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

Cumberland County Schools Sustainability Report 2014

Cumberland County Schools Sustainability Report 2014

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Updated November 2014: This report was developed by the Operations Department in conjunction with Sustainable Sandhills as a bi-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/

Cover Art by 2013 Energy Awareness Poster contest honorable mention Kristin Bradford of Jack Britt High School.

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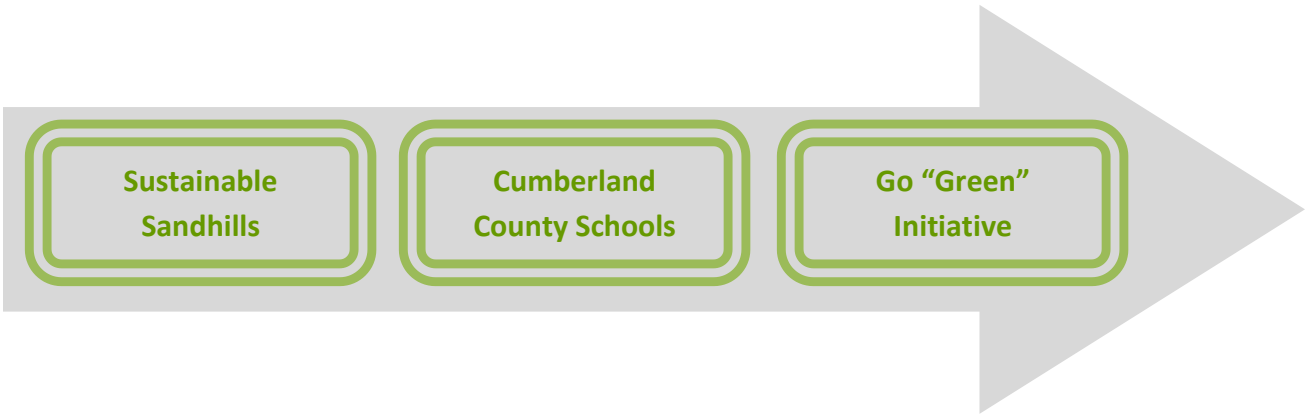

LETTER FROM THE SUPERINTENDENT

Greetings to all,

Do you remember, "How Green Was My Valley?" This Academy award film from 1942, about Welsh coal miners and their lives, sparks a valid question: "How Green is our Cape Fear Valley region and in particular, Cumberland County Schools."

Since the inception of the Green Schools program in 2009, we have made many requests of our school personnel and students to reduce consumption, conserve energy, reuse, recycle and work together toward creating a more sustainable future. As one principal said, "We are caring now for the future." We do that in many ways and one way is caring for the environment.

In 2012, I asked all of us to '"Do One Thing"' toward our sustainability goals and our folks who are called to teach, and those who serve and support teaching, have stepped up to the challenge. There are many positive results from our actions to conserve. I illustrate this by sharing the following examples. Our utility unit costs have increased over the last five years. Not just creeping up, but literally leaping up in cost per unit. Fuel oil cost per gallon is up 60%, electricity per kilowatt hour up 14% and is scheduled to increase another 5 ½% over the next two years. Water and sewer costs are up 29% and 24%, respectively. That being said, our energy consumption has decreased so that we are actually operating within the same budget as five years ago.

In addition, a Green School environment provides an ideal learning laboratory for valuable lessons about sustainability that can connect to nearly every aspect of a child's education. At the elementary level, students are learning about composting as they work in raised bed gardens and they are learning about environmental responsibility as they separate recyclables from regular waste. High school students are learning about alternative energy sources and energy conservation and debating the challenge of supporting climate refugees. The bottom line is this, greening our schools is our responsibility and from the top down we see the need to put sustainable practices in place – "to care now for the future'. Together, we can build a greener more sustainable future through the determined set of strategies derived from the Cumberland County Go "Green" Initiative. These originally inconvenient activities are making a difference and creating healthy habits, preparing students for future responsibility, and developing social awareness about a subject that permeates our society at large. As the leader of Cumberland County Schools, my expectations of the future are as green as our Cape Fear valley region.

Thanks for Going Green with Cumberland County Schools,

Dr. Frank Till
Superintendent
Cumberland County Schools

LETTER FROM THE EXECUTIVE DIRECTOR SUSTAINABLE SANDHILLS

Earth Day. Everyday.

In March of 2009, community leaders and engaged citizens joined together to develop ten strategic objectives supporting Fayetteville's drive to be one of the Top 10 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 with a triple bottom-line business model: People. Planet. Mission. Cumberland County Schools took the brave and proactive leadership stance in adopting 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.

Nearly 100% participation in the Go Green Initiative in the Cumberland County School District makes this county a national leader in environmental facility management and sustainability education. That partnership, developed in 2009 with Sustainable Sandhills, continues strong into 2015. The Sustainable Sandhills Green School program requires a commitment to meeting the qualifications on an environmental checklist that heavily emphasizes reducing waste, conserving energy, educating on recycling, and promoting clean air by reducing carbon emissions. Being a school committed to environmental sustainability takes work, but teaching students environmental responsibility- that being green is easy- pays off, in the present and for the future.

The Green Schools Coordinator is based in CCS Facilities but works at all levels within the school district to facilitate the "greening" process of building and curriculum. The Green Schools Coordinator works to build volunteer Green Teams at each certified Green School that create engagement between teachers, parents, students and administration. The principal of every Green School that reaches the annual energy conservation goals receives a percentage of the energy savings back in discretionary funding- a reward for working hard to save the Earth!

Thanks to a visionary school board and school leadership, Cumberland County Schools IS a school system of choice that choses to be green. This natural and collaborative partnership between the sustainability community and public education builds a brighter future for the students, the community, and the planet.

In partnership,

Hanah Ehrenreich
Executive Director

Executive Summary
Kathy Miller, Director Operations, Cumberland County Schools

Over the past few years, Cumberland County Schools has collectively diverted thousands of dollars away from our utility and waste management providers and have used those funds to support and improve building conditions. Our Go "Green" Initiative and partnership with Sustainable Sandhills 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, the Operations staff has worked hard to take advantage of utility company rebates by making efficiency improvements through Performance Contracting and in-house labor. We are united in an effort to support our schools through a variety of efforts, many of which are outlined in this document. This publication is designed to highlight recent activities and programs supporting the five principles of the CCS Go "Green" Initiative. We encourage everyone to become involved as we continue on our journey to become better stewards of our earth's natural resources.

