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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination of Need of Hines Unit 3 Power Plant	))))	DOCKET NO. 020953-EI Submitted for filing: September 4, 2002

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DIRECT TESTIMONY OF JAMES J. MURPHY

ON BEHALF OF FLORIDA POWER CORPORATION

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IN RE: PETITION FOR DETERMINATION OF NEED

BY FLORIDA POWER CORPORATION

FPSC DOCKET NO. 020953-EI

DIRECT TESTIMONY OF JAMES J. MURPHY

I. INTRODUCTION AND QUALIFICATIONS.

Q. Please state your name, your employer, and business address.

A. My name is James J. Murphy and I am employed by Florida Power Corporation (Florida Power or the Company). My business address is 7700 County Road 555, Bartow, Florida 33830.

Q. Please state your position with Florida Power and describe your duties and responsibilities in that position.

A. I am employed by Florida Power as Manager Power Plant Construction Projects. As Florida Power's Hines Project Manager, I am responsible for the overall management of licensing, engineering, procurement, and construction activities associated with new supply-side, generation projects at the Hines Energy Complex (HEC) for the Company. This includes the Hines Unit 3 combined-cycle generation plant.

Q. Please summarize your educational background and work experience.

A. I received a Bachelor of Civil Engineering from the Georgia Institute of Technology in 1974. I am a Registered Professional Engineer in the State of Florida, and have been since 1978. I am also a certified Electrical Contractor, certified General Contractor, and certified Mechanical Contractor in the State of Florida.

I joined Florida Power in 1974. I have served in numerous management positions responsible for engineering, power system planning, power plant construction and modifications, and power plant operations and maintenance.

II. PURPOSE AND SUMMARY OF TESTIMONY.

Q. What is the purpose of your testimony in this proceeding?

A. I am testifying on behalf of Florida Power, in support of its Petition for Determination of Need, by describing (1) the site and unit characteristics for the Hines 3 combined-cycle unit, including the size, equipment configuration, fuel type and supply modes, (2) the approximate costs of Hines 3, and (3) the unit's projected in-service date.

Q. Are you sponsoring any sections of Florida Power's Need Study?

A. Yes, in Section II of the Need Study, I am sponsoring the "Projected Costs" and "Projected Performance" sections under the Hines Unit 3 heading.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. I am sponsoring the following exhibits to my testimony:

JJM-1	**Hines Energy Complex Map.**
JJM-2	**Site Arrangement – Overall Plan.**
JJM-3	**Site Arrangement – Power Block Area.**
JJM-4	**Typical Combined-Cycle Schematic.**
JJM-5	**Installed Cost Estimate for Hines 3.**
JJM-6	**Project Schedule for Hines 3.**

Each of these exhibits was prepared under my direction, and each is true and accurate.

Q. Please summarize your testimony.

A. The Company plans to build Hines 3 at the HEC, its existing generation site in Polk County, Florida. That site contains the Hines 1 combined-cycle generation unit and its associated facilities. Hines Unit 2 is currently under construction with an expected commercial operation date in December 2003. In 1994, the Governor and Cabinet, sitting as the Siting Board, certified the HEC for construction and operation of the Hines Unit 1 and for 3,000 megawatts (MW) of ultimate generation capacity at the site. In 2001 the Governor and Cabinet certified the addition of Hines 2. Hines 3 will provide for an expected 582 MW (winter rating) of capacity at the site, and it will share many of the existing facilities at the site with Hines 1 and 2. The ability to share facilities at the site adds to the cost-effectiveness of Hines 3. The Company and its ratepayers will capture the cost savings associated with the economics of scale achieved from using the existing facilities for the operation of the combined Hines units 1, 2, and 3.

Hines 3 is a sister unit to Hines 1 and 2. It is a state-of-the art, highly efficient combined-cycle unit that will operate on natural gas, with the capability to operate on distillate oil. The unit's beneficial heat rate, availability, and responsiveness, among other attributes, provide the Company with a low-cost, highly flexible source of power. Hines 3 therefore enhances the overall operation and efficiency of the Company's system to the direct economic benefit of the Company and its ratepayers. Hines 3 is scheduled to come on line in December 2005.

