



Ensuring a sustainable energy future
for North Carolina

INTRODUCTION

A North Carolina Viewpoint on Energy Policy

By *Larry Shirley, Director, State Energy Office*
N.C. Department of Administration
April 2002



Larry Shirley, State Energy Office director, stands beside one of the state's alternative fuel vehicles. This Honda Insight is a mass-produced gasoline-electric hybrid car that gets over 60 miles per gallon.

Photo by Dona Stankus

Energy Influences

That our state and nation are vulnerable to global economic, political and environmental forces was strikingly demonstrated in 2001. Throughout the spring, the California electricity crisis headlined the news on a regular basis. Gasoline prices throughout the nation steadily increased. Congress renewed the debate over oil drilling in Alaska's Arctic National Wildlife Refuge. On September 11, 2002, the United States experienced the unprecedented horror of terrorism. Two weeks later, Energy Secretary Spencer Abraham assured the nation that supplies of oil and

gas were strong and stable as rumors circulated that some gasoline stations had charged \$5 for a gallon of gas.

Nearly 30 years before, the Arab Oil Embargo of 1973-74 introduced the first ramifications of our dependence upon foreign oil when OPEC curtailed oil exports. Gasoline prices spiked and allocation programs were put into place. The federal government responded by initiating energy conservation strategies, developing new technologies, and exploring renewable and alternative sources to imported oil.

The events of September 11 and the volatility of the Persian Gulf region have produced far harsher ramifications than an embargo. They now compel us to consider energy policy within the broader context of national security.

North Carolina's Energy Situation

North Carolina possesses no fossil fuel resources. Our electricity is produced almost equally by nuclear and coal power plants, with new peaking generation being fired primarily by natural gas. We are inherently vulnerable to supply disruptions. There are no operating oil refineries in the state. We are also a state experiencing rapidly deteriorating air quality in our three major metropolitan areas and the moun-

Without the benefits of energy efficiency in North Carolina since the Arab Oil Embargo in 1973, the state would probably be using about 25 percent more electricity and energy than it does today.

tainous western region, a result of emissions caused from both vehicles and power plants burning fossil fuels.

With no new rate increases requested by investor-owned utilities in many years, electricity prices have remained stable with average retail residential rates at approximately 8 cents per kilowatt-hour. However, rates are expected to increase by as much as 5 percent to 8 percent next year if the N.C. General Assembly enacts pending legislation to require utilities to clean up coal plant emissions. And, for many municipal utilities that carry the burden of \$5.5 billion in debt for the purchase of shares of nuclear power plants in the 1980s, rates range from 9 cents to 12 cents per kilowatt hour and are expected to rise.

During the winter of 2000-01, the state experienced the highest prices in the nation for propane, averaging \$2.21 per gallon during one month. With approximately 1 million residents reliant on propane, as well as many schools and businesses in rural regions, supplies were dangerously short in January and nearly caused an official energy emergency to be declared. Waivers

were granted to propane transport companies to allow extended hours for drivers, given the near emergency supply conditions.

In addition to propane, natural gas prices increased over 50 percent during the previous year and home heating fuel costs were also higher than normal. As with other states, gasoline prices remain above last year's levels and hit a high of over \$1.60 per gallon for regular grade gasoline in the spring of 2001.

In North Carolina, last winter's sharp price spikes in energy costs caused severe hardship on many families, businesses, school systems and service providers. For many families, energy costs were higher than rent or mortgage payments and food bills. As an example, one family in eastern North Carolina spent \$557 to fill up their 200-gallon propane tank in December 2000 when during the previous winter the cost to fill the same tank had been \$158. Another example can be seen in one of the state's rural school districts, which recently reported that it was already \$150,000 over its energy budget because of propane and natural gas fuel increases, necessitating cuts in school programs and services. Such dramatic increases in energy costs demonstrate the severe impacts on family and business budgets and cry out for aggressive energy efficiency programs and use of renewable energy resources that are indigenous to the state and less susceptible—if at all—to price increases.

