

# Environmental Stewardship *and the* Green Campus

by Walter Simpson, CEM

**M**uch has happened since the first Earth Day took place in 1970. Our awareness and knowledge about environmental issues have increased dramatically, and we have taken many constructive steps to address the environmental problems that threaten the quality of our lives. Yet, if we want to leave a legacy to our children and grandchildren for which we can be proud, this is no time for complacency.

As "spaceship earth" rushes into the next century, global environmental risks and dangers threaten to escalate. The key elements are population, consumption, and technology. For example:

- What will happen as our planet's human population doubles in the next fifty years? Can the earth sustain such increased demands for resources and subsequent increased waste and pollution?
- What will be the impact of the industrialization of highly populous countries, such as China, given current reliance on coal-burning, which maximizes acid-rain and global warming emissions?
- What will be the consequences to natural systems if the rest of the world adopts our economic system and lifestyle? Are we setting the proper example? Is American-style affluence sustainable over the long run?

These are vexing questions that suggest precarious times ahead. A decent future is contingent upon environmental stewardship. In this area, colleges and universities have a special responsibility. According to Oberlin College professor David Orr, the environmental crisis is at heart a crisis of ideas. As such, higher education is deeply implicated in the crisis and strenuously obliged to address it.

Institutions of higher learning are in a unique position to

instill environmental knowledge and concern. Moreover, scientific research conducted at colleges and universities can help solve technical problems associated with the environmental crisis. While environmental teaching and research are of paramount importance, this article is written specifically for facilities managers and will focus on the significant contributions they can make to environmental stewardship through the "greening" of campus operations.

## Think Globally, Act Locally

The good news is that campus greening is blooming! Many campuses in the United States, Canada, and elsewhere have started the greening process and are now actively implementing important changes in the way they conduct day-to-day business. For the leaders of this vital movement, environmental stewardship has become a priority.

In 1994, under the auspices of the Heinz Family Foundation, 450 faculty, students, and administrative staff delegates from twenty-two countries and all fifty U.S. states met at Yale University for a Campus Earth Summit, creating a "Blueprint for a Green Campus." More than 200 college and university presidents from over forty countries have committed their campuses to academic and operational environmental responsibility through affiliation with the Tufts University-based Secretariat of University Presidents for a Sustainable Future.

The seven-year-old National Wildlife Federation (NWF) Campus Ecology program is expanding its efforts to involve campus administrators as well as its traditional base of stu-

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dents and faculty. A recently published book, *Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century* by NWF's Julian Keniry (reviewed elsewhere in this issue of *Facilities Manager*), highlights the environmental work of college and university staff and tells the story of successful green campus activities on many campuses nationwide.

Other books, articles, and organizing manuals are available, including the recently published *Earth in Mind: On Education, Environment, and the Human Prospect* by David Orr. The green campus movement is alive and well and growing every day.

## Back to Basics: Energy and Recycling

Among the first steps a campus can take toward campus greening is to reinforce, reinvigorate, and expand its existing environmental programs, typically energy conservation and recycling. Most campuses have these programs; they are the foundation of any administrative environmental effort.

Energy consumption produces some of the most significant environmental impacts associated with campus operations. If staff and/or financial resources are not available to advance your energy program, consider employing the services of an energy service company. ESCOs, as they are called, can develop, design, and construct energy efficiency projects that produce positive cash flow and pay for themselves. Energy savings in excess of 20 percent of total consumption are possible.

Enthusiasm about recycling is on the rise in most parts of the country because of the success and proliferation of municipal curbside programs. Unless colleges and universities run recycling programs at least as good as local municipal ones, campus efforts will appear deficient. How much is your campus recycling? The best schools are recycling over 50 percent of their waste stream; that's the target to shoot for!

Since facilities managers have significant control over energy and recycling programs, these are areas where you can really contribute to campus greening. Moreover, enthusiastic campus participation in the rest of the green agenda is unlikely to materialize unless it is evident to all concerned that facilities management is running active, aggressive programs in these two critical areas.

## Taking the Green Path

Of course, new initiatives are essential. Environmental stewardship involves examining all facets of campus operation in order to identify environmental impacts and strategies for mitigating those impacts.

