

Show Me Results!

SUCCESS STORIES OF THE FLORIDA ENERGY OFFICE 2002

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS
FLORIDA ENERGY OFFICE

Show Me Results!

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Florida Department of Community Affairs

Florida Energy Office

Annual Report 2001-2002

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ANNUAL REPORT of The Florida Public Service Commission

on Activities Pursuant To The Florida Energy Efficiency And Conservation Act and
the Biennial Report on The Florida Energy Conservation Standards Act
Prepared by the Florida Public Service Commission, Division of Economic Regulation

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Jeb Bush
Governor,
State of Florida

A MESSAGE FROM THE GOVERNOR OF THE STATE OF FLORIDA

Finding new sources of energy continues to be a priority for Floridians as we move into the next decade. As our state continues to grow, we have a responsibility to provide reasonable and reliable sources of energy—the quality of life, the quality of our business climate and the quality of our environment will be closely linked with how we address Florida’s energy needs. After all, the most important source of energy is the energy we conserve.

The success stories in *Show Me Results! 2002* are a perfect example of how Florida’s Energy Office can help communities and businesses alike cut down on their energy bills. From using a more energy efficient light bulb, to installing awnings to weatherizing a home, I challenge Floridians to find innovative ways to make energy more affordable.



Steven M. Seibert
Secretary,
Florida Department of
Community Affairs

A MESSAGE FROM THE SECRETARY OF THE FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

I am pleased to highlight the work of our Florida Energy Office and its partners in promoting energy efficiency. The Florida Energy Office’s goal is to put public grant dollars to work to support creative “real world” solutions. This helps reduce per capita energy consumption so that we can save consumers money, protect our environment and add value to the state’s economy.

The Department of Community Affairs’ Energy Office continues to help Floridians and their communities make energy more affordable. The Department can offer and guide communities and businesses through several programs that will lower their energy costs. The Energy Office is not looking for a quick fix, rather, its goal is to re-weave energy efficiency into the social fabric.

The Department of Community Affairs hopes that the success stories in this edition of *Show Me Results! 2002* will prompt communities, businesses and local governments alike to develop their own innovative plans to conserve energy. These stories highlight just a few of the projects undertaken by the Energy Office this year that have produced concrete results. Every product or service that is funded must meet strict criteria, reducing the negative impact of energy use while offering a good market potential.

Florida continues to be a leader in its efforts to conserve energy, from the way we build our public structures to our support of new technologies and innovations. We are confident our efforts will lead to a more energy efficient state.

I hope you enjoy these success stories of the good work that is done for the benefit of Florida’s citizens.

Introduction



Energy security is as critical today as it was when the Florida Energy Office opened its doors in the 1970s. In those days, the United States was dependent on overseas suppliers for less than 40 percent of the country's oil needs.

Today we are dependent on foreign countries for 60 percent of our petroleum needs. Although the oil import trend has been decidedly in the wrong direction, the good news is that now we are poised to benefit from almost 30 years of research and development in energy efficiency, renewable fuels, and renewable energy technologies.

Unlike distributed resources, our modern energy infrastructure requires large central-station power plants and extensive distribution systems, both of which are susceptible to acts of terrorism or natural disaster. Anyone who doubts the vulnerability of our national electricity grid need only recall a hot summer night several years ago, when an untrimmed tree limb succumbed to winds and dropped on a line in Oregon. In a cascading series of events, the lights went out west of the Mississippi River.

Liquid fuels flow through pipelines that also experience periodic disruptions. Imports come to us on tankers passing through shipping lanes that are potentially as vulnerable as that power line in

Oregon. And it is difficult and costly to protect all terminuses and refineries from any eventuality. Furthermore, the cost of overseas supplies is subject to the influence of nationalist regimes and the Organization of Petroleum Exporting Countries.

Petroleum is our number one fuel, and our consumption of it continues to grow at a rate faster than all other primary energy sources. Today the U.S. consumes more than a quarter of the world's oil—more than the next five oil-consuming countries combined. In 2000, our imports cost U.S. consumers \$109 billion, an amount equal to 25 percent of our country's balance-of-trade deficit for the year. The combined forces of increased demand and finite supply can be expected to maintain upward pressure on price. Over the last three decades, the world has experienced seesaw swings in the price of oil. In the last 30 years, each of three oil price shocks in the U.S. was precipitated by a political crisis in the Middle East. Moreover, after each shock, the U.S. suffered an economic recession. While no credible experts argue that it is possible to go "off" imported oil in the near- or mid-term, energy efficiency, RETs, and domestically produced renewable fuels can reduce the extent of our dependence on foreign countries for the energy lifeline of our economy.

Unlike 30 years ago when the Nixon Administration first tried to wean our country off foreign oil following the Arab Oil Embargo of 1973, the assumed one-to-one relationship between energy inputs and economic outputs no longer exists. This is due to energy efficiency—the U.S. economy is almost 40 percent more energy efficient than it was in 1970. Put another way, one could say that the U.S. today obtains 40 percent of its "energy services" from energy efficiency compared with thirty years ago.

While our Gross Domestic Product increased from \$1 trillion in 1970 to \$10.3 trillion in 2000, the energy intensity of our economy decreased by 40 percent. Before 1970, energy use had increased hand in hand with growth in the economy.

More than two-thirds of U.S. oil consumption is in the transportation sector, where energy demand grows at full throttle. Moreover, it takes energy to make and deliver energy to the point of use. Twenty years ago, the Texas energy office estimated the amount of energy actually saved through efficiency and conservation. It derived the following equation:

$$\mathbf{1 \text{ barrel of oil saved} = 1.4 \text{ barrels "earned"}}$$

Efficiency, by its nature, reduces the need for conventional energy—whether



The nation's centralized system of production and distribution of electricity is potentially more vulnerable to disruptions than would be a decentralized system.

can reduce transmission and distribution system losses. Sprinkling generation from renewable resources throughout the fragile power distribution system strengthens it through decentralization.

States are leading efforts to create public and private partnerships to accelerate the use of advanced technologies such as the hydrogen fuel cell.

Today, the network of state energy offices including Florida's has become an important element of our national energy scene. State energy office programs match energy innovations to local conditions and economies. The state energy offices are naturally suited to crafting, testing, and demonstrating solutions to today's energy security challenges.

Long before the terrorist attacks of September 11, state energy offices have developed formal plans to respond to an energy emergency. Under the U.S. Department of Energy's State Energy Program and predecessor programs, states have had energy emergency plans in place for more than a decade. Today the State Energy Program plays a critical role in helping states with their energy programs.

Part of making it work is coordinating state and national policies on energy security, according to the U.S. Department of Energy State Energy Advisory Board. Now more than ever, these priorities must include energy efficiency and renewable energy. Encouraging energy efficiency remains smart policy for Florida. The potential for future opportunity lies in both institutional settings and innovative enterprises that understand efficiency is just good business.

Excerpts from the Department of Energy's *Conservation Update* article "Energy Security and the State Energy Program" by Maurice Kaya

liquid fuels in the transportation sector, fuels for electricity and space conditioning in the buildings sector, or process fuels in the industrial sector.

Because 67 percent of U.S. petroleum is consumed in its vehicles and most imported oil is delivered to refineries that produce motor fuels, many state energy programs target the transportation sector. Our state is addressing this issue through the Clean Fuel Florida Advisory Board. Public education campaigns, workshops, and niche market forums are being developed as the state set examples with its own fleets of vehicles. Through such programs, state energy offices have been key to market acceptance of fuel-efficient cars and trucks, alternative fuel vehicles, and renewable fuels.

Both renewable fuels and distributed energy power generation rely on local

energy resources that have implications for our energy security. Renewable fuels can be produced domestically from biomass—material from plants and crops—potentially providing new markets for rural producers. Most important, utilizing renewable fuels directly reduces our dependence on overseas oil suppliers.

Distributed applications of renewable energy in buildings, off-grid, and in mini-grids also contributes to our nation's security. This is because distributed generation offsets the need for an equivalent amount of central-station power generation and the related wires to distribute it. Electricity, heating, or cooling is produced close to where it is used, which leads to greater environmental benefits since these systems tend to be more efficient and

1

SHOW ME RESULTS!

Florida Program Helps South Carolina Promote Solar Alternatives

When the question was “affordable solar?” ... the answer was Florida Manufactured Solar Products and Operation Cooperation



The challenge was to take a 125 year old wooden building, located in a designated historic district and incorporate both the building techniques needed to preserve it’s historic value, along with the modern construction methods and the materials needed to completely restore the structure to present day Hurricane, Earthquake, Flood, Fire and Energy Codes.

For more information contact Al Othmer, Energy Conservation Assistance Program, University of South Florida Small Business Development Center (813) 974-4378

From it’s earliest beginnings, it was obvious that the Center For Sustainable Living, located at 113 Calhoun Street in the historic city of Charleston, South Carolina was going to be both a challenge and an unsurpassed success.

The challenge was, could we take a dilapidated 125 year old wooden building, located in a designated historic district and incorporate both the old building techniques needed to preserve it’s historic value, along with the modern construction methods and the materials needed to completely restore the structure to pres-

University Cooperative Extension Service, the South Carolina Sea Grant Consortium and countless other volunteers, the community now has a showplace with national recognition.

Visitors from all over the world tour the facility to see how Storm Mitigation and Energy Conservation can be incorporated in new construction as well as older buildings. One of the unique aspects of 113 Calhoun Street: The Center for Sustainable Living facility is the fact that visitors can actually “see through the walls, floors and ceilings” and gain firsthand knowledge on where and how the construction



“We are amazed by the performance of these simple Solar Technologies”, stated Mr. Dick Dalla Mira, Coordinator for 113 Calhoun St. “They are all functional, affordable and are providing our facility with needed inside and outside security lighting at no additional electric cost even when the utility grid is down.”

ent day Hurricane, Earthquake, Flood, Fire and Energy Codes.

