnecessarily. Students have also analyzed appliance purchases in terms of total operating costs rather than initial equipment expenditure, proposed revamping the lighting of exit signs, and created an incentive system for students to reduce their own energy bill.

COORDINATE WITH ALLIES

• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It! Ask for Green Cup and Energy Efficiency packets and a copy of* ***Students Working for a Sustainable World*** *(a directory of campus environmental projects) that includes information on energy efficiency).*
• **Brown is Green!**, P.O. Box 1491, Brown University, Providence, RI 02912. (401) 863-7837. Contact: Kurt Teichert. Email: kurt_Teichert@brown.edu.
• **Yale University Facilities Management,** 30 Ashmun Street, New Haven, CT 06511. (203) 432-6755. Contact: Roberto Meinrath, Deputy Director of Facilities. *Mr. Meinrath was an advisor to the Campus Earth Summit and an advocate for Yale's "Green Cup" and other energy efficiency measures.*
• **Conserve UB,** SUNY Buffalo, Physical Facilities, John Beane Center, Amherst, NY 14260. (716) 636-3636.
• **Rocky Mountain Institute,** 1739 Snowmass Creek Road, Snowmass, CO 81654. (303) 927-3128. *Amory Lovins, co-founder of the Institute, spoke at the Campus Earth Summit. His staff can provide information on energy efficiency.*

VIII. MAKE ENVIRONMENTAL SUSTAINABILITY A TOP PRIORITY IN CAMPUS LAND-USE, TRANSPORTATION, AND BUILDING PLANNING.

Who is the leader on a ship crossing the ocean? It's not the captain or navigator, but the designer of the ship. Everyone on that ship is affected by its design. No matter how good the captain is, if the ship isn't seaworthy, it is going to sink. It turns out that the system we've designed is not sea-worthy. It's not air-worthy or soil-worthy. It just ain't worthy. So go out there and be designers who can work at the level of community, because that's the level at which it is going to happen. The university is the ideal level of community to start with.[xxxiii]

— William McDonough, Dean, University of Virginia School of Architecture
Remarks to the Campus Earth Summit

RECOMMENDATION SUMMARY

1) Incorporate sustainable design principles into existing and future land-use, transportation, and building plans. **2)** In land-use plans, include guidelines to promote compact development for all new campus growth and to insure that any proposed development will not have a negative impact on parks, forests, wetlands, wildlife habitats, agricultural land, watersheds, historic buildings, traffic congestion, or noise and air pollution. **3)** In transportation plans, provide incentives for walking, bicycles, buses or rail, and ridesharing, discourage the use of single-occupancy cars by passing on the full cost of parking to drivers, and link transportation planning to land-use planning. **4)** In plans for building construction or renovation, incorporate guidelines for energy-efficiency, proper ventilation, and non-toxic, environmentally-sound construction materials.

BASIS FOR RECOMMENDATION

• Campuses have been successful at identifying land-use, transportation, and building problems and finding environmentally sound solutions that improve the quality of the environment and human life too.
• Cars on campuses are major polluters. An environmental audit of UCLA showed that the campus is the tenth largest emitter of carbon dioxide—the main greenhouse gas—in the Los Angeles basin, mostly due to pollutants from cars.[xxxiv]
• At World College West in Petaluma, California, for example, 40 percent of the students and all faculty commute to the campus, but the campus itself is pedestrian. All drivers park at a remote parking lot and take a shuttle bus to the campus. Buildings and roads cover only 10 percent of the 194-acre campus, while the rest of the grounds are covered with native landscaping where deer, fox, and other wildlife are free to roam.[xxxv]
• At Butler University in Indiana, by contrast, 50 percent of campus land is devoted to parking facilities.[xxxvi]
• The Environmental Protection Agency has declared poor indoor air quality a major national health concern, lending urgency to efforts to redesign campus buildings.[xxxvii]

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

• Work with government officials, environmental organizations, and environmental architects, engineers, and planners at the federal, state, county, and municipal level to incorporate sustainable design principles into campus land-use, transportation, and building plans.
• Create a campus planning commission that includes students, faculty, alumni, environmental architects and design experts, and community members to make recommendations for land-use, transportation, and building policies.
• Until such a planning commission exists, provide for student, faculty, staff participation in all environmental impact reviews for campus development projects.

RECOMMENDATIONS FOR STAFF

Land-Use Planners

• Analyze the environmental impacts of campus expansion projects, in terms of impact on agricultural land, watersheds, parks, forests, wetlands, forest areas, wildlife habitats, historic buildings, traffic congestion, and noise and air pollution.
• Preserve and enhance campus green space by supporting tree-planting programs and cooperative gardens. Trees and green spaces act as buffers against noise, provide shade and wildlife habitats, protect against erosion, reduce city temperatures, reduce building energy consumption, add natural beauty, and act as natural control against the greenhouse effect.
• Promote a campus land-use pattern that encourages compact development and makes public transportation more affordable and efficient.
• Integrate all campus land-use planning with local and regional planning.

