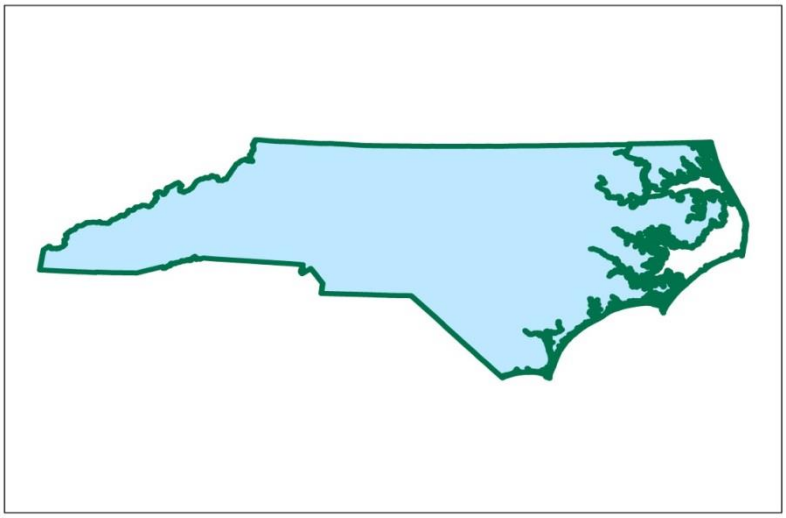
geothermal

wind

waste to energy



NC Guide to Sustainability Resources(Vol.1)

Completed by: Keeley Boggs

combined heat & power

biomass

solar thermal

fuel cells

DEDICATION

THIS BOOK IS DEDICATED TO CURRENT AND FUTURE STUDENTS OF THE SUSTAINABILITY TECHNOLOGIES PROGRAM AND TO JOHN WOJCIECHOWSKI, - AIA, LEED AP, AND LEAD INSTRUCTOR FOR THE SUSTAINABILITY TECHNOLOGIES PROGRAM AT CAPE FEAR COMMUNITY COLLEGE.

Special Thanks To…

Ed Naessens for his support throughout the entire process.

Suzanne Gooding, Sustainability Project Manager- City of Wilmington, for being a mentor, friend and for recognizing my potential.

Christine Hill, Database and GIS Management Specialist at the North Carolina Sustainable Energy Association (NCSEA) for providing the state map on the cover.

The entire staff at NCSEA for being patient with me during my learning process and while juggling school and work. The networking opportunities I gained from joining the NCSEA team is really what made this resource possible.

Last but certainly not least, a huge thank you to all of the participants who returned completed templates for this book.

Table of Contents

Introduction

The intent of this book was multi- faceted. As I gained a position with NCSEA, I began to see for myself all of the brilliant sustainable efforts that were taking place in our state of North Carolina. This book is a simple and small effort to acknowledge and bring awareness to them.

Additionally, I wanted to provide current and future students in the Cape Fear Community College Sustainability Technologies program with resources in which to build not only their resume, but hands on experience in this evolving, emergent, and innovative industry.

In my opinion and based on the knowledge that I have gained from the Sustainability Technologies program and my experience with NCSEA, students in the program should have an understanding of how policy drives the industry, what current policies and regulations are in place, and should certainly be familiar with and learn to navigate the North Carolina Utilities Commission's website, the North Carolina General Assembly's website, the North Carolina Sustainable Energy Association website, and the DSIRE: Database of Energy Efficiency, Renewable Energy website, operated by the NC Solar Center at NC State University.

Throughout my studies and experience with NCSEA I have had the pleasure to meet an amazing fleet of truly passionate and inspiring individuals. When my journey in this program first began I was told to "think outside the box," "be innovative" and "be creative."

In this book you will find a plethora of contacts and resources. My hope is that you will benefit from these contacts and that perhaps maybe they will offer an opportunity for you to "think outside the box." Opportunity is out there…if you have the ability to recognize it. Perspective is everything.

"Opportunity is missed by most people because it's dressed in overalls and looks like work." Thomas A. Edison (1847-1931)

American Inventor

Above and Beyond Energy

4006 Oleander Dr. Suite 4B

Wilmington NC 28403

Mark Jabaley

Mark@aboveandbeyondenergy.com

www.aboveandbeyondenergy.com

910-791-7123

Above and Beyond Energy has been serving Eastern North Carolina since 2007. We offer diagnostic testing and building consultations to residential construction companies as they seek to comply with the minimum code standards and to achieve higher level certifications such as: LEED, ENERGY STAR, North Carolina Healthy Built Homes and the RESNET HERS program. During the past five years we have seen steady, sustained growth and have twice been named ENERGY STAR Partner of the Year. Our clients utilize our expertise of building construction and system energy use to meet these standards to create safe, efficient and cost-competitive homes. It is our goal to provide accurate and affordable building solutions to bring sustainability home to North Carolina.

Above and Beyond Energy has presented seminars on ENERGY STAR Version 3, Home Star, and energy efficiency, has been a panelist for local green building meetings, and has reached out to thousands in the community promoting energy efficiency and home performance.

Student Internships…Yes

Airlie Gardens – New Hanover County Parks & Gardens

300 Airlie Rd

Wilmington NC 28403

Matt Collogan

mcollogan@nhcgov.com

www.airliegardens.org

910-798-7700

Airlie Gardens is a 67-acre public garden owned and operated by New Hanover County and is part of the New Hanover County Parks 7 Gardens Department. Airlie is a site on the NC Birding Trail, home to a native butterfly house, Minnie Evans sculpture Garden and much more. The mission of Airlie Gardens is to be a historic public garden with cultural and environmental education programs that serve the residents and visitors of New Hanover County. Additional information about Airlie Gardens may be found at http://www.airliegardens.org, or by calling 798-7700.

Airlie offers Environmental Education programming for over 7000 students per year and demonstration of stormwater best management practices.

Student Internships…Yes

Albemarle Economic Development Commission

405 East Main Street Suite 4

Elizabeth City, NC 27909

Wayne Harris

director@discoverec.com

www.discoverec.com

252-338-0169

The Albemarle Economic Development Commission assists high-wage employers wishing to relocate to our area or expand.

We have assisted in Iberdrola and Invenergy with their proposed Desert Wind and Hales Lake projects, locally and by voicing our objection to repealing the RPS in Raleigh.

Student Internships…No

Applied Resource Management, PC

PO Box 882

Hampstead, NC 28443

James L. Cornette, PG, CWD

Jim_arm@bellsouth.net

www.Appliedresourcemanagement.com

www.ARM-Geothermal.com

www.ARM-WellDrilling.com

910-270-2919

ARM is a full service environmental and alternative resource company. We provide scientific support services with our staff of geologists, hydrogeologists, soil scientist, wetlands biologists, and staff scientists. We also design and construct water well systems for individuals through municipalities, and design and install geothermal systems for homeowners, commercial and municipal facilities, and the US Government and Military Installations.

ARM has been the leader in using good sound geological and scientific principles for water sustainability and recycling, as well as geothermal system design and installation in North Carolina. We have been directly responsible for the rapid expansion of the geothermal market for individual homeowners and businesses in NC, allowing electricity bill savings of thousands of dollars per home or business per year. The US Military, including the Army, Navy, Coast Guard, Air Force, and Marine Corps have recognized and embraced the energy efficiency of geothermal. ARM has completed numerous geothermal projects on military bases throughout Eastern NC and Southeastern US, stimulating the economy, growing jobs, and keeping the dollars here in NC.

Student Internships…Yes

April A. Montgomery LLC

PO Box 1806

Sanford, NC 27330

April Montgomery

aprilamontgomery@rocketmail.com

919-219-1530

I provide project management and development consulting services to private sector clients interested in developing renewable energy projects in North Carolina. This includes site identification and acquisition, community education, as well as local, state and federal permitting. If constructed, more than 400MW of renewable energy will come from our projects.

My role in North Carolina's sustainability initiative has been working toward the successful development of renewable energy projects in the State.

Student Internships…Yes

Brunswick Community College

P.O. Box 30

Supply, NC 28462

Marilyn Graham

graham@brunswickcc.edu

www.brunswickcc.edu

910-755-8561

Brunswick Community College's mission is to provide opportunities for individuals to be successful through accessible, high quality programs and services that meet the educational, cultural and workforce development needs of the community.

BCC has established a Green Information and Training Center and offer an annual Sustainability Symposium and Expo.

Student Internships…Yes

Building Performance Specialists

126 Victoria Dr.

Wilmington, NC 28401

Skye Dunning

skye@bpsgreenhomes.com

www.bpsgreenhomes.com

910-470-8203

Building Performance Specialists specialize in building forensics, green building certifications, sealed crawlspaces, and solar water heating

Building Performance Specialists aim to educate the community of the importance of home energy audits. We strive to do this through participation in community events, education, and outreach. Building Performance Specialist are supporters and advocates of the North Carolina Sustainable Energy Association.

Student Internships…Yes

Cape Fear Community College

Sustainability Technologies Program

4500 Blue Clay Road

Castle Hayne, NC 28429

John Wojciechowski - Lead Instructor

jwojciechowski@cfcc.edu

http://www2.cfcc.edu/voc/sustainability-technologies/

910-362-7761

The Sustainability Technologies program is a unique curriculum designed to meet the challenges of the new energy economy. The program 's three focus areas – Sustainability, Renewable Energy, and Buildings – overlap to provide a technology-oriented and certification-based platform of training that can be found nowhere else. Graduates of the Associate in Applied Science Degree have the comprehensive knowledge to be competitive in many industries including construction, energy auditing, home inspection, solar, wind, solar thermal, waste, environmental, consulting, sales and non-profit. In addition, a number of college transfer opportunities exist.

The program places a priority on hands-on training using the latest industry-standard equipment. A number of professional credentials - including LEED® Green Associate, NABCEP PV Entry Level, NABCEP Solar Heating Entry Level and OSHA 30-hour Safety Card - are weaved into the curriculum to better prepare students for employment.

Each of the three program focus area is also offered as a 5-course Certificate geared toward dual majors or professional development. Whether you want to immerse yourself in Sustainability, get more out of your time at CFCC, or just take a few classes to make yourself more competitive in the new green economy, the SST program is here as a resource for you.

CFCC is here to support the business community by providing exceptional training at low-cost to the student. We forge alliances with businesses and organizations to connect students with pathways to employment.

Student Internships…Yes

Cape Fear Compost

Wilmington, NC

Sean Cullen

acullen@ec.rr.com

www.capefearcompost.net

910-465-9623

Cape Fear Compost was founded in 2012 by Sean Cullen and wife, Nicole when Sean saw a need in the community to help reduce the amount of compostable trash going to the landfills,and to help the environment and support sustainable agriculture. We started by offering services to businesses and restaurants. They dispose of large amounts of food waste and compostable materials and have a large impact on the environment when choosing how to dispose of these wastes. Cape Fear Compost's goal is to expand to residential communities and provide and inspire everyone with a better way to dispose of food waste and compostable materials. We also assist with yard debris removal.

Cape Fear Compost provides an alternative service for ways to dispose of food scraps and compostable materials to help reduce the amount of waste going to landfills, reducing methane emissions that landfills release into the atmosphere by keeping organic material out of them, as well as breaking down materials to be reused as soil for farming, erosion, and gardening. We are helping New Hanover County get ahead of future mandates as well.

Student Internships…Not at this time

Cape Fear Farm Credit

333 East Russell Street

Fayetteville, NC 28301

Joel T. Britt

jbritt@agfirst.com

www.capefearfarmcredit.com

910-323-9188

Cape Fear Farm Credit has been serving the credit needs of rural America for more than 90 years. Cape Fear Farm Credit is part of the nationwide Farm Credit System, a financial cooperative owned by its member-borrowers since 1917.

Cape Fear Farm Credit has more than $760,000,000 in loans outstanding to more than 2,900 members and is controlled by a group of local directors who are also farmers. Cape Fear Farm Credit has 11 branch offices serving 12 counties in North Carolina.

What is a cooperative?
A cooperative is an organization owned by and operated for the benefit of those using its services -- the members. These member-borrowers control the company by electing a board of directors from among the membership.

Cape Fear Farm Credit has provided financial assistance to North Carolina farms and farmers who are now converting swine and poultry waste to energy. This is part of NC's Renewable Energy & Energy Efficiency Portfolio Standard.

Student Internships…Maybe

Cape Fear Green Building Alliance

P.O. Box 1768

Wilmington, NC 28402

Jessica Wilson

Jwilson9331@gmail.com

www.cfgba.org

The mission of CFGBA is to promote building approaches that are environmentally responsible, healthy and financially sound.

Cape Fear Green Building Alliance seeks to bring together professionals in the building industry, including architects, designers, contractors, builders, realtors and developers, as well as concerned members of the general public.

We support education for both industry professionals and the public regarding green building practices, technologies and products, and are committed to furthering the awareness and presence of green building in the Cape Fear Region.

Student internships… Yes

Cape Fear Rain Water Harvesting

1608 Queen Street

Wilmington, NC 28401

Rick Harris

rick@capefearrain.com

www.capefearrain.com

910-763-1630

Licensed General Contractor, Licensed Plumbing Contractor; ARCSA Accredited Professional; Specializing in the Design/Sales/Installation/Service of Rainwater Harvesting Systems, Stormwater Harvesting and Best Management Practices, and LID Technologies; Southeast's Premier Rainwater Harvesting System Installer; Federal/State/Local/Commercial/Residential Contracting

Cape Fear Rain Water Harvesting efforts include: Tax Credit Info. & Lobbying, Publications/Newsletters, LEED, Water Conservation, Water Sustainability, Design/Build, Consultation, Sales, Services, Etc.

Student Internships…Yes

Cape Fear Resource Conservation & Development, Inc.

Cape Fear RC&D

20 N. 4th St. Suite 210

Wilmington, NC 28409

Nancy Buckingham

nbuckingham@capefearrcd.org

www.capefearrcd.org

910-763-6611

Cape Fear RC&D is a projects-based non-profit organization. We serve Pender, Columbus, Bladen, New Hanover and Brunswick Counties in projects at the intersection of natural resources and economic development.

Our Columbus County Landfill Gas-to-Energy (see glossary) project involves the capture of methane to power greenhouses used by Southeastern Community College's AgBiotech program in the micropropagation of Venus flytraps.

Student Internships…Yes

Cape Fear Solar Systems

901 Martin Street, Suite C6

Wilmington, NC 28412

Linda Hanykova

info@CapeFearSolarSystems.com

www.CapeFearSolarSystems.com

910-409-5533

Cape Fear Solar Systems, LLC is the local leader in design & installation of residential and commercial solar systems. With in-house design and engineering, Cape Fear Solar Systems provides turn-key solar solutions. This includes management of all necessary permits and approvals, handling of all utility paperwork, providing information on available State and Federal investment tax credits as well as consulting on community guidelines (HOA/POA/ARB/ACC).

Cape Fear Solar Systems is an Authorized Dealer for SunPower, the world's most efficient solar panels and NABCEP Solar Thermal™, Solar PV® and PV Technical Sales™ Certified. Locally owned and operated, we have installed more than half of the solar systems in Southeastern North Carolina and our satisfied customers will be happy to share with you their experience of going solar.

Designing and installing good looking solar systems and actively promoting the spread of solar energy use given the great financial benefits that this technology offers to homeowners and businesses in North Carolina!

Student Internships…Yes

Going Green Publications

Cape Fear's Going Green

PO Box 3164

Wilmington, NC 28406

Valerie Robertson

Publisher@GoingGreenPublications.com

www.GoingGreenPublications.com

910-547-4390

Going Green Publications publishes "Cape Fear's Going Green" environmental magazine and its companion website. "Going Green" is a local advertising-supported quarterly magazine with a print distribution of 8000 and a growing online readership.

