

# Opportunities to Expand Our Use of Renewable Energy Resources

Presentation to the  
Gainesville City Commission

Gainesville Regional Utilities  
March 22, 2004



# We Got The Community Involved With The Help Of The Gainesville Energy Advisory Committee

- Community Dialogue Workshops (6)
- Alachua Co. Community Planning Group (3)
- Alachua County Environmental Protection Advisory Committee (EPAC)
- Joint EPAC/Air Quality Commission Meeting
- University Faculty and Students (3)
- Homeowners Associations (4)
- Professional Organizations (3)
- Civic (5) and local Governmental Groups (12)

# We Also Sought Expert Help

- Waste Wood Resources
  - Don Post and Tom Cunilio
- Consulting Engineers
  - Black & Veatch
  - Robert Kappelman, P.E.
- State of Florida Renewable Electric Generating Assessment
  - Florida Public Service Commission
  - Florida Department of Environmental Protection

# City Commission Meetings and Workshops

## **Meetings**

- December 15, 2003
- February 9, 2004

## **Workshops**

- Future Electric Needs, March 10, 2004
- Renewable Energy, March 22, 2004
- Energy Conservation, April 19, 2004

# Our Objectives

- Assure Reliable Electrical Supplies
- Conserve Natural Resources
- Reduce Total Air Emissions
- Reduce Carbon Intensity
- Keep Electrical Costs Affordable
- Enhance The Local Economy

# We Sell Green Energy

- We have made a substantial investment
- Launched  on Nov. 30
- Available at 2 cents per kWh premium
- Blend of renewable resources
  - Biomass -- Landfill Gas
  - Solar Produced Locally
  - Purchased Wind Tags
- Sign up on line: [www.gru.com](http://www.gru.com)

# What Is Green Energy?

Sources:	Energy:	Environmental Attributes:
Fossil/Nuclear	kWh	Reference
Renewables (Green Energy)	kWh	-Displaces Fossil Fuels -Local energy sources available

# Why We Offer Green Energy

- Environmentally conscious people have asked for renewable energy in our community
- Availability of local renewable resources
- We share our community's concern about the environment
- You have given us the opportunity to make a substantial investment in green energy
- We've worked hard to bring renewable energy to our community



# What Resources Are Renewable?

- **Biomass:** waste wood, dedicated crops, municipal solid waste and biosolids
- Geothermal
- Hydro-electric: run of the river, storage
- Ocean: tidal, thermal, wave and current
- **Solar:** photovoltaic, thermal-electric, thermal, passive solar design
- Wind: intermittent water pumping

# Not All Renewable Energy Resources Are Considered Equal

- **Electric Energy Production Costs**
  - Green energy is usually more expensive on a production cost basis
- Renewables vary in **technical readiness** and **commercial maturity**
- **“All energy infrastructure has some kind of impact”** -- FPSC/FDEP Study

# FPSC Study: Renewable Energy Electric Generation Costs

Plant Type	Levelized Costs (cents/kilowatt hour)
Municipal Solid Waste	3.5-15.3
Biomass (direct combustion)	6.3-11.0
Landfill Gas	2.4-6.3
Hydro-electric	No Data
Solar Phovoltaic	19.4-47

# Not All Renewable Energy Resources Are Considered Equal

- **Resource Conservation**
  - Recycling wastes into useful energy
  - Displacing landfill gas flaring
  - Displacing fossil fuel use
- **Emissions**
  - Environmental advocates express concern about burning biomass

# What Renewable Resources Do We Have in Gainesville?

- **Biomass**

- Waste Wood
- Municipal Solid Waste - Landfill Gas



- **Solar**

- Photovoltaic
- Thermal
- Passive solar design



# Waste Wood Potential

- **Waste Wood Sources**
  - Silviculture Maintenance and Logging Residual
  - Tree Trimming and Ecosystem Restoration
- **Off-Site Aggregation and Preparation**
  - Opportunities for jobs and economic development
- **Energy Conversion** - more than 40 options
  - Separate Boiler
  - Gasifier - sensitive to feedstock composition
  - Cofiring with Other Fuels

# Using Wood Waste Will Reduce Emissions



# Waste Wood Issues

- Most abundant and available renewable energy resource in our area
- Least capital intensive and most cost-effective renewable energy resource in our area
- Using waste wood is CO<sub>2</sub> neutral
- Displaces fossil fuel use
- Waste wood is being openly burned or landfilled



# Our Solar History

- **Educational Efforts**
  - Passive Solar Design Factors for N Central Florida
  - Solar Guidebook
- **Solar Water Heater Loans** - guarantee/tax credit
- **Photovoltaic Demonstration** - Solar Days
- **Rooftop Solar PV Initiative** - pricing experiment
- **Solar Water Heater Rebates**
- **PV Interconnection** - agreement and buyback
- **Solar in Schools** - interactive teaching tools
- **Solar at the Airport** - under development

# Solar Issues



- **Passive Solar Design**

- Used in Anasazi and Cracker Vernacular Architecture

- **Water Heating Potential**

- Application criteria
- Tree City USA



- **Pool Heating**

- Most cost effective option available for the user

- **Solar Photovoltaic Energy**

- Now capable of net energy production
- Excellent for powering solar WH, remote loads
- Monitor first cost and levelized production cost
- Demonstration projects & education efforts

# Expanding Renewable Energy Use

- Thank you for allowing us to invest in green energy projects for our customers



is an opportunity to see if our customers are willing to pay extra to cover the higher production costs of green energy

- We plan to develop the most cost-effective renewable energy opportunities available

# Citizen/Expert Presentations

- Judy Harlow, Florida Public Service Commission
- Tom Cunilio, COSAF
- Don Post, Forestry Professor Emeritus
- Don West, Florida Division of Forestry
- Jim Dunlop PE, Florida Solar Energy Center
- Tom Lane, Solar Contractor
- Harald Kegelman, Agility Digital Media
- Public Comment