

Ecovillage

at Berea College





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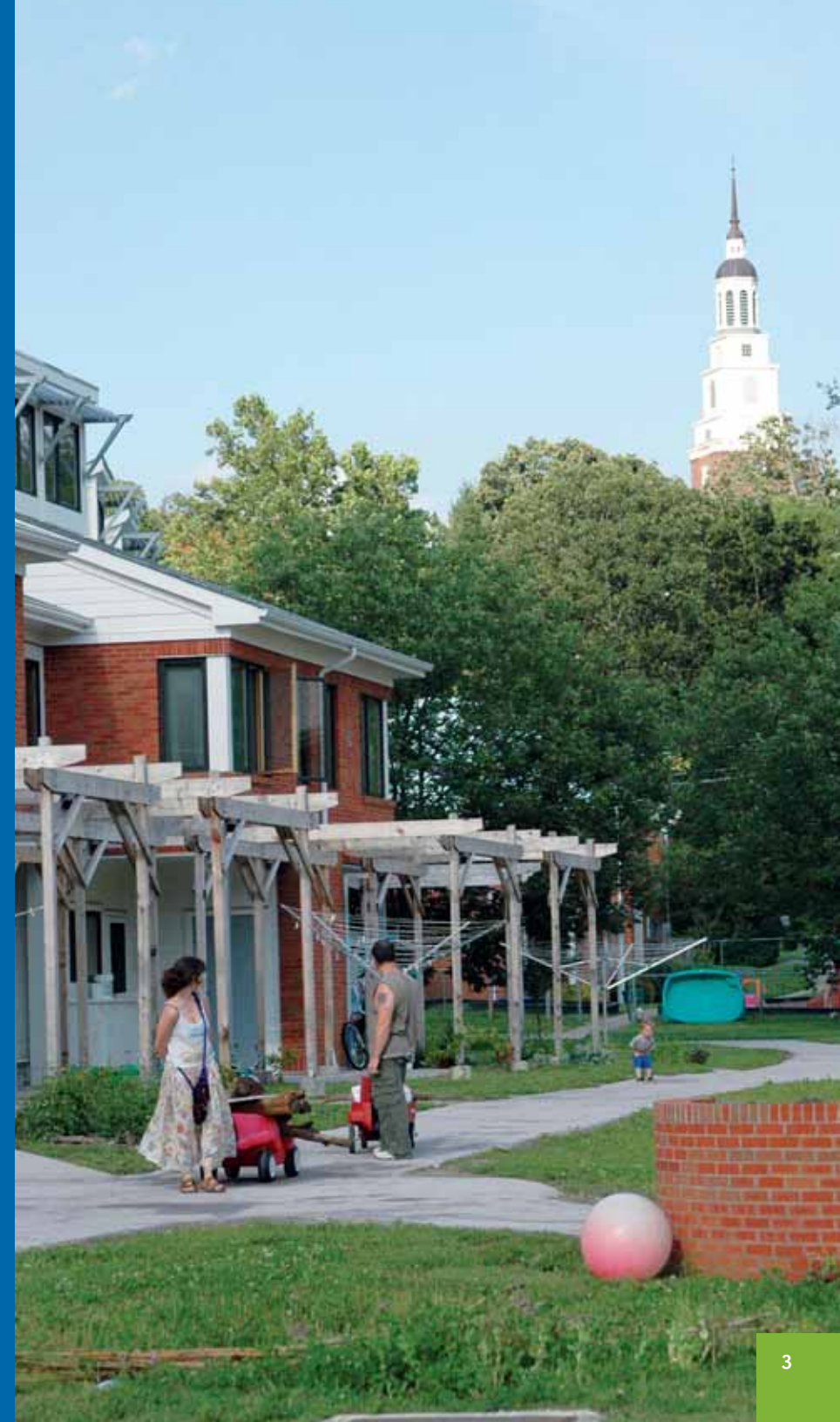
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*Subsurface Wetlands, left
 Student Family Apartments, right*



About the Ecovillage

Berea College's ecological village is an innovative residential and learning center. It provides ecologically and socially sustainable housing for student families and child care for their children while demonstrating opportunities for alternative "green" building and living.