As you can see in the faces of some of the participants and the thermographic analysis the challenge was successfully met. With the assistance of the Federal Emergency Management Agency, the U.S. Department of Energy, the State of South Carolina Energy Office, Clemson

materials and mitigation attachments are used.

The house also boast’s an array of energy conservation related appliances and retrofits. Geothermal heating and cooling systems, high efficiency tankless hot water systems and energy efficient window systems, just to name a few.

One element of modern energy ef-



A properly mitigated home can be more energy efficient than the home next door as seen in the thermographic survey (left), conducted by the Florida Energy Office Energy Conservation Assistance Program's OPERATION COOPERATION

iciency was still missing. How could the Center for Sustainable Living incorporate solar technologies without altering the compulsory historic aesthetics of the building.

Through a contact in the Rebuild America Business Partnership Network, it was suggested that the State of Florida Energy Office/Energy Conservation Assistance Program's *Operation Cooperation* was available to offer guidance with just such problems.

Florida Energy Office Energy Conservation Assistance Program personnel from the Tampa Small Business Development Center's office conducted a Solar Feasibility Survey on the facility, composed a Scope of Work to be submitted to the South Carolina Energy Office and upon approval, supervised and assisted in installing the retrofits.

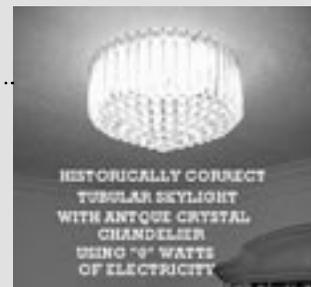
Within 120 Days the project was complete and operational using Florida solar products that any home owner could install in a few hours.

The South Carolina Center for Sustainable Living is now a showplace for sensible solar



Florida Solar Technologies used at South Carolina's 113 Calhoun Street: Center for Sustainable Living

- The system installed consisted of Daylight Harvesting Systems from Tubular Skylight Inc., Sarasota Florida. The Tubular Skylight System has eliminated the need to keep conventional electric lights on for 6 to 9 hours a day.
- Solar interior lighting systems Light Emitting Diode (LED) from Solar Direct of Sarasota Florida.
- Exterior solar security lighting systems from Rebuild America business partner Magnaray International Inc.
- Interior Storm Windows (The Winsulators) from Rebuild America Business Partner, South Sun Energy Conservations of Sarasota Florida. The Winsulator System, demonstrates what the home would have looked like 125 years ago, when windows were kept open to allow sunlight into the rooms. Now the home is air conditioned and the Winsulators allow all the light in without the heat normally generated by the historically correct clear glass windows.
- Self installing radiant barrier system from Energy Home Shield of Lakeland Florida. The Radiant Barrier System is so simple to install that any home owner could easily make it a weekend "do it yourself project".



2

SHOW ME RESULTS!

Defeating The Domino Effect

Saving energy helps to save Florida jobs.



With the assistance of the Florida Energy Office, it's Energy Conservation Assistance Program and Rebuild America Partners we can now say that Yoo-Hoo is the best drink made with the help of the Florida sun.

We can all remember the negative impact that the energy crisis in California created on a national basis. Florida was not immune to these effects. As energy prices rose nationwide, so did cost to Florida businesses and the pressure on our state leaders to find a solution.

Requests for assistance from Florida businesses, large and small, flooded the phone lines at the Energy Conservation Assistance Program offices. One request from a congressional office in Washington, DC was passed on to the U.S. Department of Energy regional office in Atlanta, Georgia and made it's way to the Florida Energy Office.

The chief executive officer of Yoo-Hoo, Inc., (the chocolate drink popular since the 1920's) has bottling facilities in Hialeah, Florida. The plant was already feeling the negative effects of the rising energy costs. The company's president was concerned that due to rising energy prices, he may have to close one or more of his bottling facilities.

The Florida Department Community Affairs Florida Energy Office and it's Small Business Development Center's Energy Conservation Assistance Program was determined that Yoo-Hoo's Florida Plant, and the jobs it provided, was not going to suffer such a fate. Within 24 hours of receiving the request for assistance, Energy Conservation Assistance Program personnel from the Tampa Small

Business Development Center's office were at the Hialeah facility, conducting a full energy analysis.

This cost-free service of the Florida Energy Office included thermographic surveys, power quality surveys, boiler efficiency analysis, vibration analysis and solar/sustainable feasibility studies.



Conservation Partners

Left to right , Plant Manager David Young, Lou Ann Powell and Dough Merritt of Tubular Skylight Inc. and Rebuild America Business Partner John Goodrich from U.S. Energy Capital Corp.

Within seven days, the president of Yoo-Hoo, in New Jersey, had a full report on his desk, that included energy conservation recommendations, mitigation recommendations and return on investment projections, to help him with his decision-making process. By incorporating both conventional and Solar retrofits for this facility, it was obvious to the corporate leaders, that considerable savings could be accomplished with a minimal investment. With the cooperation of Rebuild American Business Partners,

For more information contact Al Othmer, Energy Conservation Assistance Program, University of South Florida Small Business Development Center (813) 974-4378

Energy conservation at the Yoo-Hoo Hialeah plant



Before: (1) Un-insulated steam lines (2) steam leaks (3) 250 watt metal halide lighting.



After: (1) Insulated steam lines (2) repaired steam leaks (3) Solar daylight harvesting system using 9 watts each. Note that the old 250 watt metal halide lights (square box) are turned off.

the Florida Department of Management Services approved contractors and a parent company that was dedicated to preserving the jobs of its employees, the project was under way.

Within 270 days conditions such as un-insulated steam lines were insulated, steam leaks were repaired, and 250 watt metal halide lighting was converted to a solar daylight harvesting system using nine watts each.

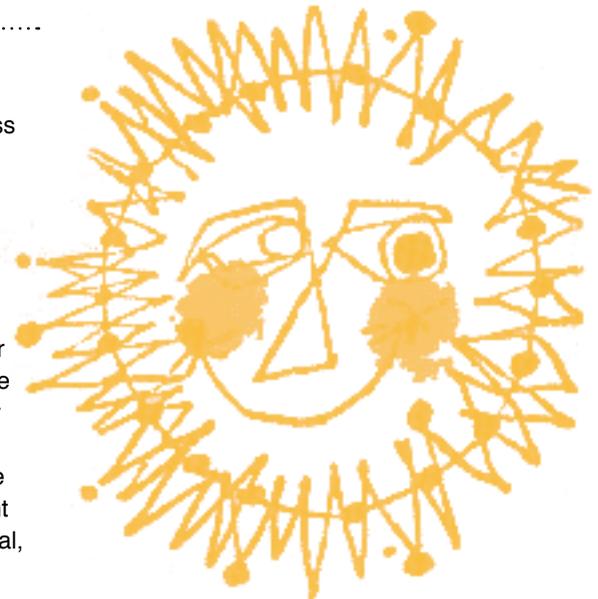
Mr. David Young, the General Manager of the Hialeah Plant commented “One of the benefits of switching to the solar daylighting systems, aside from the dollars we are saving, is safety. The city was repaving the road in front of our building when a dump truck hit one of the power poles, tearing the electrical services off the side of some buildings. This caused a shut down of power to prevent any damage to equipment.”

“A detachment of emergency response vehicles responded and even though we did not have power, the inside of the facility was brightly lit due to our Solar Daylighting System. There was more than sufficient light for a safe, orderly, shut down and employee evacuation.”

Mr. Young commented, “with the assistance of the Florida Energy Office’s Energy Conservation Assistance Program, we were able to identify and most importantly prioritize our energy conservation goals. Our Energy Conservation Assistance Program

representative supplied us with information on Rebuild America Business Partner U.S. Energy Capital Corp., who provided 100 percent financing of our solar project and SNAPS approved manufacturer Tubular Skylight Inc. This enabled us to implement conservation projects without the need of a major corporate capital investments during our time of need. Not only did we survive the last energy crisis, but we are now better prepared to contend with any future events that could cause increases in the cost of energy. Our working environment is noticeable cooler, our lighting is natural, our energy cost are lower and we are reducing power plant emissions in our surrounding community—a win-win situation for all involved.”

With the assistance of the Florida Energy Office, it’s Energy Conservation Assistance Program and Rebuild America Partners we can now say that Yoo-Hoo is the best drink made with the help of the Florida sun.



Crisis averted:

When a city dump truck hit a utility pole outside of the plant, power was shut down to prevent damage to equipment. Even without power, the inside of the facility was brightly lit due to a Solar Daylighting System. There was more than sufficient light (see below) for a safe, orderly, shut down and employee evacuation.



3

SHOW ME RESULTS!

Neighborhood Revitalization and Energy Conservation

A Perfect Combination



“We were convinced, from the very beginning, that we could incorporate energy conservation measures that would not only reduce energy cost in the community but also improve the neighborhoods aesthetics and have an positive impact on the health, safety and welfare of the residents,”

For more information contact Al Othmer, Energy Conservation Assistance Program, University of South Florida Small Business Development Center (813) 974-4378

From its conception, the Florida Energy Office’s Front Porch Florida Energy Initiative, was destined to be a model for the nation. The goal was to have a real impact on the residents and the communities that were serviced. Installing storm windows, insulated doors and caulking holes in walls, all save energy, and statistically, are the most common repairs done on revitalization projects. But for the Front Porch Florida Energy Initiative, these standard retrofits were simply not going to be enough.

