



The Energy Connection

South Carolina Budget and Control Board, Division of Regional Development

Spring 1999

New Company Offers Green Electricity, New Cash Crop for Farmers

What color is your electricity? Until recently, electricity was just the invisible force that kept the lights on. Now, with the introduction of a new biomass fuel, E-Grass, the color of your electricity may be green! Green electricity refers to electricity that is produced when plants, such as grass and trees, are burned to produce energy.

Recently, Charlie Boswell, president of North American Biomass Corporation, a new company based in Columbia, announced that NABC had obtained the rights to a revolutionary hybrid plant, E-Grass, perhaps the best commercial source of biomass available today.

NABC has established multiple programs to utilize the maximum potential of E-Grass. These include enrolling local electric companies to use E-Grass as a fuel source and contracting with local farmers to grow the required quantities of E-Grass. NABC will purchase the grass grown by the farmers, process and warehouse it, and deliver it to the electric companies.

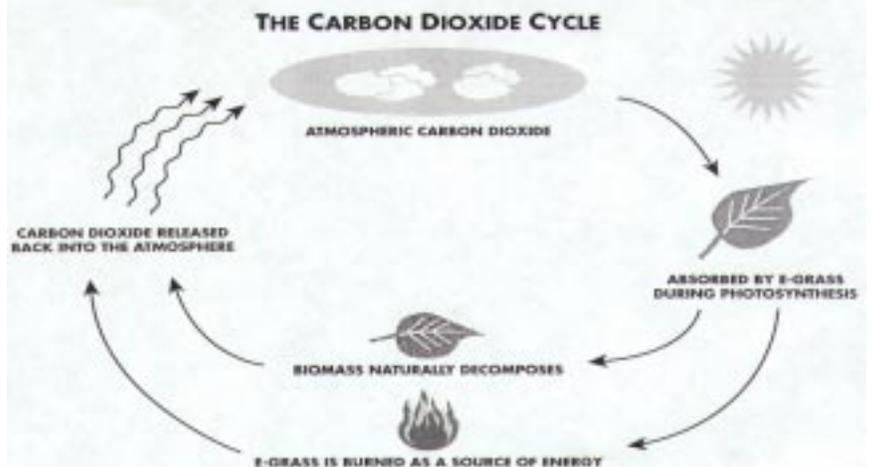


The significance of burning biomass instead of coal to produce electricity was explained by Boswell as “the best way to reduce the amount of carbon dioxide released into the air. There is no net increase in the amount of carbon dioxide released into the air when you burn biomass.” The reason for this is that a growing plant must use carbon dioxide to grow. When it is burned, the carbon dioxide that was originally used in growth is released back into the air, thereby creating a no-net-gain cycle, as shown in the graphic below.

Recently the EPA announced proposed new regulations that it wanted to impose on electric generating plants, manufacturing facilities and others that emit large quantities of carbon dioxide into the air. One of the ways that electric generating facilities could meet these proposed new standards is to spend millions of dollars installing new equipment or modifying existing equipment. NABC offers a different solution - utilizing E-Grass as a part of the fuel burned to generate electricity.

E-Grass is a hybrid plant with sterile seeds. It is propagated by planting pieces of its root system, or rhizomes. Rhizomes can be planted with a traditional sweet potato or tobacco planter. Since E-Grass is a perennial, it only has to be planted once, therefore it is not a labor-intensive crop. Once the crop has reached maturity, it is cut and baled in a manner similar to hay.

South Carolina currently spends approxi-
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Notes From the Director

Mitch Perkins



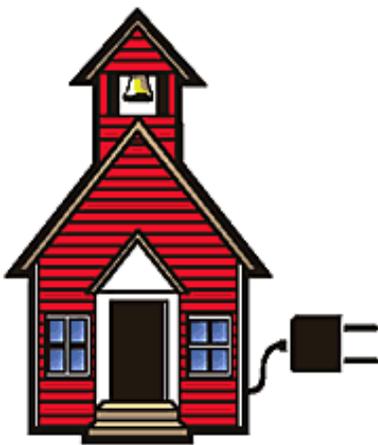
In the summer of 1998, the Department of Energy (DOE) launched Energy \$mart Schools, a major initiative to cut school energy bills and reinvest the savings in educating the nation's most valuable resource—our children.

The program's primary goal is to make schools more energy efficient, thereby allowing more resources for education. Energy \$mart Schools will be implemented through the active commitment of its partners—through existing federal, state, and other programs that include Rebuild South Carolina, State Energy Programs, and Energy Star.

