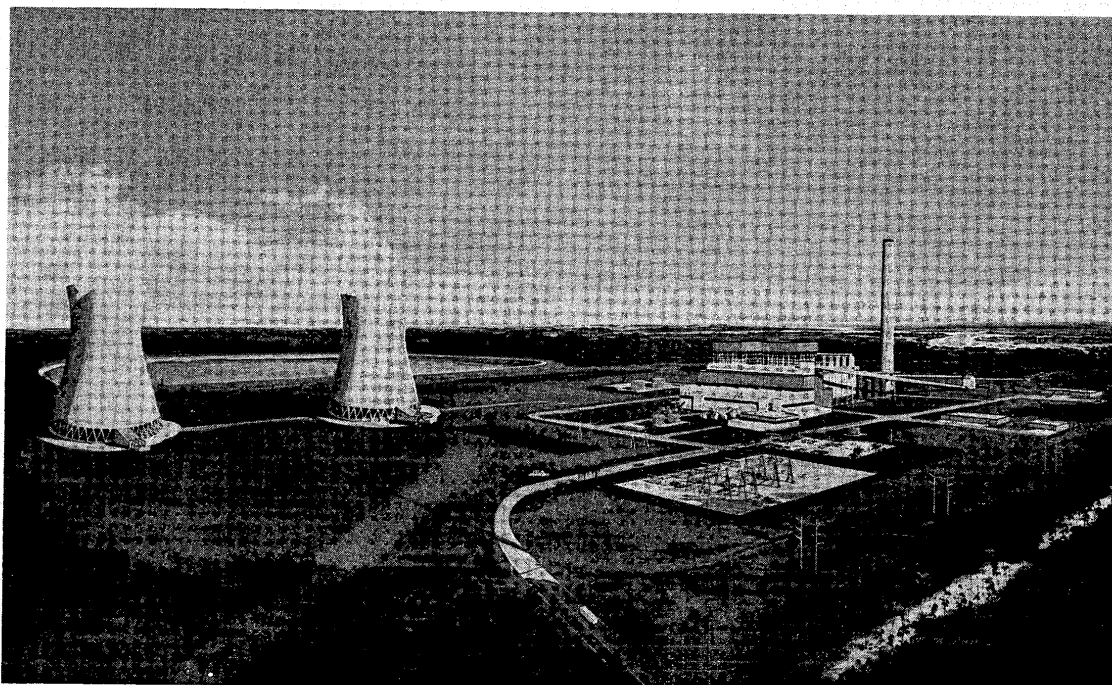




**SITE CERTIFICATION APPLICATION
ENVIRONMENTAL INFORMATION DOCUMENT**

**FOR
JACKSONVILLE ELECTRIC AUTHORITY
ST. JOHNS RIVER POWER PARK
UNITS 1 & 2
1985-1987
VOLUME 1**



envirosphere company

A Division of EBASCO SERVICES INCORPORATED
145 TECHNOLOGY PARK/ATLANTA
NORCROSS, GEORGIA 30092

1981



**JACKSONVILLE
ELECTRIC
AUTHORITY**

**ST. JOHNS RIVER
POWER PARK**

**SITE CERTIFICATION APPLICATION
ENVIRONMENTAL INFORMATION
DOCUMENT**

VOLUME 1



**envirosphere
company**

SITE CERTIFICATION APPLICATION
BY ENVIRONMENTAL INFORMATION DOCUMENT

FOR

JACKSONVILLE ELECTRIC AUTHORITY

ST. JOHNS RIVER POWER PARK

UNITS 1 & 2

1985-1987

Copy Number: 1 of 35
Prepared For: FDER
Revision Number: 1
Date: October 15, 1981

SITE CERTIFICATION APPLICATION
ENVIRONMENTAL INFORMATION DOCUMENT

FOR

JACKSONVILLE ELECTRIC AUTHORITY

ST. JOHNS RIVER POWER PARK

UNITS 1 & 2

1985-1987

Copy Number: 1 of 35
Prepared For: EDER
Revision Number: 0
Date: FEBRUARY, 1981

PERTINENT APPLICATION INFORMATION

Legal Name

Jacksonville Electric Authority

Mailing Address

233 West Duval Street
Jacksonville, Florida 32201

Address of Official Headquarters

Same as above.

Business Entity

The applicant is a municipally-owned electric utility.

Name and Title of Chief Executive Officer

Royce Lyles, Managing Director

Name, Title, Address, and Phone Number of Official Representative Responsible for Obtaining Certification and To Whom Questions Concerning the Application Should be Addressed

Dale A. Moehle, Division Chief, New Fossil Generation
Jacksonville Electric Authority
233 West Duval Street
Jacksonville, Florida 32201
Phone Number: (904) 633-4513

Professional Engineer Submitting Application

W. D. Rezak, Florida Registration Number 16835

Site Location

The preferred site for St. Johns River Power Park Units 1 and 2 is located in Duval County, Florida.

Nearest Incorporated City

Jacksonville, Florida

Latitude and Longitude

The preferred site is located at 30°26'N latitude and 81°33'W longitude.

Coordinates

The Universal Transverse Mercator (UTM) coordinates are:

3366300 North
446900 East

Proposed Nameplate Generating Capacity

St. Johns River Power Park Unit 1 will have a nameplate generating capacity of 612 megawatts (MW), and is scheduled for commercial operation in December, 1985. St. Johns River Power Park Unit 2 will have a nameplate generating capacity of 612 MW, and is scheduled for commercial operation in May, 1987.

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PREFACE

Since the date this Site Certification Application was originally submitted on February 15, 1981, the St. Johns River Power Park project has received two significant state agency approvals. On June 26, 1981, after a two-day public hearing, the Florida Public Service Commission (FPSC) unanimously certified the need for SJRPP project with in-service dates of 1985 and 1987 for Units 1 and 2, respectively. (A copy of the FPSC order is included as an exhibit to this introduction.) Also, on September 1, 1981, the Florida Governor and Cabinet unanimously entered a Final Land Use Order determining that the SJRPP site is properly zoned and is consistent with all existing land use plans. (A copy of that order is also included as an exhibit to this introduction.)

In reaching its decision to certify the need for SJRPP, the FPSC recognized the utilities' dual need for additional capacity and for economic oil displacement. In the final order, the FPSC stated:

In our evaluation of the need for SJRPP Units 1 and 2 and related facilities, we have considered the principal areas of the electrical need for additional capacity to insure an adequate supply of bulk electrical power and energy to electric consumers and the economic need of providing this bulk power and energy at the lowest possible cost. In addition, the socioeconomic need of reducing the consumption of imported oil in the State of Florida has been considered. Each of these aspects of need for SJRPP 1 and 2 was evaluated with respect to the electrical consumers of JEA, FPL, and peninsular Florida as a whole. (Emphasis added)

As a result of its evaluation, and assuming that the utilities' achieve the FPSC's conservation goals, the FPSC found that JEA and FPL will need the additional generating capacity of SJRPP for reliability purposes by 1991 and 1989, respectively. Because the utilities proposed in-service dates of 1985 and 1987, the FPSC also considered whether advancing the in-service dates of the SJRPP units was the best alternative available for meeting the utilities' immediate needs for oil displacement. The FPSC concluded:

Having considered the record in this matter, we find that a need exists for the construction of St. Johns River Power Park Units 1 and 2 in the time frame proposed by the applicants, in that construction of the units appears to be the best available alternative to the continued use of expensive oil-fired generation, based upon the most reasonable projections of future fuel cost and our appraisal of possible alternatives. (Emphasis added)

This conclusion that SJRPP is the best available alternative is supported by the FPSC's finding that total savings to Peninsular Florida consumers of electricity for the period 1986-2000 would be \$8 billion (nominal dollars) under a set of fuel price assumptions deemed unfavorable to the construction of SJRPP. The FPSC further found that under "expected" fuel price assumptions, total consumer savings for the same period would be \$10 billion (nominal dollars).

Chapters 1 and 8 of this application have been updated to reflect the FPSC findings and the evidence on which the FPSC's need determination was made, including information concerning the impact of contracts entered into by JEA and FPL in February, 1981, for the purchase of firm power from the Southern Company system.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: JEA/FPL's Application of need for	)	DOCKET NO. 810045-EU
St. John's River Power Park Units 1 and 2	)	ORDER NO. 10108
and related facilities.	)	ISSUED: 6-26-81

The following Commissioners participated in the disposition of this matter:

JOSEPH P. CRESSE, Chairman
GERALD L. GUNTER
KATIE NICHOLS

Pursuant to Notice, the Florida Public Service Commission held public hearings on the foregoing in Tallahassee, Florida on May 22 and 23, 1981. Having considered the entire record herein, the Commission now enters its final Order.

APPEARANCES: Gary P. Sams, Esq., Richard P. Melson, Esq., Hopping, Boyd, Green & Sams, Suite 420, Lewis State Bank Building, Tallahassee, Florida 32301, for Jacksonville Electric Authority and Florida Power and Light Company.

W.O. Birchfield, Esq., Martin, Ade, Birchfield and Johnson, 3000 Independent Square, Jacksonville, Florida 32201, for Jacksonville Chamber of Commerce.

George W. Kent, Jr., Esq., 2105 Park Avenue, Suite 21, Orange Park, Florida 32073, for Clean Air Coalition, Beckshire Drive Community Club and Sea Oats Garden Circle.

Joseph A. McGlothlin, Esq., Michael B. Towmey, Esq., and Arthur R. Shell, Jr., Esq., 101 East Gaines Street, Tallahassee, Florida 32301, for the Florida Public Service Commission.

Virginia Daire Reber, Esq., Pamela Johnson, Esq., and Bill Bilenky, Esq., 101 East Gaines Street, Tallahassee, Florida 32301, for the Florida Public Service Commissioners.

ORDER

BY THE COMMISSION:

On February 28, 1981, the Jacksonville Electric Authority (JEA) and Florida Power and Light Company (FPL) filed a joint application with this Commission for the certification of need for St. Johns River Power Park (SJRPP) Units 1 and 2. The application encompasses two coal-fired generating units and related facilities, with proposed in-service dates of December, 1985, and May, 1987. The application was made pursuant to the provisions of the Florida Power Plant Siting Act, Chapter 403, Florida Statutes. As required by Section 403.507 (1)(6), Florida Statutes, the Commission's preliminary report on the

need for SJRPP Units 1 and 2 was issued and filed with the Florida Department of Environmental Regulation (FDER) on April 27, 1981. This Order reflects our final determination of the issue of the need for the proposed units.

We construe the "need for power" issue to encompass several aspects of need. In our evaluation of the need for SJRPP Units 1 and 2 and related facilities, we have considered the principal areas of the electrical need for additional capacity to insure an adequate supply of bulk electrical power and energy to electric consumers and the economic need of providing this bulk power and energy at the lowest possible cost. In addition, the socio-economic need of reducing the consumption of imported oil in the State of Florida has been considered. Each of these aspects of need for SJRPP 1 and 2 was evaluated with respect to the electrical consumers of JEA, FPL, and peninsular Florida as a whole.

The Florida Energy Efficiency and Conservation Act also impacts upon the instant application. It states in pertinent part:

The commission shall adopt appropriate goals for increasing the efficiency of energy consumption, specifically including goals designed to increase the conservation of expensive resources, such as petroleum fuels, and to reduce the growth rates of electric consumption and especially weather sensitive peak demand.

Conservation goals pursuant thereto have been established for electrical utilities in Florida. Achievement of these goals would result in a 2.9% average annual compound rate of Peninsular energy growth during the period of 1980 through 1989. The rate of Peninsular summer and winter firm peak load growth for this period would be limited to 2.7% and 2.8%, respectively. Additionally, by 1990 the consumption of oil would be reduced to a level 25% less than that estimated to be consumed in 1980 pursuant to the "State of Florida, 1980 Ten Year Plan".

Should the Commission's FEECA goals governing the growth of seasonal kilowatt demand be achieved, and we are of the opinion that they can reasonably be achieved, additional generating capacity for the purpose of insuring adequate supplies of power and energy to peninsular Florida electric consumers does not appear to be required until 1991. Similarly, JEA and FPL do not appear to require additional generating capacity for reliability purposes until 1991 and 1989 respectively, should they achieve their respective FEECA seasonal kilowatt demand goals. Thus, the salient issue is the determination of the need for SJRPP Units 1 and 2 with in-service dates of December, 1985, and May, 1987, respectively is whether the construction of these units in the time frames proposed represents the lowest cost alternative available to the continued use of expensive oil-fired generation in Peninsular Florida, and in the areas served by JEA and FPL.

On May 22 and 23, 1981, public hearings were conducted in Tallahassee, at which time the Commission undertook a thorough investigation and analysis of the issues pertinent to a final decision of the need for SJRPP Units 1 and 2 to displace oil fired generation in peninsular Florida. The potential alternatives to the continued use of oil to insure an economical supply of bulk electrical power and energy to JEA, FPL, and Peninsular customers which were evaluated included: construction of SJRPP; construction of additional 500 kv transmission lines to Georgia and within Florida, or acceleration of currently planned lines for the purpose of importing increased amounts of "coal-by-wire" power and energy; conversion of existing oil-fired units to coal; coal-oil mix (COM) or coal-water mix; purchases from Georgia Power's Vogtle nuclear units; additional conservation in excess of the FEECA goals; and continued use of imported oil. The economic feasibility of each alternative was assessed, as well as the

impact of each upon the reduction of the consumption of imported oil in the State of Florida.

The proposal to construct SJRPP Units 1 and 2 and each of the alternatives which were evaluated will be discussed below.

PURCHASED POWER, CONSTRUCTION OF ADDITIONAL 500 KV TRANSMISSION LINES TO GEORGIA AND WITHIN FLORIDA AND/OR THE ACCELERATION OF CURRENTLY PLANNED LINES.

FPL has completed negotiations with the Southern Company to increase its purchases of economic coal-generated power from the present level of 100 mw to 300 mw in August of 1980, continuing through 1986. The purchases are subject to availability, other commitments of higher priority, and are thus interruptible if the power is needed by Southern. These economic power purchases are therefore considered to be a non-firm power source and are not included in the determination of FPL system reserves. However, firm coal purchases have been contracted for with Southern as follows:

<u>YEAR</u>	<u>CAPACITY (MW)</u>
1983-1986	350
1987	650
1988-1992	1000

Purchased power, as an alternative, from Seminole Electric Cooperative and Georgia Power Company was evaluated on the basis of economic optimization. Seminole offered to sell JEA the following amounts of power from its new coal-fired Unit 1:

200 mw in 1983 and 1984
400 mw in 1985 through 1990
300 mw in 1991 and 1992
100 mw in 1993 and 1994

Georgia Power offered and JEA could physically take approximately 650 mw when two 500 kv lines presently under construction are in service, but before 500 kv lines planned by FPL to run south from the Jacksonville area are completed in 1985 and 1987, respectively. After the two lines are completed then JEA could take up to 800 mw.

Georgia Power's rate per kilowatt hour is lower than Seminole's early on, but higher in the later years. Other factors which enhance the purchase from Georgia Power were: the availability of larger amounts of power; the purchase can begin immediately, while the Seminole purchase must wait until 1983; a high assurance of continuous supply with GPC; and the fast delivery of GPC's power blends easily into the GPC plan for 500 kv ties between Georgia and Florida. Also, additional high voltage lines would be needed for JEA to receive power from Seminole in significant amounts. As purchases from either Seminole or GPC are generically equivalent, purchase from one would eliminate a purchase from the other without altering the time frame of SJRPP's construction. The above firm purchases are incorporated in the calculation of FPL's generating system reserve.

JEA's "coal-by-wire" contract with Southern provides for the following power purchases:

	<u>Schedule E (Non-Firm) (MW)</u>	<u>Unit Power Purchases (Firm) (MW)</u>	<u>Total (MW)</u>
2/1980 - 5/1980	50	0	50
6/1980 - 7/1982	100	0	100
8/1982 - 12/1982	300	0	300
1983 - 1986	300	300	600
1987	0	500	500
1988 - 1992	0	400	400

In order to accommodate the firm and non-firm purchases, FPL must expand its high voltage (500 kv) transmission system. Two 500 kv lines are being constructed from Hatch (in Georgia) to Duval (an FPL transmission substation) with scheduled in-service dates of August, 1982, and January, 1983, respectively. They are being built jointly with JEA. Upon completion of the first Duval-Hatch 500 kv line, FPL will increase its purchase from Southern to 300 mw (350 mw firm; 300 mw scheduled) when the second line is completed in January 1983. Additional 500 kv transmission capacity is planned south of Duval to fully utilize the coal power available to FPL.

Plans call for one 500 kv line from Martin to Poinsett in 1984; one 500 kv line from Duval to Poinsett in 1985 which will complete a 500 kv route from the Georgia state line to Miami. A second 500 kv route will be completed in 1987 with the completion of the second Duval-Poinsett and the Poinsett-Midway 500 kv lines. Following completion of these lines FPL will increase its purchases from Southern to 1,000 mw in January, 1988.

Power from the proposed SJRPP units is more economical than "unit power" purchases from Southern because of Southern's high cost of capital, profit margin, transmission line losses, and the fact that purchased capacity is always delivered from Southern's newest units having the highest fixed charges. In addition, the availability and potential cost of purchased power after 1992 is uncertain, as Southern refuses to commit to firm sales after that date and because any purchases after 1992 would probably continue to be from Southern's highest cost coal units.

CONVERSION OF EXISTING OIL-FIRED UNITS TO COAL OR OTHER FUELS.