As the reality of our finite resources becomes more obvious each day, it can be hard to know what—if anything—we can do to help sustain our planet and the people on it. "Cape Fear's Going Green" was created in 2007 in response to a public need for local information on eco-friendly activities, products and services available in the Lower Cape Fear region of North Carolina. Over the course of the year we discuss green building and sustainable architecture, water management, alternate energy, eco-friendly products, transportation, organic food and gardening, and the enjoyment of nature. Profiles of local individuals, groups, businesses and events show the variety of innovative projects our neighbors are pursuing. We have articles on local plants and animals and the places they live. An online version of our calendar—the first "green" calendar in the area—is updated weekly to provide the latest information on what's happening in our community. An online listing of area environmental organizations is a reference for anyone wanting to find groups of like-minded people, whether for volunteerism, contributions, or internship and job opportunities.

Student Internships…Yes

Carolina Green Building

1608 Queen St.

Wilmington, NC 28401

Robbie Sutton, Owner

Robbie@carolina-green.com

www.carolina-green.com

910-233-4798

Carolina Green Building offers full design and installation services for renewable energy and energy efficiency. With Carolina Green Building, you can find the perfect custom system for your home or business at the best value, guaranteed.

Our products and services feature industry-leading technologies like high efficiency micro-inverters, wireless programming for solar thermal, and self-furling wind turbines. Additionally, our advanced installation methods and certified ***System Designer*** will ensure that your new equipment performs in all conditions. Together, the technology and industry expertise will increase the life of your system - and your bottom line.

Free consultation site assessments are also available from our on-site specialist. We will analyze your energy consumption and recommend energy-saving products and techniques to ensure your renewable resource is powering efficient loads.

Owner, Robbie Sutton, teaches Continuing Education for N.C. Inspections Departments on the fundamentals of solar and wind. In addition, he is an instructor for and developed Cape Fear Community College's Jobs NOW! It is a program for "Solar Installer Training" and sits on the board of directors for CFCC's Sustainable Technologies Program.

Student Internships…Yes

Central Carolina Community College Chatham Campus

764 West Street

Pittsboro NC 27312

Laura Lauffer

llauffer@cccc.edu

www.cccc.edu/green

919-545-8032

CCCC is known as Green Central. Our Chatham Campus is home to three distinct sustainability programs and features green buildings, and an award winning rainwater management system

CCCC created the first Sustainable Agriculture Associate degree in the nation. We have a certified organic farm. We are also home to the Chatham Cottage; a green built home that is built by sustainable technology students and auctioned annually. The campus features a 1.2 MW solar PV system, solar thermal systems for heating and water use as well as a green roof and passive solar designed buildings.

Student Internships…No

Chemtex International, Inc.

1979 Eastwood Road

Wilmington, NC 28403

Dennis Leong

inquiries@chemtex.com

www.chemtex.com

910-509-4400

Chemtex is a global engineering and technology company wholly-owned by Italy's Gruppo Mossi & Ghisolfi ("M&G"). Chemtex specializes in delivering value-added project solutions for its clients in the bio-fuels, renewable chemicals, energy, environmental, petrochemical, polymers and fibers industries. The company benefits from over 60 years of success in process development and commercializing hundreds of plants worldwide. Chemtex International Inc., its North American Headquarters, is located in Wilmington, N.C.

Chemtex is a leader in chemical engineering and renewable processes. It has engineered and constructed the world's first commercial-scale cellulosic ethanol facility in Crescentino, Italy for Beta Renewables that produces cellulosic ethanol from locally sourced cellulosic biomass using its PROESA® Process.

Chemtex, with its partners, plans to bring its market leading PROESA Technology to produce cost competitive and environmentally superior cellulosic ethanol in North Carolina. A first plant is targeted to be operational in 2015. It is expected to create approximately 65 direct and at least 250 indirect jobs excluding those relating to the construction of the plant and is expected to be the foundation for the further expansion and development a significant "green" industry in North Carolina.

Student Internships…Maybe

City of Fayetteville Environmental Services Department

455 Grove Street

Fayetteville, NC 28301

Gerald “Jerry” Dietzen

gdietzen@ci.fay.nc.us

www.cityoffayetteville.org

910-433-1984

The City of Fayetteville, with a population of 208, 000, is the 5th largest metro area in NC. Home of the North Carolina Veterans’ Park, 6 high quality museums, Cape Fear River Trail and home to Fort Bragg: “When the country calls 911… Fort Bragg answers”

The City of Fayetteville has been developing recycling programs for curbside residential, multifamily and commercial developments. Energy efficiency audits, EECBG project management, installation of electric car charging stations, LEED program element review in construction and demolition projects, energy efficiency project oversight, sustainability reporting and presentations.

Student Internships…Yes

City of Wilmington

PO Box 1810

Wilmington, NC 28402

Suzanne Gooding

Suzanne.gooding@wilmingtonnc.gov

www.wilmingtonnc.gov

910-341-1602

Wilmington, located in New Hanover County, is a coastal town situated in southeastern North Carolina. The city is bordered by the Cape Fear River to the west and the Atlantic Ocean to the east.

The City of Wilmington is our local municipal government.

The City of Wilmington has implemented several energy conservation and efficiency projects, as well as led the region in curb-side recycling efforts.

Student Internships…Yes

Clean Energy Events

6436 Green Arbor Lane

Wilmington, NC 28409

Richard Groves

rick@cleanenergyevents.org

www.cleanenergyevents.org

910-538-0075

The mission of Clean Energy Events is to advocate renewable energy and sustainable practice through public awareness and education.

We have provided solar energy for community events and created scholarships for renewable energy education. Scholarships have been awarded to CFCC Sustainability Technologies program.

Student Internships…Yes

Earthshare North Carolina

331 West Main Street

Durham NC, 27701

Heather Beard

info@earthsharenc.org

www.earthsharenc.org

919-687-4840

Our purpose is to strengthen the capacity of EarthShare NC's 70 member non-profits to preserve and enhance the natural environment. We pursue this mission by partnering with businesses across the state to engage employees in the work of our members. Giving campaigns educate employees about the value of protecting North Carolina's natural resources and promoting participation in the work of these organizations brings much needed support.

We have worked to connect the business community to the non-profit environmental work being done in NC. This is achieved through workplace activities and actions that support community social responsibility and sustainability programs.

Student Internships…Yes

Ecocential Energy

Po Box 423

Wrightsville Beach, NC 28480

Dean Snyder

dean@ecocentialenergy.com

www.ecocentialenergy.com

910-264-3315

Ecocential Energy is a group of energy auditors and energy upfit/retrofit specialists.

Ecocential Energy has provided advising for the CFCC Sustainability Technologies program whenit was in its early stages. I proctor BPI candidates for the Cape Fear Green Building Alliance. I also teach weatherization and give seminars on energy efficiency.

Student Internships…Yes

Elizabeth City State University

1704 Weeksville Road

Elizabeth City, NC 27909

Cassidy Cannon

clcannon@mail.ecsu.edu

www.ecsu.edu

252-335-3962

Elizabeth City State University, a constituent institution of the University of North Carolina, offers baccalaureate, graduate, and professional programs for a diverse student body. The institution's rich heritage provides a firm foundation for its educational endeavors, as well as its role in serving the needs and aspirations of individuals and society.

Elizabeth City State University is proud to say that we are a key player in preserving the great state of North Carolina. Our dedication to a sustainable North Carolina is shown through numerous strides in reducing our carbon footprint. We work closely with state legislators on meeting and exceeding state mandates as it pertains to energy and water reduction, capital projects, and waste diversion. We look forward to being an example for neighboring institutions, organizations, and home owners. Most importantly, we are exposing 3,000 of North Carolina's best and brightest students on living a more environmentally friendly lifestyle every school year. Classes and educational projects partner with an eco-friendly culture that our future leaders experience every day. We look forward to continuing and increasing our sustainable strides.

Student Internships…Yes

Environmental Stewardship Initiative

N.C.DENR

217 Jones Street

Raleigh, NC

Julie Woosley

Julie.woosley@ncdenr.gov

www.ncesi.org

919-707-8110

The N.C. DENR Environmental Stewardship Initiative is designed to promote and encourage superior environmental performance by N.C.'s regulated community. This voluntary program provides benefits and technical assistance to stimulate the development and implementation of programs that use pollution prevention and innovative approaches to meet and go beyond regulatory requirements.

This program seeks to reduce the impact on the environment beyond measures required by any permit or rule, producing a better environment, conserving natural resources, and resulting in long-term economic benefits.

Student Internships…Yes

2013 ESI Members

Stewards:

- ASMO North Carolina Inc. - Statesville
- Bridgestone Americas Tire Operations LLC - Wilson
- City of Gastonia Crowders Creek Resource Recovery Facility
- City of Gastonia Long Creek Resource Recovery Facility
- City of Gastonia Water Treatment Plant
- Daimler Trucks North America LLC - Cleveland
- Hickory Cable Facility, Corning Cable Systems
- Corning Inc. – Wilmington
- EMC Corporation – Apex
- Engineered Sintered Components – Troutman
- Firestone Fibers & Textiles – Kings Mountain
- Fleet Readiness Center East - Cherry Point
- GKN Driveline- Sanford Precision Forming Facility – Sanford
- John Deere Turf Care – Fuquay-Varina
- Michelin Aircraft Tire Co. - Norwood
- Novozymes North America Inc. - Franklinton
- Smithfield Packing Company – Wilson
- Thomas Built Buses, Inc. – High Point

Rising Stewards:

- ASMO North America Inc. – Greenville
- AW North Carolina Inc. - Durham
- Bridgestone-Bandag, LLC - Oxford
- City of Gastonia Resource Recovery Farm
- Daimler Trucks North America LLC – Gastonia
- Eaton Corporation, Raleigh Production Operations - Raleigh
- Eaton Corporation - Roxboro Plant
- Eaton Corporation, Youngsville Plant Operations - Youngsville
- Firestone Fibers & Textiles Company, Gastonia
- GKN Driveline - Roxboro
- GKN Sinter Metals - Conover
- NACCO Materials Handling Group - Greenville
- N.C. Zoological Park - Horticulture Section - Asheboro
- RF MicroDevices, Inc - Greensboro
- Smithfield Packing Company Inc. Tar Heel Division – Tar Heel

Everblue

8936 North Pointe Executive Park Drive, Suite 140

Huntersville, NC 28078

Charles Hooper, Client Sales & Support Manager

chooper@everblue.edu

www.Everblue.edu

704-997-0045

Everblue is the premier sustainability training organization worldwide offering classes in Green Building, Energy Efficiency, and Renewable Energy.

Everblue has held many classes in North Carolina and works with a variety of government, non-profit, education partners, and private organizations to provide training for the earth's sustainable workforce. Everblue actively pursues and is involved through memberships and affiliation with local sustainability focused organizations and initiatives.

Student Internship…Yes

Feast Down East

601 South College Road

Wilmington, NC 28403-5978

Jane Steigerwald –Director

steigerwaldj@uncw.org

www.feastdowneast.org

910-962-7105

Feast Down East is a non-profit economic development project focused on helping small-scale limited-resource farmers build and sustain their farms and connect them with local markets to sell their products. Feast Down East also educates the consumer on the importance of buying local. The goal of Feast Down East is to build a strong sustainable local food system and alleviate poverty in our rural communities.

Feast Down East aims to create a sustainable food system that enriches and preserves our farmland and its heritage, while improving the nutrition, health and economic well-being of our communities.

Student Internships…Yes

FOCUS

Lower Cape Fear Sustainable Communities Consortium

201 North Front Street, Suite 807

Wilmington, NC 28401

Adrienne Cox

ACox@FOCUSsenc.org

(910) 795-2799

In 2011, the Wilmington Metropolitan Statistical Area (MSA, including Brunswick, New Hanover and Pender Counties) (March 2013 Brunswick was moved from the Wilmington MSA to the Myrtle Beach MSA) was awarded 1.13 million dollars from DOT, EPA and HUD. The purpose was to recognize that funds are limited and by combining efforts at the Federal level, these entities, with USDA later joining, could provide funds for a single deliverable, a plan for Sustainable Development, that would help guide future funding for the region. LCFSCC is to be dissolved January 2015 (lifetime of grant) with an area organization/agency to assume responsibilities for implementation.

Promote the 6 livability principles as defined by the US Federal Government. FOCUS is charged with incorporating and interweaving these fundamental qualities for most efficient and successful results in our region to promote a consistent and unified regional vision for future development and economic prosperity. **We are interested in the following disciplines for internships: (there are certainly cross-over opportunities)**

Communications – Marketing, Social Media
Public Administration – Urban and Rural Planning, Environmental, Non-Profit, Grant Writing, Policy Analysis
Business Administration – Economic Development, Tourism, Marketing, Small Business Development, Incubator and Cluster Development
Geography – GIS and Resource Management
Environmental – Resource Management, Impediment Analysis

Student Internships…Yes

Green Building Club

Cape Fear Community College

411 North Front Street

Wilmington, NC 28401

Jonathon Begue

jbegue@cfcc.edu

910-362-7000

The Green Building Club hosts monthly meetings that may involve special guest speakers, projects, events, and field trips. The guest speakers are local businesses and organizations that are in the field of green building and sustainability.

The Green Building Club aims to assist and promote in the learning and education of green building as well as sustainable design and technology. The club encourages sustainability in construction and design while promoting the use and knowledge of LEED (Leadership in Energy and Environmental Design).

With students graduating every year there is always an opportunity to for students at CFCC to serve as a club officer, who can get more involved into planning and organizing club activities.

Student Internships…Students may serve as Club Officers

Green Palm Solutions Inc.

PO Box 6436

Raleigh NC

Sean Conley, President

Greenpalmsolutions@gmail.com

www.greenpalmsolutions.com

919-522-6174

We provide consulting, vendor, integrator and installation of energy efficient lighting, on and off grid solar systems, off grid solar powered generator systems, wind and solar powered lights. Green Palm Solutions will customize projects and provide customers with multiple sustainable solutions such as Electric Vehicle Chargers and Solar Carports for residential and commercial customers.

Green Palm Solutions has been active in the local Sustainable trade shows and the Green Building Community. We have been active in helping educational groups such as Rowan Cabarrus Community College with material to install an off grid solar system with a web monitoring kit. We attended the Solar Power International trade show in Orlando Fall 2012. As a member of NCSEA we participate in supporting the renewables in NC. We hope to help keep NC in the top five solar states in the US. We are making efforts to grow business in other markets other than the Carolinas such as Los Angeles County, Maine, New Jersey, and the Caribbean.

Student Internship…Yes

Green State Power

3oo North Greene Street

Suite 200

Greensboro NC, 27401

Tilden Hagan

info@greenstatepower.com

www.greenstatepower.com

336-446-9382

Green State Power is a full service solar developer offering solar PV and solar thermal systems for residential, commercial, and utility customers.

Green State Power has supported solar and other renewable energy initiatives throughout North Carolina and helped to educate the public about the possible uses of these technologies.

Student Internships…Yes

Greenville Utilities

PO Box 1847

Greenville, NC 27835

Andy Yakim

Yakima@guc.com

www.guc.com

252-551-1525

Since 1905, Greenville Utilities has been an integral part of Greenville-Pitt County, growing and progressing along with our expanding service area.

Greenville Utilities provides electric, water, sewer and natural gas services to the City of Greenville and 75% of Pitt County. We serve a combined total of more than 135,800 customer connections. Greenville Utilities is owned by the citizens of Greenville but operates under a separate charter issued by the N.C. General Assembly.

We are guided and managed by an eight-member Board of Commissioners. The Board is responsible for approving rates, development plans, the annual budget and setting operating and extension policies. Policies are implemented by the General Manager. The City Manager serves as a full voting member; five other Board members are nominated by the City Council, and two are nominated by the County Commissioners. All Board members are approved by the City Council.

Our highly-experienced Management Team is dedicated to working together to operate GUC in the best interest of our customers.

We offer energy-efficient home programs, audit and survey programs, as well as Building Sciences programs since 1977.

