# Renewable Energy and Interconnection to the Grid

**Mark Spiller, Strategic Planning Department**

**Gainesville Regional Utilities, Gainesville, Florida**

**October 11, 2005**

**University of Florida**

# Gainesville Regional Utilities

- City-Owned Utility
- Electric, Gas, Water, Wastewater, Reclaimed Water and Telecommunications
- 612 MW of generating capacity (coal, gas, nuclear, landfill gas, solar)
- Approximately 88,000 customers

# Project Chronology

- 1982 Field Study of SWH Impacts
- 1980s Low-Interest SWH Loans
- 1991 Solar Days Workshop
- 1993 One of the First Green Pricing Programs
- 1996 PV10 Array (Systems Control)
- 1997 SWH Rebate
- 2000 Began Developing LFGE Project
- 2002 Standard PV Interconnect & Buy-Back
- 2003 2.3 MW LFGE Project Commissioned
- 2004 Two -- Solar in Schools Projects
- 2005 Proposing 30 MW of Biomass-Fired Capacity
- 2006 Ten kW PV at Regional Airport
- 2012 Proposed 15% Renewables/EE Goal (+10%)

# Resource Assessment

**Biomass: forestry & yard waste, dedicated crops, anaerobic wastewater treatment gasification, landfill gas, municipal solid waste (incl. red bag waste, carpet & tires)**


**Solar: PV, SWH, Passive Design (new construction)**

**Others: wind, hydro, geothermal, tidal, wave, etc.**

# Resource Assessment

- Determining Sustainable Yield
- Intermittent Nature of Resource
- Fuel Supply Infrastructure
- Competition for Fuels
- Energy Conversion Technologies
- Interconnection Issues
- Feasibility Analyses

# Interconnection Issues: Small Generators

- Applies to Inverter-controlled generators of less than 10 kilowatt capacity
- Florida requires Investor-Owned Utilities to allow interconnection of photovoltaic systems <10 kW
- GRU developed a standard interconnection and excess power buyback agreement available at: http://www.gru.com/Pdf/Photovoltaic5.pdf
- Based upon IEEE 929-2000 (UL 1741 protocol)
- Buyback scenarios (i.e., net and dual metering)

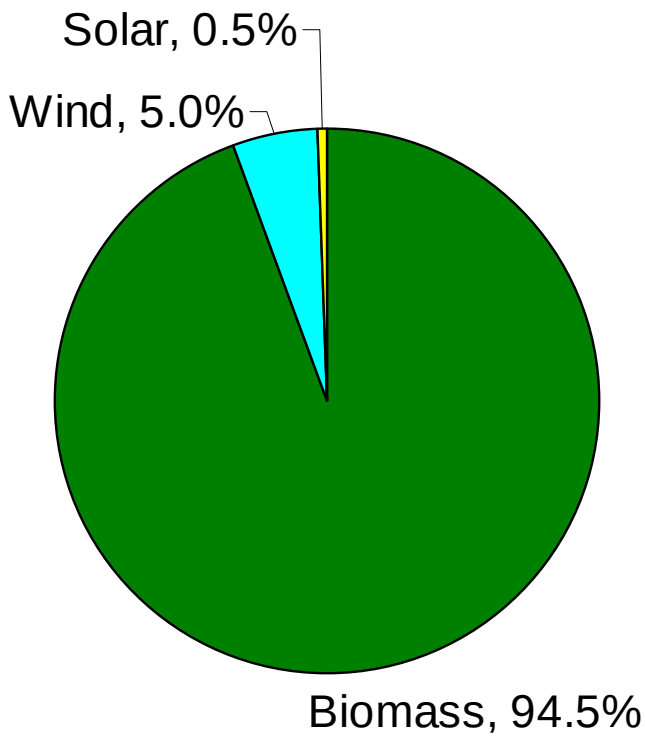
# Interconnection Issues: Larger Generators

- Parallel Generation and Transmission Constraints
- Qualified Facility Status and Avoided Cost
- Transmission systems regulated by the Federal Energy Regulatory Commission (FERC)
- Process of Interconnection Rulemaking
- Promulgation of IEEE 1547
- Ancillary Documents to IEEE 1547
- Case Study: GRU Landfill Gas to Energy Project

# Alachua County Southwest Landfill
# LFGE Project

# What is GRUgreen Energy?

- **Energy produced from a blend of renewable resources**
  - **Local Biomass**
  - **Local Solar**
  - **Wind – TRECs purchased from Iowa**



www.gru.com • (352)334-3434

# GRUgreen Energy

**Mark Spiller, Strategic Planning**

**Gainesville Regional Utilities**

**(352) 393-1293**

**spillermb@gru.com**