The South Carolina Energy Office plans to partner with the U.S. Department of Energy, South Carolina's Department of Education, utility companies, community representatives, and a host of others concerned with energy efficiency, cost effectiveness, and the environmental health of our schools, as well as with the productivity and well-being of South Carolina students and teachers.

The Energy \$mart Schools program has a 10-point Action Plan:

- Establish quantitative goals;
- Remove institutional, legal and other barriers;
- Develop financial, procurement, and design tools;
- Provide technical assistance and training;
- Demonstrate advanced technologies;
- Demonstrate impacts of building design on learning and health;
- Develop energy curricula;
- Disseminate information;
- Recognize success; and
- Track progress through partner meetings.



Energy \$mart Schools

The benefits of the program are tremendous. With South Carolina schools spending nearly \$73.8 million last year to heat and cool schools, potential energy cost savings are enormous. A 1977 survey found half of the state's 1,100 schools are more than 40 years old. Many of those structures are obsolete and cannot be outfitted with computer and modern telephone systems. One in every 10 classrooms across South Carolina is a portable classroom. The state needs 13,000 new classrooms to meet or replace obsolete or aging ones.

Energy \$mart Schools will focus on "Books not BTUs," reinvesting the savings in education or other local priorities. In addition, it will improve classroom environment and productivity while teaching kids about energy. For more information, contact Howard Coogler of the South Carolina

Energy Office.
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What's Happening Around the State



The **City of Charleston** has solicited proposals from Energy Performance Contractors to upgrade the lighting, envelope and HVAC systems in four buildings: Gaillard Auditorium, Lockwood Municipal Complex, City Hall and 116 Meeting Street. With Charleston being a Rebuild America and Rebuild South Carolina partner, the South Carolina Energy Office is assisting the city through its publication, *Guide To Energy Performance Contracting*, and with technical advice.

The **University of South Carolina Spartanburg** has reported annual energy cost savings of nearly 48 percent at its Child Development Center as compared to its base year of fiscal year 1996. According to Project Manager Kent Orr, the University achieved these savings by replacing the existing HVAC system with a larger, more efficient system controlled by a programmable thermostat, relamping with T-8 lamps and electronic ballasts, downsizing the hot water heater, and controlling it with a timer. USC Spartanburg is a Rebuild South Carolina Partner.

In February, the SC Energy Office partnered with the SC Department of Education to co-host two downlink sites for the national teleconference on "**Energy Smart Solutions for America's Schools.**" The teleconference, presented by the U. S. Department of Energy and the Geothermal Heat Pump Consortium was the first in a series of educational outreach programs of the Energy \$mart Schools Partnership. If you are interested in receiving details about future teleconferences, please contact Richard Baldauf of the SC Energy Office.

Universities Reap Energy Savings They Sow

Nine public universities have reported \$1,802,549 in annual energy savings from energy efficiency projects completed between July 1993 and June 1998. Each year the South Carolina Energy Office reviews utility cost savings reports on completed projects and certifies the reported savings to the Commission on Higher Education. The Commission then adjusts the funding formula for the 17 universities, four-year colleges and regional campuses to allow them to retain part of the energy savings in their budgets.

Lighting retrofits were the most commonly reported projects for Fiscal Year 97-98. T8 lamps and electronic ballasts, LED exit lights, compact fluorescent lamps, and other lighting efficiency measures were installed at the College of Charleston, Francis Marion University, USC-Columbia, and USC-Spartanburg.

USC-Columbia reported the project with the largest annual energy savings, the installation of variable speed drives on existing chilled water pumps in 11 buildings and the East Energy Facility. The project generates \$129,405 in annual utility cost savings. The simple payback period for the installation cost of \$382,960 is only three years.

Clemson University reported removing a stand-alone centrifugal chiller from continuous service by connecting the laboratories in Sistine Hall to the more efficient central chiller system. This \$20,000 project will pay for itself in just over 3 years. University Facilities at Clemson has also implemented an aggressive load management program with Duke Power Company. Although it does not qualify as an energy savings project for certification, the program has reduced demand charges by \$750,000 for 1997 and 1998.

For information on the energy savings certification program for public higher education institutions, contact Janet Lockhart of the SC Energy Office.

