



Go Green Initiative

We're a school system of choice and our choice is Green

# Cumberland County Schools Sustainability Report 2012



*sustainable*  
SANDHILLS 



# Cumberland County Schools Sustainability Report 2012

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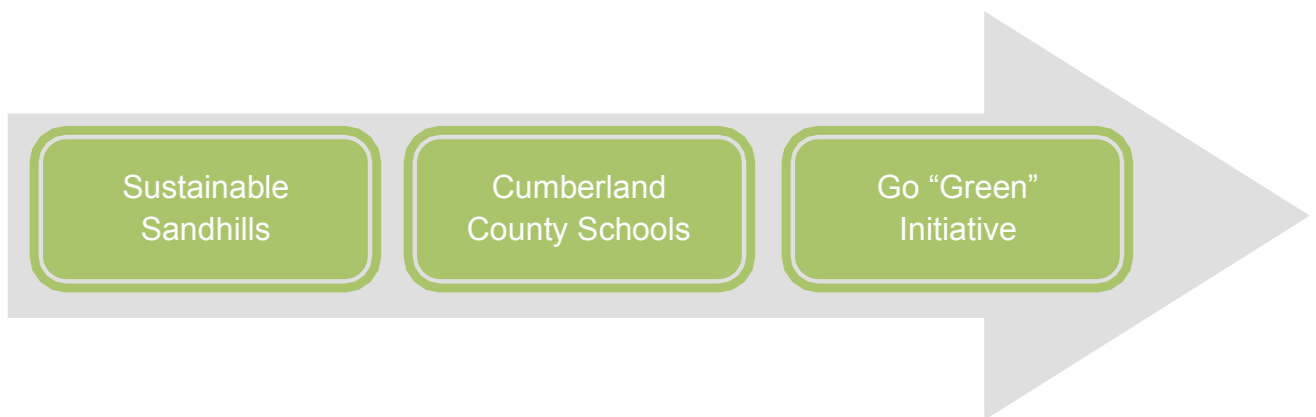
**Updated November 2012:** This report was developed by the Operations Department in conjunction with Sustainable Sandhills as an annual summary of sustainable practices in CCS daily operation. Copies of this report are available on the CCS website <http://www.operations.ccs.k12.nc.us/> or <http://gogreen.ccs.k12.nc.us/>

## TABLE OF CONTENTS

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Page 3	Letter from the Superintendent
Page 4	Letter from the Executive Director of Sustainable Sandhills
Page 5	Executive Summary
Page 6	Go “Green” Initiative
Page 8	Awareness and Education
Page 14	Pollution Control
Page 16	Waste Reduction and Recycling
Page 17	Water Conservation and Efficiency
Page 18	Energy Conservation and Efficiency

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## LETTER FROM THE SUPERINTENDENT

*Hello Cumberland County!*

*“Do one thing” to help the environment, speaks volumes for those who are trying to turn our culture toward more sustainable attitudes, actions and future. The Alliance for Climate Education (ACE) website is only one of several quality websites that highlight the actions of individuals who “do one thing” to protect the environment. Here at Cumberland County Schools (CCS), our Go “Green” Initiative, adopted in 2009, is right there in the forefront of these movements. This program provides information and strategies to reduce the CCS carbon footprint and an infrastructure to support successful sustainable programs in the schools.*

*Our practice of sustainability did not begin in 2009, but much earlier, as our system looked for ways to manage tight school budgets. Today, the Go “Green” Initiative has allowed us to develop a more comprehensive program that supports environmental education and awareness through sustainable practice. It has become ingrained in the way we do business. We believe that if we do not observe environmentally friendly behaviors the future will be less than what we hope for our children.*

*In 2009, North Carolina passed legislation that prohibits a variety of recyclable materials in the landfill. In 2011, this legislation was expanded again. In compliance with this, it has become important to pay attention to what we put into our trash cans. Supporting our Go “Green” Initiative begins with recycling the vast amount of waste we generate. Sixty to ninety percent of classroom waste can be recycled. It not only saves money, but it makes sense to repurpose, reuse and recycle the resources we had previously been throwing in our landfill. In addition, it is the law. “Do one thing”.*

*Measures outlined in this report show how conservation practices in electricity, water, and other fuels are making a difference in our community of schools. Our New Century Schools are our newest schools. New Century International Elementary was designed LEED (Leadership in Energy and Environmental Design) certified and New Century International Middle was designed with a kilowatt demand limiting ice storage chiller system and natural light plan. Our Child Nutrition Services are part of the “Farm to Table” Initiative and their recycling practices are impeccable. Our Transportation Department is reducing the impact our buses have on our environment through mechanical and routing improvements. Our Technology Department continues to make great strides toward reducing electrical consumption through new processes and equipment. Elementary schools are increasing the use and purpose of school gardens. Schools are using recycling bins in the classroom and have Green Teams to help support the program’s concepts. We have a Green Technology Academy from middle school through high school that includes a demonstration solar array located at the middle school.*

*There are many sustainable success stories in Cumberland County Schools and it is our hope that by sharing these stories, we can encourage others to join us and “do one thing” right for the environment.*

*Thanks,*

*Dr. Frank Till  
Superintendent,  
Cumberland County Schools*

## LETTER FROM THE EXECUTIVE DIRECTOR SUSTAINABLE SANDHILLS

Greetings!

*In March of 2009, community leaders and concerned citizens joined together to develop strategic initiatives for ten objectives supporting Fayetteville's drive to be one of the top ten cities to live in the U.S. The eighth objective to Grow a "Green" Community challenged businesses, health care facilities, schools and universities in the community to become certified as "Green" businesses. In response to the community challenge to Grow a Green Community, Cumberland County Schools adopted The Go "Green" Initiative (GGI), a grassroots program that teaches students personal responsibility for the earth and helps schools evaluate every aspect of their environmental impact.*

*From this, a partnership with Sustainable Sandhills developed that continues today. Together we developed a "Green" Schools check list that supports five principles: Awareness and Education, Energy Conservation/Efficiency, Water Conservation/Efficiency, Pollution Control and Waste Reduction/Recycling. Through grant funding and energy savings dollars, Sustainable Sandhills has provided a "Green" Schools Coordinator to oversee this program and work at all levels within the schools to facilitate the "greening" process.*

*Forty-two Cumberland County School facilities have now been "Green" certified through Sustainable Sandhills. Others are working hard to attain this status. What does it mean to be a "Green" school? It means the school is recycling most of the waste produced, it means they are conserving energy – eliminating personal refrigerators and other unnecessary plug-in loads, replacing all incandescent lighting with compact fluorescent, cutting off computers at night, being conscientious of the way heating and air conditioning is operated. It means the school encourages bus ridership, carpooling and walking to reduce carbon emissions. It means the school uses curriculum guidelines to incorporate ecological activities in their lessons, conserves water by using rain barrels for irrigation, and plants gardens with edible plants and plants native to the region. It means the school reduces exposure to toxins by using "Green Seal" certified cleaning products, makes it a practice to use two-sided copying, purchases bio-degradable products and products containing recycled content. These schools will not tell you that being "Green" is easy but they will tell you that teaching students environmental responsibility is the right thing to do.*

