REQUEST FOR BOARD ACTION

HENDERSON COUNTY
BOARD OF COMMISSIONERS

MEETING DATE: August 2, 2010

SUBJECT: 2010 ARC Energy RFP

ATTACHMENTS: Yes
Grant Proposal

SUMMARY OF REQUEST:
A grant application will be submitted prior to the August 31, 2010 deadline for the 2010 ARC Energy RFP overseen by the Appalachian Regional Council. This grant is for $5,000 for a Building Permit Rebate Program to rebate up to $500 in permit fees for certified LEED or HealthyBuilt Homes. No monetary contributions are requested from Henderson County. This grant will be administered by the Engineering Department in conjunction with the permit center.

The current draft of the grant proposal is attached.

BOARD ACTION REQUESTED:

To authorize the County Engineer to submit the 2010 ARC Energy RFP application for the Building Permit Rebate Program.

Suggested Motion(s):

I move that the Board authorize the County Engineer to submit the 2010 ARC Energy RFP for the Building Permit Rebate Program.

Appalachian Regional Commission

Community-Based Energy Projects: Planning and Implementation

2010

Cover Page

Project Title:	Energy Efficient Building and Construction Permit Fee Reimbursement Program
Organization/Applicant:	Henderson County, North Carolina
Primary Contact:	Alexis Baker
Address:	100 N. King St., Hendersonville, NC 28792
Email:	alexisbaker@hendersoncountync.org
Phone:	828-694-6524
Fax:	
County (ies) served:	Henderson County
Grant Request:	$5,000

Contents

1. Project Summary

Henderson County is located in the Western mountains of North Carolina. The county's unique geography makes it especially susceptible to high concentrations of ozone during summer months due to pollution from North Carolina and the surrounding states. In order to reduce greenhouse gases and ozone pollution in North Carolina, Henderson County is leading the way in encouraging efficiency in building construction and transportation. To accomplish the goal of improving efficiency and decreasing the production of greenhouse gases, Henderson County proposes an Energy Efficient Building and Construction Permit Fee Reimbursement Program to incentivize the construction of green buildings. In order to qualify for the building and construction fee reimbursement program, all residential construction must be certified under the Western North Carolina Building Council's Healthy Built Homes or qualify as LEED homes.

2. Description of proposed activity, including anticipated outcomes

Currently, Western North Carolina has 19 LEED certified projects in Buncombe County and three (3) in Henderson County. In 2009, only two LEED homes were certified, one in Buncombe and the other in Henderson County. There are also 19 Healthy Built Homes certified in Henderson County and 86 additional homes are registered. It is estimated that there are approximately 414 homes certified in Western North Carolina and 390 additional homes registered. The anticipated outcome of the Energy Efficient Building and Construction Permit Fee Reimbursement Program is to increase the number of green certified homes in Henderson County. By 2012, the goal is to have a total of six (6) LEED certified buildings and 24 Healthy Built Home certified buildings in Henderson County. Reimbursements on building permits will be capped at $500, the typical building permit for a residential house ranging from 1,500 to 1,999 square feet.

3. Leverage

The $5,000 grant request will be matched by in-kind contributions of 200 hours at $25 per hour for administration and tracking.

4. Implementation

Building permits will be paid in full and reimbursed up to $500. The administrators of the Energy Efficient Building and Construction Permit Fee Reimbursement Program will receive the documentation from the applicant. This documentation will be verified and compiled into a database tracking green buildings. This program will be in line with an existing Henderson County Energy Plan.

5. Capability of Applicant and Community Partners Applicant

Applicant will partner with local builder associations to encourage increased numbers of Healthy Built and LEED certified buildings.

6. Outreach

Brochures will be produced for the Permitting and Building Inspections Departments and press releases will be used to advertise the availability of this program for new construction.

7. Sustainability

Once demand for the program is established in Henderson County, future funding will be supplemented by the general fund if revenues from permits improve.

Attachments

Appalachian Regional Commission
Community-Based Energy Projects: Planning and Implementation
2010

Project Budget
Line Item Budget

Expense	$ ARC Costs	$ Matching Costs*	$ Total
Personnel	0	$5,000	
Benefits			
Travel			
Equipment			
Supplies			
Contractual			
Other	$5,000		
Sub total			
Indirect			
Total			$10,000

* Sources of Matching Costs:

Source	$ Amount	Type (Cash, In-kind)
1. Henderson County	$5,000	in-kind
2.		
3.		
4.		

Total Matching Costs: $5,000

Please attach a budget narrative describing each expense line item, above.

"Other" expenses include $5,000 in rebates for building permits. Matching costs are in-kind administration of program at $25/ hour for 200 hours.

Alexis Baker

Education and Training: University of North Carolina at Chapel Hill, B.A. Environmental Studies (1998-2001)
University of North Carolina at Charlotte, M.A. Geography (2003-2006)

Professional Experience:

May 2009-Current. **Environmental Programs Coordinator**, Henderson County, NC

- Led seminars and educational outreach on environmental stewardship, energy management, and recycling
- Organized special events related to recycling and energy management
- Authored press releases and articles for local media outlets
- Authored energy management plans and environmental policy documents
- Researched and assisted with grant proposals and writing.
- Acted as staff to the Environmental Advisory Committee and Solid Waste Advisory Committee

April 2007-April 2009, **Planner**, Henderson County, NC

- Authored policy documents and community plans
- Approved and ensured subdivision compliance with all local and state regulations
- Led community input meetings for community plans
- Acted as staff to the Etowah and Horse Shoe Communities Advisory Committee and the Historic Committee
- Created shapefiles and geodatabases for planning department.

Synergistic Activities.

- NCI Certified Charrette Planner (April 2008)
- Green Design and Development (March 12, 2008 and May 8, 2008)
- Grant-writing Courses (AB-Tech, March-April, 2007; Land-of-Sky, November 16, 2009)
- Photovoltaic Courses (Appalachian State University, September 18-20, 2009 and October 2-4, 2009)

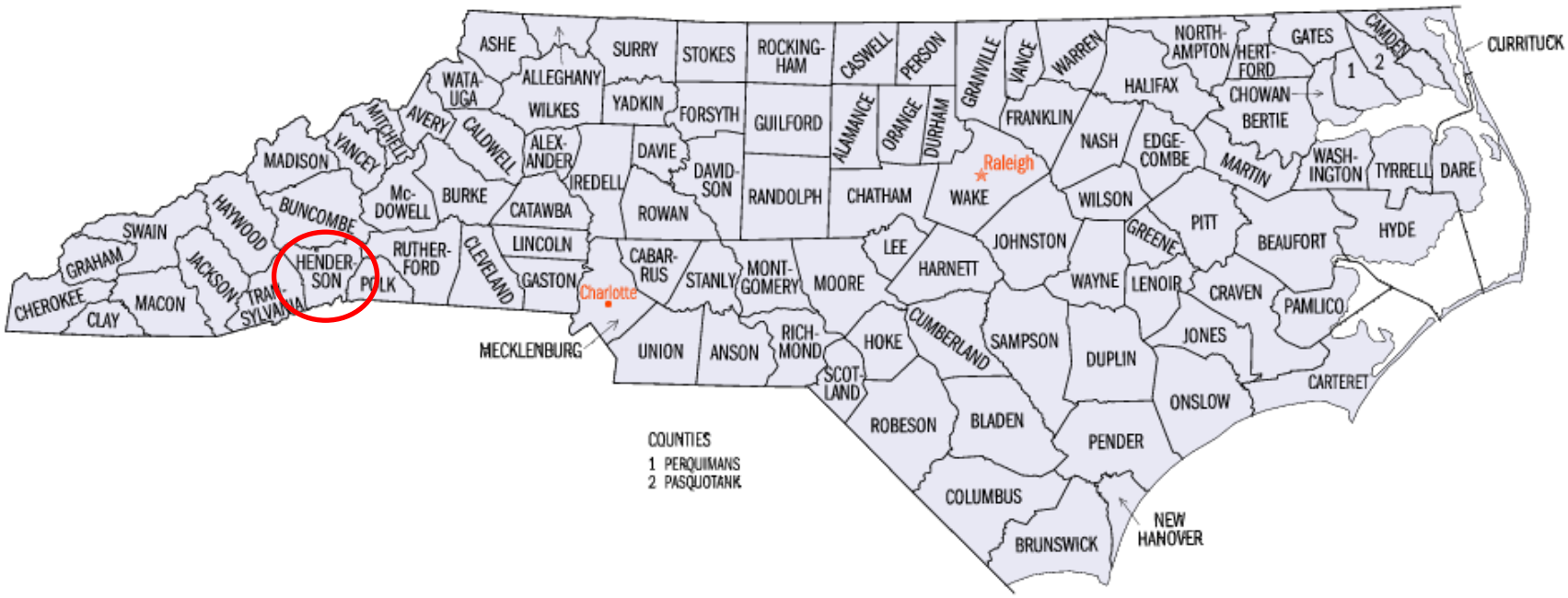
Timeline:

October 2010: Grant Received

November 2010: Database Developed. Press releases and educational materials distributed

January 2010: First Rebates distributed to certified homeowners or builders.

Attachment D: Map



Henderson County Strategic Energy Plan

Draft Document

10/23/2009

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APPENDICES

Executive Summary

This Executive Summary includes a brief overview of plans to meet the goal of reducing Henderson County's energy usage 10% by June 20, 2010. Measurements toward the goal will be in BTUs per square foot for County facilities. Another goal of this Plan is to make Henderson County a regional leader in energy management and efficiency. These goals will be accomplished through responsible usage of resources in accordance with state legislation and County and regional outreach efforts.