Utility Energy Conservation Programs Are Lacking

The sixth annual report on demand-side activities implemented by the suppliers of electricity and natural gas throughout South Carolina is available from the SC Energy Office. This report summarizes energy conservation information submitted by retail distributors of electricity and natural gas in South Carolina, with a purpose of describing ways to use conservation to meet the needs of South Carolina. This year's report includes information from 45 of the 46 electric utilities operating in the state, and 13 of the 19 natural gas suppliers operating in the state.

Two basic themes emerge in this year's report: (1) savings from demand-side management programs are declining, many existing programs are being eliminated, and new programs are not being implemented; and (2) there is a great deal of variation among the utilities in the degree to which they participate in demand-side activities.

Demand-side activities are used to reduce the peak demand for electricity and to reduce the overall amount of energy used. Their use reduces harmful emissions, conserves fuel resources, reduces consumers' bills, and reduces the need for additional power plants. In 1997, these demand-side activities reduced peak demand by 5 percent, or the equivalent to reducing the need for almost 9 combustion turbines. Overall energy consumption was reduced by 0.18 percent through demand-side activities in 1997, saving consumers about \$9 million.

Leaders in energy conservation are Carolina Power & Light, Duke Power and the Cooperatives. The future of conservation programs is not certain due to the pending restructuring of the electric industry.

If you would like a copy of this report, or want more information on demand-side activities in South Carolina, please contact Kate Billing of the SC Energy Office.

E-Grass...Continued from Page 1

mately \$460 million dollars a year outside the state purchasing fuel for its electric plants. If 20 percent of this amount, or \$92 million, was spent purchasing E-Grass grown by South Carolina farmers, this would create a significant economic impact on the state.

Mitch Perkins, Director of the South Carolina Energy Office, stated, "South Carolina produces no coal, oil, natural gas, or uranium. Therefore, our office has long advocated the use of renewable energy resources, such as E-Grass, that can be produced and utilized in South Carolina."

For more information on E-grass and the North American Biomass Corporation, contact Tonya White at (803) 561-0995, or at tonya@egrass.com.

SCEO Partners with EPA

The South Carolina Energy Office has signed on as a State Ally with the U.S. Environmental Protection Agency in their Landfill Methane Outreach Program (LMOP). LMOP was launched as part of President Clinton's Climate Change Action Plan in order to encourage the use of landfill gas as an energy source.

Methane, which comprises 50 percent of landfill gas, is considered a greenhouse gas that contributes to global warming. Each ton of methane released into the atmosphere has as much global warming impact as 21 tons of carbon dioxide. At this point, the gas produced by most landfills is flared into the atmosphere as per federal regulations. Harnessing this wasted energy and channeling it into useful applications represents innovation at its finest, and the SC Energy Office is excited to be a part of this effort.

The goal of this program is to develop landfill gas to energy (LFGTE) projects by reducing educational and institutional barriers through partnerships with state officials, municipal solid waste owners and operators, utilities, energy users and the LFGTE industry.

As a State Ally, the Energy Office is responsible for organizing a task force made up of individuals from the public and private sector, bringing LFGTE projects to South Carolina. The Energy Office will also be responsible for developing a primer on landfill gas-to-energy projects, and will sponsor a one-day workshop in October to educate people on the use of methane gas.

If you would like more information on LMOP, or are interested in landfill gas-to-energy projects, contact Kate Billing of the SC Energy Office at (803) 737-8030.

Central Midlands Clean Cities Coalition Gets a New Coordinator

The Central Midlands Clean Cities Coalition (CMCCC) has hired Bob Graham as its Clean Cities Coordinator. Graham is responsible for recruiting local stakeholders, coordinating Program Plan development and public outreach activities, and representing the Coalition at conferences and other events. He will also serve as the liaison between the Steering Committee, working groups, and state and federal agencies, and will play a large role in developing the goals and objectives of the Coalition.

Graham comes to the Coalition from the South Carolina Emergency Preparedness Division, where he served as the State Hazard Mitigation Officer. While at EPD, he coordinated the state's disaster mitigation efforts.

The Clean Cities program is a locally-based, voluntary public/private partnership sponsored by the U.S. Department of Energy (DOE) that expands the use of alternatives to gasoline and diesel fuel. Legal alternatives under the Energy Policy Act of 1992 (EPA92) include compressed natural gas (CNG), ethanol, methanol, electricity and liquefied petroleum gas (propane).



Clean Cities builds on local initiatives and partnerships and nationwide networks to achieve its goals. By combining local decision-making with voluntary action by partners, this grassroots community action is a departure from the usual top-down approach of federal programs. These coalitions create effective local programs that will combine to form a sustainable nationwide alternative fuels market.