*We want to thank Cumberland County Schools for leading this community in their support of the 8th objective to Grow a "Green" Community. This natural partnership between sustainability and education brings children and public education into the necessary fold of sustainability. This is quite a feat. Thanks to a visionary school board and school leadership, Cumberland County Schools has much for which to be proud.*

*Sincerely,*

*Kelly Bah  
Executive Director  
Sustainable Sandhills*

## Executive Summary

Kathy Miller, Director Operations, Cumberland County Schools

The Go “Green” Initiative has continued to flourish under the direction of Gloria Lengel, Green School Coordinator with Sustainable Sandhills. Our partnership with this non-profit organization has afforded us great opportunity to influence change in our schools and develop a social awareness about an important issue which not only affects the way that we live and do business today but can have lasting effects on our world environment for years to come. There are a variety of reasons why a school system should promote eco-friendly living and sustainable practices: (1) We have a moral obligation to protect our environment and natural resources for future generations (2) Eco-friendly living creates a healthier learning environment; and (3) Sustainable practice improves efficiency, reduces waste and saves tax dollars.

Many options and choices exist for public schools to use natural resources more efficiently, to reduce, reuse, and recycle, to follow healthy, high-performance construction guidelines, to produce healthy lunches, to reduce carbon emissions, to eliminate exposure to toxic chemicals and to protect our global environment. There is also tremendous opportunity to teach children about environmental responsibility and sustainable living and to support students in becoming leaders in making their own school a healthier, more ecologically friendly place. Teachers across Cumberland County are using the Go “Green” Initiative as a catalyst for interdisciplinary learning that connects students to their school, community and the environment, and empowers them to spread solutions beyond their campus.

In addition, our central service staffs are united in an effort to support our schools in this endeavor through a variety of efforts, many of which are outlined in this document. We encourage everyone to become involved as we continue on our journey to become better stewards of our earth’s natural resources.



Go Green Initiative

We're a school system of choice and our choice is Green

# Go “Green” Initiative

Green school operation is the most effective agent for enacting significant positive environmental and educational change in schools and communities. For Cumberland County Schools, school greening is becoming more than a trend; rather it is now the method of choice for providing healthy, comfortable and productive learning environments while saving energy, resources and money.



Go Green Initiative  
We're a school system of choice  
and our choice is Green



The CCS Go “Green” Initiative (GGI) was implemented to provide a reportable framework by which we can monitor and initiate sustainable practices that will improve the health and energy-efficiency of our schools. In the process, we are encouraging and supporting science-based environmental and civic education in the classroom. The GGI focuses on five comprehensive principles:

- *Awareness/Education: Promoting sustainable practices by integrating activities into the student’s lesson plans and by communicating, celebrating and awarding positive change.*
- *Pollution Control: Focusing on alternatives in transportation, cleaning, pest management and storm water control with the least potential impact on human health and the environment.*
- *Waste Reduction/Recycling: Promoting the efficient use of materials and the reuse or recycling of discarded materials.*
- *Water Conservation/Efficiency: Seeking to reduce water consumption through the use of efficient equipment and conservative practices.*
- *Energy Conservation/Efficiency: Following the Cumberland County Schools Conservation/Incentive Plan.*

In the spring of 2009, Sustainable Sandhills partnered with the Cumberland County Schools to begin

certifying our schools as “Green Schools”. Sustainable Sandhills is a local non-profit dedicated to making the communities of the Sandhills region sustainable for current and future generations. Today, there are 40 certified Green Schools and 2 certified central services buildings. Our Board of Education endorses this program and encourages schools to seek Green certification through Sustainable Sandhills.



### CERTIFIED GREEN SCHOOLS/BUILDINGS

Operations Center	Collier Elem	Hall Elem	Souders Elem
E.R.C.	Cumberland Road Elem	Honeycutt Elem	South View High
Alderman Elem	District 7 Elem	Ireland Drive Middle	Spring Lake Middle
Ashley Elem	Easom Elem	Jones Middle	Stedman Primary
Auman Elem	Ferguson Easley Elem	Long Hill Elem	Vanstory Hills Elem
Baldwin Elem	Fuller PLC High	Martin Elem	Walker-Spivey Elem
Beaver Dam Elem	Gallberry Farm Elem	Miller Elem	Westover High
Berrien Elem	Glendale Acres Elem	Morganton Road Elem	Williams Middle
Black Elem	Gray's Creek Elem	New Century Int'l Elem	Willis Elem
Cape Fear High	Gray's Creek High	Owen Elem	
Cashwell Elem	Gray's Creek Middle	Seventy-First High	

Twenty-three schools are in the process of completing the requirements for Green Certification this year.

Information regarding this program can be found at <http://gogreen.ccs.k12.nc.us/> .





## AWARENESS AND EDUCATION

Probably one of the most important components of the Go “Green” Initiative is Awareness and Education. This principle gives students the opportunity to practice environmental responsibility, conservation of resources, recycling and to explore hands-on solutions for a sustainable future. Engaging students in real world problem solving and sustainable practices is reflected in the philosophy of the North Carolina Department of Public instruction’s curriculum as stated below.

...the challenge of education is to prepare students for a rapidly changing world. Students in modern society must be prepared to:

- Compete in a global economy
- Understand and operate complex communication and information systems, and
- Apply higher level thinking skills to make decisions and solve problems (Instruction, 2008)

Integrating sustainable practices into the curriculum, (and the curriculum into sustainable practices):

- Mirrors the real world in which we live
- Motivates students by making learning relevant to their personal lives
- Adds coherence to vast amounts of information by making connections among disciplines
- Fosters collaboration among students and teachers (Instruction, 2008)

Some of the most dynamic programs in our schools are those that have Student Green Teams. Students, given the autonomy to help in the process of finding solutions for conservation and recycling, have a refreshing, outside the box approach. Early involvement in this program allows young students to carry these lessons forward as they advance, taking solutions with them and refining them as they grow older. As they understand the significance of their conservation practices at school, this translates to their home and community at large. The Go “Green” Initiative incorporates the tenants of environmental education, which are:

... a resource that transcends the classroom—both in character and scope. Regardless of where, how or to whom it’s provided, the end goal is the same: environmental literacy. More than ever, children and adults need to know how ecological systems work and why they matter. Some people have become so disconnected from the natural resources that sustain them; they don’t know where their food comes from or where they get their drinking water. People require knowledge, tools and sensitivity to successfully address and solve environmental problems in their daily lives. The health of the environment is inseparable from humans’ well-being and economic prosperity. Environmental education is a lifelong process for the learner. Those who provide environmental education in classrooms and who serve the public at parks, museums and nature centers are a powerful presence in North Carolina (Education, 2012). \*





SOLAR AWNING

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 Edison, 1931*

## Douglas Byrd Middle School Solar Array and the Douglas Byrd High School Academy of Green Technology

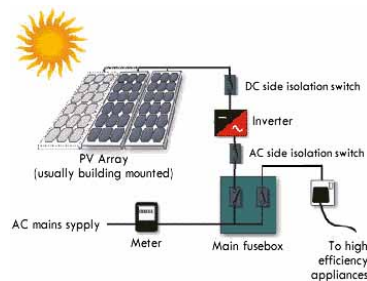
August 2011 saw the dedication of an educational photovoltaic (PV) solar awning at Douglas Byrd Middle School. This addition was made possible through a \$10,000 Youth Growth Stock Trust grant from United Way. The installation of the solar array aligned the middle school with Douglas Byrd High School as it becomes the Career and Technical Education Academy of Green Technology. This two kilowatt system is tied to the school's electrical grid and is the perfect way to introduce middle school students to renewable energy. Students can monitor the dashboard display in the school lobby to observe real-time solar generation. Students graduating from Douglas Byrd Middle have the opportunity to apply to the new Academy of Green Technology that began with the 2011-2012 school year at Douglas Byrd High. This project acts as a stepping stone for middle school students to peak their interest in the academy and to introduce them to the possibility of green careers.

"Every minute enough solar energy hits the earth to power the entire world for one year. Is that not a staggering thought?" *American Solar Energy Society*

### Academy of Green Technology



The Academy of Green Technology at Douglas Byrd High School provides students with high-quality interdisciplinary learning experiences with an emphasis on STEM concepts. Students enrolled in this program explore renewable energy alternatives and explore conservation practices. Students have the opportunity to earn four certifications upon completion: **ETA** certified Solar PV Installer, **RESNET** certification in Energy Auditing, **Electrical/Electronics Technology (FTCC)**, and **Microsoft Office Specialist**.





### Bees Go to School on Career Day

Bees are visiting this school to teach a lesson about sustainability and to get young



learners to think about the impact humans have on other species in our environment. Pollination and insect behavior are a part of the elementary curriculum. Bringing a beekeeper to the classroom connects the learner to the lesson. It is great for students to get up close and personal without the lesson being painful.

### Earth Day Activities



Whether it was a special assembly of songs about how precious and finite is our Earth, making a pledge on an Earth Day Quilt, or making recycled jewelry, schools throughout Cumberland County honored this important day when we make a celebrated effort to reduce, reuse, recycle and conserve.

### Lake Rim Water Quality Classes



This allowed them to actively participate in an environmental discussion of Lake Rim's water quality.

Nick Jerald's students were treated to a day of exploring the water quality of Lake Rim. With the support of our Green Schools Coordinator, Gloria Lengel and the Lake Rim Park Ranger Amber Williams, students found out what scientists actually do when evaluating water quality. Students developed their technical skills by using equipment to chemically measure water quality, observational skills to find organisms that are aquatic indicator species and interpretive skills to



Hi Gloria,

Our science initiative was successful this year. We made great growth. Our scores went from 47% - 65.5 % for eighth grade. Your contribution was valuable.

Thanks,  
Naydne Wilds-Gilbert

--email May 29, 2012

### Summer Environmental Education

North Carolina (NC) is one of only a few states which has a certification program for Environmental Education (EE). This is available to both formal and non-formal educators. Courses were offered locally during the summer of 2012 that introduced Cumberland County educators to the NC EE certification program. Classroom space, curriculum materials and presenters were provided in cooperation with Cumberland County Schools, Sustainable Sandhills, Cumberland County Soil and Water Conservation, Fayetteville Parks and Recreation, Lake Rim Park and the John Pechmann Fishing Education Center. Outdoor learning trips to Ravenrock and Lake Waccamaw were also offered.

### School Gardens – Planning, Planting and Picking

Grants have provided many schools with monies to build raised bed gardens on school grounds. Students are introduced to the fundamentals of gardening as lessons in science, math, and cultural history are conveyed through hands-on experience.



## Tree Plantings



April 16, 2011, marked a day of devastation in Cumberland County. Among the many properties damaged by the swath of tornadoes, which tore through our community, was Benjamin Martin Elementary School. The damage was extensive enough that students were unable to complete the school year at Ben Martin. The good news is that Ben Martin was back in operation for 2011-12 school year. The school and grounds were cleared, cleaned, and repaired; the marks of the tornado were not obvious until looking at the skyline behind Ben Martin. It is easy to see something is missing, and it was the trees. The mark of devastation was visible in the missing

mature trees that gave shade, stabilized the soil, and added a vital resource for teaching as well as beauty to the school grounds. Last year, Ben Martin was awarded various native trees by Fayetteville Beautiful. The spring day chosen for the tree planting was warm and the celebration extended through the day; as students and staff took turns helping Fayetteville Beautiful volunteers, the City of Fayetteville tree crew and CCS Operations workers plant trees.

This fall, a grant through the North Carolina Urban Forest Council allowed Ben Martin to add additional trees to provide a buffer between the school and the neighborhood.

Seventy-First High and Terry Sanford High were also recipients of a grant from Fayetteville Public Works Commission to satisfy the city's Tree Protection Standard. In order to replenish trees that have been removed to protect power lines, additional trees have been planted at these schools. Students from these schools were involved in the planning and planting process and will be responsible for the long-term maintenance and care of the trees. In addition, educational seminars will continue to be offered to support the planting activities and discuss the benefit of planting trees in urban communities.

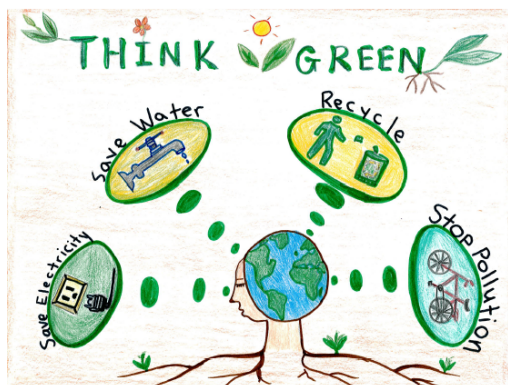


## Alliance for Climate Education (ACE)

ACE, is a national nonprofit supporting climate awareness. This organization uses an award winning presentation to introduce high school students to the science behind climate change and inspire them to work towards practical solutions. They provide a framework and leadership classes for students to start carbon cutting projects in their school and community. "Do One Thing" to create a wave of change and reduce our carbon footprint.