Apart from the cost savings achieved by placing in operation a state-of-the-art, highly efficient generation unit, the Company and its ratepayers will further benefit from a competitive initial cost for the unit. The total projected cost for Hines 3 is estimated to be $231 million excluding AFUDC. AFUDC is estimated to be approximately $27 million, giving a total installed cost of $258 million. A significant advantage is due in part to the Company's having preserved its previously negotiated, favorable equipment terms for the combustion turbine units.

In summary, Hines 3 allows the Company to meet its reliability needs with the most efficient technology on the market at a below market cost, giving the Company and its ratepayers substantial economic benefits in terms of technology, efficiency and flexibility in operation, and cost of generating power.

III. DESCRIPTION OF THE HINES 3 SITE.

Q. Please describe the location of the HEC.

A. The HEC is an 8200 acre site located in southwest Polk County, Florida, approximately 40 miles east of Tampa, 7 miles south of Bartow, and approximately 3.5 miles northwest of Ft. Meade. County Road 640 is on the northern boundary of the HEC, and County Road 555 runs through the site north to south. The location of the HEC is shown in Exhibit ____ (JJM-1).

Q. Please describe the location of Hines 3 at the HEC.

A. Exhibit ___ (JJM-2) is the HEC site plan and shows the development of the entire site. It depicts the relationship of the location of the power block, including Hines 1, Hines 2, and the proposed Hines 3 unit, in relation to the existing cooling ponds and water treatment and wastewater disposal areas for the units. Exhibit ___ (JJM-3) is the power block layout for Hines 3. It depicts the Hines 3 power block in relation to the Hines 1 and 2 power blocks and existing rail lines, state roads, and access roads that will serve all units, and existing dikes and former phosphate mining areas on the HEC site.

Q. What are the benefits to the Company and its ratepayers from locating the Hines 3 unit at the HEC?

A. The location of the Hines 3 unit at the HEC offers the Company and its ratepayers the ability to achieve economies of scale by using existing infrastructure at the site for operation of the Hines 3 unit. By building Hines 3 at the HEC, the Company will be able to use the existing access road, cooling pond, reclaimed water supply pipeline, water treatment and wastewater disposal facilities, gas laterals, and transmission facilities, among other site facilities, for the Hines 1 and 2 units and the proposed Hines 3 unit. Because the Company can use the existing site facilities for the three units, the Company will not have to design and construct these facilities for the Hines 3 unit. The location of the Hines 3 unit at the HEC will save the Company site development costs the Company otherwise would have incurred. As a result, the Company and its ratepayers will save additional engineering and construction costs by locating Hines 3 at the HEC.

IV. DESCRIPTION OF THE HINES 3 UNIT.

Q. Please describe the proposed design of the Hines 3 unit.

A. Hines 3 is a state-of-the-art combined-cycle unit similar to the Hines 1 and Hines 2 units. It consists of two combustion turbines, two unfired heat recovery steam generators, one steam turbine, and a recirculating water cooling system. The unit is a dual-fuel generation system, meaning that the combustion turbines can be operated on natural gas or distillate oil. For Hines 3, natural gas is the primary fuel, and low sulfur (0.05 percent) distillate oil is the alternative fuel.

The combustion turbines and steam turbine for the Hines 3 unit are configured in sequential stages, as shown in the typical schematic for a combined-cycle unit in Exhibit ___ (JJM-4). The first stage includes the combustion turbines, much like utility peaking units, which generate electricity. In the second stage of the process, hot gas from the combustion turbines is passed through the heat recovery steam generator, where steam is produced and fed into the steam turbine to generate additional electricity -- hence, the term "combined-cycle" generation technology.

Q. What are the advantages to combined-cycle technology for the Company?

A. Combined-cycle generation technology is very efficient because it generates electricity from the input fuel both directly, through the combustion turbines, and indirectly, through the heat recovery steam generator and steam turbine. Further flexibility exists through the use of reheat configurations. By reheating extracted steam, additional improvement in cycle efficiency can be achieved. In all of these ways, combined-cycle technology makes the most of the input fuel, achieving increased efficiency in the generation of electricity from the available fuel source. For these reasons, the modern combined-cycle power plant is one of the most efficient power cycles available today.