Henderson County Key Elements and Focus Areas of the Plan

The Energy Plan is not intended as merely a mandate to perform specific energy-related tasks, but instead presents a framework for making unique energy decisions.

Key Elements

- **Data collection** — Accurate measurement and analysis of electricity, fossil based fuels, and water usage to benchmark and develop Key Performance Indicators (KPIs), including a quarterly review of trends and costs based on building square footage.
- **Building audits** — Conduct energy audits to identify conservation opportunities. Update, repair, or replace electrical or mechanical equipment when energy savings are cost effective.
- **Billing audits** — Review billing rates with utility providers annually. Bills should be reviewed monthly.
- **Plan development** — An Energy Committee involving County departments is responsible for the participation of efficient energy practices among their departments as well as for the County facilities as a whole. This Committee and an additional committee composed of representatives of participating municipalities will review and update this plan on an annual basis (See Section 1).
- **Education and outreach** — Educate the general public and County and Municipality staff through informative presentations, mobile education centers, informative presentations, handouts, County newsletters, training, press releases, and other forms of communication to explain that effective energy conservation reduces energy costs and promotes better environmental stewardship in the Community.
- **Building and Construction Efficiency** — Apply energy saving building practices in all major facility construction/renovation projects and in operating and maintenance of building in accordance with US Green Building Council/LEED standards to the highest level practical
- **Energy and Fuel Projects -** Execute approved, prioritized projects of energy efficiency and fuel conservation and implement process improvements, based on Cost Benefit

Analysis (CBA) from Energy Assessments, Capital Improvement Plan (CIP) and Best Management Practices

- **Emergency and Critical Operation Management**— Create contingency plans to deal with equipment failures and fuel or energy shortages.

Focus Areas

Targeted focus areas and refined strategic goals for Henderson County are presented in Table 1.1. Focus areas and refined strategic goals for participating Henderson County municipalities will be added in subsequent updates of this plan.

Focus Area	Goal
Energy awareness, education & information	Incorporate energy conservation and reduction efforts in the County and Municipalities for employees and residents by communication and outreach means
	Train inspectors and County employees in Energy Star, LEED, HealthyBuilt Homes, ISO 14001, etc.
Maximize energy savings in facilities	Incorporated energy and waste saving building practices in all major facility construction and renovation projects
	Complete Government owned building Audit Assessments
Energy conservation technologies, practices and opportunities	Design and maintain high performance government buildings
	Increase use of alternative funding mechanisms in lieu of direct appropriations
	Fund an Energy Coordinator position for three years through ARRA Funds and other available grants responsible for building and energy audits.
	Prioritize a list of energy conservation projects and develop a capital improvements plan.
	Create incentive programs to encourage the use of green technologies such as residential/commercial permit waivers or property tax abatements for residents.
Efficient and effective work environment	Reduce petroleum consumption by increasing utilization of alternative fuels.
	Incorporate behavioral modifications into day to day facility operations.
	Create emergency operation plans to address essential equipment failures and fuel or energy shortages.

Henderson County Strategic Energy Plan

Introduction

Henderson County and the participating municipalities, in order to improve the efficient use and conservation of energy and water resources, has developed this Strategic Energy Plan with a focus upon creating benchmarks, measurable goals, and implementation strategies to thoroughly and adequately analyze and address existing energy management issues within the County.

The Plan encompasses two parts: Buildings efficiency and Transportation. Elements in the Building section of the plan reflect improvements in Energy Managements and Efficiency as well as Alternative Energy Development. Transportation elements intend to reduce fossil fuel consumption. Present efforts and measures of success in each of these focus areas are documented by the Performance Scorecard in Appendix B.

This Plan is intended to be a reviewed and updated annually. The Energy Committees should review their progress on the Plan during their quarterly meetings.

Section 1 - Responsibilities

A. Building Efficiency and Management

The Henderson County Energy Committee will be appointed to create energy efficiency awareness and communication among the departments, to promote energy efficiency behavior changes among County employees, and to identify and address energy efficiency and renewable energy opportunities throughout the facilities. The Committee includes a representative from the County Manager's Office, the Finance Department the Human Resources Department, the Central Services Division, a representative from each department, the Environmental Programs Coordinator, and the Energy Coordinator. The Committee meets quarterly to evaluate the energy programs and projects and to update our Performance Scorecard.

The specific responsibilities of the Henderson Energy Committee Members are as follows:

- **The Finance Department prepares quarterly utilities expenditure reports.**
- **The Central Services Division Representative reports the status of the energy efficiency opportunities (EEOs) that have been addressed since the last meeting, those related costs and estimated savings, any weather-related trends in utility use, and newly identified EEOs in the facilities and central equipment.**
- **The Environmental Programs Coordinator reports the status of educating the County staff on the importance of their role in improving the energy efficiency of operations and promotes energy efficiency initiatives to the public.**
- **The Energy Coordinator (see section 5) gives technical assistance with energy billing, auditing, and data analysis and collection.**
- **The County Manager's Office Representative chairs the Committee and overseas the implementation of the plan.**
- **Each Department Representative is responsible for updating an energy plan specific to his/her department. These plans should be incorporated into the County Strategic Energy Plan.**

A second energy committee tentatively known as the County and Municipal Energy Committee will be composed of representatives from each participating Henderson County municipal government entity. This committee and the Henderson County Energy Committee will be charged with approving updates to the Henderson County Strategic Energy Plan and identifying energy saving opportunities.

The County and Municipal Energy Committee member responsibilities may include the following:

- **Municipal Representatives discuss specific energy needs of their participating municipality. Each representative reports their quarterly utilities expenditures to the committee and discusses**

successes and shortfalls. They will also discuss energy efficiency opportunities and estimated savings.

- **<u>The Henderson County Environmental Programs Coordinator</u> reports the status of educating the County and Municipal staff on improving energy efficiency of operations. The coordinator also updates the committee on possible grants and energy opportunities available.**

- **<u>The Henderson County Energy Coordinator</u> (see section 5) gives technical assistance with energy billing, auditing, and data analysis and collection.**

- **<u>The County Manager's Office Representative</u> officially represents the County and may act as chair unless otherwise decided by the committee.**

Both committees should work closely together to ensure that the Strategic Energy Plan is a comprehensive plan that addresses energy management needs and concerns for both municipal and county staff and residents.

B. Transportation

The North Carolina Department of Transportation (NCDOT) maintains the majority of public roads in the State. The state maintained road system in North Carolina includes over 79,000 miles of roadway. Henderson County has approximately 850 miles of state maintained roads. NCDOT conducts design and construction of roadways in Henderson County. The County does not currently maintain any roads for public purpose. NCDOT maintains control and authority over what road construction projects are implemented.

NCDOT coordinates much of its transportation planning efforts for the regions of Henderson, Haywood, and Buncombe counties through the French Broad River Municipal Planning Organization (MPO). Henderson County has most recently participated in the preparation and prioritizing of project lists for the:

- "Comprehensive Transportation Plan for French Broad River MPO and Rural Areas of Buncombe, Haywood and Henderson Counties" which serves as a vision for the future transportation system (adopted January 18, 2008);
- "Transportation 2030: The Long Range Multi-Modal Plan for Buncombe, Haywood, and Henderson Counties" which identifies transportation improvements and programs to be carried out over the next 25 years and;
- "Transportation Improvement Program (TIP)" which lists projects proposed for the next seven (7) years.

Beyond the MPO process, Henderson County also works directly with the division offices of NCDOT to provide input and to stay advised of progress on local projects.

Henderson County has an appointed Transportation Advisory Committee (TAC). The TAC is comprised mostly of local government MPO representatives and several County appointed members at large who meet regularly to: (1) discuss local transportation issues, (2) receive updates from the NCDOT district engineer regarding progress on projects (Transportation Improvements Projects (TIP) and secondary road projects); and (3) take input from the public regarding its concerns and issues related to transportation.

Apple Country Transit, the local bus service, is overseen by the Planning Department and operated by Western Carolina Community Action (WCCA). The County leverages federal and state grants to operate the system and matches grants with a local share contribution which is supplemented by the municipalities of Hendersonville and Fletcher. Department and fleet vehicles serving County staff are maintained by Central Services.

Section 2: Current Assessment

A. Building Efficiency and Management

On May 7, 2008, the County Manager announced a mandate to reduce energy by 10%. Under the same directive by the County Manager of a 10% reduction in energy, each department has written simple energy plans addressing certain behaviors that could positively affect efficiency. Under this mandate, data was compiled from May 2007 to the current month. Each quarter beginning in May 2008, data was compared and reported. Additionally, since May 2008, five energy audits have been conducted on existing County facilities. The remaining audits will be classified according to their energy usage. The top six energy users will be evaluated in the next eighteen months.

In order to properly account for energy usage and efficiency within the County, accurate data analysis and collection should be utilized. A baseline year is established based on the County Manager's mandate of a 10% reduction in energy. This baseline will run from May 2007 to April 2008. Future data collection reporting will utilize fiscal years. To accomplish these goals, Staff has obtained current and historical data from the County's electricity and natural gas provider. These providers have agreed to supply a spreadsheet of data on a quarterly basis. Staff is currently working to improve internal energy and utilities accounting procedures. The resulting energy accounting database should be user friendly and produce an expedient method of data reporting.

Data analysis should also incorporate the concept of degree days and heating and cooling days. Degree days are a measure of the difference between 65 degrees Fahrenheit (65°F) and the average daily temperature. This measure assumes that above an average daily temperature of 65°F no heat would be required. Heating degree days are a measure of how much (in degrees), and for how long (in days), outside air temperature was lower than 65°F. They are used for calculations relating to the energy consumption required to heat buildings. Cooling degree days are a measure of how much (in degrees) and for how long (in days) outside air temperature was higher than 65°F. This is, of course, used for calculations relating to the energy consumption required to cool buildings.