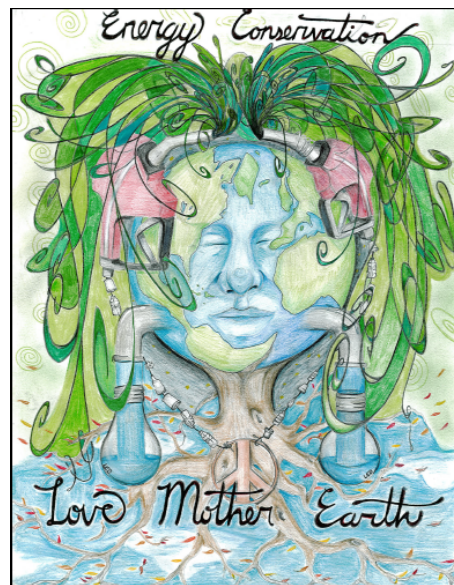



## Energy Awareness Poster Contest



October is 'Energy Conservation Month'. Students and teachers are encouraged to discuss energy conservation as they participate in the Poster Art

and Slogan contest. Sixteen students are chosen from elementary, middle and secondary entries to hang their creations in the Board Room and each first through third place winner receives a monetary award just in time for Christmas. The competition is stiff and the entries are judged by local artists.





**Go Green Initiative**  
We're a school system of choice  
and our choice is green.

**GGI NEWSLETTER**  
**APRIL 2012**

It's Earth Day!!

"Mobilize the Earth"

**1 billion people - 192 countries**

68% of the world's population  
A Billion Acts of Green

**Pledge an Act of Green.**

- ✓ Bike to work.
- ✓ Ask clergy to deliver an Earth Day sermon.
- ✓ Plant a garden at home or school.
- ✓ Call upon your legislator to discuss green.
- ✓ Get a home energy audit.
- ✓ Change out light bulbs.
- ✓ Eliminate the use of pesticides and toxic chemicals in your home.
- ✓ Improve your inside air quality by using green certified cleaning products.
- ✓ Teach solar cooking.
- ✓ Eat more local foods.
- ✓ Help children make rainbows of healthy fruits and vegetables on their school trays each day.
- ✓ Defend our backyards and green spaces for our future.
- ✓ Make informed decisions for finding, developing and accessibility to sources of energy.
- ✓ Organize an Earth Day event.

**What is a Green School?**

Green Schools are the most effective agents for enacting significant positive environmental and educational change in schools and communities. School greening is quickly becoming more than a trend; rather, it is now the method of choice for providing healthy, comfortable and productive learning environments while saving energy, resources and money.

A green school improves the health and energy-efficiency of the school facility, ensures science-based environmental and civic education in the classroom, implements healthy food choices into the cafeteria, promotes alternative means of transportation, and expands recreational choices and opportunities for all students.

The benefits of green schools are now well established and range from significant reductions in greenhouse gases to impressive energy cost savings. Improved student test scores and higher teacher and student retention, as well as very impressive improvements in children's health. Studies have demonstrated that green schools greatly reduce student sick days, significantly improve the health of students with diabetes, asthma and other respiratory illnesses, reduce social inequity, enhance student motivation in both the short and long term, and provide an educationally rich setting.

Despite what many people think, green schools cost on average less than 2% more to build than a traditional school, yet the payback often occurs within only a few years due to the energy savings alone. A green school typically utilizes 33% less energy and 32% less water – enough savings to hire two additional full-time teachers.

Ultimately greening America's schools presents an extraordinary cost-effective opportunity to improve the health and educational settings for all students, increasing school equality and competitiveness while reducing long-term health and operational costs.

Source: <http://edu.earthday.org/about/what-is-a-green-school>

## Getting the Word Out

Every month an electronic newsletter is sent to Green School team leaders, custodians and principals chocked full of Green information, grant ideas, and other resources to assist schools in the pursuit of sustainable practice and hands-on curriculum integration. With the update of the CCSs website, web-based offerings for the Go "Green" Initiative were expanded. Teachers, students, and parents are encouraged to go to this site for events, classes, projects, grant information, newsletters, and curriculum materials. This site can be used as a springboard for anyone interested in sustainable living and environmental stewardship. Also included is information about our Green Schools, including pictures and statistics on our district-wide effort to conserve our natural resources and reduce waste.

# Energy Break

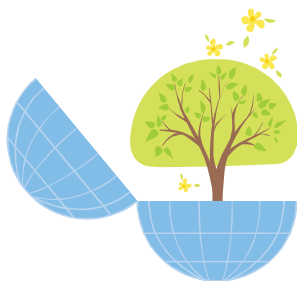
## Conservation Opportunities

As part of the Go “Green” Initiative, schools are encouraged to completely shut down equipment during the spring, winter, and intercession breaks. This challenge includes unplugging computers and televisions and defrosting and cleaning out personal compact refrigerators. In the summer, school custodial personnel are provided a check sheet to help them evaluate summer building operation. By engaging in this type of practical no-cost solutions, CCS is able to save thousands of utility dollars every year.

## POLLUTION CONTROL

The use of fuels leads to emissions of carbon dioxide (CO<sub>2</sub>) and small quantities of other greenhouse gases – including methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). By reducing electricity usage by 4,935,602 kWh and natural gas usage by 311,228 therms in the 2011-2012 school year, CCS reduced CO<sub>2</sub> emissions by 4,959 metric tons.

Reducing CO<sub>2</sub> emissions by 4,959 metric tons is equal to:



Carbon sequestered by 127,167 tree seedlings grown for 10 years.

The annual green-house gases emissions from 972 passenger vehicles.



### Transportation



There are over 500 publicly owned school buses, transporting over 28,000 school age children over 4.5 million miles annually in Cumberland County. These buses are diesel-fueled, with high amounts of exhaust emissions. Although school buses are one of the safest means of transporting children to and from school, emissions from diesel-powered school buses constitute a serious health risk to children. While it is true that breathing diesel exhaust has health implications for everyone, children are much more susceptible to this pollution than healthy adults because they breathe more air relative to their body weight and their respiratory systems are still developing.

The Transportation Department is becoming more environmentally

friendly. Between 2006 and 2011, through a series of State and Federal grants, all non-emissions equipped schools buses had a diesel oxidation catalyst and closed crank case ventilation system installed on them. The installation of this equipment helped to reduce the density per cubic centimeter of internal diesel emissions. This helped to improve the air quality inside the bus and reduce the pollutants into the environment.