North Carolina's Energy Outlook

With such a precarious energy situation and no fossil fuels inside North Carolina, the state has focused on the development of indigenous renewable energy resources (biomass, hydro, wind, landfill gas and solar) and energy efficiency programs. Currently, it is estimated that the state gets between 3 percent to 4 percent of its energy requirements from renewable resources, with potential to get a much larger share if these resources are aggressively developed.

North Carolina possesses over 1,400 megawatts (MW) of small *hydro* potential at existing impoundments, between 1,200 to 4,000 MW of *wind* potential in the mountains of the state, approximately 300 MW of potential at existing abandoned *landfill sites*, several hundred megawatts of *solar* potential in the near-term, and several thousand megawatts of *biomass* potential. The state also is attempting to develop an ethanol industry that could produce 45 million gallons annually using corn as the primary feedstock.

Without the benefits of energy efficient programs and incentives in North Carolina since the Arab Oil Embargo, the state would probably be using about 25 percent more electricity and energy than it does today. The efficiency programs operated throughout the years by our state's utilities, the State Energy Office, and our state's energy consumers have greatly curtailed peak

load requirements and allowed us to delay and reduce the number of additional power plants that had to be brought on-line.

With the proper course of action, North Carolina can become less vulnerable to energy supply disruptions, while promoting greater energy independence and a cleaner environment.

Unfortunately, conservation efforts have waned in recent years as our state has prepared for the possibility of electricity restructuring. Utilities, which once had thousands of megawatts of demand-side management (DSM) programs, have eliminated many of these programs and sharply curtailed their DSM efforts. Meanwhile, rapid population growth in North Carolina's urban areas has combined with the reduction in efficiency programs to produce annual electric growth rates often exceeding 3 percent. Reducing this electric growth is critical to the health of the state's environment, its citizenry and its economy.

North Carolina has recently placed efforts to restructure the electric industry in a temporary holding pattern. A blue-ribbon study commission has been reviewing this situation for three years and has called on the legislature to begin restruc-

turing in 2005-06. No action, though, is expected from the legislature until there are successful examples from other states, such as Texas, Ohio or Pennsylvania, where restructuring has already been undertaken.

While awaiting these developments, the study commission is now reviewing how to make “green power” an option for consumers and whether a public benefits fund should be created from a small wires charge to encourage energy efficiency, advance development of renewable energy resources and protect low-income consumers. Most states that have undergone restructuring have created such a fund and allowed the sale of green, or renewable, electricity.

Recommendations

With the proper course of action, North Carolina can become less vulnerable to energy supply disruptions, while promoting greater oil independence and a cleaner environment. Actions that the State Energy Office recommends include the following:

- Actions to ensure that up-to-date and well-tested energy emergency response plans are in place in the event of supply disruptions or curtailment.
- Strong support for the development of alternative-fueled vehicles (AFVs) to reduce vehicle emissions and reduce our reliance on overseas petroleum,

including the acceleration and enhancement of the Clean Cities Program and matching funds for fueling infrastructure for AFVs.

- Integration of environmental concerns with energy supply development to ensure that we are reducing our air and water quality problems as we move ahead to increase available energy supplies.
- Increased federal funding for low-income households to weatherize their homes, lowering the need for fuel payment assistance—a continuing drain on federal and state budgets.
- Strong support for increased funding of energy efficiency programs, including both implementation programs and research and development efforts. We need to move aggressively now to conserve energy in the midst of the nation’s energy crisis, but we must also be developing better and more efficient technologies for deployment over the next decade.
- Strong support for increased funding of renewable energy programs. While buying time with energy efficiency, we must make the transition to renewable energy resources. Both in North Carolina and throughout the nation, there is great potential to shift to a much greater reliance on renewable energy resources in a cost-effective manner. We must get serious about this needed transition and invest the resources necessary to make it happen over the next 10 to 20 years.