Student Internships…Yes

Jennette's Pier

7223 South Virginia Dare Trail

Nags Head, NC

Daryl Law

Daryl.law@aquariumsnc.com

www.jennettespier.net

252-255-1501 Ext 202

State-of-the-art fishing pier with green technologies, educational programs and UNC-CSI research partner located on the Atlantic Ocean in Nags Head. Wide, clean public beaches and bathhouse.

The new Jennette's Pier is loaded with state-of-the-art "green" technology and innovative design. Most prominent are the three elegant Bergey Excel-S wind turbines that spin gracefully above the Pier's wooden deck. At maximum output, the turbines are capable of fulfilling nearly half the facility's electric needs. In addition, one of the Pier's shade pavilions is covered in photo-voltaic cells that convert sunlight into electricity, which is stored in a battery bank until needed to power Pier lights at night.
Besides on-site energy production, the Pier is designed for energy efficiency and resource conservation. A closed-loop, geothermal, HVAC system conditions the pier house. Eighty wells 200 feet deep circulate fluid that returns to the building at a consistent temperature to aid heating in winter and cooling in summer.
Water conservation is of particular interest. Rainwater cisterns provide irrigation, deck wash-down and vehicle cleaning. An on-site waste water treatment facility returns reclaimed water to the Pier and bathhouse toilets. Together, these two features alone are projected to reduce municipal water use by 60 to 80 percent.
All of these features combined are an important and tangible demonstration of clean energy production and conservation at work.

Jennette's Pier has multiple "green" messages. We are LEED Platinum certified by the US Green Building Council.

Student Internships…Yes

Mid Atlantic Solar

113 Garrington Island Rd

Shawboro, NC 27973

Wayne Williams

Atlanticsolar1@aol.com

252-336-2570

Mid Atlantic Solar is a full service Photovoltaic and Solar Thermal installation company for residential, commercial, and industrial sites. Mid Atlantic Solar is NABCEP certified and provides financing options.

Mid Atlantic Solar services all of Eastern North Carolina and areas in Virginia. We strive to help others understand the benefits both economically and environmentally that solar can provide.

Student Internships…Yes

Mott Landscaping

Mott Roofscaping

Mott Wholesale Nursery

PO Box 629

Wilmington, NC 28402

Steve Mott

Mott.mail@mottlandscaping.com

www.mottlandscaping.com

910-254-0500

Mott's is a Licensed N.C. Landscape & Irrigation contractor. Install landscaping & irrigation systems for commercial and residential projects. We do stream restorations, littoral shelf plantings in retention ponds, build and plant rain gardens, design and install green roofs and green walls, install floating gardens in ponds to remove nutrients and heavy metals, install water harvesting systems and install landscape lighting.

First person in coastal Carolina certified as Green Roof Professional, Certified green wall professional, former board member with Cape Fear Green Building Alliance, Received several awards Lower Cape Fear Stewardship Development Program. Give seminars on Green Roofs, Walls, and Floating Gardens to schools, clubs, and conventions.

Student Internships…Yes

North Carolina Biotechnology Center

Southeastern Office

720 North 3rd Street

Wilmington, NC 28403

Suite 402

Randall Johnson

Randall_Johnson@ncbiotech.org

www.ncbiotech.org

The North Carolina Biotechnology Center provides long-term economic and societal benefits to North Carolina through support of biotechnology research, business, education and strategic policy statewide. Headquartered in Research Triangle Park, the Center has five regional offices, including the Southeastern Office in Wilmington, focused on regional biotechnology economic development

A range of activities related to Agricultural Biotechnology, Marine Biotechnology, and Industrial/Biorenewable Biotechnology that lead to water conservation, waste remediation, pesticide-use reductions, increases in volume-per-acre crop production, and conversion of waste products to useful products including biofuels/energy, to name just a few activities.

Student Internships…Yes

NC Coastal Federation

503 Causeway Drive

Suite F1

Wrightsville Beach, NC 28480

Ted Wilgis

tedw@nccoast.org

www.nc.coast.org

The North Carolina Coastal Federation is 30 year old conservation organization that works in all 20 counties of NC. We focus on education, advocacy and restoration projects that work to protect and enhance the coastal resources of North Carolina.

Our sustainability efforts are best showcased through our education, outreach and advocacy centered around low impact development...

Student Internships… Yes

North Carolina Department of Environmental & Natural Resources

NCDENR

217 West Jones Street
Raleigh, NC
Secretary: John E. Skvarla, III
Public Information Officer: Drew Elliot
http://portal.ncdenr.org

The North Carolina Department of Environment and Natural Resources is the state agency that enforces environmental laws and regulations and offers assistance to customers to help them comply. State parks, the N.C. Zoo and aquariums, and the Museum of Natural Sciences, the Wildlife Resources Commission, and other related programs are also in this Department.

It is recognized that the N.C. Department of Environment and Natural Resources' primary mission is to protect North Carolina's environment and natural resources. In executing this mission, DENR operates with the broad-based understanding that the following three fundamental principles are integral components of its protective mandate.

Fundamental Philosophy: In its essence, DENR is a service organization. Whether managing parks and zoos or issuing permits, agency personnel, operating within the confines of the regulations, must always be a resource of invaluable public assistance, rather than a bureaucratic obstacle of resistance.

Fundamental Economics: Acknowledging that a traditional cost/benefit analysis is not always fully applicable to matters of the environment and public recreation, the agency will be continually cognizant that an economic cost/benefit analysis is an integral component of DENR's public service endeavor.

Fundamental Science: That all decisions are made with a respect and understanding that environmental science is quite complex, comprised of many components, and most importantly, contains diversity of opinion. In this regard, all public programs and scientific conclusions must be reflective of input from a variety of legitimate, diverse and thoughtful perspectives.

The Outcome:a collaborative stewardship among the citizens, government regulators and the business community will maintain and enhance North Carolina's environment and natural resources for the benefit and enjoyment of everyone living in or visiting our great state.

Student Internships…Yes

NC Green Power

909 Capability Drive

Suite 2100

Raleigh, NC 27606

Katie Shepherd

kshepherd@ncgreenpower.org

www.ncgreenpower.org

919-857-9026

NC GreenPower is an independent nonprofit improving the quality of our state's environment through a program that connects consumers with green energy and carbon offset providers.

NC GreenPower is an independent, nonprofit organization established to improve North Carolina's environment through voluntary contributions toward renewable energy and the mitigation of greenhouse gases. A landmark initiative approved by the N.C. Utilities Commission, NC GreenPower is the first statewide green energy program in the nation supported by all the state's utilities and administered by Advanced Energy, an independent nonprofit corporation located in Raleigh, N.C.

Student Internships…Yes

NC Green Travel Initiative

NC Division of Environmental Assistance & Outreach

1639 Mail Service Center

Raleigh, NC 27699-1639

Tom Rhodes, Program Manager

tom.rhodes@ncdenr.gov

www.ncgreentravel.org/

(919) 707-8140

NC GreenTravel Initiative is a partnership of the North Carolina Division of Environmental Assistance; the Center for Sustainable Tourism; the NC Division of Tourism, Film & Sports Development and Waste Reduction Partners.

NC GreenTravel is a special recognition program to promote sustainable travel by recognizing tourism-oriented businesses in North Carolina for their efforts to protect the environment through energy conservation, water conservation and waste reduction.

To take part in the program, businesses may visit www.ncgreentravel.org/ and download a form to apply for recognition. Those applications are reviewed by our NC GreenTravel review team and assigned point scores that qualify the businesses for recognition on a three-tiered scoring system. All successful applicants are displayed online as having achieved status as a NC GreenTravel business. Recipients also receive a certificate of sustainability and a door decal denoting them as a member of NC GreenTravel Initiative. The program also offers free, non-regulatory technical assistance to assist them in becoming more sustainable by providing energy, water and waste assessments and consultation.

I am the program manager and developer of the NC GreenTravel Initiative, operated under the auspices of the North Carolina Division of Environmental Assistance and Outreach. NC GreenTravel planning is undertaken by an advisory team made up of program partners.

Yes, we would consider accepting student internships. Those would be handled through Scott Mouw, Community and Business Assistance Section Chief at NC DEAO.

Student Internships…Yes

North Carolina Interfaith Power & Light

27 Horne St., Raleigh, NC 27607

Director Susannah Tuttle, MDiv

susannah@ncipl.org

www.ncipl.org

919-612-5526

North Carolina Interfaith Power & Light works with faith communities to address the causes and consequences of global climate change and promotes practical, hope-filled responses through education, outreach, and public policy advocacy

Our role in North Carolina's sustainability initiative has been Energy Efficiency, Renewable Energy, and the Food-Climate Connection as they all relate to NC Communities of Faith.

Student Internships…Yes

North Carolina Sustainable Energy Association

NCSEA

1111 Haynes Street
Suite 109
Raleigh, NC 27604
Keeley Boggs
Community Relations Specialist & Policy Liaison
keeley@energync.org
www.energync.org
919-832-7601(office)
910-538-5597(cell)

Founded in 1978, the North Carolina Sustainable Energy Association (NCSEA) is a 501 © 3 nonprofit membership based organization of individuals, businesses, government and nonprofits working to ensure a sustainable future by promoting energy efficiency and renewable energy to the benefit of North Carolina through education, public policy and economic development.

We develop and advocate for clean energy laws, rules, rate structures, as well as utility, public and nonprofit programs that make energy more affordable and accessible. NCSEA's programs, events and publications keep our members, partners, and decision-makers (elected officials) current on how policy improvements have impacted energy costs, job creation, economic growth, and the sustainability of our energy future.

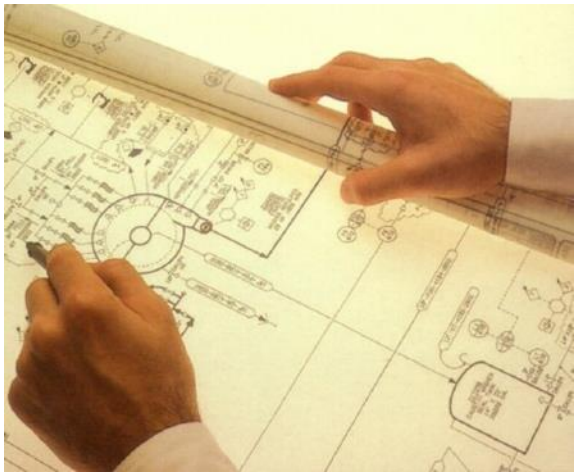
Our work leads to more jobs, business and economic investment opportunities and clean energy projects in every region of our state. NCSEA's market intelligence team collects and assesses unique data to create an accurate picture of the clean energy industry in our state. As a result of our incremental, balanced approach, no major North Carolina state energy policy decision developed and advocated for by NCSEA has been reversed or reduced. (This includes the RPS that was recently threatened by HB298 which was a motion to repeal the state RPS. The motion to repeal the Renewable Energy & Energy Efficiency Portfolio Standard was defeated on April 24th 2013.)

NCSEA is a catalyst for quick scale-up of the clean energy market, employing reliable information to build bridges between consumers, state and local government, businesses, finance, economic development organizations and workforce developers to foster market growth.

NCSEA is the only North Carolina nonprofit leading public policy change and driving market growth. NCSEA has assisted in ushering over 70 policies in the state of North Carolina.

Student Internships…Yes

Norton & Associates Inc.



1000 West Main Street

Elizabeth City, NC 27909

Robert H. Norton

ibnorton@msn.com

www.norton1111.com

252-267-2200

Sustainable Development, Investment, Planning, Design and Construction Management

NC Business Member 15 years with LEED, Green and Sustainable Innovation Solutions

Feasibility, economic, energy benchmarks

Funding, Design, Engineering, Development, Construction Turn Key project delivery

PEBS Green Building LEED System Fast Trak Building system options

Energy Star Certification systems

Project funding & financing options/Private equity investment, Debt financing with offset energy credits

Shared, guaranteed 35% energy savings programs upgrades/renovations with no capital investments

10, 20 to 30 year Municipal Lease option programs paid with operating fund energy credit savings

Provider of Green, LEED, Energy Star Certified Permanent new buildings & renovations providing space for education, K-12 schools, college academic/dorms/dining, medical, sports, social, libraries, prisons and all other public applications. Renewable Energy Campus Programs

Provider of Green, LEED, Energy Star Certified Permanent new buildings & renovations providing space for education, K-12 schools, college academic/dorms/dining, medical, sports, social, libraries, prisons and all other public applications. Renewable Energy Campus Programs

Agriculture Sustainable Clean Energy programs including FarmEnergy renewable programs that reduce energy operating cost and create revenue. Renewables using wind, solar, biomass, biofuels, geothermal, and co-gen. We assist in development, funding, permitting, construction, operations, lease back.

The goal is to provide direct programs that benefit farmers, grow safe food, manage and conserve energy, land, soils and stabilize and guide agricultural American markets. We team and provide technology that will provide a more diverse forms and types of renewable farm energy.

Student Internships…Maybe

Old Growth Riverwood

1407 Castle Hayne Road #B

Castle Hayne, NC

Terrie Metz

www.OldGrowthRiverwood.com

tmetz@oldgrowthriverwood.com

910-762-4077

We process logs that we recover from the Cape Fear River as well as reclaimed beams from historic structures from the surrounding area. We transform these logs into gorgeous flooring, counter tops, molding, trim, mantles, furniture and much more.

Old Growth Riverwood is committed to being green and environmentally responsible and does not cut down any living trees to produce our products.

Student Internships…No

Pender County Planning & Community Development Division of Planning

Benjamin Andrea

PO Box 1519

Burgaw, NC 28425

bandrea@pendercountync.gov

www.pendercountync.gov

910-259-1202

Pender County's Division of Planning provides assistance with and the development of long range policy, and planning, and ordinance documents to guide the county's decisions concerning land development and growth related activities.

Pender County has been involved in the Lower Cape Fear Sustainable Communities Consortium since its inception in 2010. The Consortium has been awarded one of four regional planning grants in North Carolina to develop a regional plan for sustainable development for the region of Pender, Brunswick, and New Hanover Counties. Beyond the Consortium, Pender County supports the NC Sustainable Development Principles through holistic and coordinated planning efforts. An example of such an effort was the County's recent effort to create incentives for Low Impact Development within the county, working closely with the NC Coastal Federation as well as the Business Alliance for a Sound Economy (BASE). This effort earned Pender County a Brown Pelican Award from the NCCF, and the effort is currently being used as a case study in the workshops conducted by the NC LID Certification Program through NCSU. Pender County continues to explore innovative methods and efforts to create and support sustainable communities with the county and region, supported by the County's 2010 Comprehensive Land Use Plan.

Student Internships…Yes

Performance Home Systems

1131 Ellis Road

Lumber Bridge, NC 28357

Michael Atwood

mike@performancehomesystems.com

www.performancehomesystems.com

910-723-2741

We are building performance analyst. Our primary services include home energy audits, duct leak certification, and energy efficiency certifications.

We service residential, commercial and industrial sites. We aim to educate those that we provide audits for on the importance of energy audits and efficiency measures. Performance Home Systems would like to collaborate with the Solar House at North Carolina State University to use their "House of Pressure" to demonstrate the importance of duct and whole house leakage testing.

Student Internships…Yes

SACE

Southern Alliance for Clean Energy

North Carolina Office:
Ulla Reeves, High Risk Energy Program Director
34 Wall Street, Suite 607
Asheville, NC 28801
ulla@cleanenergy.org
(828) 254-6776

South Carolina/Coastal Program Office:
Chris Carnevale, Coastal Climate and Energy Coordinator
P.O. Box 13673
Charleston, SC 29422
chris@cleanenergy.org
(843) 225-2371

http://www.cleanenergy.org

SACE has been a leading voice for energy policy to protect the quality of life and treasured places in the Southeast since 1985.