Transportation Coordinators

• Educate the campus community about the presence, ease, and benefits of alternative modes of transportation—public transportation, bike use, and ridesharing.
• Encourage the use of public transportation (buses, trolleys, metro stations, trains) by 1) providing easy access to such transportation, 2) posting bus schedule information in a central location, 3) subsidizing mass transit passes, and 4) engaging in land-use planning that facilitates mass transit.
• Encourage bicycle use by 1) creating safe bikeways throughout the campus and surrounding areas, 2) providing abundant and secure bicycle storage, 3) asking local bike shops to offer student discounts and create a bike lending program, and 4) installing bicycle racks on bus and rail service.
• Encourage ridesharing programs by 1) imposing parking surcharges for people driving alone, 2) offering reduced-price and preferential parking for carpools, 3) creating a bulletin board with a map on which students, faculty, and administrators can pin their numbers and locations, and 4) developing a computerized ridesharing system which matches up neighbors.
• Create a "car-free" central campus area with efficient shuttle bus service to and from parking lots.

Building Managers

• Incorporate renewable, recycled, nontoxic, and energy efficient materials in building construction and renovation, such as recycled carpet padding, "good wood" (wood not harvested from rainforests or ancient forests), recycled steel, "glassphalt" (asphalt made with recycled glass), insulation made with recycled paper, nonsynthetic carpets, nontoxic paints and adhesives, and products and technologies that maximize energy efficiency.
• Designate recycling areas into the floor plans of campus building and remodeling projects so recycling containers do not pose a fire or safety hazard.
• Test for and mitigate pollutants such as radon, asbestos, and drinking water contaminants.
• Maintain and monitor heating, ventilation, and air-conditioning systems campus-wide, and reduce the use of substances that may contribute to poor indoor air quality, such as pesticides and cleaning products.

RECOMMENDATIONS FOR FACULTY

• Offer class opportunities for students to study land-use, transportation, and building policies.
• Research the science, economics, law, and politics of such decisions and make policy recommendations.

RECOMMENDATIONS FOR STUDENTS

• Walk, bike, take the bus or rail, and share a ride whenever possible.
• Conduct an awareness campaign about alternative transportation options.
• Organize students to persuade campus officials that student buildings, such as dormitories, dining halls, and student centers, need to incorporate the most environmentally sound principles, technology and building materials.
• Establish housing cooperatives or "green houses" both on and off-campus to push the frontiers of green design—including solar collectors, passive solar architecture, energy efficient appliances and lighting. Residents can participate in recycling, composting, gardening, gray water systems, and environmentally responsible consuming.

CASE STUDY OF SUCCESS

University of Colorado, Boulder, Colorado

The University of Colorado at Boulder has attempted to make environmental responsibility a top priority in its transportation and campus development or "master-plan." The transportation policy was changed when student leaders noticed problems with Boulder city buses: the routes were not publicized, they did not go through campus, and they stopped running too early. As a result, only 2.7 percent of the university's students used the bus system. To address this problem, a student was hired to collect information about mass transit and act as a liaison between the administration, the city, and the student government. The coordinator met with local government officials and learned of the city's commitment to reduce single-passenger driving in the area by 15 percent by the year 2000. The city brought the

directors of mass transit programs from the University of Oregon and the University of Illinois to advise them. The program they established provides unlimited local bus use with an expanded schedule to accommodate late-night riders.[xxxviii]

Students and administrators concerned about the environment discovered that the "campus master plan" and "building code checklist" were the two most important documents that guide facilities managers in their work with builders and architects for all construction and land-use planning. When students and administrators discovered several problems in the documents, they developed a set of amendments in consultation with campus and outside experts. For example, they proposed that all building construction should designate floor space for recycling containers. When their proposal was completed, they approached the Boulder Campus Planning Commission, a group of students, faculty, and staff representatives who advise the University Chancellor on campus planning. Their thorough research and argumentation convinced the committee to adopt the amendments. As a result, all architects and contractors must consult the recycling office before developing the floor plan of a proposed building. They must also do a follow-up visit to the recycling office or facilities management during the construction phase to insure that the campus's waste reduction needs are adequately addressed.

COORDINATE WITH ALLIES

• **University of Colorado-Boulder Environmental Center**, Campus Box 207, Boulder, CO 80309. (303) 492-8308. Contact: Will Toor, Director. *Ask about the transportation reforms and the Campus Planning Commission.*

• **ReThink, Inc.** (310) 827-1217. Contact: April Smith. *Ask for advice on greening land-use, transportation, and buildings plans.*

• **National Growth Management Leadership Project**, 915 15th St., NW, Suite 601, Washington, DC 20005. Contact: Saunders C. Hillyer. *Ask for the name of the growth management organization in your state that can assist your campus in greening its land-use and transportation policies.*

• **American Institute of Architects, Environmental Committee**, 1350 New York Avenue, NW, Washington, D.C. 20006. (202) 626-7300. *Request the guide on environmentally sound building materials.*

IX. ESTABLISH A STUDENT ENVIRONMENTAL CENTER

Student environmental centers are institutions that last longer than the energy of a few charismatic individuals....They legitimize student environmental work, and conserve knowledge, skills, contacts, and a sense of community from one year to the next.