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Go "Green" Initiative

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The Cumberland County Schools Go "Green" Initiative was adopted by the Cumberland County Board of Education in 2009. This program was designed to provide a framework to institute a system-wide approach to environmental stewardship. All of our sustainability efforts fall under one of the five comprehensive principles. These principals are used as a guide to develop strategic plans, implement measures and record success, as reflected in the balance of this document.

GO "GREEN" INITIATIVE 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.*

Sustainable Sandhills Green Schools Certification Program

In an effort to validate and gain community support for this movement, Cumberland County Schools partnered with Sustainable Sandhills to develop a "Green Schools" certification program. Sustainable Sandhills is a local non-profit dedicated to working with businesses, local government officials, educators, faith communities, and other civic and cultural organizations to preserve and protect our natural resources. 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. Under the direction of Gloria Lengel, Green Schools Coordinator, we have seen a significant increase in environmental awareness in the last couple of years and the majority of our facilities are now Green School certified.

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

CERTIFIED GREEN SCHOOLS/BUILDINGS 2009-2014

Gray's Creek District* and the Jack Britt District+ are all Green Certified

	Support Services		
Central Services	*Educational Resource Center*	*Prime Time*	*Operations Center*
Transportation			
	Elementary Schools		
*Alderman Road**	*Alma Easom*	*Armstrong*	*Ashley*
Beaver Dam	*Ben Martin*	*Brentwood*	*C. Wayne Collier*
Cliffdale	*Cumberland Mills*	*Cumberland Road*	*District 7*
E. E. Miller	*E. Melvin Honeycutt+*	*Eastover Central*	*Ed V. Baldwin*
Elizabeth Cashwell	*Ferguson Easley*	*Gallberry Farms**	*Glendale Acres*
*Gray's Creek**	*Howard Hall*	*J. W. Coon*	*J. W. Seabrook*
Lake Rim	*Lillian Black*	*Long Hill*	*Loyd Auman*
Lucille Souders	*Manchester*	*Margaret Willis*	*Mary McArthur*
Montclair	*Morganton Road*	*New Century International+*	*Ponderosa*
Raleigh Road	*Rockfish*	*Stedman Primary*	*Stoney Point+*
Sunnyside	*Teresa C. Berrien*	*Vanstory Hills*	*W. H. Owen*
Walker-Spivey	*Warrenwood*	*Westarea*	
	Middle Schools		
Anne Chestnutt	*Douglas Byrd*	*Gray's Creek**	*Hope Mills*
Ireland Drive	*John Griffin+*	*Mac Williams*	*New Century International+*
Pauline Jones	*Reid Ross*	*Seventy First Classical*	*Spring Lake*
	High Schools		
Alger B. Wilkins Performance Learning Center	*Cape Fear*	*Douglas Byrd*	*E. E. Smith*
*Gray's Creek**	*Jack Britt+*	*Massey Hill Classical*	*Ramsey Street*
Reid Ross Classical	*Seventy First*	*South View*	*Terry Sanford*

AWARENESS AND EDUCATION

Kindergarten

The founder of early childhood education, Frederick Froebel, began the first Kindergarten- literally "Children's garden" – in the 19th century. These kindergartens had individual gardens for each child, enclosed by a communal garden. Children used their gardens as they wished, for play and experimenting, gaining firsthand experience. They helped with the communal garden, and often explored the surrounding fields and woods. Froebel believed that children should grow in harmony with nature. Other pioneers of early childhood education shared Froebel's emphasis on the connection between young children and nature. ((NAAEE), 2010)

The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (Educators, 2010)

Environmental education usually begins at home, connecting the child with its world. This foundation of environmental awareness, knowledge and skills allows children to move out into the larger world around them as they enter school. Students solving issues, having a good understanding to comprehend and work through causes, actions and consequences of those issues are all steps toward environmental literacy. Whether you are a child (or an adult), environmental learning is student-centered providing real world context of issues and opportunities to "construct your own understanding through hands-on investigations. Engaging in direct experiences, one is challenged to use higher order thinking skills as active and responsive problem solvers". (NAAEE, 2010)

From the North American Association for Environmental Education, the *Guidelines for Learning (K-12),*explains the core principles from which environmental education comes. Each principle is bound to the others as we are interconnected in our surrounding. Systems, where separate parts have interconnected relationships; and humans are 'inextricably bound to environmental quality'. Lifelong learning begins early in learning about our surrounding, helping us to think outside the box, making sound decisions; working collaborativly to solve problems all make learning that much more meaningful. (Educators, 2010)

The principle of Awareness and Education, gives students the opportunity to practice environmental responsibility through the conservation of resources, the recycling of waste, and exploring hands-on solutions for a more sustainable future in the classroom. Cumberland County Schools engages students in real world activities that teach sustainable practices at an early age. From pre-kindergarten, students have the opportunity to participate in their school's recycling program and learn about gardening activities that promote sustainability.

Recent studies by Louise Chawla and other environmental educators indicate that the duration and quality of environmental education through their lives increases the knowledge base and improves the environmental literacy of students. In Cumberland County Schools, not only are we changing behaviors toward a more sustainable future but we are also checking along the way how well those lessons are staying with our students.

Over the last several years, the Sustainable Sandhills Green Schools Program has joined in partnerships with local environmental educators in various agencies. This has led to developing quality environmental education experiences for both teachers and students in Cumberland County.

Alliance for Climate Education (ACE)

We continue to have schools sign up for the very best assembly on Climate Education. Not only is it free but they update their presentation frequently enough that students and teachers always learn something new. The Green School's Program throughout the year urge our high schools to "Do One Thing" to create a wave of change and reduce our carbon footprint.

Douglas Byrd Middle School and the Academy of Green Technology

The Career and Technical Education Department has planned, and implemented green technology curriculum at the middle school level at Douglas Byrd Middle School. The educational solar array, installed as a cafeteria awning, allows students to have a visual

representation of what they are studying and encourages them to begin exploring green technology. Students rising from Douglas Byrd Middle can then apply to the Academy of Green Technology at Douglas Byrd High.

Douglas Byrd High School Academy of Green Technology

The key objective of the Academy of Green Technology at Douglas Byrd High School is to assist students as they prepare for a career in a globally connected and technology driven workforce. Their specific focus is on alternative energy and sustainability.

Students enrolled in this program explore renewable energy alternatives and explore conservation practices. Green Academy members enroll in a combination of high school and community college courses. They can earn up to 17 hours of college credit and they are eligible for certificates upon completion: **ETA** certified Solar PV Installer, **RESNET** certification in Energy Auditing, **Electrical/Electronics Technology** (FTCC), and **Microsoft Office Specialist**.