The number of cooling and heating days derived from degree days may serve to explain or predict energy needs. Unpredictable energy usage, not corresponding with heating or cooling days, may indicate a need for better energy management or efficiency. Data should also reflect building and facility energy efficiency on a square footage basis as well as in overall usage. Buildings housing more than one department, if not already using them, may also add sub-meters to better understand energy usage by department.

Currently, the County does not utilize alternative energies in its buildings and facilities. However, a grant was recently submitted on September 21, 2009 to install solar thermal water heating on the new courthouse to service the detention center. In Section 4-Energy Efficiency, a goal has been set to incorporate alternative

energies into at least one County building in the next five years. If the grant is won, it is expected to have the solar thermal water heating system installed by or before fiscal year 2011. Once the Henderson County Energy Committee is formed, it will evaluate costs and necessities of other possible alternative energies among their energy efficiency opportunities (EEO) as they evaluate and improve this Strategic Energy Plan.

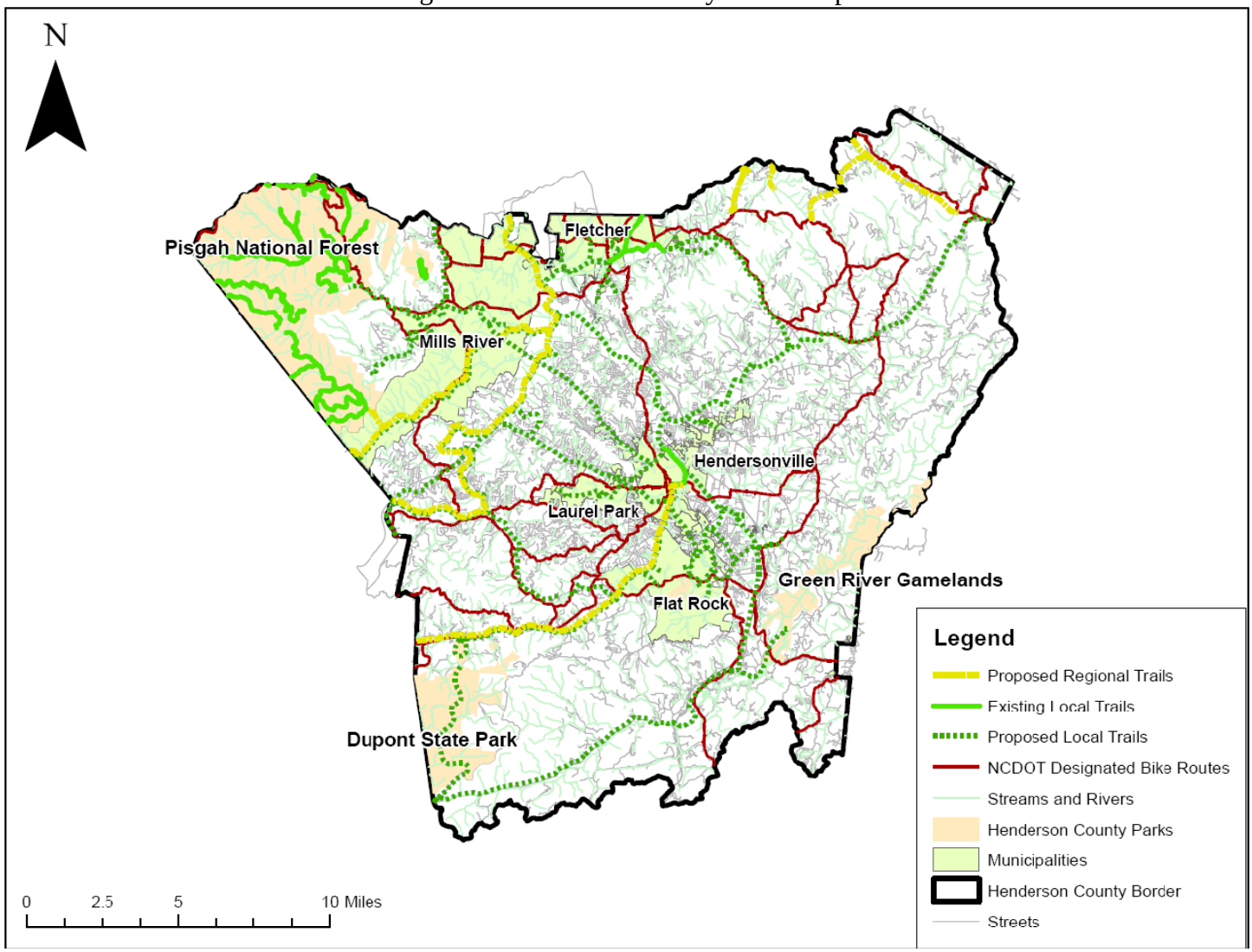
B. Transportation

WCCA maintains a fleet of over eighteen vehicles and operates fixed route and senior and disabled services under contract with the county. Maintenance is subcontracted privately and vehicles are fueled at the County's maintenance facility. Fleet fuel usage data is maintained by Central Services. Western Carolina Community Action maintains cost figures for Apple Country Transit buses and the WCCA vans. Currently, the Planning Department, which oversees public transportation for the County, has applied for and has received grant funding to replace up to four of the six fixed route buses in WCCA's fleet and approximately four senior and disabled compressed natural gas (CNG) vans. The County is scheduled to build a CNG fueling station in 2010 and to place the CNG vehicles in operation by early 2011. The remaining vehicles will be replaced as funds become available.

Alternative means of transportation include greenways and bike routes (see Figure 1). The Apple Country Greenway Committee discusses improvements and developments for greenways, and Parks and Recreation oversees the maintenance and upkeep of existing greenways under the County's jurisdiction. Bike Routes are designated by the North Carolina Department of Transportation.

Beginning in 2007, the North Carolina Trails program has worked with multiple-country regions in North Carolina to develop regional systems that interconnect in a comprehensive statewide trail network. Land-of-Sky Regional Council partnered with the State Trails Program to develop a regional trails plan for the French Broad/ Pigeon River watershed. Figure 1 displays the existing and proposed routes for bicycle and pedestrian transportation.

Figure 1: Henderson County Trails Map



Section 3 –Accounting and Procurement

A. Building Efficiency and Management

Energy data and water data uses a baseline from May 2007 to April 2008. This time frame was used due to the mandate of the County Manager in May 2008 to reduce energy usage by 10%. All future data collection and reporting will be based on fiscal years. Below, table 1 shows the baseline data as compared to fiscal year 2009 for electricity usage. Both data sets are based on a 12 month period. Overall percent change indicates that electricity usage was reduced by 4.29% between the base line year and the fiscal year. Further data manipulation, including square footage into data analysis, may help to explain why some departments or

facilities may use more energy than others. Future updates to this plan will also include data analysis of propane per square footage to better explain total energy usage per building or department.

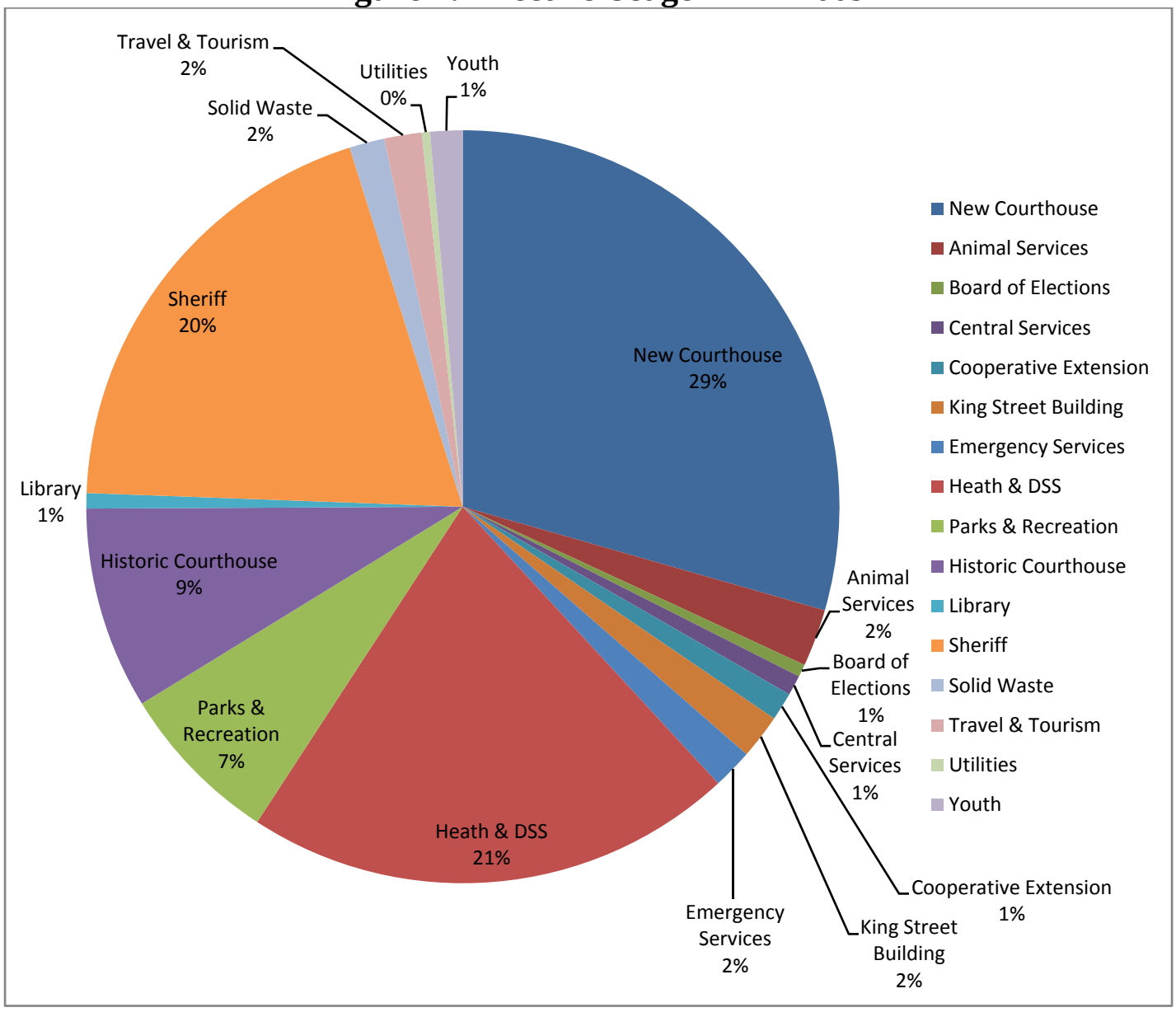
In order to ensure the most cost effective and efficient use of electricity, the energy bills should be reviewed monthly and billing rates should be reviewed annually with the utility provider. Changes in billing rates, behavioral modifications, or the incorporation of energy efficiency opportunities should be noted when analyzing data. Changes in efficiency should also be analyzed for cost savings and the estimated reduction in carbon emissions.