Transportation has also improved the quality of air in the bus parking lot and at the school by ensuring that buses are not idling for more than five minutes, also putting stickers on the buses to remind the drivers of the idling policy. We ensure that the buses are not parking close to the school building. Signs have been posted where parents park to pick up their child, reminding them to shut off their engines while waiting for dismissal. All of the above are part of our campaign to reduce emissions and improve air quality around the outside Cumberland County Schools.

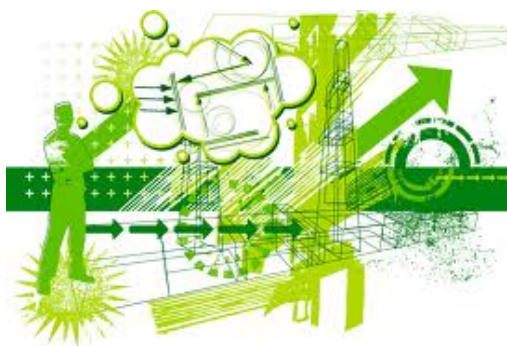
Over the past several years, the Transportation Department has made several changes to ensure that CCS is more energy efficient and climate friendly. Using the TIMS (Transportation Information Management System) routing system, transportation supervisors have worked hard to reduce the number of buses on the road while transporting more students to more schools. Bus routes have been consolidated and re-routed to ensure the buses are not crossing over each other during their routes. Transportation has reduced the number of stops on each route by creating corner stops. This helps to reduce the number of route start/stops; thereby, conserving fuel and time. We are putting into place a system that enables us to have GPS units on each bus. This will aid in our continued effort to make routing adjustments to improve transportation efficiency.

### **Integrated Pest Management**

In compliance with G.S. 115C-47, the CCS BOE approved a new policy regarding Integrated Pest Management (IPM). IPM is a comprehensive approach that combines prevention, surveillance, and environmentally sound methods to prevent and solve pest problems. The goal of IPM is to protect human health by adequately controlling pest populations and reducing human exposure to pesticides. Spraying is done when and where monitoring has indicated that pests will cause health risk or medical injury and no other method of control is considered effective.

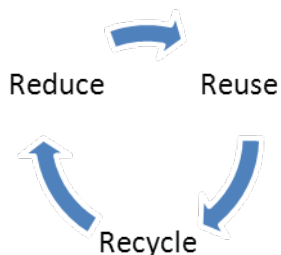
### **Green Products**

In making purchasing decisions, CCS often considers the environmental impact of the purchase. It is recognized that buying green has a positive impact on health and the environment. Therefore, CCS purchases products that contain recycled content or emit fewer toxins. Many school custodians use environmentally friendly cleaning products to help improve indoor air quality and reduce the health problems associated with traditional cleaning supplies. Sustainable building products and energy efficient appliances and equipment are standardized in new construction and renovation. Buying green signals that CCS cares about the health and safety of our students and staff.





# WASTE REDUCTION AND RECYCLING



Prior to the initiation of the Go “Green” Initiative, the district recycling program suffered from lack of infrastructure. The encompassing nature of this program facilitates system-wide recycling and materials conservation. One of the most visible demonstrations of the Go “Green” Initiative is the recycling. This not only occurs in the classroom but is successfully modeled by cafeteria personnel and other departments committed to this sustainable practice. Items such as televisions and computer equipment are recycled through the GOVDEALS resale opportunity. Batteries, ballasts, fluorescent lamps, ceiling tile and other building products are also recycled when opportunity exists.



Cumberland County Solid Waste Management (CCSWM) provides free recycling to every public school located in Cumberland County. Blue bins have been provided by CCSWM for recyclable paper, newsprint, plastic bottles, and aluminum cans. In addition, cardboard dumpsters have been provided to each school for cardboard waste. The CCSWM recycling program enables CCS to comply with recent North Carolina statutes

The Bag Monster visits schools for the “Bag the Bag” Competition sponsored by Fayetteville Beautiful, a nonprofit, combining education with hands-on stewardship to make our community cleaner, greener, and more livable.

banning a large variety of recyclable materials from the landfill. The CCSI recycling effort saves money and saves county landfill space.

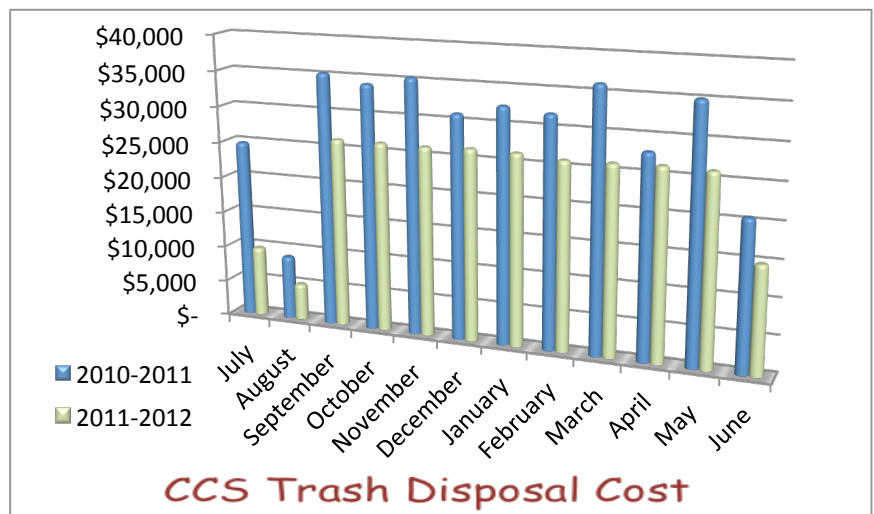
The CCSI recycling effort saves money and saves county landfill space.

Cumberland County  
Solid Waste Management  
Recycling Center





Recycling enabled Cumberland County Schools to reduce the number of regular dumpster pick-ups by 25%; thereby, saving the county over **\$88,000** in waste disposal costs in 2011-2012.