State Energy Office General Information

The State Energy Office (SEO) is North Carolina's lead agency for energy programs and serves as the official source for energy information and assistance for consumers, businesses, government agencies, and policy-makers. The SEO administers programs in four primary areas:

- Energy efficiency and renewable energy for residential, commercial, industrial, agricultural, transportation and utility sectors
- Alternative fuels and alternative fuel vehicles
- Energy emergencies during natural disasters and supply disruptions
- Energy policy recommendations to the N.C. Energy Policy Council, N.C. General Assembly, the Governor's Office, and other state agencies

Mission

The State Energy Office promotes energy efficiency and renewable energy, striving toward a sustainable energy future. The office accomplishes this by administering innovative programs, projects and services that inform, educate and involve energy consumers, producers and decision-makers. The State Energy Office organizes rapid responses to energy emergencies. The office is recognized as

North Carolina's primary, independent resource for energy information and technology.

Funding

The two major funding streams for the SEO are derived from the Petroleum Violation Escrow (PVE) funds and the U.S. Department of Energy (DOE). The PVE funds arose out of a series of federal court settlements involving overcharging by petroleum companies in the 1970s and 1980s. The funds are returned to customers and other affected groups by dividing them among the states for distribution through energy efficiency and renewable energy programs. By leveraging federal



This community center in Carrboro, North Carolina, uses solar as an energy source and was a part of the annual nationwide Solar Home Tour.

Photo by the State Energy Office

funds, the State Energy Office is able to administer programs and projects that benefit state and local governments and all North Carolinians. The State Energy Office uses no state-appropriated funds.

History

The Arab Oil Embargo of 1973-74 was the impetus for the creation of the State Energy Division under the Department of Military and Veteran Affairs. Thereafter, the agency was transferred and operated under the North Carolina Department of Commerce until September 30, 2000. On October 1, 2000, the State Energy Office was transferred to the North Carolina Department of Administration.

North Carolina Energy Policy Council

Created by the North Carolina Energy Policy Act of 1975, the council is charged with overseeing the state's energy policies and providing recommendations for policy changes to the governor and General Assembly.

The 18-member body, composed of representatives from the General Assembly, as well as Cabinet secretaries and gubernatorial appointments for specific slots (i.e., industrial, environmental, alternative energy, economics), has recently been reorganized and is now working on the development of a comprehensive energy policy for North Carolina.

Energy Policy Council Members

Cabinet Secretary Members

Secretary Gwynn T. Swinson, Chair,
Ex-officio - N.C. Department of Administration (Conservation Committee)

Michael Hughes, Designee

Commissioner Meg Scott Phipps, Ex-officio - N.C. Department of Agriculture & Consumer Services (Research & Development Committee)

Winston Sutton, Designee

Secretary Jim Fain, Ex-officio - N.C. Department of Commerce (Research & Development Committee)

John Nelms, Designee

Secretary William G. Ross Jr., Ex-officio - N.C. Department of Environment & Natural Resources (Conservation Committee) -

Gary Hunt, Designee

Chairman Jo Anne Sanford, Ex-officio - N.C. Utilities Commission (Management/Emergency Committee)

Jimmy Ervin, Designee

General Assembly Members

Senator Hamilton C. Horton Jr., General Assembly, Forsyth County (Conservation Committee)

Senator Eleanor Kinnaird, General Assembly, Chatham, Lee, Moore, Orange, Randolph Counties (Management/Emergency Committee)

Representative Joe P. Tolson, General Assembly, Edgecombe, Nash, Pitt, Wilson Counties (Research & Development Committee)

General Assembly Members (Cont.)