Graham has been very successful in recruiting potential stakeholders for the Coalition. Thus far, representatives from the SC Energy Office, SC DHEC's Division of Air Quality, USC's Sustainable Universities Initiative, USC Transportation Department, the Sierra Club, and York Technical College have agreed to work toward making the greater Columbia area a Clean City.

If you are interested in learning more about the Central Midlands Clean Cities Coalition, please contact Bob Graham at (803) 376-5390 or bob@cmcog.state.sc.us; or Patricia Tangney of the South Carolina Energy Office at (803) 737-8030, 1-800-851-8899 statewide or ptangney@drd.state.sc.us.

SC Energy Office Successful in Manufactured Housing Efficiency

Renew America has announced that the South Carolina Energy Office has received a Certificate of Environmental Achievement and will be included in Renew America's *Environmental Success Index*, a one-of-a-kind database filled with successful environmental programs.

Since 1993, the State of South Carolina has offered an incentive program for consumers who purchase energy efficient manufactured homes. This incentive provides South Carolina consumers who purchase "energy efficient manufactured homes" an exemption on any amount of sales tax due above \$300. The features which qualify manufactured homes as energy efficient include: storm or double pane glass windows; insulated or storm doors; an a minimum thermal resistance rating equivalent to R-11 for walls, R-19 for floors, and R-30 for ceilings. These standards make the home less

“Age of Oil” Entering Its Last Days

ARCO Chairman and CEO Mike R. Bowlin says the world is entering “the last days of the Age of Oil” and urged the U.S. energy industry to pay more attention to alternative transportation fuels, including natural gas. At the Cambridge Energy Research Associates’ annual conference, Bowlin said the 21st Century will bring a dramatic “new look” to the domestic energy industry and that natural gas and renewable fuels will play decisive roles in the energy mix of the future.

“Global demand for clean energy - natural gas, renewables, electricity and new energy technologies - will grow faster than overall demand for energy, including oil and coal,” Bowlin said.

Energy providers must make a critical choice, he said. “Embrace the future and recognize the growing demand for a wide array of fuels, or ignore reality and slowly - but surely - be left behind.”

Bowlin, head of the world’s fifth-largest oil company, also called on the energy industry to join automakers in developing cleaner fuels, including reformulated gasoline. *AND ON THAT NOTE...*

York Tech National Leader in Electric Vehicle Technology

The Center for Alternative Energy Technology at York Technical College, located in Rock Hill, is the nation’s leading two-year college dealing with electric vehicle technology and electric vehicle training and education.

York Technical College has been involved with the testing and development of educational programs for electric vehicles since the late 1980s, and compressed natural gas vehicles since the early 1990s. York Technical College has a diverse fleet of electric and compressed natural gas vehicles that represent the range of current technology. This fleet enables the College to gain experience with alternative fuel vehicle operation and maintenance, which supports the development of educational programs. During this time, the College has worked with numerous public and private partners throughout the United States in the development of educational programs and training material.



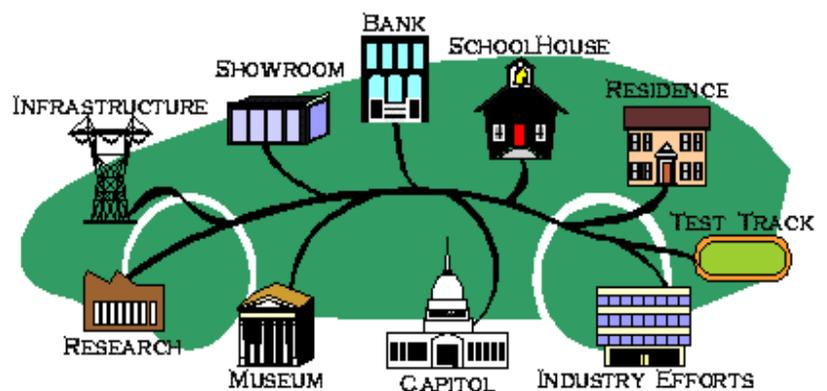
The College, with the support of the South Carolina Energy Office placed electric vehicles at the State Convention of the South Carolina Department of Parks, Recreation and Tourism, at Swansea High School, and in Richland School District Two. The objective of this program is to demonstrate the utility of electric vehicles and to educate the students and public on the technology, operation, and performance of modern electric vehicles.