Our dedicated and diverse staff is poised to tackle our region's energy challenges and harness the economic opportunities presented by clean renewable energy. SACE advocates for federal, state and local climate policy solutions, energy efficiency programs and policies, and renewable energy such as solar, wind, and sustainable bioenergy. We promote clean fuels and vehicles, oppose nuclear and coal-fired power plant expansion, and encourage the retirement of old, dirty inefficient coal-fired power plants in our region.

For over 25 years, SACE has worked as a strong defender of the environment, challenging the status quo and working to minimize the impact of the energy sector on our region's communities, natural resources and economies. We are committed to ensuring that communities throughout the Southeast never have to choose between a healthy environment and a stable economy.

Student Internships…Yes

Southern Energy Management

101 Kitty Hawk Drive

Morrisville, NC 27560

Justin Gibson

jgibson@southernenergy.com

www.southern-energy.com

919-454-5063

Southern Energy Management is a sustainable energy services company serving the Southeast and Mid-Atlantic from our headquarters in North Carolina. Our services include the design and installation of residential and commercial solar power systems, residential energy efficiency testing, and green for home owners, builders, companies, non-profits, and government clients. Our goal is to make it as simple and cost effective as possible for everyone to invest in sustainable energy solutions for a better future.

We have worked hard to promote the industries involved in the Sustainability Sector, specifically in renewable energy and energy efficiency. Over the past ten years, we have installed multiple solar projects that have been the largest ever seen in this state. On the energy efficiency side, we have certified over 11,000 Energy Star Homes in NC. Every day we continue to work towards our company mission, which is "to improve the way people make and use energy".

Student Internships…Yes

Stop Titan Action Network

530 Causeway Dr. Suite B2

Wrightsville Beach, NC

Sarah Gilliam, coordinator

sarahg@nccoast.org

www.stoptitan.org

Stop Titan Action Network is a coalition of seven organizations, along with thousands of citizens and over a hundred small businesses that are working together to oppose the proposed Titan Cement project. The seven organizations include the N.C. Coastal Federation, Cape Fear River Watch, Friends of the Lower Cape Fear, Citizens Against Titan, Penderwatch & Conservancy, The N.C. Chapter of the Sierra Club, Southern Environmental Law Center and Duke University's Environmental Law & Policy Clinic

Our efforts include protecting our river, waterways, air and soil from the destructive nature of portland cement manufacturing; working with citizens, community groups and elected officials to identify alternatives to heavy industry that create jobs for locals without compromising our quality of life.

Student Internships…Yes

U.S. Green Building Council
USGBC
North Carolina Chapter

PO Box 31384

Charlotte, NC 28231-1384

Emily Scofield

escofield@usgbcnc.org

www.usgbc.org

704-608-1999

The mission of USGBC NC is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.

Primarily the North Carolina Chapter intends to accomplish its mission through leadership and coalition building with public and private sector entities and residents as a whole – fostering collaboration with key stakeholders in the community to accelerate the adoption of green practices, policies and programs. Partnering with the city and county governments, educational facilities, public agencies, the private sector, and non-profit groups, the statewide chapter will provide education, information, technical assistance and training

.

Student Internships…Yes

Wayne Community College
Wayne Business & Industry Center
Small Business Center

PO Box 8002

Goldsboro, NC

Renita D. Allen Dawson

rddawson@waynecc.edu

www.wayneworksnc.com/small-business-center/

The Small Business Center, part of NC's dynamic Small Business Center Network, provides one-one-one consulting services, resources, and free seminars. Our goal is to help you realize your dream of owning your own business or making your current business more profitable.

Helping small businesses to create business plans and apply for additional capital as well as assistance with marketing and advertising. We also provide seminars and workshops.

Student Internships…No

Additional Sources

1. 510nano, Inc.
2. A Natural Approach
3. ABC of the Carolinas
4. Abundant Power Group
5. Adam Shay CPA, PLLC
6. Advanced Energy
7. Advanced Solar
8. Advantage West
9. Advantage West (WNC Regional Economic Development Commission)
10. Aerotek Energy Services
11. Airlie Environmental Education
12. Albemarle Economic Development Commission
13. Alganomics
15. All About Energy Solutions
16. Ally Engineering
17. Alphin Design Build, Inc.
18. Alternative Energy Concepts

19. American Solar Integrators
20. AppleBlossom Energy Inc.
21. arCHPower Solutions
22. Argand Energy Solutions
23. Atlantic Energy Concepts
24. Automated Facility Solutions
25. Baker Renewable Energy
26. Beaver Brothers, Inc.
27. Belham Management Industries, LLC.
28. Birdseye Renewable Energy, LLC
29. Black and Veatch Corporation
30. Blanco Tackabery & Matamoros, P.A.
31. Blue Sun Renewables
32. Brunswick County Waste Industries
33. Brunswick Electric Membership Corporation
34. Business Development Consultant (Wind)
35. Calor Energy Consulting
36. Camp Lejuene

37. Cape Fear Compost
38. Cape Fear Public Utility Authority
39. Cape Fear Riverwatch
40. Cape Fear Riverwood
41. Cape Fear Solar Systems, LLC
42. Cape Fear Volunteer Center
43. Cape Hatteras Wind Energy
44. Capital Area Workforce Development
45. Carolina Coast Inspection & Energy
46. Carolina Country Builders
47. Carolina Energy Saver
48. Carolina LED
49. Carolina Solar Energy
50. Carolina Solar Farms
51. Catlin Engineers & Scientists
52. Center Studio Architecture, PLLC
53. Centralina COG
54. Certified Public Accountant

55. CertusBank
56. Charlotte Environmental, Inc.
57. Charlotte Regional Partnership
58. Cherokee Investment Partners, LLC
59. City Of Elizabeth City
60. City of Fayetteville, Energy Efficiency & Sustainability Engineer
61. City of Fayetteville, Environmental Services Dept.
62. City of Raleigh
63. Clean Air Lawn Care
64. Clean Marine Solutions
65. Clean Power Design
66. CohnReznick LLP
67. College of Albemarle
68. Columbus County Public Utilities
69. Comfort Systems USA Carolinas
70. CORPS of Engineers
71. Coyle Industries
72. Craven County Schools

73. Daetwyler Clean Energy
74. Dean Hardwoods
75. Debby Gomulka Designs
76. Deloitte
77. DHIC, Inc.
78. Digital Power
79. Division of Environmental Assistance & Outreach
80. Dixon Hughes Goodman, LLP
81. Downtown Raleigh Alliance
82. DPW Solar
83. E3 Power Company LLC
84. Earth Energy Solutions LLC.
85. EATON – Global
86. Efficient Energy America
87. Electric Auto Association
88. Element power
89. Elizabeth City
90. Elm Energy Group

91. Empower Energy Technology
92. Enel Green Power North America
93. Energy Savvy
94. Energy Services Coalition
95. ENlight Solar LLC
96. Environment NC
97. Environmental Rainwater Solutions
98. Environmental Solutions Group, LLC
99. Enviroscape Resources
100. ERGO
101. ESA Renewables, LLC
102. Facility Strategies Group, LLC
103. Fayetteville Chamber
104. FLS Energy, Inc.
105. Flynn IP Law
106. Forsite Development, Inc.
107. G&A Advisors
108. GE Hitachi

109. Genesis Technologies Group

110. George Institute for Biodiversity & Sustainability

111. Global Clean Energy Consultants

112. Global Cleantech Cluster Association

113. Global Perspectives

114. Global Test Supply

115. Go Energies

116. Good Earth Associates

117. Green Coast Recycling

118. Green ECO Institute Inc.

119. Green Opportunities

120. Green Planet Energy Solutions

121. Green Plus

122. Green Power Solutions

123. Greer & Walker, LLP

124. H Burkert & Co.

125. Habitat for Humanity Charlotte

126. Harvest Solar Services

127. HelioSage Energy
128. Home Builders Association of Durham, Orange and Chatham Counties
129. Honeywell Building Solutions
130. Horne Brothers Construction
131. Hyperion Energy LLC
132. Iberdrola Renewables, Inc.
133. Ingersoll Rand
134. Innovative Design, Inc.
135. Invenergy LLC
136. J + J Solar
137. Jetion Solar (US) Corp.
138. Johnson C. Smith University
139. Key Equipment Finance
140. Land-of-Sky
141. Land-of-Sky Regional Council
142. Law Office of Kurt J. Olson, PLLC
143. Lend Lease
144. Lenoir Community College

145. LRJ Associates, LLC

146. Lumber River Workforce Development

147. M. Squared Builders & Designers, INC.

148. Mackay Communications

149. McNaughton-McKay Electric

150. Melvin Lewis Writing Services

151. Mitsubishi Electric

152. Moore & Van Allen PLLC

153. National Renewable Energy Corporation (Narenco)

154. Natural Awakenings

155. NavAir

156. NC Carolina Department of Correction – Central Engineering Division

157. NC Coastal Federation

158. NC Green Consultants

159. NC Interfaith Power & Light (NCIPL)

160. NC Solar Inc.

161. New Hanover County

162. New Hanover County Department of Environmental Management

163. Next Generation Solar

164. NORESCO, LLC

165. Normandeau Associates, Inc.

166. North Carolina Center for Global Logistics

167. North Carolina Coastal Land Trust

168. North Carolina Department of Public Safety

169. North Carolina Energy Department of Commerce

170. North Carolina Military Business Center

171. North Carolina Ports

172. North Carolina Rural Center

173. North Carolina Solar Center / N.C. State University

174. North Carolina State Energy Office

175. North Carolina Sustainability Center

176. North Carolina`s Eastern Region

177. Northeastern University Charlotte

178. Northeastern Workforce Development Board

179. O2 Energies Inc.

180. Oceana

181. Office of Sustainability

182. Old School Rebuilders

183. Optima Engineering, PA

184. Peak Solar

185. Pender County

186. Pepco Energy Services

187. Performance Home Systems

188. Phillips Electrical Systems, Inc.

189. Piedmont Electric Membership Corporation

190. Piedmont Natural Gas Company

191. Piedmont Service Group

192. Piedmont Triad Regional Council

193. Pitt Community College

194. PowerSecure Solar

195. PowerWorks

196. PPD Environmental Awareness Committee

197. Progress Energy

198. Progressive Benefit Solution

199. Pure Power Systems, Inc.

200. Queen City Forward

201. QUINtec Energy

202. Rainstorm Solutions

203. Ralph McCay, PE

204. Re-Align Technology

205. REC Americas, LLC

206. REFUsol, Inc.

207. Rethink H2O

208. Rockwood Lithium Inc.

209. Rohde & Schwarz

210. Rowan-Cabarrus Community College

211. RTRP

212. Samsel Architects

213. Sandhills Energy (Bonville Construction Co., Inc.)

214. Sea Spray Foam Insulation

215. Self Help

216. SEPI Engineering & Construction, Inc.

217. Sheercom, LLC

218. Sierra Club

219. Signature Solar

220. SIPS Team USA

221. Siser USA, LLC

222. SJF Ventures (Sustainable Jobs Corporation)

223. Smith Gardner Inc.

224. Solar Services

225. SolarCity Corporation

226. SolarH2Ot

227. SolarStar

228. Solbridge Energy

229. Sophie Piesse Architect, PA

230. South Front Rental Community

231. Southeastern Coastal Wind Coalition

232. Southeastern Energy Corp.

233. Southpoint Solutions

234. Springleaf Strategies

235. S-Tech

236. Stellar Energy

237. Strata Solar

238. Strategic Talent Innovations,LLC

239. Styers, Kemerait & Mitchell, PLLC

240. SunEnergy 1

241. Sunlight Partners

242. SunPower Corporation

243. Sustain Charlotte

244. Sustainable Design Collaborative

245. Sustainable Energy Community Dev. Co., LLC

246. Sustainable Sandhills

247. The Nature Conservancy - Southeast Coastal Plains Chapter

248. Thirdparty Labs

249. Town of Pittsboro / Town manager

250. Trina Solar

251. Truveon Corporation

252. TSMC Solar North America

253. UNC Charlotte IDEAS Center

254. UNCW- Sustainability Department

255. US ARMY CORPS of ENGINEERS- WILMINGTON REGULATORY DIVISION

256. US Commercial Service - Charlotte

257. USGBC - NC Triangle Chapter

258. USGBC North Carolina Chapter

259. U-Teck

260. Verity

261. VistaGreen

262. Wake Forest University

263. Wanzek Construction

264. Waste Reduction Partners

265. Watson Energy

266. Wave Transit

267. Wilson Community College

268. Wishart Norris Henninger & Pittman, P.A.

269. Womble Carlyle Sandridge & Rice, PLLC

270. YES! Solar Solutions

Additional Resources & Tools

General Resource Links

Alliance for Climate Education

http://www.acespace.org/

American Wind Energy Association

http://awea.org/

Civic Impulse, LLC

http://www.civicimpulse.com/

Department of Energy - Energy Efficiency and Renewable Energy

http://www.eere.energy.gov

Energy Star

http://www.energystar.gov

Energy Savers

http://energy.gov/energysaver/energy-saver

Environmental Protection Agency

http://epa.gov/

Govtrack.us

http://www.govtrack.us/

Interstate Renewable Energy Council

http://www.irecusa.org/

National Energy Education Development Project (The NEED Project)

http://www.need.org/

North Carolina Solar Center

http://ncsc.ncsu.edu/

Rocky Mountain Institute

http://www.rmi.org/

US Energy Information Administration

http://www.eia.gov/

Community Links

Cape Fear Citizens for a Safe Environment

http://www.thenbm.com/cfs.html

Cape Fear Climate Action Network

www.capefearcan.com

Cape Fear Economic Development Council

www.capefearedc.org

Cape Fear River Watch

www.cfrw.us

Center for Environmental Farming Systems

www.cefs.ncsu.edu

City of Wilmington Stormwater services

www.wilmingtonnc.gov

Conservation Trust for North Carolina

www.ctnc.org

Earth Day Alliance

www.wilmingtonearthday.com

Electric Vehicle Automobile Association – Coastal Carolinas/Wilmington

www.waaev.org

Environment North Carolina

www.environmentnorthcarolina.org

Lower Cape Fear Stewardship Development Coalition

www.stewardshipdev.com

North Carolina Healthy Built Homes

www.healthybuilthomes.org

North Carolina Office of Environmental Education

www.eenorthcarolina.org

North Carolina Sierra Club- Cape Fear Chapter

www.nc.sierraclub.org/capefear/index.html

North Carolina Sustainable Building Design Competition

http://ncsu.edu/index.php/technology/high-perf-building/nc-sustainable-building-design-competition/

Stop Titan Action Network

http://stoptitan.org/

UNCW ECO

www.uncweco.com

Residential Links

Database of State Incentives for Renewables and Efficiency (DSIRE)

http://www.dsireusa.org/incentives/index.cfm?re=1&ee=1&spv=0&st=0&srp=1&state=NC

State and Federal Tax Incentives for Residential Solar Energy

http://ncsc.ncsu.edu/

Residential Solar Tax Credit FAQ

http://ncsc.ncsu.edu/

Residential Tax Credits for Energy Efficiency and Renewable Energy

http://ncsc.ncsu.edu/

Business Links

DOE Building Technologies Program

http://www1.eere.energy.gov/buildings/about.html

Database of State Incentives for Renewables and Efficiency (DSIRE)

http://www.dsireusa.org/incentives/index.cfm?re=1&ee=1&spv=0&st=0&srp=1&state=NC

Renewable Energy Tax Credit (Corporate)

http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NC19F&re=1&ee=1

State and Federal Tax Incentives for Commercial Solar Energy

http://ncsc.ncsu.edu/

NC Incentives: Transportation

http://ncsc.ncsu.edu/

Builder Tax Credits

http://ncsc.ncsu.edu/

Climate Research and Information Links

National Climatic Data Center, located in Asheville, NC

http://www.ncdc.noaa.gov/

World Data Center for Meteorology, Asheville, NC

http://www.ncdc.noaa.gov/oa/wdc/index.php

Cooperative Institute for Climate and Satellites, Asheville, NC

http://cicsnc.org/

Southeast Regional Climate Center, UNC Chapel Hill, NC

http://www.sercc.com/

NC Department of the Environment and Natural Resources, Division of Air Quality

http://www.ncair.org/monitor/eminv/gcc/

Greenhouse Gas Emissions Inventory and Trends

http://www.ncair.org/monitor/eminv/gcc/ghg_ei_trends.shtml

Climate and Public Policy Links

NC Climate Action Plan Advisory Group

http://www.ncclimatechange.us/

NC Climate Action Plan Advisory Group final report

http://www.ncleg.net/gascripts/DocumentSites/browseDocSite.asp?nID=14&sFolderName=CAPAG%20Final%20Report