Conversion of JEA's existing units to use a fuel other than oil, the purchase of coal-derived energy from other utilities and purchase of a share in a generating plant constructed by other utilities were considered as possible alternatives to actual construction of SJRPP Units 1 and 2. However, a number of problems must be identified with reference to these alternatives. The continued availability of natural gas as a boiler fuel in substantial quantities at a reasonable price was found to be too uncertain. Large scale conversion of an existing unit to coal would involve construction of a new coal unloading, storage and handling facility, an ash handling and disposal system, substantial expansion of the flue gas handling and cleanup system and extensive reconstruction of the boiler room. In addition, the added investment would be applied to old units having a life expectancy much shorter than that of a new unit. Perhaps most importantly, the effect of such a conversion would be to decrease, rather than increase, the generating capacity.

In their presentation, the applicants conducted an economic analysis of annual costs to determine the feasibility of conversion of the three existing oil-fired JEA Northside units. Total capital costs including interest during construction to convert the units were estimated to be as follows:

Northside Units 1, 2, and 3	\$1,353.4 million
Northside Unit 3 only	\$ 617.2 million

The maximum output of the units was estimated to be reduced accordingly:

	Maximum Net Output (mw)	After Conver- sion to Coal
Northside Unit 1	262.5	149
Northside Unit 2	262.4	149
Northside Unit 3	499.4	283
TOTAL	1,024.2	581

The applicants estimated that the full-load heat rates would be increased by approximately 11% by the conversion. Evaluation of the

conversion of Northside's three units or Unit 3 alone, with deferral of SJRPP, indicated that such a conversion would result in a substantial increase in JEA's cost of power production.

This conclusion is reinforced by the result of certain analyses performed by FPL regarding the possible conversion of 800 mw and 400 mw class units to coal on their system. Using the PROMOD model FPL conducted promotion costing computer simulation runs based upon the assumption that conversion would result in a 10% derating of the 400 mw units and a 20% derating of the 800 mw units. The results of the PROMOD analyses indicate that (1) conversion would accelerate FPL need for additional capacity and (2) construction of SJRPP Units 1 and 2 would still be needed to economically displace generation by oil.

Conversion of oil-fired units to use of a coal oil-mixture would represent only a 50% solution to the oil displacement problem. It is not a proven concept and was not evaluated in depth. The uncertainties involved in adapting the JEA boilers to burn such a mixture also contributed to its elimination as a presently viable option.

PURCHASE FROM GEORGIA POWER'S VOGTLE NUCLEAR UNITS

The final alternative to the construction of SJRPP 1 and 2 considered was the possibility of purchasing part ownership of Georgia Power Company's Plant Vogtle which involves two nuclear units in the 1,150 mw class totaling 150 mw. However, its estimated cost of production for 550 mw, comparable to SJRPP, including interest during construction would total \$1522 billion compared to \$983 million for SJRPP. This much higher initial capital cost would lead to higher total capital and energy costs in the early years of operation, thereby lessening the attractiveness of Plant Vogtle as an alternative to SJRPP.

CONSTRUCTION OF SJRPP UNITS 1 and 2

The units which the applicants propose to construct are two coal-fired generators of the 550 mw class. The applicants demonstrated that certain economies of scale are associated with the joint ownership of such large units which enhance the economic viability of the proposal. In addition, the joint venture will make maximum utilization of JEA's ability to raise capital at relatively low costs, thereby lowering the fixed costs associated with the unit. The ability to adapt the boilers to the use of oil or gas has been engineered into the design of the units, so that conversion, if it proves necessary, will be less expensive than for a unit designed to burn one fuel exclusively.

To assess the economic viability of the proposal, it is necessary to make certain assumptions concerning the future relationships between the costs of coal and oil during the life of the proposed units. Various scenarios were presented and assessed during this proceeding. Each scenario included assumptions as to the units' heat rate and capacity factors over time; the cost of capital which would be associated with the construction of the units; and, perhaps most critically, the relationship between the costs of oil and coal during the life of the project. One set of assumptions concerning future escalation rates of fuel which we regard as reasonable and useful for purposes of the analysis are those formulated by Data Resources, Inc. Under this set of assumptions, the Commission staff computed the "expected case" savings in fuel costs for FPL associated with the construction of SJRPP 1 and 2 to reach \$29,604,000 in 1986; \$125,717,000 in 1990; and \$654,262,000 in the year 2000. The corresponding fuel savings which would be realized by JEA under these assumptions would amount to \$95,985,000 in 1986; \$235,055,000 in 1990; and \$804,027,000 in the year 2000. In total, Peninsular Florida would realize an estimated \$10 billion (nominal dollars) in savings under this "expected case" scenario.

We also examined a "worst case" scenario utilizing a higher estimated cost of capital and estimates of fuel escalation rates compiled by Chase Econometrics, which project a smaller differential between the costs of coal and oil and are thus less favorable to the application in terms of economic justification. Under these "worst case" assumptions, JEA's projected fuel savings would be \$94,298,000 in 1986; \$254,693,000 in 1990; and \$558,887 in the year 2000. FPL's savings would be \$22,236,000 in 1986; \$134,190,000 in 1990; and \$429,889,000 in the year 2000. Total peninsular savings for the period 1986-200 under this "worst case" scenario would be \$8 billion (nominal dollars).

Having considered the record in this matter, we find that a need exists for the construction of St. Johns River Power Park Units 1 and 2 in the time frame proposed by the applicants, in that construction of the units appears to be the best available alternative to the continued use of expensive oil-fired generation, based upon the most reasonable projections of future fuel cost and our appraisal of possible alternatives. While we have therefore determined that we should certify the need for the units, we note in passing that the cost effectiveness of one aspect of the overall proposal--the building of coal transloading facilities on Blount Island--was questioned during the hearing in this matter. Our concern over this aspect does not serve to overcome the economic benefits which we believe are properly associated with the overall project; however, we reserve jurisdiction to review the prudence of the Blount Island facilities in the context of ratesetting proceedings. Accordingly, it is

ORDERED by the Florida Public Service Commission that all findings of fact contained herein are hereby approved. It is further

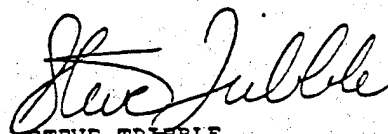
ORDERED that the application of Jacksonville Electric Authority and Florida Power and Light Company for certification of the need for St. Johns River Power Park Units 1 and 2 be and the same is hereby granted. It is further

ORDERED that this Order, together with the attached report, which we adopt and incorporate by reference, be submitted to the Department of Environmental Regulation.

By ORDER of the Florida Public Service Commission, this 26th day of June 1981.

(S E A L)

JAM:ARS


STEVE TRIBBLE
COMMISSION CLERK

State of Florida



Commissioners:
JOSEPH P. CRESSE, CHAIRMAN
GERALD L. (JERRY) GUNTER
SUSAN WAGNER LEISNER
JOHN R. MARKS, III
KATIE NICHOLS

JOSEPH D. JENKINS
Director
Electric and Gas Department
(904) 485-8501

Public Service Commission

June 26, 1981

Mr. Hamilton S. Oven, Jr.
Power Plant Siting
Department of Environmental Regulation
2562 Executive Center Circle, East
Montgomery Building
Tallahassee, Florida 32301

Dear Mr. Oven:

Transmitted herewith are five (5) copies of the Florida Public Service Commission's evaluation of the Jacksonville Electric Authority and Florida Power and Light Company's application for certification of need for the coal fired St. Johns River Power Park Units No. 1 and 2. This represents our final report and is prepared pursuant to Chapter 403.507 F.S. Should you have any questions regarding this report, please do not hesitate to contact us.

Sincerely yours,

A handwritten signature in cursive script that reads "Larry Brodman".

Assistant Director, Electric and Gas Department

A handwritten signature in cursive script, likely belonging to the Executive Director.
Executive Director

B/S/s

FLETCHER BUILDING

• 101 EAST GAINES STREET •

TALLAHASSEE 32301

"An Affirmative Action/Equal Opportunity Employer"

M E M O R A N D U M

May 28, 1981

TO : STEVE TRIBBLE, COMMISSION CLERK
FROM: ELECTRIC & GAS DEPARTMENT (TRAPP, FOXX) *RLT to F JDJ*
RE : PETITION OF JACKSONVILLE ELECTRIC AUTHORITY AND FLORIDA
POWER & LIGHT COMPANY TO DETERMINE THE NEED FOR ST. JOHNS
RIVER POWER PARK UNITS NO. 1 AND 2 AND RELATED FACILITIES.

Issues

1. The salient issue in this case is which of the following alternatives will minimize the future cost of electricity to the customers of the Jacksonville Electric Authority (JEA) and Florida Power & Light Company (FPL):
 1. Construction of St. Johns River Power Park Units 1 and 2 (SJRPP 1 and 2).
 2. Construction of additional 500 KV transmission lines to Georgia and within Florida and/or the acceleration of currently planned lines to purchase an additional 1000 MW of firm coal-by-wire (CBW) from 1984 through 1989, 500 MW in 1990, or purchase of 470 MW of Georgia Power's Vogtle Nuclear Units 1 and 2 (1150 MW each) with scheduled in-service dates of 5/85 and 11/87.
 3. Conversion of existing oil fired units to coal, coal-oil-mix (COM), or coal-water-mix.

4. Construction of additional 500 KV transmission lines to Georgia and within Florida to purchase coal fired energy on a non-firm (economy) basis, possibly on a split-the-savings basis.
 5. Additional conservation in excess of the FEECA goals.
 6. Continue to burn imported oil.
- II. Whether the Blount Island coal transloading facilities associated with SJRPP 1 and 2 are needed.
- III. Whether the fuel procurement methodology utilized by JEA/FPL is structured in a manner conducive to the efficient and economical supply of coal to SJRPP 1 and 2.

Recommendations:

- I. The Electric & Gas Department suggests that the Commission certify the need for the proposed jointly-owned JEA/FPL St. Johns River Power Park Units 1 and 2 and associated transmission facilities.
 - II. The Electric & Gas Department suggests that the Commission reserve the right to review in future rate proceedings the prudence of expenditures related to the construction and operation of SJRPP 1 and 2 and, in particular, those expenditures related to the proposed Blount Island coal transloading facilities associated with SJRPP 1 and 2.
-

MEMORANDUM - STEVE TRIBBLE
MAY 28, 1981
PAGE 3

III. The Electric & Gas Department is of the opinion that the methodology employed by JEA/FPL to identify available cost reserves, establish a group of qualified suppliers, select a preferred group of suppliers and initiate the coal contracting process appears to be one of the most comprehensive and sophisticated approaches to coal procurement employed by a Florida utility to date.

Discussion

I. Pursuant to the record in this case, the construction of SJRPP 1 and 2 appears to be the most economical alternative available at this time for the purpose of reducing the consumption of oil in Peninsular Florida, JEA, and FPL. This opinion is conditioned upon the materialization of current projections of coal and oil prices and is based on the information available at this time regarding the estimated cost and uncertainty associated with potential alternatives to the construction of SJRPP 1 and 2. Late-filed exhibit 25 (a copy of which is attached) illustrates the projected savings to electric customers in Peninsular Florida, JEA, and FPL should SJRPP 1 and 2 be constructed as an alternative to the continued use of oil fired generation. Estimated Peninsular savings associated with the construction of SJRPP 1 and 2 range from approximately \$8 billion (nominal dollars) under the "worst case" scenario, to \$10 billion (nominal dollars) under the "expected case" scenario for the period of 1986 through 2000.

ORDER NO: 10108
DOCKET NO: 810045-EU

MEMORANDUM - STEVE TRIBBLE
MAY 28, 1981
PAGE 4

II. Based on the record in this case, it appears that the construction and operation of the Blount Island coal transloading facilities, as currently proposed, is not cost-justified. Regardless of this, however, it appears that the economics relative to the construction of SJRPP 1 and 2 project, as a whole, is cost-justified, and warrants certification.

RLT:lkf

CC: Chairman Cresse
Commissioner Gunter
Commissioner Leisner
Commissioner Marks
Commissioner Nichols
Mr. David Swafford
Mr. William Talbott

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OF COUNSEL
CARLOS A. ADARZ
W. ROBERT FOXES

May 27, 1981

Joseph A. McGlothlin, Esquire
Staff Counsel
Public Service Commission
101 E. Gaines Street
Tallahassee, Florida 32301

Re: St. Johns River Power Park Units #1 and #2
Docket No. 810045-EU

Dear Joe:

Enclosed is late-filed Exhibit 25 (consisting of 10 sheets) and late-filed Exhibit 25A (consisting of 1 sheet labeled Sheet 5A).

These typed exhibits should be substituted for the handwritten version of late-filed Exhibit 25 which was submitted just prior to the close of the hearing in this docket on May 23. The typed exhibit includes a few minor corrections to the handwritten exhibit previously filed.

Concurrently herewith, we are filing the original and 16 copies of these exhibits with the Commission's clerk, and are furnishing a copy by hand to Joe Jenkins.

Also, by copy of this letter we are furnishing these exhibits to each Intervenor, or its counsel.

If you have any questions concerning these exhibits, please give me a call.

Very truly yours,

Rich Melson

Richard D. Melson

RDM/eb
Enclosures

cc: Joe Jenkins
All Intervenors

PROJECTED SURPP SAVINGS - COMPOSITE - "WORST CASE" SCENARIO

Year	FUEL				CAPITAL + O&M				SAVINGS		BLUANT IS. & TRANS.		SAVINGS		
	Cost of Oil \$/BBL	\$/kwh	Cost of Coal \$/ton	\$/kwh	Fuel Savings \$/kwh	FPL's SURPP Output 000	Total Fuel Expense 000	Investment Revenue Requirements 000	Annual O&M Expense 000	Total Annual Costs 000	Total Savings \$/kwh	Total Annual Cost 000	\$/kwh	Total Net Savings 000	\$/kwh
1981	27.90	4.68	38.76	1.64	5.86	3,372,600	197,634	61,101	19,830	80,931	2.40	116,703	3.46	8,632	.26
1982	29.55	4.96	42.53	1.79	6.45	5,059,000	326,306	102,448	32,124	134,572	2.66	191,774	3.79	8,230	.16
1983	34.00	5.70	46.64	1.96	7.09	6,745,200	512,195	305,197	46,204	351,601	5.21	180,595	2.68	149,504	.46
1984	38.00	6.37	50.79	2.14	7.33	6,745,200	629,327	288,769	49,914	338,683	5.02	290,644	4.31	30,832	.46
1985	44.00	7.38	55.37	2.33	7.09	6,745,200	762,208	274,752	53,894	338,643	4.97	389,892	5.77	30,510	.45
1986	50.00	8.39	60.04	2.53	6.45	6,745,200	888,342	268,982	62,866	331,848	4.92	429,246	6.36	29,205	.45
1987	55.00	9.23	66.02	2.78	6.45	6,745,200	977,379	262,232	71,320	333,552	4.97	522,093	7.74	29,914	.44
1988	65.00	10.90	71.45	3.01	6.45	6,745,200	1,092,722	256,048	85,530	341,578	5.06	641,827	9.52	29,371	.44
1989	75.00	12.58	77.32	3.25	9.33	6,745,200	1,255,282	250,332	92,342	345,480	5.12	751,144	11.14	28,873	.43
1990	85.00	14.26	83.73	3.52	10.74	6,745,200	1,359,389	247,612	107,720	355,092	5.19	829,514	12.30	28,638	.42
1991	90.00	15.10	90.35	3.80	11.30	6,745,200	1,359,389	247,612	107,720	355,092	5.27	905,190	13.42	28,412	.42
1992	100.00	16.77	97.63	4.11	12.66	6,745,200	1,359,389	247,612	116,354	361,276	5.35	977,520	14.49	28,191	.42
1993	105.00	17.61	105.53	4.44	13.17	6,745,200	1,359,389	247,612	116,354	361,276	5.35	977,520	14.49	28,191	.41
1994	115.00	19.29	114.06	4.80	14.49	6,745,200	1,007,739	262,232	73,320	333,552	5.01	664,827	9.93	29,117	.44
1995	120.00	20.13	121.28	5.19	14.94	6,745,200	1,092,722	256,048	85,530	341,578	5.06	669,469	9.93	29,117	.44
1996	130.00	21.81	133.27	5.61	16.20	6,745,200	1,175,013	253,138	92,342	345,480	5.12	751,144	11.14	28,873	.43
1997	140.00	23.48	144.07	6.06	17.42	6,745,200	1,255,282	250,332	92,342	345,480	5.12	829,514	12.30	28,638	.42
1998	150.00	25.16	155.72	6.55	18.61	6,745,200	1,359,389	247,612	107,720	355,092	5.19	905,190	13.42	28,412	.42
1999	160.00	26.84	168.32	7.08	19.76	6,745,200	1,359,389	247,612	107,720	355,092	5.27	977,520	14.49	28,191	.42
2000	165.00	27.68	169.94	7.66	20.02	6,745,200	1,359,389	247,612	116,354	361,276	5.35	989,113	14.66	27,970	.41

Total 8,038,882

8. Composite totals differ from sum of JEA and FPL totals due to rounding.

1. Fuel - Chase Forecast - Exhibit ROC-6
2. Capacity Factor - 70%
3. Heat Rates - SURPP - 10,100 Btu/kwh
FPL oil - 10,000 Btu/kwh
JEA oil - 10,800 Btu/kwh
4. O&M Cost - escalated at 8% annually

