



Virginia **Sustainable**
Building Network

2008 Annual Green Innovation Awards

Best Green Business Innovation

Virginia Tech

Energy Efficiency Partnership of Greater Washington



Partners:

Hannon Armstrong * Pepco Energy Services * VA Tech * Arlington County
Leo A Daly * GVA Advantis * JBG Companies * National Building Museum



Best Green Business Innovation

Virginia Tech

Energy Efficiency Partnership of Greater Washington

Goal :

- Reduce GHG emissions by 20% - 50% from existing buildings in greater DC Area
- Note: Existing Buildings account for almost 40% of GHG emissions

Concept:

- Businesses, banks, local governments, and energy services companies providing a model for self-funded projects

Education, Research and Outreach:

- Virginia Tech - Founding Partner and unbiased facilitator
- Outreach mechanism for Students, Civic Groups and Industry



Best Green Small Business

Blue Ridge Eco Shop

Healthier Living for You and the Planet
Paige and Hakon Mattson

One Stop "Green" Shopping-August 2007
Non-VOC paints, hemp bags, organic linens,
sustainable furniture, solar attic fans, safe
water and baby bottles, consumer education
and more.



Best Green Small Business

Blue Ridge Eco Shop



Best Green Organization

Habitat for Humanity Virginia

Better by Design



EarthCraft Trainings to Date

Number of affiliates attended	24
Number of people attended	69

EarthCraft Construction to Date

Number of affiliates building EarthCraft	13
Number of homes completed or under construction	27
Number of homes to be monitored	8

Best Green Organization

Habitat for Humanity Virginia



The plan for the future is to gradually increase the number of Habitat homes built to EarthCraft standards over the next five years until 2012 when we expect to build 100% EarthCraft.

Best Green Designer

The Gaines Group, PLC

- Designed first LEED for Homes certified project in Southeast US
- First LEED for Homes high school student-built project in US
- Historic tax credit LEED for Homes project
- LEED ND, two LEED CS, LEED NC, and LEED for Homes projects in design phase
- EarthCraft projects
- Volunteer time
- Educate the public



Best Green Designer

The Gaines Group, PLC



The Gaines Group, PLC.
designers of the
Hinge House

- +LEED for Homes registered project built by CATEC high school students
- +Gold Medal Winner at the 2008 Governor's Environmental Excellence Awards
- +Citation Award Winner at the 2008 JRGBC Go Green Awards

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Best Green Residential Project

ecoMOD3



- A design / build / evaluate project at the University of Virginia School of Architecture
- Creating a series of ecological, modular, and affordable housing units
- Designed and built by interdisciplinary teams of students, working closely with faculty and outside experts



Best Green Residential Project

ecoMOD3

The SEAM house:
historic house and addition

Updates:

- Highly energy-efficient foam insulation
- Reconditioned historic wood flooring
- Evacuated tube solar hot water system
- Modular green roof system
- Modular bedroom addition
- Super insulated wall and roof panel construction
- Low impact materials
- Large deck with trellis/ shade device
- Rain garden/ courtyard space
- Full accessibility
- Goal: LEED Gold or Platinum for accessory unit



Honorable Mention Residential Project

Hill Studio

Madison Field



Site Design for Infill Development in Roanoke with EarthCraft houses:

- Rain gardens and swales
- Strategically placed trees
- Bat houses for mosquito control
- Optional 1000 gallon cistern that routes filtered rainwater to the shower
- Fresh air intake valves so the well-insulated homes can breathe
- Energy-efficient appliances, windows, and doors

Best Green Institutional Project

Longwood University Health & Fitness Center



- LEED Gold
- Mechanical system and building envelope improvements to maximize energy efficiency
- Renewable energy
- CO2 monitoring
- Low-VOC materials
- IAQ testing for optimum indoor air quality
- Efficient plumbing fixtures to reduce water use
- Recycled and regionally manufactured materials to conserve resources

Best Green Institutional Project

Longwood University

Health & Fitness Center

longwood university

new health & fitness center farmville, virginia

The new LEED Gold Health & Fitness Center is intended to provide a green recreational experience for the University's faculty, staff, and students. Presenting a contemporary take on the campus' traditional architecture, the building features a combination of brick and stone with a glass curtain wall and ample windows that suffuse the building's fitness areas with daylight. Efforts to improve indoor air quality in the building create healthier surroundings where students can breathe easy as they use the facility's multi-purpose and two-court gymnasiums, fitness center with climbing wall, exercise rooms, racquetball courts, and indoor track.

indoor air quality

Low-Emitting Materials

All adhesives, sealants, paints, carpets, and composite wood materials contain no or low amounts of volatile organic compounds (VOCs).

Carbon Dioxide Monitoring

CO2 sensors help to provide adequate ventilation.

Construction IAQ Management

During construction, absorbent materials were protected from moisture to prevent the growth of mold. Ductwork was also protected to prevent contamination.

Indoor Air Quality Testing

Prior to occupancy, IAQ testing was conducted to ensure good air quality.

sites & water

Site Location

The facility is located on a previously developed site that was once a parking lot.

