

# Gainesville, Florida

**One community's strategy to  
reduce climate change**



## Four key strategies to meet the greenhouse gas 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

*Gainesville is now one of more than 1,000 cities in the United States committed through the U.S. Conference of Mayors to taking action to protect our climate.*

## Reduce Greenhouse Gas Emissions

### What is the goal?

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 climate change are under way in Gainesville, Florida. This report provides details on Gainesville's plan to reduce greenhouse gas emissions.

Local governments have a unique responsibility in the fight against climate change 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, the City of Gainesville Mayor and Commissioners pledged to reduce greenhouse gas emissions by signing on to the U.S. Conference of Mayors Climate Protection Agreement. The Climate Protection Agreement and the Kyoto Protocol call for reducing greenhouse gas emissions to seven percent below 1990 levels by 2012, a target Gainesville will hit in late 2013.

Through its municipally owned utility, Gainesville Regional Utilities (GRU), the City has made many strategic investments to reduce greenhouse gas emissions. For example, GRU purchased a natural gas distribution system in 1990 and has purchased electricity generated from wind and landfill gas. In 2009, GRU began purchasing additional landfill gas and signed a contract with Gainesville Renewable Energy Center LLC (GREC) to purchase 100 percent of the energy produced by a new 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, including a program designed to offer low-income customers assistance in making upgrades that can lower their electric bills, improve comfort and reduce energy use.

A key component of several GRU efficiency programs is to provide 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.

## Improve Efficiency of Power Generation

GRU's generating fleet is aging, making it critical to maximize the efficiency of units and gain more energy output. Upgraded turbines installed at the Deerhaven Generating Station's coal-fired Unit 2 in 2011 allow GRU to produce an additional 13 MW of energy without using any additional fuel.

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 generation efficiency.



*GRU's South Energy Center was dedicated in 2009.*

Figure 1

CASH BACK ENERGY AND WATER EFFICIENCY PROGRAMS

	RESIDENTIAL	BUSINESS
<b>SOLAR</b>		
Solar Electric (PV) System	\$1.50/watt up to \$7,500 for solar window of 85% or greater \$1.15 per watt for a solar window of 70 - 84%	Solar FIT*
Net Metering for Solar PV Systems	\$0.115/kWh	up to \$0.132/kWh based on customer type
Solar Water Heater	\$500	\$500
<b>NATURAL GAS</b>		
Natural Gas Water Heater	up to \$500	\$500
Tankless Natural Gas Water Heater	up to \$700	
Natural Gas Central Heater	up to \$400	
Natural Gas Range and Dryer	\$75 each	
<b>ELECTRIC</b>		
Heat Pump Water Heater	\$200	\$200
Home Performance with ENERGY STAR Insulation	up to \$1,400 \$0.125 per square foot up to \$375	\$0.125 per square foot up to \$375
Pool Pump	\$250	\$250
Refrigerator Buyback and Recycling	\$50	
Window Replacement	\$1.25 per square foot up to \$300	\$1.25 per square foot up to \$300
Window Tint/Film/Solar Screens Rebate	\$1.00 per square foot up to \$100	\$1.00 per square foot up to \$100
<b>HEATING AND A/C</b>		
High-Efficiency Central Air Conditioner	\$550	\$550
Duct Leak Repair	50% of the cost of repairs, max \$375	50% of the cost of repairs, max \$375
<b>OTHER PROGRAMS</b>		
Low Income Energy Efficiency Program (LEEP)	up to \$3,200	
Customized Business Rebate		50% of the project cost up to \$100,000, restrictions apply
<b>WATER</b>		
In-ground Irrigation System Maintenance	\$50	\$50
Rain Sensor	\$25	\$25

\* Participants in the solar feed-in tariff (FIT) invest in their own PV systems and sell energy directly to GRU under a long-term contract with a guaranteed price.

# Increase Use of Renewable and Domestic Fuels to Generate Electricity

## Solar

GRU has provided rebates for solar water heating since 1997 and solar photovoltaic (PV) systems since 2007. In March 2009, Gainesville implemented a Solar Feed-In-Tariff (FIT) program offering GRU electric customers a chance to invest in PV and sell the electricity directly to the utility under a contract for 20 years at a fixed price. Based on highly successful models in Europe, the Solar FIT has a cap of 4 MW per year through 2016 that could result in 32 MW of solar energy.

*GRU was the first utility in the nation to implement a European-style solar feed-in-tariff.*

## Biomass

When Gainesville adds biomass in 2014, 21 percent of GRU's energy will come from local, renewable sources. The fuel for the plant will come from local wood-waste suppliers that follow strict standards to protect the forest. GRU and GREC have developed the first forest stewardship incentive program in the nation to encourage suppliers to perform above the minimum standards. This will encourage better forestry practices and protect crucial wildlife habitats.

Beyond these environmental benefits, the plant will provide renewable energy for the community and ensure the future reliability of GRU's electric generation. The biomass facility will create more than 700 permanent jobs and provide a \$31-million boost to the regional economy annually from ongoing operations. It will also add more than \$5.5 million per year to the local property-tax base.

## Landfill Gas

Landfill gas (mostly methane) is produced by the natural degradation of organic matter in a landfill. The methane emitted is a harmful greenhouse gas with a potential climate change effect greater than carbon dioxide. However, this waste product can be converted to useful energy. GRU purchases landfill gas energy from G2 Energy LLC, which collects methane at the Marion County Baseline Landfill, and uses it as fuel for electric generators. In May 2010, a third unit was added to the system, increasing its existing capacity by 27 percent.