Table 1: Electricity Usage in Henderson County, Baseline Comparison to Fiscal Year 2009

Electricity Usage in Henderson County								
Department/ Building	Base Line			Fiscal 2009			Percent Change	
	KWH	1,000 BTU	Cost	KWH	1,000 BTU	Cost	1,000 BTU	Cost
New Courthouse	2,043,840	6,973,582	$102,915.38	1,947,840	6,646,030	$101,110.12	-4.7%	-1.8%
Animal Services	223,819	763,670	$15,562.83	163,100	556,497	$12,455.12	-27.1%	-20.0%
Board of Elections	43,964	150,005	$4,282.96	35,598	121,460	$3,569.57	-19.0%	-16.7%
Central Services	95,124	324,563	$8,777.18	57,002	194,491	$7,008.31	-40.1%	-20.2%
Cooperative Extension	132,307	451,431	$10,330.19	79,882	272,557	$7,499.88	-39.6%	-27.4%
King Street Building	177,011	603,962	$14,497.42	126,288	430,895	$10,564.87	-28.7%	-27.1%
Emergency Services	123,239	420,491	$12,765.31	113,706	387,965	$12,097.83	-7.7%	-5.2%
Heath & DSS	1,553,496	5,300,528	$112,585.92	1,393,794	4,755,625	$98,269.94	-10.3%	-12.7%
Parks & Recreation	476,018	1,624,173	$1,969.86	465,851	1,589,484	$2,291.78	-2.1%	16.3%
Historic Courthouse*	271,751	927,214	$20,712.47	574,633	1,960,648	$40,981.71	111.5%	97.9%
Library	71,945	245,476	$7,511.73	43,377	148,002	$4,642.82	-39.7%	-38.2%
Sheriff	1,287,510	4,392,984	$82,194.60	1,294,124	4,415,551	$78,797.72	0.5%	-4.1%
Solid Waste	186,264	635,533	$17,118.20	100,017	341,258	$11,082.56	-46.3%	-35.3%
Travel & Tourism	112,346	383,325	$8,855.52	106,302	362,702	$8,655.27	-5.4%	-2.3%
Utilities	19,200	65,510	$2,262.37	23,312	79,541	$2,739.82	21.4%	21.1%
Youth	95,560	326,051	$7,631.22	92,160	314,450	$7,286.11	-3.6%	-4.5%
Total	6,913,394	23,588,500	$429,973.16	6,616,986	22,577,156	$409,053.43	-4.3%	-4.9%

*Historic Courthouse was unoccupied until August 2008.

Figure 2: Electric Usage in FY 2009



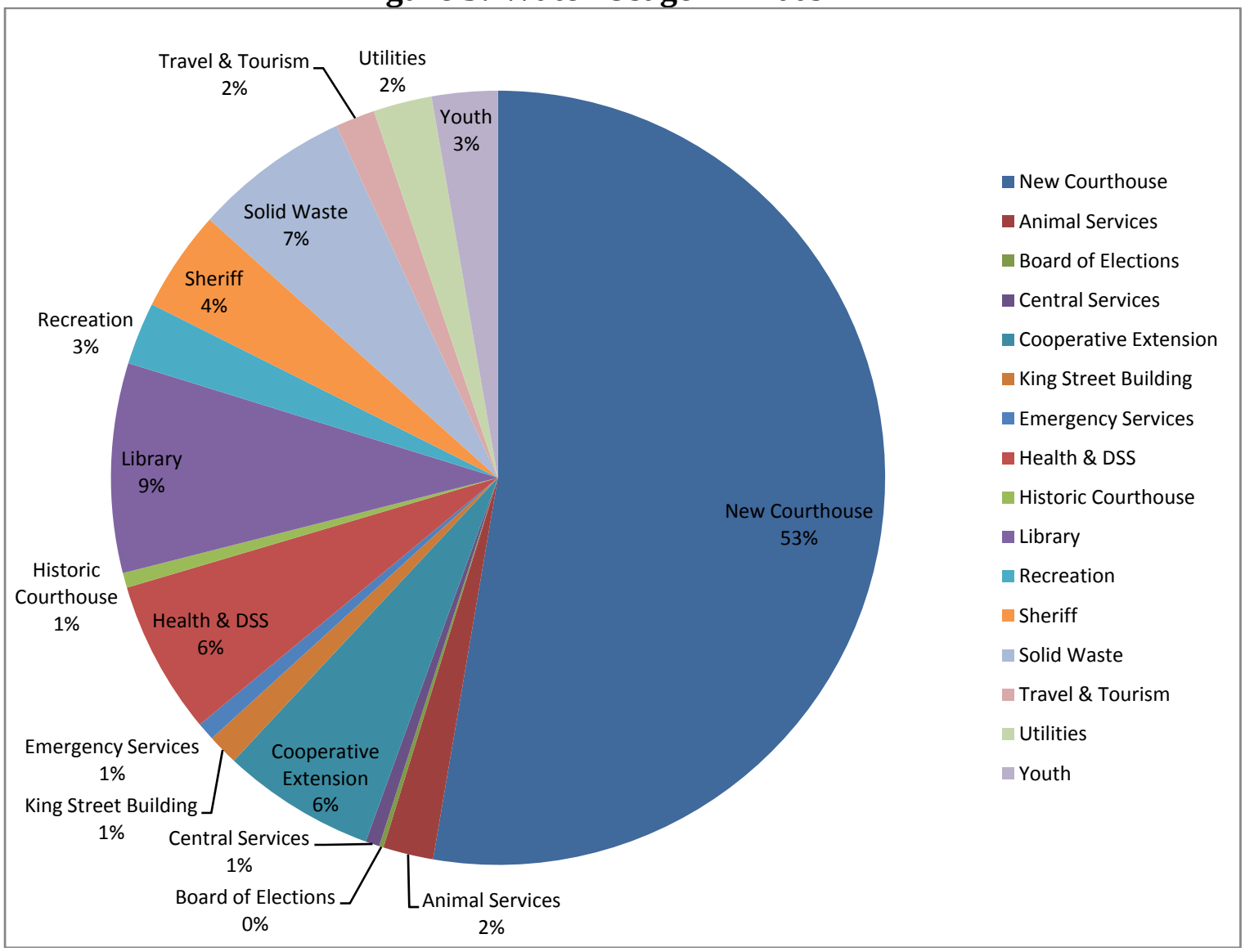
Water usage is based, in most part, on buildings. Facilities such as the County Administration building houses several departments as does the new courthouse and historic courthouse. Fiscal year 2009 as compared to the baseline shows an overall 18.5% increase in water usage. Several ways to reduce water usage through energy efficiency opportunities include low flow toilets and sink aerators.

Table 2: Water Usage in Henderson County, Baseline Comparison to Fiscal Year 2009

Water Usage in Henderson County						
Departments/Buildings	**Baseline**		**Fiscal 2009**		**Percent Change**	
	K Gal	**Cost**	**K Gal**	**Cost**	**K Gal**	**Cost**
New Courthouse	54,763	$26,502.80	38,803	$21,641.70	-29.1%	-18.3%
Animal Services	2,498	$2,587.49	1,544	$1,710.99	-38.2%	-33.9%
Board of Elections	104	$101.48	136	$130.82	30.8%	28.9%
Central Services	853	$731.21	428	$490.31	-49.8%	-32.9%
Cooperative Extension	3,455	$1,236.14	4,720	$1,781.13	36.6%	44.1%
King Street Building	1,001	$819.23	947	$810.79	-5.4%	-1.0%
Emergency Services	533	$421.10	554	$453.90	3.9%	7.8%
Health & DSS	4,390	$2,866.35	4,728	$3,129.85	7.7%	9.2%
Historic Courthouse*	990	$714.04	456	$384.51	-53.9%	-46.2%
Library	6,751	$4,223.76	6,447	$4,034.54	-4.5%	-4.5%
Recreation	1,791	$835.81	1,919	$1,155.23	7.1%	38.2%
Sheriff	3,935	$2,671.20	3,114	$2,303.53	-20.9%	-13.8%
Solid Waste	3,558	$1,291.33	4,813	$1,820.01	35.3%	40.9%
Travel & Tourism	1,935	$1,276.11	1,213	$861.12	-37.3%	-32.5%
Utilities	1,648	$1,558.30	1,801	$1,616.05	9.3%	3.7%
Youth	2,220	$856.28	2,026	$841.26	-8.7%	-1.8%
Total	90,425	48,693	73,649	$43,165.74	-18.5%	-11.3%

*Historic Courthouse was unoccupied until August 2008.