— Betsy Mendelson, University of Chicago Student Environmental Center

RECOMMENDATION SUMMARY

1) Provide space, funding, and high-level support for a student environmental center as a durable institution from which to educate the campus and local community about environmental issues.
2) Develop a center membership program, and use center-sponsored events and conferences to strengthen the network of students, faculty, staff, and alumni concerned about environmental problems. **3)** If possible, locate funds to support a full or part-time paid administrator/staffer for the center who can help students channel their energy into substantive reforms on the campus, local, state, national and global levels.

BASIS FOR RECOMMENDATION

• Many campus environmental groups have no working base, with no permanent space for meetings, computers, phones, fax, copier, books, magazines, career information and other resources for students and student organizations concerned about the environment.
• Student environmental centers can tie together the campus and local community, and provide a forum for diverse individuals and institutions to discuss issues and work together on projects.
• Centers can help colleges and universities use their resources more efficiently. In an era of tight budgetary constraints, campuses can realize dramatic annual savings in energy use, water use, and solid waste fees by encouraging student initiative.
• Centers can help overcome the problem of student turn-over, especially those that have a full or part-time administrator. Even those that rely on volunteer staff alone can help programs to continue and preserve resources when students graduate.
• Centers can serve as information clearinghouses to provide answers to questions about environmental issues.
• Centers can educate the campus and local community by hosting conferences and other events.
• Centers can identify and support student environmental leaders through training and job opportunities.

RECOMMENDATIONS FOR HIGH LEVEL CAMPUS OFFICIALS

• Provide in-kind support by donating university space, rent, utilities, and office furniture.
• Assist the center's efforts to raise project-specific funding, whether from university sources, alumni, or foundations.
• If possible, allocate funds for an office administrator to staff the center full or part-time.
• Allow students to contact alumni who are environmental professionals in order to strengthen alumni ties and give students valuable links with mentors, potential on-campus speakers, and possible donors.
• Provide written and oral endorsements of the Center to faculty, staff, and alumni.

RECOMMENDATIONS FOR STAFF

• Donate surplus furniture, office equipment, articles, books and other items to the center.
• Serve as advisors on an environmental center advisory board.
• Centralize information about campus environmental practices through the center.
• Post information on new opportunities and developments on an environmental bulletin board in the center.

RECOMMENDATIONS FOR FACULTY

• Participate in a regular lecture or dinner discussion series hosted at the center.
• Establish a fellows program of professors affiliated with the center who can provide research opportunities through the center.
• Help bring prominent outside speakers to the center and to raise funds.

• Donate surplus furniture, office equipment, books, or teaching supplies to the center.

Recommendations for Students

• Elect a volunteer or raise funds to hire a center director.
• Develop budgets for start-up, operations, and future project needs.
• Find a space for the center. If a high-quality room is not available, consider sharing space, using marginal space, or rehabilitating an old building or room.
• Set up an environmental center advisory board of faculty, administrators, alumni, and community leaders to assess center needs, advise organizers on projects, and help raise funds.
• Raise funds to establish and sustain the center from various sources: the university (President's office, student government/activities, academic departments, dean's offices, graduate schools), students (student fees, student government), other individuals (parents, alumni), and outside organizations (university or alumni-connected foundations, corporations, non-profit organizations, local businesses).
• Write the center mission statement in consultation with the Advisory Board and identify its goals, who it benefits, and how it will accomplish them.
• Collect equipment from campus offices, parents, alumni, churches, or other offices.
• Publicize the center so that all students, faculty, administrators, and alumni know what resources are available. Issue press releases to local and campus media, make presentations to other student groups and dorms, hold promotional events, set up displays in common areas, and use the campus computer network to list services and events at the center.
• Develop work study positions for students to organize center-sponsored projects.
• Provide resources for community groups to use the center.
• Develop a library (books, magazines, news clippings, reports, and other documents) of information about campus practices and local, national, and global environmental groups, environmental studies programs, and environmental issues.
• Organize a semi-annual open house at the center and invite interested trustees, administrators, faculty, students, and community leaders.
• Assemble a coalition of groups concerned about the environment that could use the center.
• Pursue joint projects and information exchanges with other campus organizations, such as multicultural houses, career services, and community service groups.

Case Study of Success

Yale Student Environmental Center, Yale University, New Haven, Connecticut

After Earth Day 1990, Yale students began a two-year campaign to establish a student environmental center. First, they drafted a statement of purpose: "To increase student environmental awareness and leadership, educate and involve the New Haven community, and strengthen the network of Yale environmentalists—students, faculty, administrators, alumni."

Next, they met with a lawyer to set up the center as a non-profit corporation. They formed a board of directors, comprised of student officers, and an advisory board of faculty members, administrators, and alumni. In consultation with their advisory board members, they developed programs that could attract high-level campus officials and alumni, such as the "Green Cup" energy-efficiency competition, which was designed to save energy and university funds.

In 1992, at the suggestion of one of their advisory board members, Yale students met with Teresa Heinz and the staff of the Heinz Family Foundation, who agreed to sponsor the Campus Earth Summit as a project of the Heinz Family Foundation.