“We were convinced, from the very beginning, that we could incorporate energy conservation measures that would not only reduce energy cost in the community but also improve the neighborhoods aesthetics and have an positive impact on the health, safety and welfare of the residents,” stated Al Othmer of the Florida Energy Office’s Energy Conservation Assistance Program.

Another, and possibly the most important goal, was to help educate the local Front Porch Florida committee members on how to deal with such projects. The Greater Pensacola Front Porch Florida project is a perfect example of just how successful a partnership of local community leaders, volunteers and government agencies like the Florida Department of Community Affairs can be in meeting a local communities needs.

“The Energy Conservation Assistance

Program and specialists from Ft. Walton Beach and Tampa, provided cost free energy surveys to the Pensacola Front Porch Florida neighborhood committee, attended committee meetings to answer questions, advised them on possible retrofits and provided them with information on some of the latest energy conservation technologies and construction materials, but that was the extent of our involvement,” stated Mr. Othmer.

“Once we demonstrated some of the newer technologies to the committee members, surveyed all the homes, and spoke to the home owners about their needs and concerns, the Front Porch committee members went into high gear and the repairs were underway.”

“After we had received the results of the Energy Conservation Assistance Program energy surveys, and had been educated on some of the newer materials and equipment that came under the guidelines of our Florida Energy Office Grant, we were able to do a lot more then we expected” stated Ms. Thelma Manley, Greater Pensacola Front Porch Florida Community Liaison. “By incorporating such techniques as using insulating reflective paints and coatings we not only made the homes more energy efficient but also enhanced the looks of the neighborhood.”

“By utilizing all of the communities resources, like suggesting to organize

Energy Conservation Assistance in Pensacola’s Front Porch Florida Neighborhood



“By incorporating such techniques as using insulating reflective paints and coatings we not only made the homes more energy efficient but also enhanced the looks of the neighborhood.”

—Thelma Manley,
Greater Pensacola Front Porch Florida Community Liaison

church and youth groups to help with replacing old fashioned incandescent light bulbs with energy efficient compact fluorescents, we not only stretched the energy grant dollars, but lowered the lighting cost in the homes to a level that we could now install automated, outdoor security lighting, on homes that had none and still burn less electricity than the home owner was using prior to the addition of the outside system.

These are the types of energy conservation measures we were striving

construction cost in the Pensacola area, this means we brought these homes up to modern-day building and energy standards at a savings of \$44.46 a square foot. The valuable information, pertaining to the specific costs of the various energy conservation measures employed in the Pensacola project, has been passed along to our other Energy Conservation Assistance Program centers. Presently, the Orlando center is assisting the West Palm Beach Front Porch Florida project come to a similar successful completion



Greater Pensacola Front Porch Florida committee members Thelma Manley (left) and Michelle McNeil (right) receiving the first Florida Energy Office Energy Star Neighborhood Awards

for, not only are we helping the home owner save energy dollars but we are also having a positive impact on the neighborhoods security by lowering burglary crime rates.

Ten homes were made more energy-efficient at a completed project cost of \$5.55 a square foot. The largest home in this phase of the project was 2,351 square feet and the smallest home was 704 square feet. In comparison to new

and our Tampa office is assisting the Greater Frenchtown Front Porch Florida community in Tallahassee to obtain similar results,” reported Al Othmer, Florida Energy Office Energy Conservation Assistance Program representative.



4

SHOW ME RESULTS!

U.S. Post Office Buildings Reducing Energy Consumption

Florida Helps Reduce Operating Expenses in Federal Buildings



Since 1998, the U.S. Department of Energy has awarded grant funds to the Florida Energy Office to increase the energy efficiency of U.S. Post Office buildings, and transfer lessons learned to other federal and state agencies to help make government more efficient.

Federal facility managers are striving to reduce the consumption of precious energy resources 30 percent by 2005. The federal government occupies almost 15,000 buildings in Florida, including 640 U.S. Post Offices. This is over 100 million square feet of building space that consumes 2,600 million kWh—5 percent of Florida’s total commercial electric consumption. Total federal building energy use in Florida is 10-fold more than Florida’s State agency buildings. The Postal Service accounts for a publicly visible 10 percent of federal building energy consumption.

Advantek Consulting, Inc. in the form of energy surveys, analysis, and training has contributed to the success of this effort.

First, a comprehensive energy management strategy was created. The strategy includes an energy survey plan, a financing and implementation plan and timeline, and a recognition program. Utility billing histories were statistically analyzed to develop a prioritization database. That database was used to sort federal buildings into four groups depending on their energy savings potential, energy use/cost per square foot, and the predicted budget



“Energy costs have skyrocketed in the past year. As an organization, the Postal Service must be diligent in it’s efforts to reduce the overall operating expenses. Energy conservation is one of the easiest ways to reduce these operating costs. It only takes a second to turn off a light or equipment when not in use. It’s just makes good business sense,” says Phyllis White, Resource Efficiency Manger, U.S. Postal Service.

Since 1998, the U.S. Department of Energy has awarded grant funds to the Florida Energy Office to increase the energy efficiency of U.S. Post Office buildings, and transfer lessons learned to other federal and state agencies to help make government more efficient. Expertise from

needed to realize the savings. One result is a top priority list of Top 50 Energy Hogs. The work also provides ideas to make designs for new Postal Office buildings more energy efficient.

An especially successful awareness activity is a monthly energy usage re-

For more information contact Mike West at (321) 733-1426 x 31 or e-mail: mwest@advantekinc.com



Energy Star Computers

“Evolving technology will help resolve the quandary of whether to leave a computer on or turn it off. An emerging standard, called Energy Star®, lets computer equipment idle with almost no power consumption, and yet turn on instantly when needed.”

—Bill Gates, Microsoft Corporation

One PC with the Energy Star® feature disabled, if left on continuously, consumes between \$75 and \$100 worth of electricity a year. If turned off on weekends/nights, cost is about \$45 per year. The cost drops to about \$17 per year once the Energy Star® features are enabled. In comparison, a large photocopier consumes nearer \$500 per year. For a typical office environment with 100 computers and one copier, using Energy Star® enabled PCs, monitors and copier would save at least \$2,200 per year and as much as \$5,800 per year, depending on the current use pattern.

It's a myth that turning off computers and printers or allowing them to go into sleep mode causes problems with the network. The reality is that network software suppliers such as Microsoft and Novell confirm that properly configured networks should allow PCs and printers to become dormant or be turned off when required. This does not apply to servers.*

A Guide is available at <http://eande.lbl.gov/EAP/BEA/LBLReports/39466/39466>

*http://www.energywise.co.nz/content/ew_business/office/offmyth.htm

port listing all facilities and their current month's usage compared to the baseline period. The report encourages competition amongst managers for recognition for the greatest energy savings. Others are made aware of lack of savings, which usually results in a request for assistance in identification and implementation of savings measures. Facilities with reduced energy use are highlighted and congratulated in the report. It cannot be overstated that the support and cooperation of facilities management and maintenance, information technology, and operations managers is critical to realizing energy efficiency. In fact, we have learned that energy savings are almost unachievable without whole agency cooperation.

“Energy costs have skyrocketed in the past year. As an organization, the Postal Service must be diligent in its efforts to reduce the overall operating expenses. Energy conservation is one of the easiest ways to reduce these operating costs. It only takes a second to turn off a light or equipment when not in use. It's just makes good business sense,” says Phyllis White, Resource Efficiency Manger, U.S. Postal Service.

The first round of building projects include air conditioning, compressed air, and lighting system upgrades. Energy efficient building technologies such as high efficiency air handler fan motors and variable frequency drives, high efficiency pump motors, soft motor starters, and in-

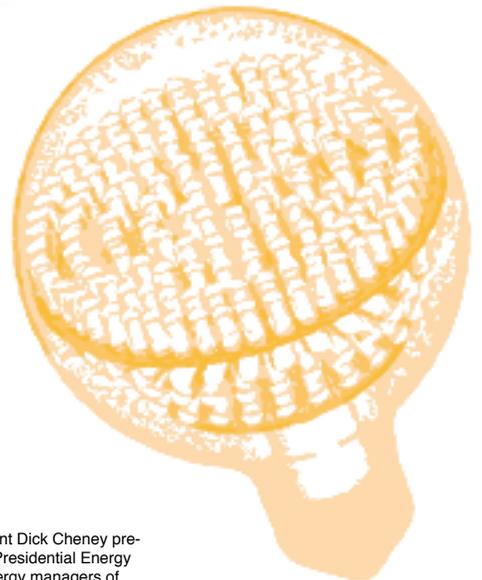
stallation of linear T5 high efficiency lighting, LED exit signs, occupancy controls, and compact fluorescent lamps will reduce energy consumption by 35 percent. An additional 5 percent reduction is being achieved through awareness and training. Once completed, the projects will save 80 million kWh, enough to supply almost 5,000 homes.

These LED lamps draw only 1-Watt of power, as compared with the 70-Watt incandescent loading dock lamps they replaced. The LED lamps are guaranteed for 5 years of continuous service and they have an unbreakable polycarbonate housing.

On October 18, 2001 energy managers at the Postal Service each received a Presidential Energy Award from Vice President Dick Cheney at a White House reception based, in part, on this project.



Vice President Dick Cheney presenting the Presidential Energy Award to energy managers of the U.S. Postal Service.



5

SHOW ME RESULTS!

Producing Electricity with Biomass Fuels

Tampa Electric's Polk Power Station



Integrated gasification combined cycle power plants are a new approach to generating electricity cleanly from solid fuels such as coal, petroleum coke, and now biomass.