NC Legislative Commission on Global Climate change

http://www.ncleg.net/gascripts/Committees/Committees.asp?sAction=ViewCommittee&sActionDetails=Non-Standing_6268

NC Legislative Commission on Global Climate change final report

http://www.ncleg.net/documentsites/committees/LCGCC/Commission%20Report%202010/LCGCC%20Final%20Report%205-20-10.pdf

Secondary Economic Impact Analysis of Greenhouse Gas Mitigation Options for North Carolina

http://www.ncleg.net/documentsites/committees/LCGCC/CAPAG%20Final%20Report/Secondary%20Impact%20Analysis%20GHG%20Options.pdf

Energy Trends Links

Annual Energy Outlook 2010 - Energy Information Administration (EIA)

http://www.eia.gov/oiaf/aeo/pdf/overview.pdf

2009 Updates and Trends - Interstate Renewal Energy Council (IREC)

http://irecusa.org/wp-content/uploads/2009/10/IREC-2009-Annual-ReportFinal.pdf

U.S. Solar Market Trends 2009 report (IREC)

http://irecusa.org/wp-content/uploads/2010/07/IREC-Solar-Market-Trends-Report-2010_7-27-10_web1.pdf

Workforce Development Links

Renewable Energy and Energy Efficiency certification information

http://www.greenstudentu.com/green_campus/nc_community_colleges_go_green.aspx

Local Government Links

EECBG program

http://www1.eere.energy.gov/wip/eecbg_state_allocations.html

NC League of Municipalities

http://www.nclm.org/programs-services/Pages/Green-Challenge.aspx

NC model Wind Power ordinance (DSIRE)

http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NC18R&re=1&ee=1

North Carolina Government Links

North Carolina State Office

http://www.nc.gov/

Office of the Governor

http://www.governor.state.nc.us/

Office of Lieutenant Governor

http://www.ltgov.state.nc.us/

NC General Assembly

http://www.ncga.state.nc.us/

NC Dept. of State Treasurer

https://www.nctreasurer.com/Pages/default.aspx

NC Dept. of Commerce

http://www.nccommerce.com/

NC Dept. of Labor

http://www.nclabor.com/

NC Office of State Auditor

http://www.ncauditor.net/pub3/

NC Dept. of Justice

http://www.ncdoj.com/

NC Insurance Commissioner

http://www.ncdoj.com/

NC Dept. of Agriculture and Consumer Services

http://www.ncagr.gov/

NC Dept. of Correction

http://www.doc.state.nc.us/

NC Dept. of Administration

http://www.doa.state.nc.us/default.asp

NC Dept. of Revenue

http://www.dornc.com/

NC Dept. of Transportation

http://www.ncdot.gov/

NC Dept. of Environment and Natural Resources

http://portal.ncdenr.org/web/guest

NC State Energy Office

http://www.energync.net/

NC Utilities Commission

http://www.ncuc.commerce.state.nc.us/

Find your state legislative representatives

http://www.ncleg.net/representation/WhoRepresentsMe.aspx

Teacher and Student Resources Links

CLEAN – Climate Literacy & Energy Awareness Network

http://cleanet.org/index.html

Energy Kids

http://www.eia.gov/kids/

Kids Saving Energy

http://www1.eere.energy.gov/kids/

We Day: Events That Inspire a Generation to Act

http://www.weday.com/

Additional Teacher and Student Resources

Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education (http://www1.eere.energy.gov/education/energy_literacy.html) identifies seven Essential Principles and a set of Fundamental Concepts that, if understood and applied, will help individuals and communities make informed energy decisions. The intended audience is anyone involved in energy education from K-Gray and is meant to inform the improvement and development of energy curriculum to more broadly cover the Fundamental Concepts. The Energy Literacy Framework is free to download from the website and up to five hard copies can be ordered.

The **Energy Literate Citizenry from K-to-Gray: A Webcast on the Department of Energy's Energy Literacy Initiative** is available online, including a PDF of the presentation. Please see the web page below for the presentation and available resources.
http://www1.eere.energy.gov/education/webcast_energyliteracy.html

The Department of Energy Office of Energy Efficiency and Renewable Energy has a searchable library of K-12 Lesson Plans & Activities (http://www1.eere.energy.gov/education/lessonplans/default.aspx). You will also find the Energy Literacy framework highlighted on this page. The Energy Literacy framework is a standards-like document for educators which identifies the concepts from both the natural and social sciences that someone would know and understand if they were energy literate. There are links to ScienceEducation.gov and to an Energy Basics site that are very useful as well. See EERE's Kids Saving Energy site which was last updated in 2008 but still has a lot of relevant games and information. http://www1.eere.energy.gov/kids/
EERE Wind Office: Energy Basics/how wind turbines works with a really great widget/animation http://www1.eere.energy.gov/wind/wind_animation.html. They also have a great set of other wind energy basics multimedia http://www1.eere.energy.gov/wind/multimedia.html, and a wind 101 video http://www.youtube.com/watch?v=tsZITSeQFR0&feature=youtu.be.
EERE Solar Office: Great resources for teaching about solar including videos, graphics and animations. https://www.eeremultimedia.energy.gov/solar/

Energy 101 videos from the U.S. Department of Energy. Short videos on a variety of energy related topics. http://www.youtube.com/playlist?list=PLACD8E92715335CB2&feature=plcp
The DOE also has a general video site that can be searched for other topics and energy related talks. http://energy.gov/videos/

Department of Energy hosts Energy All Stars: On January 19, 2013 as part of Inauguration Weekend, the Department of Energy hosted Energy All Stars featuring prominent energy leaders doing TED-style talks outlining what our energy future can and should look like, and steps that can be taken to achieve that vision. Speakers included Secretary of Energy - Steven Chu, former governor of Michigan - Jennifer Granholm, Los Angeles Mayor - Antonio Villaraigosa, CEO of Bloomberg New Energy Finance - Michael Liebreich, President and CEO of CPS Energy - Doyle Beneby, managing principal of the Analysis Group and former Assistant Secretary of Energy - Susan Tierney, and Bill Nye the Science Guy. Watch these incredible presentations at:
http://www.youtube.com/playlist?list=PLgU0cHea5t3qPNsUzG9rcNsVG3eVv57qa

The Department of Energy's Energy Saver site includes energy saving content as well as how-to articles and videos, calculators, and a blog. Beyond providing information about low-cost ways to lower household energy bills, the site also provides information about local tax credits; rebates and energy efficiency financing that may be available in different communities.
http://energy.gov/energysaver/energy-saver

PBS NOVA Labs: The Energy Lab (http://www.pbs.org/wgbh/nova/labs/lab/energy/) is the second lab in this new digital platform where "citizen scientists" can actively participate in the scientific process. For something we use every day, energy is a pretty mysterious concept. This Lab investigates what energy is, how it can be converted into useful forms, and why some sources are running low. In the Research Challenge, you'll use scientific data to design renewable energy systems for cities across the U.S.—and compete with others to see whose designs can produce the most power.

The U.S. Energy Information Administration (EIA) has an **Energy Kids** site (http://www.eia.gov/kids/) where you can find a wide range of activities for students and information about how teachers can put this site to use. They also have a lot of very useful data and analysis concerning energy on their main site (http://www.eia.gov/).

The U.S. Energy Information Administration (EIA) Energy Explained site (www.eia.gov/energyexplained) is a great nonpartisan source for up-to-date energy facts and data on the entire range of energy topics. Do you understand where your gasoline comes from, what determines the price of electricity, or how much renewable energy we use? If not, you're not alone. But now you can learn all about energy at Energy Explained, a nonpartisan guide to the entire range of energy topics from biodiesel to uranium.

The U.S. Energy Information Administration (EIA) State Energy Portal (http://www.eia.gov/beta/state/) includes interactive mapping, instant state comparisons, interactive state rankings, and an advanced state data finder to key statistics and analysis. To learn more, watch the video at: http://www.youtube.com/watch?v=JverGty_ckQ

BITES (Building, Industry, Transportation, and Electricity Scenarios) tool is an interactive framework that lets users explore the energy and carbon implications of altering the current U.S. energy profile. Using 'what-if' scenarios, users are able to adjust inputs to the electricity generation, buildings, industry, and transportation sectors in order to compare outcomes to baseline reference cases. https://bites.nrel.gov/

The NEED (National Energy Education Development) Project (www.need.org) has a large library of energy curriculum on a wide range of energy topics and is differentiated between primary, elementary, intermediate and secondary levels. Specific curriculum you will find useful can be found at the following site which sorts the curriculum according to subject. (http://www.need.org/Curriculum-Guides-by-Subject).

The National Academies' What You Need To Know About Energy (http://needtoknow.nas.edu/energy/) interactive website breaks energy up into Uses, Sources, Costs and Efficiency. This site is a reliable source for unbiased information and science related to energy. Links are provided for an Energy Quiz, Short Video, Glossary and the original reports from the National Academies about energy on which the website is based. The National Academies – YouTube channel is a great resource for energy and climate change short videos: http://www.youtube.com/user/nationalacademies.

The Energy Library is a web-based information resource about energy in all of its multifaceted aspects. The Energy Library is neutral in regards to energy systems. It does not favor one type of energy source or energy policy over another, one country over another, or one political ideology over another. The Energy Library provides objective and up-to-date information that is written and reviewed by experts. http://theenergylibrary.com/

The Switch Energy Project is a film, web and education program to build energy awareness and efficiency, and help us move forward to a smarter energy future. They have a lot of short video clips on a wide range of energy topics that teachers may find useful and students may find interesting. http://www.switchenergyproject.com/index.php

Science360 Knowledge Network immerses visitors in the latest wonders of science, engineering, technology and math. They gather the latest science videos provided by scientists, colleges and universities, science and engineering centers, the National Science Foundation and more. A search of "energy" on the site yields some great short and long videos on a wide range of topics. http://science360.gov/

Green Revolution has 10 videos on a wide range of energy topics: discover, wind, green roofs, smart grid, city car, solar, hydrogen, biomass, microbes and electric vehicles. These short videos are a great intro to any of these topics and show some of the great research happening in different parts of the energy space.
http://www.nsf.gov/news/special_reports/greenrevolution/index.jsp

Climate Literacy & Energy Awareness Network (CLEAN) houses a reviewed collection of K-20 educational resources meant to help students' understand the core ideas in climate and energy science. These resources have been linked to the essential climate and energy literacy principles and are searchable in a variety of ways. http://cleanet.org/

The Green Schools National Network (GSNN) which is a non-profit organization advances the national Green & Healthy Schools Movement by connecting like-minded and passionate education, non-profit, corporate and public sector individuals and programs. GSNN is the national umbrella organization that works collaboratively with others to improve education in the United States. Education for sustainability helps young people gain the knowledge, skills, motivation and hands-on experiences to make the world a better place for everyone and everything. http://www.greenschoolsnationalnetwork.org/

Energy4me is another organization that has resources and activities for students and also has free kits teachers can order to teach about energy topics. (http://www.energy4me.org/)

Science NetLinks from the **American Association for the Advancement of Science (AAAS)** (http://sciencenetlinks.com/) provides K-12 teachers, students, and families with quality resources for teaching and learning science. All of the resources are Internet based and free to everyone. They have a collection of resources called The Science of Energy (http://sciencenetlinks.com/collections/science-energy/) which shines a light on the types of lessons, tools, and interactives available to help students understand energy. One energy related game they have is called Power Up! (http://sciencenetlinks.com/interactives/powerup.html) It is aimed at younger students (Grades 3-8). They also have Power Play (http://sciencenetlinks.com/media/filer/2011/10/07/powerplay.swf) which is for grades 6-8. Energy Time Machine (http://sciencenetlinks.com/tools/energy-time-machine/) presents the history of energy from 500,000 BCE up to 2006. The Oil Refining interactive is also very good (http://sciencenetlinks.com/interactives/energy/interactive/api_treat_012810.swf).

AAAS Cutting Edge: Energy Lecture Series is a lecture series where AAAS members make brief, easy to understand presentations about the latest advancements in their field. The newest installment, Cutting Edge: Energy draws on the expertise of Paul Alivisatos, Henry Shiu, Belinda Batten, and Kim Magrini, as they share their insights on the newest developments in solar energy, wind energy, wave energy, and biofuels. Available as videos and audio podcasts, these lectures offer a fascinating look at the future of renewable energy resources.
http://membercentral.aaas.org/cutting-edge

THINK! ENERGY is an initiative from National Energy Foundation that invites all people to practice three main principles: Think! – Discover energy and learn about resources, uses and supply as it relates to you personally, in schools or businesses, at home, and in your community. Talk! – Discuss the energy and environmental topics that encourage debate and formulate ideas. Take Action! – Decide to take action and make a difference in energy through conservation and energy efficiency practices that impact the environment in positive and healthy ways.
http://thinkenergy.org/

Earth: The Operators' Manual ("ETOM" for short) is a rigorously researched, beautifully filmed and ultimately uplifting antidote to the widespread "doom and gloom" approach to climate change. The program opens with a thorough grounding in Earth's climate history and an overview of the current dilemmas, but its main thrust is an upbeat assessment of our many viable sustainable energy options. Links to the three episodes of ETOM at this site – each about an hour long and worth viewing!
http://earththeoperatorsmanual.com/

WattzOn is a consumer energy engagement software platform that provides free tools and expert advice to help people understand their energy use and how they can make smart decisions about saving energy and making their homes more green. http://www.wattzon.com/etom

PBS America Revealed – Episode 1: Food Machine. Over the past century, an American industrial revolution has given rise to the biggest, most productive food machine the world has ever known. Host Yul Kwon explores how this machine feeds nearly 300 million Americans every day. He discovers engineering marvels we've created by putting nature to work and takes a look at the cost of our insatiable appetite on our health and environment. http://www.pbs.org/america-revealed/episode/1/

PBS America Revealed – Episode 2: Nation on the Move. America is a nation of vast distances and dense urban clusters, woven together by 200,000 miles of railroads, 5,000 airports, and 4 million miles of roads. These massive, complex transportation systems combine to make Americans the most mobile people on earth. http://www.pbs.org/america-revealed/episode/2/

PBS America Revealed – Episode 3: Electric Nation. Our modern electric power grid has been called the biggest and most complex machine in the world – delivering electricity over 200,000 miles of high tension transmission lines. But even though the grid touches almost every aspect of our lives, it's a system we know very little about. http://www.pbs.org/america-revealed/episode/3/

PBS America Revealed – Episode 4: Made in the USA. American manufacturing has undergone a massive revolution over the past 20 years. Despite all the gloom and doom, America is actually the number one manufacturing nation on earth. Yul Kwon crosses the nation looking at traditional and not-so traditional types of manufacturing. http://www.pbs.org/america-revealed/episode/4/

Our Children's Trust has videos of youth from around the country talking about how climate change is affecting them and their families. It also details the actions they are taking to make a difference. http://ourchildrenstrust.org/trust-films They are partnered with iMatterMarch at www.imattermarch.org