Figure 3: Water Usage FY 2009



The Henderson County Energy Coordinator (see Section 5) will work with participating municipalities to create baseline data tables and track and report data on a quarterly basis. These tables will be included in subsequent updates to this plan.

B. Transportation

Among County maintained vehicles, the Sheriff's Department had the highest total gasoline costs in FY 2008 and FY 2007. While it is worthwhile to cut back on fuel costs whenever feasible, the distribution of gallons of gasoline spent on County vehicles appears to directly correspond with the departments most likely to utilize vehicles in day to day departmental operations. In the case of the Sheriff's Department, it is necessary for this department to have the highest total gasoline costs compared to other departments as employees of that department may be involved in patrolling and emergency response.

Future updates to this section should include the number of vehicles used per department. The number of vehicles may better reflect if it is necessary for a department to reevaluate their energy usages. Data should also properly reflect the gas shortages in August and September 2008 where mandatory travel restrictions were imposed on County employees. Furthermore, the tables should indicate both total gallons used and cost per department due to the fluctuating price of gasoline. In subsequent updates of this plan, participating municipalities will work with the Henderson County Energy Coordinator (see Section 5) to create baseline fuel tables and track quarterly changes in fuel usage.

Department	FY2008 Approximate $ Spent	FY2007 Approximate $ Spent	% of Total (Gallons)
Animal Control	$13,961	$10,916	2.77%
Assessor	$3,997	$3,153	0.80%
Code Enforcement	$3,668	$2,928	0.72%
Cooperative Extension	$1,126	$ 900	0.23%
DSS	$3,204	$2,480	0.62%
EMS	$63,956	$46,856	13.58%
Fire Marshall	$6,145	$4,842	1.21%
Garage	$19,075	$15,077	3.74%
Health Department	$35,102	$27,983	6.94%
Inspections	$ 35,296	$27,687	6.96%
Library	$2,942	$2,331	0.59%
Motor Pool	$5,296	$4,255	1.05%
Planning	$998	$801	0.20%
Recreation	$870	$704	0.17%
Sheriff	$291,587	$231,465	57.67%
Soil & Water	$1,185	$930	0.23%
Travel & Tourism	$322	$233	0.06%
Utilities	$6,008	$4,672	1.16%
Youth Development	$6,740	$5,341	1.33%
TOTAL	**$501,478**	**$393,553**	**100.00%**

Section 4 –Energy Efficiency

A. Building Efficiency and Management

Procedures to adequately address faulty equipment should be written by the Energy Committee and the capital improvement planning process should be overseen by the Central Services manager. These procedures and phone numbers of equipment rentals, suppliers, and repair people will be added as an attachment. All central equipment should have scheduled maintenance. The equipment in need of replacement should be replaced with Energy Star or the most efficient equipment. Contingency plans should be developed and tested to protect critical facility operations from energy and water shortages and incorporated into a countywide Emergency Management Plan.

Within the next 18 months, a total of four to six county building should be audited. These buildings will be specifically chosen due to their rank in energy usage. Audits in the first year may reveal such EEOs as sealing airleaks and voids in the air ducts, doors, and windows, ensuring that thermostats are working properly, installing aerators on sinks, using low flow toilets, placing timers on drink and snack machines, and replacing incandescent lights with compact fluorescent light bulbs. Other more expensive EEOs found during the quarterly energy audits may be reviewed through a performance contract, which would need approval by the Board of Commissioners. Such EEOs may include replacing HVAC equipment with energy efficient heat pumps, replacing windows and inefficient water heaters, and installing insulation. Whenever necessary to improve operation and efficiency, mechanical and electrical equipment should be updated, repaired, or replaced. Programs and processes that may be accomplished in the first year include: improving utility tracking and data analysis, completing a meter survey, auditing buildings using the energy efficiency opportunities (EEO) Checklist (Appendix-G) to develop a list of energy efficiency (EE) and renewable energy (RE) projects and available funding, addressing additional EEOs in buildings, attending efficiency training workshops, requesting the free steam trap survey from the State Energy Office, and obtaining efficiency tests for heating, ventilation, and air conditioning systems (HVAC). Processes to improve energy efficiency should also be pursued. These processes would include an annual review of utility rates with each supplier and an audit of each utility invoice on a quarterly or monthly basis.

Alternative energies should be pursued along with other energy efficiency opportunities. Projects to be accomplished within the next five years include a pilot project to install photovoltaics, solar thermal water heating, and/or rain barrels on an existing county building (See Section 6-Timeline). Additionally, any new building projects should incorporate energy and water conservation technologies into their design. Sustainable building practices should be pursued at all times in all operations and maintenance of buildings. Whenever possible, County buildings should strive to meet U.S. Green Building Council/LEED standards, Energy Star, and HealthyBuilt Home standards. Henderson County should also strive to improve energy efficiency among county and regional residents. Whenever possible, energy efficiency should be encouraged by County employees. Methods of promoting efficiency among residents are further explained in the Outreach section.

B. Transportation

The County is currently reviewing programs and projects to improve transportation cost efficiency. Compressed Natural Gas will be used in at least three buses in 2011. In general, CNG vehicles are 5-15% more efficient in mileage than regular gasoline engines. Natural gas is also less expensive than gasoline and reduces maintenance costs by causing less wear and tear on engines. Replacing the entire bus fleet with natural gas

vehicles could translate into a savings of $20,000 per year. Another benefit of natural gas is that it is one of the most clean burning fuels.

Additionally, County staff should incorporate fuel and cost efficiency and environmental stewardship in their everyday activities. Staff should be encouraged to walk, bicycle, or share rides whenever possible. County vehicles should not be utilized for journeys of less than a quarter mile unless in cases of inclement weather, where large material hauling or moving is involved, or a Staff member has a physical disability.

Departmental energy plans should include an inventory of their vehicles along with their gas mileage, vehicle identification numbers, odometer reading, models, miles per gallon, and maintenance schedules. The information compiled from the departmental inventories will be compiled into a centralized database. Vehicles should, whenever possible, be replaced with the most efficient vehicles and, where feasible, with alternative or flex fuel vehicles. Measures for more efficient vehicles should also be incorporated into an emergency management plan as a preemptive measure against future fuel shortages.

Section 5- Outreach

A. Building Efficiency and Management

Henderson County is committed to wise energy and resource usage. To become a leader in Western North Carolina, Henderson County will not only be dedicated to efficient energy usage in the county, but will use outreach and education to assist residents, employees, and the surrounding counties and communities in reaching their goals of energy efficiency. The Energy Mandate, found in Appendix D, is the County's formal declaration of its commitment to working together to reach the goal of reducing the total annual energy use per square foot of County facilities by at least 10% by June 20, 2010 and 4% for each year thereafter. With the support of the County Manager and department heads, the Energy Committees should realize their efforts toward this goal. The Environmental Programs Coordinator will be responsible for outreach for the communities and the County, various training courses, and grant research and writing for energy related grants. Inspectors and the Central Services Manager should receive Energy Star, LEED, and ISO 14001 training and make these skills available to the public upon request. Permit waiving or property tax abatements may be offered as incentives for LEED, Energy Star, Healthybuilt Homes, or any other reputable green certification process.

The position of Energy Coordinator will be grant funded for three years. This position will be responsible for county wide energy and building audits and energy management outreach. The Energy Coordinator will be made available to all participating government entities to conduct any energy audits, staff training and energy management outreach.

B. Transportation

The Apple Country Transit advertises bus schedules on their website, at the WCCA offices, the Planning Department, and the libraries. The Environmental Programs Coordinator will assist the Planning department by promoting the use of public transit through press releases, web site, and other methods such as a free bus riding

event, limited free ride coupons, and reduced or free rates for those with low or fixed incomes. Energy Coordinator will assist with fuel tracking data.

