9

Beaufort County Comprehensive Plan

Energy

Table of Contents

Introduction

Energy usage and conservation is a growing topic of concern nationally and in Beaufort County in light of rising fuel costs. In 1997, when the County adopted its first comprehensive plan, the cost of petroleum hovered around $20 per barrel and $1.25 per gallon at the pump. In 2008, fuel prices peaked in July at over $4 per gallon. Beaufort County is a significant consumer of both petroleum and electricity. While its natural beauty and amenities have made the County a desirable place to live, the availability of reasonably priced electricity to power air-conditioning has made the County a bearable place to live during the summer months. County residents and visitors also rely almost solely on private automobiles to commute to work and to conduct the most basic of errands. These factors point to the need to create new policies and reevaluate existing policies that affect the amount of energy that is consumed locally and to explore opportunities to locally produce alternative forms of energy.

State and Local Overview

South Carolina's per capita electricity consumption is among the highest in the United States due to high demand for electric air-conditioning during hot summer months, and the widespread use of electricity for home heating during typically mild winter months. Nearly three-fifths of South Carolina households use electricity as their primary energy source for home heating.[1] In 2005, the state was ranked as the fifth largest electricity user per person in the United States.[2]

Nuclear power accounts for more than one-half of South Carolina's electricity generation. With four active nuclear power plants, South Carolina is among the top nuclear power producers in the United States. Coal fuels about two-fifths of net electricity generation. South

[1] Energy Administration Administration – State Energy Profiles
http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=SC
[2] California Energy Commission, U.S. Per Capita Electricity Use by State in 2005,
http://www.energy.ca.gov/electricity/us_per_capita_electricity_2005.html

Carolina has no coalmines, and coal-fired power plants rely on supplies from other states. South Carolina's only substantial energy resource is its system of rivers and lakes, which offers modest hydroelectric power from facilities located in several river and lake basins. Other opportunities for renewable energy lie primarily in the state's off shore wind and solar resources.

The suppliers of electricity in Beaufort County, Palmetto Electric Cooperative and South Carolina Electric and Gas (SCE&G), rely primarily on coal-powered generators. Palmetto Electric, which serves roughly 66,000 customers in Beaufort, Jasper, and Hampton Counties, buys power from state-owned Santee Cooper through the Central Electric Power Cooperative. Santee Cooper generates about 80% of its electricity from coal-fired power plants. SCE&G, which serves 45,500 customers in Beaufort and Jasper counties, generates its own electricity, with about 65 percent of it from coal. This is of concern to Beaufort County because in the past 12 months, the price of coal has increased four fold, causing both companies to raise rates significantly in the later part of 2008 and in 2009.

In response to energy and climate concerns, on February 16, 2007, Governor Sanford issued Executive Order 2007-04[3] establishing the South Carolina Climate, Energy & Commerce Advisory Committee (CECAC). The Committee arrived at a comprehensive set of 51 sustainable policies specific for South Carolina. Many of these policies are appropriate for local government to implement, and are therefore referenced in this document where applicable.

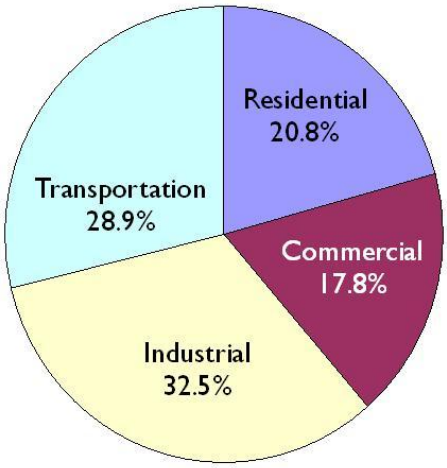
Vision

The vision of the Energy element is to lower Beaufort County's energy dependency by reducing local energy consumption and facilitating local renewable energy production by doing the following:

- Promoting energy efficiency by assessing Beaufort County's facilities and operations and implementing changes to reduce energy consumption;
- Providing incentives for the private sector to invest in green technologies;
- Implementing land use and transportation policies that reduce trip lengths, encourage walking and cycling, and facilitate improved public transportation;
- Overcoming regulatory barriers that create unnecessary obstacles to green building practices and renewable energy generation;
- Facilitating educational outreach to promote energy efficiency and green technology.

[3] www.scclimatechange.us/plenarygroup.cfm

Land Use and Transportation Policies



This chart represents national energy consumption in 2006 by end-use sector.