Representative Nurham O. Warwick, General Assembly, Onslow, Pender, Sampson Counties (Research & Development Committee)

Public Sector Members

Robert Burns, petroleum industry, Arey Oil Company (Management/Emergency Committee)

Don K. Davis, natural gas industry, Progress Energy Inc. (Management/Emergency Committee)

Councilwoman Helen P. Gay, elected municipal official, Rocky Mount (Conservation Committee)

Dr. John L. Neufeld, economic analysis sector, University of North Carolina at Greensboro (Management/Emergency Committee)

Mike Nicklas, alternative energy sector, Innovative Design (Research & Development Committee)

Ray Ogden, industrial energy sector, Intek Inc. (Research & Development Committee)

Commissioner Dave Plyler, county commissioner, Forsyth County (Conservation Committee)

Wade Pridgen, electric power industry, Progress Energy (Management/Emergency Committee)

Michael Shore, environmental protection sector, Environmental Defense (Conservation Committee)

State Energy Office Staff

Director

Larry E. Shirley

Section Chief/Manager

State Energy Program

Rita L. Joyner

Emergency and Policy Coordinator

Sharon Stroud

Building Engineer

Starlette Brown

Energy Conservation Representative

Bob Leker

Energy Conservation Representative

Cynthia Moseley

Public Information Coordinator

Andrea Gabriel

Administrative Assistant

Marianne Moss

Office Assistant

Jeannette Martin

Office Assistant

Gwen Wells

Contact Information

State Energy Office

N.C. Department of Administration

1830 A Tillery Place

Raleigh, NC 27604-1376

Mailing Address: 1340 Mail Service Center

Raleigh, NC 27699-1340

(919) 733-2230—telephone

1-800-662-7131 (NC only)

(919) 733-2953—fax

e-mail: energyinfo@ncmail.net

<http://www.energync.net>



Program Descriptions

The State Energy Office provides services and benefits to small businesses, industry, local governments and individual citizens in seven major areas: agriculture, awareness and education, buildings, business and industry, renewable and alternative energy sources, sustainable communities and emergency response, and transportation.

Currently, the State Energy Office operates more than 50 projects to meet the energy needs of North Carolinians. Below are descriptions of some completed, ongoing and proposed projects. Many are statewide; those demonstration projects that are specific to counties or regions may have statewide application.

Agriculture

Energy Production from Bermuda Grass and Poultry Litter *(New Hanover County)*

Demonstrated the use of Bermuda grass and poultry litter as a mixed fuel in a co-generation facility. (C)

Program Status Key

- C - Completed
- O - Ongoing
- P - Proposed

Ethanol from Swine Waste *(Wake County)*

Investigates the use of gasification technologies to convert swine waste, a major environmental pollutant, into fuel grade ethanol. (O)



Wood, or biomass, is an alternative source of energy. Through its Industries of the Future program, the State Energy Office is working with universities and the forest products industry to provide additional markets for wood waste.

Photo by Warren Gretz, National Renewable Energy Laboratory

N.C. Aquaculture *(Wake County)*

Demonstrated an all-electric water treatment system for an intensive aquaculture recirculation fish production system. Water use was minimized as was the energy needed to heat it. (C)

Post-Harvest Promotion *(Statewide)*

Promoted energy efficient post-harvest handling and cooling of fruits and vegetables through educational activities. (C)

Thermophilic Anaerobic Digester (*Duplin County*)

Will use a waste digester running at 120 degrees F. to convert hog wastes to methane gas. A micro turbine will burn the methane, producing electrical power. Water use and odors will be minimized. (P)

Awareness and Education

ARES (Annual Report of Energy Savings) (*Statewide*)

Tracks and documents actual energy savings, measured in BTUs, of North Carolina's State Energy Program. (O)

Awareness and Marketing (*Statewide*)

Produces and disseminates information about energy efficiency for consumers, the agricultural community, the commercial/industrial sector, schools and local governments throughout North Carolina. Information is disseminated through various channels including the broadcast media, the Internet, and outreach and educational activities. For example, through the Agency for Public Telecommunications, the State Energy Office has produced television programs on flood recovery, alternative fuel vehicles, the EV Challenge, renewable energy, and residential energy conservation. (O)

Data Analysis and Forecasting (*Statewide*)

Provides timely data on historical and forecasted energy consumption in North Carolina. (O)

National Energy Education Development Program (NEED) (*Statewide*)