Alliance for Climate Education (ACE) provides FREE high school assemblies with a conservation message that challenges students to DOT – do one thing and to join student action teams. Visit their website to learn how to schedule an assembly at your high school today! ACE is the national leader in high school climate science education. They are dedicated to educating America's high school students about the science behind climate change and inspiring them to do something about it – while having fun along the way. ACE delivers two core offerings: the ACE Assembly and the Student Action Program. http://www.acespace.org/

The **Alliance to Save Energy** is a nonprofit organization that promotes energy efficiency worldwide through research, education and advocacy. They encourage business, government, environmental and consumer leaders to use energy efficiency as a means to achieve a healthier economy, a cleaner environment and greater energy security. http://ase.org/

The **Cooperative Extension System** provides featured articles and activities related to Home Energy. The extension website also has Farm Energy and Wood Energy resources. http://www.extension.org/home_energy

WxTV is a national weatherization training show that uses a blend of expert advice, how-to techniques, innovation, and reality TV to create entertainment-based learning. Episodes range 12-15 minutes in length and are filmed around the country by WxTV film crews and often by weatherization crews themselves, in the field, showcasing their know-how. WxTV brings together differing techniques from hot, cold, humid, and arid environments, opening a dialogue for crews to debate the best way to accomplish weatherization tasks under varying conditions. But it's not just weatherization on WxTV's radar; the show has expanded to cover all aspects of energy-efficient living. In just a year and a half, the show has gained a sizable following within the weatherization, renovation, and energy-efficiency industries. http://wxtvonline.org/episodes/

Exploring Energy Efficiency & Alternatives (E3A): E3A was developed as a partnership with Montana and Wyoming Cooperative Extension systems as a foundation for non-biased, research-based information on home and agricultural energy efficiency and conservation strategies and small renewable energy technologies. E3A provides ready-to-use downloadable fact sheets, links to resources, and resources to help farm and home consumers explore small renewable energy systems For educators, E3A is a self-guided, self-contained grab-and-go-toolkit of resources for a wide range of audience applications - K-12, volunteer, train-the trainer and higher education energy education. , The E3A toolkit includes lesson plans, evaluation tools, teaching demonstration kits, fact sheets, presentation materials and other resources.. The E3A program is being adopted by a number of other states as a foundation for their statewide energy curriculum and a national training was offered to facilitate this adoption of the program. http://www.e3a4u.info/default.cfm

Envirolution is dedicated to developing and scaling dynamic K-12 education, job training, leadership academy, and community outreach programs centered around green industries and green energy. With a focus on service learning, our programs not only provide career development for students, but also enable our participants to give back to their communities. Envirolution™ seeks to promote global change by championing local efforts that empower citizens to do positive, meaningful work and to make a good living while giving back to their own social and environmental communities. http://envirolution.org/

Tennessee Energy Hog: Learning about energy is fun when you include Energy Hogs! The Energy Hog Challenge is a set of classroom activities that guide children through lessons about different sources of energy, how we use energy at home, and how to bust energy hogs to save energy.
Students will:

- Learn good energy-saving habits
- Bring their lessons home to help their families save money by reducing home energy bills
- Protect natural resources for future generations.

http://energyhog.org/

Con Edison energetically invites teachers and students to use their electrifying new website, ConEd Kids, designed especially for grades 5-8. ConEd Kids motivates kids to explore the world of energy all around them with Con Edison's research on energy, games, links, biographies, factoids, dictionary, energy's history, news, and the latest facts on the environment.
http://www.coned.com/kids/

The **Lights for Learning** program gets students excited for energy-efficient actions, stimulates awareness of energy conservation methods, and educates students to become the next generation of environmentally aware citizens. The program uses group education reinforced through the sale of compact fluorescent light bulbs and other energy-saving products. Through L4L, K-12 students sell energy-efficient products including ENERGY STAR® qualified CFLs, LED holiday light strands and night lights, and low-flow showerheads; rather than traditional school fundraising items such as candy and gift wrap. Sales are through take-home order forms, organized booth sales at school or community events, or permanent sales kiosks. Periodic contests encourage students to apply their creativity toward developing videos and posters promoting energy efficiency. http://www.lights4learning.org/

The Green Education Foundation is a non-profit organization that provides curriculum and resources to K-12 students and teachers worldwide with the goal of challenging youth to think holistically and critically about global environmental, social, and economic concerns and solutions. They have K-12 Lesson Clearinghouse as well as a variety of challenges which students can participate in related to environmental education.
http://www.greeneducationfoundation.org/

Discovery Education's TurfMutt: Foster an appreciation of the environment and an interest in the green space in your community with these classroom resources designed for students in grades K-5, recently updated with NEW lesson plans and activities for K-2! With TurfMutt as your guide, your class will get outside, investigate the benefits of landscaping and recycling, plus understand the importance of the lawns, flowers, bushes and trees that surround us every day. http://turfmutt.discoveryeducation.com/educators.cfm

The Foundation for Water & Energy Education is committed to providing balanced information regarding the use of water as a renewable energy resource in the Northwest.
http://fwee.org/

The National Science Teachers Association has Science Objects which are energy focused. Science Objects are two hour on-line interactive inquiry-based content modules that help teachers better understand the science content they teach. These Science Objects are currently available for free!
Energy: Different Kinds of Energy
http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.1.1
Energy: Energy Transformations
http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.2.1
Energy: Thermal Energy, Heat, and Temperature
http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.3.1
Energy: Useful and Not So Useful Energy
http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.3.1

RenewableEnergyWorld.com provides the latest news and information related to renewable energy. From blogs to videos and webcasts, this site has lots of resources though they do not have any specific lesson plans or education links.
http://www.renewableenergyworld.com/rea/home

GOOD is a collaboration of individuals, businesses, and nonprofits pushing the world forward. They publish a magazine and GOOD Issue 022: The Energy Issue covers a variety of energy related topics.
http://www.good.is/the-energy-issue/

PhET site with lots of great simulations for physics, chemistry, biology, earth science and more.
http://phet.colorado.edu/
Simulation of a generator, transformer, electromagnet, pickup coil, and bar magnet. An easy way to show how energy is generated by changing the magnetic field and how moving electrons create magnetic fields.
http://phet.colorado.edu/en/simulation/generator
Faraday's Electromagnetic Lab - same simulation, different focus.
http://phet.colorado.edu/en/simulation/faraday

The Habitable Planet: Energy Lab Simulator in this lab, the challenge is to try to meet the world's projected energy demand by choosing from the available energy sources, while keeping atmospheric CO2 under control and avoiding the particular limits and pitfalls associated with each energy source. Lessons on Managing Resources and Energy Efficiency are detailed.
http://www.learner.org/courses/envsci/interactives/energy/index.php

My Energy Gateway is a site focused on planning an education and career in energy. Find information on degrees and certifications in energy. Get tuition and information on scholarships, internships, college rankings, career options and industry resources. http://www.myenergygateway.org/

Whales to Windmills: Inventions Inspired by the Sea is a Tedx talk that details inventions connected to creatures from the sea. It has an energy and carbon emission connection. http://www.youtube.com/watch?v=OpLzI27febM

California PEAK (Promoting Energy Action & Knowledge): PEAK is an environmental education program designed to empower students with the knowledge to manage energy use in their homes, schools and communities. Through hands-on learning, students are inspired to take action to create a more sustainable world. Explore our website to learn more about PEAK, program resources and our award winning, **standards-based** curriculum! http://www.peakstudents.org/default.asp

Wisconsin K-12 Energy Education Program (KEEP) was created to promote energy education in Wisconsin. KEEP is the product of an innovative public private partnership between educators and energy professionals. The Wisconsin Center for Environmental Education (WCEE) launched this effort in 1995. http://www4.uwsp.edu/cnr/wcee/keep/index.htm

Science in Focus: Energy a video workshop for K-6 science teachers to provide a solid foundation, enabling you to distinguish between the way "energy" is commonly understood and its meaning in science. Examine energy's role in motion, machines, food, the human body, and the universe as a whole. Learn how energy can be converted from one form to another and transferred over space and time. And explore the notion of "conservation of energy" — the idea that energy can neither be created nor destroyed. Course can be taken online for free – eight 1 hour videos. http://www.learner.org/resources/series160.html

MJ Murdock Charitable Trust Partners in Science Program is designed to help high school science teachers work with a mentor doing cutting-edge research over the course of two summers. The purpose of this grant is to bring the knowledge from the research lab back into the high school science classroom, promoting hands-on science education. Eligibility: High school teachers in Oregon, Washington, Idaho, Montana or Alaska http://www.murdock-trust.org/grants/partners-science.php

Competitions and Awards Programs:

The **Siemens We Can Change the World Challenge** is the premier national environmental sustainability competition for grades K-12. Through project-based learning, students learn about science and conservation while creating solutions that impact their planet. Opens in August. Deadline is mid-March.
http://www.wecanchange.com/

The **President's Environmental Youth Awards** (PEYA) are projects developed by young individuals, school classes (K-12), summer camps, and youth organizations to promote environmental stewardship. Winning projects in the past have covered a wide range of subject areas, including:

- environmental science projects
- recycling programs in schools and communities
- construction of nature preserves
- major tree planting programs
- videos, skits, and newsletters that focused on environmental issues

Evaluation results consistently demonstrate that the experience is frequently a life-changing event for many of the young people and sponsors who attend. **Deadline is December 31 of each year.**
http://www.epa.gov/peya/

The **NEED (National Energy Education Development) Project's Youth Awards for Energy Achievement** recognizes outstanding achievement and rewards student leadership for excellence in energy education in student's schools and communities. This is a K-12 program with scrapbooks detailing projects and applications due to state coordinators in April each school year. For more information about this program see the following website: http://www.need.org/Youth-Awards.

National Environmental Education Foundation (NEEF) Sustainable Energy Award is a $10,000 award presented to each of the top three high schools that can demonstrate how they have engaged students and teachers in school-wide energy savings through the creative and innovative use of technology. Deadline is early February. http://www.neefusa.org/energyaward

The **Ten80 Student Racing Challenge**: NASCAR STEM initiative is a project-based learning system and optional competition league created by educators, engineers and industry partners over the last decade. Its mission is to help youth, especially underrepresented minorities and women, to develop confidence and interest in STEM areas that will give them skills in these subjects and as critical thinkers, ultimately helping prepare them for higher education, careers and citizenship. The curriculum is aligned with national standards and Ten80's team of engineer-educators provides professional development and training for teachers and coaches who support students. http://www.studentracingchallenge.com/

The **Green Cup Challenge™** starts with dedicated green teachers and students. The GCC invites all schools -- public and private, day and boarding schools -- to measure and reduce campus electricity use and GHG emissions, and supports campus greening efforts including recycling and water conservation.
http://www.greencupchallenge.net/

The **DuPont Challenge**, North America's premier science essay competition, encourages students to delve deep into their interests in science, technology, engineering, and math (STEM) and express themselves with creativity and purpose. Ours is a growing world that faces new challenges each day, and we want STUDENTS to share their ideas for how science can help keep our global population supplied with food, safety, and clean energy. Deadline is February 10, 2013. Senior Division for grades 10, 11, 12 and Junior Division for grades 7, 8, 9.
http://www.thechallenge.dupont.com/

The **Spark! Lab Invent It Challenge** sponsored by the Smithsonian on ePals engages K-12 students to invent something to meet one of three challenges. Split into four categories by age. Challenge 1: Think about a problem in your school and come up with an invention to solve it. Challenge 2: Find an invention that is used in your school and tell us how you would improve upon it. Challenge 3: Find a real-world problem and come up with an invention to solve it. Deadline is January 4, 2013 at midnight EST.
http://en.community.epals.com/smithsonian_on_epals/p/inventionchallenge2012.aspx

DOE Sponsored Competitions and Programs

The **Better Buildings Challenge** supports commercial and industrial building owners by providing technical assistance and proven solutions to energy efficiency. The program also provides a forum for matching Partners and Allies to enhance collaboration and problem solving in energy efficiency. Both Partners and Allies are publically recognized for their leadership and innovation in energy efficiency. http://www4.eere.energy.gov/challenge/home

The **Better Buildings Alliance** is transforming the way commercial buildings use energy. BBA invites building owners, managers, and operators to work with the Building Technologies Program (BTP) and with each other to identify and implement best practices, key decision-making tools, and advanced technologies for significant energy savings in their portfolios.
http://www1.eere.energy.gov/buildings/betterbuildings/bba/bba-index.html

The **Solar Decathlon** challenges collegiate teams to design, build, and operate solar-powered houses that are cost-effective, energy-efficient, and attractive. The winner of the competition is the team that best blends affordability, consumer appeal, and design excellence with optimal energy production and maximum efficiency. http://www.solardecathlon.gov

EcoCAR 2: Plugging In to the Future is a three-year collegiate engineering competition and the only program of its kind. The competition's mission is a vital one: offer an unparalleled hands-on, real-world experience to educate the next generation of automotive engineers. The competition challenges 15 universities across North America to reduce the environmental impact of a Chevrolet Malibu without compromising performance, safety and consumer acceptability. http://www.ecocar2.org/

The **National Collegiate Wind Competition** is a forum for undergraduate college students of multiple disciplines to investigate innovative wind energy concepts; gain experience designing, building, and testing a wind turbine to perform according to a customized market data-derived business plan; and increase their knowledge of wind industry barriers. Successful teams will gain and then demonstrate knowledge of technology, finance, accounting, management, and marketing, providing lifelong technical and business skills.
http://www1.eere.energy.gov/wind/news_detail.html?news_id=18984 Deadline for application: February 19, 2013
District/School Wide Programs:
ENERGY STAR for K-12 School Districts
Partnering with ENERGY STAR is a commitment to your students as well as to the environment.
http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12

Wind For Schools Program – details about how to apply for this grant program.
http://www.windpoweringamerica.gov/schools_wfs_project.asp

Fuels for Schools program – will help assess if biomass can be used to heat schools and other buildings within the school district. Your facility may be eligible for a program-sponsored Pre-Feasibility Assessment if located in Nevada, Idaho, Utah, Montana, Wyoming, or North Dakota.
http://www.fuelsforschools.info/aboutFFS.html

TerraCycle's purpose is to eliminate the idea of waste. We do this by creating national recycling systems for previously non-recyclable or hard-to-recycle waste. Anyone can sign up for these programs, called the Brigades, and start sending us waste. http://www.terracycle.net/en-US/

Green Ribbon Schools is a national program recognizing schools making concerted energy efficiency, conservation and sustainability efforts. See if your state is involved and learn about what it takes to become a Green Ribbon School. http://greenribbonschools.org/

The Trash Redux initiative focuses on reducing the amount of trash produced by schools. It promotes conservation practices, awareness efforts and thoughtful decision making in order to obtain a “zero waste” platform in schools. http://www.gradesofgreen.org/initiatives/trash-redux

Growing public concern over greenhouse effects, concerns over safe disposal of e-waste, and local K-12 school district needs to conserve funding are forcing schools to address green IT issues as a matter of conscience, budget and political value. The Consortium for School Networking (CoSN) Green Computing Leadership Initiative provides tools, tips, and resources for school technology leaders to help reduce their school district carbon footprint.
http://www.cosn.org/Default.aspx?TabId=4110

Recycle Bowl - Keep America Beautiful's recycling competition is back. Compete against other schools in your state and nationwide to see who recycles the most. There are lots of ways to get involved, tools and resources to get you started, and GREAT PRIZES for top performers!
http://recycle-bowl.org/

Teacher Awards:
The **National Environmental Education Foundation (NEEF) Richard C. Bartlett Environmental Education Award** is given annually to an outstanding middle or high school teacher who successfully integrates environmental education into their curriculum and engages students in interdisciplinary solutions to environmental challenges. The award alternates between middle and high school teachers each year (2012 is for high school teachers) and recognizes an educator who can serve as an inspiration and model for others. Winner will receive $5,000 and two merit winners will receive $750 each. Nominations due June 8.
http://www.neefusa.org/bartlettaward.htm

The **Presidential Innovation Award for Environmental Educators** recognizes outstanding K-12 teachers who employ innovative approaches to environmental education and use the environment as a context for learning for their students. Up to two teachers from each of EPA's 10 regions, from different states, will be selected to receive this award. The White House Council on Environmental Quality (CEQ), in partnership with the U.S. Environmental Protection Agency (EPA) administers this award to nationally honor, support and encourage educators who incorporate environmental education in their classrooms & teaching methods. Teacher awardees will receive a commemorative plaque and an award of $2000 to be used to further the recipient's professional development in environmental education. An additional award of $2000 will go to the teacher's local education agency to fund the environmental education activities and programs of the teacher.
http://www.epa.gov/education/teacheraward/index.html

Glossary

Absorber – The part of a solar collector that absorbs the sun's energy and changes that energy into heat.