Land use and transportation policies have significant potential over the long term to reduce energy use in Beaufort County. Nationally, the transportation sector accounted for nearly 29% of total energy consumption in 2006 (see chart in sidebar). In Beaufort County, this percentage is likely higher due to a relatively small local industrial sector. There is a direct relationship between average vehicle miles traveled (VMTs) and energy use. Therefore, reducing the amount that we drive can greatly reduce the amount of energy we use. Over the last 25 years, cheap gasoline has led to a lax attitude about how much we drive. Nationally between 1977 and 2001, VMTs increased by 151% while population only increased by 30%. Much of our driving habits are a direct result of development patterns. The difference between these two rates is largely attributable to growth in auto-oriented development and land use/transportation related issues, such as the availability and convenience of pedestrian and cycling facilities and public transportation. Recent spikes in fuel costs, however, have raised concerns about the sustainability of sprawl from an energy standpoint. Beaufort County's built environment is predominantly auto-oriented. Therefore, developing policies that reduce VMTs, provide transportation choices, and promote mixed-use pedestrian friendly development in key locations are vital to Beaufort County's long-term sustainability both as a place to live and to visit.

Land Use

Local government land use policies provide both the vision and the framework of our built environment. Policies that prescribe strict separation of land uses and low-density development in central areas where infrastructure is available promote sprawl and increase trip lengths. Policies that promote mixed-use developments, integrated bike and pedestrian trails, a street system of interconnected roads, and higher density development at the right locations, reduce sprawl and VMTs. Less VMTs means less energy expended.

Existing Land Use Patterns: Outside of Downtown Beaufort, Port Royal, Bluffton's original square mile, Habersham, and a handful of other traditional neighborhood developments, prevailing land use patterns in Beaufort County are auto-oriented. Owning an automobile is a necessity to perform the most basic of errands for most County residents.

Front Seat, a Seattle-based software company, has developed an on-line application called Walk Score™, which calculates the walkability of an address by locating nearby stores, restaurants, schools, parks, and other destinations and assigning points based on the quantity and distance of these destinations to the address[4]. Scores above 50 generally point to a quantity, proximity and mix of activities that encourage walking. Eight Beaufort County addresses were entered into Walk Score™. Four represented traditional pedestrian oriented neighborhoods, while four were auto-oriented commercial centers. The results indicated that, with the exception of Downtown Beaufort, Beaufort County's pedestrian-friendly neighborhoods currently lack the variety and mix of uses necessary to significantly reduce auto dependency. However, the greatest concentrations of retail, restaurants and other destinations are in auto-oriented shopping centers that lack pedestrian infrastructure, and are too far from residential areas (see Figures 9-1 and 9-2).

Figure 9-1: Walk Score™ Results for Selected Pedestrian-Oriented Neighborhoods

Location	Address	Walk Score™
Downtown Beaufort	700 Bay Street	75
Port Royal	1601 E. Paris Av.	48
Downtown Bluffton	2 Boundary St.	46
Habersham	46 Market St.	25

Figure 9-2: Walk Score™ Results for Selected Auto-Oriented Developments

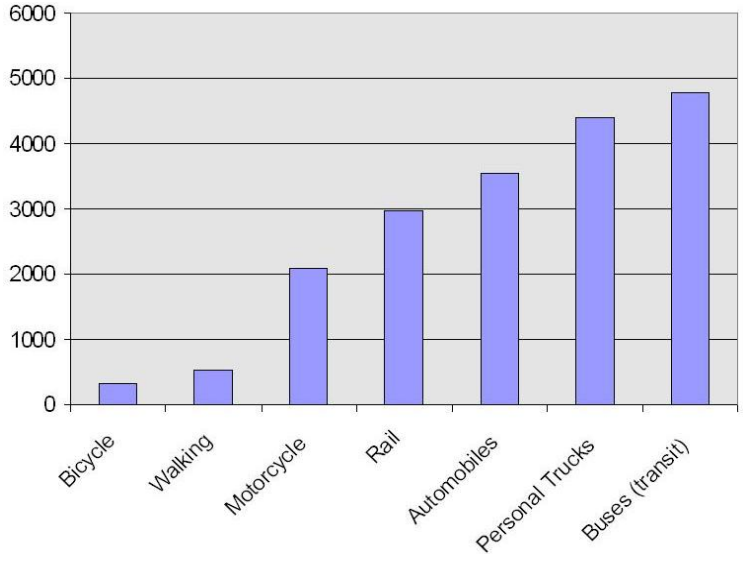
Location	Address	Walk Score™
Beaufort – Intersection of Boundary St. and SC 170	2401 Boundary St.	65
Bluffton – Intersection of US 278 and SC 46	1038 Fording Island Rd.	66
Hilton Head Island – Sea Pines Circle	2 Greenwood Dr.	95
Hilton Head Island – Pineland Station	438 Wm. Hilton Parkway	82

[4] www.walkscore.com

This quick analysis points to two strategies that are vital to promoting more walkable communities and reducing automobile dependency within the County's existing developed areas. One is to promote more infill developments and a greater variety of uses within the County's existing pedestrian oriented neighborhoods. The other strategy is to identify key commercial intersections to target for redevelopment into mixed-use, pedestrian and transit friendly communities to bring jobs, retail and other services in proximity to residents.