In 1998, the College made an active commitment to recruit and admit single parent students, which created the need for more student family housing. Rather than build conventional townhouse apartments, the College designed the Ecovillage to be a tangible example of its dedication to sustainable living.

Ecological design is the foundation of Berea's transformation to a sustainable campus, one that can meet its current needs without degrading the capacity of the world's social, economic, and ecological systems to meet the needs of future generations. Ecological design is the application of ecological principles to the design of sustainable technologies, buildings, and communities. Working with nature instead of against it, ecological design promotes dramatic increases in energy efficiency. It decreases water use. It also reduces wastes, maximizes recycling and reuse, and emphasizes the use of renewable energy sources. Berea students participate directly in ecological design on campus—in planning, construction, and operations—to gain valuable experience that complements their traditional classroom training and teaches them how to make a smaller footprint on the earth.

Ecovillage Goals

The Ecovillage models alternative ecologically-friendly building techniques. Residents are encouraged to become a sustainable community by reducing consumption of nonrenewable resources and participating in activities that foster a sense of community, efficient use of energy, and shared learning.

Ecological goals include reducing both energy and water use by 75 percent, treating waste water and storm water on-site to swimmable quality, and recycling or reusing at least 50 percent of municipal waste produced by Ecovillage residents. Social goals include encouraging residents to maintain academic excellence and a 90 percent graduation rate, as well as participate in energy conservation, recycling, and other efforts to increase sustainability.

Ecovillage Components

All together the Ecovillage apartments, Commons House, Child Development Laboratory, Ecological Machine, Information Kiosk, Natural Building Shelter, and Sustainability and Environmental Studies House create an innovative, sustainable community.

*Individual Family Gardens, right
Accessible Convenient Child Care, far right*





Community Garden Project



Solar Arrays at the Commons House



Straw Bale Construction at the Information Kiosk



Recycle Bins



Compost Garden Clippings

Ecovillage Map

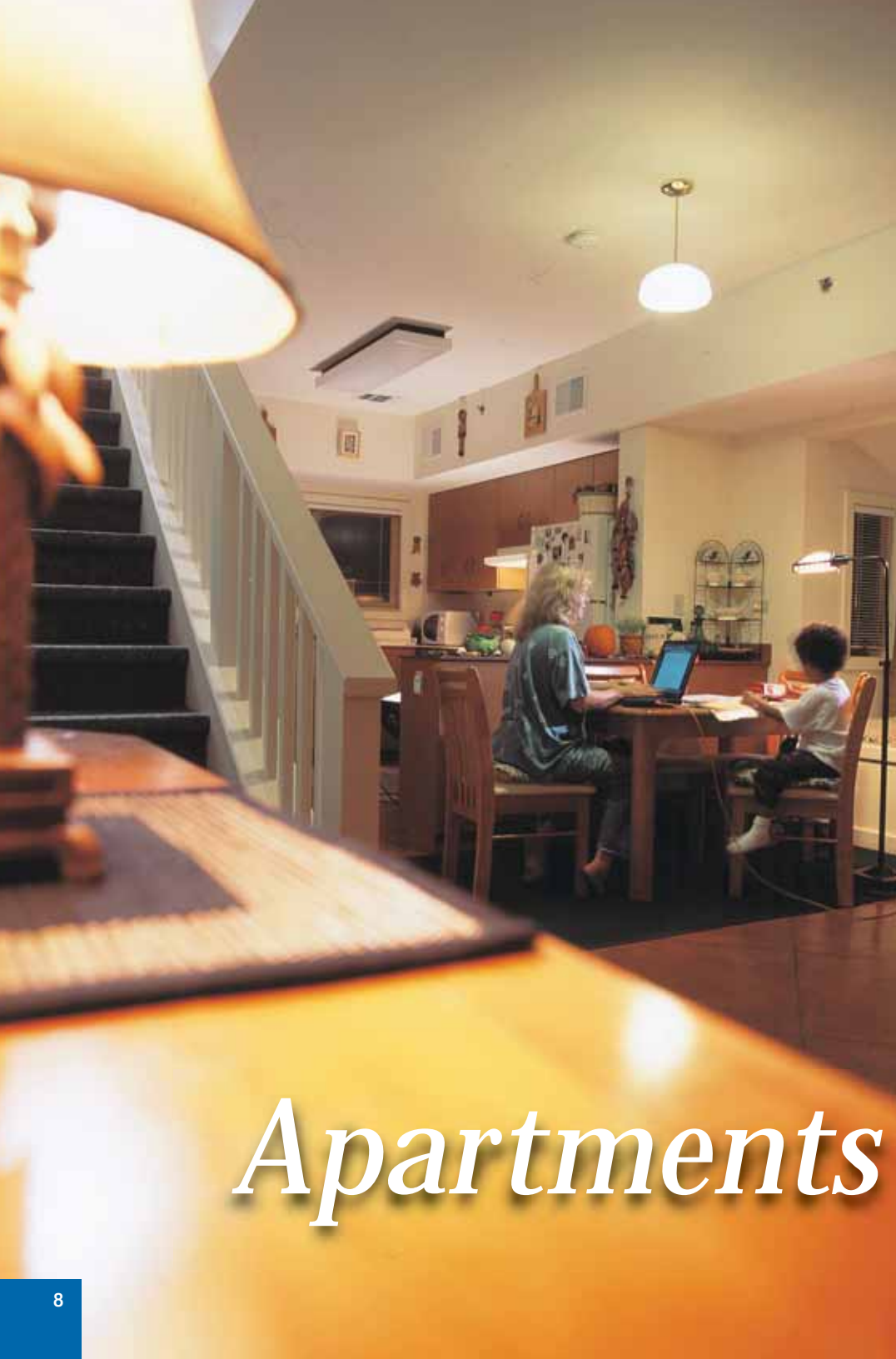
In 1988, six Colonial style brick units were built for married student housing. The idea of building further sustainable student family housing took hold in 2002-03, thus creating the Ecovillage student apartments and model SENS House. In 2005, the CDL was dedicated. Because the Ecovillage is an evolving sustainable model community, recent additions have included smaller buildings that demonstrate sustainable building practices, such as the Information Kiosk and the Natural Building Shelter, as well as Food Forest plantings.