Another advantage of the combined-cycle design is that it allows for greater flexibility in matching system operating characteristics over time. Because of its technological efficiency, it can readily be called on to meet varying operational load requirements in an economical manner. Thus, the Hines 3 combined-cycle unit can function as a baseload or intermediate unit, as required by the Company's system.

In addition to its high efficiency, the Hines 3 will have a low environmental impact. Combined-cycle units operating on natural gas, like Hines 3, are one of the cleanest sources of fossil generation. Flue gas is the only byproduct of the combustion process, whether the unit is burning natural gas or distillate oil, that would leave the HEC. Both are low sulfur, low ash fuels. Thus, sulfur and particulate emissions are virtually nonexistent. Nitrogen oxides will be controlled by selective catalytic reduction and water injection. Airborne emissions, therefore, will be minimized by the use of a relatively clean fuel and the appropriate application of control technologies.

Q. How will fuel be provided and handled for the Hines 3 unit?

A. Natural gas will be delivered by pipeline to the HEC by FGT and GNGS. Gulfstream Natural Gas has recently interconnected its gas transmission system at HEC. The addition of the Gulfstream delivery point to the HEC in 2002 has provided for a competing gas supply to the units located there. This gas delivery system at the HEC is sufficient to supply the Hines 3 unit. No additional gas lateral is necessary at the HEC.

Additionally, there currently is on-site storage for the distillate oil, providing sufficient storage capabilities to operate Hines 1, 2, and 3 for approximately two (2) days of continuous unit operation at full load on the backup fuel. No additional storage facilities for the backup fuel are necessary for the Hines 3 unit. The distillate oil for the HEC units is delivered to the HEC by tanker trucks.

Q. How does the Company plan to construct Hines 3?

A. Florida Power will maintain direct overall management of the project, including participation in construction management functions, by having a substantial presence onsite during the construction and startup phase. Florida Power may elect to competitively select equipment suppliers, the architect/engineering (A/E) firm, and the constructors, or the Company may opt to contract for a design-build turn-key approach. The exact method will be evaluated considering the competitive market while minimizing the Company's risk. In either case, the beneficial option terms for the combustion turbine equipment would still be exercised.

Q. What will it cost the Company to build Hines 3?

A. The total projected cost for the Hines 3 unit is approximately $231 million (excluding AFUDC) in actual dollars. This cost was developed on the basis of replicating the design and layout of our Hines 2 unit. A breakdown of the major cost items for the Hines 3 unit is included in Exhibit ____ (JJM-5).

The project cost for Hines 3 reflects competitive equipment pricing because the Company was able (1) to negotiate and preserve beneficial combustion turbine equipment pricing and other favorable contract terms and conditions (for example, performance guarantees and liquidated damages provisions), thus reducing its capital costs compared to current market costs for the same combustion turbine equipment, and (2) to share common site utilities and facilities with the Hines 1 and 2 units, thus reducing or eliminating site development and construction costs and associated facilities costs the Company would have otherwise incurred.

Q. What will it cost the Company to operate the Hines 3 unit?

A. The estimated incremental annual fixed operation and maintenance (O&M) cost for Hines 3 is $1.45/kW-Yr (2005$). The largest fixed costs are wages and wage-related overheads for the permanent plant staff, as well as expenses for unplanned equipment maintenance. Between four and six employees are expected to be added to the staff at the HEC upon the addition of Hines 3. Variable O&M costs, which vary as a function of plant generation, include consumables, chemicals, lubricants, water, and major maintenance costs such as planned equipment inspections and overhauls. The estimated variable O&M cost in 2005 is $2.13/MWh.

Q. When Hines 3 is constructed and in operation, what operational characteristics will it have?

A. As noted above, Hines 3 will have state-of-the-art combined-cycle technology. As a result, it will be a highly efficient unit with an excellent heat rate, operating with an average summer and winter full load heat rate of approximately 6900 Btu/kWh (HHV). The Hines 3 unit will have an expected equivalent forced outage rate of approximately 3 percent. Hines 3 is expected to have a capacity factor range of 50 percent to 60 percent. When placed in operation, Hines 3 will be one of the most efficient units on the Company's system.

V. PROPOSED SCHEDULE.

Q. What is the in-service date for the Hines 3 unit?

A. Hines 3 is scheduled to come on line in December 2005.

Q. Will the Company meet that in-service date?

A. Yes, barring any unforeseen and significant delays. The proposed schedule for the permitting and construction of the Hines 3 unit is contained in Exhibit ____ (JJM-6). In my opinion, this schedule is reasonable and can be met by the Company.