Part of a closed loop biomass crop was recently harvested to produce electricity in Tampa Electric's Polk Power Station Unit #1. No technical impediments to incorporating a small percentage of biomass into Polk Power Station's fuel mix were identified. Appropriate dedicated storage and handling equipment would be required for routine biomass use.

Polk Unit #1 is an integrated gasification combined cycle power plant. This type of power plant is a new approach to generating electricity cleanly from solid fuels such as coal, petroleum coke, and now biomass. Solid fuel is first ground into a water slurry which is pumped into the gasifier. There it is converted into a high pressure combustible gas from which pollutants such as particulates and sulfur compounds are easily removed. The clean gas then fuels a combined cycle consisting of a combustion turbine plus a steam turbine. The combustion

turbine operates much like a jet engine to produce electricity. The steam turbine produces additional electricity from the system's waste heat, making the combined cycle the most efficient way to produce electricity on a large commercial scale.

The closed loop biomass crop is a 600 tree grove of eucalyptus trees planted in

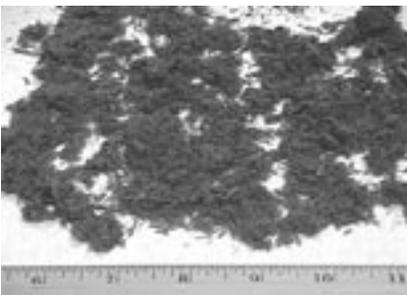


Six-hundred tree Eucalyptus grove biomass crop with processing equipment in foreground. The felled trees are cut into four foot logs prior to processing.

For more information contact Steve Segrest at Common Purpose, (813) 987-9728.



1996 by Common Purpose, Inc., on land provided by the Tampa Port Authority. 10% of the crop was harvested in late December 2001. The felled trees were cut into four foot logs. These were processed through a portable commercial hammer mill and trommel screen. After five passes through the mill and screen, the trees were reduced to 8.8 tons of material with the consistency of coarse sawdust. The particles needed to be this fine to avoid plugging the pumps and screens in the power plant's fuel slurry feed system.



Eucalyptus fuel after fifth mill pass.

The fuel was transported by special closed trailer to Polk Power Station located in the southwest corner of Polk County. A slag bin that usually holds the non-combustible residual mineral matter from coal gasification had been thoroughly cleaned to receive the biomass and serve as the staging area. Expensive automated solids handling and feeding equipment that would be used for long term commercial operation was not installed for the brief test. Instead, the biomass was manually loaded into 22 tote

sacks which held an average of 800 lb each. The totes were emptied over an 8½ hour test period into a stirred tank which supplies some of the water to the slurry preparation system.

The test went very smoothly. The biomass comprised 1.2% of the plant's fuel during the 8½ hours

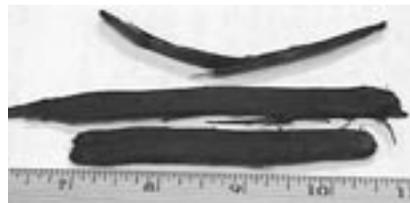
it was being fed. Plant performance during the biomass test was statistically indistinguishable from operation on the plant's base fuel, a blend of coals and petroleum coke.

There was only 1 minor incident during the test. Despite the extreme care taken to exclude all oversized material during biomass preparation, three wood chips did find their way into the 21st tote. These plugged the suction to one of the pumps in the slurry feed system. The chips were easily removed in a few minutes without any interruption to gasification or power production. A commercial biomass feed system could be easily configured to prevent this from recurring.



Emptying totes into mixing tank.

From the positive test results, we conclude there is no technical impediment to incorporating small percentages of biomass into the Polk Power Station IGCC fuel mix. The biomass feeding method used for the test was obviously very labor intensive. Dedicated receiving, storage, handling, and feeding systems would be required for practical routine biomass gasification.



Oversized material can cause problems in the biomass feed system.



Biomass staging area.

6

SHOW ME RESULTS!

The Florida Photovoltaic Rebate Program

Bringing Solar Electric Technology to the Consumer



A prerequisite to developing long-term markets for grid-connected photovoltaic (solar electric) technology is to establish interim some form of economic subsidy that brings the high up-front capital costs down to a more attractive level for consumers.

The state of Florida recognizes this need, and has met the challenge by creating the Florida Photovoltaic Rebate Program. The Rebate Program is a collaborative effort among the Florida Energy Office, the U.S. Department of Energy through Sandia National Laboratories, the Florida Solar Energy Center, and solar end-users. It provides rebates of \$4.00 per nameplate-rated watt for the installation of grid-connected photovoltaic systems on homes, commercial buildings, or public facilities.

The maximum rebate provided to homeowners is \$16,000. Homebuilders can also receive an additional incentive of \$2,000 for installing systems on model homes. For public or commercial facilities (6 kilowatts or larger), the maximum rebate is \$40,000 at the same rate of \$4.00 per Watt. At the program's kickoff in March of 1999, the Florida Energy Office obligated \$525,000 for rebate funds.



These funds are distributed by Florida Solar Energy Center, a research institute of the University of Central Florida.

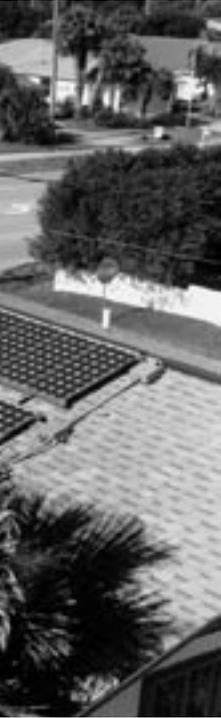
In order to qualify for rebate funds, applicants must meet a series of quality control requirements. Applicants are required to use only Florida Solar Energy Center-approved photovoltaic system designs and licensed electrical or solar contractors that have passed a competency examination offered through the Florida Solar Energy Center to install

the system. They also must provide copies of their equipment invoices and system warranties and agree to allow the system to be monitored for at least one year. In addition, the Florida Solar Energy Center conducts an inspection on every

photovoltaic system to ensure that it has been installed properly and meets all applicable electrical codes and standards.

To date, the Florida Solar Energy Center has received nearly 70 rebate applications and more than 1200 telephone and electronic mail inquiries about the program. Forty-six systems have already been installed in conjunction with the rebate, with several more expected to be completed by 2003. This will add approximately 200 kilowatts

For more information contact Jennifer Szaro, Florida Solar Energy Center
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of solar electricity to the state's energy capacity, reducing carbon dioxide emissions by more than 650,000 pounds per year. It will also avoid approximately 1,700 pounds of Nitrogen Oxides and 3,500 pounds of Sulfur Dioxide each year by reducing the need for electricity produced from conventional fossil fuel facilities.



The average size for a residential photovoltaic system installed through the rebate is just under three kilowatts. Public installations on schools are somewhat larger at about four kilowatts. The average commercial facility was fourteen kilowatts in size. Installed system costs ranged from just under \$7 per watt to more than \$17 per watt, with the average cost being \$9.50 per watt.

The photovoltaic rebate program affected eleven different electric utility service territories. The majority of rebate applications came from public electric utilities. Some of these utilities conducted

large photovoltaic projects that included several systems. One of these utilities, JEA, installed four-kilowatt photovoltaic systems on every public high school and college in its service territory. The Orlando Utilities Commission, also installed systems on schools. Both of these utilities allow electricity produced by the photovoltaic systems to be given to the schools at no charge.

Other utilities, such as the Utilities Commission of New Smyrna Beach, passed the rebates on to their utility customers, and matched these funds with an additional utility rebate. Residents of this community ended up paying around \$2 per watt for their systems, which

allows the systems to pay themselves off in less than ten years, based on today's electric rates.

The program has been so successful, that there is currently a waiting list in case additional funds become available. Based on a survey issued recently, many more people would have signed up for the program if interconnection had not been a barrier. Others stated that they would have participated if the rebate had been slightly more. The majority of consumers that replied to the rebate questionnaire stated that subsidies are a must until the price of solar comes down to below \$4 per watt.



7

SHOW ME RESULTS!

2001 Energy Star for Small Business Award

Energy Specialists Nominate Milton Business



The Three Rivers Resource Conservation and Development Council project was nominated by the Energy Conservation Assistance Program Energy Specialists for the 2001 Energy Star For Small Business Award and was one of three Florida businesses to receive the National Energy Star Award.

The Energy Conservation Assistance Program, funded through the State of Florida Department of Community Affairs, performs energy savings evaluations for Florida businesses. One business evaluated in 2001 was the Three Rivers Resource Conservation and Development Council, Inc. in Milton in Santa Rosa County.

The Three Rivers Resource Conservation and Development Council project was nominated by the Energy Conservation Assistance Program energy specialists for the *2001 Energy Star for Small Business Award* and was one of three Florida businesses to receive the National Energy Star Award.

The Energy Specialists did such a commendable job in evaluating the original administrative headquarters in Milton that they were invited to examine architectural plans for a proposed building to make energy savings suggestions on the new building located in DeFuniak Springs in Walton County.

Following are energy retrofits identified, and implemented, for the Three Rivers Resource Conservation and Development Council Administrative Building in Milton:

1. Energy efficient windows
2. 12 SEER HVAC system
3. Upgrading of ceiling insulation and use of ceiling fans

4. Use of T-8 fluorescent lamps
5. Compact fluorescent, instead of incandescent lamps in hanging light fixtures.
6. Infrared light controls
7. LED, instead of incandescent EXIT signs
8. Awnings to shade windows
9. Induction hot water supply for break room and restroom
10. Combining multiple meters to one meter

The photographs on these two pages illustrate some of the energy retrofits that were implemented.