5. Cost of Capital - JEA - 10.5%
FPL - Debt - 16%
Preferred - 14%
6. Ownership - JEA 80%
FPL 20%
7. Blount Island Cost - JEA 201.6 (includes transmission)
FPL 28.8
Total 230.4 Million

JEA
PROJECTED SJRPP SAVINGS - "WORST CASE" SCENARIO
1986 - 2000

Year	(1) Cost of Oil \$/BBL	(2) \$/twh	(3) Cost of Coal \$/twh	(4) \$/twh	(5) Fuel Saving \$/twh	(6) JEA's SJRPP Output 000 twh	(7) Total Fuel Saving 000 \$	(8) Net Debt Service at 10.5% 000 \$	(9) Renewal and Replacement Fund 000 \$	(10) Plant O&M 000 \$	(11) Total (8)+(9)+(10) 000 \$	(12) Total \$/twh	(13) Net Saving 000 \$	(14) Net Saving \$/twh	(15) Blount Island & Tenn. \$/twh	(16) Net Saving \$/twh	(17) Total Saving 000 \$
1981	27.90	4.86	38.76	1.63	6.18	1,686,300	104,213	-	-	9,915	9,915	.59	94,298	5.59	-	5.59	94,298
1982	29.55	5.15	42.53	1.79	6.80	2,579,450	172,003	99,127	15,489	16,062	16,062	.64	155,941	6.17	-	6.17	155,941
1983	34.00	5.92	46.64	1.96	8.31	3,372,600	280,263	86,736	15,489	23,102	137,718	4.08	142,545	4.23	.47	3.76	126,568
1984	38.00	6.62	50.79	2.14	9.81	3,372,600	310,852	83,638	15,489	24,958	127,183	3.77	203,669	6.04	.47	5.57	187,692
1985	44.00	7.66	55.37	2.33	11.29	3,372,600	380,767	80,540	15,489	26,947	126,074	3.74	254,693	7.55	.47	7.08	238,716
1986	50.00	8.71	60.04	2.53	13.85	3,372,600	448,893	78,391	15,489	29,106	125,115	3.71	275,530	8.17	.47	7.70	259,553
1987	55.00	9.58	66.02	2.78	15.71	3,372,600	467,105	78,391	15,489	31,413	125,113	3.72	323,580	9.59	.47	9.12	307,603
1988	65.00	11.32	71.45	3.05	17.03	3,372,600	513,647	78,391	15,489	36,660	127,842	3.87	383,107	10.06	.47	9.59	323,706
1989	75.00	13.06	77.32	3.35	18.33	3,372,600	574,354	78,391	15,489	39,584	130,540	3.96	383,107	11.36	.47	10.89	367,110
1990	85.00	14.81	83.73	3.62	19.58	3,372,600	618,198	78,391	15,489	42,765	133,474	4.05	376,361	11.75	.47	11.28	360,314
1991	90.00	15.68	90.35	3.80	20.79	3,372,600	650,355	78,391	15,489	46,171	140,051	4.15	478,147	14.18	.47	13.71	462,170
1992	100.00	17.42	97.63	4.11	21.08	3,372,600	701,164	78,391	15,489	49,881	143,761	4.26	516,594	15.32	.47	14.85	500,417
1993	105.00	18.29	105.53	4.44	21.08	3,372,600	710,944	78,391	15,489	53,860	147,740	4.38	553,424	16.41	.47	15.94	537,447
1994	115.00	20.03	114.06	4.80	21.08	3,372,600	710,944	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
1995	120.00	20.90	123.28	5.19	21.08	3,372,600	539,835	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
1996	130.00	22.64	131.27	5.61	21.08	3,372,600	574,354	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
1997	140.00	24.39	144.07	6.06	21.08	3,372,600	618,198	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
1998	150.00	26.13	155.72	6.55	21.08	3,372,600	650,355	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
1999	160.00	27.87	168.32	7.08	21.08	3,372,600	701,164	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
2000	165.00	28.74	181.94	7.66	21.08	3,372,600	710,944	78,391	15,489	58,177	152,057	4.51	558,887	16.57	.47	16.10	542,910
Total																	4,906,047

Assumptions

1. Fuel escalation rates based on October, 1980 Chase Econometrics study as shown in Exhibit ROC-6.
2. Capacity factor of 70%.
3. Heat rates of 10,100 for SJRPP and 10,600 for oil.
4. JEA cost of capital of 10.5%.
5. Interest during construction capitalized through 1987.
6. Renewal and replacement fund requirements based on 12.5% of debt service.
7. O&M escalated at 8% annually.
8. 50% Blount Island and 100% transmission cost, with I.D.C. of \$147.5 million.

FPL
PROJECTED SURP SAVINGS - "WORST CASE" SCENARIO

Year	FUEL				CAPITAL & O&M				SAVINGS		BLOUNT ISLAND COST*		NET SAVINGS	
	Cost of Oil \$/bbl	Cost of Oil ¢/kwh	Cost of Coal \$/ton	Cost of Coal ¢/kwh	Fuel Savings ¢/kwh	FPL's Surp Output 000 kwh	Total Fuel Savings 000 \$	Investment Revenue Requirements 000 \$	Annual O&M Expense 000 \$	Total Annual Costs 000 \$	Total Savings 000 \$	Total Annual Costs 000 \$	Total Net Savings 000 \$	FPL's Surp Output 000 kwh
1981	27.90	4.50	38.76	1.64	2.86	1,686,300	91,252	61,101	9,915	71,016	22,236	1,132	8,632	51
1982	29.55	4.77	42.51	1.79	2.98	1,544,047	102,468	102,468	16,062	118,530	35,537	1,40	8,230	33
1983	34.00	5.48	46.64	1.96	3.52	251,933	190,781	190,781	21,102	211,883	38,050	1,13	15,194	45
1984	38.00	6.13	50.79	2.14	3.99	298,475	186,544	186,544	24,957	211,501	46,974	2,58	14,855	41
1985	44.00	7.10	55.37	2.33	4.77	343,668	182,531	182,531	26,947	209,478	53,714	3,96	14,533	42
1986	50.00	8.06	60.64	2.53	5.51	361,543	178,723	178,723	29,105	207,829	61,114	4,56	14,228	41
1987	55.00	8.87	66.02	2.78	6.09	405,387	175,102	175,102	31,433	206,535	68,852	5,90	13,937	41
1988	65.00	10.48	71.45	3.01	7.47	421,575	171,650	171,650	33,660	205,312	76,720	6,10	13,659	40
1989	75.00	12.10	77.32	3.25	8.85	463,732	168,152	168,152	35,944	204,096	84,765	6,07	13,394	39
1990	85.00	13.71	83.21	3.52	10.19	477,560	165,196	165,196	38,790	203,986	93,108	6,08	13,140	38
1991	100.00	16.13	97.67	4.11	12.02	518,031	162,168	162,168	42,765	204,933	102,429	6,09	12,896	37
1992	103.00	16.94	105.51	4.44	13.75	557,154	159,258	159,258	46,171	205,429	111,532	6,12	12,611	36
1993	113.00	18.55	114.06	4.80	15.36	594,927	156,452	156,452	49,880	206,332	120,936	6,15	12,415	36
1994	120.00	19.35	123.28	5.19	16.52	631,688	153,732	153,732	53,860	207,592	129,889	6,20	12,214	35
1995	130.00	20.97	133.27	5.61	17.64	639,108	151,042	151,042	58,177	209,219	137,408	6,20	12,40	35
1996	140.00	22.58	144.07	6.06	18.71									
1997	150.00	24.19	155.72	6.55	19.77									
1998	160.00	25.81	168.32	7.08	20.83									
1999	165.00	26.61	181.94	7.66	21.89									
2000														
Total						3,132,600	639,108	151,042	209,219	6,20	137,408	6,20	12,40	

Assumptions:
Heat Rates - 011,10,000 Btu/kwh
Coal 10,100 Btu/kwh
Fuel Cost - Chase economic forecast per ROC-6
O&M Cost - Provided by JEA
FPL Ownership (220 MW - Buyback 330 MW) Total 550 MW
Capacity Factor - 70%

*Derivation of Blount Island & SJRPP Investment Revenue Requirements is attached

FPL
DETAIL - TOTAL "WORST CASE" ANNUAL COSTS

Year	Straight Line Depreciation	Operating & Maintenance Expenses	Return (1)	Other Operating Expenses (2)	FPL Payment - JEA Debt (3) Service	FPL Payment Renewal & Repl. Fund (3)	Total FPL Revenue Requirements	Total FPL Annual Costs w/o O&M
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
1986	6,591	9,915	33,060	21,450			71,016	61,101
1987	11,359	16,062	55,756	35,333		9,293	118,510	102,448
1988	11,359	23,102	53,161	33,330	83,638	9,293	213,883	190,781
1989	11,359	24,957	50,299	31,955	83,638	9,293	211,501	186,544
1990	11,359	26,947	47,589	30,652	83,638	9,293	209,478	182,531
1991	11,359	29,106	45,017	29,416	83,638	9,293	207,829	178,723
1992	11,359	31,433	42,570	28,242	83,638	9,293	206,535	175,102
1993	11,359	33,962	40,239	27,121	83,638	9,293	205,612	171,650
1994	11,359	36,660	38,013	26,049	83,638	9,293	205,012	168,352
1995	11,359	39,594	35,880	25,026	83,638	9,293	204,790	165,196
1996	11,359	42,765	33,834	24,044	83,638	9,293	204,933	162,168
1997	11,359	46,171	31,868	23,100	83,638	9,293	205,429	159,258
1998	11,359	49,880	29,974	22,188	83,638	9,293	206,332	156,452
1999	11,359	53,860	28,137	21,305	83,638	9,293	207,592	153,732
2000	11,359	58,177	26,320	20,432	83,638	9,293	209,219	151,042

- (1) Calculated based on capital costs as follows: Debt 16%; Preferred 14%; Equity 17%
- (2) Includes income taxes and taxes other than income taxes.
- (3) Based on a 10.5% interest rate on JEA bonds

FPL
BLOUNT ISLAND - "WORST CASE" COST

	FPL Capital Revenue Requirement*	FPL Payment JEA Debt Service	FPL Payment Renewal & Replace. Fund	Total 000 \$	¢/kwh
1986	8,632	0	0	8,632	.51
1987	8,230	0	0	8,230	.33
1988	7,872	6,590	732	15,194	.45
1989	7,533	6,590	732	14,855	.43
1990	7,211	6,590	732	14,533	.42
1991	6,906	6,590	732	14,228	.41
1992	6,615	6,590	732	13,937	.41
1993	6,337	6,590	732	13,659	.40
1994	6,072	6,590	732	13,394	.39
1995	5,318	6,590	732	13,140	.38
1996	5,574	6,590	732	12,896	.38
1997	5,339	6,590	732	12,661	.37
1998	5,113	6,590	732	12,435	.36
1999	4,892	6,590	732	12,214	.36
2000	4,671	6,590	732	11,993	.35

Assumptions:

*FPL's portion of Blount Island Total Cost = 28.8 million

Capital cost assumptions are based on: Debt 16%
Preferred 14%
Equity 17%

PROJECTED SURPP SAVINGS - COMPOSITE "EXPECTED CASE" SCENARIO

Year	FUEL				CAPITAL AND O&M				SAVINGS		BLOUNT IS. & TRANS.		SAVINGS	
	Cost of Oil \$/BBL	Cost of Oil ¢/kwh	Cost of Coal \$/ton	Cost of Coal ¢/kwh	Fuel Savings ¢/kwh	SURPP Output 000 kwh	Total Fuel Savings 000 \$	Investment Rev. Rec't. 000 \$	Annual O&M Expense 000 \$	Total Annual Cost 000 \$	Total Savings 000 \$	Total Annual Cost 000 \$	Total Net Savings 000 \$	Total Net Savings ¢/kwh
1981	29.85	5.01	46.56	1.95										
1982	34.31	5.76	51.12	2.15										
1983	38.58	6.47	56.16	2.36										
1984	43.13	7.23	62.64	2.64										
1985	48.61	8.15	70.80	2.98										
1986	55.06	9.24	78.72	3.31	5.93	3,372,600	199,995	54,408	19,810	74,238	2,20	125,757	3.73	7.687
1987	61.75	10.36	86.64	3.65	6.71	5,059,000	339,459	91,161	32,124	123,285	2,44	216,174	4.27	7.320
1988	69.13	11.60	95.28	4.01	7.59	6,745,200	511,961	258,404	46,704	304,608	4,51	207,153	3.07	26.118
1989	77.38	12.98	104.40	4.39	8.59	6,745,200	579,413	244,965	49,914	294,879	4,37	284,534	4.22	25.827
1990	86.49	14.51	114.24	4.81	9.70	6,745,200	654,284	239,282	53,894	293,176	4,35	361,108	5.35	25.547
1991	96.10	16.12	124.08	5.22	10.90	6,745,200	735,227	233,777	58,210	291,987	4,32	443,290	6.57	25.285
1992	106.58	17.88	134.64	5.67	12.21	6,745,200	821,589	228,433	62,666	291,299	4,32	533,290	7.89	25.034
1993	118.17	19.82	146.40	6.16	13.66	6,745,200	921,394	224,950	67,924	292,874	4,34	628,520	9.32	24.995
1994	130.94	21.96	158.88	6.69	15.27	6,745,200	1,029,992	222,103	73,320	295,423	4,38	714,569	10.89	24.564
1995	145.08	24.36	172.08	7.24	17.10	6,745,200	1,153,429	219,378	79,188	298,566	4,43	854,863	12.67	24.145
1996	158.53	26.59	184.32	7.76	18.83	6,745,200	1,270,121	216,764	85,510	302,294	4,48	967,827	14.35	24.115
1997	171.86	28.83	197.52	8.31	20.52	6,745,200	1,384,115	214,251	92,342	306,593	4,55	1,077,522	15.97	23.913
1998	186.31	31.25	211.44	8.90	22.35	6,745,200	1,507,552	211,810	99,760	311,590	4,62	1,195,962	17.73	23.717
1999	201.93	33.87	226.82	9.55	24.32	6,745,200	1,640,433	209,482	107,720	317,202	4,71	1,323,231	19.62	23.546
2000	218.92	36.72	243.12	10.23	26.49	6,745,200	1,786,803	207,160	116,354	323,514	4,80	1,463,289	21.64	23.356
Total 10,080,810														
Total 210.4 million														

1. Fuel - DRI fuel escalation rates per FSC staff
2. Capacity Factor - 70%
3. Heat rates - SURPP - 10,100 Btu/kwh
FPL - 10,000 Btu/kwh
JFA OIL - 10,800 Btu/kwh
4. O&M Cost - escalated at 6% annually
5. Cost of Capital - JFA - 90%
FPL - Debt - 11%
Preferred - 10%
6. Ownership - JFA 80%
FPL 20%
7. Blount Island Cost - JFA 201.6 (includes transmission)
FPL 28.8
8. Composite totals differ from sum of JFA and FPL totals due to rounding.

JEA
PROJECTED SCRPP SAVINGS - "EXPECTED CASE" SCENARIO
1986 - 2000

Year	(1) Cost of Oil \$/Bbl	(2) \$/kwh	(3) Cost of Coal \$/ton	(4) \$/kwh	(5) Fuel Saving \$/kwh	(6) JEA's SCRPP Output 000 kwh	(7) Total Fuel Saving 000 \$	(8) Net Debt Service at 9% 000 \$	(9) JEA SCRPP Fixed Costs and O&M Renewal and Replacement 000 \$	(10) O&M 000 \$	(11) Total 000 \$	(12) Total \$/kwh	(13) Net Saving (7)-(11) 000 \$	(14) Net Saving \$/kwh	(15) Blount Island & Trans. \$/kwh	(16) Net Saving \$/kwh	(17) Total Saving 000 \$
1981	29.85	5.20	46.56	1.96	6.28	1,666,300	105,900	-	-	9,915	9,915	.59	95,985	5.69	-	5.69	95,985
1982	34.33	5.98	51.12	2.15	7.11	2,529,450	179,840	83,086	-	16,062	16,062	.64	163,776	6.47	-	6.47	163,776
1983	38.58	6.72	56.16	2.36	8.03	3,372,600	270,820	73,305	12,604	23,102	118,792	3.52	152,028	4.51	.39	4.12	138,925
1984	43.13	7.51	62.64	2.64	9.09	3,372,600	306,569	71,086	12,604	24,958	110,867	3.29	195,702	5.78	.39	5.39	182,509
1985	48.61	8.47	70.80	2.98	10.25	3,372,600	345,592	68,868	12,604	26,947	110,637	3.28	235,055	6.97	.39	6.58	221,452
1986	55.06	9.59	78.72	3.31	12.89	3,372,600	414,728	66,550	12,604	29,106	110,578	3.28	277,946	8.24	.39	7.85	264,443
1987	61.75	10.76	86.64	3.65	15.42	3,372,600	486,329	66,147	12,604	31,433	110,687	3.34	324,041	9.61	.39	9.22	310,938
1988	69.13	12.04	95.28	4.01	18.03	3,372,600	563,663	66,147	12,604	33,962	112,713	3.42	373,616	11.08	.39	10.69	360,513
1989	77.38	13.48	104.40	4.39	21.63	3,372,600	608,080	66,147	12,604	36,600	115,411	3.51	428,252	12.70	.39	12.31	415,149
1990	86.49	15.06	114.24	4.81	25.62	3,372,600	669,461	66,147	12,604	39,594	118,345	3.60	489,735	14.52	.39	14.13	476,632
1991	96.10	16.74	124.08	5.22	29.94	3,372,600	729,493	66,147	12,604	42,765	121,516	3.70	547,945	16.25	.39	15.86	534,871
1992	106.58	18.56	134.64	5.67	35.17	3,372,600	804,060	66,147	12,604	46,171	124,922	3.81	604,571	17.93	.39	17.54	591,468
1993	118.17	20.50	146.40	6.16	41.42	3,372,600	884,060	66,147	12,604	49,881	128,632	3.93	665,615	19.74	.39	19.35	652,112
1994	130.94	22.81	158.88	6.69	48.63	3,372,600	940,955	66,147	12,604	53,860	132,611	4.06	731,449	21.69	.39	21.30	719,346
1995	145.08	25.27	172.08	7.24	56.12	3,372,600	995,000	66,147	12,604	58,177	136,928		804,027	23.84	.39	23.45	790,474
1996	158.53	27.61	184.32	7.76	64.03	3,372,600	1,048,000	66,147	12,604								
1997	171.86	29.94	197.52	8.31	72.35	3,372,600	1,099,000	66,147	12,604								
1998	186.31	32.45	211.44	8.90	81.25	3,372,600	1,148,000	66,147	12,604								
1999	201.93	35.17	226.80	9.55	90.70	3,372,600	1,195,000	66,147	12,604								
2000	218.92	38.13	243.12	10.23	100.70	3,372,600	1,240,000	66,147	12,604								
Total: 5,919,415																	

- Assumptions:
1. Fuel escalation rates based on Data Resources, Inc. study provided by PSC staff.
 2. Capacity factor of 70%.
 3. Heat rate of 10,100 for SCRPP and 10,800 for oil.
 4. JEA cost of capital of 9%.
 5. Interest during construction capitalized through 1987.
 6. Renewal and replacement fund requirements based on 12.5% of debt service.
 7. O&M escalated at 9% annually.
 8. 50% Blount Island and 100% transmission cost, with I.D.C. of \$138.5 million.