Section 6 - Timelines

One goal of this Plan is to make Henderson County a regional leader in energy management and efficiency. One step toward the realization of this goal is to move toward EPA Energy Star status for each of the County's occupied buildings. The goal will be achieved through the development and implementation of the programs and projects listed in the Performance Scorecard. The Committee develops milestones and assigns accountability for each phase of each program and project. Milestones are updated during the quarterly Committee meetings. The final milestone of each project is to document actual costs and savings. The following milestones have been accomplished in FY 2007-2009:

FY 2007- 2009 Milestones Accomplished
Departmental energy plans written (8 written)
HVAC optimization (thermostat set at 74-78 F in summer and 64-69 F in winter)
Energy awareness PR materials posted and given-out
Staff attended energy training workshops
Grant obtained for CNG buses and station

The following Milestones, with proposed deadlines indicated, will be achieved in FY 2010:

FY 2010 Milestones
Energy Coordinator hired
County Energy Committee established to meet quarterly (4 times)
County and Municipal Committee established to meet quarterly (4 times)
Quarterly Building Assessments (Top 3 buildings)
Utility Rate Review Program initiated (98 electric accounts reviewed)
Five introductory training workshops hosted for staff
Identified the possibility of sub-metering buildings
Utility Data Accounting Database developed (September 1, 2009)
DOE EEC Block Grant application submitted (October 2009)
Redesigned energy data collection procedures (January 1, 2010)
Evaluate Performance Contracting (May 1, 2010)
Remaining County Department Energy Plans written (15 written by June 2010)
Municipality Department Energy Plans written (10-20 written by June 2010)
No-cost EEOs addressed and identified by departments (June 2010)
Remaining EEOs evaluated and prioritized (June 2010)
Meter surveys identified un-needed meters (June 2010)

Trained 2 inspectors in LEED, Energy Star, HealthyBuilt Homes, or ISO 14001 (June 2010)

The following Milestones, with proposed deadlines indicated, are planned for FY 2011-2015:

FY 2011-2015 Planned Milestones
Conducted a Rate Review of every account to ensure the most economical rate (Annual)
Audited and assessed remaining buildings and central equipment for EEOs (Annual)
Evaluated and prioritized remaining projects (Annual)
Replaced inefficient lighting fixtures with premium fluorescent fixtures (e.g. replaced T-12 fixtures with T-8 and replaced incandescent light bulbs with compact fluorescent light bulbs).
Provided occupancy daylight controls for some lighting systems
Replaced inefficient HVAC systems (1 per year)
Replaced or tuned inefficient boilers and chillers identified through a boiler and chiller system efficiency survey. (Central Service Manager identifies number of boilers and chillers and annually services)
Provided additional energy awareness PR materials (Quarterly or 4 times per year)
Provided insulation in some attics, walls, and floors (1 per year)
Replaced inefficient water heaters with premium-efficiency water heaters (Annually)
Replaced inefficient motors with premium-efficiency models, cogged V-belts, and VFDs (Annually)
Hosted additional training workshops for staff
Provided additional educational opportunities to inspectors and County staff on LEED, Energy Star, HealthyBuilt Homes, or ISO 14001
Implemented one (1) alternative energy project per year
Energy awareness PR materials posted and given-out (July 2010)
CNG fueling station built (July 2010)
Created Emergency Management Plan to identify solutions for water, fuel, and energy shortages (August 2010)
Vehicle inventory finished for each department (August 2010)
Four (4) of the six fixed route buses and up to four (4) of the seven senior and disabled social service vans replaced with CNG vehicles (2011)
Piloted a program to install solar thermal water heating and cooling on the County courthouse (2011)
Had a LEED certified building in Henderson County (2012)

The Central Services Manager will also address the EEOs that were recommended in the boiler and chiller system efficiency surveys. The boilers will be tuned annually, and heat transfer surfaces in the boiler and chiller systems will be cleaned annually. These investments are expected to return a positive cashflow to the operating budget.

During the quarterly meetings, the Henderson County Energy Committee will work as a team to prioritize the investments in programs and projects that are listed in the Performance Scorecard. The Environmental Programs Coordinator's profile of utility costs and the Central Services Manager's list of EEO projects will be discussed. Budget costs and savings estimates for each program and project are regularly updated. At each meeting, goals and milestones will be addressed and updated where necessary.

Financial Parameters

The primary funding source for maintenance programs is the general fund. EEO projects will be funded through grants, and those not so funded will be addressed by a performance contract or through the Capital Improvement Plan. Some of the longer-payback EEO projects and training programs will be funded by grants, while those not funded will be addressed through performance contracting.

Section 7- Funding

In FY 2010, loans, grants, incentives and other funding opportunities will be identified and applied for to improve energy efficiency whenever possible as a supplement to the capital improvements funding. Available funding includes but is not limited to the following:

American Recovery and Reinvestment Act:

Energy Efficiency and Conservation Block Grants: Federal grants may be applied for to assist eligible entities in creating and implementing strategies to reduce energy usage and increase energy efficiency in an environmentally sustainable manner.

North Carolina State Energy Program: The State of North Carolina has submitted a proposed plan to the U.S. Department of Energy. The State breaks down its $76 million share into the following six categories:

(1) Supporting small business and industry through energy savings ($12 million)

(2) Growing North Carolina's green workforce ($8.5 million)

(3) Creating an energy investment revolving loan fund ($20 million)

(4) Improving government energy efficiency ($9 million)

(5) Promoting residential energy efficiency and renewable energy ($12 million)

(6) Fostering renewable energy technology and resource innovation ($14 million)

Proposed activities to be funded of interest to local governments include continuing education for building inspectors to improve code implementation and enforcement; energy education and training programs for governmental, residential, commercial, industrial, non-profit, and transportation sectors; energy use assessments; and energy plan development.

In addition, the State proposes to establish an energy revolving loan fund to provide no- and low-interest loans to businesses, non-profits, local governments, public schools, community colleges, state agencies, and state universities. The fund will provide loans of up to $1 million for terms of up to ten years. Eligible projects will include renewable energy initiatives, other energy-saving measures, and performance contract term buy-downs.

The Energy Improvement Loan Program (EILP): Loans of 1-3% are available for local governments through the North Carolina State Department of Energy up to $500,000 that demonstrate energy efficiency, energy cost-savings or reduced energy demand. The loan can be repaid from the energy savings these improvements generate.

Duke Smart Savers Incentives Program: Duke Energy provides incentives to businesses for installing energy efficient equipment. By submitting invoices and scheduling appointments by Duke representatives, the County can receive cash back for installation of efficient equipment for lighting, heating and cooling, chiller and thermal storage, and motor/pump/VFDs.

Performance Contracting: An agreement is entered into with a private energy service company (ESCO) and Henderson County. The ESCO identifies and finds EEOs and then recommends a package of improvements to be paid for through savings. The ESCO guarantees that savings meet or exceed annual payments to cover all project costs. The contract terms are usually from seven up to fifteen years. If no savings are seen, then the ESCO pays the difference.

Appendix A: Henderson County Departmental Energy Plans

***Municipality Energy Plans inserted by June 2010**

Appendix – A Departmental Energy Plans

Emergency Services
(EMS, Fire Marshal, Emergency Management)
Energy Conservation Plan

GOAL

To reduce energy consumption by a minimum of 10 percent.

OBJECTIVES

FUEL CONSERVATION

- Maintain proper tire pressure through weekly tire pressure checks. Tires requiring more than 2 pound adjustment on a weekly basis will be checked more frequently.
- Monitor fuel mileage for all vehicles.
- Monitor equipment requirements and remove unnecessary cargo.
- Consolidate trips and errands.
- Avoid excessive idling for non-emergency travel.
- Obey the speed limit.
- Walk (if physically possible) for non-emergency trips less than .3 mile.
- Reduce unnecessary trips to headquarters for training and data transfer through information technology improvements.
- Maintain log of tire pressure and fuel mileage for each vehicle, schedule maintenance at recommended intervals.
  (See attachment A)
- Evaluate take-home vehicle assignments.

UTILITY CONSERVATION

- Turn off lights in rooms not in use, or open blinds for natural lighting when appropriate.
- Turn off equipment overnight or when not in use.
- Replace incandescent bulbs with compact florescent bulbs or LED lighting.
- Install low-flow shower heads at crew quarters and implement 4 minute maximum water run time on showers.
- Set thermostats at 64-68 degrees for heating and 74-78 degrees for cooling.
- No space heaters allowed.
- Fans are allowed for use when room is occupied.
- Close blinds in summer and open in winter for solar efficiency

ENERGY CONSERVATION PLAN
ATTACHMENT A

VEHICLE NUMBER_____FUEL TYPE_____

NEXT SERVICE DUE_____

RECOMMENDED TIRE PRESSURE__F_____R_____

PRESSURE CHECKED DATE_____BY_____

PRESSURE CHECKED DATE_____BY_____

PRESSURE CHECKED DATE_____BY_____

PRESSURE CHECKED DATE_____BY_____

MILEAGE_____GALLONS_____MPG_____

MILEAGE_____GALLONS_____MPG_____

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Appendix – A Departmental Energy Plans

HENDERSON COUNTY FINANCE DEPARTMENT

ENERGY CONSERVATION MEASURES

- Keep lights off in areas/rooms not in use
- Reduce the number of fluorescent bulbs in overhead light fixtures
- Keep all thermostats on lowest possible level for the season per county policy
- Have Central Services replace light bulbs with more energy efficient lighting
- Power down all office equipment including computers, copier, printers, etc. daily that do not power down themselves

Appendix – A Departmental Energy Plans

Henderson County Animal Services Center Energy Conservation Plan

Electricity-

1) **To keep the heat pumps from running all night we are going to start closing all trap doors when the temperatures go below 50˚ F.**
2) **We will also set the thermostats around 75˚ F.**
3) **There are two different sets of lights for each wing of dog runs. One set is designed to provide a soft glow at night. We will start turning this set off at night.**

Gas-

1) **We will try and make only one trip a day to the Humane Alliance Spay/Neuter clinic.**
2) **I will also encourage staff to schedule spay/neuter in a manner that will minimize the number of days we have to make the trip.**
3) **Combining supply list so that we minimize the number of trips to vendors. Also using delivery service provided by vendors if it's cost effective.**

After department head meeting:
Summer 78-74 degrees F Thermostats
Winter 65-69 degrees F Theromstats
No space heaters
Fans are ok if the thermostat is set on the most cost efficient setting.
Close Blinds
Insulation type inventory
Turn off lights and equipment
No idle policy for vehicles
Buy vehicles smartly

Appendix – A Departmental Energy Plans

ENERGY CONSERVATION
HUMAN RESOURCES DEPARTMENT
5/05/08

Energy consumption by Human Resources staff generally includes:

- Lights
- Heating and Air Conditioning
- Water
- Gas
- Electricity
- Paper

HRD efforts to conserve energy include:

1. Turn off all lights in bathroom and department upon leaving.
2. Choose to teleconference into meetings rather than drive whenever possible.
3. Turn off all computers at close of business each Friday or prior to holidays.
4. Recycle all paper; increase electronic communication to eliminate paper use; maintain emails and documents electronically and set up electronic task list/reminders rather than printing hard copies whenever possible.
5. Do not allow water to run while washing hands, but turn on to lather and to rinse only.
6. Use one paper towel instead of two to dry hands after washing.
7. Conduct business with remote departments by phone or electronically whenever possible.
8. Send regular Admin Alert every Friday to remind all employees what they can do to conserve (turn out lights, turn off computer, recycle, etc.)