Many campuses have organized a campus environmental committee or task force to initiate and coordinate this environmental agenda. While facilities management must play a central role, this needs to be a coalition effort. Ideally, this task force would include representation from key departments and offices comprise faculty and students as well as staff. All members need to be enthusiastic, especially the group's leader or chair. Other key ingredients for a campus environmental task force include regular meetings, some form of institutional memory, and a subcommittee organization. The task force will need access to higher levels of decision-making in order to be effective.

Empowerment is crucial to the success of this kind of group. Task force members need to see results. Reasonable proposals need to become new policies or programs in a reasonable amount of time. Administrative support must be evident and broad minded. To be effective, the task force will need to look wherever it wants in its quest to identify both

problems and solutions. No area should be "off-limits."

Another important step toward the green campus is to conduct a campus environmental profile or audit. This can be undertaken by the campus environmental task force, though it need not be. It is common at many colleges and universities for student groups to conduct an audit and present it as a challenge to their school's leadership. But the audit should be honest and pose a challenge regardless of who conducts it. A number of excellent resources are available to assist in the audit process (see "Resources" section below).

The heart of a campus environmental audit is its recommendations. These will typically take the form of proposed campus policies and programs and be grouped by issue areas. A number of generic recommendations are included with this article in the sidebar titled "Steps Toward Sustainability."

Fine-tuning and gaining acceptance and approval of these policies and programs will take time and effort. Since everything cannot be done at once, priorities will have to be established. Scoring some "victories" early on—even if they are small ones—is important, although it is equally important to develop long-range plans to tackle the larger problems.

## Getting Serious About Stewardship

Once your campus environmental task force or committee becomes successful in getting its proposals approved, it's then time to address the challenge of implementation. Since most colleges and universities seem to be diverse and decentralized communities of free-spirited individuals, few things get accomplished by fiat or order. That makes implementation hard. What to do?

First, where you have influence and control, use it. Facilities is a good example. While deliberation on new policies and programs in your department may be an open and consultative affair, once facilities managers have reached an implementation decision they can expect results and cooperation from their staff. Gaining cooperation from other segments of the campus community may be more difficult.

Implementation of green policies and programs requires upping the ante on campus environmental awareness activities. This means rethinking and going beyond the traditional publicity campaigns for campus energy conservation and recycling. While helpful, campus mailings, newspaper articles, posters, and stickers won't do the job. Neither will organizing lectures only attended by the "converted." A deeper kind of outreach is required.

A more effective way to reach all segments of the campus community is through a network of "environmental contacts" or "coordinators" who represent the various departments and offices on campus. These individuals serve as informational conduits and liaisons between their areas and the campus' environmental program. They also serve as informal monitors and trouble-shooters. Such a network is time-consuming to establish, especially if it is complete and includes representation from all administrative and academic units, but it is the only way to go in the long run.

An environmental contacts network will need a coordinator—perhaps your energy officer, recycling coordinator, or an assistant. The recruitment process for members of the network should include training, to instill familiarity with the issues and with program objectives and methods. Providing appropriate resource material is also important. And don't forget to include facilities staff—from custodians to trades to



engineering—in this educational outreach process.

Once a campus environmental coordinators network is in place, it has to be “worked” or it will eventually fall apart. This can be done by regular follow-up with network members by the coordinator or, perhaps, by student assistants or volunteers. An occasional network newsletter (printed on recycled paper, of course!) can help, as can providing support and dialogue through an e-mail discussion group.

Holding periodic meetings, perhaps once a semester, can also build the effort. These get-togethers can provide an opportunity to inform and rally your environmental outreach team—as well as give team members a chance to “vent,” share success stories, make recommendations, and bond with one another.

Note that some members of your network may need to get release time from their supervisors to participate. That should be relatively easy to obtain since network responsibilities will probably take just an hour or two each week after the environmental program is established. Of course, resolving issues such as release time are easy if campus greening has the blessing of campus administrative and academic leadership.

### The Importance of Top Level Leadership

If top level support is a prerequisite to achieving some measure of environmental success, top level involvement and leadership are essential to achieving excellence in campus greening. Without a clear commitment and active involvement on the part of a college or university president, a campus environmental program will be ineffective past a certain point. The effort will stop well short of genuine environmental stewardship and excellence.