After two years of searching for space (and operating out of a room in a basement), the students found two large rooms in a central location. The new Yale Student Environmental Center was put to use immediately in the effort to organize the Campus Earth Summit.

Coordinate with Allies

• **Yale Student Environmental Center**, P.O. Box 4663 Yale Station, New Haven, CT 06520-4663. (203) 432-7222. *Ask to speak with the student co-chairs, or a board member who knows about the founding and operation of the Center.*
• **University of Colorado-Boulder Environmental Center**, Campus Box 207, Boulder, CO 80309. (303) 492-8308. Contact: Will Toor, Director.
• **University of Chicago Environmental Center**, 5555 S. Ellis Ave., Chicago, IL 60637. (312) 702-4315. Contact: Betsy Mendelson.

X. SUPPORT STUDENTS WHO SEEK ENVIRONMENTALLY RESPONSIBLE CAREERS

To create an enduring society, we will need a system of commerce and production where each and every act is inherently sustainable and restorative....Just as every act in an industrial society leads to environmental degradation, regardless of intention, we must design a system where the opposite is true, where doing good is like falling off a log, where the natural, everyday acts of work and life accumulate into a better world as a matter of course, not as a matter of conscious altruism.[xxxix]

— Paul Hawken, author, *Ecology of Commerce*

RECOMMENDATION SUMMARY

1) Provide funding and resources to the career placement office for staff to assist student efforts to find careers in organizations working for an environmentally sustainable future, including comprehensive and accessible job and internship listings, alumni contacts, recruitment opportunities, and environmental career guidance. **2)** Provide staff and funding support for students, faculty, and staff to organize an annual "Careers in the Environmental Field" panel that brings environmental leaders and alumni from different sectors (government, business, academia, the media, non-profits), to campus to speak to students about their work.

BASIS FOR RECOMMENDATION

- The environmental field is a $150 billion activity representing two percent of the gross national product.[xl]
- Meeting the future human resource needs of the field requires a concerted effort to prepare a growing and increasingly diverse work force.
- Students can gain practical experience, find out more about environmental careers, and potentially find a job through internship programs.
- Strong support for environmental careers can give students a competitive edge in the job search upon graduation.

RECOMMENDATIONS FOR HIGH-LEVEL CAMPUS OFFICIALS

- Ask alumni to speak on campus about their careers in the environmental field.
- Allocate funds to the career placement office for staff to facilitate student searches for careers in environmental fields.

RECOMMENDATIONS FOR STAFF

Career Placement Officers

- Hold a "careers in the environmental field" fair where students can learn about environmental internships and careers with environmental groups, think tanks, government, academia, industry, and consulting firms.
- Develop a library of written resources (books, magazines, newsletters, employment solicitations) describing careers in the environmental field and providing information about job opportunities.
- Send a letter to all interviewing companies asking about their environmental record and if they have signed or plan to sign the CERES Principles, a corporate environmental code of conduct.
- Send a letter to every company that recruits on campus asking for a list of positions within the company for students interested in working for environmentally-sustainable businesses.
- Set up internship programs with local public-interest organizations, government agencies, and private companies for work during the academic year, summer, or after graduation.
- Conduct a poll to learn what percentage of students are interested in an environmental career.
- Distribute employment information to students via the environmental center, environmental groups, bulletin boards, computer networks, and local and undergraduate periodicals.
- Encourage environmental organizations to recruit on campus.
- Develop commitments from individuals, institutions, and alumni to sponsor students interested in working in the environmental field, especially for organizations that cannot afford to pay their interns.

Alumni Officers

• Develop an internship program with university alumni.
• Create a directory of university environmental alumni who students could contact to learn about environmental careers.

Recommendations for Faculty

• Offer course credit for internships.
• Offer summer jobs working on research projects or with organizations professors are connected with.
• Identify possible environmental careers and help students acquire the skills needed for these careers.

Recommendations for Students

• Develop your own career resources, such as a list of student contacts, an employment newsletter, a database of recent graduates in environmental careers, and a collection of commentaries by students about past internship opportunities.
• Invite professionals from the environmental field to speak on campus.
• Initiate programs in which students pledge not to work at environmentally irresponsible companies.
• Work with local environmental groups while in school.
• Organize trainings for campus-based organizing, which will develop marketable student skills.
• Work on projects with your campus environmental group to gain practical experience.

Case Study of Success

University of Michigan, Ann Arbor, Michigan

This decentralized campus has three separate offices— Career Planning and Placement, Project Serve, and the School of Natural Resource Placement Services—that assists students in their efforts to find careers in the environmental field. The university's Career Planning and Placement Office contains a vast library of career descriptions as well as publications containing environmental job listings. Project Serve's office is also dedicated to providing students with volunteer work experience with community groups and nonprofit organizations. The School of Natural Resources produces a weekly jobs bulletin containing opportunities found through alumni associations in addition to jobs recruited by the Employer Outreach Publication. This publication, listing majors and student projects and experience, is distributed to over 700 prospective employers. In 1991, the university held its first Interdisciplinary Environmental Career Conference and is planning to organize this event annually. By combing a variety of student disciplines, from Public Policy to Chemical Engineering, in addition to majors with the School of Natural Resources, the conference has successfully attracted a large number of government agencies, corporations, and nonprofit organizations.[xli]

Coordinate with Allies

• **Environmental Careers Organization**, 286 Congress St., Boston, MA 02210-1009. (617) 426-4375. Contact: Douglas O'Reilly. *Formerly the CEIP Fund, the Environmental Careers Organization places interns with agencies, corporations, and organizations, offers conferences, workshops, seminars, and counseling on environmental careers, and publishes* ***The New Complete Guide to Environmental Careers.***
• **University of Michigan, Career Planning and Placement Office**, Ann Arbor, MI. (313) 764-7458. Contact: Karen Borland.