Ecovillage Key

- 1 Original Apartments
- 2 Commons House
- 3 Apartments
- 4 Wastewater Treatment Wetlands
- 5 Natural Building Shelter
- 6 SENS House
- 7 Information Kiosk
- 8 Ecological Machine
- 9 Child Development Laboratory







Apartments

The Ecovillage has 50 apartments within easy walking distance of both child care and the main campus. To accommodate different needs and family sizes, there are 8 one-bedroom apartments, 38 two-bedroom apartments, and 4 three-bedroom apartments. The apartments are designed to save water and energy, and most buildings face south for additional energy savings. They feature nontoxic materials that improve the quality of the inside air for residents and their children. Design features and appliances in the Ecovillage apartments include:

- **Cabinets and countertops** made of formaldehyde-free resin and 100% recycled or recovered wood fibers. This meets or exceeds EPA indoor air quality regulations.
- **Ceiling fans** increase ventilation and air movement.
- **Compact fluorescent bulbs** use 66% less energy than incandescent bulbs and last as much as 10 times longer.
- **Programmable thermostats** allow residents to automatically adjust temperatures when they are sleeping or away.
- **Ground source heat pumps** provide both heating and cooling for the apartments by using the underground temperature, which is more constant than the outside air.
- **Thermal mass living room floors** are made of stained, scored, and sealed concrete that looks like tile.
- **Solar tubes**, similar to skylights, provide lighting from the sun.
- **Low-flow showerheads** aerate and increase the velocity of the water, helping residents use half as much water per minute.
- **Low consumption toilets** have a dual-flush mechanism to help conserve water by allowing residents to select a flush that uses 1.6 gallons of water or a half-flush that uses only 0.8 gallons.
- **Front-loading washers** use 50% less water and energy than top-loading washers. Although front-loading dryers are available in the Commons House, they were intentionally not included in the apartments to encourage residents to use the clotheslines provided outside each home.
- **Low-e window glazing** keeps heat indoors in winter and outdoors in summer.