Designs educational activities and materials directed at K-12 public school students to promote an understanding of the economic and environmental trade-offs of energy consumption and production. It includes up-to-date educational evaluation, recognition of achievement, and professional development for educators. (O)

Renewables in Schools (*Statewide*)

Seeks to demonstrate renewable energy technologies in K-12 public schools through hands-on applications, classroom activities and demonstrations. (P)

Sponsorships and Workshops (*Statewide*)

Provides funding for educational events, conferences and workshops that provide training and educational opportunities for North Carolina's citizens on key energy topics. Topics have included ethanol production and use, emergency recovery, energy efficiency for home and commercial buildings, and alternative fuel vehicles. (O)



Ginny Byrne, NEED lead teacher, and her students from North Ridge Elementary School (Raleigh) participate in the NEED Youth Awards as winners for North Carolina Elementary School of the Year.

Photo by the National Energy Education Program



The State Energy Office worked with N.C. A&T State University and the Solar Center to retrofit this Greensboro apartment complex with solar electric panels. These panels lower monthly electric bills and provide backup in case of power disruptions.

Photo by the North Carolina Solar Center

Buildings

Center for Energy Research and Technology (Statewide)

Supports the activities of the Center for Energy Research and Technology (CERT), an energy education institute at North Carolina A&T State University. Research focuses on energy use and energy efficiency in manufactured housing, solar electricity in public housing, and the development of fuel cells. (O)

Clean Technology Demonstrations (Statewide)

Will develop partnerships with North Carolina colleges and universities to demonstrate clean energy technologies, such as fuel cells, biomass, wind, solar and geothermal. (P)

Energy Efficiency in State Construction (Statewide)

As directed by the N.C. General Assembly, projects demonstrate energy improvements in lighting, boiler controls,

HVAC controls, chilled water systems, and other energy efficiency measures in state and university buildings. (O)

Energy for Buildings (Statewide)

Provides industrial companies with assistance in their efforts to reduce emissions of carbon dioxide and other greenhouse gases that contribute to both global warming and air pollution. (O)

Energy Improvement Loan Program (Statewide)

Provides low-interest loans to businesses, industries, local governments, nonprofits and schools to implement energy conserving and renewable energy measures that are identified as being both economically and technically feasible. (O)

High Performance Building Guidelines (Statewide)

Provides training and educational presentations about the *High Performance Guidelines* recently developed by Triangle J Council of Governments in an attempt to construct more sustainable buildings. Targets policy-makers, designers and other professionals who design, build and manage public schools, state and local government buildings, and facilities at universities and community colleges. (O)

Housing Energy Efficiency (Statewide)

Will create a market demand for homes that exceed the North Carolina Energy Code. The energy efficiency of homes will be documented through a home energy rating recognized by the national mortgage industry. (P)

Local Government Units (*Statewide*)

Promotes the increase of energy efficiency in new and existing buildings and sustainable economic development. (O)

North Carolina Energy Code Assessment and Training (*Statewide*)

Evaluates the effectiveness of North Carolina's residential and commercial building energy codes by assessing energy code development and enforcement. Provides training in energy codes for building inspectors and other professionals. (O)

Public School Energy Improvement (*Lee County*)

Demonstrates in selected sites the efficient application of renewable energy in

the school setting for power and instructional purposes. (O)

Steam Trap Surveys (*Statewide*)

Helps North Carolina businesses by identifying and reporting on the condition of each steam trap, specifying those needing repair or replacement. (O)

Business and Industry

Alternative Cooling Technologies (*Statewide*)

Educated industries about the benefits of evaporative cooling, desiccant dehumidification and absorption, and gas-fired chillers. (C)



The State Energy Office funds demonstration projects throughout the state. In Yancey County, the EnergyXChange site uses methane gas from a landfill as a source for electricity in commercial greenhouses.