For more information contact Charles Parry at (850) 863-6546.



8

SHOW ME RESULTS!

Energy Improvements at the Gulf Islands National Seashore Fort Pickens Park

Optimum Savings includes Geothermal Technology



Fort Picken's new geothermal climate controlled maintenance building



Energy saving evaluations at Fort Pickens suggested installing awnings and storm windows.

In 2001, energy specialists working through the Energy Conservation Assistance Program, performed an energy savings evaluation of the U.S. Department of Interior's Gulf Islands National Seashore Fort Pickens Park, located near Pensacola, Florida. The original energy evaluations were done on all the buildings at Fort Pickens.

The following energy conservation recommendations were made:

1. Install storm windows
2. Insulate hot water pipes and lower thermostat setting
3. Utilize awnings to reduce solar heat
4. Add and reinstall insulation
5. Change to efficient T-8's

The evaluation included eliminating outside A/C compressors. Due to the salt air compressors last only three to five years. The Energy Conservation Assistance Program specialists suggested replacing the split system HVAC units with geothermal heating and cooling as they are super efficient and are not subject to deteriorating effect of salt air.

The new maintenance building is climate controlled by a geothermal system.

The Energy Conservation Assistance Program specialists maintain pace with current energy technology and are able to make optimum savings recommendations for energy clients particularly when the client, like Fort Pickens personnel, keep an open mind to energy savings potential.



Other improvements included insulating hot water pipes and lowering the thermostat setting.

For more information contact Charles Parry at (850) 863-6546.



Improvements to the buildings at the Gulf Islands National Seashore's Fort Pickens Park included replacing the insulation, changing to a more efficient lighting system, replacing outside A/C compressors corroded by the salt air with a geothermal heating and cooling unit.

9

SHOW ME RESULTS!

Rebuild America Program Utilizes Energy Conservation Assistance

Energy Efficient Retrofits at Panama City Housing Authority's Massalina Complex



Massalina Complex Residence

Energy Specialists from the Energy Conservation Assistance Program assist other agencies by performing hands on evaluations of buildings. Evaluations were done at the request of Rebuild America personnel for their partner, Panama City Housing Authority.

Last year, Rebuild America personnel requested an energy savings evaluation on behalf of their partner, the Panama City Housing Authority. Often, energy specialists from the Energy Conservation Assistance Program are called upon to assist other agencies by performing hands-on evaluations of buildings. The Panama City Housing Authority owns six complexes in the Panama city area. A building in each of complex was evaluated with four buildings evaluated at the Massalina Complex. Following are some of the survey results:

1. Use compact fluorescent lighting
2. Utilize shades
3. Use programmable thermostats
4. Insulate hot water lines
5. Use fluorescent vanity lights
6. Clean motors
7. Adjust water closet
8. Shade compressors

The Massalina Complex has made great strides in lowering their buildings' energy costs. They have insulated all ceilings with R-38 insulation and installed all new insulated glass windows. They will, in the near future, retrofit lamps to fluorescent lighting. They may switch from natural gas hot water heaters to smaller, more efficient electric hot water heaters. \$833,217.00 has been expended thus far for energy efficient retrofits at the Massalina Complex with anticipated pay back in six years.



For more information contact Charles Parry at (850) 863-6546.

USE FLUORESCENT



INSULATE HOT WATER PIPES



UTILIZE BLINDS ON SW SIDE



USE FLUORESCENT VANITY LIGHT



KEEP FAN MOTOR CLEAN



CONSIDER PROGRAMMABLE THERMOSTAT



10

SHOW ME RESULTS!

Energy Conservation Assistance Program Saves Dollars For Daycare Centers

Energy Efficiency Improvements Reduce Operating Costs



Starchild Academy was incorporating all the latest in learning technologies and the clients were interested in making sure their building was as efficient as possible.

For more information contact Rick Dolan at (407) 823-5554.

During the Spring of 2000, the Energy Conservation Assistance Program

at the University of Central Florida, part of the Florida Small Business Development Center Network was contacted by a client interested in building a new 17,300 square foot facility for use as a day care center. Starchild Academy was incorporating all the latest in learning technologies and the clients were interested in making sure their building was as efficient as possible.

A review of their building plans revealed deficiencies in the initial HVAC system as proposed. After several meetings with the architect and contractor, a new high efficiency system incorporating specialized supply and return ducting, dehumidification control for fresh makeup air and automatic thermostats for each area was worked out. In fact, the system was so innovative that the building inspectors had to be educated as to the design parameters before they would sign off on it.

Also included in this building were a hybrid daylighting/ fluorescent lighting system designed to make maximum usage of natural lighting, a fixed ultraviolet resistant glazing system and higher levels

of insulation. To help offset the additional costs for these systems, the client obtained a low interest Florida Energy Loan. The total design package is saving the Center over \$16,960.00 per year on energy costs.

While this project was underway, another facility heard of our services and sought our assistance. Kiddie U is a 15,400 square foot facility located in South Orlando. The owner was at the same place when he contacted the Energy Conservation Assistance Program. He had a set of plans, a builder and a site and wanted some input. His initial plan called for the use of insulated panelized construction in the building. To further increase efficiency, higher insulation levels were added to the ceiling. To further assist in heat rejection, solar screen was applied to all east and west windows to maintain view without heat.

The HVAC system chosen was a high SEER air conditioner with heat recovery and automatic setback thermostats in a zoned configuration. The heat recovery





SHOW ME RESULTS!

LOOKING AHEAD

Main Street Milton Downtown
Redevelopment Program

Prepurchase Evaluation
Service Offered to Florida
Businesses



Pre-purchase evaluations of buildings are another viable service offered by Energy Conservation Assistance Program specialists, in addition to evaluating client's existing buildings.

Main Street Milton Downtown Redevelopment program is one of more than 80 designated to be a Florida Main Street community. Main Street Milton is considering purchasing the Old Milton Post Office as a possible future site for a Children's Arts and Science Museum.

The pre-purchase evaluation of the interior of the building found an obvious water intrusion problem, need for a new HVAC system and asbestos abatement would be necessary.

Pre-purchase energy evaluations are a valuable service offered to business to help them plan their future energy conservation strategy when purchasing older structures.

units fed two separate water heaters, one with a higher setting for hot water usage in the kitchen and laundry, and one with a low setting for use in the restrooms to prevent accidental scalds on the children.

All lighting was either T-8 with electronic ballasts or compact fluorescent, controlled by occupancy sensors in all areas. Exterior security lighting is compact fluorescent fixture controlled by sensors. There is also a centralized computer system to keep track of all operating systems and notify staff if maintenance is required.

The improvements on this building were financed through a Florida Energy Loan and annual savings are averaging \$17,893.00. The current operating cost of this building is approximately 40 percent less than that of the client's previous facility and he is quite pleased with the results. This client was named one of 19 National Energy Star Award Winners for 2001 for the innovations incorporated into his building.



For more information contact Charles Parry at (850) 863-6546.

Annual

of

The Florida Public Service Commission

on Activities Pursuant To

The Florida Energy Efficiency And Conservation Act

As Required By Chapters 377.703(3)(F) And 366.82(4), *Florida Statutes* and

The Biennial Report on The Florida Energy Conservation Standards Act

As Required By Chapter 553.975, *Florida Statutes*

Report

Prepared by the Florida Public Service Commission
Division of Economic Regulation

FEBRUARY 2002

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SECTION 1:

CONSERVATION ACTIVITIES FOR ELECTRIC UTILITIES**1.1 ELECTRIC UTILITY CONSERVATION PROGRAM BENEFITS**

In 1980, the Florida Public Service Commission required all electric utilities to adopt cost-effective conservation, or demand side management, programs to meet the requirements of the newly enacted Florida Energy Efficiency and Conservation Act. Since that time, Florida's electric utilities have implemented a wide array of conservation programs.

The Florida Energy Efficiency and Conservation Act places emphasis on reducing the growth rates of weather-sensitive peak demand, reducing and controlling the growth rates of electricity consumption, and reducing the consumption of expensive resources such as petroleum fuels. To meet these objectives, the Commission sets demand side management goals, and the utilities develop and implement demand side management programs designed to meet these goals. As a whole, Florida's utilities have been successful in meeting the overall objectives of the Florida Energy Efficiency and Conservation Act.

As discussed in further detail below, currently seven of Florida's electric utilities are required to meet the Florida Energy Efficiency and Conservation Act standards. This includes the five investor-owned utilities and two municipal utilities. The Commission requires investor-owned utility demand side management programs which are approved for cost recovery to be "cost-effective," such that all utility ratepayers benefit, not just those ratepayers participating in the programs. Cost-effective demand side management programs benefit the general body of ratepayers by reducing current production cost, deferring the need for future power plant construction, and improving reliability. In addition,

demand side management programs benefit program participants by reducing electric bills.

Although the Commission no longer sets numeric demand side management goals for the non-Florida Energy Efficiency and Conservation Act electric utilities, many of these utilities continue to offer demand side management programs to their customers. For example, the City of Tallahassee offers free energy audits and low interest loans on energy efficiency products. In addition to the potential demand and energy savings, these utilities recognize that offering demand side management programs may play a key role in increasing customer satisfaction.

As a whole, utility sponsored demand side management programs have reduced statewide summer peak demand by an estimated 3761 megawatts (MW), winter peak demand by 5451 MW, and energy consumption by an estimated 2595 gigawatt hours (GWh), since 1980. These estimated savings include demand side management programs sponsored by both the Florida Energy Efficiency and Conservation Act utilities and those which are not currently covered under the Act. Based on the winter demand reduction, this has deferred the need for over ten typical 500 MW plants, or enough capacity to serve approximately 1.7 million households. By 2010, demand side management programs are forecasted to reduce aggregate summer peak demand by an estimated 4568 MW, winter peak demand by 6474 MW, and energy consumption by 4543 GWh. This will benefit Florida's ratepayers by deferring the need for additional generating capacity.

