Gainesville, Florida

One community's strategy to reduce global warming

Four key strategies to meet the carbon reduction goal:

- ➜ Improve energy and water efficiency
- ➜ Improve efficiency of power generation
- ➜ Increase use of renewable and domestic fuels to generate electricity
- ➜ Improve transportation and land use initiatives

Reducing Greenhouse Gas Emissions

What is the goal?

Gainesville is one of 72 communities in Florida now committed through the U.S. Conference of Mayors to taking action to protect our climate.

From improving the synchronization of traffic signals to installing new solar panels at local businesses, a number of projects to reduce greenhouse gas emissions and slow global warming are underway in Gainesville, Florida. This report provides details on Gainesville's plan to reduce carbon emissions – the largest contributor to global climate change.

Local governments have a unique responsibility in the fight against global warming as elected officials make decisions on behalf of citizens regarding issues such as transportation, power generation, infrastructure improvements, land use and zoning, building codes, landscaping, waste management and land conservation.

In 2005, along with cities across the nation, City of Gainesville leaders pledged to reduce carbon. As part of this progressive leadership, Mayor Pegeen Hanrahan signed the U.S. Mayors Climate Protection Agreement on behalf of the Gainesville City Commission. The Climate Protection Agreement and the Kyoto Protocol call for reducing carbon emissions to seven percent below 1990 levels by 2012, a target Gainesville will hit in 2013. This is an aggressive goal considering that about 60 percent of the electricity used to serve Gainesville's homes and businesses comes from coal generation.

Through its municipally-owned utility, GRU, the city has made many strategic investments to reduce carbon emissions. For example, GRU purchased a natural gas distribution system in 1990 and has purchased electricity generated from wind and landfill gas. Most recently, GRU signed a contract to purchase additional landfill gas and is negotiating with a private company to construct a 100-megawatt (MW) biomass-fueled power plant.

Improve Energy and Water Efficiency

GRU's energy supply strategy is to improve the efficiency of its power generating units and increase the use of renewable energy.

The cheapest energy is the energy that is never produced.

GRU has sponsored energy efficiency programs since the late 1970s but stepped up its efforts in 2006. That year, the Gainesville City Commission directed the utility to pursue additional programs to help customers modify their use of electricity and achieve maximum energy efficiency. Figure 1 demonstrates the range and depth of the available energy and water efficiency programs.

A key component of these efficiency programs has been and continues to be providing substantial financial incentives to encourage customers to use natural gas for water heating, space heating and clothes drying. The direct use of natural gas for these activities is twice as efficient as electricity when the losses involved in converting fuel to electricity are considered. GRU has set very aggressive goals to help customers reduce electricity consumption, which ultimately will reduce GRU's retail electric sales by more than 10 percent by 2015.

GRU's South Energy Center is scheduled for completion in February 2009.

Improve Efficiency of Power Generation

In 2000, GRU converted the downtown J.R. Kelly Generating Station Unit 8 to a combined cycle unit, resulting in a 75-MW increase in capacity and a 50 percent increase in the generation efficiency. In addition, the South Energy Center is a new facility that will serve the new Shands at the University of Florida Cancer Hospital. The South Energy Center uses advanced technology to simultaneously produce electricity, chilled water, and steam for the hospital at double the efficiency of a traditional, centralized power plant.

Figure 1

CASH BACK ENERGY AND WATER EFFICIENCY PROGRAMS

	RESIDENTIAL	BUSINESS
SOLAR		
Solar Electric (PV) System	up to $7,500	Solar FIT
Solar Water Heater	$500	up to $500
NATURAL GAS		
Natural Gas Water Heater	$250	$500
Tankless Natural Gas Water Heater	$350	
Natural Gas Central Heater	up to $300	
Natural Gas Range and Dryer	$75	
Cooling/Dehumidification		up to $50,000
HEATING AND AC REBATES		
High Efficiency Central Air Conditioner	$300 or $550	$300 or $550
High Efficiency Room Air Conditioner	$150	
Central Air Conditioner Maintenance	up to $55	
Duct Leak Repair	up to $375	
OTHER PROGRAMS		
Customized Business Rebate		up to $40,000
Smart Vendor for Drink Machines		free equipment
Exit Sign Replacement		$50/sign
Reflective Roof Coating for Mobile Homes	$70	
ENERGY STAR® for Affordable Housing	$300	
Added Insulation	$0.125 per sq. ft., up to $375	
Refrigerator Buyback and Recycling	$75	
3% APR Energy Efficiency Loan	up to $10,000	
Home Performance with ENERGY STAR®	up to $1,560	
LEEP (Low Income Energy Efficiency Program	up to $3,000	
Pool Pump	up to $500	
In-ground Irrigation System Maintenance and Rain Sensor	$50 and $25	