Photo by Becky Wallace, Blue Ridge Resource Conservation & Development Council

Boiler Efficiency Technical Assistance
(*Statewide*)

Conducts boiler surveys in plants to identify needed improvements. Trains plant personnel on how to solve boiler efficiency problems and promotes state-of-the-art equipment to maintain optimum boiler efficiency. (O)

Climate Change Reduction (*Statewide*)

Will develop implementation activities and demonstrations to achieve greenhouse gas reductions in various sectors of North Carolina's economy. (P)

ECU Incinerator (*Pitt County*)

Uses landfill gas to treat on-site bio-medical and low-level radioactive wastes from Pitt County Memorial Hospital and the East Carolina School of Medicine. (O)

Energy Efficiency Program for Nonprofits (*Statewide*)

Will assist nonprofit agencies in implementing measures to reduce their energy costs, thereby expanding available funds for services and programs. (P)

Energy Management Program
(*Statewide*)

Surveys HVAC, lighting, chiller and cooling towers, and compressed air systems for the commercial, industrial, nonprofit, institutional and agricultural sectors. Follow-up workshops provide basic and advanced training for facilities managers including the Certified Energy Managers' Program, and preventative maintenance. (O)

Energy Reduction through Industrial Partnerships (*Statewide*)

Identifies opportunities for industrial, commercial and institutional facilities to save energy by establishing partnerships for reusing materials, water and energy. (O)

Landfill Gas Utilization Projects
(*Avery, Mitchell, Wilkes, Yancey Counties*)

Captures methane gas from landfills, converting it to energy for a variety of commercial and industrial uses such as space heating for greenhouses. (O)

N.C. Waste Exchange (*Statewide*)

Will link recovered materials with markets, reducing waste disposal through reuse and recycling. Will increase waste prevention and source reduction, decrease carbon dioxide and methane in solid waste landfills, and improve savings in transportation energy. (P)

North Carolina Climate Wise/Energy Star for Industry (*Statewide*)

Markets environmentally sound energy efficient programs to corporations and industry. Assists in developing inventory and pollution mitigation strategies to reduce greenhouse gases in the manufacturing process. (O)

North Carolina Industries of the Future
(*Statewide*)

Promotes and provides methodologies for industries to enhance their competitiveness through improved energy and environmental performance. Focuses initially on the chemical, forest products and mining industries. (O)

Renewable and Alternative Energy Sources

Fuel Cell and Micro Turbines

(Eastern North Carolina)

Will investigate the viability of distributed generation technology, generating electricity from fuel cell and micro-turbine technologies using methane gas from animal waste. This technology minimizes energy loss and uses waste heat. (P)

Geothermal Heating and Cooling

(Central North Carolina)

Compares the energy used by an advanced geothermal heat pump to a conventional heat pump, installed in mobile classroom units. (O)

Million Solar Roofs Initiative *(Durham, Guilford, Orange, Watauga Counties)*

Promotes use of solar energy technologies at the local level through local steering committees, education, training and demonstrations. (O)

North Carolina Solar Center *(Statewide)*

Provides support for a center offering a range of comprehensive technical and educational services designed to advance the use of solar technologies. The N.C. Solar Center also demonstrates solar applications at the NCSU Solar House and an adjoining test site. (O)

Wind Energy in North Carolina

(Western North Carolina)

Studies the potential for harnessing wind energy in the N.C. mountains, map-

ping and evaluating infrastructure needs, such as road access and electric transmission line proximity. (O)



The State Energy Office will study the potential for developing wind power in the North Carolina mountains. These wind turbines, the first in the Southeast, are located in Tennessee.

Photo by the Southern Alliance for Clean Energy

Sustainable Communities and Emergency Response

Energy Emergency Preparedness

(Statewide)

Helps to keep the state's energy emergency preparedness program comprehensive and timely, including emergency actions to be taken in the event of an energy demand or supply crisis. Provides for a training simulation for industry, state and local officials to test plans in a non-emergency setting. (O)

Flood Recovery Technical Assistance (*Eastern North Carolina*)

Helps residents and businesses rebuild following Hurricane Floyd in two ways. Through the N.C. Industrial Rebuilding Plan, the SEO is continuing to help industry recover from floodwater damage to equipment and plants. The Healthy Buildings Resource Center assists builders, HVAC contractors, and homeowners deal with problems in residential and small commercial buildings that were inundated from the flood. (O)



The State Energy Office helped support rebuilding efforts in the wake of Hurricane Floyd. Maggie Crawford stands in front of the “E-house” in Kinston. Built after her original house was destroyed, it was designed and constructed with energy-efficient technologies.