FPL

Sheet 7 of 10

Total 4,159,960

Heat Rates - Oil 10,000 Btu/kwh

Capacity Factor - 70%

tion of Blount Island & SJRPP Investment Revenue Requirements is attached.

FPL
DETAIL - TOTAL "EXPECTED" ANNUAL COSTS

Year	Straight Line Depreciation	Operating & Maintenance Expenses	Return (1)	Other Operating Expenses (2)	FPL Payment - JEA Debt (3)	FPL Payment - Renewal & (3) Repl. Fund	Total FPL Annual Costs	Total FPL Annual Costs w/o O&M
	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
1906	6,591	9,915	27,141	20,676			64,323	54,408
1987	11,359	16,062	45,775	34,027	68,063	7,563	107,223	91,161
1988	11,359	23,102	43,644	32,085	68,063	7,563	185,816	162,714
1989	11,359	24,957	41,295	30,776	68,063	7,563	184,013	159,056
1990	11,359	26,947	39,070	29,537	68,063	7,563	182,539	155,592
1991	11,359	29,106	36,958	28,362	68,063	7,563	181,411	152,305
1992	11,359	31,433	34,950	27,244	68,063	7,563	180,512	149,179
1993	11,359	33,962	33,035	26,179	68,063	7,563	180,161	146,199
1994	11,359	36,660	31,207	25,160	68,063	7,563	180,012	143,352
1995	11,359	39,594	29,457	24,185	68,063	7,563	180,221	140,627
1996	11,359	42,765	27,778	23,250	68,063	7,563	180,778	138,013
1997	11,359	46,171	26,163	22,352	68,063	7,563	181,671	135,500
1998	11,359	49,880	24,608	21,486	68,063	7,563	182,959	133,079
1999	11,359	53,860	23,100	20,646	68,063	7,563	184,591	130,731
2000	11,359	58,177	21,608	19,816	68,063	7,563	186,586	128,409

- (1) Calculated based on capital costs as follows: Debt 11%; Preferred 10%; Equity 17%
- (2) Includes income taxes and taxes other than income taxes.
- (3) Based on a 9% interest rate on JEA bonds.

FPL
BLOUNT ISLAND - "EXPECTED COST"

	FPL Capital Revenue Requirement*	FPL Payment - JEA Debt Service	FPL Payment Renewal & Replace. Fund	Total 000 \$	Total ¢/kwh
1986	7,687	0	0	7,687	.46
1987	7,320	0	0	7,320	.29
1988	7,009	5,405	601	13,015	.39
1989	6,718	5,405	601	12,724	.38
1990	6,438	5,405	601	12,444	.37
1991	6,176	5,405	601	12,182	.36
1992	5,925	5,405	601	11,931	.35
1993	5,686	5,405	601	11,892	.35
1994	5,455	5,405	601	11,461	.34
1995	5,236	5,405	601	11,242	.33
1996	5,026	5,405	601	11,032	.33
1997	4,824	5,405	601	10,830	.32
1998	4,628	5,405	601	10,634	.32
1999	4,437	5,405	601	10,443	.31
2000	4,247	5,405	601	10,253	.30

Assumptions:

*FPL's portion of Blount Island total cost = 28.8 million

Capital cost assumptions are based on Debt 11%; Preferred 10%; Equity 17%

FCG - PROJECTED COAL UNIT SAVINGS

Year	FUEL						CAPITAL + O&M				SAVINGS	
	Cost of Oil		Cost of Coal		Fuel Savings	FPL's SURPP Output 000 kwh	Total Fuel Savings 000 \$	Investment* Revenue Requirements 000 \$	Annual O&M Expense 000 \$	Total Fixed Costs 000 \$	Total Net Savings 000 \$	
	\$/BBL	¢/kwh	\$/ton	¢/kwh	¢/kwh							¢/kwh
1981	36.00	5.81	50.50	2.20	3.61	3,372,600	195,948	89,540	24,886	114,406	81,522	2.42
1982	39.60	6.39	55.55	2.41	3.98	3,372,600	215,846	89,540	26,877	116,417	99,429	2.95
1983	43.56	7.03	61.11	2.66	4.37	3,372,600	237,094	89,540	29,027	118,567	118,527	3.51
1984	47.92	7.73	67.22	2.92	4.81	3,372,600	261,039	89,540	31,349	120,889	140,150	4.16
1985	52.71	8.50	73.94	3.21	5.29	3,372,600	287,008	89,540	33,857	123,397	163,611	4.85
1986	57.98	9.35	81.33	3.54	5.81	3,372,600	315,675	89,540	36,566	126,106	189,569	5.62
1987	63.78	10.29	89.46	3.89	6.40	3,372,600	347,715	89,540	39,491	129,031	218,684	6.48
1988	70.15	11.31	96.41	4.28	7.03	3,372,600	382,116	89,540	42,650	132,190	249,926	7.41
1989	77.17	12.45	108.25	4.71	7.74	3,372,600	420,563	89,540	46,062	135,602	284,961	8.45
1990	84.89	13.69	119.08	5.18	8.51	3,372,600	462,383	89,540	49,747	139,287	323,096	9.58
1991	93.38	15.06	130.99	5.70	9.36	3,372,600	508,925	89,540	53,727	143,267	365,658	10.84
1992	102.72	16.57	144.09	6.26	10.31	3,372,600	559,514	89,540	58,025	147,565	411,949	12.21
1993	112.99	18.22	158.50	6.89	11.33	3,372,600	615,500	89,540	62,667	152,207	463,293	13.74
1994	124.29	20.05	174.35	7.58	12.47	3,372,600	677,218	89,540	67,681	157,221	519,997	15.42
1995	136.72	22.05	191.78	8.34	13.71	3,372,600	744,670	89,540	73,095	162,635	582,035	17.26
1996	150.39	24.26	210.96	9.17	15.09	3,372,600						
1997	165.43	26.68	232.05	10.09	16.59	3,372,600						
1998	181.97	29.35	255.26	11.10	18.25	3,372,600						
1999	200.17	32.29	280.78	12.21	20.08	3,372,600						
2000	220.18	35.51	308.86	13.43	22.08	3,372,600						

1/ Carrying charges at 11%, 30-yr. levelized.

Unit size = 550 MW

Capital Cost (1986 \$) \$1,480/kw including IDC

O&M: Fixed \$18.82/kw

Var. 4.31 mill/kwh

Escalation at 8%

Fuel cost from FCG Economic Oil Displacement Study

ESC at 10% for oil & coal

FPL
BLOUNT ISLAND - "EXPECTED COST"

	FPL Capital Revenue Requirement*	FPL Payment - JEA Debt Service	FPL Payment Renewal & Replace. Fund	Total 000 \$	¢/kwh
1986	7,687	0	0	7,687	.46
1987	7,320	0	0	7,320	.29
1988	7,009	5,405	601	13,015	.39
1989	6,718	5,405	601	12,724	.38
1990	6,438	5,405	601	12,444	.37
1991	6,176	5,405	601	12,182	.36
1992	5,925	5,405	601	11,931	.35
1993	5,686	5,405	601	11,892	.35
1994	5,455	5,405	601	11,461	.34
1995	5,236	5,405	601	11,242	.33
1996	5,026	5,405	601	11,032	.33
1997	4,824	5,405	601	10,830	.32
1998	4,628	5,405	601	10,634	.32
1999	4,437	5,405	601	10,443	.31
2000	4,247	5,405	601	10,253	.30

Assumptions:

*FPL's portion of Blount Island total cost = 28.8 million

Capital cost assumptions are based on Debt 11%; Preferred 10%; Equity 17%

FCG - PROJECTED COAL UNIT SAVINGS

Year	FUEL						CAPITAL + O&M				SAVINGS	
	Cost of Oil		Cost of Coal		Fuel Savings	FPL's SJRPP Output 000 kwh	Total Fuel Savings 000 \$	Investment*1/ Revenue Requirements 000 \$	Annual O&M Expense 000 \$	Total Fixed Costs 000 \$	Total Net Savings 000 \$	
	\$/BBL	¢/kwh	\$/con	¢/kwh	¢/kwh						¢/kwh	
1981	36.00	5.81	50.50	2.20	3.61							
1982	39.60	6.39	55.55	2.41	3.98							
1983	43.56	7.03	61.11	2.66	4.37							
1984	47.92	7.73	67.22	2.92	4.81							
1985	52.71	8.50	73.94	3.21	5.29							
1986	57.98	9.35	81.33	3.54	5.81	3,372,600	195,948	89,540	24,886	114,406	3.39	
1987	63.78	10.29	89.46	3.89	6.40	3,372,600	215,846	89,540	26,877	116,417	3.45	
1988	70.15	11.31	98.41	4.28	7.03	3,372,600	237,094	89,540	29,027	118,567	3.52	
1989	77.17	12.45	108.25	4.71	7.74	3,372,600	261,039	89,540	31,349	120,889	3.58	
1990	84.89	13.69	119.08	5.18	8.51	3,372,600	287,008	89,540	33,857	123,397	3.66	
1991	93.38	15.06	130.99	5.70	9.36	3,372,600	315,675	89,540	36,566	126,106	3.74	
1992	102.72	16.57	144.09	6.26	10.31	3,372,600	347,715	89,540	39,491	129,031	3.83	
1993	112.99	18.22	158.50	6.89	11.33	3,372,600	382,116	89,540	42,650	132,190	3.92	
1994	124.29	20.05	174.35	7.58	12.47	3,372,600	420,563	89,540	46,062	135,602	4.02	
1995	136.72	22.05	191.78	8.34	13.71	3,372,600	462,383	89,540	49,747	139,287	4.13	
1996	150.39	24.26	210.96	9.17	15.09	3,372,600	508,925	89,540	53,727	143,267	4.25	
1997	165.43	26.68	232.05	10.09	16.59	3,372,600	559,514	89,540	58,025	147,565	4.38	
1998	181.97	29.35	255.26	11.10	18.25	3,372,600	615,500	89,540	62,667	152,207	4.51	
1999	200.17	32.29	280.78	12.21	20.08	3,372,600	677,218	89,540	67,681	157,221	4.66	
2000	220.18	35.51	308.86	13.43	22.08	3,372,600	744,670	89,540	73,095	162,635	4.82	

1/ Carrying charges at 11%, 30-yr. levelized.

Unit size = 550 MW

Capital Cost (1986 \$) \$1,480/kw including IDC

O&M: Fixed \$18.82/kw

Var. 4.31 mill/kwh

Escalation at 8%

Fuel cost from FCG Economic Oil Displacement Study

HSC at 10% for oil & coal

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that copies of late-filed Exhibit 25 (consisting of 10 sheets) and late-filed Exhibit 25A (consisting of 1 sheet labeled Sheet 5A) were furnished on May 27, 1981, to the following:

BY HAND:

Arthur R. Shell, Jr., Esq.
Staff Counsel
Florida Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32301

BY U.S. MAIL:

W. O. Birchfield, Esq.
Martin, Ade, Birchfield & Johnson
3000 Independent Square
Jacksonville, Florida 32202

Mr. John Kern
Clean Air, Inc.
630 North Edgewood Avenue
Jacksonville, Florida 32205

George W. Kent, Jr., Esq.
Post Office Box 49
Orange Park, Florida 32073

Richard D. Melson

Richard D. Melson
Hopping Boyd Green & Sams
Post Office Box 6526
Tallahassee, Florida 32301
(904) 222-7500

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Application of Jacksonville) DOCKET NO. 810045-EU ()
Electric Authority and Florida) ORDER NO. 10108-A
Power and Light Company for Certi-) ISSUED: 8-25-81
fication of Need for St. John's)
River Power Parks Units 1 and 2.)

AMENDATORY ORDER

BY THE COMMISSION:

On February 4, 1981, this Commission issued Order No. 10108 granting certification of need for Jacksonville Electric Authority and Florida Power and Light Company for St. John's River Power Parks Units 1 and 2. Upon subsequent consideration of that Order, we note that in the second paragraph on page six (6), line ten (10) of page six (6), the figure "\$558,877" should have been stated as \$558,887,000. Additionally, on line 13 of the same page the period "1986-200" should have been the period 1986-2000. The purpose of this Order is to include said words in the manner in which they were intended.

Therefore, in consideration thereof, it is

ORDERED by the Florida Public Service Commission that the second paragraph of Order No. 10180 issued on February 2, 1981, be and the same is hereby reflected to read as follows:

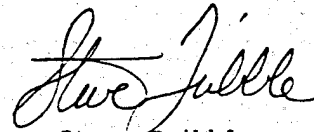
We also examined a "worst case" scenario utilizing a higher estimated cost of capital and estimates of fuel escalation rates compiled by Chase Econometrics, which project a smaller differential between the costs of coal and oil and are thus less favorable to the application in terms of economic justification. Under these "worst case" assumptions, JEA's projected fuel savings would be \$94,298,000 in 1986; \$254,693,000 in 1990; and \$558,887,000 in the year 2000. FPL's savings would be \$22,236,000 in 1986; \$134,190,000 in 1990; and \$429,889,000 in the year 2000. Total peninsular savings for the period 1986-2000 under this "worst case" scenario would be \$8 billion (nominal dollars).

It is further

ORDERED that Order No. 10108 be and the same is hereby affirmed in all other respects.

By ORDER of the Florida Public Service Commission, this 25th day of August 1981.

(S E A L)



Steve Tribble
COMMISSION CLERK

ARS

BEFORE THE GOVERNOR AND CABINET
OF THE STATE OF FLORIDA

In Re:

Jacksonville Electric Authority
St. Johns River Power Park,
Power Plant Site Certification
Application

DOAH CASE NO. 81-357

The following persons were present and participated in
the disposition of this matter:

Honorable Bob Graham
Governor

Honorable George Firestone
Secretary of State

Honorable Jim Smith
Attorney General

Honorable Bill Gunter
Treasurer and Insurance Commissioner

Honorable Gerald A. Lewis
Comptroller

Honorable Doyle Conner
Commissioner of Agriculture

Honorable Ralph D. Turlington
Commissioner of Education

FINAL ORDER ADOPTING HEARING
OFFICER'S ORDER RECOMMENDING BOARD
FINDING OF CONSISTENCY AND COMPLIANCE
WITH EXISTING LAND USE PLANS AND ZONING ORDINANCES

BY THE GOVERNOR AND CABINET:

Having heard presentations by the parties, reviewed the
Recommended Order dated July 8, 1981, as modified by the
Amended Recommended Order dated July 20, 1981, (attached and
incorporated as Exhibits "A" and "B"), and being fully advised
herein, it is

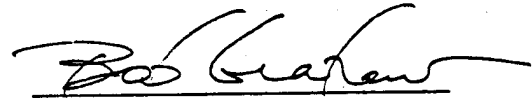
ORDERED:

1. The Recommended Order as modified by the Amended
Recommended Order is adopted.
2. The proposed site is found and held to be in conformity
with existing land use plans and zoning ordinances in effect as
of this date.
3. The responsible zoning or planning authorities are
ordered to refrain from hereafter changing such land use plans

or zoning ordinances so as to affect the proposed site unless certification is denied.

DONE AND ORDERED THIS 15th day of September, 1981, in Tallahassee, Florida, subsequent to a vote of the Governor and Cabinet at a duly constituted Cabinet meeting of September 1, 1981

FOR THE GOVERNOR AND FLORIDA
CABINET


BOB GRAHAM
Governor

VOTE:

For

7

Against

0

Copies Furnished to All Parties.

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

IN RE: JACKSONVILLE ELECTRIC AUTHORITY)
ST. JOHNS RIVER POWER PARK,)
POWER PLANT SITE CERTIFICATION)
APPLICATION.)