Q. Does this conclude your direct testimony?

A. Yes.

Exhibit JJM-1

Hines Energy Complex Map

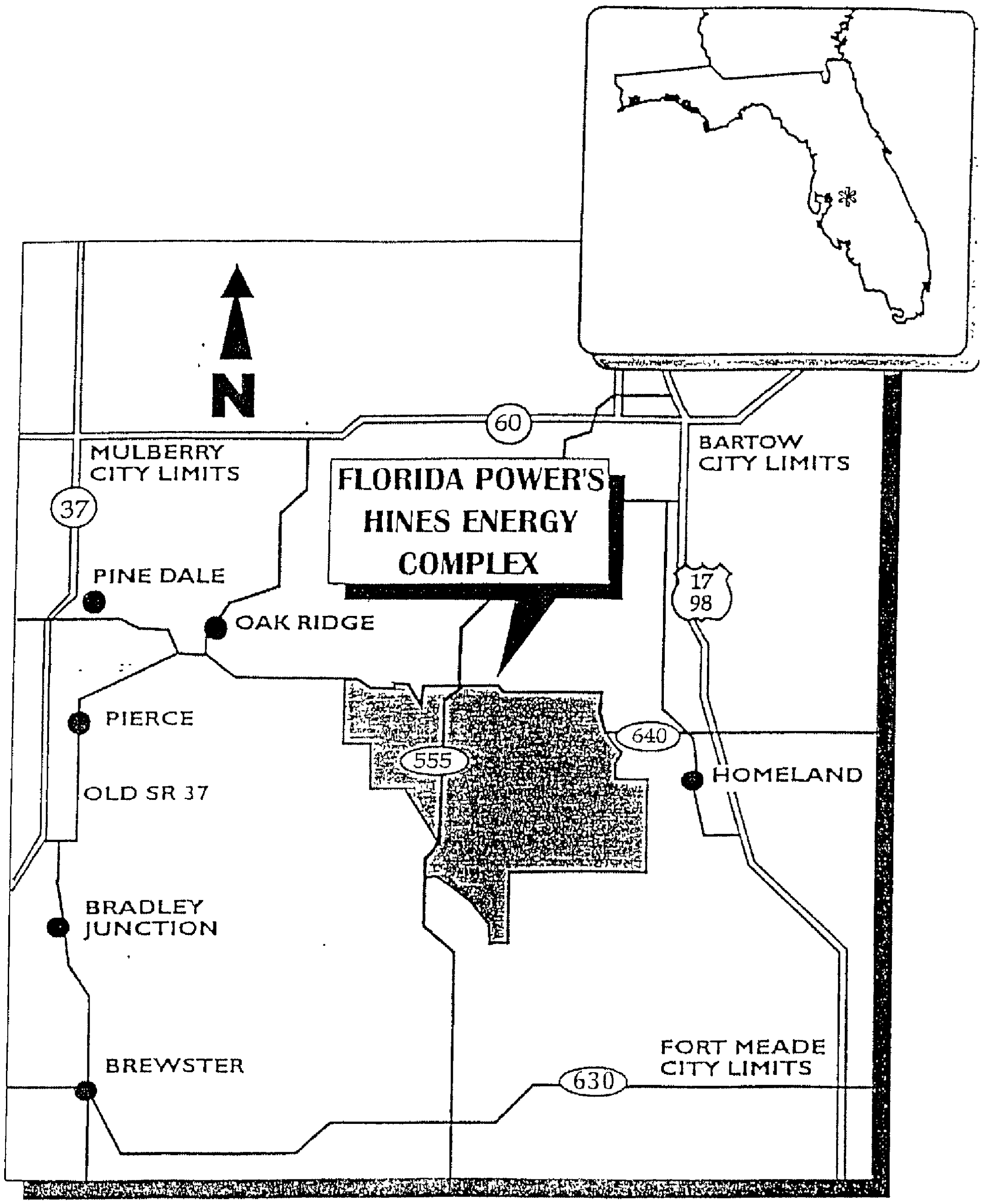