1.2 FLORIDA'S NUMERIC CONSERVATION GOALS

In June, 1993, the Commission revised its rules, requiring the establishment of numeric demand side management goals for summer and winter demand (MW), and annual energy (GWh) sales over a ten year period. These rules applied to the twelve Florida utilities which exceeded the Florida Energy Efficiency and Conservation Act's 500 GWh threshold. At the time, these utilities comprised approximately 94 percent of all electricity sales in Florida. The amended rules require the Florida Energy Efficiency and Conservation Act utilities to propose goals for Commission approval based on an assessment of a wide variety of end-use categories in the residential and commercial/industrial market segments. The rules also require annual reporting, allowing the Commission to more closely monitor and evaluate the demand side management activities of the Florida Energy Efficiency and Conservation Act utilities. Pursuant to Rule 25.17.0021(2), *Florida Administrative Code*, the Commission sets demand side management goals for each utility at least once every five years. In October, 1994, the Commission first established annual numeric demand side management goals for the four largest investor-owned electric utilities. These goals represented aggressive, reasonably achievable levels of conservation while minimizing the rates to the utilities' ratepayers. The cumulative effect of these annual goals was a projected savings of approximately 2,100 MW and 2,883 GWh by the year 2003. To further encourage demand side management, the Commission also voted to allow for a case-by-case consideration of lost revenue recovery and incentives through the Energy Conservation Cost Recovery

Clause for a specific group of demand side management measures. These measures include solar, renewables, natural gas substitution, high efficiency cogeneration, and other demand side management programs that have significant savings but exert negligible upward pressure on rates. Utilities were also encouraged to explore "green pricing", a relatively new concept used in some states, to promote solar and renewable energy resources. In green pricing programs, customers voluntarily choose to contribute money, payable in addition to their monthly bill, for the utility to procure and implement renewable technologies.

In June, 1995, the Commission approved demand side management plans for the large investor-owned utilities. The Commission subsequently approved plans filed by the investor-owned utilities to conduct research and development on natural gas technologies for heating, cooling, dehumidification, and water heating, for possible future inclusion in electric utility demand side management planning. The Commission also set annual numeric demand side management goals for the Florida Public Utilities Company, and the eight municipal and six cooperative electric utilities subject to Florida Energy Efficiency and Conservation Act in 1995. By early 1996, the Commission had approved the demand side management plans of Florida Public Utilities Company and the eight municipal and six cooperative electric utilities.

During the 1996 session, the Florida Legislature increased the minimum sales threshold for utilities subject to the Florida Energy Efficiency and Conservation Act to 2000 GWh as of July 1, 1993. As a result, only the five investor-owned utilities, Jacksonville Electric Authority and Orlando

Utilities Commission are now subject to the Florida Energy Efficiency and Conservation Act. These utilities are currently responsible for approximately 87 percent of the state's total electric sales.

Demand side management goals were most recently established on October 1, 1999, for the four largest investor-owned electric utilities. Overall, the level of each utility's demand and energy goals is lower than the goals approved by the Commission in 1994. The primary reason for decreased numeric goals was that the cost of new generating units had dropped substantially in the previous five years. This reduced the potential benefits resulting from the deferral of generating capacity to the general body of a utility's ratepayers. Without a corresponding decrease in the cost of delivering demand side management programs, the result was that fewer utility-sponsored demand side management programs were cost-effective. In addition, some existing demand side management programs had approached their saturation levels. This reduced the future market potential of some demand side management measures. The four largest investor-owned utilities filed demand side management plans with the Commission at the end of 1999. These plans were approved by the Commission in April, 2000. The plans describe the demand side management programs to be offered to customers which are designed to generate the demand and energy savings required by each utility's demand side management goals. In accordance with a stipulation reached with the Legal Environmental Defense Fund in Docket No. 971005-EG, each of the four investor owned utilities included a green-pricing program or research program in its demand side management Plan. For example, the Tampa Electric Company

instituted a customer optional three-year pilot green energy rate and rider program. The program is designed to provide Tampa Electric Company's customers with an opportunity to purchase 50 Kwh blocks of renewable energy from photovoltaic and biomass sources.

The Commission set new numeric demand and energy demand side management goals for the Florida Public Utilities Company in May, 2000, and approved the Company's demand side management plan in October, 2001. The Commission set numeric goals of zero for the Jacksonville Electric Authority and the Orlando Utilities Commission in April, 2000, because these two utilities could not identify any additional cost-effective demand side management programs to offer.

Utilities address the dynamic nature of the cost-effectiveness of demand side management programs by re-evaluating the programs on a regular basis. If a program is found to be no longer cost-effective, the utility should file a petition before the Commission requesting changes to the program, or that the program be dis-

continued. The Commission has received several of these petitions recently from the investor-owned utilities due primarily to a reduction in the cost of generation.

Table 1 displays the reported demand side management achievements of the five investor-owned utilities during 2000. The achievements are compared to the demand side management goals revised by the Commission in 1999. Florida Power Corporation exceeded all of its residential and commercial/industrial demand side management goals in 2000. Florida Power & Light, Gulf Power Company, the Tampa Electric Company and the Florida Public Utilities Company did not meet some of the revised goals for 2000. Florida Power & Light exceeded its residential summer demand and energy goals and did not meet its residential winter demand and commercial/industrial goals. Florida Power & Light responded that results from two of its existing residential programs, the Duct System Testing and Repair program and the New Construction program, were less than anticipated because modifications to these programs were not implemented

until regulatory approval was received in mid-year 2000. Florida Power & Light also stated that initial participation in the Commercial/Industrial Load Control program was less than expected as the time for customers to make necessary on-site capital improvements was longer than anticipated. Florida Power & Light has reviewed its demand side management achievement data for 2001 and is now meeting or exceeding all demand side management goals on both an annual and cumulative basis.

Gulf Power Company exceeded its commercial/industrial energy goals, however it did not meet its residential goals and commercial/industrial demand goals for 2000. Gulf Power Company responded that residential achievements were less than expected due primarily to the Good-Cents Select program, a residential real time pricing program. Participation in this program was less than forecasted. Gulf expects participation in this program to improve due to its increased target market research efforts and a recently launched advertising campaign.

TABLE 1: COMPARISON OF 2000 DEMAND SIDE MANAGEMENT ACHIEVEMENTS WITH COMMISSION APPROVED GOALS

	Winter MW Goals	Reported Winter MW Reduction	Summer MW Goals	Reported Summer MW Reduction	Annual GWH Goals	Reported GWH Reduction
Florida Power Corporation (FPC)						
Residential	30.00	35.00	10.00	17.00	15.00	21.00
Commercial/Industrial	4.00	12.00	4.00	12.00	2.00	6.00
Florida Power & Light (FPL)						
Residential	91.60	78.30	75.50	93.40	91.90	123.70
Commercial/Industrial	20.50	16.40	46.20	41.50	68.50	65.20
Gulf Power Company						
Residential	26.00	7.00	22.30	5.30	16.70	5.40
Commercial/Industrial	36.10	9.70	46.00	18.00	2.10	5.90
Tampa Electric Company (TECO)						
Residential	16.70	12.10	5.80	4.30	10.30	11.60
Commercial/Industrial	1.50	1.80	3.50	5.20	12.90	19.00
Florida Public Utilities Company (FPUC)						
Residential	.33	.27	.26	.20	.17	.46
Commercial/Industrial	.04	.12	.06	.12	.02	.32

The Tampa Electric Company has exceeded its commercial/industrial goals, but has not met its residential demand goals. The Company received regulatory approval for a new residential program, the New Construction program, and for the modification of the Residential Heating and Cooling program in the third quarter of 2000. The Tampa Electric Company expects residential demand achievements to improve in 2001 when a full year's worth of results from these two programs is included. Tampa Electric also reported less than expected achievements from the residential Duct Repair program. The Tampa Electric Company received Commission approval for a modification to this program in 2001 and is now seeing increased participation levels.

The Florida Public Utilities Company is exceeding its goals for commercial/industrial customers, but has fallen slightly short of its residential demand goals. The Company reported that residential demand achievements have been impacted by a less than expected participation level in the GoodCents Loan program. This program provides residential customers with reduced cost, unsecured loans for energy-saving home improvements. Customers are apparently opting for other financing methods due to the reduced interest rates and fees from other available loan sources, such as home equity lines of credit. The Florida Public Utilities Company is currently evaluating the viability of this program. The fact that some utilities did not meet some of their conservation goals may suggest that some goals were aggressively set. The goals are scheduled to be reset in 2005. Revised annual data will be filed in March, 2002 and staff will continue to monitor the utilities' progress in achieving the goals set in 2000.

1.3 SUMMARY OF ELECTRIC CONSERVATION PROGRAMS

Every Florida Energy Efficiency and Conservation Act utility offers some form of education on energy conservation as well as energy audits. Educational programs and announcements provide consumers with basic information on techniques to conserve energy as well as information on energy programs available through the utility. The energy audit program serves as the foundation for all other demand side management programs by helping customers determine which utility-sponsored conservation programs may be appropriate for their needs. As mandated by Florida Statute, audits are available to all residential customers. For a fee, many utilities will provide more detailed audits at the customer's request. Some of the major utilities also educate the construction industry on the Florida Energy Efficiency Code for Building Construction.