## WATER CONSERVATION AND EFFICIENCY

In 2012, plumbing fixtures were replaced at eight facilities as part of a Performance Contract. An investigative audit of select schools indicated that the existing toilet fixtures had a mixture of 3.5 gpf to 1.6 gpf rate of water usage. These units were replaced with new 1.28 gpf high efficiency toilets. The urinals had a mixture of 1.0 – 1.5 gpf. These were replaced with 0.125 gpf “pint” high efficiency urinals. Piston valves were used to replace the current diaphragm vales to increase reliability and reduce

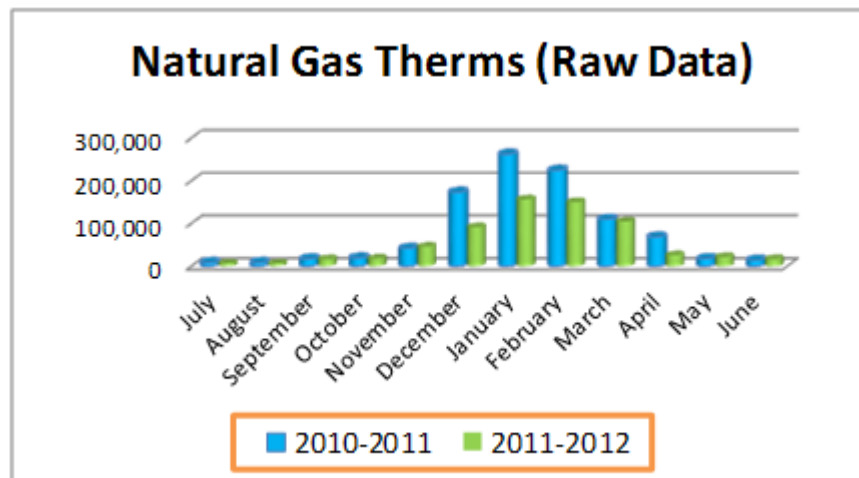
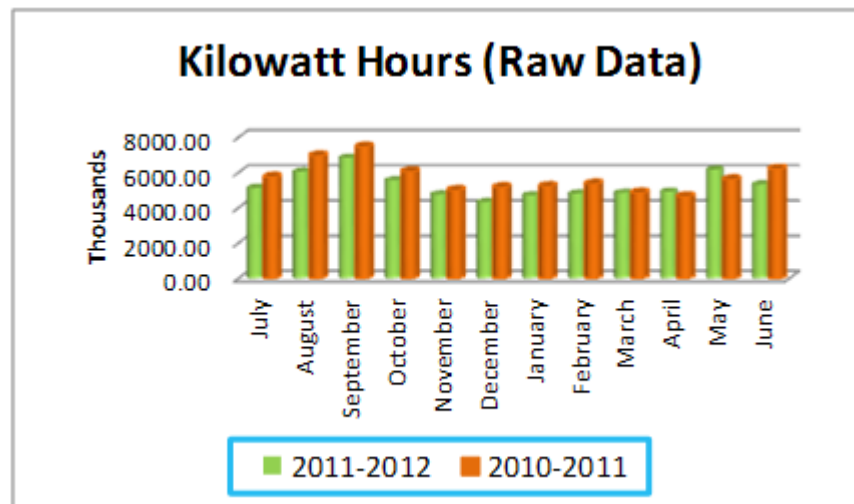


maintenance and operating costs. Sink faucets were replaced with .5 gpm aerators where applicable. The savings estimate for these measures equates to \$35,890 per year with an overall estimated payback of 6.1 years.

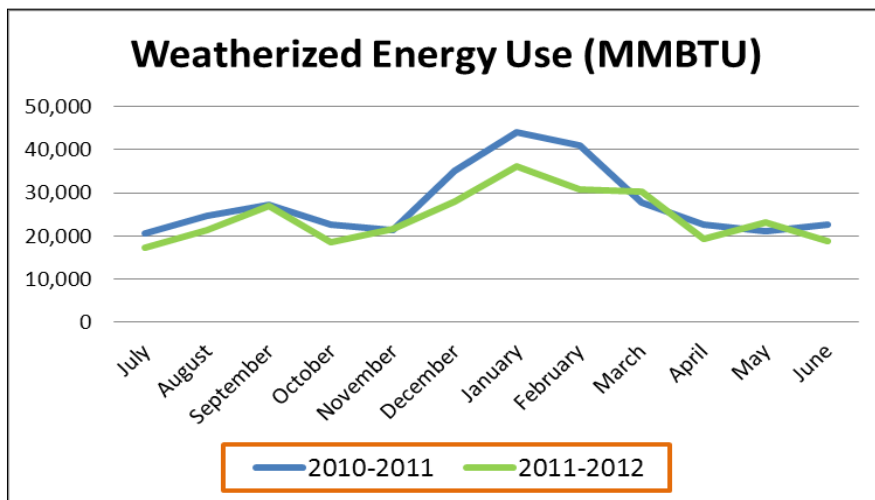
In the past three years, many schools have acquired rain barrels through grant funding. This enables schools to irrigate the raised bed gardens and flower gardens with free reclaimed water.

# ENERGY CONSERVATION AND EFFICIENCY

The overall kilowatt hour (kWh) usage for all Cumberland County Schools was 7% less for school year 2011-2012 than the previous year – that is significant! Fourteen schools showed a reduction in consumption of greater than 15%. This can be directly attributed to: (1) the installation of more efficient equipment, building controls and lighting fixtures; (2) operational modifications justified through the day-time and night-time audits completed by our Go “Green” Coordinator, Energy Technician and other mechanical maintenance personnel, (3) enhanced preventive maintenance protocol, and (4) conservation efforts demonstrated by school personnel and students.



In addition to saving 7% on electricity, CCS also reduced natural gas consumption by 32%. To compensate for the very cold winter in 2010-2011, the data was converted to MMBTUs and normalized for the heating/cooling degree days. The MMBTU usage avoidance for the 2011-2012 school year was 31,874, which equates to nearly \$700,000.



Normalized Cost Avoidance Electric and Natural Gas \$697,298					
	Natural Gas 2010-2011	Electric 2010-2011	Weatherized Natural Gas 2011-2012	Weatherized Natural Gas 2011-2012	Normalized MMBTU Avoidance
MMBTU (Usage)	97,097	233,777	74,063	216,937	31,874

*Weatherized data factors in the temperature variance from one year to the next. Extreme weather conditions will have an impact on the HVAC operational hours. Our normalized (weatherized) MMBTU cost avoidance equals \$697,298 for the 2011-2012 SY.*

### Performance Contract

CCS is no stranger to Performance Contracting. In May 2012, the Board of Education approved a third performance contract for 2.3 million to upgrade inefficient equipment and improve operational performance. Projects have been undertaken in the following schools: Alma Easom Elementary, Bill Hefner Elementary, Brentwood Elementary, Central Services Curriculum Building, E. Melvin Honeycutt Elementary, E. E. Miller Elementary, Educational Resource Center, Howard Health and Life Science High, Lewis Chapel Middle, Margaret Willis Elementary, Massey Hill Classical High, Morganton Road Elementary, Pine Forest High, Ramsey Street High, and Seventy-First Classical Middle. Performance Contracting allows school districts to pay for much needed capital equipment projects through the savings generated by the new equipment. New water efficient plumbing fixtures, energy efficient lighting systems, energy management system improvements and retro-commissioning will be completed at fourteen schools. This work will be completed by January 2013 and is guaranteed to save the district the entire cost of the project over the term of the contract. Some of this work is being performed by CCS maintenance personnel in order to extend the value of the project.