Photo courtesy of DBHS Academy of Green Technology

The Academy chairperson, Denise Renfro has expanded their outreach program with funding for a mobile off-grid solar house to serve as a working model for a solar efficient home. The grant funding last year expanded their teaching opportunities allowing the Academy to take the **Sun Stewards** program, mobile solar home to schools throughout Cumberland County. Academy students will share how solar energy is converted to electricity through a variety of engaging presentations and hands-on activities.

The Academy also publishes the AGT News Note a series of emails news blurbs keeping the members of the board and supporters of the Academy up-to-date with happenings and achievements with both academy teachers and students.

The Academy also invites speakers, such as Dr. David McNelis from the UNC Center for Sustainable Energy, Environment and Economic Development. He spoke on Energy's Future. Another speaker, David Trego, CFO of Electrical Systems from Fayetteville Public Works Commission (PWC) came and discussed Green Careers in Utilities.

Earth Day Activities

Earth Day 2013 brought the smell and taste of blueberries! Schools participating in Earth Day events throughout the month of April were given seedlings (2 per school) of blueberry plants from the Sam Rose Blueberry Farm in Sampson County. Beautiful plants were delivered to a variety of schools with directions on how to care for their plants. The hope was to plant outside for future enjoyment, just as we do in the classroom.

During the Earth month of April 2014, we celebrated Gardens. Those schools that requested areas built up or cleared and plowed were given seeds and plants of their choice for their gardens. We had quite a few schools that rejuvenated old gardens and put in new gardens. Since most spring gardens usually come to harvest during the summer months, several school gardens designated their gardens for support of families involved in the weekend backpack programs. Kudos to all who participated!

In collaboration with Fayetteville State University's (FSU) Green Team, we successfully offered to three nutritionally at-risk schools an opportunity to have a festival at their schools. Two elementary schools

and one high school were selected. Activities and events throughout the morning were selected for age and grade appropriate matches to the curriculum. The FSU green team leader, Kourtney Morris started working with the Green Schools program early in 2013. Though initially skeptical, the schools wholeheartedly embraced the program once presented for approval. The FSU community support from fraternities, sororities, and the Green Team was nothing short of phenomenal. All schools were very excited and wanted everyone to return to celebrate Earth Day in 2015.

Plans to include the FSU green team, Academy of Green Technology and our local environmental educator resources are already being developed for the next county-wide Earth Day Festival for elementary schools.

Lake Rim Water Quality Classes

In collaboration with fellow environmental education agencies and environmental educators, the Sustainable Sandhills Green Schools program has continued to offer Water Quality studies for 8th graders in Cumberland County. The last several years have seen an increase of those schools participating. N. C. Wildlife Commission, Fayetteville City Parks, City of Fayetteville Storm Water, and Cumberland County Soil and Water Conservation all worked together to provide a quality program which gives hands-on experience to students studying the various methods of evaluating a water shed. Chemical analysis, species survey, pollution prevention, and other topics give students a wide range of information about the Bones Creek watershed.

Students collecting water chemistry data from water samples

Methodist University Environmental and Occupational Management Program Internships

The Green Schools Program partnered with Methodist University and the Department of Environmental and Occupational Management (Southeastern Center for Environmental Excellence). As a part of their internship, students graduating from the Environmental

Management Program, work with Cumberland County Schools Mechanical maintenance and Energy personnel to gain useful experience. These students job shadow and evaluate energy and environmental issues for assigned schools then present their findings to the administration of those schools.

This internship inspired Methodist University students to evaluate their campus sustainability. They began developing a green based program similar to Sustainable Sandhills and Cumberland County Schools.

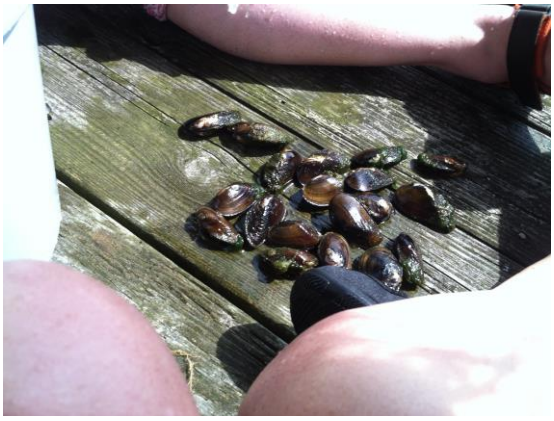
Professional Development

Teacher's Summer Adventures in North Carolina

North Carolina (NC) is one of only a few states which have a certification program for Environmental Education (EE). This is available to both formal and non-formal educators. This last year, Green Schools Program worked with the Elementary Science Curriculum chair, Angela Adams, to provide a six-day series teaching professionals at our state parks. Environmental Education Learning Experiences at local state parks opened up a new avenue of learning for those who enrolled.

The adventure began at Jones Lake State Park learning about Carolina Bays and their unique ecosystems found there. Our next foray was to Lake Waccamaw State Park, another Carolina Bay but uniquely different from other bays in the area. Ravenrock State Park was the next stop. The trip to the Cape Fear and the actual rock took teachers back in geologic history. We returned to Lake Waccamaw State Park to learn about the many 'gators' that call this bay home. Next teachers learned about the Lumber River environment and history at the Lumber River State Park. Moving along the river side, teacher's surveyed species found the river and found the environment to be healthy and full of key indicator organisms. The last adventure took teachers to the coast where they explored the only coquina shell rock formation in North Carolina, coastal wetlands and the nurseries of the sea, our marshes.

All participating educators spoke highly of this learning experience in this first annual North Carolina summer environmental education adventure; some even grew personally as their kayak adventure allowed them to overcome a fear of water, snakes, and water critters. Plans are in process for single day adventures here in Cumberland County so that more teachers might obtain hands-on experience to share in the classroom.