A variety of specific conservation programs are offered by the utilities. Programs such as ceiling insulation upgrade, residential energy management, window film and duct leak testing programs are offered, with the utility paying a financial incentive. Programs where equipment is purchased for new installations or retrofit, such as heating, air cooling, water heating and lighting equipment, are offered by the utility with cash incentives for the purchase of high efficiency equipment. Several utilities offer incentives to commercial and industrial customers to support their investment in capital equipment with the potential for substantial demand and energy savings.

Load management is an important part of the utilities' energy conservation plans. Participants are paid for allowing the utility to control when certain electric appliances

are available for use. The few hours the appliances are not available usually occur during peak hours; however, these few hours translate into savings for the utilities in terms of avoiding the construction of high cost peaking generation.

Cogeneration also helps to avoid or defer utility construction of generating units. Generation planning and cogeneration are addressed in greater detail in separate sections of this report.

An important part of conservation activities customers do not readily observe is research and development. Promising technologies currently being investigated are photovoltaics and additional uses of thermal storage. The next generation of approved conservation programs in Florida may come in large measure from the investment utilities are making today in research and development.

The following list summarizes the general categories of conservation programs currently offered by Florida Energy Efficiency and Conservation Act electric utilities. A more detailed listing of the programs offered by each of Florida's investor-owned electric utilities is available on the Commission's website at www.floridapsc.com.

CONSERVATION PROGRAM CATEGORIES

ENERGY AUDITS: Energy audits are designed to save demand and energy by increasing customer awareness of available conservation measures. Free audits are offered to all residential customers. Walk-through audits are also offered by some utilities to commercial and industrial customers, with more complex evaluations available for a charge.

EFFICIENT EQUIPMENT REPLACEMENT PROGRAMS: These programs encourage conservation by providing rebates or low

interest loans for high efficiency equipment purchases. Eligible equipment may include: high efficiency heaters and air conditioners, alternative electric water heaters, lighting and electric motors.

BUILDING ENVELOPE PROGRAMS: These programs are designed to reduce demand and energy by offering customers rebates or low interest loans toward the purchase of improvements which decrease the load on air conditioning and heating equipment. Examples include ceiling insulation upgrades and duct leakage repair.

LOAD MANAGEMENT AND INTERRUPTIBLE SERVICE: The objective of these programs is to reduce peak demand. Customers receive a monthly incentive or reduced rate in exchange for allowing the utility to control when certain electric appliances are available for use.

COGENERATION: Encouraging the development of cogeneration projects helps to avoid or defer utility generation expansion.

RESEARCH AND DEVELOPMENT: The research and development of promising conservation technologies by utilities may increase the effectiveness of future conservation programs.

1.4 CONSERVATION COST RECOVERY

Investor-owned electric utilities are permitted to recover prudent and reasonable expenses, including incentives paid to participating customers, for Commission-approved demand side management programs through the Energy Conservation Cost Recovery clause (ECCR). As discussed above, utilities are required to present evidence that these programs are cost-effective and therefore benefit the general body of ratepayers. Since the enactment of the Florida Energy Efficiency and Conservation

Act, investor-owned electric utilities have recovered over \$3.2 billion of conservation program expenditures through the Energy Conservation Cost Recovery clause.

Table 2 summarizes the conservation program expenditures recovered by Florida's investor-owned electric utilities through the ECCR clause in 2000:

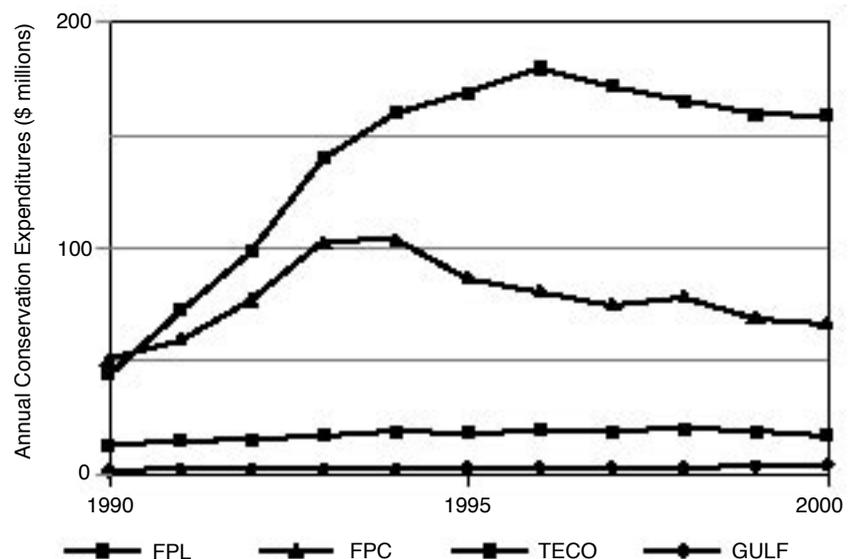
TABLE 2: ELECTRIC CONSERVATION COST RECOVERY FOR 2000

	EXPENDITURE
Florida Power Corporation	\$66,052,277
Florida Power and Light	\$158,312,900
Florida Public Utilities*	\$323,102
Gulf Power Company	\$3,872,004
Tampa Electric Company	\$16,656,250
Total	\$245,216,533

*Marianna and Fernandina Beach divisions are combined.

Figure 1 depicts the annual estimated expenditures on demand side management programs which have been recovered from customers by Florida's four largest investor-owned utilities over the past ten years. Annual demand side management expenditures increased substantially between 1990 and 1996 due primarily to the expansion of Florida Power and Light's and the Florida Power Corporation's load management programs. However, total demand side management expenditures have decreased slightly since 1996 due to demand side management program saturation and to declining demand side management cost-effectiveness caused by the lower cost of new generating units.

FIGURE 1: Annual Estimated Expenditures on Demand Side Management Programs



SECTION 2:

ELECTRIC UTILITY POWER SUPPLY**2.1 REVIEW OF ELECTRIC UTILITY TEN-YEAR SITE PLANS**

During the 1995 Legislative session, Section 186.801, *Florida Statutes*, was revised to make the Commission the lead agency charged with determining the suitability of electric utility Ten-Year Site Plans. Commission Rules 25-22.070-.072, *Florida Administrative Code*, regarding the submission of these plans were adopted by the Commission on October 30, 1997. The Ten-Year Site Plans provide forecasts of future electric load requirements and the resource mix planned to meet these needs. A public workshop before the Commission to review the current Ten-Year Site Plans was held August 13, 2001. At the workshop, utilities presented their plans, and interested parties were provided an opportunity to make comments in person and in writing regarding the adequacy of the plans. A report analyzing the plans of the utilities, which includes the comments of other interested state and local government agencies, may be obtained by contacting the Commission's Division of Records and Reporting at 850-413-6770, or from the Commission's website at www.floridapsc.com.

The review of the Ten-Year Site Plans is one activity performed by the Commission in implementing the legislative mandate of Chapter 366.04(3), *Florida Statutes*, commonly known as the 'Grid Bill.' Pursuant to the Grid Bill, the Commission has the authority to exercise jurisdiction over the "planning, development, and maintenance of a coordinated electric power grid throughout Florida to assure an adequate and reliable source of energy for operational and emergency purposes in Florida and the avoidance of further uneconomic duplication of generation, transmission, and distribution facilities."

2.2 POWER PLANT AND TRANSMISSION LINE NEED DETERMINATION

The Commission is responsible for reviewing Florida's need for new supply-side sources of electricity pursuant to Section 403.519, *Florida Statutes*. Before 1986, any proposed steam or solar electrical generating facility larger than 50 MW was subject to a Commission need determination. In 1986, the Legislature increased this threshold to 75 MW.

In December 1993, the Commission adopted Rule 25-22.082, *Florida Administrative Code*, on the selection of generating capacity. Prior to filing a petition for determination of need with the Commission, each investor-owned utility must evaluate supply-side alternatives to its next planned generating unit by issuing a request for proposals. This rule is designed to help ensure that the most cost-effective alternative source of electricity is selected. A Commission workshop was held February 7, 2002, to review whether changes to the rule are necessary, given recent technological and regulatory changes in the electric industry.

The following generating units have been approved by the Commission, but are not yet in service:

Gulf Power Company—Smith Unit 3:

In June, 1999, the Commission granted Gulf's petition to build a 532 MW gas-fired combined cycle unit at the existing Lansing Smith site in Bay County. Smith Unit 3 was certified under the Power Plant Siting Act in July, 2000. Gulf began construction on the unit in November, 2000 to meet an in-service date of June, 2002.

City of Lakeland—McIntosh Unit 5:

In April, 1999, the Commission granted the City of Lakeland's petition to build a 120 MW steam turbine portion of a 365 MW

combined cycle unit at the McIntosh site in Polk County. The steam turbine portion of McIntosh Unit 5 was certified under the Power Plant Siting Act in June, 2000. Construction began immediately thereafter to meet an anticipated March, 2002 in-service date.

Florida Power Corporation – Hines Unit 2:

In December, 2000, the Commission granted the Florida Power Corporation's petition to build a 567 MW gas-fired combined cycle unit at the existing Hines plant site in Polk County. This unit was certified under the Power Plant Siting Act in September, 2001. The unit has an anticipated November, 2003 in-service date.

JEA – Brandy Branch Unit 4:

In February, 2001, the Commission granted Jacksonville Electric Authority's petition to add a 191 MW heat recovery steam generator (HRSG) at the new Brandy Branch site in Duval County. The HRSG, with an anticipated June, 2003 in-service date, will be fitted to two 191 MW combustion turbine units already placed into service in January, 2001, forming a 573 MW combined cycle unit. The Jacksonville Electric Authority is awaiting final certification from the Power Plant Siting Board.