Increase Use of Renewable and Domestic Fuels to Generate Electricity

Solar

GRU has been providing rebates for solar water heating since 1997 and solar photovoltaic (PV) systems since 2007. The solar program has been so successful that as of March 1, 2008, 12.9 percent of State of Florida solar rebates had been distributed to GRU customers, despite the municipality having less than one percent of the state's population. Now, a new proposal to promote even more solar in Gainesville is being considered. A solar feed-in-tariff (FIT), modeled after similar programs in Europe, could further increase the number of solar PV systems in Gainesville. This program could drastically improve the market for solar PV in Gainesville and cement the city's leadership position in the state for many years to come.

Gainesville is the first utility in the nation to recommend a solar feed-in-tariff to promote the production of distributed solar PV.

Biomass

Biomass, or organic materials made from plants and animals, can be burned or converted to produce energy in a method that is carbon neutral. GRU is negotiating a contract to purchase the energy from a biomass-fueled 100-MW power plant to be known as the Gainesville Renewable Energy Center. The fuel for the plant will come from logging residues, forest thinnings and similar urban waste vegetation, most of which is currently burned in the field without any pollution control. Offsetting the use of coal not only reduces carbon emissions, it can also help create new jobs in our region.

Landfill Gas

Landfill gas (mostly methane gas) is produced by the natural degradation of organic matter in the landfill – in the past this gas typically went to waste. The methane emitted is a harmful greenhouse gas with a potential global warming effect greater than carbon. To help reduce the effects, GRU will soon be purchasing energy from G2 Energy, LLC, which will begin collecting methane at the Marion County Baseline Landfill and using it as fuel for electric generators. This effort builds on the landfill gas to energy project between GRU and Alachua County at the Southwest Landfill. This project ended in 2007 when all the useful gas was converted to electricity. Figure 2 compares the current usage of fuel by GRU with 2013 projections, including reducing the use of coal and replacing it with biomass power.

Figure 2

GRU FUEL MIX

Planned Improvements in GRU's Fuel Diversity (Percentage of Electric Energy [MWh] by Fuel Type)

Fuel Type	Current (% by MWh)	Future circa 2013 (% by MWh)
Coal	59.9%	50.4%
Natural Gas	17.1%	13.0%
Fuel Oil #2 & #6	0.7%	0.0%
Purchased Power	17.3%	13.9%
Subtotal Fossil	**95.0%**	**77.3%**
Nuclear	**4.1%**	**4.9%**
Biomass	0.0%	16.3%
Solar PV	0.02%	0.3%
Hydro	0.0%	0.4%
Wind	0.0%	0.0%
Landfill Gas	0.9%	0.8%
Subtotal Renewable	**0.9%**	**17.8%**
Total All Fuels	100.0%	100.0%

This table represents current contractual commitments, 1 MW of solar installed per year starting 2009, and successful completion of ongoing biomass and hydro projects.

More than 50 percent of Gainesville's standard traffic lights have been replaced with energy efficient LED lights.

Improve Transportation and Land Use Initiatives

There are many cost-effective ways to reduce carbon emissions. Two of the largest efforts in Gainesville include traffic signal synchronization and land protection.

Gainesville is installing a county-wide state-of-the-art Traffic Management System. The new system involves replacement of outdated traffic signal controllers, traffic monitoring cameras, system-wide signal retiming, public access to real time conditions, and a Traffic Management Center. The Traffic Management Center will allow engineers to monitor traffic and provide real time signal timing modifications in response to travel conditions. The new system is expected to reduce travel time delays thus resulting in reduced fuel consumption and carbon emissions.