How do you obtain that leadership commitment? Perhaps the most effective way is for the campus environmental task force, in conjunction with well respected sympathetic administrators, faculty, and students, to approach the president and request that he or she sign the Talloires Declaration. This international declaration commits signatories to pursuing environmental education and operations as central institutional priorities. (See “Resources” section for information on how to obtain a copy of this declaration.)

Consideration of the Talloires Declaration could also be initiated by sympathetic members of the college or university board of trustees. Current U.S. and Canadian signatories include the presidents of sixty-seven institutions such as Brown University, University of California/Santa Barbara, Carleton University, University of Florida, University of Massachusetts/Boston, McGill University, Middlebury College, University of North Carolina, University of Pittsburgh, University of Rhode Island, Rutgers University, Tufts University, University of Virginia, and the College of William and Mary.

Green campus initiatives will thrive when members of your campus community know that your president is interested, on board, and involved. Leadership from the president will result in increasing support from vice presidents, directors, and deans. Policy implementation will be expedited, go more smoothly, and be more comprehensive and effective.

One of the ways top level leadership can make things happen is by setting the right example and by practicing green habits. For example, if a president or a vice president starts reusing envelopes, using double-sided copying and 100 percent recycled, non-chlorine-bleached paper for official correspondence, widespread campus use of these ecological prac-

tices will be much easier to achieve. Conversely, if a president (or leadership generally) shuns green habits, they may be viewed as unprofessional or eccentric, and institutionalizing them may be impossible.

An obvious step to solidifying, publicizing, and institutionalizing top level support is to incorporate green campus tenets into your college or university mission statement. The campus environmental task force could propose appropriate language to tie the teaching, research, and public service dimensions of your school’s mission to environmental responsibility and stewardship.

Of course, green campus language can also be incorporated into the mission statements of individual departments and offices as well. Maintenance or facilities management is an obvious place to start.

### Greening TQM and Customer Service

Because facilities management or maintenance departments operate the campus physical plant, they play a critical role in campus greening. Their commitment and leadership are essential. Consequently, it is vitally important that environmental concerns be addressed as facilities total quality management (TQM) and customer service programs are developed. Additionally, facilities managers need to consider how their operations contribute to the environmental education of the student population.

Facilities management’s TQM goals or objectives should include campus greening as a fundamental value commitment. To incorporate greening in TQM, questions like these must be considered: How can we make physical plant operations more environmentally responsible? How can we improve our energy, recycling, and other environmental programs? The TQM technique of benchmarking can then be applied to measure green campus performance and progress against the best peer institutions across the country, many of which are profiled in Keniry’s *Ecodemia*.

Customer service is another concept borrowed from the private sector to improve campus business operations. Unfortunately, it is possible for customer service to be defined narrowly and end up in conflict with environmental objectives.

Take temperature control, for example. If customer service is raised to an absolute and becomes synonymous with making people happy and minimizing complaints, then conserving energy through proper heating and cooling temperature control will become impossible. Thus, customer service needs to be defined within reasonable limits and viewed in the context of other policies and priorities. A sensible, well-publicized, conscientiously administered temperature policy should be able to coexist with a reasonable customer service program.

But greening goes further and asks us to reexamine the concepts of “customer” and “service.” On the one hand, the customer may be the room occupant who claims to be too hot or too cold. On the other hand, according to green campus thinking, the customer is also the wider community—including our children and future generations who are or will be affected by our behavior.

How do you provide excellent customer service to this wider constituency? Surely not by operating a campus in an environmentally irresponsible way. Green operational changes will affect service to your immediate campus customers, but the changes will be perceived positively if the

program is explained and marketed properly.

This customer service theme can be developed further by considering the student, whom we often refer to as our ultimate customer. We address the needs of students by becoming part of their educational experience.

### Facilities Role in Eco-Literacy

According to David Orr, the green campus philosophy imposes a moral obligation on all of us who work at educational institutions. We are obliged, he argues, to prepare students for a responsible life on this beautiful though fragile and endangered planet. By this he means graduating students who are environmentally literate and concerned.

Faculty play their part in the classroom. But facilities management departments also have a role to play in this educational process. We do this by setting an example and by creating the right environment for the learning process. Campus operations should be consistent with, reinforce, and enlarge the academic environmental message.