Alternative Transportation

Two nearby bus stops are served by the Farmville Area Bus Blue and Red Lines.

Heat Island Reduction

Sidewalks were constructed using light-colored concrete pavement.

Water Efficient Plumbing

A 40 percent reduction in water use is expected as a result of installing waterless urinals, low-flow showers, and ultra low-flow lavatories.



materials

Construction Waste Management

Over 98% of the waste generated during demolition of the existing parking lot and construction of the facility was recycled rather than sent to a landfill.

Recycled Content Materials

Over 28 percent of the materials used to construct the facility, including steel, rebar, and carpet, were made of recycled content.

Regionally Manufactured Materials

Over 54 percent of the materials used to construct the facility were manufactured within 500 miles of the project site. Of the products manufactured regionally, 24 percent were made from regionally extracted raw materials.

Forest Stewardship Council Certified Wood

All wood doors, sports flooring, and casework throughout the facility are FSC Certified as being sustainably harvested.



Category	Points	Weighted Points
Location & Transportation	1	1
Water Efficiency	1	1
Energy & Atmosphere	10	10
Materials & Resources	10	10
Indoor Environmental Quality	10	10
Quality	1	1
Total	34	34

Energy Use Reduction

A modeled 43% reduction in energy use earned the center 7 LEED Optimize Energy Performance points. Approximately 11% of the facility's energy is supplied by the University's central steam plant, which burns sawdust, and is considered renewable energy.

Energy Recovery

Enthalpy wheels recover sensible and latent energy from building exhaust air.

Enhanced Building Envelope

Roof insulation consists of 4 inch rigid polyisocyanurate board with an R-value of 25, and wall insulation has an R-value of 19.

Demand-Controlled Ventilation

Carbon dioxide sensors have been installed in spaces with highly variable occupancy, such as gyms and exercise rooms, to adjust ventilation depending on occupancy.

energy



Honorable Mention Institutional Project

York County School Division

- Energy management program approach to reducing pollution and decreasing energy waste
- Energy saving and sustainable design strategies such as geothermal heating and cooling systems, heat wheel energy recovery systems, and occupancy sensors for classroom lighting. 5 ENERGY STAR buildings.
- Plan to educate employees, students, and the community by promoting environmental initiatives such as Earth Day and Energy Star's *Change a Light* campaign
- Since 2004, energy consumption has been reduced by more than 17%: over \$1,000,000 in total cost avoidance



Best Green Commercial Project

National Audio & Visual Conservation Project for the Library of Congress

Designed and built to preserve
the world's collection
of motion picture and sound
media

Sustainable elements of the
project include:

Re-use onsite of 50,000 cy of
excavated rock

Rainwater is controlled by
natural vegetation and bio-
swales

5.5 acres of Extensive and
intensive green roof systems

45 acre site - largest private
reforestation project on
the east coast - planted
9,000+ trees



Best Green Commercial Project

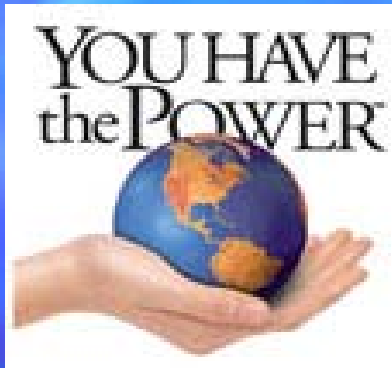
National Audio & Visual Conservation Project for the Library of Congress



- Specialty air recirculation system in the blast proof nitrate vault areas - created benchmark for NFPA codes
- An extensive CO2 monitoring system
- Low or no VOC paints and adhesives
- Lots of natural daylighting from high bay curtainwall and skylights in the highly occupied office areas
- Water fountain and pond and multi-tiered terraces

Most Sustainable Community Program

Henrico County, Virginia



- County Manager's charge to "change the energy culture in Henrico"
- Hired first Energy Manager in 2003.
- 5 year energy improvement program is in its third successful year
- Program includes lighting retrofits, HVAC upgrades, building controls, and operational changes to reduce energy consumption
- Energy Program has saved over \$1,700,000, obtained more than \$60,000 in grants, and found oil tax dollars that were owed from more than 8 years ago



Most Sustainable Community Program

Henrico County, Virginia



- Videos have been made demonstrating how to conduct home energy audits
- Energy Fairs/Symposiums have reached in excess of 5,000 students and an additional 2,000 adults in the county
- 250,000 square foot high school and a 40,000 square foot library will be built to LEED standards
- Installed a photovoltaic array and complete weather station for educational purposes at Mills Godwin High School – linked to 6 middle and high schools



Special Recognition

for commitment to promoting sustainable building practices in Virginia

Eric Oliver, P.E., LEED AP



- VSBN Board Chairman for 4 years
- Professional Engineer
- Certified Energy Manager
- LEED Accredited Professional
- Certified Home Energy Rater
- Green Building Enthusiast!



EMO Energy Solutions

Energy Efficiency & Sustainable Design Consulting