STRATEGIES FOR IMPLEMENTING THE BLUEPRINT RECOMMENDATIONS

STRATEGY 1: BUILD DIVERSE CAMPUS COALITIONS

ALL CAMPUS ENVIRONMENTAL LEADERS:

• Hold a campus-wide "Campus Earth Summit" with students, faculty, administrators, and alumni to set specific targets and timetables for implementing the *Blueprint for a Green Campus* recommendations.
• Include students, faculty, administrators, and alumni on all university committees that deal with campus environmental issues.
• Ask faculty to contribute expertise to resolve campus environmental problems. For example, ask pesticide experts to work with physical plant operators on pest management policy.
• Hold informal gatherings with students, faculty, and administrators to build a sense of a campus environmental community.
• Form issue-specific coalitions with non-environmental groups. For example, work with minority and people of color groups to address environmental justice concerns, or work with community service organizations on food recovery programs for the homeless.
• Ask students to organize pilot projects when the university is hesitant to adopt a program to prove that the program is feasible.
• Create student employment opportunities in campus operations and environmental education.

COORDINATE WITH ALLIES

• **Student Environmental Action Coalition,** PO Box 1168, Chapel Hill, NC 27514. (919) 967-4600. Contact: Miya Yoshitani, Executive Director. *Ask for advice on campus organizing for environmental justice.*
• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It! Ask for packets and information on how to organize diverse campus coalitions.*

STRATEGY 2: STRENGTHEN REGIONAL, NATIONAL, AND GLOBAL COMMUNICATION CHANNELS

ALL CAMPUS ENVIRONMENTAL LEADERS

• Join consortiums of environmentally responsible universities, such as the Secretariat of University Presidents for a Sustainable Future, an international consortium of 172 colleges and universities dedicated to facilitating an environmentally sustainable future. All members have signed the Talloires Declaration, a set of recommendations and declarations defining the role of universities in the work of sustainable development.
• Join coalitions of student environmental groups, such as the Campus Ecology Program (formerly Cool It!), Student Environmental Action Coalition, Campus Green Vote, the Sierra Student Coalition, or others.
• Participate in training programs to learn organizational skills, such as those sponsored by Campus Ecology (formerly Cool It!), Campus Green Vote, and SEAC.
• Encourage associations of university professionals to discuss environmental matters in trade journals and conferences. For example, the national associations of dining hall managers, bookstore owners, and purchasing officials are already including environmental issues in their national conferences.
• Allocate funds for students, faculty, and administrators to attend conferences and forums on environment, population, development, and related fields.

COORDINATE WITH ALLIES

• **Student Environmental Action Coalition**, PO Box 1168, Chapel Hill, NC 27514. (919) 967-4600. Contact: Miya Yoshitani.
• **Campus Ecology Program, National Wildlife Federation**, 1400 16th St., NW, Washington, DC 20036. (202) 797-5435. *Formerly Cool It!*

• **Campus Green Vote**, 1400 16th St., NW, Washington, DC 20036. (202) 939-3316.
• **Secretariat of University Presidents for a Sustainable Future and Tufts Environmental Literacy Institute,** Center for Environmental Management, Tufts University, 474 Boston Avenue, Medford, MA 02155. Contact: Tom Kelly, (617) 627-3486. E-mail: tkelly@oper.cem.tufts.edu.

STRATEGY 3: PARTICIPATE IN PUBLIC POLICY FORMULATION AND CITIZENSHIP EDUCATION

ALL CAMPUS ENVIRONMENTAL LEADERS

• Encourage the university to sponsor natural and social scientific research to help design more effective, innovate approaches to environmental problems for local, state and national governments.
• Work with state governments to improve environmental education, waste reduction, and energy efficiency policies and strengthen standards for recycled paper content, percentage of waste stream recycled, and other measures.
• Serve on environmental policy, environmental education, and pollution prevention task forces or committees.
• Hire new faculty who have expertise in formulating public policy solutions to environmental problems.
• Register students to vote and educate them about the environmental records of elected officials and candidates for office, through forums, seminars, and debates.
• Train students in the skills they need to lobby government agencies to take stronger steps toward advancing human and environmental well-being.

COORDINATE WITH ALLIES

• **Campus Green Vote,** 1400 16th St., NW, Washington, DC 20036. (202) 939-3316. Contact: Chris Fox. *During election years, Campus Green Vote trains students in the skills of campaigning for pro-environment candidates. During non-election years, Campus Green Vote trains students in the skills needed to persuade the President, the Cabinet Departments, Federal Agencies, the Congress, and international institutions to take stronger steps toward an environmentally sustainable future.*
• **Second Nature: Education for a Sustainable Future**, 17 Msgr. O'Brien Hwy.; PO Box 410350, East Cambridge, MA 02141-0004, (617) 227-8888. Contact: Anthony Cortese, CEO.