Development Rights and Land Conservation

The City of Gainesville currently either owns or controls the development rights on more than 10,000 acres of land. By keeping these lands out of development, the storage of carbon in the soil and the capture of carbon by appropriate land management is preserved for substantial carbon offset credits. And more than $20 million will be invested for additional land conservation efforts in Gainesville and Alachua County over the next several years through the "Wild Spaces and Public Places" one-half cent sales tax initiative that voters passed in November 2008. Figure 3 lists the programs or projects that are taking place citywide to reduce carbon.

Figure 3

CURRENT AND FUTURE OFFSETS (metric tons of CO_2 equivalents per year)

Source of Carbon Offsets	Current Reductions (thru 2007)	Projected Annual Reductions (by end of 2013)
Repowering J. R. Kelly Unit 8	61,336	31,801
GRU Energy Conservation Programs	111,240	177,650
Acquiring Land Development Rights	31,824	31,824
Landfill Gas to Energy Project	348	19,678
LED Traffic Signals	773	2,967
Combined Heat and Power (South Energy Center)	0	22,557
Solar Photovoltaic Electricity	164	7,682
Hydroelectric Power	0	10,205
Biomass Power Plant[1]	0	334,219
Traffic Light Synchronization	0	82,701
Totals	205,685	721,285

[1] Assumes that in 2013, half of the capacity of the biomass unit will be sold off system.

Advantages for Citizens of Gainesville

The smart investments being made by the City of Gainesville to reduce greenhouse gases, improve energy efficiency and increase renewable energy sources will more than pay for themselves in years to come. The benefits include reduced overall expenditures for electricity and fuels, a cleaner atmosphere, protection against pending carbon constraint legislation, the creation of jobs, new economic opportunities, a higher quality of life and enhanced energy independence for the community.

Figure 4 shows CO_2 equivalents emissions from 1990, 2007, and a projection for 2013. Total carbon emissions in relation to the goal of the Kyoto Protocol are shown in Figure 5.

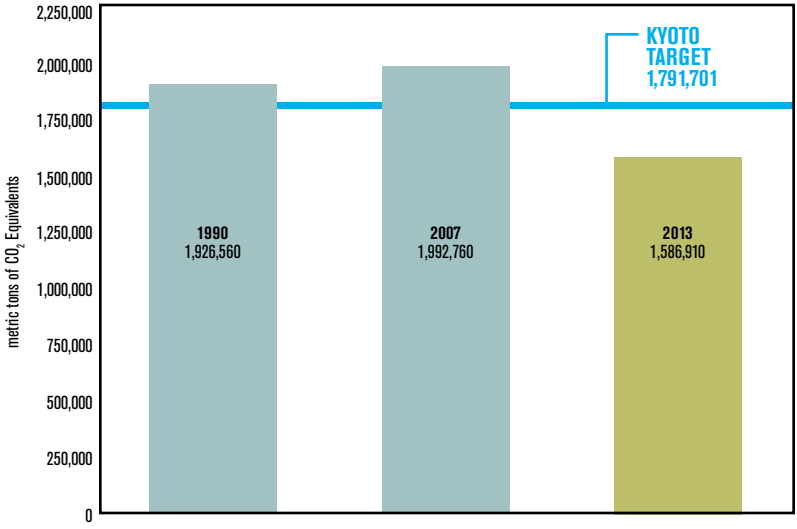
Figure 4

HISTORY AND TREND IN CARBON EMISSIONS (Equivalent Metric Tons of CO_2 per Year)

Energy End Use	**Calendar Year**		
	1990	2007	2013
Electrical Production or Purchase	1,662,079	1,865,029	1,440,824
Non-Electric Generating Unit (W/WW, Nat Gas, Vehicles, etc.)	264,481	127,731	146,086
Total City of Gainesville Operations	**1,926,560**	**1,992,760**	**1,586,910**

Figure 5

TOTAL CITY OF GAINESVILLE CARBON EMISSIONS



For more information, visit www.cityofgainesville.org. Find tips for reducing your energy and water use at www.gru.com. Visit http://gainesville-green.com to view your carbon footprint.

CITY OF GAINESVILLE
every path starts with passion
FLORIDA

GRU℠
More than Energy™

301 S.E. 4th Avenue
Gainesville, FL 32601
(352) 334-3434