The involvement of facilities management in the education of students can and should be taken one step further. Orr describes an educational process that breaks down the barriers between academic functions and those of campus operations. He envisions an educational experience where the campus itself—its architecture, its physical plant, and its business operations—is pedagogic and becomes a "learning lab" for students.

Through appropriate courses or through extra-curricular activities, students can study the campus and learn to help mitigate negative campus environmental impacts. According to Orr, this kind of hands-on involvement in the workings of the campus empowers students and helps them learn more about how the world works and how to affect it constructively. Of course, facilities management activities must be accessible to students, and facilities staff must be willing to serve as informal teachers if this eco-literacy process is to work.

### Fiscal Bottom Lines

It's been said, quite aptly, that if you want to see an organization's priorities, look at its budget. A commitment to campus greening means going beyond "talking the talk." You also have to "walk the talk." That means allocating appropriate campus resources to get the environmental job done.

Staffing of key positions is a critical issue. It is hard to imagine any large campus organizing an effective energy conservation program without at least a full-time energy director or coordinator. Moreover, this individual will need support staff to make energy conservation projects happen.

The same can be said of recycling. A full-time coordinator is a general prerequisite to an effective program; this person would be in addition to the personnel who physically collect the recyclables. Given staffing levels and staffing costs common for other campus business functions, the idea of establishing staff positions completely dedicated to environmentally beneficial activities should not be viewed as controversial or excessive.

We live in an era of budget cutting, downsizing, and privatization. Making that green campus commitment means continuing down the green path even when times get tough. Green positions should be protected when the budget gets tight. If some maintenance functions get privatized, contract provisions mandating full cooperation with campus environmental objectives should be made—even if these add some expense.

### For Love or Money

Luckily, environmental stewardship is often good for the budget. This fortunate coincidence has been described as "doing well by doing good." The hallmark of a green campus is waste reduction. Generally, reducing waste will save your campus money while conserving resources and contributing toward environmental protection. Waste reduction is good management from a variety of perspectives.

The financial benefits of energy conservation are well established. Not only do energy saving projects tend to pay for themselves, a portion of the costs of these projects can be offset by utility demand side management (DSM) incentives. Some campuses are discovering that water conservation retrofit projects also save enough to benefit their financial bottom lines. Campus recycling, while less lucrative, can avoid landfill costs and generate income that helps pay the costs of recycling.

But the ability of conserving activities to save money may lead managers and their superiors to view these activities narrowly. While it makes sense to use green campus efforts to save money, a real commitment to environmental responsibility must go beyond doing only those things that save money or pay for themselves.

Colleges and universities spend money and allocate resources to many programs that are costly and are not expected to pay for themselves in a strict dollar sense. Expenditures for these activities and functions are routinely approved because they are viewed as the right thing to do, as important or necessary. Green campus initiatives need to be placed in that category and not evaluated solely on the basis of economics and payback.

### The Challenge of "Retail Wheeling"

The North American electric power industry is undergoing a sea change, propelled by a variety of forces including federal legislation. Like the telephone and natural gas industries before it, the electric power industry is in the midst of deregulation. Electric utilities are facing increasing competition from other power producers. Many large electric users are looking to retail wheeling, self-generation, or customized utility contracts as salvation from escalating electric rates and costs—without considering how these arrangements could affect their conservation efforts.

Retail wheeling, where and when it materializes, will permit large electric users to buy cheap power from distant third-party generators and pay local utilities a "wheeling" or transportation charge for delivery to their facility. The end result may be substantially lower electric rates for these users (causing smaller users to pay more).

It's hard to fault colleges and universities for seeking lower electric rates. But as rates go down, so will incentives for energy conservation. For example, if retail wheeling allows you to buy power at 4 cents a kilowatt hour instead of the 8 cents you currently pay, your paybacks for electric energy conservation projects will double. Conservation may still be cost-effective at that rate, but it may look a lot less attractive.

The green campus effort must address this issue directly. Lower rates may encourage more energy use while not changing the fact that wasteful energy consumption significantly contributes to environmental degradation through air pollution, greenhouse gas emissions, and other serious impacts. By failing to reflect the environmental costs of energy use, the new rates pose a real threat to environmental stewardship.