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The Campus and Environmental Responsibility, edited by David Eagan and David Orr, San Francisco, CA: Josey-Bass, 1992.

Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change, by April Smith and the Student Environmental Action Coalition, Washington, DC: Living Planet Press, 1992.

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Ecological Literacy, David W. Orr, Albany, NY: SUNY Press, 1992.

Education for the Earth: A Guide to Top Environmental Studies Programs, Princeton, NJ: Peterson's Guides, Second Edition, 1994.

Student Environmental Action Guide, Student Environmental Action Coalition, Berkeley, CA: EarthWorks Press, 1991.

50 Simple Things Your Business Can Do to Save the Earth, Earthworks Group, Berkeley, CA, 1989. (Many of the recommendations can be applied to campuses.)

ARTICLES AND PAMPHLETS

"Environmental Movement Booming on Campuses," Julian Keniry, Change, September/October, 1993.

"Partnership Leader Worshop Manual," Second Nature, 28 Msgr. O'Brien Highway, East Cambridge, MA 1994. Call (617) 227-8888.

"Preventing Pollution in University Purchasing and Dining," Sarah Hammond Creighton, Tufts Center for Environmental Management, Medford, MA 1993.

"Talloires Declaration," University Presidents for a Sustainable Future, Tufts Environmental Literacy Institute, 1990. Call Tom Kelly at (617) 627-3486 for a copy of the declaration.

COMPUTER TOOLS

• Student EnviroLink, env-link@andrew.cmu.edu

• EcoNet, Call (415) 442-0220 to subscribe.

• SEACNet, Call (919) 967-4600 to subscribe.

NATIONAL ORGANIZATIONS

• Campus Ecology Program (Formerly Cool It!), 1400 16th St., NW, Washington, DC 20036. (202) 797-5435.

• Campus Green Vote, 1400 16th St., NW, Box 24, Washington DC 20036. (202) 939-3316.

• College and University Recycling Caucus, University of Colorado at Boulder, UMC 331, Campus Box 207, Boulder, CO 80309. (303) 492-8307.

• Environmental Careers Organization, 286 Congress St, Boston, MA 02210. (617) 426-4375.

• Green Seal, 1730 Rhode Island Avenue, NW, Suite 1050, Washington, DC 20036-3101. (202) 331-7337.

• Green Corps, 1109 Walnut, 3rd Floor, Philadelphia, PA 19107. Contact: Leslie Samuelrich, 617-426-8506.

• Heinz Family Foundation, 3200 CNG Tower, Pittsburgh, PA 15222.

• Second Nature, 28 Msgr. O'Brien Highway, East Cambridge, MA 02141-0004. (617) 227-8888.

• Sierra Student Coalition, 223 Thayer St., #2, Providence, RI 02906. (401) 861-6012.

• Student Pugwash USA,1638 R ST. NW, #32, Washington, DC 20009. (202) 328-6555.

• Student Environmental Action Coalition, PO Box 1168, Chapel Hill, NC 27514-1168. (800) 700-SEAC.

• University Presidents for a Sustainable Future, Center for Environmental Management, Tufts University, 474 Boston Avenue, Medford, MA 02155. (617) 627-3486.

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Campus Delegations

• U Nacional de Misiones (Argentina)
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• U of Melbourne
• U of Sao Paolo (Brazil)
• Carelton U (Canada)
• Dalhousie U (Canada)
• U of British Columbia
• Universidad de Costa Rica
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• Moi U (Kenya)
• U Autonoma Chapingo (Mexico)
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• U of Phillipines
• Mendeleev U (Russia)
• Moscow State
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• Kookmin U (S. Korea)
• U Autonoma de Madrid
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• Birmingham Southern
• U of Alabama, AL
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- Florida A&M
- Florida Int'l
- Miami Dade CC.
- U of Miami
- Emory U., GA
- Spelman, GA
- Brigham Young U.
- U of Hawaii, HI
- Teikyo Westmar, IA
- U of Idaho
- Northwestern U., IL
- So. Illinois U., IL
- UI at Chicago, IL
- UI-Urbana-Champaign
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- UT at El Paso
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Environmental Orgs.

- Campus Ecology Program of NWF
- Campus Green Vote
- Green Corps
- Green Seal
- SEAC
- State PIRGs

TO ORDER THE *BLUEPRINT,* THE "CAMPUS GREEN PAGES," AND OTHER CAMPUS ECOLOGY RESOURCES

Call, fax, e-mail or write the following organizations which can provide you with additional copies of the *Blueprint,* either in print format or on-line, and help you enact its recommendations.