Appendix – A Departmental Energy Plans

Henderson County Soil & Water Conservation District's Energy Conservation Plan

The Henderson County Soil & Water Conservation District is committed to providing the taxpayers of Henderson County with impeccable service in an efficient and effective manner. One of the ways to meet this commitment is to ensure that, from an energy usage standpoint, our office is operating in the most energy-efficient manner possible.

SWCD will strive to reduce its energy usage by utilizing energy-efficient equipment for new purchases, by retrofitting existing facilities to maximize the facilities' efficiency and effectiveness from the standpoint of energy usage, and by educating our employees on day-to-day procedures that reduce energy consumption.

Heating and cooling:

- In winter, set office thermostat as low as comfortable (65 to 68 degrees F is suggested) when the office is occupied.
- Set back the thermostat by as much as 10 degrees F at night or when the office is unoccupied.
- Set back the thermostat to 50 to 55 degrees F when the office is unoccupied for more than 24 hours.
- Install programmable thermostat(s) to automatically provide the settings mentioned above.
- Replace filters once a month during winter.
- Minimize the use of bathroom ventilating fans and/or install a timer switch on them.
- In summer, shade west-facing windows.
- Maintain a temperature of 72 to 74 degrees or higher in summer.
- Regularly change air-conditioning system filters and clean the condenser.

Appliances and Electrical equipment:

- Turn off computer monitors at day's end.
- Turn off printers at day's end.
- Set temperature of water heater to 120 degrees F.
- Wrap water heater with insulating blanket.
- Maintain refrigerator at 37 to 40 degrees F and freezer at 5 degrees F.
- Unplug equipment when not in use, such as coffeemakers, printers, radios, etc.

Other:

- Repair any leaky faucets.
- Turn off lights when not in use.
- Switch to fluorescent bulbs in bathrooms.
- Follow maintenance schedule for departmental vehicle; maintain proper tire inflation.
- Use county car instead of truck when possible to conserve fuel.
- Be sure to follow posted speed limits and/or reduce speed when using county vehicles.
- Combine trips in county vehicles when possible.
- Investigate whether closing blinds over skylights would reduce cooling costs in summer.

- Consider switching employees to a 4-day week to allow for energy conservation via a shorter work week. Consider having employees telecommute/work from home on the fifth day.

Appendix – A Departmental Energy Plans

05-02-08

IT Department Energy Conservation Plan

- Turn on lights only when needed. Lights in unoccupied areas should not be left on. Emergency lights that stay on all the time should be limited to those that are necessary.
- Encourage the use of compact fluorescent light bulbs by Central Services.
- Keep thermostats no higher than 68 degrees for heat or 78 degrees for cooling.
- Personal computers, monitors, and other equipment should be powered off at the end of each workday, and should be configured to sleep or hibernate on inactivity during the work day.
- Equipment such as computers, monitors, projectors, and printers that are used only periodically, in areas such as the IT classroom, should be kept powered off except when in use.
- Purchase only ENERGY STAR certified computers and equipment. The ENERGY STAR computer specification is expected to save consumers and businesses more than $1.8 billion in energy costs over the next 5 years and prevent greenhouse gas emissions equal to the annual emissions of 2.7 million vehicles. (see www.energystar.gov)
- Replace older photocopier in the IT Department with a new, energy-efficient model, and avoid settings that result in using power all the time, such as “instant on” features. . ENERGY STAR qualified office and imaging products use as much as 60% less electricity than standard equipment (see www.energystar.com).Turn off the copier at close of business.
- Walk rather than drive whenever practical. When driving is required, carpool when possible, and plan trips efficiently to avoid making unnecessary trips. Whenever possible, use conference calls and web-enabled technology to hold meetings that would otherwise involve travel.
- Implement server consolidation through virtualization to maximize energy savings.

Appendix – A Departmental Energy Plans

Henderson County Parks and Recreation Department

801 Glover Street (Jackson Park), Hendersonville, NC 28792
(828) 697-4884 office / (828) 697-4886 fax

ENERGY PLAN

August 8, 2009

Jackson Park and Stoney Mountain Activity Center –

HCPRD office and SMCA office-

-Turn off light when not in use. Avoid using lights during the day if sufficient natural light is available.
-Set thermostat during the summer months between 74˚ - 78˚.
-Set thermostat during the winter months between 65˚ - 69˚.
-Ensure HVAC is on a maintenance program (filters changed etc.)
-Double glazed windows installed in office.
-Conduct Insulation Inventory.
-Change light bulbs to energy efficient bulbs.
-Plan trips to maximize efficient travel.
-Turn off equipment when not in use. (Computer, printers, etc.)

Park grounds-

-Set tennis courts lights to correspond with nightfall. Separate timers on upper and lower courts.
-Turn off ball field lights when games over.
-Inventory safety lights around the park.
-Set basketball court lights to correspond with night fall.
-Evaluate appliances at concessions stands.

Etowah Park, East Flat Rock Park, Edneyville Park, Edneyville Community Center, Westfeldt Park, Dana Park –

Park grounds-

-Plan trips to maximize efficient travel. Visit parks using shortest route.
-Set basketball court lights to correspond with nightfall.
-Inventory safety lights around the park.
-Set thermostat during the summer months between 74˚ - 78˚.
-Set thermostat during the winter months between 65˚ - 69˚.
-Ensure HVAC is on a maintenance program (filters changed etc.)
-Conduct Insulation Inventory.
-Change light bulbs to energy efficient bulbs.

Appendix – A Departmental Energy Plans

Henderson County Planning Department
Energy Conservation Plan

Revised 8-3-2009

GOAL

To reduce energy consumption by a minimum of 10 percent and reduce costs.

OBJECTIVES

Change employee behavior and implement modifications to equipment and operations to reduce energy consumption and costs.

Maintain or increase existing service levels.

EMPLOYEE CONSERVATION ACTIONS

- Turn off lights in rooms not in use.
- Turn off equipment overnight or when not in use.
    - This will include all computers, printers, copiers, and other ancillary devices.
    - All equipment should be unplugged at the end of each business day. Plugging equipment into power strips can make this task easier.
    - The large format plotter should remain turned off when not printing.
    - There may be some exceptions where equipment must remain on at all times (IT Server).
- Set thermostats at 64-68 degrees for heating and 74-78 degrees for cooling.
- Space heaters are not allowed.
- Portable fans are permitted.
- Actively use blinds for natural light and solar efficiency (e.g. closed to avoid direct light in summer and open in winter). Avoid direct light that causes unwanted heating in summer but open when light is indirect.
- Turn lights off when sufficient natural light exists.
- Consolidate departmental processes, site visits, and tasks requiring driving when possible.

EQUIPMENT MODIFICATIONS

- Replace incandescent bulbs with compact florescent bulbs.
- Reduce the number of florescent bulbs in use by only using the amount of lighting necessary. Many rooms have double switches for the overhead lights. In that case only use one bank and when adequate natural light is available, do not use them at all.
- Install motion sensor activated lighting in common areas (e.g. rest rooms, file rooms, etc.).
- Remove lighting from vending machines and place timers on snack food machines.
- Install seven day programmable thermostats for HVAC systems.

- Change HVAC filters at specified routine schedules.
- Install LED exit signs.
- Install wall outlet timers for printers, copiers and other equipment to ensure off-time when offices are unoccupied. Alternatively, just turn off power strips each day.
- Unplug unused water fountains and raise temperature settings for actively used water fountains.
- Modify computer settings to enter sleep mode or shut down when idle for specific periods.

Note: Many of the equipment modifications will be implemented by Central Services using Guaranteed Energy Savings Contract.

Appendix – A Departmental Energy Plans

King Street Office Building
Energy Conservation Plan

GOAL

To reduce energy consumption by a minimum of 10 percent.

OBJECTIVES

Change employee behavior and implement modifications to equipment and operations to reduce energy consumption and costs.

Maintain or increase existing service levels.

DEPARTMENTS/UNITS IMPACTED

Human Resources Department
- HRD/Risk Management
- Wellness

Code Enforcement Department

Emergency Services Department
- Emergency Management
- Fire Marshal

Planning Department
- Permitting
- Planning
- Property Addressing

Engineering Department
- Engineering
- Utilities
- Erosion Control
- Inspections

EMPLOYEE CONSERVATION ACTIONS

- Turn off lights in rooms not in use.
- Turn off equipment overnight or when not in use. This will include all computers, printers, copiers, and other ancillary devices.
- Set thermostats at 64-68 degrees for heating and 74-78 degrees for cooling.
- Space heaters are not allowed.
- Actively use blinds for natural light and solar efficiency (e.g. closed to avoid direct light in summer and open in winter). Avoid direct light that causes unwanted heating in summer but open when light is indirect. Turn lights off when sufficient natural light exists.
- Consolidate departmental processes, site visits, and tasks requiring driving.