Strategies to keep conservation efforts alive despite lower rates must be identified and explored. What are these strategies? How can energy conservation efforts be sustained?

## Sustaining Your Energy Program

Ultimately, environmental stewardship involves a change of values; campuses should be willing to be environmentally responsible even when it's not profitable. This commitment should be applied to energy conservation, though, admittedly, energy projects that are very costly to implement are not as likely to be pursued if the monetary return on investment is not there.

Fortunately, even in the context of lower energy rates or prices, energy conservation and efficiency can still make good financial sense. How so? Because lower energy prices do not necessarily produce the lowest energy bills.

If lower rates are allowed to undermine conservation efforts and encourage energy waste, higher energy consumption may result in inflated energy bills—thus, negating all or some of the hoped for financial benefit of lower rates. Moreover, if needlessly high levels of energy consumption are allowed to persist, campus energy bills will be that much higher when energy prices rebound and rise again (as they inevitably will). Energy efficiency is a hedge against future rate shock and remains fundamental to least-cost energy strategies.

Shifting from simple payback to life cycle evaluation of projects also demonstrates the cost-effectiveness of conservation despite lower energy rates. While lower electric rates may extend the simple payback of a proposed energy conservation project, a life cycle analysis may show that the measure still makes financial sense—given its projected saving over the life of the equipment being installed as well as its quantifiable maintenance, capital improvement, and other benefits.

The challenge of keeping campus energy conservation going in the brave new world of lower rates exists equally if decreased rates are the result of self-generation or lower "buy-out" rates provided by your utility (to prevent you from wheeling or self-generating). If you build your own power plant, proposed conservation projects will be evaluated against your "marginal rates," i.e., what it monetarily costs or benefits you to produce or save the next kilowatt hour. Marginal rates tend to be much lower than average power production costs, so energy conservation project paybacks will definitely slip. Thus, the need for life cycle evaluation.

Buy-out rates from utility companies intent on keeping your business may be structured in a two-tiered fashion, with one block of power being charged at the "full rate" while consumption past that point is at lower marginal rates. Campuses contemplating buy-out contracts based on marginal rates should assess the bargaining leverage they have with their utility and, if possible, use it to dictate terms.

It may be possible to negotiate with the utility a custom contract that includes an adjustment mechanism that permits documented energy efficiency improvements to save at the

full rate. By preserving the full financial benefits of energy conservation, you will be maintaining incentives that will keep your program active and aggressive, as it should be. The end result will be both lower energy consumption and costs—along with all the environmental benefits associated with efficiency.

## Speaking Out, Joining the Debate

An underlying premise of the green campus movement is serving the wider community. That may mean speaking out publicly concerning the potential "dark side" of utility deregulation.

As the electric power industry is restructured, state public utility commissions need to hear from colleges and universities about the need to maintain demand side management programs and appropriate price structures to encourage energy conservation and efficiency. Moreover, facilities managers and the institutions they represent shouldn't hesitate to speak out against utility rate proposals that they believe are not conducive to environmental stewardship or in the public interest.

As a society, we may end up throwing out the conserving-baby with the bath water if deregulation is not carefully considered. Colleges and universities can play a useful role in this critical debate.

## Cultural Change and the Sustainable Society

American colleges and universities exist in a social context, namely a social system that defines the "good life" in terms of materialistic consumption. All of us, on or off campus, have grown up learning that success is affluence. Bigger is better. And immediate gratification is a right.

Without realizing it, we regard the natural world as a collection of resources or commodities to be used, exploited, gobbled up. We are shoppers in one vast global supermarket! Ah, yes, enjoy!

But while our commercial culture has benefits, many aspects of it are not sustainable over the long run. We can't go on consuming at this rate and producing all the inadvertent waste and pollution that goes along with this lifestyle. Ultimately, we need to talk about cultural change if we are going to understand why campus greening will not be easy and if we want to maximize our chances for success.

The green campus movement is about "small is beautiful." It's about frugality and an understanding that less may be more. It's about abandoning selfishness in favor of compassion and service to others. We need to feel in our gut that the world we live in does not belong to us; it belongs to our kids. We must look at what we do today from the perspective of the next generations. Moreover, our empathy must extend to other species, to ecosystems, and to the earth itself.