Photo by the Advanced Energy Corporation

Rebuild America (*Statewide*)

Creates partnerships to renovate buildings and improve energy efficiency in multi-family and public housing, commercial buildings, and school and government buildings. Rebuild America strengthens communities by stimulating economic

growth, saving money and improving environmental quality. (O)

Residential Heat Exchanger Evaluation (*Statewide*)

Transferred the heat exchanger technology proven effective in automobiles into equipment used to cool houses. (C)

SERT

(*State Emergency Response Team*)
(*Statewide*)

Helps support and staff the Energy Desk for the State Emergency Response Team when natural disasters or supply disruptions occur. (O)

SHOPP (*State Heating Oil and Propane Program*) (*Statewide*)

Collects supply and price data from a cross sample of heating oil and propane fuel vendors on a weekly basis from October through March. This confidential data is provided to the Energy Information Administration as a component of their information on heating fuels and provides North Carolina with timely information on propane and heating oil trends. (O)

Sustainable Community Development (*Statewide*)

Will increase communities’ awareness of and commitment to sustainable development with a focus on economic well-being, renewable energy, energy efficiency, environmental health, waste minimization and improvements in quality of life. (P)

Waste Reduction Partners (Western North Carolina)

Develops an energy efficiency assessment tool for use in public facilities and conducts energy surveys of state and local government facilities in western North Carolina. Tracks actual energy and environmental savings achieved through client implementation. (O)

Transportation

Alternative Fuels (Statewide)

Will introduce and promote alternative transportation fuels to the public and private fleet management sectors of North Carolina, including compressed natural

gas, propane, ethanol, electricity, hydrogen, and biological materials. (P)

Assessing Biomass Resources for Liquid Fuel Production in North Carolina (Statewide)

Will conduct a survey and production study to determine the amount of sugar, starch and cellulosic products and residues that are available in North Carolina as potential sources of feedstock for renewable energy applications, including ethanol. (P)

Car Care Clinics (Statewide)

Instructed motorists on energy saving strategies for motor vehicle operation and identified cost effective and energy efficient repairs and maintenance. (C)



This demonstration house at N.C. A&T State University serves to test alternative energy and energy-conservation strategies in the manufactured housing industry.

Photo by the Florida Solar Energy Center, National Renewable Energy Laboratory

Clean Cities

(Charlotte Area, Triad, Triangle)

Provides funding to advance the use of alternative fuels and alternative fuel vehicles in the Triangle and Charlotte areas of North Carolina. A new program for the Triad region will be launched this coming year. (O)

EV Student Education *(Statewide)*

Supports the N.C. Electric Vehicle Challenge in which high school students in over 25 schools retrofit gasoline-powered street vehicles into battery-operated vehicles. Includes a mobile classroom and educational video for use in schools, exhibitions and other venues. (O)

EV Charging Station *(Wake County)*

Will construct a solar charging station for electric vehicles at NCSU's Solar House and provide opportunities for fleet operation managers to see how solar charging stations operate. (O)

Evaluation of Motor Oils *(Wake County)*

Evaluated the performance and energy efficiency advantages and disadvantages of three types of engine oil for use in state vehicles. (C)

OEM/CNG Vehicle Program

(Forsyth County)

Will track and document performance of alternative fuel vehicles (compressed natural gas) purchased directly from the original equipment manufacturer. (O)



Wayne Denton of Motor Fleet Management drives an alternative fuel vehicle.