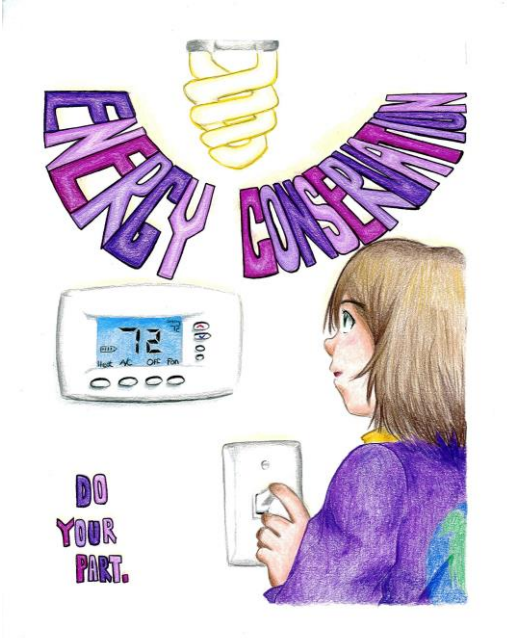
Teachers learning about Lake Waccamaw's indigenous species

"Developing, Planning, and Writing Your School's Sustainability Plan Class"

The Green Schools offered several courses to encourage schools to take time away from school to focus on going green. This series of classes allowed participants time to develop, plan and write their school's sustainability plan. They met with other schools and were able to compare and share different ways to develop recycling programs that works, present effective environmental awareness techniques and conservation practices. There were twelve schools that became Green Certified as a result and three additional schools are finishing up their plans so that they can be certified at 2014-15 school year.

During the upcoming school year, those schools that have been certified since 2009 to spring 2011 will begin working on re-certification. A series of rubrics, based on each of the sustainability principles have been developed to guide schools through the recertification program. The rubrics expand the knowledge of what is expected of schools as they travel toward sustainability. It also allows schools to gauge how well they are working toward a community of sustainability.

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. This year nineteen students will be chosen which is different from previous years. We are including Pre-K to 2 as a separate category and winners from this category will earn a certificate. We have entries from elementary, middle and high schools. The winners from each level will have their creations hung in the Central Services Board Room. Each first through third place winner in each level, receives a monetary award just in time for Christmas. This competition is used as another tool to increase awareness and promote energy conservation in the schools.

Honey Bees

Occasionally there are events that typify the best practices for sustainability. One of these times is when unwanted insects such as honeybees decide to take up residence at our schools. Stedman Elementary School had honeybees living in a tree at the front of the

school. One of the staff was surprised that the bees had to go as they had been in residence for quite a few years. In fact, no one had been stung in recent time. But the bees had to go, so discussion began as to how best to remove them. We didn't want to destroy a valued pollinator nor cut down a healthy tree. Consulting older beekeepers provided an old fashion and successful remedy. Bees were able to leave the tree hive but were unable to return. They instead built their home in the beekeepers hive. Once they became established and the queen came out; the hole was sealed and they were taken home with one of the beekeepers. The mission was a success.

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.

POLLUTION CONTROL

The use of fuels leads to emissions of carbon dioxide (CO2) and small quantities of other greenhouse gases – including methane (CH4) and nitrous oxide (N2O). Since 2010-2011, we have reduced our consumption of electricity by 19,166,958 kWh.

This reduction in electricity is equivalent to the annual CO^2 gas emissions from 1,487,183 gallons of gasoline consumed.

This reduction in electricity is equivalent to the CO^2 gas emissions from 14,196,128 pounds of coal consumed.

In one year, 10,833 acres of U.S. forest could sequester the CO_2 emitted.

International Walk or Bike to School

Each year in our Go Green Initiative newsletter, we urge our schools to participate in the International Walk to School Event. This program is not just for those who are thinking of physical activity but also those who are concerned about the number of single rider vehicles that transport students to school and the pollution that is generated on a daily basis. So it is a no brainer that this fits perfectly into our Green Schools Pollution Control principle of our Green School's Program.

Never heard of this program? It started in 1997 as a mirror event to Canada and Britain's promotion of walking to school. In 2000, it became an international event, now with over 40 countries participating. By 2005, federal legislation was passed to establish Safe Routes to School. More than fourteen thousand schools have benefited from the funds given for events and planning safe routes to our nation's schools. Biking to School was added in 2012 and the largest participation was in 2013.

Some of our schools are not able to participate by directly walking to school but there are provisions in the program to walk while at school so as to gain credit as having participated. The Fayetteville Observer documented one of Stoney Point Elementary three early morning Walk to School events. Parent's dressed in all sorts of costumes and work uniforms as they walked with their children.

School Health Services

Many of our departments outside of Auxiliary Services have a part in this framework we call sustainability and many times we work together to promote environmental awareness and healthful living. The Sustainable Sandhills Green Schools has participated in the CCS Health Services Department's very successful Healthy Fall Festival and the annual Cape Fear Valley Asthma Fair. These underscore our green principal of Pollution Control by providing materials about indoor air quality and its link to student learning. Thinking of both the home and school, we present options to harsh cleaning products and healthier cleaning practices.

Transportation

The Transportation Department continues 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.

Integrated Pest Management

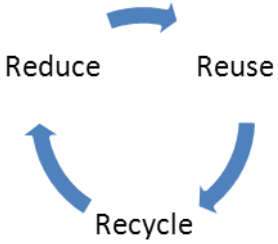
In compliance with G.S. 115C-47, the Cumberland County Schools continues to use a comprehensive approach that combines prevention, surveillance, and environmentally sound methods to prevent and solve pest problems. The goal of Integrated Pest Management is to protect human health by adequately controlling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

Green Products

It is recognized that buying green certified products for schools has a positive impact on health and the environment. Understanding the connection between indoor air quality and student learning leads Cumberland County in the direction of making sound green purchasing decisions. Therefore, CCS purchases products that contain recycled content or

emit fewer toxins. We encourage school custodians to 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



One of the most visible demonstrations of the Go "Green" Initiative is the recycling. Looking around each classroom, one will find at least one student who is passionate about environmental issues and on each hall, you will find at least one teacher who is interested in and concerned about a sustainable future for his/her students. Most schools do not have a problem garnering support for the Green School's recycling program.

Recycling must begin in the classroom and it must be a reflection of the school culture from hall to hall, throughout each department, and each grade level; the school must work together to make a difference for tomorrow. Preserving the Cumberland County landfill is a daunting task. Because we live in a relatively transit community training and retraining is necessary. That being said, continuity is not as difficult as one might think. Students train students in lower grades to continue the recycling effort in each school.

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

county landfill space.

Characters with a Particular Message

Regina Recyclebin and Singleton Bagman appeared to help spread the message to recycle and reduce the number of non-recycle materials we use. They take their message to elementary schools and even consented to appear with our green teams for the Fayetteville Christmas parade. We look forward to more appearances and messages from this intrepid duo.

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.

Electronics Waste Drives

The Green Schools Program coordinated November America Recycles and Earth Month E-Waste drives in conjunction with Cumberland County Solid Waste, Cumberland County Schools, City of Fayetteville, Fayetteville Beautiful, and Sustainable Sandhills. Because of the cooperation between agencies there was greater publicity and as a result over 4.5 tons of electronics were collected in the fall of 2013. This year our effort yielded 7.5 tons for our fall E Waste drive.