Active Solar - A solar application, which uses electrical or mechanical equipment to assist in the collection and storage of solar energy for the purpose of heating, cooling, or making electricity.

Ambient Light – Illumination from a natural light source, as opposed to task lighting.

Avoided Costs – These are costs that a utility avoids by purchasing power from an independent producer rather than generating power themselves, purchasing power from another source or constructing new power plants. The North Carolina Utilities Commission calculates avoided costs for each utility, and these costs are the basis upon which independent power producers are paid for the electricity they produce. There are two parts to an avoided cost calculation: the avoided capacity cost of constructing new power plants and the avoided energy cost of fuel and operating and maintaining utility power plants.

Bakeout – A process used to remove volatile organic compounds (VOC's) in a building by operating a building's HVAC systems at elevated temperatures using 100 percent outside air after all the furniture and finishes (carpeting, ceiling tiles, etc.) have been installed.

Base Load – The minimum load experienced by an electric utility system over a given period of time.

Biomass – An energy resource derived from organic matter such as wood, agricultural waste and other living cell material.

Bioremediation – The use of natural biological processes (microbes, bacteria, plants, etc.) to break down contaminants and restore contaminated land back to productive use.

Black Water – Water containing human waste from toilets and urinals. Black water contains pathogens that must be neutralized before the water can be reused. Typically black water, after neutralization, is used for non-potable used such as flushing or irrigation.

BREEAM – Building Research Establishment Environmental Assessment Method (BREEAM) is a comprehensive tool for analyzing and improving the environmental performance of buildings through design and operations. This methodology has been developed by the UK based Building Research Establishment.

British Thermal Unit (Btu) – The amount of energy it takes to raise the temperature of one pound of water one degree Fahrenheit.

Building Envelope – Includes elements (walls, windows, roofs, skylights, etc.) and materials (insulation, vapor barrier, siding, etc.) that enclose a building. The building envelope is a thermal barrier between the indoor and outdoor environment and is a key factor in the "sustainability" of a building. A well-designed

building envelope will minimize energy consumption for cooling and heating as well as promote the influx of natural light.

Carbon Dioxide – Carbon Dioxide is a colorless, odorless gas that naturally exists in earth's atmosphere. The major source of man-made CO2 emissions is from the combustion of fossil fuels. Carbon Dioxide is the primary greenhouse gas and is known to contribute to global warming and climate change. Atmospheric concentrations of CO2 have been increasing at a rate of about 0.5 percent per year and now approximately 30 percent above pre-industrial levels.

Carbon Neutral – A scenario where the net discharge of carbon dioxide into the atmosphere is zero. Carbon neutrality can be achieved by planting enough trees so that CO2 emissions as a result of combustion would be offset by CO2 absorption by the plants. In the presence of water and light, trees convert CO2 into sugar and oxygen thru the process of photosynthesis. The average tree absorbs 10 kg (22 lbs.) of CO2 per year. Carbon neutral is also referred to as "net zero carbon".

Carbon Footprint - A measure of your impact on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide.

Carbon Trading – A market based tool designed to reduce harmful emissions by using cap-and-trade programs or credits that pay for or offset greenhouse gas reductions.

Climate Neutral – No net production of greenhouse gases (see also Carbon neutral).

Clean Tech – New technology, products and services that reduce negative environmental impacts by promoting sustainability and energy efficiency.

Cogeneration – The generation of electricity and the capture and use of otherwise wasted heat energy byproducts (See also combined heat and power system).

Columbus Alternative Energy & Ag-Biotechnology Center – A methane capture electricity generation facility that also utilizes the waste heat generated from a boiler to heat a greenhouse to be used by students at Southeastern Community College's Agricultural Biotechnology program. (Columbus County, NC)

Combined Heat and Power System – A system that uses waste heat to produce electricity or useful, measurable thermal or mechanical energy at a retail electric customer's facility.

Commissioning – The process of ensuring that a building's complex array of systems is designed, installed, and tested to perform according to the design intent and the owner's operational needs. The commissioning of new buildings is most effective when considered throughout the planning stages, and as early as the schematic design phase.

Conduction – Heat flow within a material that is cause by the difference of temperature within that material.

Convection – The movement of parts of a fluid because of variations in the fluid's density caused by temperature differences.

Daylighting – A method of illuminating building interiors with natural light and minimizing the use of artificial lighting. Common daylighting strategies include the proper orientation and placement of windows, the use of light wells, or light shafts.

Demand-Side Management (DSM) – Activities, programs, or initiatives undertaken by an electric power supplier or its customers to shift the timing of electricity use from peak to nonpeak demand periods. DSM includes, but is not limited to, load management, electric system equipment and operating controls, direct load control, and interruptible load.

Desert Wind Power Project - The Desert Wind Power Project is designed to be a 300 MW, 150 turbine, wind farm on 20,000 acres of scrubland in Pasquotank County and Perquimans County, North Carolina. It is scheduled to be in operation by the end of 2012.

Direct Load Control –Activities that can interrupt load at the time of peak by interrupting power supply on consumer premises, usually applied to residential consumers.

Displacement Ventilation – A method of space conditioning where conditioned air is supplied at or near the floor. Since the air is supplied at very low velocities, a cool layer of air collects in the occupied zone resulting in comfortable conditions for the occupants. Buoyant forces remove heat generated by occupants and equipment, as well as odors and pollutants, all of which stratify under the ceiling and are extracted from the space by exhaust fans. Displacement ventilation systems were originally used in industrial facilities and subsequently in office buildings, auditoria, performing arts centers and spaces with large interior volumes. These systems are effective in improving indoor air quality as well as providing energy savings when compared to conventional fully mixed systems.

Duel Flush Toilet - A dual-flush toilet is a variation of the flush toilet that uses two buttons or handles to flush different levels of water. The main feature of the toilet is that it has two buttons for releasing water. It outputs water in both 0.8-gallon and 1.6-gallon capacities. The smaller level is designed for liquid waste, and the larger is designed for solid waste. It also uses a larger 4-inch (10 cm) trapway in the bowl, allowing for water to come out faster and clear the bowl efficiently.

Eco-Friendly, Environmentally- Friendly – A loose term often used in marketing to inform consumers about an attribute of a product or service that has an environmental benefit. This term does not necessarily indicate all attributes of a product or service is environmentally benign.

Ecological Footprint – The area of land and water needed to produce the resources to entirely sustain a human population and absorb its waste products with prevailing technology. The concept of an ecological footprint is used as a resource management and community-planning tool.

Electric Power Supplier – A public utility, an electric membership corporation, or a municipality that sells electric power to retail electric power customers in the state.

Embodied Energy - The sum of all the energy required to produce goods or services, considered as if that energy was incorporated or 'embodied' in the product itself. The concept can be useful in determining the effectiveness of energy-producing or energy-saving devices (does the device produce or save more energy that it took to make it?), of buildings, and, because energy-inputs usually entail greenhouse gas emissions, in deciding whether a product contributes to or mitigates global warming.

Emittance – The property of a material to radiate energy.

Energy Efficiency (EE) – An equipment, physical, or program change implemented after January 1, 2007, that results in less energy used to perform the same function. "Energy efficiency measure" includes, but is not limited to, energy produced from a combined heat and power system that uses nonrenewable energy resources. "Energy efficiency measure" does not include demand-side management.

Energy Star – A joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy helping individuals and businesses save money and protect the environment through energy efficient **Federal** products and practices.

Federal Energy Regulatory Commission (FERC) – FERC is an independent federal agency that regulates the interstate transmission of electricity, natural gas, and oil.

First Cost - The sum of the initial expenditures involved in capitalizing a property; includes items such transportation, installation, preparation for service, as well as other related costs.

Fly Ash – The ash residue from high temperature combustion processes. Electric generating plants using western coal produce a non-toxic fly ash that, because of its very high calcium content, can be a substitute for Portland cement (the common bonding material in concrete).

Fossil Fuels – Energy dense and Carbon rich fuels, such as coal, oil and natural gas, produced by the decomposition of ancient (fossilized) plants and animals.

FSC Products – Forest Steward Council wood bearing the FSC logo guarantees that it was sustainably harvested from a certified, well managed forest.

Fritted Glass - Fritted glass is defined as a heat or temperature controlling or resistant kind of glass. It bears small holes and is ceramic. It is mainly used in solar panels.

Fuel Cell - A fuel cell is a device that converts the chemical energy from a fuel into electricity through a chemical reaction with oxygen or another oxidizing agent.

Gas-Fired Absorption Chiller – Mechanical equipment that is used to generate chilled water for cooling of buildings. Conventional chillers use electricity as the energy source, whereas gas-fired absorption chillers use clean burning natural gas. While conventional chillers have a compressor and use refrigerants to produce cooling, absorption chillers contain an absorber, generator, pump and heat

exchanger, and do not use ozone-depleting substances. The absorption cycle utilizes environmentally friendly working fluids, namely water (refrigerant) and lithium bromide (absorbent). Some absorption chillers use ammonia as the refrigerant and water as the absorbent.

Geothermal Energy - Geothermal energy is heat energy within the Earth. Geothermal energy is produced from the Earth's core. Temperatures hotter than the sun's surface are constantly produced inside the Earth by the slow decay of radioactive particles. Geothermal energy at times finds its way to the surface in the form of volcanoes, hot springs and geysers.

Global Warming - A process that raises the air temperature in the lower atmosphere due to heat trapped by greenhouse gases, such as carbon dioxide, methane, nitrous oxide, CFCs and ozone. It can occur as the result of natural influences, but the term is most often applied to the warming predicted to occur as a result of human activities (i.e., emissions of greenhouse gases).

Grey Water – Wastewater that does not contain sewage or fecal contamination and can be reused for irrigation after simple filtration.

Green – Making decisions based on an environmentally-friendly philosophy and conservation of natural resources.

Green Building – A building that minimizes impact on the environment through resource (energy, water, etc.) conservation and contributes to health of its occupants. Comfortable, aesthetically pleasing and healthful environments characterize green buildings.

Greenhouse Effect - The greenhouse effect is a process by which thermal radiation from a planetary surface is absorbed by atmospheric greenhouse gases, and is re-radiated in all directions. Since part of this re-radiation is back towards the surface and the lower atmosphere, it results in an elevation of the average surface temperature above what it would be in the absence of the gases.

Greenhouse Gases – Atmospheric gases that contribute to the greenhouse effect and sustain life on earth. Increasing concentrations of greenhouse gases in the atmosphere are altering the habitat humans evolved to thrive in; this is a process called global warming or climate change. Greenhouse gases include: carbon dioxide, water vapor, nitrous oxide, ozone, methane, and CFCs.

Green Power – This is a term used to describe sources of energy that are considered to be environmentally friendly and non-polluting, such as geothermal, wind and solar power.

Green Roofs - Serve several purposes for a building, such as absorbing rainwater, providing insulation, creating a habitat for wildlife, and helping to lower urban air temperatures and mitigate the heat island effect.

G**rid** - An electrical, or power, grid is an interconnected system of transmission lines from multiple suppliers to consumers.

H**ead** – The total pressure or resistance to the flow of a liquid within a circuit exerted by gravity and friction.

Heat Island Effect – "Heat island" refers to urban air and surface temperatures that are higher than those of nearby rural areas. Many American cities and suburbs have air temperatures up to 10º F (5.6º C) warmer than their surrounding natural land cover.

HVAC – An acronym for Heating, Ventilation and air conditioning.

Indoor Air Quality (IAQ) – Pollution from gases or particles released into the air is the primary cause of indoor air quality problems. Inadequate ventilation can increase indoor pollutant levels by not bringing in enough outdoor air to dilute emissions.

Insolation - A measure of solar radiation energy received on a given surface area and recorded during a given time, typically one day.

Intelligent Materials – Materials that are able to adapt to their environment by altering their properties. Example of intelligent materials include liquid crystal glass which changes from transparent to opaque upon application of a current, and thermochromic glazing that changes transparency in response to ambient temperatures.

Interconnection Process – The physical connection of two electric systems that allows for the sale or exchange of electricity.

Interruptible Load – Loads that can be interrupted in the event of capacity or energy deficiencies on the supplying system.

Kyoto Protocol – The Kyoto Protocol treaty was negotiated in December 1997 at the city of Kyoto, Japan and came into force February 16th, 2005.

"The Kyoto Protocol is a legally binding agreement under which industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% compared to the year 1990 (but note that, compared to the emissions levels that would be expected by 2010 without the Protocol, this target represents a 29% cut). The goal is to lower overall emissions from six greenhouse gases - carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs - calculated as an average over the five-year period of 2008-12. National targets range from 8% reductions for the European Union and some others to 7% for the US, 6% for Japan, 0% for Russia, and permitted increases of 8% for Australia and 10% for Iceland."

LEED – The Leadership in Energy and Environmental Design Green Building rating system. LEED is a voluntary, consensus-based, national standard based on a four level certification program that encompasses design techniques for the building envelope and throughout the interior for new construction and renovations, as well as their operational program for existing properties.

Life Cycle Cost – The amortized annual cost of a product, including capital costs and installation, operating, maintenance, and disposal costs discounted over the lifetime of the product.

Light Shelf - A light shelf is an architectural element that allows daylight to penetrate deep into a building. This horizontal light-reflecting overhang is placed above eye-level and has a high-reflectance upper surface. This surface is then used to reflect daylight onto the ceiling and deeper into a space.

Low E-Windows – Low emissivity windows reflect heat, not light, keeping spaces warmer in winter and cooler in summer.

Microclimate – Localized climate conditions within an urban area or building.

Native Landscaping – Using indigenous species in order to eliminate the need for irrigation.

Net-zero – Requiring no additional energy input from outside sources.

New Renewable Energy Facility – A renewable energy facility that either: (a) was placed into service on or after January 1, 2007; (b) delivers or has delivered electric power to an electric power supplier pursuant to a contract with NC GreenPower Corporation that was entered into prior to January 1, 2007; or (c) is a hydroelectric power facility with a generation capacity of 10 megawatts or less that delivers electric power to an electric power supplier.

Nitrogen Oxides - Nitrogen oxide can refer to a binary compound of oxygen and nitrogen, or a mixture of such compounds. They are produced during combustion, especially at high temperature. These two chemicals are important trace species in Earth's atmosphere.

Non-Renewable Resources – Resources that are in limited supply, such as oil, coal, and natural gas.

Orientation – The position of a building relative to the points of a compass. Energy consumption in a building can be reduced by proper orientation of the building's window areas.

Ozone Layer – In the upper atmosphere about 15 miles above sea level it forms a protective layer which shields the earth from excessive ultraviolet radiation and occurs naturally.

Passive Solar - In passive solar building design, windows, walls, and floors are made to collect, store, and distribute solar energy in the form of heat in the winter and reject solar heat in the summer. This is called passive solar design or climatic design because, unlike active solar heating systems, it doesn't involve the use of mechanical and electrical devices.

Peak load – Maximum power used in a given period of time.

Pervious Pavement - Permeable paving is a range of sustainable materials and techniques for permeable pavements with a base and sub base that allow the movement of storm water through the surface. In addition to reducing runoff, this effectively traps suspended solids and filters pollutants from the water.