Energy Reducing Future Land Use Policies: Many of Beaufort County's future land use policies, outlined in Chapter 4 of this plan, are designed to reduce sprawl, promote community character, and promote transportation choices. These policies also help to reduce VMTs, and therefore, promote reduction in energy usage. One of the main goals of the Future Land Use chapter is to maintain a distinct regional form of compact urban and suburban development surrounded by rural development, designed to maximize the efficiency of regional infrastructure and the avoidance of sprawl. Mixed-use developments are encouraged to promote pedestrian access to services and facilities while providing internal trip capture to minimize the traffic impact of these developments. Bike and pedestrian trails are encouraged to link schools, shopping areas, employment and other destinations. Infill and redevelopment is directed to municipalities and areas adjoining municipalities.

Figure 9-3. Energy Consumption (BTUs per Passenger Mile) for Selected Modes of Transportation[5]



[5] The data comes from two sources. The Transportation Energy Data Book: Edition 22 (2002), published by the US Department of Energy provides energy intensity information for motorized transportation. Estimates on energy intensity for cycling and walking come from the publication, Energy and Problems of a Technical Society, 2nd Edition, Kraushaar and Ristinen, 1993. Per capita BTU consumption assumes that the average occupancy of an automobile and personal truck (two-axle, four-tire trucks) to be 1.6 passengers. Average occupancy of a bus is calculated at 9.2 passengers.

TRANSPORTATION

As stated above, automobiles are responsible for a large portion of the total energy used in Beaufort County. As shown in Figure 9-3, above, travel by private automobile and trucks is very energy intensive. In addition to land use strategies designed to reduce VMTs and automobile dependency, transportation policies designed to reduce congestion, reduce travel demand and promote alternative modes of transportation, also help to reduce energy consumption.

Maximizing Road Network Efficiency: Automobiles are the most efficient when they operate at steady, relatively low speeds (35-45 mph) with no stops. Optimizing the timing of existing signals and installing advanced control equipment on arterial travel corridors can significantly reduce traffic congestion and fuel use. Access management techniques including maximizing signal spacing; maximizing intersection and driveway spacing; providing deceleration lanes; sharing driveway access; providing frontage and backside access roads; and requiring interconnectivity, also assist in fuel conservation.

Interconnectivity: The energy required for travel between two points is largely dependent upon the length of the route. Providing a network of fully connected streets allows the use of shorter and more direct routes. Whenever possible, designs for new developments should include connections (i.e., streets, bikeways and sidewalks) to existing developments and connections should be added between older developments. When compared to a conventional suburban network of cul-de-sacs and collector streets that funnel all traffic to arterials, a grid street pattern can reduce VMTs within a development by up to 60%.[6]

Travel Demand Management: Transportation policies designed to reduce travel demand such as promoting telecommuting, flexible work hours, carpool matching, and vanpool services have beneficial affects on energy usage as well.

Alternative Transportation Modes: Public transit is an energy efficient transportation mode when it is well used and its buses are full of passengers. Transit systems are most likely to be used when a rider's origin and destination are located within walking distance of a transit station or stop. People living close to transit, within one-quarter to one-half mile, are two to four times more likely than the general population to use this option to commute to work. In preparation for population growth and densification in the growth areas, a thorough demographic and destination site analysis should be done to identify proper placement of future transit stations. The amount of commercial space, number of employees, and residential density needed to support

[6] California Energy Commission. Energy Aware Planning Guide. California Energy Commission, January 1993.

cost-effective transit and reduce automobile commuting varies greatly between communities.

Bicycle and pedestrian trails are well developed in the Town of Hilton Head Island, and along the Buckwalter and Bluffton Parkways, but efforts have been more modest to non-existent in other areas of the County. Alternative means of transportation can be made safer and more attractive by redesigning streets and intersections within intensively developed areas to give equal priority to pedestrians, cyclists, buses, and automobiles. Important features of pedestrian and cyclist friendly streets include narrower street widths, on-street parking and less disruptive placement of off-street parking, pedestrian protection at intersections, convenient and safe locations for transit stops, and more attractive sidewalk designs.