• **CAMPUS GREEN VOTE.** 1400 16th St., NW, Box 24, Washington, DC 20036, (202) 939-3338, Fax (202) 797-6646, Email: shadow@igc.apc.org. This office serves as a clearinghouse for distribution of the *Blueprint* and for follow-up efforts to the 1994 Campus Earth Summit. In addition, we encourage students, faculty, and administrators to work directly with the following organizations:

• **CAMPUS ECOLOGY PROGRAM.** The Cool It! Program of the National Wildlife Federation has changed its name to the Campus Ecology Program, and has a number of resources and regional organizers to assist you in your efforts to enact the *Blueprint* recommendations. A forthcoming book that is an excellent supplement to the *Blueprint* is ***Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century,*** by Julian Keniry, which profiles staff and administrator environmental leaders. Another resource is ***Campuses Working for a Sustainable Future,*** an annual directory of campus environmental groups and programs. The following national staff can be reached at 1400 16th St., NW, Washington, DC 20036: Nick Keller, Director, (202) 797-6858, nkeller@nwf.org; Chris Soto, Resources Coordinator, (202) 797-5435, soto@nwf.org; Julian Keniry, National Coordinator, (202) 797-5467, julian@nwf.org.; **For campuses in the Northeast,** contact Mehrdad Azemun, Northeast Organizer, (202) 797-5468, noreast@nwf.org; **For campuses in the Southeast,** contact Angie Newsome, Southeast Organizer, NWF Southeastern Natural Resource Center, 1401 Peachtree St., NE, Suite 240, Atlanta, GA 30309, (404) 876-2608, soeast@nwf.org; **For campuses in the Midwest,** contact Elena Takaki, Midwest Organizer, NWF Great Lakes Natural Resource Center, 506 E. Liberty, 2nd Floor, Ann Arbor, MI 48104-2210, (313) 769-9970, midwest@nwf.org.; **For campuses in the West,** contact Nicole Holt, Western Organizer, NWF Western Natural Resource Center, 921 SW Morrison, Suite 512, Portland, OR 97205, (503) 222-1429, western@nwf.org.

• **THE STUDENT ENVIRONMENTAL ACTION COALITION (SEAC).** SEAC has a national office with four full-time staff, three regional offices with part-time staff, and over fifty volunteer-run offices in the U.S. SEAC runs a national clearinghouse which includes two excellent books that supplement the *Blueprint* and will help you enact the recommendations, including ***Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change*** (Living Planet Press, 1993) and ***The Student Environmental Action Guide*** (EarthWorks Press, 1991). The following national staff can be reached at SEAC, P.O. Box 1168, Chapel Hill, NC 27514-1168, (800) 700-SEAC, Fax (919) 967-4648, Email: seac@igc.apc.org: Miya Yoshitani, Executive Director; Liz Gres, National Organizer; Amit Srivastava, National Organizer; and Lorraine Strauss, *Threshold* magazine editor. The SEAC National Office can refer you to the most appropriate regional coordinator for your campus.

• **TO ORDER "THE CAMPUS GREEN PAGES":** The Campus Green Pages is a current directory (last revised October, 1994) of 1,365 students, faculty, staff, and administrators on 515 campuses in all 50 states who are working for a sustainable future. The directory is sorted by region and state and includes phone, fax, and email addresses (where available). Call, Fax, E-Mail or Write: Campus Green Vote, 1400 16th St., NW, Box 24, Washington, DC 20036, (202) 939-3338, Fax (202) 797-6646, Email: shadow@igc.apc.org.

• **PLEASE SEND ADDRESS UPDATES FOR 1995-96 "CAMPUS GREEN PAGES" BY APRIL 30, 1995:** While faculty and administrator addresses may remain the same from year to year, student addresses, phone numbers, and email addresses need annual updating. Please help Campus Green Vote, the Campus Ecology Program, and SEAC by sending in any address updates, including, Student Name (and year of graduation), Group Name, Address (including Zip), Phone, Fax, Email, and Faculty or Administrator Advisor Info. Send them to: Campus Green Vote, 1400 16th St., NW, Box 24, Washington, DC 20036, (202) 939-3338, Fax (202) 797-6646, Email: shadow@igc.apc.org.