Exhibit JJM-2

Site Arrangement – Overall Plan

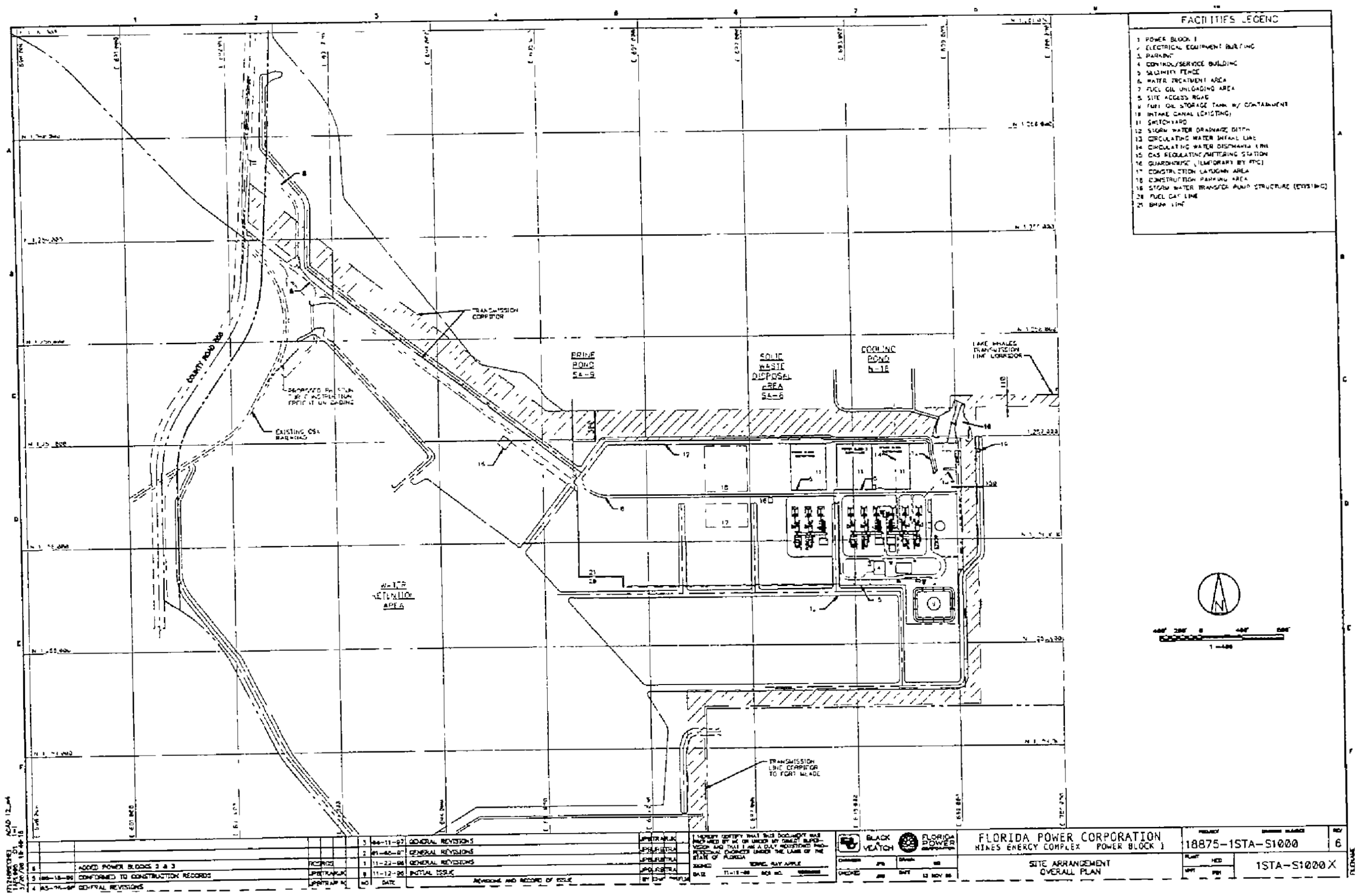

Exhibit JJM-3