Energy Efficiency

Summary of Programs offered by ICLEI

Cities for Climate Protection Campaign: Assists local governments to reduce greenhouse gas emissions, improve air quality, and enhance urban sustainability.
Local Agenda 21 Campaign: A planning process that helps municipalities identify local sustainability priorities and implement action plans.
Water Campaign: Assists development of local water action plans to achieve improvements in water quality, conservation and access.
Sustainable Procurement Program: Integrates environmental and social criteria into procurement policies and procedures.
Sustainability Management Program: Assists local governments in factoring environmental, social, and economic concerns into municipal decision-making.

Source: www.iclei.org

When addressing energy issues, achieving energy efficiency should be the first consideration, especially at the County level. Energy efficiency is accomplished when less energy is used to provide the same service. For example, a well-insulated building allows the occupants to enjoy the same room temperature while using less energy for heating and cooling. This is achieved by a combination of changing technologies and behavior. Measures include the use of efficient and appropriately sized HVAC systems, proper insulation, efficient appliances, high performance windows, and low wattage lighting. When compared to the cost and effort to increase energy production, efficiency is the "low hanging fruit" of the energy equation. It is much like the old adage, "a penny saved is a penny earned." The American Council for an Energy Efficient Economy (ACEEE) has estimated that investments in energy efficiency in the year 2004 resulted nationally in 1.7 quads of energy saved over a one-year period. This savings is roughly equal to what would be generated by 40 mid-sized, coal –fired power plants[7].

The state and federal governments along with the non-profit sector offer local governments several comprehensive programs to assist in energy conservation and efficiency. For example, ENERGY STAR, a joint program of the US Environmental Protection Agency and the US Department of Energy, promotes the use of energy efficient products and practices. The South Carolina Energy Office (SCEO) provides technical assistance, financial assistance, educational outreach, and grants and loans to citizens, businesses, and local governments to promote energy efficiency. In addition, ICLEI (Local Governments for Sustainability) is an international association of local government organizations that provides technical consulting, training and support to local governments on energy and sustainability issues (see sidebars).

[7] Karen Ehrhardt-Martinez and John A Laitner, , The Size of the U.S. Energy Efficiency Market: Generating a More complete Picture, American Council for an Energy-Efficient Economy (2008).
http://aceee.org/pubs/e083.pdf?CFID=378145&CFTOKEN=15172376

Summary of Programs offered by SCEO

ConserFund loan program: Loans can be used for the implementation or upgrade of energy management and control systems; modification or installation of HVAC systems; and other energy cost-savings improvements.
Energy Accounting Software: This web-based accounting system, called Utility Direct, allows public entities to log and track their energy costs and usage via a Web-based platform.
Carolina Energy Manager (CEM) Training: This is a classroom training program to prepare qualified energy managers for the Certified Energy Manager (CEM) certification examination.
Energy Audits: Energy audits consist of a walk-through assessment of building energy costs and efficiency, which identify recommendations for savings, cost analysis, and any operation and maintenance needs.
Utility Bill Analysis Program: SCEO will review utility bills to find billing errors or misapplied rates and to obtain refunds of overcharges from the utility providers.

Source: www.energy.sc.gov

Energy Audits and Energy Performance Contracts

An energy audit is an inspection, survey and analysis of energy performance and usage in a building or group of buildings designed to identify opportunities to reduce energy consumption while maintaining the same level of service. Typically, an energy audit looks at insulation, windows, the HVAC system, lighting and appliances to determine opportunities for energy savings. Energy audits are often achieved through a performance contract with an energy service company. Under a performance contract, a building owner, such as Beaufort County, would enter into an agreement with an energy service company to perform an energy audit and to make the energy saving improvements at no up front cost to the owner. Over the contract period (typically 5 to 20 years), the savings from reduced utility bills are used to pay for the facility improvements. The City of Charleston entered into an energy performance contract in 2001, which is projected to eventually result in a 16% reduction in energy and gas usage and $18.4 million in energy and operational savings.

Green Building

Green building is a general term that refers to construction techniques that promote the efficient use of energy, water, and other resources; that protect the health of occupants; and that reduce waste, pollution, and other adverse environmental impacts.

Green Building Codes: An effective way for local governments to promote green building is through its building codes. Beaufort County adheres to the International Building Code (IBC) as mandated by the State of South Carolina. Beaufort County Codes Department enforces the International Energy Conservation Code (IECC) in commercial buildings only. The State of South Carolina has not adopted the IECC for one and two family dwellings. Green building rating systems typically use the IECC code requirements as relative baseline requirements, then require higher standards in some areas, but also contain an array of additional requirements, which are not currently addressed in the IECC codes. The International Code Council has joined with National Association of Homebuilders in the development of the ICC 700-2008 National Green Building Standard (NGBS) for residences and is developing an Inspector of Green Building Technologies certification exam that should be available in 2009. Beaufort County's current strategy is to adopt a voluntary approach to promoting green building standards until the statewide uniform green building code is adopted and can be enforced.[8]

[8] Beaufort County Building Codes Department.