## Operations Maintenance Staff and Technicians

The vast majority of a school's energy consumption comes from heating, cooling, ventilation, lighting, and water heating. Therefore, the technical expertise and support of CCS mechanical maintenance personnel is vital to the efficient operation of facilities. This group has been instrumental in several efficiency improvements. CCS plumbers, electricians and HVAC/Energy personnel have been intricately involved in the execution of the Performance Contract. The electrical department also developed the scope of work submitted to the North Carolina State Energy Office for a \$200,000 American Recovery and Reinvestment Act block grant to upgrade lighting at 11 schools in 2011. This grant allowed CCS to replace antiquated and inadequate lighting with new energy efficient lighting. By retrofitting fixtures at Progress Energy Schools, CCS was also able to capitalize on Progress Energy's rebate program.

## Energy, Heating and Cooling Audits



Auditing facilities for conservation and efficiency is key to the success of any Sustainability Program. The goal is to maximize efficiency, improve environmental conditions and work with the school staffs to educate and increase environmental awareness. The Green Schools Coordinator and a CCS Energy Technician performed summer daytime audits at all schools. In the fall, they began the night time audits with assistance from two Methodist College Environmental Education Interns. During these audits, the HVAC equipment is checked to verify that building equipment is operating as scheduled. Time clocks and electronic controllers are adjusted to minimize energy consumption. Over 3,864 hours were taken off time clocks on boilers and water heaters and 144 heating issues were addressed and corrected. Appliances and energized equipment are detailed in a room by room report. The associated energy savings potential and monetary savings is conveyed to the school principal. As audits are completed, work orders noting inoperable or inefficient operation of equipment are relayed to the responsible maintenance departments.

## New School Construction

Our most recent construction, New Century International Elementary School, completed in August 2010, and New Century International Middle School, completed November 2012, were built with conservation in mind. The elementary school, designed by SFL+A Architects and Optima Engineering, was planned as LEED certified. The "green" design included the use of daylighting, T-5 and T-8 dimmable classroom



lighting with occupancy and photometric sensors. Ground-source heat pumps, variable speed pumps, pre-conditioned ventilation air with CO2 and humidistat control provides an efficient and hygienic HVAC system. Waterless urinals, sensed faucets and flush valves were also included in this environmentally friendly design.

New Century International Middle, designed by LSV Architects and Progressive Design Collaborative, is the second school built in Cumberland County to use an ice bank thermal storage system. By producing ice for cooling during off-peak hours and splitting the building demand load, the cost per electrical unit is 20% less. In addition, the designed chiller plant was built with 20% less capacity. Ice Storage is a much more efficient cooling system, design so that redundancy needs can be met with stored ice and part-load losses can be minimized.

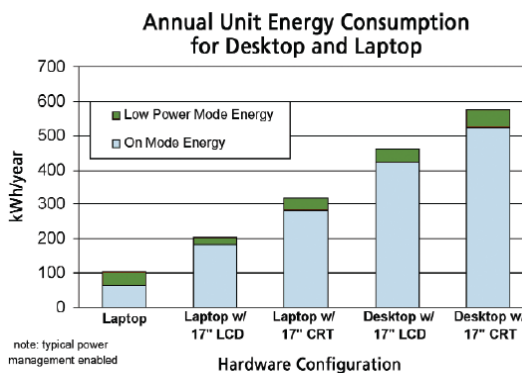


### Information Technology



The CCS Technology Department has installed Altiris, software that remotely shut down all CCS CPUs at 10:00 p.m. each night. Although, employees are encouraged to shut down equipment at the end of the day, this secondary measure keeps the nearly 30,000 CCS computers from running 24/7, increases the CPU life, and helps curb viral attacks.

CCS Technology has invested in Energy Star equipment and Smart Cart Charging stations. These charging stations that have a rotating trickle charge that disburses the charging to all laptops from a single 120v outlet, thus limiting kW demand costs.

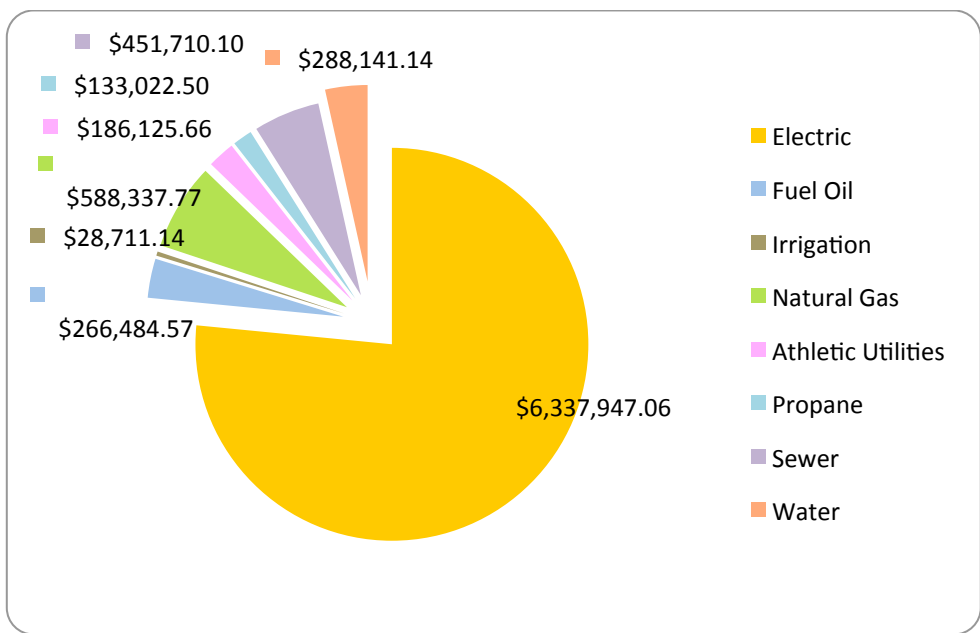


Technology has worked to eliminate individual classroom printers and provide larger local area copiers. This reduces hardware cost, consumables cost (paper, ink, toner), electricity, and maintenance. Future plans for Technology include the consolidation of servers and virtualization of servers and storage.

### Benchmarking Utility Data

Cumberland County Schools has nearly 800 utility meters. The cost per utility unit is dependent on the applied rate schedule and usage pattern; therefore, the collection and analysis of utility data is imperative to cost control. The Energy Department is responsible for analyzing utility data, preparing benchmarking reports and establishing a baseline year in order to evaluate energy consumption improvements in the following years. As utility rates, weather and building square footage all change over the years, improvement results are tracked using weatherized data and MMBTUs per square foot. Utility companies like PWC are interested in this information for the purpose of acquiring the qualifying Energy Efficiency Credits (EECs) that come from conservation efforts.