The College has developed and published a 60-hour continuing education program on Electric Vehicle Maintenance and wrote the textbook on the maintenance of electric vehicles to support this course. The College also developed an interactive web-based computer program called the Electric Vehicle Road Map to introduce the public to electric vehicle technology, their benefits and availability; this can be found at <http://epri.com/csg/trans/evrn/index.html>.

As a member of the National Alternative Fuels Training Consortium, York Technical College is partner in a network of 19 two-year colleges throughout the country dedicated to training skilled technicians to service alternative fuel vehicles. The consortium helps provide the infrastructure for implementing widespread use of alternative fuels to increase our nation's energy security and improve our air quality.

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Electric Vehicle Road Map



Manufactured Homes...Continued from Page 4

expensive to maintain than standard manufactured homes. Additionally, higher energy standards are even more attractive for consumers because some power companies offer lower rates to consumers who purchase energy efficient manufactured homes. The standards for the tax incentive are designed to match power company standards, allowing consumers to receive both a sales tax break and lower electricity rates.

Coordinated by Renew America, the National Awards Council for Environmental Sustainability recognizes successful programs and their achievements annually. The coalition of 60 national environmental, non-profit, government and business organizations includes the National Audubon Society, the Nature Conservancy, Sierra Club, Environmental Law Institute, Earth Voice, AT&T, the National Geographic Society, and the Smithsonian Institution.

For more information about Renew America, or to see the *Environmental Success Index* online visit their webpage at www.crest.org/renew_america.

Switch Off To Save Energy

Switching off a device when it is not in use is undoubtedly the most simple power saving measure. But how much is too much?

After 20,000 switching cycles (17-20 years of service) emission of the cathode starts to weaken. The other components are not impaired by frequent switching. Based on research, the critical operating time can be determined when wear caused by the switching cycle starts to impair the life cycle. For PC monitors, this critical operating time is 15 minutes. This means that switching off the monitor is worthwhile for breaks lasting more than 15 minutes.

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SC Energy Office Adds News Faces

The SC Energy Office has undergone several staff changes in the past few years. Most recently, the Office has had the pleasure of welcoming two new employees, Sonny DuBose and Jeff Molinari.

Sonny DuBose has joined the staff as a Program Coordinator. He assists the Energy Office with its marketing efforts, primarily marketing and publicizing the Energy Office's financial services and technical assistance programs. Sonny has worked as a Marketing Consultant, a Senior Vice President of Marketing and Sales, a real estate broker, developer, builder and property manager, and radio and television broadcaster. Sonny has been President of the Hilton Head Island Board of Realtors, Realtor of the Year (1985), former Lexington County Council member, and board member of the Central Midlands Regional Planning Council.

Jeff Molinari has joined the Energy Office's Funding and Evaluation team as an intern. He assists the Energy Office by conducting research, analyzing data, maintaining databases, and performing other administrative functions. Jeff threw caution to the wind and enrolled at USC without ever having visited South Carolina, where he has since made many friends and contacts. Jeff is currently a first year student in USC's Masters in Public Administration program. He received a BA degree in Political Science from the State University of New York at Geneseo.



York Tech...Continued from Page 5

With the support of the U.S. Department of Energy, the SC Energy Office, York County Natural Gas Authority, and the City of Rock Hill, the College introduced compressed natural gas (CNG) dump trucks into the Rock Hill fleet and developed a CNG maintenance training program for the city maintenance personnel.

Working with the University of South Carolina and other partners, York Technical College will conduct field tests and maintenance using a fuel cell-powered John Deere utility vehicle (a Gator). This program is designed to demonstrate the feasibility of using metal hydride alloys to store hydrogen fuel for the fuel cell vehicle.

York Technical College has recently been awarded a three-year grant from the National Science Foundation to develop a post secondary certificate and degree program on Electric Vehicle Engineering Technology. This grant will also include the development of educational modules on electric vehicle technology and their impact on the environment for integration into secondary school science and mathematics curriculum.

Publications Available

The SC Energy Office is pleased to announce the revised and current editions of two very popular booklets: *The Energy Factbook* and the *Model Year 1999 Fuel Economy Guide*.

The recently revised *Energy Factbook* covers topics from the very basics of understanding energy to nuclear energy to conservation and efficiency. The *Factbook* also covers energy consumption and production from a South Carolina, nationwide and global perspective. Informative graphs and diagrams illustrate the impact cutting energy costs can have on everyday lives.