CASE NO. 81-357

FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND RECOMMENDED ORDER

Pursuant to the requirements of Section 403.508,
Florida Statutes, the undersigned conducted a land use hearing
in this cause on May 5, 1981, in Jacksonville, Florida.

APPEARANCES

For Applicant Jacksonville Electric Authority:

Gary P. Sams, Esquire
Hopping, Boyd, Green & Sams
420 Lewis State Bank Building
Post Office Box 6526
Tallahassee, Florida 32301

For State of Florida Department of Environmental
Regulation:

Louis F. Hubener, Esquire
Assistant General Counsel
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

For State of Florida Department of Veteran
and Community Affairs:

C. Laurence Keesey, Esquire
Department of Veteran and
Community Affairs
Carlton Building, Room 204
Tallahassee, Florida 32301

For Sea Oats Garden Circle:

Mrs. L. B. (Priscilla) Andrews
Sea Oats Garden Circle
115 Palm Avenue
Jacksonville, Florida 32218

For Heckscher Drive Community Club:

Jean Ila Creech, Spokesperson
Heckscher Drive Community Club
5900 Heckscher Drive
Jacksonville, Florida 32226

For Agricultural Stabilization and
Conservation Service:

Douglas I. Moore
Chairman-Duval County
The Agricultural Stabilization
and Conservation Service of
the U. S. Department of Agriculture
12275 Holstein Drive
Jacksonville, Florida 32226

For Clean Air Coalition, Inc.:

John Kern, President
Clean Air Coalition, Inc.
630 Edgewood Avenue
Jacksonville, Florida 32205

For the Jacksonville Chamber of Commerce, Inc.:

Gerald Bartles
Executive Vice President
Jacksonville Chamber of Commerce, Inc.
Post Office Box 329
Jacksonville, Florida 32201

This land use hearing is part of the site certification proceeding in accordance with the Florida Electrical Power Plant Siting Act, Part II, Chapter 403, Florida Statutes. Having considered all the testimony, evidence and argument presented, the Hearing Officer enters the following:

FINDINGS OF FACT

1. The Department of Environmental Regulation published notice of this land use hearing on March 21, 1981 in the Florida Times-Union newspaper. Notice was also published in the Florida Administrative Weekly. The Applicant, Jacksonville Electric Authority, (hereinafter JEA) posted notice of this hearing at the proposed site and the Department of Environmental Regulation (hereinafter DER) mailed notice of this hearing to the chief executives of the local and regional authorities with responsibility for zoning and land use planning whose jurisdiction includes the site.

2. JEA is an electric utility and agency of the City of Jacksonville. Its application in this proceeding seeks site certification for the construction of a coal-fired electric generating plant and ancillary facilities, including a coal unloading facility and associated transmission lines, all of which are to be located in Duval County, Florida.

3. The proposed site comprises approximately 1,636 acres located north of the St. Johns River in northern Duval County, immediately contiguous to JEA's existing Northside

Generating Station.

4. Ordinance 80-1290-700 of the City of Jacksonville was adopted specifically for the purpose of zoning the land which comprises the site for which certification is sought in a classification which allows the land use JEA intends by its application. The Ordinance zones the site as GU, Government Use, a zoning classification which does allow the use to which the land will be put by the Applicant should the site be certified. By the terms of this Ordinance, the classification GU shall apply to the subject land on the date that Fee Simple title to that land passes to the Jacksonville Electric Authority. To the extent that Fee Simple title to that land has not already passed to the Jacksonville Electric Authority, the subject land is currently zoned IH, Industrial Heavy. JEA is a governmental agency of the City of Jacksonville and possesses all powers of eminent domain necessary to acquire the land comprising the site.

The foregoing zoning classification does not apply to any land located within Government Lot 2, Section 6, Township 1 South, Range 28 East. JEA has stated that it has no intent to develop any part of Government Lot 2 within the proposed site and it is therefore not considered part of the site.

5. The site certification application includes a proposed coal unloading facility to be located on approximately 55 acres of Blount Island, contiguous to the St. Johns River, and owned by the Jacksonville Port Authority, another agency of the City of Jacksonville. That 55-acre parcel is currently zoned IW, Industrial Waterfront, and a coal unloading facility is consistent with the uses allowed within the IW zoning classification. ✓

6. The site certification application includes certain directly associated transmission lines to connect the proposed generating facility to the existing transmission network. The preferred corridors for these directly associated transmission lines extend in the same general direction as the existing transmission lines from JEA's Northside Generating Station and will run to existing substations in all cases. Transmission lines,

substations and similar installations are classified as "essential services" and as such are permitted in any zoning district within Duval County without any unique zoning to allow that land use.

7. The use of the proposed site, including the coal handling facility and directly associated transmission lines, are all consistent with the elements of the 2005 Comprehensive Plan of the City of Jacksonville relating to land use. The plant site and the coal unloading facility appear on the land use plan map as "water related industrial" uses, and JEA has stated its intent to comply with the locational criteria for transmission lines found in the electric utility element of the City of Jacksonville 2005 Comprehensive Plan.

The 2005 Comprehensive Plan has been approved by the State Department of Community Affairs and the Northeast Florida Regional Planning Council for consistency with state and regional land use planning requirements.

CONCLUSIONS OF LAW

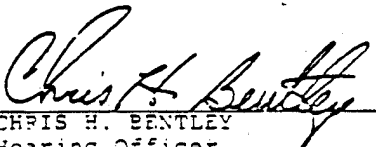
8. All parties and the public were afforded proper notice of this proceeding as required by law.

9. The sole issue for determination at the land use hearing required by Section 403.508, Florida Statutes, is whether or not the proposed site is consistent and in compliance with existing land use plans and zoning ordinances. As shown by the Findings of Fact above, the proposed site in this cause is consistent, and in compliance with, existing land use plans and zoning ordinances so long as JEA holds Fee Simple title to the land which comprises the proposed site.

RECOMMENDED ORDER

Therefore, it is hereby recommended that the land use proposed for the site is consistent and in compliance with existing land use plans and zoning ordinances so long as JEA holds Fee Simple title to the subject land.

DONE and ORDERED this 8th day of July, 1981, in
Tallahassee, Florida.


CHRIS H. BENTLEY
Hearing Officer
Division of Administrative
Hearings
The Oakland Building
2009 Apalachee Parkway
Tallahassee, Florida 32301
(904) 488-9675

Copies furnished:

Bary P. Sams, Esquire
Hopping, Boyd, Green & Sams
Post Office Box 6526
Tallahassee, Florida 32301

Arthur Shell, Esquire
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FILED WITH THE CLERK OF THE
DIVISION OF ADMINISTRATIVE
HEARINGS THIS 8th DAY OF
JULY, 1981.

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

IN RE: JACKSONVILLE ELECTRIC AUTHORITY)
ST. JOHNS RIVER POWER PARK,)
POWER PLANT SITE CERTIFICATION)
APPLICATION.)
_____)
)

CASE NO. 81-357

AMENDED RECOMMENDED ORDER

Findings of Fact, Conclusions of Law, and a Recommended Order were entered in this cause by the undersigned on July 8, 1981. That Recommended Order stated "Therefore, it is hereby recommended that the land use proposed for the site is consistent and in compliance with existing land use plans and zoning ordinances so long as JEA holds Fee Simple title to the subject land." The condition of that recommendation, that JEA hold Fee Simple title to certain lands, was intended to apply only to that part of the site comprising approximately 1,636 acres located north of the St. Johns River in northern Duval County, and immediately contiguous with JEA's existing Northside Generating Station. It was not intended to apply to the proposed coal unloading facility on Blount Island, or the associated transmission line corridors. The zoning applicable to those two parts of the overall site do not require that JEA hold Fee Simple title. Therefore, the Findings of Fact, Conclusions of Law, and Recommended Order dated July 8, 1981 is amended to read as follows:

"Therefore, it is hereby recommended that the land use proposed for the site is consistent and in compliance with existing land use plans and zoning ordinances so long as JEA holds Fee Simple title to the land which comprises that part of the site consisting of approximately 1,636 acres located north of the St. Johns River in northern Duval County, and immediately contiguous to JEA's existing Northside Generating Station."

DONE and ORDERED this 20th day of July, 1981, in Tallahassee, Florida.

#81-357
July 20, 1981
Amended Recommended Order
Page Two


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Filed with the Clerk of the
Division of Administrative
Hearings this 20th day of July,
1981.

1

PURPOSE OF THE PROPOSED FACILITY AND ASSOCIATED TRANSMISSION

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PURPOSE OF THE PROPOSED FACILITY AND ASSOCIATED TRANSMISSION

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1.0 PURPOSE OF THE PROPOSED FACILITY AND ASSOCIATED TRANSMISSION

This chapter provides a discussion of the factors which led to the decision by Jacksonville Electric Authority (JEA) and Florida Power & Light Company (FPL) to construct a coal-fired generating facility known as the St. Johns River Power Park (SJRPP) at the Eastport site located in Duval County. The facility will consist of two jointly owned 600 MW class units built at a project cost of 1,388 million dollars by 1988 (excluding allowance for funds used during construction).

As shown in Section 1.1.1, the utilities' current load forecast projections demonstrate the need for this project for reliability purposes (Section 1.1.3) starting in 1988. In addition, this project offers both JEA and FPL the capability to significantly reduce the level of oil consumption on their systems prior to that time.

Section 1.2 presents an analysis of the potential annual oil displacement of 10 million barrels of oil associated with this project and the resultant fuel cost savings. This analysis indicates that JEA and FPL should construct these units at the earliest possible in-service date to take advantage of the benefits associated with reducing dependence on foreign oil. Among these benefits are long term economic benefits to each utility's customers, diversification of the fuel mix along with an attendant increase in reliability, and furtherance of state and national energy goals. Current schedules call for the commercial operation of the first unit by December, 1985 and the second unit by May, 1987. Section 1.2 also discusses the effects of the Florida Energy Efficiency and Conservation Act on the proposed project. As demonstrated therein, even with the attainment of the conservation goals, the proposed facility is presently needed for oil displacement at the earliest possible time and will be needed for reliability purposes at a later date.

1.1 SYSTEM DEMAND AND RELIABILITY

The information provided in this section is organized and presented to reflect the joint participation of JEA and FPL in the construction and future operation of the proposed facility. To accomplish this, each subsection under 1.1 is organized so that the information is first presented for JEA as the lead utility and then for FPL.

1.1.1 Load Characteristics

The JEA is a municipally owned electric utility serving the northeast corner of peninsular Florida (see Figure 1.1-1). The JEA retail service territory is comprised of three counties, Duval, St. Johns, and Clay with a total of 225,980 customers as of December 31, 1980. Approximately 85 percent of the net energy for load generated during 1980 was used by three customer classes: residential (37 percent), commercial (14 percent), and industrial (34 percent).

To serve this load, JEA generating capacity is comprised of three generating plants. These generating facilities consist of 11 fossil steam units and 9 gas turbines. Table 1.1-1 is a listing of JEA's existing generating facilities.

The power generated by JEA is distributed to the load over a transmission system comprised of 477 miles of overhead and 43 miles of underground cable. JEA is also interconnected to other Florida utilities through two 230 kV and one 115 kV ties.

FPL is an investor owned utility serving the south and eastern portions of peninsular Florida (see Figure 1.1-2). The FPL service territory encompasses a total of 2,247,688 customers in 35 counties as of December 31, 1980. Of the energy sales for 1980, approximately 92 percent went to serve the needs of residential, commercial, and industrial

customers. Unlike JEA, FPL residential customers used 50 percent of the sales with commercial customers using 34 percent and industrial only 8 percent.

The existing FPL generating capacity is comprised of 13 generating plants distributed geographically around its service territory. These generating facilities consist of 3 nuclear steam units, 26 fossil steam units, 48 gas turbines, 2 diesel installations, and 2 combined cycle units. Table 1.1-2 is a listing of FPL's existing generating facilities.

The FPL bulk transmission system is composed of 316 miles of 500 kV and 1,950 miles of 240 kV lines. The underlying network is composed of 1,377 miles of 138 kV, 602 miles of 115 kV, and 311 miles of 69 kV transmission lines. FPL is also interconnected to other Florida utilities through seven 240 kV, five 138 kV, three 115 kV ties and to Georgia Power Company through one 500 kV tie.

1.1.1.1 Load Analysis

Jacksonville Electric Authority

The JEA's history and forecast of energy use by customer class is presented in Table 1.1-3 and represents the most current estimate of JEA's energy use by customer class. This forecast yielded a long term (1979-2000) compound annual growth rate of 2.8 percent in total net energy for load. The energy use by residential, commercial, and industrial customers is expected to grow during this period at annual rates of at 2.8, 3.6, and 3.5 percent, respectively.

Table 1.1-4 presents JEA's historical and forecasted seasonal peak demand developed from JEA's most current Electric Energy and Demand forecast. The annual system peak load is expected to grow at a rate of 3.4 percent over the forecast period (1979-2000). Beginning in 1985, the JEA

system is expected to switch from a summer peaking system to a winter peaking system. This expected switch is a result of growth in residential electric heat saturation through the year 2000.

Figure 1.1-3 is a graphic representation of JEA's annual load duration curve for 1979. This figure shows the percentage of energy supplied against the percentage of the time of occurrence and illustrates the varying magnitude of the load during the period. This annual load duration curve is typical for the JEA system.

It should be noted that the official JEA forecast presented does not include the effects of the conservation goals adopted by the Florida Public Service Commission (FPSC) under the Florida Energy Efficiency and Conservation Act (FEECA). In its Order Number 10108 (dated June 26, 1981) certifying the need for SJRPP, the FPSC found that the JEA would develop a capacity need by 1991 assuming that its FEECA conservation goals are achieved.

Florida Power & Light Company

The FPL's history and forecast of energy use by customer class is presented in Table 1.1-5 and represents FPL's most current energy forecast. The results of this forecast show that for the period 1980 through 1990, the compound annual growth rate of net energy for load is expected to be from 3.1 to 5.1 percent per year.

Table 1.1-6 presents FPL's historical and forecasted seasonal peak demand developed from FPL's most current seasonal peak forecast. The annual system peak load is expected to grow at a compound growth rate of 1.7 to 3.8 percent over the forecast period (1980 - 1990). Under this forecast FPL expects that the winter peak will continue to grow at approximately the same rate as the summer peak and that FPL will be a winter peaking company.

Figure 1.1-4 is a graphic representation of FPL's annual load duration curve for 1979. This figure illustrates the varying magnitude of the load during the period and represents a typical shape for the FPL system.

The FPL forecast presented in this section incorporates the expected results of those programs which FPL will use to reduce energy and seasonal peak growth in response to the conservation goals adopted by the FPSC on November 13, 1980.

1.1.1.2 Demand Projections

This section presents a summary of the load and energy forecast methodology used by JEA and FPL. For a more detailed explanation, see Appendix M.

Jacksonville Electric Authority

Gilbert Associates, Inc. was contracted in 1980 by JEA to develop a forecast of energy and peak demand requirements for JEA for the period 1980 through 2000.

This forecast was developed by members of the professional staff of Gilbert Associates, Inc. and Wharton Econometric Forecasting Associates, Inc. with assistance from the JEA System Planning Staff.

The 20 year forecast of energy and demand requirements for the JEA system was produced from a system of economic, demographic, and electric energy and peak load models which were developed specifically for the JEA service territory by means of econometric analysis of regional data. The essential features of the methodology employed and a summary of key forecast results are presented below.

Forecast Methodology

Analysis was performed at the highest level of disaggregation possible consistent with the available data. Specifically, the net energy for load forecast for the JEA system was developed by forecasting energy use in each of the following JEA sales and energy classifications:

Rate 10	- Residential Service
Rate 20	- Small General Service
Rate 30	- Large General Service
Rate 40	- Industrial
Rate 45	- Other Public Utilities
Rates 50-90	- Street Lighting
	Losses and Adjustments

Total system peak load requirements were forecast for the 1st and 3rd quarters of each year throughout the forecast period (1980-2000).

In order to produce the energy and demand forecasts, a system of long run forecasting models were constructed specific to the JEA service territory. The integrated forecasting system consisted of the following five component models:

1. Wharton Quarterly and Annual Macroeconomic Models of the U.S. economy
2. Regional Economic Model of the Jacksonville Standard Metropolitan Statistical Area (SMSA) of Baker, Clay, Duval, Nassau, and St. John Counties
3. Regional Demographic Model consisting of two submodels
 - Duval County
 - Jacksonville SMSA Less Duval County

4. Service Area Econometric Energy Model by class of service

5. Peak Load Model

Figure 1.1-5 illustrates the relationships between the various component models. As can be seen, data produced by the Wharton Quarterly and Annual Macro Economic Models of the U.S. economy is used as input into both the Regional Economic Model and the Regional Demographic Model. Data used in the Regional Economic and Demographic Models is also used in both the Service Area Econometric Energy Model and the Peak Load Model.

Regional Economic Model

The Regional Economic Model is a modified export base type model. Industries which are significant exporters to areas outside of the Jacksonville SMSA are modelled as a function of national and regional activity and of regional wage rates relative to national wage rates. Industries which are primarily regional are modelled as a function of regional activity variables including: (1) employment in other regional industries, (2) real personal disposable income, and (3) population. Regional wage rates by industry are thus a function of national wage rates in the same industry, the regional price level relative to the national price level, and the tightness of the regional labor market relative to the national labor market as measured by ratios of employment to labor force. Total wages paid to area residents are determined by adding up the wage bills (wage rates times employment) for establishments located in the SMSA, and correcting for the net wages earned by commuters. The other components of personal income such as transfer payments, dividends, interest and rent, and supplements to wages are determined by combinations of regional and national variables.

