ANALYSIS OF ISSUES
RELATED TO
RFP FOR BIOMASS-FUELED GENERATION CAPACITY

September 27, 2007
Gainesville Regional Utilities

Biomass Sustainability

Issue: Will the proposed project hurt the region's overall biomass productivity? Should forest product fuel suppliers be required to have their forests certified as being managed under sustainable practices? Will use of logging residue deplete the soil?

Analysis: The USFRC[1] study addresses this issue in Section 3.2.1. There are a range of programs designed to assure sustainable silviculture in the region. The Florida Division of Forestry has a voluntary program called the "Florida Forest Stewardship Program" that has gained a very high level of participation. This program has 99% participation in the state and 100% in Alachua County (see: http://www.fl-dof.com/forest_management/fm_pdfs/2005BMPSurvey_Complete.pdf). There are certification programs that a landowner may further choose to participate in, as follows (source: www.metafore.org).

Forest Certification in Florida

- 90% of Florida's forests are not certified
- 10% are certified
  - Sustainable Forest Initiative - 1,259,783 acres (paid)
  - American Tree Farm System - 811,173 acres
  - Forest Stewardship Council - 40 acres[2] (paid)

One of the sources of biomass fuel identified in the USFRC[1] study is logging residue. Concern has been expressed that the leaves and needles removed as part of this harvest will deplete the soil of nutrients. Staff's observation of logging practices in Florida indicates that a major portion of the leaves and needles remain after conventional logging. Data has been provided by the Florida Renewable Resource Conservation and Development group that indicate that harvesting loblolly pine branches and bole removes a very small fraction of nutrients compared to other crops. Nutrient supplements are a normal part of forestry in Florida.

GRU supports sustainable forestry practices and has made it one of the evaluation criteria in the RFP for Biomass-Fueled Generation Capacity. The cost effectiveness of the paid programs compared to conventional programs, and the additional cost these programs will incur on the price of fuel is impossible to

determine at this time. Requiring in the near future that fuels come from other than the prevailing sustainable stewardship program would significantly reduce the available supply. GRU designed the RFP process to solicit ideas and plans to incentivize improved forestry practices over time. GRU also expects that any certification requirements will require resource commitments for inspection and follow through.

Truck Traffic

Issue: Won't a biomass fuel facility result in excessive truck traffic to Deerhaven?

Analysis: The USFRC[1] study (Section 4, Table 34) addresses this issue. The number of trucks for a 40 MW plant would require 183 trucks per day. This will have a fairly small impact on the overall traffic load on US 441 (less than 1%). This is fairly comparable to the truck traffic coming into and out of the Leveda Brown Environmental Park and Transfer Station onto Waldo Road.

Consistency with Comprehensive Plans

Issue: Is the proposal to use municipal solid waste ("MSW") facility consistent with local comprehensive plans? Will the proposal compete with recycling programs that are encouraged by Gainesville's waste reduction policies?

Analysis: The solid waste element of the Alachua County Comprehensive Plan precludes combustion of municipal solid waste. The Solid Waste Element of the City of Gainesville's Comprehensive Plan, which applies to the Deerhaven site, is silent with regard to MSW-to-energy but states the following:

> "1.1.1 The City shall minimize the amount of solid waste that must be disposed in landfills. In order of priority, minimization shall be attained by (1) source reduction of waste; (2) re-use; (3) recycling; (4) composting; and (5) land filling."

The City Comprehensive Plan as worded does not preclude the development of a MSW-to-energy facility within City limits. Furthermore, GRU does not intend that a MSW-to-energy project should displace or reduce, but should supplement, the City of Gainesville's other efforts as enumerated in the Comprehensive plan to minimize the amount of MSW that must be disposed of in landfills. The proposal does not include source separated paper, cardboard, or plastics as one of the possible fuels. These materials, if source separated, are expected to have a higher economic value recycled than as fuel.

Also, the State of Florida, through legislation passed in 2005, encourages municipalities to consider the development of waste-to-energy facilities as an alternative to additional landfill space as a component of a comprehensive MSW reduction program. From the 2007 Florida Statutes:

> **"403.70611 Requirements relating to solid waste disposal facility permitting.--**Local government applicants for a permit to construct or

expand a Class I landfill are encouraged to consider construction of a waste-to-energy facility as an alternative to additional landfill space."

MSW-to-energy Greenhouse Gas Reduction

Issue: Are greenhouse gas emission reductions from MSW-to-energy greater than those from anaerobic decomposition (i.e., landfill gas or LFG)?

Analysis: Landfills decompose organic materials anaerobically producing methane, which if not collected and handled, is a very potent greenhouse gas, over 20 times more potent than carbon dioxide. Anaerobic decomposition leaves more carbon sequestered in the landfill as compost and difficult to decompose plastics and oils. However, thermal MSW-to-energy technologies generate a greater amount of usable fuel, and therefore potentially offsetting more fossil fuels.

Studies that have been performed on this question indicate that the net advantage of land filling versus MSW-to-energy in terms of carbon reduction depend upon the make up of the local waste and the manner in which the avoided landfill is managed. GRU recognizes that not all the content of MSW is biomass derived (e.g. plastics are derived from petrochemicals) and this must be considered in claiming carbon credits.

Related to the issue of the carbon-neutrality of MSW as a fuel, the State of Florida has classified MSW as biomass, and in turn has determined biomass to be a renewable resource. From the 2007 Florida Statutes:

> **"366.91 Renewable Energy.--**
>
> (1) The Legislature finds that it is in the public interest to promote the development of renewable energy resources in this state…
>
> (2) As used in this section, the term:
>
> (a) "Biomass" means a power source that is comprised of, but not limited to, combustible residues or gases from forest products manufacturing, agricultural and orchard crops, waste products from livestock and poultry operations and food processing, urban wood waste, ***municipal solid waste***, municipal liquid waste treatment operations, and landfill gas. [emphasis added]
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> (b) "Renewable energy" means electrical energy produced from a method that uses one or more of the following fuels or energy sources: hydrogen produced from sources other than fossil fuels, ***biomass***, solar energy, geothermal energy, wind energy, ocean energy, and hydroelectric power. [emphasis added]"

Therefore, it must be inferred that the State of Florida views the development of MSW-to-energy as a renewable energy resource to be in the public interest.

Importance of MSW to the Proposed Project

Issue: How much capacity is lost if MSW is not used as a fuel?

Analysis: The capacity represented by a given amount of fuel depends on the size and efficiency of the unit. Using the fuel volumes and prices provided in Appendix A, Table 2 of the RFP Technical Document, at a fuel price comparable to coal ($3.00/mmBtu) MSW from the City represents 11% of the available energy and capacity. Including the equivalent of all of the County's MSW would represent 20% of the available energy and capacity. MSW is significant to the project as a reliable source of fuel, its potential as a source of revenues to offset power production costs, the transportation costs and energy saved by not transporting MSW to Union County, and the reduction of landfill volume requirements.

Notes to Analysis of Issues

1. The acronym "USFRC" refers to a study commissioned by Gainesville Regional Utilities entitled: Economic Availability of Alternative Biomass Sources for Gainesville, Florida, Part I and Part II, Principal Investigator, Dr. Douglas R. Carter, University of Florida, School of Forest Resources and Conservation. Co-Principal Investigators, Dr. Matthew Langholtz, University of Florida, School of Forest Resources and Conservation, Drs. Timothy Townsend and Brajesh Dubey, University of Florida, College of Engineering, Department of Environmental Engineering Sciences, and Mr. Richard Schroeder, BioResource Management, Inc., August, 2007, University of Florida.

2. Personal communication