Site Arrangement -- Power Block Area

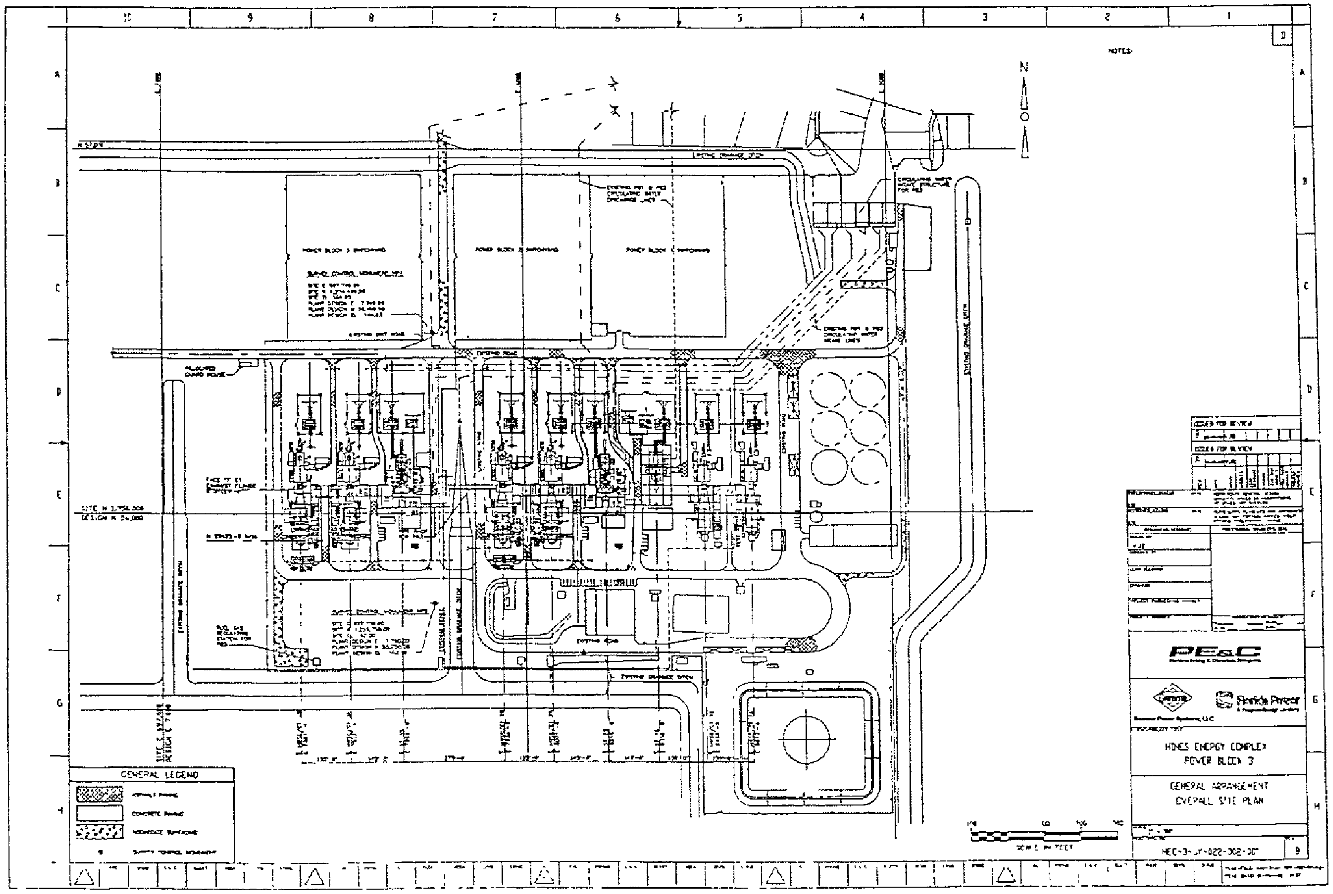

Exhibit JJM-4

Typical Combined-Cycle Schematic

(2-on-1)