Regional Demographic Models

In order to identify and provide a detailed forecast of the population within the JEA service area (which essentially consists of Duval County), separate population models were constructed for Duval County and for the balance of the other counties contained within the Jacksonville SMSA. The population models employed are of the single year of age cohort (a group of individuals having a statistical factor in common) survival type and have the capability to generate population estimates by single year of age, race and sex. The models were started as of 1970 using the 1970 U.S. Census data for the counties currently comprising the Jacksonville SMSA. U.S. survivorship rates by single years of age were adjusted to reflect total regional mortality. National fertility rates by cohort were also adjusted to reflect total regional fertility. The regional mortality and fertility statistics were obtained from the intercensal population estimates reported in Current Population Reports Series P-25. Net migration rates were specified outside the model to produce total population forecasts consistent with the employment forecasts of the Regional Economic Model.

This approach was chosen as an alternative to the University of Florida population projections by County (Bulletin No.53). JEA feels this methodology has several distinct advantages:

- While University of Florida estimates for the State as a whole are based upon rigorous methodology and appear accurate, estimates by County are based on a simple ratio - share procedure.
- Since JEA's service area encompasses only a few counties, population estimates are very sensitive to small errors resulting from sharing of State projections to the County level.
- JEA methodology maximizes use of available data disaggregated to the County and SMSA level.

Service Area Econometric Energy Model

The Service Area Econometric Energy Model forecasts electricity sales by class of service and is driven by the combined output of the Regional Economic and Demographic models. Driving variables for the energy model include manhours, employment, alternate energy prices including the JEA forecasted price of electricity, population, households, per capita income, and wage rates relative to the cost of capital. The energy model incorporates the effects of alternate fuel prices and labor-capital substitution on electricity demand. Historical weather conditions are explicitly included as well.

Peak Load Model

The JEA Peak Load Model consists of econometric equations for the first and third quarter system peak loads. This model is driven by regional electricity sales obtained from the Service Area Econometric Energy Model, residential air conditioning saturation, and residential electric heat saturation. The combined effects of these saturation levels and weather variables are explicitly identified in the peak load equations.

Energy and Demand Requirements

Three separate forecasts of JEA system energy and demand requirements were developed using the integrated forecasting system described above. These three forecasts are identified as the Most Probable, Low Growth Case, and High Growth Case. The Low and High Growth forecasts were developed to illustrate the possible range of energy and demand requirements which would result from alternate regional and national economic forecasts and alternate local demographic forecasts.

Most Probable Forecast - This forecast yielded a long term (1979-2000) compound annual growth rate of 2.8 percent in net energy for load and a compound annual growth rate of 3.4 percent in annual system peak load.

Beginning in 1985, the JEA system is expected to switch from a summer (third quarter) peaking system to a winter (first quarter) peaking system. This conversion to a winter peaking system results from the expectation that residential electric heat saturation will grow rapidly from its present level of approximately 30 percent to a saturation level of 95 percent by the year 2000. At the same time, air conditioning saturation, which already is at about 86 percent, cannot be expected to contribute to similar strong growth rates in summer (third quarter) system peak load despite the forecast of increases in the saturation level of central air conditioning systems.

The expected growth in electric space heating is induced by large increases in the price of alternate heating fuels (oil and natural gas) relative to the average price of electricity. A major assumption upon which the above conclusions rest is that JEA will be able to essentially remove the current large positive differential in JEA's average electricity rate versus the national average price. Inherent in this assumption is the expectation that JEA will realize a rapid switchover from the current 100 percent reliance upon oil-fired generation to 90 percent non-oil-fired generation by the year 2000. The result of such a generation fuel switchover would be a 6.6 percent compound annual growth in electricity price, which would be substantially below the 8.0 percent growth rate expected for the national average electric price.

High and Low Growth Cases - The Higher and Lower Growth forecast cases were based upon higher and lower alternative national economic forecasts which in turn led to higher and lower regional economic and demographic forecasts. During the period 1979 through 2000, the lower forecast assumptions yield a compound annual growth rate of 2.3 percent in net energy for load and 3.0 percent in annual system peak load. During the same forecast period, the higher growth assumptions yield a compound annual growth rate of 3.2 percent in net energy for load and 3.7 percent in annual system peak load. As with the Most Probable forecast, the Low and High

Growth Cases also forecast that the JEA system will convert to a winter peaking system by about 1985. Additionally, annual system load factor in the Most Probable forecast is expected to be about 51 percent in the year 2000 while for the Low and High Growth Cases annual system load factor in the year 2000 are forecast to be 49 percent and 52 percent, respectively.

Conservation Scenario

An effort was made to estimate the potential impact upon the Most Probable forecast of the introduction of residential appliances of improved efficiency ratings and also of the potential impact of various load management strategies. The Conservation Scenario is intended to provide a quantitative estimate of the potential impact upon the Most Probable Forecast of the introduction of residential appliances which conform to the DOE efficiency improvement targets and also the potential impact of load control of water heaters, electric space heating and, to a limited extent, central air conditioners. The conservation adjustments were aimed exclusively at the residential class and were determined only for specific points in time - 1985, 1990, 1995 and 2000. The energy sales forecasts and the coincident peak demand contributions for all other customer classes were not adjusted for the above considerations and remain the same as in the unadjusted Most Probable Forecast.

Load Control Reductions

The total impact of residential load control on winter system peak was computed by assuming that some form of control would be applied to water heaters and electric space heating. For each of the years 1985, 1990, 1995 and 2000, the total winter peak load reduction due to load control was estimated as the sum of the water heater and electric space heating load reduction.

The impact of residential load control on summer system peak was determined only for 1985 due to the fact that subsequent to that time it is expected that the winter peak will dominate and reductions to summer peak will not be required. For 1985, the total summer peak reduction was estimated by computing the load reductions resulting from control of water heaters and central air units.

The estimated reductions in annual residential energy sales (GWh) and residential coincident demand (MW) contributions to the system winter and summer peak loads are as follows:

- . Appliance efficiency improvements were estimated to cause a reduction in both annual residential energy sales (kWh) and also the residential class coincident demand contributions to the winter and summer system peak loads. By 1985, appliance efficiency improvements were estimated to cause a 294 GWh or 11.5 percent reduction in Most Probable residential energy sales. By the year 2000, when essentially the total appliance stock will have been upgraded to meet the DOE efficiency targets, the reduction in residential sales was estimated to amount to 587 GWh, or 14.3 percent.
- . Appliance efficiency improvements were estimated to reduce system winter peak load by 108 MW in 1985 and 220 MW by the year 2000. Similarly, appliance efficiency improvements were estimated to reduce the 1985 summer peak load by 99 MW. By the year 2000, the summer peak load reduction was estimated to total 152 MW.
- . The residential load control program was assumed to impact only the summer and winter peak load, with annual energy consumption being unaffected. In the year 1985, it was estimated that control of water heaters and electric space heating would result in a reduction of 123 MW from the system's winter peak load. It was further

estimated that control of electric water heaters and central air conditioning systems could reduce the 1985 summer peak load by 78 MW. By the year 2000 control of electric water heaters and electric space heating would result in a winter peak load reduction of 202 MW. No control of end-use appliances affecting the summer peak was calculated for the years 1990, 1995 and 2000 due to the fact that JEA will have become a firm winter peaking system by 1985.

Florida Power & Light Company

FPL forecasts customers, sales (energy), peak demand and load factor using both econometric and engineering models where appropriate. An econometric model is based upon the relationships between the variables to be forecasted and the economic and social environment, i.e., customers, sales and peak demand are estimated as a function of such local and national economic measures as real per capita personal income, population of the FPL service territory, Florida employment, and Gross National Product (GNP). An engineering model bases its forecast on the number of appliances and their consumption, projected improvements in appliance efficiency, and improvements in the thermal efficiency of buildings. FPL utilizes a combination of these two types of models and Monte Carlo simulation not only to project the forecast variables but also to determine the uncertainty surrounding the forecast of net energy and peak loads.

Forecast Methodology

The forecast is broken into three areas - customers, sales (energy), and peak load. The following discusses each model separately.

Customer Forecasts

Customers are forecast using econometric models for the following six classes: residential, commercial, industrial, street and highway, resale and other. The basis for the customer forecasts are projections of FPL's service territory population.

Residential customers are forecast from population forecasts of the 21 major counties in the FPL service territory and estimated residential household size. The population of the FPL service area is derived from the University of Florida's and the National Planning Association's forecasts of population by county. The estimate of household size is derived from National Planning Association's forecasts for Florida and SMSA in FPL's service territory as well as FPL's own estimate. The residential customers forecast is derived by dividing the population forecast by the household size forecast.

Commercial customers are forecast by using FPL's residential customers from the previous year to account for the delay in the opening of such commercial ventures as shopping centers and restaurants following the occupancy of new residential homes. Industrial customers are forecast using GNP; since GNP is a measure of the nation's output of final goods and services, it tends to be highly correlated with FPL's industrial customers.

Street and highway and other public authority customers are forecast using population projections of the FPL service territory.

Resale customers are forecast as a function of the population of Florida.

Energy Forecast Model

The economy of the FPL service area is dominated by tourism, construction, agriculture, service industries, and light manufacturing. To adequately forecast the energy requirements for the area, this unique mix has to be recognized.

In order to more accurately evaluate and project the patterns of growth for the coming years, separate forecasting equations were developed for each of the major classes of users: residential, commercial, and

industrial. The remainder of total sales is forecast by extrapolation of historical trends. These models are a combination of econometric and engineering methodologies.

The residential energy forecast begins with an estimate of the variables that influence the residential sector. Real per capita personal income in Florida, real price per residential kilowatt-hour (kWh), air conditioning saturation, electric heating saturation, and cooling and heating degree days are the variables selected to explain the trends in use per customer.

It is expected that residential conservation will have a pronounced effect on energy consumption in the future; therefore, FPL explicitly accounts for seven types of conservation: appliance efficiency, Watt-Wise homes, solar water heating, home audit programs, the State Residential Building Energy Code, residential pool pump program, and time of use (T-O-U) rates. The effect of each source of conservation on residential consumption is forecast separately.

The commercial sector in Florida is comprised primarily of tourist and service industries. After considerable study, a model was derived in which commercial sales per customer are a function of total non-agricultural employment in Florida and the real price per commercial kilowatt-hour. The total employment variable is used as a measure of the general economic conditions because it tracks the business cycle. The commercial sector's sales are further modified by the effects of T-O-U rates and an audit program described in FPL's Energy Management Plan for the 80's.

Industrial energy use represents about 7 percent of the total energy sales and is incorporated into the forecast by considering two factors. First, industrial sales are correlated with manufacturing employment in Florida. The industrial sector's sales are further modified by the effects of T-O-U rates and an audit program described in FPL's Energy Management Plan for the 80's.

Peak Load Model

Unpredictable variations in weather conditions can result in considerable variation in the use of air conditioning during the summer and electric heating during the winter. For analytical purposes, the summer peak load was separated into two components: non-weather sensitive and weather sensitive.

The non-weather sensitive component is defined as the minimum load during the hours when the summer peak usually occurs. This demand is predominantly determined by the economic environment and shows the load when weather sensitive appliances are at their minimal usage. This portion is forecast on a per customer basis by using real price of electricity and real per capita personal income in Florida.

The weather sensitive component is defined as the difference between the actual peak and the non-weather sensitive component for the period. It represents the load in excess of the base load which is primarily a function of weather conditions. The summer weather sensitive component is forecast on a per customer basis and is related to the minimum temperature on the peak day, the real price of electricity, and the saturation of air conditioners.

The winter peak forecast is based on the number of residential customers which have electric heat, the minimum temperature on the winter peak day, and the number of winter customers.

Regression analysis is used to develop the summer non-weather sensitive load, the summer weather sensitive load, and the winter peak load models. Having developed the regression equations, the relevant variables are then projected to determine the summer non-weather sensitive, summer weather sensitive, and winter peak load forecasts. Both the summer and winter peak load forecasts are then modified by the effects of certain types of conservation which are described below.

Conservation

The conservation models reflect the proposed programs to meet the FPSC rules establishing statewide energy conservation goals as required by the Florida Energy Efficiency and Conservation Act (FPSC Docket No. 800522-EG).

The regression techniques described previously are used to derive equations that forecast long term energy and peak demand. The coefficients derived are based on history and may not predict the effects of future changes in technology or consumer life-style. In order to have a realistic forecast, these future changes must be predicted and incorporated into the forecast separately from the regression equations. The changes must be identified, assumptions made about the significant parameters, and then the results must be incorporated into the forecast.

It is important to note that the total energy reduction attributed to conservation cannot necessarily be calculated by summing the energy reductions of each individual conservation program, and then subtracting this figure from the econometric model's baseline forecast. The reasons why this cannot be done are as follows:

First, as explained above, the econometric model's forecast is not a single number, but an entire band. Thus, the program results might vary depending upon where, in the banded econometric forecast, reference is being made. The second problem involves the engineering models which were used to develop the program results. It is difficult to incorporate a laboratory comparison into a forecast. The third problem area with respect to using engineering models involves the possibility of double counting of results. The fourth potential problem of engineering models is their failure to account for increased electricity use as a result of customers electric bills being lower after conservation measures are installed. The fifth potential problem area involving the use of engineering models is the difference between potential and probable results. As a result of these problems, care must be taken when evaluating the impact of conservation programs. See Appendix M for a more detailed explanation.

Eight changes have been identified as being significant and having a high probability of occurring. These are: (1) implementation and success of an energy efficient home building program (called the Watt-Wise home by FPL); (2) an increasing saturation of solar water heaters; (3) government mandated improvements in the efficiency of certain appliances; (4) home energy audit programs for the retrofit of existing homes with energy saving technologies; (5) the State Residential Building Energy Code; (6) a swimming pool pump audit program; (7) a commercial customer audit program; and (8) T-O-U rates. A more complete discussion of these programs can be found in FPL's Energy Management Plan for the 80's.

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Monte Carlo Simulation

While considerable effort is exerted to insure accuracy in the forecast, there is always uncertainty as to its ultimate accuracy. Hence in making a forecast, every decision maker would like to know to what extent events may alter the forecast, in order to assess the impacts that such changes may have on the planning process.

To achieve the flexibility to respond to uncertain future events, FPL has moved away from discrete forecasts. Plans made on the basis of a single set of forecast numbers do not have the flexibility necessary for unforeseen economic and technological growth.

Instead, FPL uses a simulation approach which is designed to allow: (1) the individual and/or simultaneous evaluation of a large number of alternatives, and (2) the internal development by the model of probabilities for these alternatives. Using this approach requires that a probability distribution be assigned to each independent (or exogenous) variable. For example, a weather variable has been shown to be uniformly distributed through a range of values. The price variables might be described quite differently. Thus, different forecasts for the independent variables may be evaluated by changing the distribution parameters or by

utilizing a deterministic solution to the simulation model. The result of this simulation approach is a range of forecast values to be used instead of a single discrete forecast.

Load Management

Accurate forecasts of future electrical demand require careful consideration of the potential impact of conservation. The price of electricity is an important "conservation" variable since it affects the customer's decision to consume or conserve electricity. Economic activity also affects the consumption of electricity. Improved appliance efficiency, solar water heating, and the energy efficient homes would also tend to reduce the rate of growth of electricity. These variables are considered in the load forecast and were previously discussed.

In addition, FPL is currently looking into alternative load management measures that will help reduce the peak load while improving load factor. By improving load factor, existing facilities can be utilized to the maximum extent possible. To achieve this, FPL initiated several test programs involving utility control of residential loads such as air conditioning and water heating. The results of these tests will be used in evaluating implementation techniques on a large scale basis. In addition, FPL will be implementing other load management programs such as time-of-use rates for both residential and commercial sectors, the previously discussed pool pump program, and curtailable rates for commercial and industrial customers.

In spite of these efforts, however, FPL needs the proposed plant from both a capacity and oil displacement standpoint. Were this new coal capacity to be deferred because of load management, the results may be an increase in oil consumption since the utilization of existing oil-fired capacity will be increased. Moreover, as with all new programs, there is a degree of uncertainty associated with these load management programs. This uncertainty is a result of the lag inherent in customer acceptance and

response to these programs. Should customer acceptance be less than that expected by FPL, the company could find itself in the position of having insufficient time to react to this reduced response due to the long lead times required to build a power plant. This could lead to severe penalties being imposed on the public. FPL believes, however, that load management can be successful and will monitor customer response to these programs and adjust its plans as required to reflect their implementation and acceptance. Even if these programs are fully successful, the need for the capacity of this plant still exists, albeit with a slight delay. Until then, however, the need for the plant is fully justified and cost effective on an oil-reduction basis.

Summary

The use of a range (or distribution) of forecast values representing upper and lower bounds for each of the explanatory variables resulted in the development of banded peak load and energy forecasts. The forecast of summer peak load projects a compound annual growth rate in the 1980-1990 period ranging from 1.3 to 3.9 percent. The energy sales forecast has a low annual growth rate of 3.1 percent and a high annual growth rate of 5.1 percent.