For anyone considering the purchase of a new vehicle, the *Model Year 1999 Fuel Economy Guide* for automobiles is a must. The *Guide* lists estimates of miles per gallon for each vehicle available for the 1999 model year. This book is produced by the U.S. Environmental Protection Agency.

For a free copy of these booklets, contact Renéé Daggerhart of the SC Energy Office at (803) 737-8030 or 1-800-851-8899 statewide.

SC Energy Office Opportunities To Learn

Ground Source Heat Pump Workshops

Half-day Introductory Geothermal Workshop - \$25

Columbia - May 18, 1999

Greenville - May 19, 1999

Three-Day Geothermal Certification Class - \$95

Charleston - June 7 - 9, 1999

Geothermal Workshop for Architects and Engineers - \$45

Columbia - June 11, 1999

The SC Energy Office has made arrangements to offer educational workshops for architects, engineers and HVAC companies who are interested in learning about this technology. An intensive three-day certification class will be held following the completion of the initial workshops. Those who attend the three-day installation workshop will receive an International Ground Source Heat Pump Association Installation Certificate. For registration information, contact Vicky McCann with Advanced Energy at (919) 857-9000.

Building Energy Code Training Workshops

Charleston - June 15 - 16, 1999

Columbia - June 29 - 30, 1999

Florence - Sept. 29 - 30, 1999

Clemson - Oct. 19 - 29, 1999

The South Carolina Energy Office has received federal funding to continue the training on the Model Energy Code and ASHRAE 90.1 building energy code requirements. Training will be offered for building inspectors and officials, architects, engineers, designers, builders and contractors. The registration fee is \$100, or \$50 if only attending one day. Contact Southface Energy Institute at (704) 265-4888 for registration information, or the SC Energy Office for more information.

Do You Have Energy ² Learn?

Energy ² Learn, a one-day workshop for K-12 teachers, is back, with something for everyone!

This second-annual workshop, to be held at Seawells in Columbia on August 5, will feature the latest on energy education for the classroom, including updates on the statewide Palmetto Energy Awards Program (PEAP) and the introduction of the National Energy Education Development (NEED) Project.

The workshop will feature lessons on energy in South Carolina and lessons on two often under-appreciated recycling lessons - composting and buying recycled. Workshop participants will receive:

- ⊗ the *Action For A Cleaner Tomorrow* curriculum;
- ⊗ many classroom materials including posters, T-shirt, totebag, and many products made from recycled content materials;
- ⊗ opportunities to win many prizes, including a recycled computer; and
- ⊗ opportunities to visit displays and learn about other energy/environmental programs in South Carolina.

Energy ² Learn is limited to the first 200 teachers who register. This free event is sponsored by the SC Energy Office, the SC Department of Health and Environmental Control's Office of Solid Waste Reduction and Recycling, the U.S. Postal Service, and the U.S. Environmental Protection Agency. For registration information, please call DHEC's Recycling Hotline at 1-800-768-7348.

South Carolina S.A.V.E.\$ (Schools and Agencies Verify Energy Dollars) was initiated in 1994 to assist schools and agencies in monitoring their energy costs. S.A.V.E.\$ participants receive FASER (Fast Accounting Software for Energy Reporting) energy accounting software and training to track, analyze and print reports on energy and utilities. There are currently two versions of FASER software used in the state: FASER9 for DOS and FASER2000 for Windows. For information on FASER, contact Julia Parris at jparris@drd.state.sc.us or call the SC Energy Office.

What's New With FASER?

A Year 2000 Readiness Disclosure with the most current information was sent to all OmniComp software customers in March. If you did not receive this disclosure or you have additional questions about the Year 2000 readiness, please contact OmniComp at 1-800-726-4181.

FASER5: The new release is loaded with enhanced features and is Y2K ready. By the time you receive this newsletter you should have received the new release. If you have not received FASER Release 5.0, please contact Julia Parris of the South Carolina Energy Office as soon as possible. New features of Release 5 include an advanced cost avoidance module, virtual submeter creation, rate schedule wizard, improved user interface and reporting capabilities, and an SQL (Sequel Server) database engine.

FASER has the ability to import bill data electronically using Electronic Data Interchange (EDI). EDI is a tremendous time and cost saving data transfer that provides quick and efficient transfer of information, elimination of data entry errors, paperless data transfer, and reduced labor costs associated with entering, filing, storing and reconciling data. Ask your utility company if your bills are available in EDI format.

Director Mitch Perkins
Editor Reneé Daggerhart

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