Regina Recyclebin and Singleton Bagman enjoying the E-WASTE drive

Recycle Buckets Program

Several years ago, a question was asked and it led to an epiphany on recycling. What happens to all the floor stripper and wax buckets that are emptied as custodial services refinishes our floors in the summer? The answer did not involve recycling, repurposing or even reselling them. Usually they were given away to members of the community who loved them for fishing and gathering vegetables from gardens. That epiphany led to repurposing those buckets for recycling containers. The first year, only three schools were interested in using the buckets for recycling. The next year, it started slow even though Green Schools stated they would spray the recycle logo in school colors on the side of the buckets. Still the buckets could not find a home until pictures of the buckets all painted hit the internet. Quickly, buckets were collected and made their way to Operations to be painted and sent back out as recycling containers. They came in so fast that stick-on logos had to be purchased in lieu of painting the decal. The majority of schools are using these buckets for recycling paper. Several schools have two buckets in each classroom to sort paper from plastic and metal. The hope is next year the whole system will have enough buckets for two per classroom.

2013 Christmas Parade

School Green Teams were invited to participate with Regina Recyclebin and Singleton Bagman in the 2013 Christmas Parade. Though 'the weather outside was frightful' students from elementary, middle and high schools; green team leaders, and a Methodist University intern celebrated the season along with the shenanigans of Regina and Singleton along the parade route.

Vermicomposting

Up to 75 percent of what is discarded by North Carolina's communities and businesses are organic materials. Instead of disposing of food scraps, yard wastes, and other organics, the materials can be vermicomposted. This method of recycling converts organic materials that have traditionally been viewed as waste into a valuable soil amendment for plants and crops. When vermicompost is added to soil, it boosts the nutrients available to plants and enhances soil structure and drainage. Vermicompost has also been shown to increase plant growth and suppress plant disease and insect pest attacks. (Sherman, 2014)

In partnership with Kenny Bailey of Cumberland County Cooperative Extension, we built vermiculture bins for worms. Red Wiggler worms are well adapted to eating our garbage and do not rely on collapsing tunnels, which makes them a perfect choice for changing our organic waste to black gold. This black gold is a highly nutritious soil that is excellent for plants and therefore our school gardens. Kenny and the Green Schools program are starting by raising these voracious eaters so schools can begin their own vermicomposting projects. In the spring of 2015, there should be quite a few worms from our vermiculture efforts so schools can start vermicomposting their organic waste in class projects on recycling and science.

Recycling has enabled Cumberland County Schools to reduce the number of regular dumpster pick-ups by 25%; thereby, saving the county an average of $**70,000** in annual waste disposal costs since the 2010-2011 school year.

WATER CONSERVATION AND EFFICIENCY

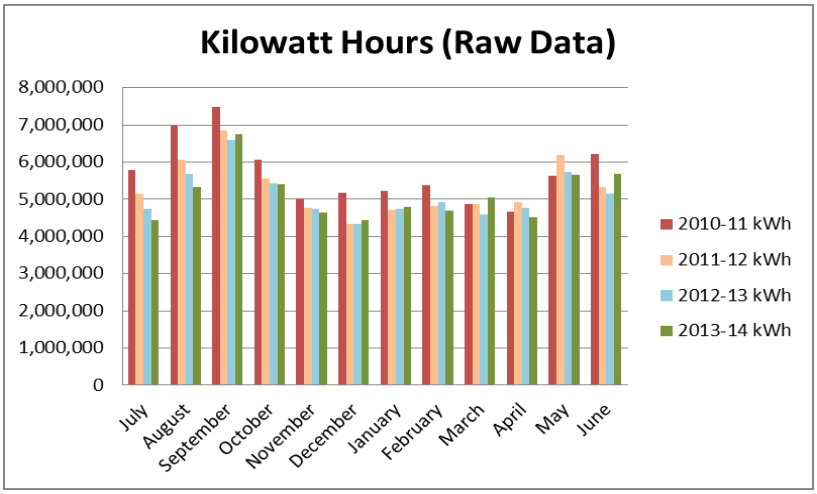
During the winter months, Green Schools personnel visit the schools to evaluate building heating operation and also to note water usage and evaluate restroom and cafeteria plumbing fixtures. Faulty water faucet timers and leaking faucets can be costly, a lone toilet in an outdoor concession that is running constantly can equate to hundreds of dollars in wasted water and sewer costs. Operational controls and temperature controls on water heaters must meet the requirements of the health department for kitchens and restrooms

but should never exceed that requirement.

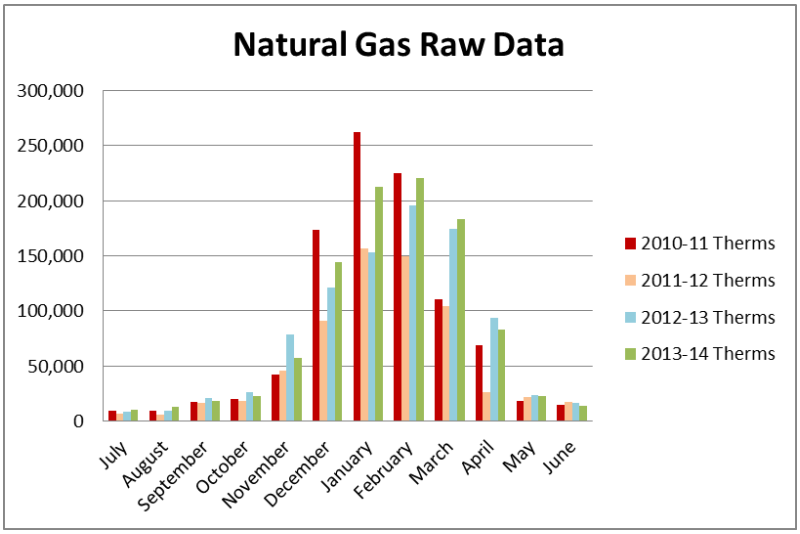
Rain barrels continue to be an excellent way that schools can collect water and still conserve water for their many gardens. Schools can irrigate the raised bed gardens and flower gardens with free reclaimed water. These barrels are provided at an extremely low cost through the school discount offered by theh Cumberland County Soil and Water Conservation office.