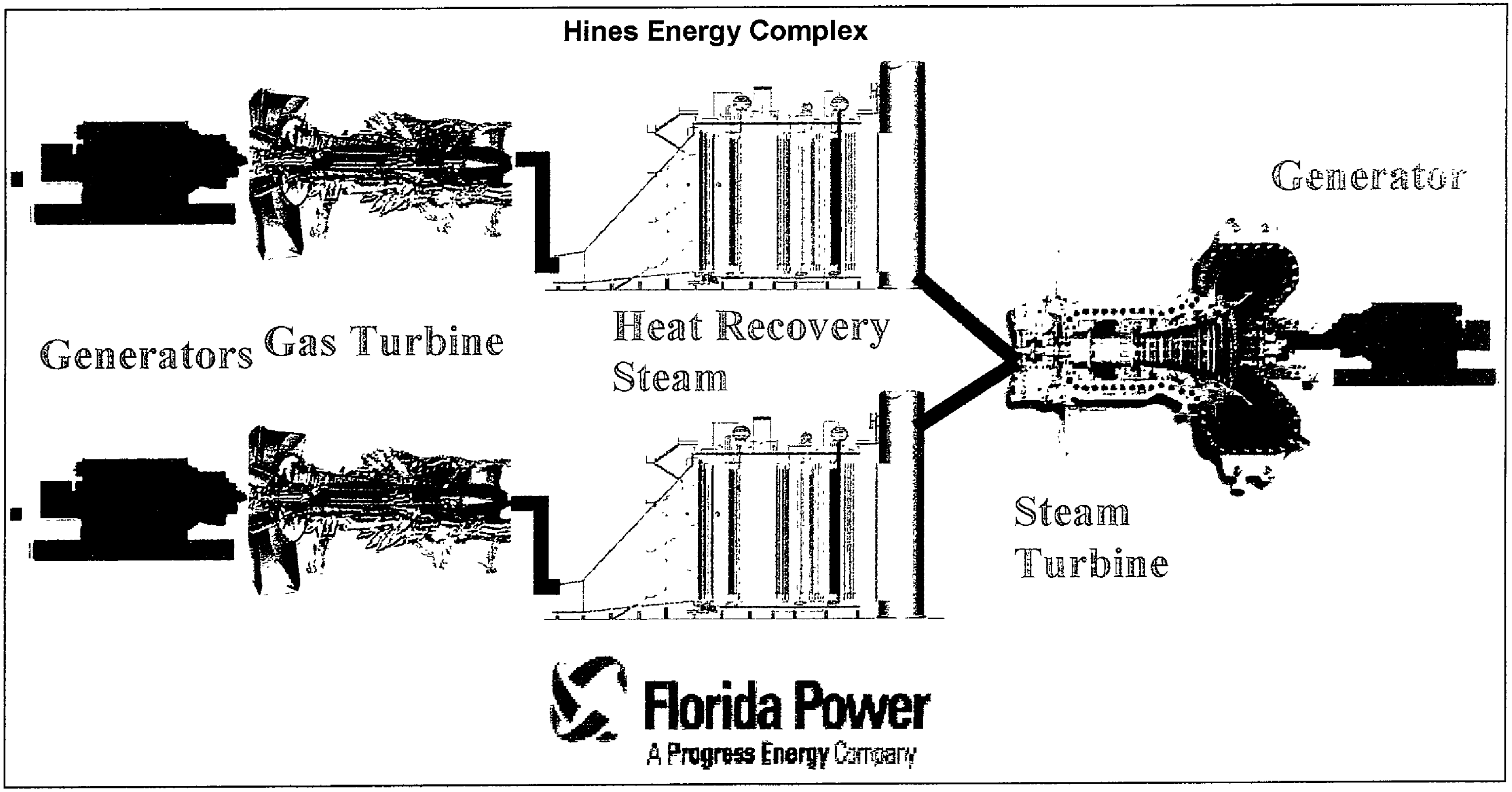

Exhibit JJM-5

Projected Cost Estimate for Hines 3 Unit

EPC Contractor and Equipment Contracts	$209,974,500
Contingency	$4,625,000
Licensing, Permits and Site Certificates	$1,400,000
FPC Internal Costs	$10,500,000
Total Project Cost – Excluding Transmission	**$226,499,500**
Substation Expansion	$4,500,000
Total Transmission	**$4,500,000**
TOTAL PROJECT COST	**$230,999,500**

Exhibit JJM-6

Project Schedule for Hines 3

Award Purchase Order Contracts for Major Equipment	May 1, 2003
Supplemental Site Certification Approval	May 1, 2003
Award EPC Contract	June 1, 2003
Begin Construction	September 1, 2003
Construction Complete	December 1, 2005
Commercial Operation	December 1, 2005