1.1.1.3 Capacity Exchanges

The Energy Broker Program

The Florida Electric Power Coordinating Group, Inc. Energy Broker Program is a voluntary, coordinated effort by the generating utilities in Peninsular Florida to achieve maximum utilization of on-line generating capability. The Energy Broker program is a method of informing the individual participants as to the best match of economy interchange sales and purchases between participants pursuant to their bi-lateral contracts which could produce the greatest savings to the group as a whole. Over the

12 months ending September 30, 1980, the Energy Broker participants have exchanged over 2,400,000 MWh of energy and shared in over \$40 million of economy energy savings.

Participation in the Energy Broker Program as of December, 1980, consists of 14 investor and municipally owned utility systems representing over 99 percent of the generating capability in Peninsular Florida. JEA and FPL are active participating members of this program.

It should be noted that the Energy Broker concerns itself with short-term, non-firm sales and purchases of economy energy.

Jacksonville Electric Authority

Historical and Projected Purchases/Sales

JEA historically has not participated in any firm capacity sales or purchases. However, it is the policy of JEA to participate in any firm power sales or purchases which result in reliable cost effective service. JEA, in February, 1981, signed a firm power purchase contract with the Southern Company which will commence in 1983 and end in 1992. The contract provides for "coal-by-wire" as follows:

<u>From</u>	<u>Through</u>	<u>Capacity</u>
January 1, 1983	December 31, 1986	300 MW
January 1, 1987	December 31, 1987	500 MW
January 1, 1988	December 31, 1992	400 MW

These unit power purchases are from specific Southern Company coal units now under construction. Chapter 8, Section 8.1.3, discusses the potential of firm sales or purchases.

Economic Power Purchases

JEA is presently purchasing 100 MW of economy power from the Southern Company. This power is produced from coal-fired units and aids JEA in reducing its dependence on oil-fired generation. This contract will increase to 300 MW in August of 1982 and will continue at that level through 1986 and provides for the purchase on an economic basis, subject to its availability, from the Southern Company. This means that this power is provided on an interruptible basis and is not considered a firm power purchase.

Florida Power & Light Company

Historical and Projected Purchases/Sales

FPL's historical experience with purchases or sales to other utilities has been pursuant to interconnection agreements; there have been no firm capacity sales or purchases in the past. However, FPL has contracted for the future purchase of firm coal-fired power from Tampa Electric Company's (TECO) Big Bend Unit No. 4. This contract becomes effective on the in-service date of Unit No. 4, which is expected by April, 1985, and continues through December, 1987.

Under the terms of the contract, FPL will receive the following capacities:

<u>From</u>	<u>Through</u>	<u>Capacity</u>
In-Service Date	December 31, 1985	292 MW
January 1, 1986	December 31, 1986	208 MW
January 1, 1987	December 31, 1987	104 MW

FPL has also entered into an agreement, in February, 1981, with the Southern Company to buy firm power purchases from 1983 through 1992. Under the terms of the contract, FPL will receive the following amounts of firm coal power:

<u>From</u>	<u>Through</u>	<u>Capacity</u>
January 1, 1983	December 31, 1986	350 MW
January 1, 1987	December 31, 1987	650 MW
January 1, 1988	December 31, 1992	1000 MW

These contracts will enable FPL to further serve its customers' needs with non-oil generated electricity.

Economic Power Purchases

FPL is currently purchasing 100 MW of coal-fired generation from the Southern Company. The purchase of this power is on an economic basis and will be available to FPL through 1986. The energy is priced at Southern's incremental system-wide energy costs and economically dispatched against the cost of FPL's own generation. The terms of the existing service schedule, designated Schedule E, commit the Southern system to provide this power to FPL subject to availability. That is, it is provided on an interruptible basis and thus not considered a firm capacity source.

1.1.2 System Capacity

This section provides a summary of both JEA's and FPL's approach to generation planning, as it is applied in general and in the specific case of this proposed project. A detailed explanation may be found in Appendix M, Section M.3 and M.4.

Future system additions are determined by a utility through a planning process which identifies and evaluates potential system expansion alternatives. This planning process, whether performed internally by the utility or through the use of consultants, generally involves three main steps:

1. forecast of future system loads
2. identification of available options to meet forecasted loads
3. if additional generation is deemed to be required, determination of amount and type of generation to be added

There are many subjective judgements and analytical studies involved in each step of the process. Among these are such items as economic assumptions, customer mix, load and unit characteristics, generation mix, and the system reliability criteria chosen. Furthermore, changes in either social, regulatory, or technological areas could impact the final outcome and need to be factored into the process. As a result, the planning process must be able to adapt to changing conditions. This is accomplished through a periodic re-evaluation of the expansion plan. By accomplishing this, the customer is assured that an adequate and reliable system is provided as economically as possible.

As a result of this process, the construction of the proposed plant offers both utilities the flexibility needed to meet an uncertain planning environment.

In addition to their internal planning process, JEA and FPL also participate in several regional planning efforts which insure the most efficient and economic development of the future energy supply for the ratepayer of Florida. These regional planning efforts are:

Southeastern Electric Reliability Council

The Southeastern Electric Reliability Council (SERC) is one of the nine regional councils of the National Electric Reliability Council. Both JEA and FPL are members of the Peninsular Florida subregion, and adhere to the SERC planning guidelines established to accomplish the following goal: "to augment further the reliability of bulk power supply in the areas serviced by its member systems".

Florida Electric Power Coordinating Group, Inc.

The purpose of the Florida Electric Power Coordinating Group is to "engage in the active coordination of planning, construction, and utilization of generation and transmission facilities in Florida". For example, both JEA and FPL have participated in several studies such as the investigation of the advantages and disadvantages of centralized dispatch for Peninsular Florida.

1.1.3 Reserve Margins

This section explains both JEA's and FPL's analysis of reserve margins associated with the planning process.

Jacksonville Electric Authority

As the system load grows, generating capacity must be increased to maintain an acceptable level of service reliability. To achieve an acceptable level of reliability, utilities install generation capacity which is greater than the expected peak demand. This reserve capacity provides for maintenance of generating units, forced outages, and load growth in excess of estimates.

One criterion often used to measure the adequacy of installed reserve capacity is the percentage of installed capacity to peak load. This method, however, ignores the effect of differences in system load characteristics and variations in the characteristics of the types and sizes of installed and planned generating units.

Another method sometimes used is to maintain reserves equal to the capacity of one or more of the largest units on the system. Historically, JEA has used this method to insure the adequacy of its installed reserve capacity. However, while this criterion provides sufficient reserves to cover the loss of the largest unit, it does not consider the relationship between units on the system and differences in load characteristics.

A third, more recent, method of gauging the adequacy of the generating system is to apply probabilistic methods to capacity planning. This method allows consideration of the effects on the system of unit size and design, and of uncertainties as to forced outage rates, maintenance schedules and the load forecast. These methods provide a reliability index in terms of loss-of-load probability (LOLP) or expectation of loss-of-load hours (LOLH).

While no one criteria completely establishes the generation reserve margin needed to reliably meet the expected load with the expected generation configuration, JEA believes a probabilistic approach such as LOLP or LOLH offers a method to quantify the uncertainties under which a generation expansion plan must be made. It should be noted that in the final analysis of the design index, it is the perceived risk level that is acceptable to the utility and its customers which determines the level of reliability. As mentioned previously, the reliability level must consider the load forecast, unit size, and maintenance schedules. One of the largest uncertainties is the load forecast which is a composite of the many factors which influence demand growth. Factors such as economic growth, population growth, and regulatory policies can have tremendous impact on a load forecast due to the uncertain nature of each. Unit sizes also play an important part in the reliability of a system. As larger and larger units

are added to a system and come to represent a large portion of the installed system capacity, a larger reserve margin is usually required to maintain the same level of reliability as in the past. Planned maintenance also enters into the reliability consideration. As the size and number of units on a system increase, it becomes necessary for the utility to schedule maintenance during both valley and peak periods. To maintain an acceptable level of risk, system reserve levels must increase.

By using LOLP or LOLH as a reliability index, generation expansion plans can be compared on the basis of a measurable "risk level" which takes into consideration the uncertainties in the planning process and allows an evaluation of a wide range of alternatives.

In order to develop a probabilistic criterion for determining the adequacy of planned and installed generating capacity, JEA examined the 20 year period between 1958 and 1977 to determine the historic system reliability. A computer program (PROMOD) was used to make this analysis. This program considered peak load, energy sales, load shapes, and generating unit forced outage rates, as well as scheduled and unscheduled maintenance requirements. A reliability index measured in expected LOLH (i.e., number of hours per year for which demand may exceed generation) was calculated. This index was computed using the load distribution for all hours in a year. This calculation showed that for the 1958-1977 period the JEA system had a calculated median LOLH of 120 hours/year exclusive of any assistance from tie lines.

A check on the reasonableness of the 120 LOLH figure was made and it was found that this translated into providing reserve equal to approximately the capacity of the largest generating unit. This is not surprising since traditionally generation capacity additions and reserve requirements were based on covering the loss of the largest unit. JEA believes, as a result of this analysis, that a reliability level of 120 LOLH should be used as one of the criteria to determine the in-service dates of future units.

In-service dates of future JEA generation additions were determined by using PROMOD and applying the 120 LOLH criterion. Once the generation addition schedule was determined, JEA reviewed the effect of long term maintenance schedules on system LOLH. Maintenance of generating units is imperative if the integrity of the generating system is to be upheld. Maintenance consists of both minor and major overhaul procedures which are conducted periodically according to manufacturer recommendations. Since this usually involves removing the unit from service for extended periods, care must be taken in scheduling these maintenance requirements as they have a significant impact on the system risk level.

Using the load and energy forecast prepared by Gilbert Associates, Inc., and the technique described above, it was found that the first unit would be required in July, 1991 and the second unit in January, 1993. Tables 1.1-7 and 1.1-8 illustrate JEA's generation reserve analysis for 1980 through 1989 for both the forecasted summer and winter peaks.

Florida Power & Light Company

Reserve Margins as a Planning Criterion

Electric utilities typically have installed generation capacity that is greater than their current level of peak demand. This additional capacity is necessary so that utilities can continue to provide reliable service to customers in the event of contingencies such as when some plants are shut down for refueling, scheduled maintenance, unscheduled breakdowns, or when demand exceeds expected or forecasted levels.

There are two principal reliability criteria used frequently by the electric industry to attempt to define an adequate level of capacity: percent reserve margin and LOLP. Percent reserves is defined as capacity in excess of a certain forecasted or expected consumer demand. LOLP is a probabilistic method that attempts to quantify the expected risk of not

being able to serve the consumer's demand for electricity. Either of these methods serves as an adequate planning tool since there is a strong correlation between the two.

At the outset, it is important to recognize that there is no precise formulation which yields the optimum required capacity level. Accordingly, these levels are established based on a consideration of specific system characteristics and a perceived risk level that is acceptable, or desirable, to the company and its customers. Under current circumstances, FPL believes that a 20 - 25 percent reserve margin is reasonable and appropriate for its system planning purposes. Factors entering into this determination are more fully discussed below.

One of the major difficulties in developing an acceptable reserve margin is the uncertainty associated with the load forecast. Assessment of future demand growth is complex and controversial. Many of the factors determining demand growth are uncertain, for example, economic growth, consumer purchasing behavior, effects of potential conservation measures, and new standards for electric appliances.

Thus, the amount of reserve capacity planned by Florida Power & Light depends upon system load characteristics, number, size, and type of units, and the perceived amount of uncertainty with growth forecasts.

Factors Affecting Reserve Margins

During the 1960's, the loss of load probability methods of analyzing system reliability came into common use by the utility industry. A LOLP index of one day in 10 years is a widely used planning criterion within the industry for large interconnected systems. To achieve this standard, planned reserve margins generally have averaged 15 to 30 percent. Use of LOLP criteria is regarded by FPL as a planning aid which helps establish and verify the adequacy of planned reserve margins.

The size and type of units that make up the system must be considered in arriving at the appropriate level of reserves. Large units (700-800 MW) represent a large percentage of system capacity and load. Consequently, reserve margin requirements tend to increase to accommodate the loss of any such unit.

Planned maintenance outages are typically scheduled by utilities to coincide with seasonal periods of reduced customer load. As the number of units on a system increases, it is impossible to schedule all necessary unit maintenance during these periods and, therefore, system reserves have to increase to allow units to be maintained during peak periods at an acceptable level of risk.

In addition, long construction lead times, delays in project schedules, and the previously mentioned uncertainties in the load forecast tend to increase risk and require a higher reserve margin to compensate.

Finally, another major consideration in the development of reserve margins is FPL's responsibility to the Florida Subregion of SERC. FPL and other members voluntarily share operating reserve requirements for spinning reserve and supplemental reserve. FPL's reserve requirements represent its ability to react to system emergencies and forced maintenance outages. They must be maintained if FPL is to provide adequate and reliable generation to its customers and meet its operating reserve responsibilities to other Florida utilities.

The above factors, if ignored in determining adequate reserves, would tend to increase system risk to unacceptable levels. To compensate for this, FPL has for some time followed a 20 - 25 percent generating reserve margin target. It must be noted that FPL's target reserve margin levels are based on the "most probable" value within FPL's load forecast band. As such, actual reserve margin levels may be materially lower under the "high" band of the forecast and, conversely, higher under the "low" band.

Planned Outage Methodology

As previously discussed, forced and planned maintenance outages are major considerations when planning for reserve margins.

FPL's overhaul schedule for 26 steam units is based on system capability and predicted system loads. FPL schedules a complete turbine-generator inspection every 5 years with shorter outages in other years for boiler cleaning and auxiliary maintenance. The operating condition of units, any modifications recommended by turbine-generator manufacturers, unit upgrading, transmission line limitations, area protection, available manpower, budgetary limitations, and numerous other variables are considered in the development of the system schedule.

FPL must provide sufficient generation reserves to allow for planned maintenance outages without jeopardizing the system's ability to meet the demand while maintaining sufficient available capacity to allow for emergencies.

Supportive Study

FPL's successful use of percent reserve margins as a capacity expansion planning criterion is based on the established reserve/risk relationship that is characteristic of FPL's system. Therefore, if the system characteristics change through time (i.e., supply and demand parameters), so can this reserve/risk relationship. It then becomes necessary to periodically re-confirm and possibly re-establish the relationship to ensure that FPL's risk level falls within expected values with relation to the reserve margin planning criterion.

Preliminary results of a recent comprehensive study on generation reliability show the continuing strong correlation between reserves and risk as they relate to the FPL system. This further validates the use of percent reserves as a planning criterion to provide adequate and reliable

generation. Also, an assessment of FPL's current expansion plans reconfirms the need for the proposed coal units on a risk evaluation basis as well as the percent reserve criterion.

FPL will continue to utilize state-of-the-art techniques for system planning and further investigate the development of new methods to keep up with the growing complexity of the planning function in the electric utility industry.

Effect of Unit Operation on FPL Generating Capability

FPL's planned generating capability additions for the years 1980 through 1989 are presented in Table 1.1-9. As shown in this table, FPL needs the capacity of these units in 1988 and 1990 in order to maintain its planning criterion of 20 to 25 percent reserves. Present schedules, however, which are based on the mutual needs of the joint project partners, call for the first unit to be commercially available by the summer peak of 1986 with the second unit being available by the summer peak of 1987. Table 1.1-10 shows the generating capability that will result from the earlier addition of the second unit.

As described in Section 1.1.1.1, FPL expects to be a winter peaking company. Nevertheless, FPL continues to base its generating expansion plans on expected summer peaks. The reasons for this are threefold: (1) cooler intake air and water temperatures make the generating units more efficient during the winter (see Table 1.1-2 showing a difference of greater than 500 MW between summer and winter ratings for existing units); (2) projected winter peaks do not generally exceed the summer peak by a sufficient amount to offset increased unit efficiency; and (3) winter peaks tend to be of short duration as compared to summer peaks. FPL, therefore, considers the summer peak dominant and plans accordingly. Additionally, FPL continuously monitors and re-evaluates its forecast and consequently, the above described relationship is periodically re-examined.

In addition to its capacity needs, FPL intends to utilize the addition of these units to reduce its dependence on oil-fired generation. Section 1.2 further discusses FPL's oil displacement objectives.