ENERGY CONSERVATION AND EFFICIENCY

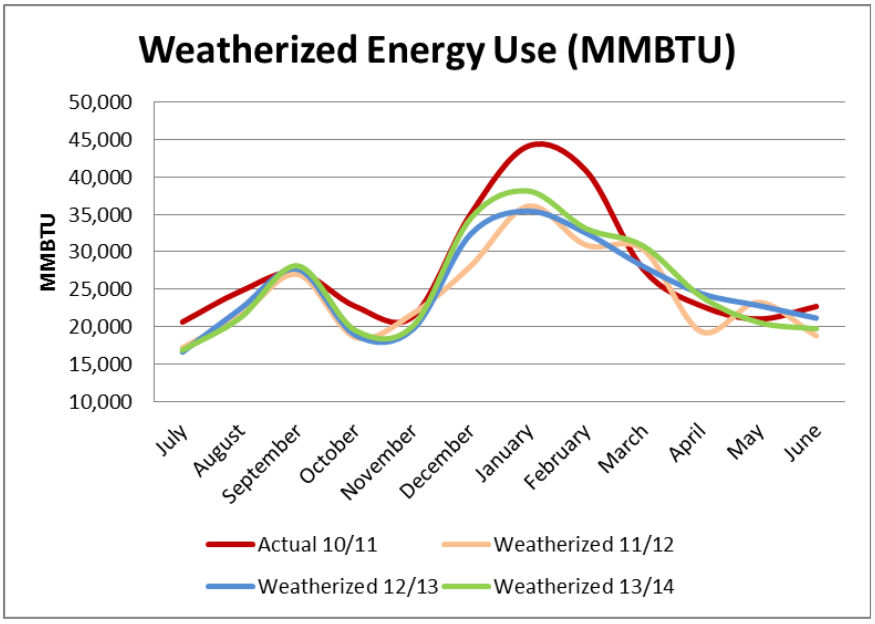
Since school year 2010-11, electrical kilowatt hour (kWh) usage and natural gas usage for all Cumberland County Schools has declined. To compensate for weather differences the data is normalized based on heating/cooling degree days and the cost avoidance is calculated based on the average cost of each utility. Over a three year period, our total cost avoidance was nearly **2 million dollars**! This remarkable reduction in consumption can be directly attributed to: (1) the installation of more efficient equipment, building controls and light 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.



	Electric kWh Raw Data												
	July	August	September	October	November	December	January	February	March	April	May	June	Total
2010-11 kWh	5,774,543	6,975,171	7,485,970	6,073,123	5,018,912	5,182,226	5,236,079	5,382,311	4,873,330	4,662,121	5,629,813	6,222,630	68,516,229
2011-12 kWh	5,139,824	6,065,746	6,851,035	5,567,966	4,762,135	4,336,667	4,723,967	4,823,746	4,861,897	4,922,516	6,185,918	5,339,210	63,580,627
2012-13 kWh	4,746,389	5,686,996	6,595,454	5,437,879	4,750,455	4,332,418	4,739,823	4,921,420	4,585,021	4,769,219	5,720,345	5,140,430	61,425,849
2013-14 kWh	4,443,683	5,331,586	6,735,788	5,393,011	4,650,483	4,433,449	4,784,536	4,685,738	5,049,908	4,517,323	5,663,051	5,686,697	61,375,253



	July	August	September	October	November	December	January	February	March	April	May	June	Total
2010-11 Therms	9,186	9,063	17,531	19,833	42,312	173,528	262,716	225,091	110,177	68,753	18,156	14,626	970,972
2011-12 Therms	6,493	6,131	16,526	17,939	45,749	91,350	156,558	149,898	104,583	25,872	21,689	16,956	659,744
2012-13 Therms	7,991	8,989	20,498	25,880	78,641	121,134	153,490	195,513	174,882	93,772	23,859	16,445	921,094
2013-14 Therms	10,358	12,708	17,929	22,545	56,821	144,325	212,912	220,412	183,353	83,270	22,239	13,415	1,000,287



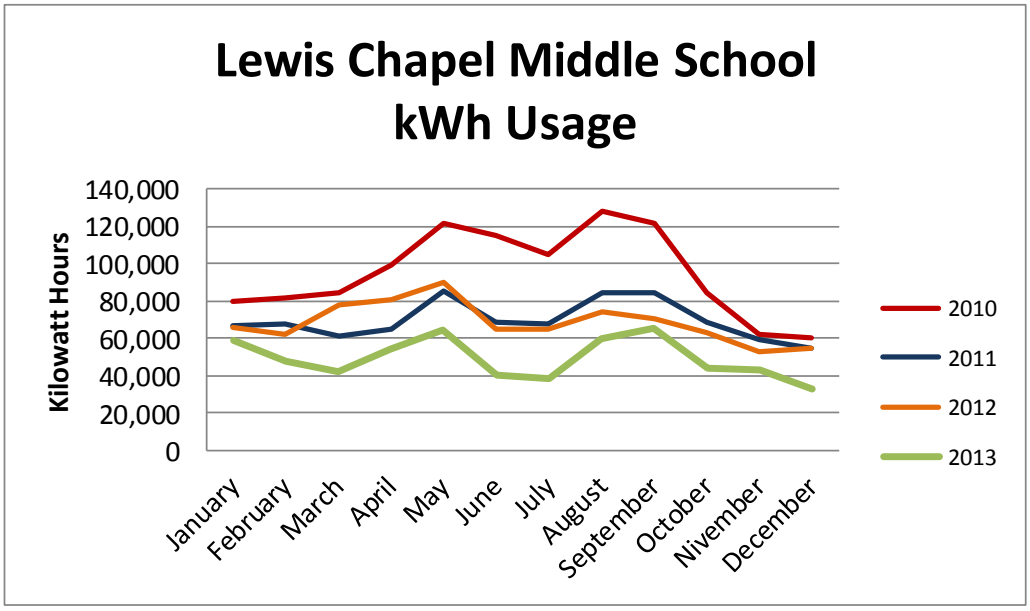
	Weatherized Kilowatt Hour MMBTU Avoidance	Electrical Cost Avoidance Based on Average Cost Per MMBTU	Weatherized Natural Gas MMBTU Avoidance	NG Cost Avoidance Based on Average Cost Per MMBTU	Total Cost Avoidance Based on Average Cost Per Unit
2011-2012	15,136	$414,345	23,034	$219,292	$633,637
2012-2013	21,252	$581,779	7,717	$73,470	$650,249
2013-2014	22,217	$690,159	1,376	$12,820	$702,979

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.