Green Building Rating Systems: The most well known green building rating system is the Leadership in Energy and Environmental Design (LEED) developed by the US Green Building Council. LEED was created to provide a common standard of measurement for green building by establishing a scoring system based on required prerequisites and credits. A total of 69 points can be achieved by meeting requirements in the six following categories:

- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor environmental quality
- Innovation in materials and design

The four levels of certification are shown in Table 9-4 below.

Figure 9-4: LEED Rating System for Four Levels of Certification

Rating	Points
Certified	26-32
Silver	33-38
Gold	39-51
Platinum	52-69 (maximum measured)

The first LEED certified building in Beaufort County was completed in 2008 by the Beaufort Jasper Water & Sewer Authority (BJWSA). The Technical College of the Lowcountry (TCL) is a two-year college serving the needs of about 8,500 students in Beaufort, Colleton, Hampton, and Jasper Counties. TCL is developing a LEED "Green" Building Construction Training and Employment Project, which will provide participants with education and training for certification as an Alternative Energy Construction Technician (AECT).

Conclusion

There are two general strategies that Beaufort County should consider to promote energy efficiency and green building. First, the County should lead by example. This strategy would include performing and implementing an energy audit; requiring all new County buildings, renovations, and additions to be LEED certified; and encouraging other local governments and public agencies to do likewise. The second strategy is to encourage energy efficiency in the private sector by a combination of incentives, educational outreach, and removing any unnecessary regulatory barriers.

Renewable Energy

Renewable energy is energy generated from natural resources, such as sunlight, wind, and tides, which are naturally replenished. As energy costs rise, there is a growing market nationally for many forms of renewable energy. Beaufort County with its many days of sunshine, offshore winds and large tidal range has unique opportunities to faciltate and promote the generation of renewable energy.

Solar

With an average of 230 days of sunshine, solar power has great potential in Beaufort County. This section discusses two forms of harnessing heat and energy from the sun. Photovoltaic (PV) arrays, which are glassy rooftop panels that produce electricity and can connect directly to the electric grid. Solar hot water heaters rely on sunlight to heat a glycol solution that cycles through a heat exchanger. PV arrays do not work well in shade, but hot water heaters keep collecting sunlight in ambient light. The cost effectiveness of PV installations are affected by net metering rules, which are discussed later in this section, and tax incentives.

A 30 percent federal tax credit for solar power was extended for eight years in October 2008. The law removes a $2,000 monetary cap for residential solar electric installations, thereby providing a greater incentive to homeowners to invest in solar energy. In addition, South Carolina allows taxpayers to receive a 25% tax credit for the amount expended for the purchase and installation of solar generating devices. Beaufort County can facilitate the production of solar energy by removing regulatory barriers to the placement of solar collectors, and to advocate for the removal of similar restrictions in private covenants.

Biomass

Biomass refers to biological material such as wood, yard waste and construction debris. Currently biomass and wood wastes in Beaufort County are incinerated with no energy recovery or are placed in a construction and demolition (C&D) landfill. In fiscal year 2008, the County collected 9,500 tons of yard waste and 2,000 tons of C&D

waste. Two options for beneficial reuse of these materials are incineration with energy recovery and composting to produce a commercial mulch product for local landscaping.

Incineration with Energy Recovery: The types of materials that could be used as a fuel are yard waste (home and commercial landscape trimmings, grass cuttings), C&D waste (home and commercial building excess wood materials), screened woody demolition waste, and tree trimmings by utility companies and SCDOT. Organic wastes may be highly variable in energy content and in content of inerts. Economic feasibility will depend on site availability, public acceptance, federal and state policy and subsidies, and cooperation with electricity providers (net metering and access to the grid). A suitable scale for such a facility would require a source of feed stocks from several surrounding counties.

Biodiesel

Biodiesel is a non-petroleum-based diesel fuel made from vegetable oil or animal fat (tallow), and from cellulosic materials in trees, shrubs, and crops. Biodiesel can be used, alone or blended with conventional diesel fuel, in unmodified diesel-engine vehicles. In the United States, the predominant source of biodiesel feed stock is soybean oil. Other oil from corn, cottonseed, canola, flax, sunflower and peanut, also can be used but are more expensive than soybean oil. Animal-derived products such as tallow are another source as is recycled oil and grease from restaurants and food processing plants.

