

ATTACHMENT B

GAINESVILLE REGIONAL UTILITIES

2008 TEN-YEAR SITE PLAN



Submitted to:

The Florida Public Service Commission

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## 2. DESCRIPTION OF EXISTING FACILITIES

**Gainesville Regional Utilities** (GRU) operates a fully vertically- integrated electric power production, transmission, and distribution system (herein referred to as "the System"), and is wholly owned by the City of Gainesville. In addition to retail electric service, GRU also provides wholesale electric service to the City of Alachua (Alachua) and Clay Electric Cooperative (Clay). GRU's distribution system serves approximately 124 square miles and 90,939 customers (2007 average). The general locations of GRU electric facilities and the electric system service area are shown in Figure 2.1.

### 2.1 GENERATION

The existing generating facilities operated by GRU are tabulated in Schedule 1, found at the end of this chapter. The present summer net capability is 611 MW and the winter net capability is 632 MW<sup>1</sup>. Currently, the System's energy is produced by three fossil fuel steam turbines, six simple-cycle combustion turbines, one combined-cycle unit, a 1.4079 % ownership share of the Crystal River 3 nuclear unit operated by Progress Energy Florida (PEF), and two internal combustion engines that run on landfill gas.

The System has two primary generating plant sites -- Deerhaven and John R. Kelly (JRK). Each site comprises both steam-turbine and gas-turbine generating units. The JRK station also utilizes a combined cycle unit. A small amount of generation capacity is provided by two internal combustion engines located at the Alachua County Southwest Landfill.

#### 2.1.1 Generating Units

##### **2.1.1.1 Steam Turbines.**

The System's three operational simple-cycle steam turbines are powered by fossil fuels and Crystal River 3 is nuclear powered. The fossil fueled steam turbines

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<sup>1</sup> Net capability is that specified by the "SERC Guideline Number Two for Uniform Generator Ratings for Reporting." The winter rating will normally exceed the summer rating because generating plant efficiencies are increased by lower ambient air temperatures and lower cooling water temperatures.

comprise 54.7% of the System's net summer capability and produced 80.2% of the electric energy supplied by the System in 2007. These units range in size from 23.2 MW to 228.4 MW. The combined-cycle unit, which includes a heat recovery steam generator/turbine and combustion turbine set, comprises 18.3% of the System's net summer capability and produced 12.6% of the electric energy supplied by the System in 2007. The System's 11.43 MW share of Crystal River 3 nuclear unit comprises 1.9% of the System's net summer capability and produced 5.0% of total electric energy in 2007. Deerhaven Unit 2, and Crystal River 3 are used for base load purposes, while JRK Unit 7, JRK CC1, and Deerhaven Unit 1 are used for intermediate loading.

#### **2.1.1.2 Gas Turbines.**

The System's six industrial gas turbines make up 24.9% of the System's summer generating capability and produced 2.2% of the electric energy supplied by the System in 2007. These simple-cycle combustion turbines are utilized for peaking purposes only because their energy conversion efficiencies are considerably lower than steam units. As a result, they yield higher operating costs and are consequently unsuitable for base load operation. Gas turbines are advantageous in that they can be started and placed on line in thirty minutes or less. The System's gas turbines are most economically used as peaking units during high demand periods when base and intermediate units cannot serve all of the System loads.

#### **2.1.1.3 Internal Combustion (Piston/Diesel).**

The System operates two reciprocating internal combustion engines at the Southwest Landfill producing 1.3 MW. Fueled by gas produced by the landfill, these units represent 0.2% of the System's summer capability and produced 0.02% of total energy in 2007. They are operated as continuously as possible.

#### **2.1.1.4 Environmental Considerations.**

All of the System's steam turbines, except for Crystal River 3, utilize recirculating cooling towers with a mechanical draft for the cooling of condensed steam. Crystal River 3 uses a once-through cooling system aided by helper towers. Only Deerhaven 2 currently has flue gas cleaning equipment consisting of a "hot-side" electrostatic precipitator. Construction is currently underway on a selective catalytic reduction system to reduce NO<sub>x</sub>, and a dry flue gas desulfurization unit with fabric filter, which will reduce SO<sub>2</sub> and particulates.

### **2.1.2 Generating Plant Sites**

The locations of the System's generating plant sites are shown on Figure 2.1.

#### **2.1.2.1 John R. Kelly Plant.**

The Kelly Station is located in southeast Gainesville near the downtown business district and consists of one combined cycle, one steam turbine, three gas turbines, and the associated cooling facilities, fuel storage, pumping equipment, transmission and distribution equipment.

#### **2.1.2.2 Deerhaven Plant.**

The Deerhaven Station is located six miles northwest of Gainesville. The original site, which was certified pursuant to the Power Plant Siting Act, included an 1146 acre parcel of partially forested land. The facility consists of two steam turbines, three gas turbines, and the associated cooling facilities, fuel storage, pumping equipment and transmission equipment. As amended to include the addition of Deerhaven Unit 2 in 1981, the certified site now includes coal unloading and storage facilities and a zero discharge water treatment plant, which treats water effluent from both steam units. A potential expansion area, owned by the System and adjacent to the certified Deerhaven plant site, was incorporated into the Gainesville City limits February 12, 2007 (ordinance 0-06-130), consists of an additional 2328 acres, for a total of 3474 acres.