Performance Contract

In January 2013, Cumberland County Schools completed a third Performance Contract. Performance Contracting allows school systems to finance energy saving upgrades of facilities funded by the anticipated savings generated over several years. In March of 2014, we received our first Annual Guaranteed Reconciliation Report from Noresco, the Energy Services Company with which we partnered to perform $2.3 million in efficiency projects at fourteen schools. The measurement and verification results confirm that the avoided energy and operational cost savings guaranteed by these upgrades have been met in year one of the performance period.

In July of 2012, Noresco began the efficiency upgrades at Lewis Chapel Middle which included a lighting upgrade and the replacement of the antiquated pneumatic building controls. This was completed in January 2013. This single school example highlights the value of conservation combined with efficiency improvements. Although the cost of kilowatt hours has significantly risen from $.079/kWh to $.1069/kWh in the last four years, this school was still able to reduce electrical consumption costs each year for a total cost avoidance of $47,559.50 over a three year period.



Usage	1,142,899	834,585	822,187	591,343
Cost	$90,305.24	$80,357.01	$79,787.53	$63,211.68
Cost/kWh	$0.0790	$0.0963	$0.0970	$0.1069

Operations Maintenance Staff and Technicians

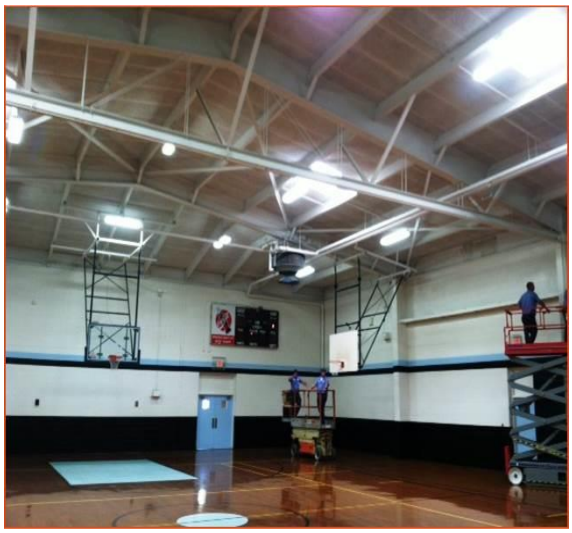
Cumberland County School's mechanical maintenance personnel have found that the performance of preventive and predictive maintenance can cut utility costs, extend equipment life, and improve occupant comfort. The HVAC/Energy department continues to fine tune building operation and troubleshoot schools that have excessive energy use. One such school was Ireland Drive Middle. A small investment in control valves and the redesign of equipment operation reduced the kWh consumption at Ireland Drive by > 47%.

Ireland Drive Middle Kilowatt Hours

	July	August	September	October	November	December	January	February	March	April	May	June
2010-11	25,545	18,935	38,947	35,121	28,716	40,092	47,737	46,760	73,476	26,352	32,457	36,696
2011-12	30,662	25,783	42,848	31,461	24,917	29,103	24,697	27,844	23,377	21,603	17,666	28,784
2012-13	14,271	15,097	30,034	22,395	17,233	18,364	18,484	18,746	18,274	16,677	20,837	19,428

Our electrical department has replaced all the high bay electrical light fixtures in the Operations Shop and Transportation Garage and has augmented the energy savings by applying for and receiving energy rebates from Duke/Progress Energy in the amount of $29,735 and $9,242, respectively. As funding allows, technicians are retrofitting gymnasiums with LED fixtures. Most of these projects will pay for themselves within two years through the utility savings earned.

As utility rates continue to rise and funding continues to decline, an appreciation of utility savings opportunities through proper maintenance, building operation and conservation becomes essential.



Energy, Heating and Cooling Audits

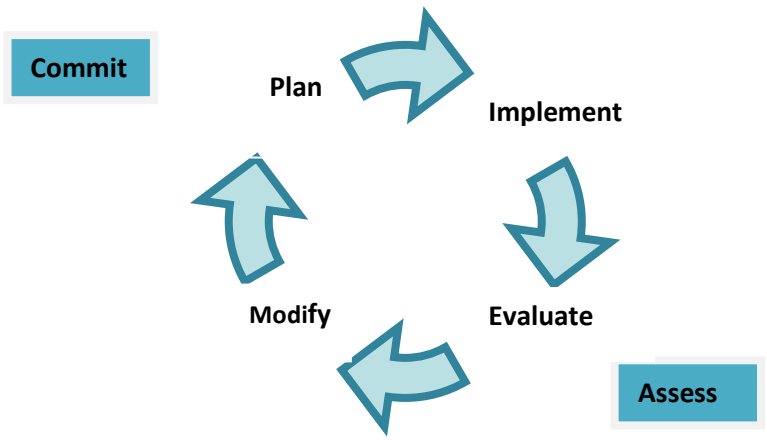
The Green Schools Coordinator and Energy Department work collaboratively to ensure energy-savings protocols are being practiced by auditing schools at night. Detailed room-by-room reports are generated showing utility waste and the annual cost associated with each infraction. Nighttime audits provide a method for Operations to find equipment inadvertently left on after the school day as well as note other facility conditioning issues that may need the maintenance attention. Principals are encouraged to use these reports to track compliance and increase staff awareness. Conservation is a cooperative effort and these reports should be used as a positive tool to promote fiscal and environmental responsibility.

Day audits are utilized to make sure the classroom environment is conducive to learning. Overheating or under-heating during the school day prevents students from having a classroom in which they can optimally learn. Correcting these issues supports the Go Green Initiative mission to create healthy schools and learning environments while conserving energy.

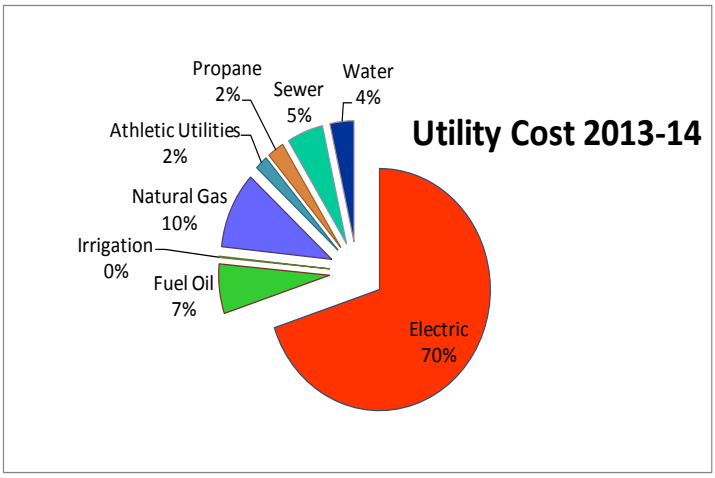
Conservation Opportunities

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.