Feasibility of Biodiesel Production in Beaufort County: In Beaufort County and surrounding areas, cellulosic materials from wood waste may be the most significant feed stock, as is recycled restaurant oil and grease. In fiscal year 2008, 357 tons of unprocessed waste cooking oil was collected in the County. This has the potential to produce about 94,000 gallons of biodiesel.[9]

Use of cellulosic feed stocks will require the additional processing step of gasification. The gasified material is then reconstituted into biodiesel and other fuels.

Wind, Wave and Tidal Energy

The South Carolina Energy Office, Clemson and Coastal Carolina Universities, and the Savannah River National Lab are cooperating to research the potential for generating wind energy off the coast. Issues

[9] http://www.oregon.gov/ODA/do_reports_biodiesel.shtml Assumes that 7.6 pounds of fat will produce one gallon of biodiesel

to be addressed include identification of the needs and barriers of integrating offshore wind energy into the power grid; identification of technology that can transfer the power to the shore; and establishment of a state task force to determine the economic and environmental effects of wind energy and create a permitting process for wind farms in state waters. In the pilot project, the state hopes to build an 80-megawatt wind farm of between 12 and 15 turbines about 3 miles off shore. The wind farm location would most likely be between Charleston and North Carolina because the mean wind speeds are highest there. One megawatt of wind power can produce enough electricity to serve 250 to 300 homes on average each day. The pilot project could serve between 20,000 and 24,000 homes. Researchers are predicting that the pilot project could be in operation within a five year time period.

In addition to the wind farm concept, as part of the same study, data will be obtained on wave and tidal energy potential using a buoy observation network that will measure wind, wave, tide and current resources at six offshore locations in two lines and water level and winds at two locations along the two lines.[10]

Net Metering

Net metering allows consumers who generate electricity on site (e.g. wind and solar) to receive retail credit from the utility company for the electricity they generate in excess of what they consume. Therefore, net metering serves as an important incentive because it assists the homeowner or business owner in recouping the initial capital investment of installing the energy-generating device. South Carolina's investor owned utilities (including SCE&G), its state owned utility (Santee Cooper) and its electric cooperatives now all offer net metering. However, the SC Energy Office recognizes that net metering is in its "infancy stages" in South Carolina and that there are areas for improvement in statewide policies. They recommend that the State standardize its net metering policies among utilities and require more "user friendly" policies.[11]

[10] Hartwig, Erica, Technical Contact, South Carolina Roadmap to Gigawatt-Scale Coastal Clean Energy Generation: Transmission, Regulation and Demonstration PROJECT NARRATIVE; South Carolina Energy Office 2008.
[11] A Joint Resolution Requiring Recommendations for Establishing Net Metering Programs in South Carolina, 2009, SCEO.

Other Energy and Sustainability Issues

Recycling, water conservation and local foods initiatives are discussed in greater detail in other chapters of this plan. However, each of these issues has a significant energy saving component, which is discussed below.

Recycling

Recycling of household and commercial waste is more energy efficient than disposing solid waste and producing new materials. The steps in supplying recycled materials to industry (including collection, processing and transportation) typically use less energy than the steps in supplying virgin materials to industry (including extraction, refining, transportation, and processing). [12]

Additional energy savings associated with recycling are gained in the manufacturing process itself, since the materials have already undergone processing. For example, recycling used aluminum cans requires only about five percent of the energy needed to produce aluminum from bauxite. These savings far outweigh the energy created as a by-product of incineration or disposing of the materials in a landfill.[13]

Beaufort County currently collects recycled materials at its 12 convenience centers located throughout the County. As the County explores mandating franchised curbside solid waste collection in higher density areas, the County should also consider curbside recycled materials collection in the same areas.

[12] http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/FACTS/benefits3.htm
[13] Environmental Benefits of Recycling SCDHEC
http://www.scdhec.net/environment/lwm/recycle/resource_center.htm#'For%20Your%20Information'%20Fact%20Sheets

Water Conservation

Efficient water use can also reduce the amount of energy needed to treat wastewater, resulting in less energy demand and, therefore, fewer harmful byproducts from power plants. Most people realize that hot water uses up energy, but supplying and treating cold water requires a significant amount of energy too. American public water supply and treatment facilities consume about 56 billion kilowatt-hours per year—enough electricity to power more than 5 million homes for an entire year. Consequently, letting a faucet run for five minutes uses about as much energy as letting a 60-watt light bulb burn for 14 hours.[14]