It will take significant cultural change to make these values dominant. But this is what is necessary to achieve an environmentally sustainable society. Will it be a sacrifice? In some sense, yes. But the gains—including psychological, ethical, and spiritual benefits—will far exceed the losses.

A sustainable society would be one where ongoing human activities do not compromise the prospects of future genera-

"I propose a different ranking system for colleges based on whether the institution and its graduates move the world in more sustainable directions or not. Do four years at a particular institution instill knowledge, love, and competence toward the natural world, or indifference and ignorance? Are the graduates of this or that college suited for a responsible life on a planet with a biosphere?"

—David Orr  
Environmental Studies,  
Oberlin College

tions—in other words, a society where current human activity could continue, as is, indefinitely without degrading the environment and its ability to support life. That would mean limiting our numbers and demanding considerably less from the environment than we do now. It would entail full recycling of non-renewable resources and much better management of renewable resources. Sustainable energy sources are by definition solar, with efficiency serving as a bridge to that renewable energy future. Waste and pollution would have to be reduced to amounts the earth could naturally recycle on a continuing basis without harm.

Achieving an environmentally sustainable society will require a significant departure from the past. Be well advised: the challenge before us is of truly major proportions. However, every journey begins with first steps. Colleges and universities should be leading the way and aiming for environmental excellence. ■

## STEPS TOWARD SUSTAINABILITY

### Suggested Actions for Campus Greening

#### *Solid Waste Reduction and Recycling*

- Establish a waste reduction ethic in all areas, including office activities; minimize unnecessary copying, reuse scrap paper and envelopes, etc.
- Set up campus repair and "swap" shops to refurbish, exchange and reuse unwanted items.
- Reduce Third Class junk mail.
- Reduce distribution of phone books.
- Minimize press runs of campus newspapers and other publications, consistent with actual need.
- Perform waste stream analyses to determine recycling potential and progress.
- Implement recycling program, start with paper and cardboard and expand to metal, plastic and glass. Recycle tires, batteries, scrap metal. Compost organic waste.
- Set goal for recycling program of at least 50% of waste stream.

#### *Purchasing and Administrative Services*

- Purchase only what is needed.

- Implement environmentally-friendly products purchasing policy, i.e., for products that are durable, reusable, recyclable, made of recycled materials, non-hazardous, energy efficient, produced in an environmentally sound manner, etc.
- Replace white virgin material paper with 100% post-consumer recycled, non-chlorine bleached paper.
- Buy only computers and office equipment compliant with EPA Energy Star program.
- Incorporate environmental standards in all contracts for goods and services.

#### *Energy Conservation*

- Create an energy database that documents both energy use and completed energy conservation measures and projects.
- Develop heating and cooling season temperature policies that promote conservation.
- Minimize fan and equipment run times.
- Exploit all cost-effective retrofit opportunities for efficient lighting, HVAC, motors, drives, EMS, etc.
- Make conservation projects happen by using energy service companies (ESCOs), third party financing, and utility demand side management incentives.
- Use life cycle analysis to evaluate conservation projects.
- Organize an ongoing energy awareness program that enlists the support of the campus community and encourages efficient operation of lights, office equipment, etc.

#### *Water*

- Implement water conservation program to retrofit inefficient plumbing fixtures, reducing water consumption by 25% or more.
- Avoid water consuming air compressors and "one-pass" air conditioning systems.
- Protect ground water and storm runoff by minimizing use of salt for ice-melting and by implementing automotive oil recycling program for on-campus students.
- Use drought-resistant plantings. Minimize irrigation.

#### *Hazardous Materials*

- Meet or exceed legal "haz mat" handling, collection, disposal, and tracking requirements.

- Educate campus hazardous waste generators about minimization and proper disposal techniques. Encourage users to explore less hazardous chemical options.
- Develop a chemical tracking or inventory database; implement a "chemical swapping" program.
- Implement "microscale" chemistry techniques for research and teaching.
- Switch to non/least toxic paints, solvents, and cleaning agents. Switch print shop to soy-based inks.
- Recycle waste fluorescent lamps and ballasts, anti-freeze, solvents, etc.
- Use integrated pest management techniques to minimize use of pesticides. Eliminate use of lawn pesticides.
- Recycle and recover ozone-depleting CFCs. Convert/replace cooling and refrigeration equipment with HCFCs or HFCs.
- Avoid chlorine-based products and incineration of PVC plastics.