Photo courtesy of DOA Bulletin Newsletter



State Energy Office Partial List of Program Partners

Advanced Energy Corporation

Appalachian State University

Blue Ridge Regional Conservation
and Development Agency

Cape Fear Resource Conservation
and Development, Inc.

Center for Sustainable Communities

Centralina Council of Governments

Chowan Area Development Authority

East Carolina University

Hayti Development Corporation

Land-of-Sky Council of Governments

N.C. Project Green

National Energy Education Development

North Carolina A & T State University

North Carolina Department of
Environment and Natural Resources

North Carolina Facility Management
Division

North Carolina Motor Fleet
Management Division

North Carolina Office of Emergency
Preparedness

North Carolina Solar Center

North Carolina State Construction
Office

North Carolina State University

North Carolina Sustainable Energy
Association

Triangle J Council of Governments

U.S. Department of Energy

U.S. Environmental Protection Agency

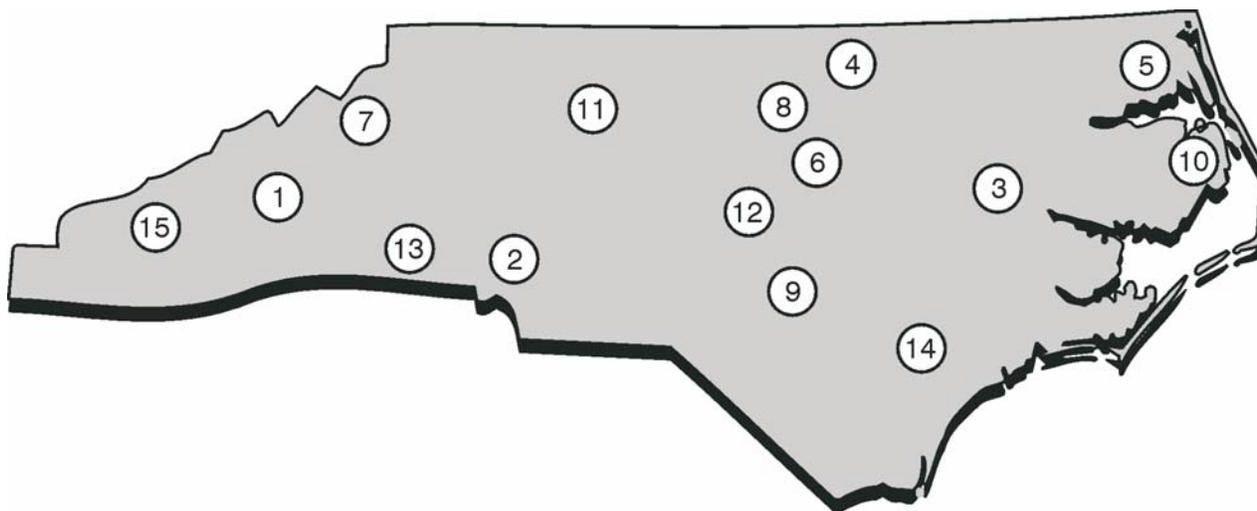
University of North Carolina - Asheville

University of North Carolina - Charlotte

Uptown Shelby Association Inc.

A Selected List of State Energy Office Programs

1. Car Car Clinics (*Buncombe*)
2. Clean Cities (*Mecklenburg*)
3. ECU Incinerator (*Pitt*)
4. EV Challenge (*Vance*)
5. Energy Efficiency in State Buildings (*Pasquotank*)
6. Ethanol From Swine Waste (*Wake*)
7. Landfill Gas Utilization Project (*Avery*)
8. Million Solar Roofs Initiative (*Durham*)
9. N.C. Climate Wise/Energy Star (*Cumberland*)
10. NEED (*Dare*)
11. OEM/CNG Vehicle Program (*Forsyth*)
12. Public School Energy Improvement (*Lee*)
13. Rebuild America (*Cleveland*)
14. Thermophilic Anaerobic Digester (*Duplin*)
15. Wind Energy in North Carolina (*Swain*)



The State Energy Office Serves Each
North Carolina County