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 2014 (% by MWh)
Coal	61.6%	63.6%
Natural Gas	17.3%	17.8%
Fuel Oil #2 & #6	0.3%	0.0%
Purchased Power	14.3%	-8.9%
<b>Subtotal Fossil</b>	<b>93.5%</b>	<b>72.5%</b>
<b>Nuclear<sup>1</sup></b>	<b>5.09%</b>	<b>5.9%</b>
Biomass <sup>2</sup>	0.0%	19.0%
Solar PV	0.3%	1.5%
Landfill Gas	1.1%	1.1%
<b>Subtotal Renewable</b>	<b>1.4%</b>	<b>21.6%</b>
<b>Total All Fuels</b>	<b>100.0%</b>	<b>100.0%</b>

This table represents current contractual commitments, 4 MW of solar installed per year starting 2009 (FIT is fully subscribed through 2016, a potential for 32 MW of PV if all contracts are completed), and successful completion of ongoing biomass projects.

<sup>(1)</sup> Replacement power for Crystal River 3

<sup>(2)</sup> Assumes that, starting in 2014, half of the capacity of the biomass unit will be sold off system.



*Gainesville has converted all of its traffic lights from incandescent to LED.*

## Improve Transportation and Land Use Initiatives

There are many cost-effective ways to reduce greenhouse gas emissions. Two of the largest efforts in Gainesville are traffic management and land protection.

### Traffic Synchronization

Gainesville is completing the installation of a countywide, state-of-the-art Traffic Management System. This system includes new traffic signal controllers, traffic monitoring cameras, systemwide signal retiming, public access to real-time conditions and a Traffic Management Center. The Traffic Management Center allows engineers to monitor traffic and provide up-to-the-minute signal timing modifications in response to travel conditions. The new system reduces travel time delays, resulting in reduced fuel consumption and greenhouse gas emissions.

## Development Rights and Land Conservation

Currently, the City of Gainesville either owns or controls the development rights on more than 10,000 acres of land. By keeping these lands from being developed, the storage of carbon in the soil and the capture of carbon by appropriate land management is preserved for substantial carbon offset credits. The “Wild Spaces and Public Places” one-half-cent sales tax initiative raised more than \$13 million for recreational improvements and land conservation efforts in Gainesville and Alachua County.

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<sub>2</sub> equivalents per year)

Source of Carbon Offsets	Current Reductions (thru 2011)	Projected Annual Reductions (by end of 2013)
Repowering J. R. Kelly Unit 8	68,476	26,711
GRU Energy Conservation Programs	167,073	177,650
Acquiring Land Development Rights	31,824	31,824
Landfill Gas to Energy Project	20,282	19,678
LED Traffic Signals	2,879	3,055
Combined Heat and Power (South Energy Center)	20,562	22,557
Solar Photovoltaic Electricity	13,099	33,145
Biomass Power Plant <sup>1</sup>	0	334,219
Traffic Light Synchronization	78,566	82,701
<b>Totals</b>	<b>374,391</b>	<b>731,540</b>

<sup>1</sup> Assumes that in 2013, half of the capacity of the biomass unit will be sold off system.

## Advantages for Citizens of Gainesville

The investments being made by the City of Gainesville to reduce greenhouse emissions, 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 legislation, the creation of jobs, new economic opportunities, a higher quality of life and enhanced energy independence for the community.

Figure 4 shows CO<sub>2</sub> equivalents emissions from 1990 and 2011, and a projection for 2013. Total greenhouse gas emissions in relation to the goal of the Kyoto Protocol are shown in Figure 5.



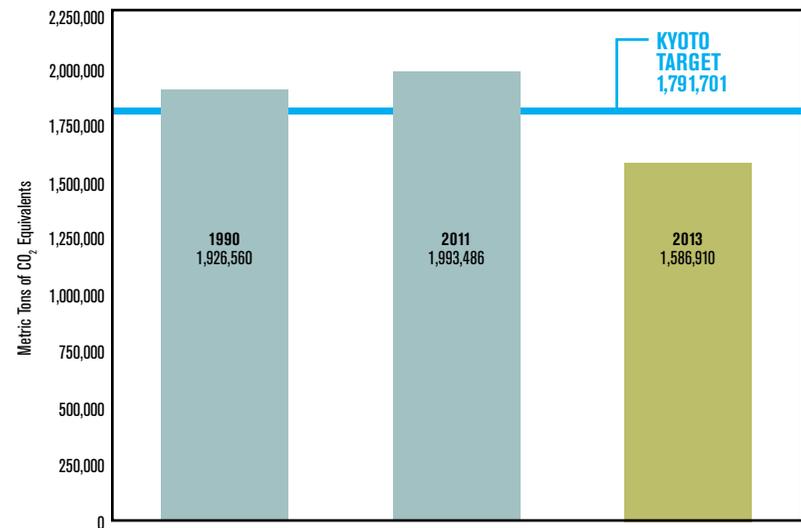
Figure 4

### HISTORY AND TRENDS IN GREENHOUSE GAS EMISSIONS (Equivalent Metric Tons of CO<sub>2</sub> per Year)

Energy End Use	Calendar Year		
	1990	2011	2013
Electrical Production or Purchase	1,662,079	1,867,180	1,440,824
Non-Electric Generating Unit (W/WW, Nat Gas, Vehicles, etc.)	264,481	126,306	146,086
<b>Total City of Gainesville Operations</b>	<b>1,926,560</b>	<b>1,993,486</b>	<b>1,586,910</b>

Figure 5

### TOTAL CITY OF GAINESVILLE GREENHOUSE GAS EMISSIONS



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



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