Beaufort Jasper Water & Sewer Authority (BJWSA): BJWSA, which provides drinking water for a majority of County residents, conducts an active public education program implementing 'WaterSense', a partnership program sponsored by the EPA designed to facilitate the efforts of its customers to save water and protect the environment.[15] During the County's hot summers, irrigation causes a significant increase in water usage and, as a result, a great demand on our water system. BJWSA addresses this water demand issue by using its treated effluent to irrigate local golf courses. BJWSA serves 12 golf courses from its Cherry Point Water Reclamation Facility with two more scheduled to come on line soon. In the spring of 2008, BJWSA began their first water reuse service for the residential lots, common areas, landscaped medians, and the golf course at the Tradition Hilton Head community located in Jasper County. Treated effluent is also provided to the Secession Golf Course on Lady's Island, the May River Golf Club at Palmetto Bluff, the two golf courses on Dataw Island and a portion of Henry's Sod Farm on St. Helena Island.[16]

Hilton Head Island Public Service Districts: The Public Service Districts on Hilton Head Island facilitate water conservation by providing water to customers on a conservation rate structure. This means that the customers who use more water pay more per gallon. This structure has been in place for over 10 years. As an additional conservation measure, the Town of Hilton Head Island has an Irrigation Ordinance that puts restrictions on the use of water for irrigation purposes for both homes and businesses[17].

Local Foods Initiatives

The way food is produced and transported has an impact on the environment and energy consumption. The term, "food miles" refers to the distance that food travels from the farm on which it is produced to

[14] http://www.epa.gov/watersense/water/save/env_benefits.htm
[15] http://www.epa.gov/watersense/
[16] http://www.bjwsa.org/pdf_files/fall2008.pdf
[17] Municipal Code Sec. 17-10-211

the kitchen in which it is being consumed. Food travels between 1,500 to 2,500 miles every time that it is delivered to the consumer[18]. Chapter 6 of this plan outlines County policies that support the economic viability of local agriculture and commercial fishing. Initiatives include purchasing conservation easements on active farmland and working waterfronts, supporting local farmers markets, and the local auction farmers market that began in 2008.

[18] Iles, A. (2005). Learning in sustainable agriculture: Food miles and missing objects.

Recommendations

Recommendation 9-1: Energy Committee

Beaufort County should designate the Natural Resources/Land Management Committee of Beaufort County Council to oversee the prioritization and implementation of the recommendations of this chapter.

Recommendation 9-2: Relationship to Other Policies

Beaufort County recognizes that many other policies in this plan have the added benefit of reducing energy demand and promoting energy efficiency. These policies include the following:

- Land Use Policies: Land Use policies that reduce sprawl, reduce VMTs and promote transportation choices also promote reduction in energy usage. These policies include growth boundaries; promoting higher density mixed use communities in proximity to employment and services; promoting connectivity; promoting sidewalks and pathways; encouraging infill and redevelopment; and preserving rural areas.
- Transportation Policies: Transportation policies designed to reduce congestion, reduce travel demand, and promote alternative modes of transportation help to reduce overall energy consumption. These policies include access management standards, signal timing, signal spacing, requiring interconnectivity, travel demand management (telecommuting, flexible work hours, carpooling), and improving public transportation and pedestrian and cycling facilities.
- Local Foods Initiatives: Policies that promote local agriculture; the local seafood industry; and promote the marketing and distribution of locally grown and produced food reduce energy consumption by reducing food transport.
- Recycling: Local policies that encourage local recycling indirectly promote energy savings because producing products from recycled materials generally uses less energy than from raw materials.

Recommendation 9-3: Education, Technical Assistance and Training

Beaufort County should facilitate educational outreach, training and technical assistance to promote energy efficiency and the use of alternative energy sources.

- Organize a "Green Expo" to facilitate information exchange. The format for the expo might include a showcase of developments, buildings, and homes that are energy efficient; suppliers of renewable energy products; programs and policies; and examples of energy efficient or zero-emission vehicles.
- Create a website to promote energy efficiency and green technologies. Facilitate network opportunities for small businesses and entrepreneurs involved in green technologies.

Recommendation 9-4: Utilize Available Technical Assistance and Expertise

Beaufort County should utilize existing state, federal, and non-profit resources to promote energy efficiency and renewable energy resources.

- Utilize available services from the South Carolina Energy Office, ENERGY STAR, and other state and federal resources.
- Consider becoming a member of ICLEI (Local Governments for Sustainability). Utilize ICLEI's technical consulting, training, and information services to build capacity, share knowledge, and support Beaufort County in the implementation of its energy and sustainability recommendations.

Recommendation 9-5: Energy Efficiency - County Energy Audit

Beaufort County should conduct an energy audit for all County facilities (existing, undergoing renovation, and under design).