Photovoltaic Panels – Solar panels that convert sunlight into electricity. Power is produced when sunlight strikes the semiconductor material and creates an electrical current.

Potable Water – Drinkable water.

Power Factor – The ratio of the actual power to the apparent power in an alternating current power system.

Power Purchase Agreement – A contract entered into by an independent power producer and an electric utility. The power purchase agreement specifies the terms and conditions under which electric power will be generated and purchased. Power purchase agreements require the independent power producer to supply power at a specified price for the life of the agreement. While power purchase agreements vary, their common elements include: specification of the size and operating parameters of the generation facility; milestones in-service dates, and contract terms; price mechanisms; service and performance obligations; dispatchability options; and conditions of termination or default.

Public Utility Regulatory Policies Act of 1978 (PURPA) –This federal statute requires states to implement utility conservation programs and create special markets for co-generators and small producers who meet certain standards, including the requirement that states set the prices and quantities of power the utilities must buy from such facilities.

Qualifying Facility (QF) – Small-scale producers of commercial energy (small power production facilities) or producers who generate useable electric energy as a co-product of other activities (cogeneration) and meet certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission ("FERC") pursuant to the Public Utility Regulatory Policies Act ("PURPA").

R-Value - The R-value is a measure of thermal resistance used in the building and construction industry. Under uniform conditions it is the ratio of the temperature difference across an insulator and the heat flux (heat transfer per unit area per unit time) through it or The R-value being discussed is the unit thermal resistance. This is used for a unit value of any particular material. It is expressed as the thickness of the material divided by the thermal conductivity. For the thermal resistance of an entire section of material, instead of the unit resistance, divide the unit thermal resistance by the area of the material.

Radiation – Energy that emanates from a source in the form of waves or particles.

Rain Water Harvesting - Rainwater harvesting is the accumulation and deposition of rainwater for reuse before it reaches the aquifer. Uses include water for garden, water for livestock, water for irrigation, etc. In many places the water collected is just redirected to a deep pit with percolation. The harvested water can be used for drinking water as well if the storage is a tank that can be accessed and cleaned when needed.

Recycle Symbol – The chasing arrow symbol used to show that a product or package can be recycled. The three arrows on the symbol represent different components of the recycling process. The top arrow

represents the collection of recyclable materials. The second arrow (bottom right) represents the recyclables being processed into recycled products and the third arrow on the bottom left represents when the consumer actually buys a product with recycled content.

Recycling – The process of collecting, sorting, and reprocessing old material into usable raw materials.

Regeneration - Regeneration is the process of renewal, restoration, and growth that makes genomes, cells, organs, organisms, and ecosystems resilient to natural fluctuations or events that cause disturbance or damage.

Renewable Energy Certificate (REC) – A tradable instrument that is equal to one megawatt hour of electricity or equivalent energy supplied by a renewable energy facility, new renewable energy facility, or reduced by implementation of an energy efficiency measure that is used to track and verify compliance with the requirements of this section as determined by the Commission. A "renewable energy certificate" does not include the related emission reductions, including, but not limited to, reductions of sulfur dioxide, oxides of nitrogen, mercury, or carbon dioxide.

Renewable Energy Facility – A facility, other than a hydroelectric power facility with a generation capacity of more than 10 megawatts, that either: (a) generates electric power by the use of a renewable energy resource; (b) generates useful, measurable combined heat and power derived from a renewable energy resource; or (c) is a solar thermal energy facility.

Renewable Energy and Energy Efficiency Portfolio Standard - On August 20, 2007, Governor Mike Easley signed Senate Bill 3 and North Carolina became the 25th state - and the first in the Southeast - to enact a mandatory renewable energy and energy efficiency portfolio standard (REPS) into law. The new law requires North Carolina electric utilities to include renewable energy and energy efficiency in their electric generation portfolios. They must do this by ensuring that a percentage of the electricity they sell is created through the use of renewable energy resources or energy efficiency measures. For NC, the REPS requirement for investor-owned utilities is 12.5% and 10% for municipal power companies and electric cooperatives by 2021 and beyond. There are several options for these power companies to comply with the REPS standard, including; using renewable resources to generate power at new or existing power plants, purchasing Renewable Energy Certificates (RECs) from renewable energy facilities,(in state or out of state) or implanting energy efficiency measures to reduce demand.

Renewable Energy Resource – A solar electric, solar thermal, wind, hydropower, geothermal, or ocean current or wave energy resource; a biomass resource, including agricultural waste, animal waste, wood waste, spent pulping liquors, combustible residues, combustible liquids, combustible gases, energy crops, or landfill methane; waste heat derived from a renewable energy resource and used to produce electricity or useful, measurable thermal energy at a retail electric customer's facility; or hydrogen derived from a renewable energy resource. "Renewable energy resource" does not include peat, a fossil fuel, or nuclear energy resource.

Retrofit - Green retrofit, home energy retrofit, home retrofit, Deep energy retrofit and home performance retrofit are terms with overlapping meaning for retrofits that ensure the maintenance and preservation of buildings and the continued operation and maintenance of energy efficiency technologies. The meaning ranges from steps home owners can do themselves to buying up distressed properties and making them

certifiably green. In the United States, the DOE issued a solicitation for $390 million for a "Retrofit Ramp-Up" program.

Return on Investment - Return on investment (ROI) is the concept of an investment of some resource yielding a benefit to the investor. As a performance measure, it is used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. In purely economic terms, it is one way of considering profits in relation to capital invested.

SEER - The efficiency of air conditioners is often rated by the Seasonal Energy Efficiency Ratio (SEER) which is defined by the Air Conditioning, Heating and Refrigeration Institute in its standard ARI 210/240, *Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment*. The SEER rating of a unit is the cooling output during a typical cooling-season divided by the total electric energy input during the same period. The higher the unit's SEER rating the more energy efficient it is. In the U.S., the SEER is the ratio of cooling in British thermal unit (BTU) to the energy consumed in watt-hours. The coefficient of performance (COP), a more universal dimensionless measure of efficiency, is discussed in the following section.

Shading Coefficient - Shading coefficient is a value that determines one type of thermal performance of a glass unit (panel or window) in a building. It is basically the ratio of solar gain (due to direct sunlight) passing through a glass unit to the solar energy which passes through 3mm Clear Float Glass. It is referred to as an indicator to how the glass is thermally insulating (shading) the interior when there is direct sunlight on the panel or window. The shading coefficient (SC) depends on the color of glass and degree of reflectivity. It also depends on the type of reflective metal oxides for the case of reflective glass.

Sick Building Syndrome - Sick building causes are frequently pinned down to flaws in the heating, ventilation, and air conditioning (HVAC) systems. Other causes have been attributed to contaminants produced by off gassing of some types of building materials, volatile organic compounds (VOC), molds (see mold health issues), improper exhaust ventilation of ozone (byproduct of some office machinery), light industrial chemicals used within, or lack of adequate fresh-air intake/air filtration (see Minimum Efficiency Reporting Value). Symptoms are often dealt with after the fact by boosting the overall turn-over rate of fresh air exchange with the outside air, but the new green building design goal should be able to avoid most of the SBS problem sources in the first place, minimize the ongoing use of VOC cleaning compounds, and eliminate conditions that encourage allergenic mold growth.

Smart grid – An intelligent electric utility grid containing the following attributes: adaptive, self-healing; predictive and proactive; optimized capacity utilization and system performance; interactive with consumers and markets; and enterprise integration of information.

Solar Azimuth Angle – The horizontal angle between a reference direction (typically due south in the Northern Hemisphere; South=180 degrees) and the sun.

Solar Collector - A solar thermal collector is a solar collector designed to collect heat by absorbing sunlight. A collector is a device for converting the energy in sunlight, or solar radiation, into a more usable or storable form. This energy is in the form of electromagnetic radiation from the infrared (long)

to the ultraviolet (short) wavelengths. The quantity of solar energy striking the Earth's surface averages about 1,000 watts per square meter under clear skies, depending upon weather conditions, location, and orientation of the surface. The term solar collector refers to solar hot water panels, but may also refer to more complex installations such as solar parabolic apparatus, solar troughs, and solar towers; or less complex installations such as solar air heat. Solar power plants usually use the more complex collectors to generate electricity by heating water to produce steam which drives a turbine connected to an electrical generator. The less complex collectors are typically used in residential and commercial buildings for supplemental space heating, perpendicular to the sun's rays.

Solar Irradiance – The power of solar radiation per unit area. Ex: 1000 Watts per square meter.

Solar Irradiation – The total amount of solar energy accumulated on an area over time. Ex: 1000 Watts per hour per square meter.

Solar Water Heating - Solar water heating (SWH) or solar hot water (SHW) systems comprise several innovations and many mature renewable energy technologies that have been well established for many years. In a "close-coupled" SWH system the storage tank is horizontally mounted immediately above the solar collectors on the roof. No pumping is required as the hot water naturally rises into the tank through thermosiphon flow. In a "pump-circulated" system the storage tank is ground- or floor-mounted and is below the level of the collectors; a circulating pump moves water or heat transfer fluid between the tank and the collectors.

Spectrally Selective Glazing - Spectrally selective glazing is window glass that permits some portions of the solar spectrum to enter a building while blocking others. This high-performance glazing admits as much daylight as possible while preventing transmission of as much solar heat as possible.

SREC – Solar Renewable Energy Credit, a certificate representing one mega-watt-hour of electricity generated from a renewable energy source.

Stack Effect - Stack effect is the movement of air into and out of buildings, chimneys, flue gas stacks, or other containers, and is driven by buoyancy. Buoyancy occurs due to a difference in indoor-to-outdoor air density resulting from temperature and moisture differences. The result is either a positive or negative buoyancy force. The greater the thermal difference and the height of the structure, the greater the buoyancy force, and thus the stack effect.

Superwindow – A window with a very low U-Value achieved through the use of multiple glazings, low-e coatings, and gas fills. A gas fill is the use of an inert gas, usually Argon or Krypton, placed between sealed panes of glazing in order to provide resistance to heat flow.

Supply-Side Management – Activities conducted on the utility's side of the customer meter. Activities designed to supply electric power to customers, rather than meeting load though energy efficiency measures or on-site generation on the customer side of the meter.

Sustainability - Sustainability is the capacity to endure. In ecology the word describes how biological systems remain diverse and productive over time. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. For humans, sustainability is the potential for long-term

maintenance of well-being, which has ecological, economic, political and cultural dimensions. Healthy ecosystems and environments are necessary to the survival and flourishing of humans and other organisms. There are a number of major ways of reducing negative human impact. The first of these is environmental management. This approach is based largely on information gained from earth science, environmental science and conservation biology. The second approach is management of human consumption of resources, which is based largely on information gained from economics. A third more recent approach adds cultural and political concerns into the sustainability matrix.

Steam Electric Power Plant (Conventional) – A plant in which the prime mover is a steam turbine. The steam used to drive the turbine is produced in a boiler where fossil fuels are burned.

Tank-Less Water Heaters – Tank-less water heaters, also known as demand-type or instantaneous water heaters, provide hot water only as it is needed. They don't produce the standby energy losses associated with storage water heaters, which can save you money. Tank-less water heaters heat water directly without the use of a storage tank. When a hot water tap is turned on, cold water travels through a pipe into the unit. Either a gas burner or an electric element heats the water. As a result, tank-less water heaters deliver a constant supply of hot water. You don't need to wait for a storage tank to fill up with enough hot water. However, a tank-less water heater's output limits the flow rate.

Thermal Mass - Thermal mass is a concept in building design that describes how the mass of the building provides "inertia" against temperature fluctuations, sometimes known as the thermal flywheel effect. For example, when outside temperatures are fluctuating throughout the day, a large thermal mass within the insulated portion of a house can serve to "flatten out" the daily temperature fluctuations, since the thermal mass will absorb thermal energy when the surroundings are higher in temperature than the mass, and give thermal energy back when the surroundings are cooler, without reaching thermal equilibrium. This is distinct from a material's insulative value, which reduces a building's thermal conductivity, allowing it to be heated or cooled relatively separate from the outside, or even just retain the occupants' thermal energy longer.

Thermostatic Expansion Valve - A thermal expansion valve (often abbreviated as **TEV**, **TXV**, or **TX valve**) is a component in refrigeration and air-conditioning system that controls the amount of refrigerant flow into the evaporator thereby controlling the superheating at the outlet of the evaporator. Thermal expansion valves are often referred to generically as "metering devices".

Time-of-Use (TOU) Rates – Electricity prices that vary depending on the time periods in which the energy is consumed. In a time-of-use rate structure, higher prices are charged during utility peak-load times. Such rates can provide an incentive for consumers to curb power use during peak times.

Triple Bottom Line - The triple bottom line (also known as people, planet, profit or "the three pillars") captures an expanded spectrum of values and criteria for measuring organizational (and societal) success: economic, ecological, and social.

Value Engineering - Value engineering (VE) is a systematic method to improve the "value" of goods or products and services by using an examination of function. Value, as defined, is the ratio of function to cost. Value can therefore be increased by either improving the function or reducing the cost. It is a primary tenet of value engineering that basic functions be preserved and not be reduced as a consequence of pursuing value improvements. Value engineering is sometimes taught within the project management or industrial engineering body of knowledge as a technique in which the value of a system's outputs is optimized by crafting a mix of performance (function) and costs. In most cases this practice identifies and removes unnecessary expenditures, thereby increasing the value for the manufacturer and/or their customers.

Ventilated Façade – This is a system of a building consisting of two skins placed in such a way that air flows in the intermediate cavity. The ventilation of the cavity can be natural, fan supported or mechanical. Apart from the type of the ventilation inside the cavity, the origin and destination of the air can differ depending mostly on climatic conditions, the use, the location, the occupational hours of the building and the HVAC strategy.

Volatile Organic Compounds - Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions.

Weatherization - Weatherization is the practice of protecting a building and its interior from the elements, particularly from sunlight, precipitation, and wind, and of modifying a building to reduce energy consumption and optimize energy efficiency. Weatherization is distinct from building insulation, although building insulation requires weatherization for proper functioning. Many types of insulation can be thought of as weatherization, because they block drafts or protect from cold winds. Whereas insulation primarily reduces *conductive* heat flow, weatherization primarily reduces *convective* heat flow. In the United States, buildings use one third of all energy consumed and two thirds of all electricity. Due to the high energy usage, they are a major source of the pollution that causes urban air quality problems and pollutants that contribute to climate change. Building energy usage accounts for 49 percent of sulfur dioxide emissions, 25 percent of nitrous oxide emissions, and 10 percent of particulate emissions.

Weatherization Assistance Program - The Weatherization Assistance Program (WAP) enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. Funds are used to improve the energy performance of dwellings of needy families using the most advanced technologies and testing protocols available in the housing industry. The U.S. Department of Energy (DOE) provides funding to states, U.S. overseas territories, and Indian tribal governments, which manage the day-to-day details of the program. These governments, in turn, fund a network of local

community action agencies, nonprofit organizations, and local governments that provide these weatherization services in every state, the District of Columbia, U.S. territories, and among Native American tribes.

Wind Turbine - A wind turbine is a device that converts kinetic energy from the wind, also called wind energy, into mechanical energy; a process known as wind power. If the mechanical energy is used to produce electricity, the device may be called a wind turbine or wind power plant. If the mechanical energy is used to drive machinery, such as for grinding grain or pumping water, the device is called a windmill or wind pump. Similarly, it may be referred to as a wind charger when used for charging batteries.

Xeriscaping - Xeriscaping and xerogardening refer to landscaping and gardening in ways that reduce or eliminate the need for supplemental water from irrigation. It is promoted in regions that do not have easily accessible, plentiful, or reliable supplies of fresh water, and is gaining acceptance in other areas as climate patterns shift.

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"We are like tenant farmers chopping down the fence around our house for fuel when we should be using Nature's inexhaustible sources of energy — sun, wind and tide. ... I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that." Thomas A. Edison (1847-1931) American Inventor