Programmable Thermostat



Front-loading Washer



Natural Ventilation Control



Compact Florescent Light & Fan



Pop-out Window Ventilation



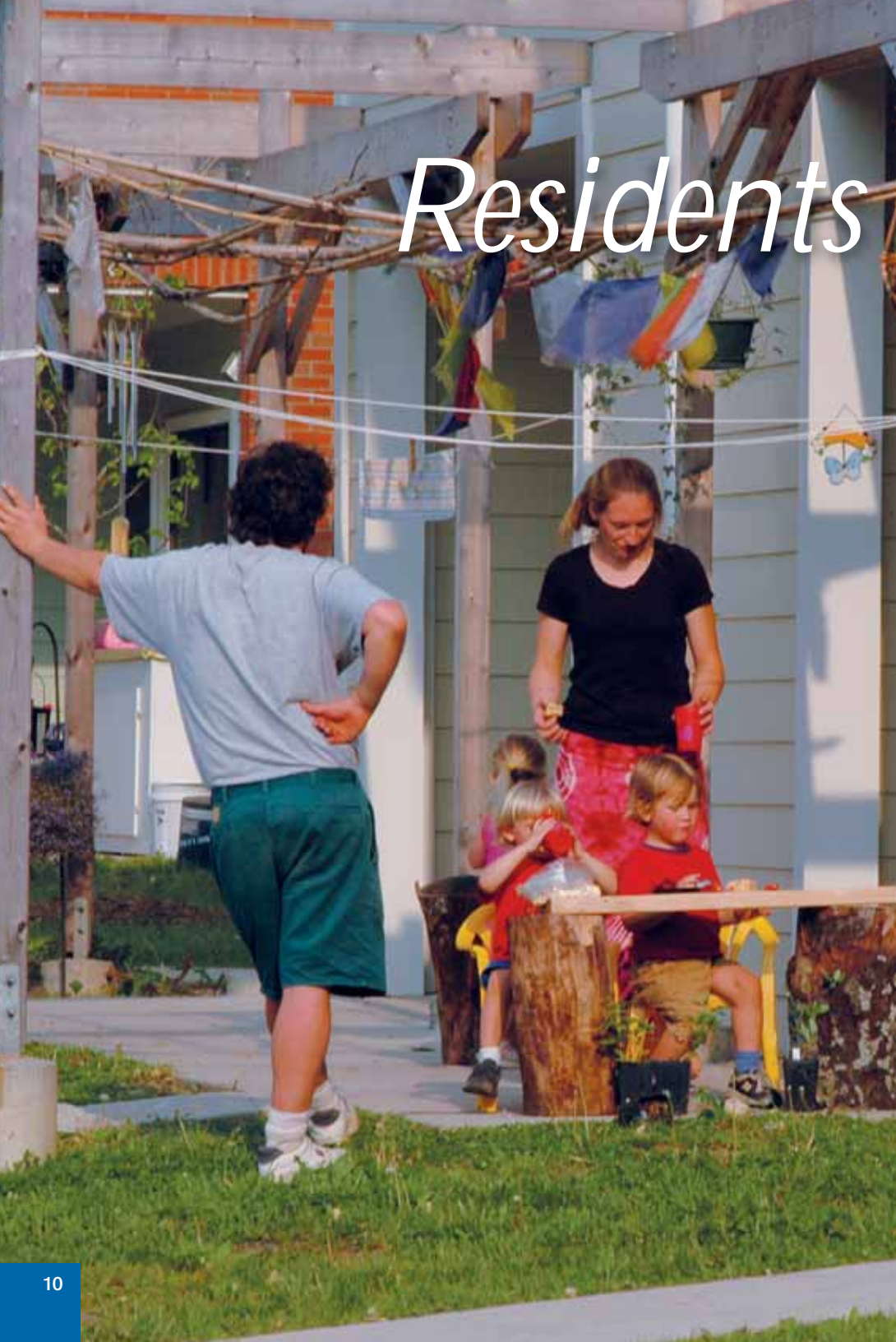
Net Meter



Residents

Ecovillage residents are families—single parents and married students with and without children. Four single students also live in the Sustainability and Environmental Studies House. Eight designated community assistants and one Ecovillage Collegium member work with all the residents. Although families come to the Ecovillage at different stages of environmental and community awareness, all residents recycle, monitor their energy use, and attend conflict mediation training. To aid in the development and health of the whole community, residents also are asked to select two activities from a menu of options during their first year and three activities for years thereafter. The options may include:

- Composting for the Ecovillage
- Participating in the transportation program: either agreeing to not have a car or to use their car for carpooling for child care facilities or grocery stores
- Assuming responsibility for one educational program and one social program per year
- Participating in gardening, landscaping, grounds keeping, and outdoor activities
- Producing and distributing green cleaning supplies
- Participating in governance or leadership (Ecovillage Association Executive Committee or Non-Traditional Student Association)
- Babysitting sick children



Line-Dried Laundry Leaves a Fresh Scent



Commons House

The Commons House, a central gathering place that offers a large community room, office, laundry area, kitchen, and children's play area, is used for Thursday parent lunches and other programs. It can be reserved for meetings, parties, and study groups. Sustainable features of the Commons House include, solar hot water panels that provide radiant floor heat, and reused ceiling lumber and exterior barn siding.



Commons House Dryers Come in Handy on Cold Days.



Community Transportation

The College has provided the Ecovillage with a Toyota Prius that residents may use. A hybrid car, the Prius combines a gas engine and an emissions-free electric motor. It also has a low-emissions rating and does not have to be recharged. The Ecovillage is within walking distance of campus, so the Prius is available for off-campus needs such as grocery shopping. There is a mileage fee if only one person uses the car, but no fee is charged if two or more people ride in the car.



Boyd and Gaynell Fowler Child Development Laboratory

The Child Development Laboratory (CDL), located at the west end of the Ecovillage, provides quality child care and early educational experiences for the young children of Berea College students, staff, faculty members, and, space permitting, to residents of the local community. The facility can serve up to 118 children from 6 weeks through 5 years of age for full-day, half-day, or after-kindergarten care. About 90 percent of eligible children of Ecovillage residents attend the CDL. It is designed to serve as a model for other child care providers in Appalachia.

The first floor includes 11 classrooms, a full kitchen and dining area, a reception area, administrative offices, and a laundry room. The second floor includes an unobtrusive observation deck with listening stations for parents and other students, a college classroom, teacher break room, and conference room. Completely fenced outdoor play areas and teaching gardens surround the building.

The CDL serves as a learning laboratory for Berea College students enrolled in child and family studies, nursing, psychology, and education studies. The CDL is rich in resources and potential for the scholarly work of faculty and students who have an interest in child development, family life, and teaching/learning processes.

The CDL was designed by Rodney Wright, an architect noted for creating “green” child care centers. The building incorporates many of the construction methods and materials found in other Ecovillage buildings, as well as features such as child-sized drinking fountains, sinks, and toilets.



*Age-appropriate Activities
Sustainable & Natural Creative Environments*





*Child Care for Infants and Toddlers
(6 weeks to 5 years)*



Jackson L. Oldham Ecological Machine

In theory and practice, an ecological village does not send waste downstream. The Ecovillage has an on-site sewage treatment system that illustrates the concepts of ecological design.

The ecological machine consists of a series of tanks that provide optimal conditions for bacteria, snails, plants, fish, and other aquatic organisms to consume organic wastes, converting waste water into odor-free, swimmable-quality water. The greenhouse-like environment is also an excellent classroom for teaching biology, chemistry, and other sciences.

The ecological machine can process up to 10,000 gallons of sewage a day, which—after flowing through a subsurface wetland and passing through an ultraviolet sterilizer—returns to a majority of Ecovillage buildings to flush toilets. Because much of the waste water from the Ecovillage community flows into the ecological machine, which contains living organisms, residents are taught to not use bleach, antibacterial soaps, or other products that may harm the organisms and decrease the ecological machine's effectiveness.



*Above, Sewage Treatment Involves Closed and Open Hydroponic Tanks
Left, Student Labor Workers Look after the Health of the Plants and Fish in the Ecological Machine*



Information Kiosk

The Ecovillage Information Kiosk is a small, student-built, three-walled structure located between the ecological machine and the Sustainability and Environmental Studies House. It demonstrates straw bale building technology and displays information about the Ecovillage for visitors to learn more about this unique community. Upcoming events focused on ecological design, sustainability, or the environment are advertised there as well.