EQUIPMENT MODIFICATIONS

- Replace incandescent bulbs with compact florescent bulbs.
- Reduce the number of florescent bulbs in use.
- Install motion sensor activated lighting in common areas (e.g. rest rooms, file rooms, etc.).
- Remove lighting from vending machines and place timers on snack food machines.
- Install seven day programmable thermostats for HVAC systems.
- Change HVAC filters at specified routine schedules.
- Install LED exit signs.
- Install wall outlet timers for printers, copiers and other equipment to ensure off-time when offices are unoccupied.
- Unplug unused water fountains and raise temperature settings for actively used water fountains.
- Modify computer settings to enter sleep mode or shut down when idle for specific periods.

Note: Many of the equipment modifications will be implemented by Central Services using Guaranteed Energy Savings Contract.

OPERATIONS

- Adjust work schedules to maximize energy conservation (4 day work week).

Benefits	Obstacles
Customer Convenience	Holidays
Energy Savings	Customer Convenience
Fuel Consumption	Child Care
Employee Commute Cost	

Positive Effects

1. The 4-day work week can provide greater convenience and access to customers and citizens by providing extended hours. Current hours of operation are Monday – Friday, 8:00a.m. to 4:30p.m.
2. Establish 4 work days with new hours of operation as Monday – Thursday, 7:00a.m. to 6:00p.m. These extended hours could allow working customers to access government offices before or after their normal workday. From a customer service standpoint, this is a positive step. Department Heads would implement employee schedules to maintain 37.5 hour work week while maintaining weekly office hours totaling 44 hours.
3. A 4-day work week can reduce energy usage by eliminating an entire heating/cooling cycle for the HVAC system among other possible energy savings. Temperature settings could be modified each Thursday afternoon to Monday morning to a lower operational setting.

Obstacles

1. There are some potential consequences to a 4-day work week. The current Holiday schedule is based upon a 7.5 hour workday. A 4-day work week would require employees to flex-schedule hours worked to reach 37.5 hours in a week where the Holiday fell Monday-Thursday. Alternatively, the employee could use vacation leave to make up the difference since the County will continue to allot only 7.5 hours per holiday. The Personnel Handbook

would need to address how Holiday pay is handled. The same number of Holidays could be allotted. There are options to address this issue.

2. While customer traffic is lower on Fridays, inevitably some customers will not want to wait the extra day to access government offices.
3. Child Care for employees may also be an issue to work around and accommodate since some child care centers open at 7:30a.m. and close at 5:30p.m. Department Heads will need to accommodate these employees while not compromising operations. The solution for this issue will vary by department so that an arrangement can be tailored to each situation. However, working on Friday should not be an option as this will negate the energy saving benefits of the new schedule.

Appendix – B Performance Scorecard

Focus A: Supply Side	
Strategy 1.	Purchase utilities at most economical rates
Strategy 2.	Maximize utilization of incentive programs

Past Year Activities (2007-2009)	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Accountability	Funding Source

2009-2011 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source
Review utility Billing Rates with each supplier, and quarterly invoice audit.							Energy Coordinator	
Review utility incentive programs for alternative funding sources for energy efficiency improvements and renewable energy opportunities.							Energy Coordinator	
Evaluate purchase options with utility providers							Central Services Manager, Energy Committee, Energy Coordinator	
Sub-meter buildings if possible and conduct meter surveys	Reduced energy costs						Energy Coordinator, Central Services Manager, Environmental Programs Coordinator, Utility Provider	

2011-2013 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source

Focus B: Demand Side	
Strategy 1.	Conduct energy audits to identify opportunities for conservation and establish trend line for spending
Strategy 2.	Prioritize energy saving and alternative energy projects according to cost-effectiveness
Strategy 3.	Develop Key Performance Indicators (KPIs) that clearly measure real energy and water conservation progress
Strategy 4.	Implement and address fast-payback energy efficiency opportunities.

Past Year Activities (2007-2009)	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Accountability	Funding Source

2009-2011 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source

2011-2013 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source

Focus C: Communication, Outreach, and Training	
Strategy 1.	In-house workshops training employees on energy management.
Strategy 2.	Train two Building Inspectors in LEED, Energy Star, HealthyBuilt Homes, ISO 14001, or other energy management certification
Strategy 3.	Educate employees on benefits of energy management and conservation at work and home via, email, newsletter and handouts.
Strategy 4.	Establish purchasing policies to ensure procurement of efficient equipment and energy star appliances.
Strategy 5	Implement emergency procedures to deal with energy shortages and equipment failures

Past Year Activities (2007-2009)	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Accountability	Funding Source

2009-2011 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source
Develop County-Wide Energy Management and Emission Reduction Policy					Salary			
Educate BOC, County and Muncipalities, and Facilities on NC Energy legislation, State Energy resources & planning techniques								
Develop an Strategic Energy Plan	Adopted Plan		NA	NA	Salary		Solid Waste/Engineering	
Conduct Energy Management training sessions for Management and employees	Sign off sheet		NA	NA				

Develop energy & water conservation educational opportunities: 1) flyers and newsletter, 2) Energy Committee meetings 3) electronic transmissions 4)In-house workshops	Participation by all employees in energy conservation efforts. Certificate						Environmental Programs Coordinator/PIO	
Building Inspectors trained in energy management.	Two inspectors certified						Building Inspections	

2011-2013 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source
Emergency Procedure Plan	Adopted Plan							

Focus D: Implement Fleet Management Program

Strategy 1.	Increase number of CNG and alternative fuel vehicles within fleet
Strategy 2	Behavioral changes to reduce amount of fuel used

Past Year Activities (2007-2009)	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Accountability	Funding Source
CNG grants for bus obtained	CNG station and CNG vehicles obtained							

2009-2011 Activities	Measurement Expected	Measurement Actual	Savings Expected	Savings Actual	Cost	Jobs	Assigned to	Funding Source
Implement the increased use of alternative fuels	Reduced pollutant, greenhouse gas emissions and petroleum fuel							

	consumption							
Standardize fleet preventative maintenance practices and documentation.	Improved vehicle safety, utilization and reporting.							
Implement behavioral strategies into Departmental Energy Plans	Decreased fuel usage							

Appendix – C
Utility Benchmarks

Utility Providers

Electricity is provided by Duke through [number] meters.
Natural Gas is provided by PSNC through [number] meters.
Propane is purchased as needed through Energy United
Fuel Oil is purchases as needed through
Water is purchased from City of Hendersonville though [number] meters.

Annual Energy Use per Facility Total Square Foot = [number]-MBTU/SF

The total gross square footage of our facilities during last FY was [number]-SF.

Electricity: Total KWHs purchased last FY was [number], which equates to [number]-Million BTU when multiplied by 0.0034-MBTU/KWH.

Natural Gas: Total Therms of natural gas purchased last FY was [number], which equates to [number]-Million BTU when multiplied by 0.1-MBTU / Therm.

Propane: Total gallons of propane purchased last FY was [number], which equates to [number]-Million BTU when multiplied by 0.092-MBTU / gallon.

Total: Total MBTU per Square Foot for the last FY was [number]-MBTU/SF.

Utility	2008 $	2008 MBTU/SF	2009 $	2009 MBTU/SF
Electricity				
Natural Gas				
Propane				
Total				
Water				

Appendix – D
Energy Mandate for Henderson County

The undersigned recognize that utilities usage is a controllable expense in which reductions can be allocated to other needs within our operations budget, and that energy efficiency is the responsibility of all staff.

- The development and implementation of this Strategic Energy Plan is the responsibility of the undersigned Central Services Manager.
- The undersigned managers will support the Central Services Manager in implementing this Plan.
- The Energy Committee will meet quarterly to review progress of the programs and projects included in our Performance Scorecard, and they will update the undersigned directors and managers on a quarterly basis.

Energy Mandate – Goal

To reduce energy costs by 10%

Energy Mandate – Tracking Measures

- Total Utilities use and cost per square foot
- Electric KWH use per square foot
- Gas BTU use per square foot
- Oil BTU use per square foot
- Other fuel use per square foot
- Water use per square foot

Energy Mandate – Commitment

Implemented this ____ day of _____, 2009.

_____	_____	_____	_____
Human Resources Manager	Central Services Manager	Finance Director	County Manager

Appendix – E

Energy Efficiency and Renewable Energy Projects

Project Type	Net Project Area (SF)	Estimated Installed Cost per Sq. Ft. ($)	Estimated Labor and Design Cost ($)	Estimated Materials Cost ($)	Estimated Annual Energy Savings	Estimated Annual CO2 Reduction (tons)	Estimated Annual Savings ($)	Simple Pay Back (Years)	Schedule
Replace inefficient lighting with premium-efficiency fluorescent fixtures, w/occupancy controls, LED exit signs in five buildings								4	
Provide occupancy and daylight controls for some lighting systems									
Replace inefficient HVAC systems with premium-efficiency heat pump systems in five buildings								10	
Replace inefficient equipment with Energy Star equipment									
Repair holes and seal ductwork									
Insulate attics in two buildings								5	

Replace inefficient water heaters with premium-efficiency models								5	
Replace 10 inefficient motors with premium-efficiency models, cogged V-belts, and VFDs								5	
Replace 4 inefficient boilers with premium-efficiency boilers								5	
Replace 4 inefficient chillers and cooling towers with premium-efficiency equipment								5	
Solar Electric PV Systems for Public Display								20	
Provide Four Solar Hot Water Systems								4	
Wind Power Pilot Project									
Biodiesel System (grease collection)									
Total									

Appendix – F

Energy Efficiency Opportunity (EEO) Checklist (separate file)