Benchmarking Utility Data



"You can't manage what you don't measure." Assessment and evaluation of data is imperative to any successful program. The CCS Energy Department is responsible for analyzing utility data for nearly 800 metered sites, preparing benchmarking reports for each school and evaluating the success of energy improvement measures. 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. We then use the quantifiable results to evaluate our program and make future strategic energy plans. Cumberland Utility companies like PWC are interested in this information for the purpose of acquiring the qualifying Energy Efficiency Credits (EECs) that come from our conservation efforts.



Cumberland County Schools Utility Cost
July 2013 – June 2014
$9,104,590

Utilities	2010-11	2011-12	2012-13	2013-14
Electric (KWH)	68,516,229	63,580,627	61,425,849	61,375,253
Electric Cost	$6,399,645	$6,337,946	$6,288,585	$6,363,186
Fuel Oil (Gal.)	163,811	79,954	126,380	184,743
Fuel Oil Cost	$448,624	$266,485	$431,760	$602,262
Irrigation (Gal.)	3,129,897	5,312,273	4,334,640	1,450,628
Irrigation Cost	$17,909	$28,711	$24,879	$15,299
Natural Gas (Therms)	970,972	659,744	921,094	1,000,287
Natural Gas Cost	$924,407	$588,338	$795,549	$931,797
Propane (Gal.)	89,491	72,204	82,617	97,502
Propane Cost	$165,653	$133,023	$121,930	$221,965
Sewer (Gal.)	77,345,408	75,554,692	76,473,255	76,336,150
Sewer Cost	$442,799	$451,710	$482,246	$481,358
Water (Gal.)	78,545,418	77,232,458	77,392,524	78,185,642
Water Cost	$275,101	$288,141	$309,960	$318,656
Athletic Utilities (Irr. Gal)	19,251,729	17,532,540	11,552,450	14,279,847
Athletic Utilities (Ballfied kWh)	309,923	439,961	306,892	301,566
Athletics Cost	$175,046	$186,026	$151,950	$170,067
TOTAL COST	$8,849,184	$8,280,379	$8,606,860	$9,104,590

Facility Cost Per Unit From 2008-09 Through 2013-14

Utility Type	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Six Year Utility Percentage Increase
Electric (KWH)	$0.0898	$0.0908	$0.0934	$0.0997	$0.1024	$0.1037	15.45%
Fuel Oil (Gal.)	$2.1342	$2.2412	$2.7387	$3.3330	$3.4163	$3.2600	52.75%
Irrigation (Gal.)	$0.0054	$0.0055	$0.0057	$0.0054	$0.0057	$0.0105	95.30%
Natural Gas (Therms)	$1.3188	$1.1547	$0.9520	$0.8918	$0.8637	$0.9315	-29.37%
Propane (Gal.)	$1.2675	$1.6651	$1.8511	$1.8423	$1.4758	$2.2765	79.61%
Sewer (Gal.)	$0.0051	$0.0056	$0.0057	$0.0060	$0.0063	$0.0063	23.64%
Water (Gal.)	$0.0031	$0.0034	$0.0035	$0.0037	$0.0040	$0.0041	31.47%
Athletic Utilities (Irrigation Gal.)	$0.0048	$0.0054	$0.0059	$0.0056	$0.0063	$0.0065	35.42%
Athletic Utilities (Ballfield kWh)	$0.2020	$0.2035	$0.1994	$0.1986	$0.2566	$0.2547	26.09%

Balancing a Facility Operations budget, while experiencing a rapid inflation in utility cost per unit, is a tremendous challenge. Over the past six years, the cost per kilowatt hour has increased 15%, the cost per gallon for fuel oil 53% and the cost per gallon for sewer and water 24% and 31% respectively. The only solution is operating more efficiently and reducing waste. A budget increase is not an option.

Energy Incentive Program

Money is always a good incentive! One way to encourage conservation is to allow those using the electricity to share in the savings when they conserve. The Energy Incentive Program encourages schools to participate in managing the utility resources that heat, cool and light the schools. Schools that save 4% in kWh over last year's kWh or schools that continue to show savings each year after achieving the 4% reduction receive twenty-five percent of the avoided electrical cost or a minimum of $500. The school principal may use this money for school supplies or yard beautification. Each year, it becomes more challenging to show a reduction over the prior year. This year 34 schools where eligible for a portion of the $51,502 reallocated from the utility budget and 28 of those schools showed a reduction for three or more consecutive years.

What Next

Success should never breed complacency. There is always room for improvement. As we move toward a more sustainable future, we must continue to change behavior, evaluate our operation, and make efficiency improvements, as funding allows. For success, this effort must be supported by leadership at every level. Please join us as we continue on our green journey through the Cape Fear valley region.

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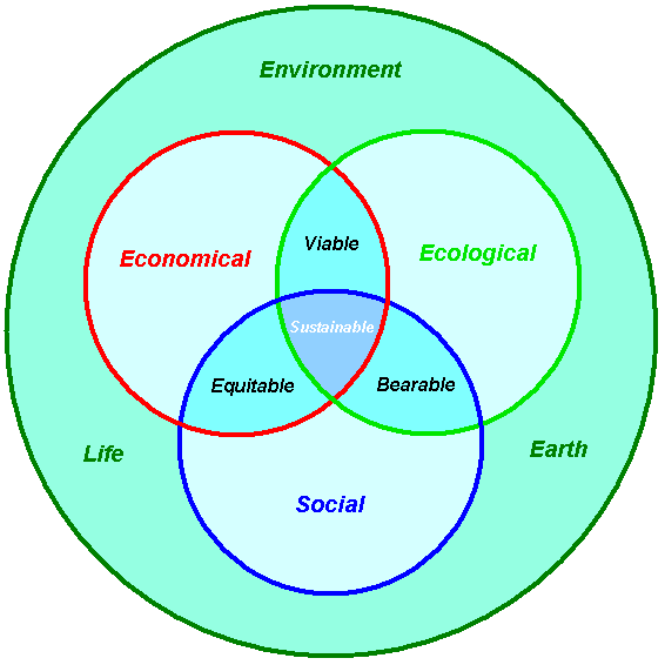
The most often quoted definition of sustainable development is the one expressed during **the World Commission on Environment and Development** in 1987, chaired by Gro Harlem Brundtland. This definition stated that "*mankind has the ability to ensure a sustainable development, meaning that the present necessities are met without compromising the ability of future generations to meet their own needs*".



(Spa, 1994)

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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