Straw Bale Building Technology and Ecovillage Signage



Dr. Margaret S. Austin Sustainability and Environmental Studies House

In addition to the Ecovillage apartment features mentioned previously, the Sustainability and Environmental Studies (SENS) House is a demonstration facility that incorporates even more ecological design features.

- a composting toilet
- a 1.5 kilowatt tracking photovoltaic panel array for electricity
- a sun oven
- a rooftop rainwater collection system that provides the house's water supply
- its own grey water treatment system
- a wall constructed of straw bale and natural plaster
- post and beam framing in the main room with timber from the College forest
- passive solar design with no central heating or cooling

As part of the College's labor program, four students live in the house and demonstrate a variety of technologies, materials, and actions that can contribute to a sustainable lifestyle. The SENS House residents offer community, Ecovillage, and

campus-based programs and workshops on sustainability, natural building, and ecological design.

The House is an academic and research facility for the Sustainability and Environmental Studies (SENS) Program, which is designed to infuse the teaching of sustainability concepts throughout the College curriculum while guiding and supporting the efforts of the College to practice sustainability.



Natural Building Shelter

This hexagonal structure located near the SENS House, demonstrates several alternative building techniques including earth bag, slip straw, cordwood, and cob walls. A living roof of soil and plants insulates and cools the building, which serves as a meeting space for Ecovillage residents. A photovoltaic panel charges the battery that provides power for the building's lights and a solar water heater supplies a radiant floor heating system. Students led a series of workshops to build the shelter, allowing the local and College communities to experience ecological design and construction in progress.





SENS House Residents



Straw Bale Wall



Solar Array at SENS House



Compost Tumbler



Downspouts Collect Rainwater for Reuse



SENS House Greenhouse and Garden



*Post and Beam Construction
Cabinets Made of Recycled Materials*

Ecovillage Gardens

A large community garden behind the Sustainability and Environmental Studies House allows all Ecovillage residents to grow vegetables and fruits. The gardens, located around the SENS House and tended by the student residents, demonstrate organic and environmentally friendly gardening methods. Apartment residents also have space for personal gardens.

Three raised beds beside the Child Development Laboratory are planted, watered, and tended by the three- and four-year-old CDL students. These plants involve the senses—edible fruits and herbs to taste, plants with textured leaves to touch, and fragrant plants and flowers to smell. Also, children have transformed two beds next to the Commons House into a butterfly garden.

At the east end of the Ecovillage, a food forest eventually will produce many fruits, nuts, berries, and medicinal plants.



Permaculture Food Forest



With all of its components, the Ecovillage is a living example of many of the College's Great Commitments. For more information, visit the Ecovillage webpage at www.berea.edu/sens/ecovillage.



The Ecovillage is made possible through the generous donations of our many alumni and friends.

THE GREAT COMMITMENTS OF BEREA COLLEGE

Berea College, founded by ardent abolitionists and radical reformers, continues today as an educational institution still firmly rooted in its historic purpose "to promote the cause of Christ." Adherence to the College's scriptural foundation, "God has made of one blood all peoples of the earth," shapes the College's culture and programs so that students and staff alike can work toward both personal goals and a vision of a world shaped by Christian values, such as the power of love over hate, human dignity and equality, and peace with justice. This environment frees persons to be active learners, workers, and servers as members of the academic community and as citizens of the world. The Berea experience nurtures intellectual, physical, aesthetic, emotional, and spiritual potentials and with those the power to make meaningful commitments and translate them into action.

To achieve this purpose, Berea College commits itself

- To provide an educational opportunity primarily for students from Appalachia, black and white, who have great promise and limited economic resources.
- To provide an education of high quality with a liberal arts foundation and outlook.
- To stimulate understanding of the Christian faith and its many expressions and to emphasize the Christian ethic and the motive of service to others.
- To provide for all students through the labor program experiences for learning and serving in community, and to demonstrate that labor, mental and manual, has dignity as well as utility.
- To assert the kinship of all people and to provide interracial education with a particular emphasis on understanding and equality among blacks and whites.
- To create a democratic community dedicated to education and equality for women and men.
- To maintain a residential campus and to encourage in all members of the community a way of life characterized by plain living, pride in labor well done, zest for learning, high personal standards, and concern for the welfare of others.
- To serve the Appalachian region primarily through education but also by other appropriate services.



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