- The County should consider entering into an energy performance contract with an Energy Service Company to perform the audit and implement the improvements.
- The Audit should include an evaluation of the feasibility of using renewable energy, such as wind and solar, to reduce energy costs in County facilities.

Recommendation 9-6: Energy Efficiency – Other Internal County Policies

Beaufort County should evaluate all County operations to promote energy efficiency and to reduce energy consumption.

- Convert the County fleet to more fuel-efficient vehicles.

1. Inventory the existing fleet to determine the vehicle function needs for each department and the miles per gallon for each vehicle
2. Develop minimum efficiency standards (miles per gallon) for each vehicle class as part of the County's procurement policy.
3. Identify older and disproportionately inefficient vehicles that need to be replaced or eliminated.
4. Maintain vehicles at optimal efficiency.

- Centralization vs. Decentralization of County Facilities: Evaluate the impact on vehicle miles traveled (VMTs) for both County residents and employees of having County facilities and services located in centralized areas as compared to having more satellite offices to bring services closer to residents.
  1. Compare the fuel efficiency of having two centralized County fuel stations as compared to issuing commercial gas station credit cards to specific vehicles.
  2. Evaluate the efficiency of having satellite County buildings scattered around the County as compared to having most departments located on one site.
- Online Services: Expand the provision of on-line services, where practical, to reduce or eliminate the need for the public to travel to County facilities.
- Telecommuting Policy: Develop a telecommuting policy for County employees for who it is a viable management work option to reduce VMTs by employees commuting to and from work.
- Walking and Cycling to Work: Provide support facilities at County buildings to promote walking and cycling to work. Support facilities may include bike racks, lockers, changing areas and showers.
- Ride Sharing: Facilitate ride sharing among County employees. Utilize the County's GIS capabilities to provide information to optimize ride sharing arrangements based on location of employee residences. Explore possible incentives to encourage ride sharing.
- Curbside Solid Waste Collection: In moderate to high density areas, provide curbside solid waste collection and recycling. Mandated franchised curbside pickup in these areas would be more fuel-efficient by eliminating individual trips to convenience centers and would encourage more recycling.

Recommendation 9-7: Energy Efficiency – Outdoor Lighting

Beaufort County should establish minimum requirements for outdoor lighting that enhance visibility and public safety by preventing uncontrolled intrusion into adjacent properties and the natural environment for purposes of promoting energy conservation and preserving the County's night sky, which is valuable natural resource important to the County's character.

Recommendation 9-8: Green Building – Green Building Codes

Beaufort County should adopt a voluntary approach to promoting green building code standards until the statewide uniform green building code is adopted and can be enforced.

Recommendation 9-9: Green Building - LEED

Beaufort County should facilitate green building through a combination of leading by example, educational outreach, and providing incentives to encourage LEED construction in the private sector.

- When planning future community facilities (or major renovations and additions to existing facilities), where practical, Beaufort County should register the proposed project, and gain certification under the U.S. Green Building Council's "Leadership in Energy and Environmental Design" (LEED) program (see Recommendation 11-5).
- Encourage the municipalities, the Beaufort County School District, and other local public and non-profit entities to construct LEED certified facilities.
- Explore possible tax incentives and other provisions to encourage the private sector to construct LEED buildings.
- Evaluate existing and future land use and building regulations to ensure that they do not place unreasonable barriers to providing site and building features designed to merit LEED credits (e.g. rain barrels, cisterns, and green roofs).

Recommendation 9-10: Green Building - Low Income Weatherization

Beaufort County should support low-income weatherization programs such as the Weatherization Assistance Program offered throught the US Department of Energy, and assist local agencies who are implementing these programs to seek all available state and federal funds that are available.

Recommendation 9-11: Renewable Energy - Remove Regulatory Barriers

Beaufort County should analyze its development regulations to remove any unnecessary regulatory barriers that deter local renewable energy generation.

- Provide standards for solar collectors and wind generators as accessory uses in the ZDSO.
- Assist private communities in overcoming barriers placed by restrictive covenants.

Recommendation 9-12: Renewable Energy - State and Federal Legislation

Beaufort County should monitor and support state and federal legislation that promotes energy efficiency and renewable or alternative energy sources.

- Support more effective net metering legislation that would allow those that produce alternative energy (e.g. wind and solar) to sell excess generated electricity back to the grid.

Recommendation 9-13: Renewable Energy – County Initiatives

Beaufort County should explore both the opportunities and the financial feasibility of generating biodiesel or electricity from local resources such as wood waste, municipal solid waste, and oil and grease from restaurants. It should also explore the feasibility of appropriate scale solar and wind opportunities. Introduction of these technologies to the County could be in the form of pilot plants.