Cumberland County Schools Utility Cost  
 July 2011 – December 2012  
 \$8,280,479.97



### Energy Incentive Program

The Energy Incentive Program continues to inspire conservation. This program encourages schools to participate in conserving the utility resources that heat, cool and light the schools. Schools that saved 4% in kWh over last year’s kWh or schools that saved 4% the previous school year and continue to show savings received twenty-five percent of the avoided electrical cost. The school principal may use this money to support teachers with school supplies or use these dollars for their yard fund. This year, a record number of schools, 73 schools, were eligible for a portion of the \$133,846 reallocated from the utility budget.

Green School thought is permeating the district as more schools are making a concerted effort to encourage energy education and conservation through Green clubs and Energy Patrols.



Margaret Willis Elementary sees red when teachers forget to be “green”. Don’t leave your lights on in the classroom, don’t throw away a plastic bottle in your waste container, and don’t leave your computer on at night.

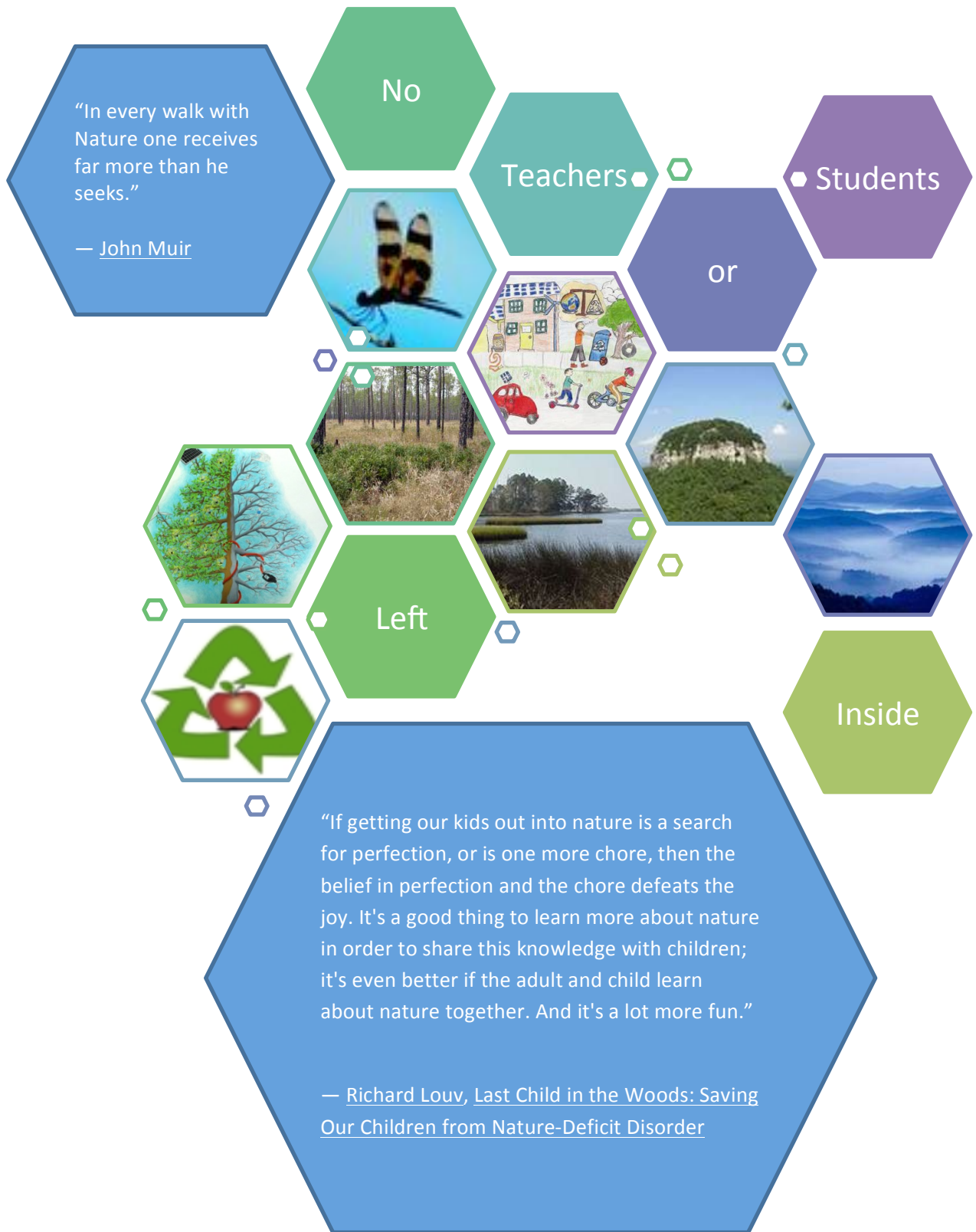
An intrepid Student “Green” Team reminds their teachers to reduce and conserve in the classroom! Offending teachers are relegated to the Go Green Jail. All in good fun!

As we move toward a more sustainable world, we are challenged to change our thoughts and behavior in significant ways. Cumberland County Schools is ready to meet that challenge. Finding solutions, working together, to “do one thing” to preserve, reduce, and conserve.



*“The frog does not drink up the pond in which he lives.” (Native saying)*





Fayetteville's Public Works Commission collaborated with Cumberland County Schools to apply for a grant from the NC Forest Service to replenish trees that have been eliminated due to utility work in the community. Terry Sanford High School and Seventy First High School were awarded funding for a variety of indigenous trees which will add beauty and color to their campuses for years to come. Both Terry Sanford and Seventy First are PWC schools.

***Terry Sanford's Power  
Tree Planting  
November 8***  
Teamwork in action



***Seventy First's Power  
Tree Planting  
November 3***

Multiple school clubs adopted and planted a tree. Each club will be responsible for caring for their particular tree throughout the school year.



Go Green Initiative  
We're a school system of choice  
and our choice is Green



This publication is printed on 10 percent post-consumer waste fiber. The paper is certified by the Forest Stewardship Council (FSC) and the Green Seal.

50 copies of this public document were printed at a cost of \$3.85 each. Copies of this report are available on the CCS website <http://www.operations.ccs.k12.nc.us/> or <http://gogreen.ccs.k12.nc.us>



**Go Green Initiative**  
**We're a school system of choice and our choice is Green**

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**FURTHER BE IT RESOLVED** that to promote healthier, more environmentally sustainable Board of Education and teach environmental leadership the BOARD hereby:

- 1) Adopts the Go "Green" Initiative as the foundation for its environmental policy...

**THE CUMBERLAND COUNTY BOARD OF EDUCATION  
GO "GREEN" INITIATIVE RESOLUTION 2009**