#### *Transportation*

- Encourage on and off campus transit by carpooling, public transportation, bicycling, walking.
- Convert vehicle fleet to alternative fuel, e.g., natural gas.

#### *Food and Food Service*

- Buy regional produce in season.
- Support local organic farms.
- Promote less meat consumption and eating "low on the food chain" for health and environmental reasons.
- Minimize the use of disposable dinnerware.

#### *Campus Land Use*

- Redefine campus beauty. Naturalize and promote "natural succession" for unneeded lawn areas. Reduce grass cutting.
- Develop a nature appreciation program.
- Protect woodlands, wetlands, watershed, wildlife.

#### *New Construction*

- Don't oversize or build unnecessarily.
- Exceed energy codes. Design for state-of-the-art energy efficiency. Incorporate daylighting and passive solar.
- Evaluate options based on life cycle analysis.
- Include suitable recycling collection space in building design programs.
- Specify environmentally-friendly building products that are energy efficient to produce, made with recy-



cled materials and without hazardous chemicals, etc.

- Recycle construction or demolition waste.

#### **Campus Planning and Design**

- Locate campus convenient to population being served and regional public transit system.
- Minimize negative impacts and disruption of natural ecosystems and surroundings. Preserve and enhance greenspace.
- Concentrate buildings and arrange campus walkways and roads to minimize on-campus driving and create a convenient pedestrian campus.
- Allow for solar access in building siting and orientation.
- Use water-efficient plantings; landscape for energy efficiency as well as aesthetics.
- Subject all renovation and expansion plans to an environmental impact analysis and sustainable design principles.

#### **Investment Policies**

- Establish environmental criteria for financial investments.
- Use stockholder influence to encourage environmentally responsible business practices.

#### **Teaching and Research**

- Strengthen and prioritize undergraduate, graduate, and post-grad environmental studies, research, and policy programs.
- Develop a program to train faculty and teach environmental literacy to all students.
- Expand opportunities for using the campus physical plant and business operations as a "learning lab" for students.
- Develop community environmental education programs and participate in public dialogue on environmental issues.

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Note: see Keniry's *Ecodemia* for additional suggestions and examples of campus environmental action.

#### **Resources for Campus Greening**

"Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education," Heinz Family Foundation, January 1995. 202-939-3316.

*The Campus and Environmental Responsibility*, edited by David Eagan and David Orr, New Directions in Higher Education series, No. 77, Spring 1992, Jossey-Bass Publishers, 350 Sansome St., San Francisco, CA 94104.

The Campus Ecology Program, National Wildlife Federation, 1400 Sixteenth St., N.W., Washington, DC 20036-2266. 202-797-5435. Can provide resource materials, speakers, workshops, sample campus environmental audits.

*Campus Ecology: A Guide to Assessing Environmental Quality and Creating Strategies for Change*, April Smith and the Student Environmental Action Coalition, Living Planet Press, 1993. This book explains the campus audit process in detail. Available through the Campus Ecology program of the National Wildlife Federation. Call for pricing (see above).

*Campus Green Buying Guide*, 1994, Green Seal. 202-331-7337.

*Earth in Mind: On Education, Environment, and the Human Prospect*,

David Orr, Island Press, Washington, DC, 1994.

*Ecodemia: Campus Environmental Stewardship at the Turn of the 21st Century*, Julian Keniry, National Wildlife Federation, Washington, DC, 1995. \$14.95. Call 800-432-6564 to order.

*Green Computing*, Walter Simpson, 1994. A copy of this 12-page booklet is available for \$2 from Conserve UB, University Facilities, 120 Beane Center, SUNY Buffalo, Amherst, NY 14260.

*A Primer on Sustainable Building*, 1995, Rocky Mountain Institute, 1739 Snowmass Creek Road, Snowmass, CO 81654-9199. \$16.95. 970-927-3851.

"Recharging Campus Energy Conservation: ESCOs and Demand Side Management at SUNY Buffalo," Walter Simpson, *Facilities Manager*, Winter 1994, APPA.

"Talloires Declaration," Secretariat of 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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