ENDNOTES

[i] David W. Orr, *Earth in Mind: On Education, Environment, and the Human Prospect* (Washington, D.C.: Island Press, 1994), 23.
[ii] Orr, *Earth in Mind,* 14.
[iii] Anthony Cortese and Sarah Hammond Creighton, "Environmental Literacy and Action at Tufts University," in David Orr and David Eagan, eds., *The Campus and Environmental Responsibility* (San Francisco: Jossey-Bass, 1992), 19-30. In its first year, TELI worked with Tufts faculty members who attended the workshops and incorporated the teaching of environmental issues into mechanical engineering, economics, history, international diplomacy, drama, sociology, and chemistry curricula. The resulting course revisions most often take one of three formats. The first uses an environmental context to teach a concept or a skill. The second involves expansion of a problem-solving exercise to include influences from or effects on the environment. The third uses environmental topics to show the relevance of the subject matter or to make the existing course material more interesting. For example, a drama professor used the environment as a theme for personal storytelling, acting, and selected readings. Two civil engineering professors modified their courses in geotechnology, soil mechanics, and foundation engineering to use environmental problems such as landfills, sludge disposal, and waste containment and cleanup along with more traditional examples such as dam building. A Spanish professor revised six courses required for a major in Spanish to include environmental readings from Spain and Latin America and to make environmental issues the subjects of paper topics and debates.
[iv] David W. Orr, *Ecological Literacy* (Albany: SUNY Press, 1992), 90-91.
[v] In biology, chemistry, and geology, students examine such topics as the impact of humans and technology on the biosphere, chemistry and its relation to air and water quality, and energy technologies. Courses in economics and government include natural resource economics and the role of the federal courts in influencing environmental policies. There are humanities courses on the environment and moral responsibility, the social history of American architecture, and American environmental history.
[vi] David Eagan, "Campus Environmental Stewardship," in David Orr and David Eagan, eds., *The Campus and Environmental Responsibility* (San Francisco: Jossey-Bass, 1992), 65, 66.
[vii] For more information about the bioregionalism course at Yale, contact William Cronon, Professor of History, University of Wisconsin at Madison, Madison, Wisconsin, 53706.
[viii] Interviews with David Eagan and Daniel Einstein; background information from Eagan, "Campus Environmental Stewardship," in Orr and Eagan, eds., *The Campus and Environmental Responsibility,* 65-76.
[ix] April Smith, *Campus Ecology* (Los Angeles: Living Planet Press, 1993), xii.
[x] Student Environmental Action Coalition (SEAC), *Student Environmental Action Guide: 25 Simple Things We Can Do* (Berkeley, CA: EarthWorks Press, 1991), 24.
[xi] Anthony Cortese, CEO, Second Nature, suggested this recommendation. Contact him at Second Nature in Boston for more detail.
[xii] Green Seal and the Center for Global Change, University of Maryland,*Campus Green Buying Guide* (Washington, D.C.: Green Seal, 1993), 2.
[xiii] *Campus Green Buying Guide*, 2.
[xiv] SEAC, *Student Environmental Action Guide,* 84.
[xv] April Smith, *Campus Ecology,* 60-61.
[xvi] The mission statement was adapted from the City of Santa Monica, California's Draft Environmental Procurement Mission Statement, contained in information obtained from April Smith about the Santa Monica Sustainable City Program (unpublished manuscript, 1994).
[xvii] Checklist questions provided by April Smith, and included in the Santa Monica Sustainable City Program (unpublished manuscript, 1994).
[xviii] Contact: Kevin Mathy, Manager of Transit and Parking Maintenance, University of California at Berkeley, Berkeley, CA. Information gathered from *Electric Transit Newsletter* (Chattanooga, TN: Electric Transit Vehicle Institute, July-Aug, 1994).
[xix] Contractors are expected to comply with Rutgers environmental program by assigning someone to coordinate with Rutgers. The Rutgers environmental program includes information about trends in the waste management industry and recycling markets, and ways to increase the amount of recycling by university personnel.

[xx] Excerpted from draft recommendation summary prepared at the Campus Earth Summit.
[xxi] Information provided by Sarah Creighton, Tufts CLEAN, Center for Environmental Management, Tufts University.
[xxii] SEAC, *Student Environmental Action Guide,* 12.
[xxiii] SEAC, *Student Environmental Action Guide,* 48.
[xxiv] April Smith and SEAC, *Campus Ecology,* 5.
[xxv] SEAC, *Student Environmental Action Guide,* 39.
[xxvi] April Smith and SEAC, *Campus Ecology,* 18-19.
[xxvii] Excerpted from his keynote address to the Campus Earth Summit, February 18, 1994.
[xxviii] *Campus Ecology,* 51.
[xxix] SEAC, *Student Environmental Action Guide,* 65.
[xxx] Yale University News Release, February 18, 1994.
[xxxi] For more information on electric vehicles compared to alternative fuel vehicles, contact Kevin Mathy, Manager of Transit and Parking Maintenance, University of California at Berkeley, Berkeley, CA.
[xxxii] Information from the Orr and Eagan, eds., *Campus and Environmental Responsibility.* Brown University entered the 1980s with many inefficient buildings: dormitory heating systems were old and unmanageable, thermostats were nonexistent or locked, light switches were key-locked or inaccessible, and many locations lacked adequate space for recycling containers. In summer 1990, the position of environmental coordinator was created in the university's Department of Plant Operations to identify energy efficiency opportunities. Immediately a proposal to replace all incandescent fixtures in the plans of the new dormitory with compact fluorescents caused a $6,000 reduction in annual operating costs.
[xxxiii] Excerpted from his Closing Remarks to the Campus Earth Summit, February 20, 1994.
[xxxiv] SEAC, *Student Environmental Action Guide,* 18.
[xxxv] April Smith and SEAC, *Campus Ecology,* 69.
[xxxvi] SEAC, *Student Environmental Action Guide,* 35.
[xxxvii] April Smith and SEAC, *Campus Ecology,* 68.
[xxxviii] SEAC, *Student Environmental Action Guide,* 63-64.
[xxxix] Paul Hawken, *The Ecology of Commerce* (New York: HarperCollins, 1994), xiv.
[xl] Information from the Environmental Careers Organization, Boston, MA.
[xli] April Smith and SEAC, *Campus Ecology,* 98-99.