Seminole Electric Cooperative / Calpine Construction Finance Company – Calpine Osprey Unit:

In April, 2001, the Commission granted a joint petition by Seminole Electric Cooperative and Calpine to construct a 529 MW gas-fired combined cycle unit at a new site in Polk County. The unit will be owned by Calpine. Calpine will sell 350 MW of firm capacity to Seminole Electric Cooperative from June, 2004 through May, 2009. Subject to contract reopener provisions, Seminole

Electric Cooperative may purchase up to the full output of the unit through May, 2020. The Seminole Electric Cooperative and Calpine received final certification of the unit from the Power Plant Siting Board in June 2001. The expected in-service date of the unit is the second quarter of 2003.

**Orlando Utilities Commission/
Kissimmee Utility Authority/Florida
Municipal Power Agency/Southern
Company-Florida, LLC—Stanton Unit A:**

In April, 2001, the Commission granted a joint petition by Orlando Utilities Commission, Kissimmee Utility Authority, Florida Municipal Power Agency, and Southern Company-Florida to construct a 633 MW gas-fired combined cycle unit at the existing Stanton site in Orange County. This unit was certified under the Power Plant Siting Act in September, 2001. Construction began immediately thereafter to meet an anticipated October, 2003 in-service date.

Under Sections 403.52 through 403.5365, *Florida Statutes*, (the Transmission Line Siting Act) the Commission is charged with determining the need for any transmission line that is greater than 230 kilovolts (kV), crosses a county line and is greater than 15 miles in length. Like the Power Plant

Siting Act, a need determination for a transmission line is a prerequisite to environmental permitting. Currently, there are no transmission line additions awaiting certification. However, the Conservation Levee transmission line, located in Broward and Dade counties, has been certified and is expected to be in service by 2007.

2.3 COGENERATION AND SMALL POWER PRODUCTION

By its enactment of the Public Utility Regulatory Policy Act of 1978, the Congress of the United States required that the Federal Energy Regulatory Commission promulgate rules implementing Public Utility Regulatory Policy Act and further required that each state regulatory commission develop procedures by which it would implement the Federal Energy Regulatory Commission's rules. As a result, the Commission promulgated initial rules on the purchase of capacity and energy from cogenerators and small power producers (qualifying facilities) in 1981. These rules were revised in 1983, 1990 and 1996.

In November, 1996, the rules were amended to ensure consistency with Rule 25-22.082 *Florida Administrative Code*, a

formal rule on the selection of generating capacity. The rule amendments include: 1) standard offer contracts are available only to qualifying facilities less than 100 KW, renewables and solid waste facilities; 2) utilities are encouraged to negotiate with qualifying facilities to avoid the construction of new utility generating units which do not require an Request for Proposal, while negotiations with qualifying facilities for larger generating units that are subject to Request for Proposal bidding will be conducted pursuant to the utility's Request for Proposal; 3) standard offer tariffs close when a Request for Proposal is issued; and, 4) a contract reopener is allowed when avoided cost changes. The Commission will hold a rule revision hearing on May 15, 2002 to review whether the current minimum term of ten years for standard offer contracts is appropriate given recent technological and regulatory changes in the electric industry.

Currently, Florida has approximately 2,871 MW of committed firm capacity under contract from 32 existing qualifying facilities.

SECTION 3:

CONSERVATION ACTIVITIES FOR NATURAL GAS UTILITIES

Historically, conservation programs offered by participating gas utilities were used to reduce Florida's reliance on foreign oil, reduce the growth rates of electric consumption, and reduce weather-sensitive peak demand. Gas conservation programs were used to increase gas usage so that Florida could reduce its reliance on foreign oil, and defer the construction of additional electric generation facilities.

Prior to 1996, the Commission's cost/benefit analysis incorporated the deferral of power plant construction as a dollar benefit. However, on May 19, 1996, the Commission approved a new cost/benefit methodology. The new methodology consists of a Gas Ratepayer Impact Measure test (G-RIM), and a Participants Test. The G-RIM test does not consider the deferral of the construction of additional generation facilities as a benefit. Under the G-RIM methodology, the merits of the gas programs are measured strictly by the benefits obtained by the general body of gas ratepayers. Subsequent to the Commission's adoption of the G-RIM and Participants tests, Peoples Gas System, City Gas Company, and Chesapeake Utilities petitioned, and received, approval of their conservation programs using the G-RIM and Participants tests.

Florida's natural gas utilities provide service to residential, commercial, and industrial customers. Advances in technology have led to a wider application in commercial and industrial processes. Natural gas is also being used to assist companies in meeting the requirements of the Clean Air Act of 1990. Development of low NO_x packaged boilers and burners, reciprocating engines and turbines, air conditioning, and desiccant cooling are reducing emissions as well as costs to many industrial and commercial companies.



Natural gas is used in residential homes for water heating, clothes drying, air conditioning, cooking, and fueling fireplaces. New technology has increased the efficiency of residential appliances, helping the customer to reduce consumption and lower energy costs.

Natural Gas Vehicles is another application that is gaining acceptance. Natural Gas Vehicles will help to reduce Florida's reliance on foreign oil and help to reduce mobile-emissions. Historically, Natural Gas Vehicle applications were limited to heavy duty trucks and buses, typically used in fleet operations. With few public fueling stations, interest in Natural Gas Vehicles failed to materialize. Without ample fueling stations, vehicle manufacturers were reluctant to produce a sufficient line of Natural Gas Vehicles. Without ample vehicles for sale, few individuals or businesses were willing to invest in the construction of public refueling stations. As part of the 1990 Clean Air Act Amendments, certain states are required to adopt a Clean Fuel Fleet program for nonattainment areas meeting stated population levels. Under this program, fleets of ten vehicles or more,

capable of being centrally fueled, must introduce emission-certified vehicles into their fleets on a percentage-each-year basis. The program was set for introduction in September, 1997, but was delayed one year due to a lack of sufficient vehicles. During the year delay, vehicle manufacturers began developing vehicles to meet the Clean Fuel Fleet program requirements. As a result, sufficient vehicles exist to support the Clean Fuel Fleet program. There are four U.S. corporations and several foreign automakers that have, or are about to produce, Natural Gas Vehicles certified to meet the requirements of the program.

While Florida was not required to develop a Clean Fuel Fleet program, members of Florida's Clean Cities Coalition have worked hard to increase the number of alternative fueled vehicles in the state. The increase in production of natural gas vehicles is beginning to offer Florida's citizens and businesses some feasible alternatives to gasoline-powered vehicles.

Moving into the twenty-first century, the increasing demand for natural gas used as an alternative energy source for electric generation has brought about the

construction of a new pipeline in the State. The Gulfstream project will be the second pipeline in Florida, a competitor to the Florida Gas Transmission pipeline that for decades has brought natural gas into the state. The 753 mile Gulfstream pipeline will extend from Mississippi and Alabama, across the Gulf of Mexico to Florida. Construction on the project began in June 2001. As of January 4, 2002, offshore pipelaying was completed and the process of pipe burial began. Onshore construction in Florida was about sixty percent complete. Gulfstream's Phase I is projected to be in-service in June 2002.

The popularity of natural gas today can be seen in the following statement. According to the *2000 Residential Gas Market Survey* conducted by the American Gas Association, natural gas captured seventy percent of the new single-family market in the United States. Conversions to gas from other fuels accounted for twelve percent of residential unit additions.

Table 3 summarizes the conservation expenditures of Florida's natural gas utilities in 2000.

TABLE 3: NATURAL GAS CONSERVATION COST RECOVERY FOR 2000

	EXPENDITURE
Chesapeake Utilities	\$348,128
City Gas Company	\$1,626,970
Florida Public Utilities Company	\$426,900
Peoples' Gas System	\$11,898,412
St. Joe Natural Gas	\$34,200
TOTAL	\$14,334,610

SECTION 4:**CONSERVATION EDUCATION PROGRAM**

In 1994, the Commission formed the Bureau of Consumer Information and Conservation Education under its Division of Consumer Affairs. In January 2002, the bureau was renamed the Bureau of Consumer Outreach. One of the primary functions of this bureau is to provide Florida consumers a variety of utility-related information using various media. However, special effort is made to educate Floridians on topics related to energy efficiency and

the need for water conservation. Through this bureau, the Commission complements existing conservation activities of the Florida Energy Efficiency and Conservation Act utilities and also serves as a central resource center for consumer information relating to conservation issues. One of the bureau's programs that has proven to be quite effective is the Library Outreach program. Through this program, the Commission distributes brochures and

posters to public libraries throughout the state on topics related to energy and water conservation. The Commission's Web site www.floridapsc.com, which falls under the responsibility of this bureau, has been expanded and redesigned to supply consumers with greater amounts of information about energy conservation and the conservation efforts of Florida's electric and gas utilities.

SECTION 5:**FLORIDA ENERGY CONSERVATION STANDARDS ACT**

Pursuant to Chapter 553.975, *Florida Statutes*, the Commission must prepare a biennial report on the savings derived from the efficiency standards for lighting equipment, showerheads, refrigerators, refrigerator-freezers, and freezers enumerated in Chapter 553.963, *Florida Statutes*,

the Energy Conservation Standards Act.

Standards for refrigerators, refrigerator-freezers, and freezers went into effect January 1, 1993. Estimated savings for these appliances amount to 1,271 GWh through 2001. Lighting equipment standards, effective January 1, 1989,

have resulted in an estimated 719 GWh in energy savings through 2001. Standards for showerheads went into effect January 1, 1988, and are estimated to have saved 1,799 GWh through 2001.



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