Table 1.1-1

JACKSONVILLE ELECTRIC AUTHORITY

EXISTING GENERATING FACILITIES

Plant	Unit No.	Location	Type	Fuel		Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen Max Nameplate kW	Net Capability	
				Pri	Alt				Summer MW	Winter MW
Southside	1	Duval County 45/2S/26E	FS	HO		11/50	11/90	37500	314.3	322.3
	2		FS	HO		1/51	1/91	37500	26.4	27.4
	3		FS	HO		1/55	1/95	50000	28.6	31.6
	4		FS	HO		11/58	1/98	75000	46.3	48.3
	5		FS	HO		9/64	9/04	156600	70.1	71.1
	1-2		CT	LO		2/69	10/80	--	142.9	143.9
Kennedy		Duval County 39/2S/27E						479100	443.8	493.5
	8		FS	HO		7/55	7/95	50000	43.1	46.1
	9		FS	HO		1/58	1/98	50000	42.8	45.8
	10		FS	HO		12/61	12/01	149600	130.2	136.2
	1		CT	LO		2/69	Unknown	17000	12.9	15.4
	2		CT	LO		2/69	10/80	--	--	--
Northside	3-6	Duval County 12/1S/27E	CT	LO		7/73	Unknown	212500	214.8	250.0
	1		FS	HO		11/66	11/06	297500	262.4	262.4
	2		FS	HO		3/72	3/12	297500	262.4	262.4
	3		FS	HO		7/77	7/17	563700	499.4	499.4
	1-2		CT	LO		10/68	10/80	--	--	--
	3-6		CT	LO		1/75	Unknown	248400	208.0	246.0
SYSTEM TOTAL									1990.3	2086.0

Table 1.1-2 (Revision 1)
FLORIDA POWER & LIGHT COMPANY
EXISTING GENERATING FACILITIES

Plant	Unit No.	Location	Type	Fuel		Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen Max Nameplate kW	Net Capability	
				Pri	Alt				Summer MW	Winter MW
Turkey Point	1	Dade County 27/57S/40E	FS	HO	NG	4/67	Unknown	402,050	367.0	370.0
	2		FS	HO	NG	4/68	Unknown	402,040	367.0	370.0
	3		N	N	No	12/72	Unknown	759,970	646.0	676.0
	4		N	N	No	9/73	Unknown	759,970	646.0	676.0
	1-5		D	LO	No	4/68	Unknown	13,750	13.5	13.5
Lauderdale	4	Broward County 30/50S/42E	FS	HO	NG	9/57	Unknown	156,250	137.0	139.0
	5		FS	HO	NG	4/58	Unknown	156,250	137.0	139.0
	1-12		CT	LO	NG	8/70	Unknown	410,736	426.0	486.0
	13-14		CT	LO	NG	8/72	Unknown	410,736	426.0	486.0
								<u>1,133,972</u>	<u>1,126.0</u>	<u>1,250.0</u>
Port Everglades	1	City of Hollywood 23/50S/42E	FS	HO	NG	6/60	Unknown	225,250	204.0	206.0
	2		FS	HO	NG	4/61	Unknown	225,250	204.0	206.0
	3		FS	HO	NG	7/64	Unknown	402,050	367.0	370.0
	4		FS	HO	NG	4/65	Unknown	402,050	367.0	370.0
	1-12		CT	LO	NG	8/71	Unknown	410,736	426.0	486.0
	1-5		D	LO	No	4/68	Unknown	13,750	13.5	13.5
								<u>1,679,086</u>	<u>1,581.5</u>	<u>1,651.5</u>

Table 1.1-2 (Revision 1) (Continued)
FLORIDA POWER & LIGHT COMPANY
EXISTING GENERATING FACILITIES

Plant	Unit No.	Location	Type	Fuel		Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen Max Nameplate kW	Net Capability	
				Pri	Alt				Summer MW	Winter MW
Riviera	1	City of Riviera Beach 33/42S/43E	FS	HO	NC	11/46	Unknown	43,750	40.0	41.0
	2		FS	HO	NC	11/53	Unknown	75,000	69.0	71.0
	3		FS	HO	NC	6/62	Unknown	310,420	272.0	275.0
	4		FS	HO	NC	3/63	Unknown	310,420	272.0	275.0
Cape Canaveral		Brevard County 19/24S/36E						804,100	729.0	739.0
	1		FS	HO	NC	4/65	Unknown	402,050	367.0	370.0
	2		FS	HO	NC	5/69	Unknown	402,050	362.0	366.0
St. Lucie		St. Lucie County 16/36S/41E						850,000	777.0	795.0
	1		N	N	No	12/76	Unknown	850,000	777.0	795.0
Sanford		Volusia County 16/19S/30E						1,028,450	861.0	871.0
	3		FS	HO	NC	5/59	Unknown	156,250	137.0	139.0
	4		FS	HO	No	7/72	Unknown	436,100	362.0	366.0
	5		FS	Ho	No	6/73	Unknown	436,100	362.0	366.0
								580,000	446.0	518.0
Putnam		Putnam County 16/10S/27E						290,000	223.0	259.0
	1		CC	HO	LO	4/79	Unknown	290,000	223.0	259.0
	2		CC	HO	LO	8/77	Unknown	290,000	223.0	259.0

Table 1.1-2 (Revision 1) (Continued)
 FLORIDA POWER & LIGHT COMPANY
 EXISTING GENERATING FACILITIES

Plant	Unit No.	Location	Type	Fuel		Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen Max Nameplate KW	Net Capability		
				Pri	Alt				Summer MW	Winter MW	
Ft. Myers	1	Lee County 35/43S/25E	FS	HO	No	12/58	Unknown	156,250	137.0	139.0	
	2		FS	HO	No	7/69	Unknown	402,050	367.0	370.0	
	1-12		CT	LO	No	6/74	Unknown	744,000	672.0	828.0	
Manatee		Manatee County 18/33S/20E						<u>1,726,600</u>	<u>1,566.0</u>	<u>1,580.0</u>	
	1		FS	HO	No	10/76	Unknown	863,300	783.0	790.0	
Martin	2	Martin County 29/39S/38E	FS	HO	No	12/77	Unknown	863,300	783.0	790.0	
							<u>863,300</u>	<u>783.0</u>	<u>790.0</u>		
Outler*	1	Dade County 24/55S/40E	FS	HO	No	12/80	Unknown	863,300	783.0	790.0	
			TOTAL SYSTEM AS OF DECEMBER 31, 1980 =					<u>11,738</u>	<u>12,296</u>		
Palatka*		Putnam County 16/10S/27E						<u>305,500</u>	<u>197.0</u>	<u>202.0</u>	
	5		FS	HO	NG	11/54	Unknown	75,000	67.0	70.0	
	6		FS	HO	NG	7/55	Unknown	161,500	130.0	132.0	
Palatka*		Putnam County 16/10S/27E						<u>109,500</u>	<u>107.0</u>	<u>111.0</u>	
	1		FS	HO	NG	8/51	Unknown	34,500	32.0	34.0	
	2		FS	HO	NG	8/56	Unknown	75,000	75.0	77.0	
TOTAL SYSTEM INCLUDING EXTENDED COLD-STANDBY AS OF DECEMBER 31, 1980 =									<u>12,042</u>	<u>12,609</u>	

* The Company currently has four fossil fuel units on extended cold standby (ECS) status.

Table 1.1-3

JACKSONVILLE ELECTRIC AUTHORITY

HISTORY AND FORECAST OF ENERGY CONSUMPTION

Year	Rural and Residential			Commercial		Industrial	
	GW	Average No. of Customers	Average kWh Consumption Per Customer	GW	Average No. of Customers	GW	Average No. of Customers
1970	1676	152242	11011	641	18040	1215	376
1971	1751	157625	11106	705	18425	1353	383
1972	1898	163786	11592	753	18943	1492	413
1973	2141	170242	12574	721	19331	1617	459
1974	1989	178758	10615	768	19664	1604	480
1975	2021	184160	10977	793	19986	1708	508
1976	2141	187685	11409	824	20522	1790	507
1977	2314	190914	12119	867	21084	1881	506
1978	2367	195537	12097	897	21777	1965	526
1979	2291	199232	11490	891	21970	2026	532
1980	2266	202415	11195	844	22038	2039	571
1981	2253	202620	11119	875	21992	2066	553
1982	2318	204320	11345	911	22222	2233	566
1983	2385	206160	11569	937	22427	2401	578
1984	2515	208110	12085	970	22749	2528	600
1985	2558	210170	12171	984	22741	2582	594
1986	2648	212310	12472	1009	22876	2687	599
1987	2726	214540	12706	1030	22951	2780	600
1988	2831	216840	13056	1054	23173	2876	613
1989	2936	219200	13394	1081	23421	3005	628

Table 1.1-3 (Continued)

JACKSONVILLE ELECTRIC AUTHORITY

HISTORY AND FORECAST OF ENERGY CONSUMPTION

Year	Street & Highway Lighting GWH	Other Sales to Ultimate Consumers GWH	Total Sales to Ultimate Consumers GWH	Sales for Resale GWH	Utility Use & Losses GWH	Net Energy For Load GWH
1970	32	0	3564	248	286	4098
1971	52	0	3861	262	331	4454
1972	57	0	4200	270	361	4831
1973	65	0	4644	321	316	5281
1974	66	0	4336	309	323	4968
1975	65	0	4587	349	382	5318
1976	69	0	4824	395	356	5575
1977	68	0	5130	428	394	5952
1978	70	0	5299	458	399	6156
1979	71	0	5279	463	361	6103
1980	79	0	5228	464	358	6050
1981	69	0	5263	475	343	6081
1982	69	0	5531	480	356	6367
1983	70	0	5793	486	366	6645
1984	70	0	6083	492	378	6953
1985	71	0	6195	498	383	7076
1986	72	0	6416	504	393	7313
1987	72	0	6608	510	401	7519
1988	73	0	6834	516	411	7761
1989	73	0	7095	522	422	8039

Table 1.1-4

JACKSONVILLE ELECTRIC AUTHORITY

HISTORY AND FORECAST OF SEASONAL PEAK DEMAND AND ANNUAL NET ENERGY FOR LOAD

Year	Summer, Peak Demand Net MW		Net Energy For Load - GWh	Load Factor %	Year	Winter Peak Demand Net MW	
	Interruptible	Total				Interruptible	Total
1970	0	834	4098	56.1	1970-71	0	733
1971	0	898	4454	56.6	1971-72	0	811
1972	0	1013	4831	54.3	1972-73	0	891
1973	0	1090	5281	55.3	1973-74	0	829
1974	0	1067	4968	53.2	1974-75	0	825
1975	0	1116	5318	54.5	1975-76	0	948
1976	0	1181	5575	53.6	1976-77	0	1160
1977	0	1243	5952	54.5	1977-78	0	1123
1978	0	1303	6156	56.1	1978-79	0	1180
1979	0	1218	6103	57.2	1979-80	0	1146
1980	0	1296	6050	53.3	1980-81	0	1169
1981	0	1279	6081	54.3	1981-82	0	1244
1982	0	1329	6367	54.7	1982-83	0	1318
1983	0	1375	6645	55.2	1983-84	0	1401
1984	0	1429	6953	55.5	1984-85	0	1464
1985	0	1444	7076	55.2	1985-86	0	1544
1986	0	1485	7313	54.1	1986-87	0	1630
1987	0	1514	7519	52.7	1987-88	0	1714
1988	0	1552	7761	51.7	1988-89	0	1798
1989	0	1596	8039	51.0	1989-90	0	1874

Table 1.1-5A

FLORIDA POWER & LIGHT COMPANY

HISTORY AND FORECAST OF ENERGY CONSUMPTION
LOW BAND OF FORECAST^a

Year	Rural and Residential			Commercial			Industrial		
	GWH	Average No. of Customers	Average kWh Per Customer	GWH	Average No. of Customers	GWH	Average No. of Customers	GWH	Average No. of Customers
1970	11814	1115070	10595	6476	121353	2044	5055		
1971	13080	1194015	10955	7395	129371	2236	5116		
1972	14653	1289027	11367	8389	139743	2468	5208		
1973	16823	1397228	12040	10180	158977	2755	5275		
1974	16802	1498262	11214	11041	168991	2646	7147		
1975	17313	1555834	11128	11851	171575	2534	8977		
1976	17626	1607015	10968	12117	177046	2596	9994		
1977	19073	1677532	11370	12885	184676	2756	111796		
1978	20736	1758838	11790	13748	192850	2993	13799		
1979	21062	1854884	11355	14373	202673	3147	14837		
1980	22433	1954240	11473	15089	212956	3348	14734		
1981	23253	2051528	11334	15571	226777	3421	14958		
1982	23688	2080586	11385	15963	232300	3518	16330		
1983	24434	2104530	11610	16374	235900	3640	16590		
1984	24837	2128004	11672	17111	239800	3681	17120		
1985	25292	2155375	11734	17877	243900	3722	18150		
1986	25700	2208509	11637	18674	252000	3767	19490		
1987	26144	2264192	11547	19502	259200	3823	20880		
1988	26712	2321446	11507	20516	266400	3868	22300		
1989	27026	2379957	11356	21315	274000	3893	23770		

^a The "Low" represents a forecasted number for which there is a 10 percent chance that the actual value will be less than the forecast.

Table 1.1-5A (Continued)

FLORIDA POWER & LIGHT COMPANY

HISTORY AND FORECAST OF ENERGY CONSUMPTION
LOW BAND OF FORECAST^a

Year	Street & Highway Lighting GWH	Other Sales to Ultimate Consumers GWH	Total Sales to Ultimate Consumers GWH	Sales for Resale GWH	Utility Use & Losses GWH	Net Energy For Load GWH
1970	185	1810	22329	786	1998	25113
1971	204	1927	24842	947	2095	27884
1972	216	2080	27806	1122	2570	31498
1973	240	1119	31117	1350	2718	35185
1974	257	409	31236	1475	2754	35465
1975	285	524	32507	1604	3040	37151
1976	308	482	33129	1801	3095	38025
1977	329	474	35517	2012	3183	40712
1978	343	478	38298	2304	3104	43706
1979	358	463	39403	2563	3376	45342
1980	372	463	41705	3003	3742	48450
1981	385	482	43112	3548	3794	50454
1982	390	507	44066	3728	3987	51781
1983	387	538	46373	3945	4289	53607
1984	382	548	46559	4214	4415	55188
1985	372	565	47828	4443	4545	56816
1986	361	576	49078	4736	4679	58493
1987	353	587	50409	4993	4818	60220
1988	344	602	51772	5264	4960	61996
1989	336	617	53187	5532	5106	63825

^a The "Low" represents a forecasted number for which there is a 10 percent chance that the actual value will be less than the forecast.

Table 1.1-5B

FLORIDA POWER & LIGHT COMPANY
HISTORY AND FORECAST OF ENERGY CONSUMPTION
MOST PROBABLE FORECAST^a

Year	Rural and Residential			Commercial			Industrial		
	GWH	Average No. of Customers	Average kWh Consumption Per Customer	GWH	Average No. of Customers	GWH	Average No. of Customers		
1970	11814	1115070	10595	6476	121353	2044	5055		
1971	13080	1194015	10955	7395	129371	2236	5116		
1972	14653	1289027	11367	8389	139743	2468	5208		
1973	16823	1397228	12040	10180	158977	2755	5275		
1974	16802	1498262	11214	11041	168991	2646	7147		
1975	17313	1555834	11128	11851	171575	2534	8977		
1976	17626	1607015	10968	12117	177046	2596	9994		
1977	19073	1677532	11370	12885	184676	2756	11796		
1978	20736	1758838	11790	13748	192850	2993	13799		
1979	21062	1854884	11355	14373	202673	3147	14837		
1980	22433	1955240	11473	15089	212956	3348	14734		
1981	23253	2051528	11334	15571	226777	3421	14958		
1982	24250	2121300	11432	16315	236864	3599	16654		
1983	25474	2199808	11580	17071	246613	3794	17344		
1984	26150	2277649	11481	18009	256700	3874	18320		
1985	26845	2358859	11381	18999	266900	3955	19860		
1986	27559	2431616	11334	20043	277500	4037	21460		
1987	28293	2507413	11284	21144	287000	4121	23120		
1988	29043	2585850	11232	22306	296800	4208	24840		
1989	29817	2665917	11185	23531	306900	4295	26630		

^a The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.

Table 1.1-5B (Continued)

FLORIDA POWER & LIGHT COMPANY

HISTORY AND FORECAST OF ENERGY CONSUMPTION
MOST PROBABLE FORECAST^a

Year	Street & Highway Lighting GMH	Other Sales to Ultimate Consumers GMH	Total Sales to Ultimate Consumers GMH	Sales for Resale GMH	Utility Use & Losses GMH	Net Energy For Load GMH
1970	185	1810	22329	786	1998	25113
1971	204	1927	24842	947	2095	27884
1972	216	2080	27806	1122	2570	31498
1973	240	1119	31117	1350	2718	35185
1974	257	409	31236	1475	2754	35465
1975	285	524	32507	1604	3040	37151
1976	308	482	33129	1801	3095	38025
1977	329	474	35517	2012	3183	40712
1978	343	478	38298	2304	3104	43706
1979	358	463	39403	2563	3376	45342
1980	372	463	41705	3003	3742	48450
1981	385	482	43112	3548	3794	50454
1982	399	519	45082	3834	4084	53000
1983	405	559	47303	4104	4471	55878
1984	402	577	49012	4417	4646	58075
1985	395	598	50792	4738	4829	60359
1986	388	618	52645	5069	5019	62733
1987	382	638	54578	5406	5216	65200
1988	375	657	56589	5754	5421	67764
1989	368	679	58690	6105	5634	70429

^a The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.

Table 1.1-5C

FLORIDA POWER & LIGHT COMPANY
HISTORY AND FORECAST OF ENERGY CONSUMPTION
HIGH BAND OF FORECAST^a

Year	Rural and Residential			Commercial		Industrial	
	GWH	Average No. of Customers	Average kWh Consumption Per Customer	GWH	Average No. of Customers	GWH	Average No. of Customers
1970	11814	1115070	10595	6476	121353	2044	5055
1971	13080	1194015	10955	7395	129371	2236	5116
1972	14653	1289027	11367	8389	139743	2468	5208
1973	16823	1397228	12040	10180	158977	2755	5275
1974	16802	1498262	11214	11041	168991	2646	7147
1975	17313	1555834	11128	11851	171575	2534	8977
1976	17626	1607015	10968	12117	177046	2596	9994
1977	19073	1677532	11370	12885	184676	2756	11796
1978	20736	1758838	11790	13748	192850	2993	13799
1979	21062	1854884	11355	14373	202673	3147	14837
1980	22433	1955240	11473	15089	212956	3348	14734
1981	23253	2051528	11334	15571	226777	3421	14958
1982	25129	2147984	11699	16934	239900	3732	16860
1983	27002	2248351	12010	18096	252100	4023	17720
1984	27831	2352863	11829	19173	265200	4125	18930
1985	28736	2462286	11670	20310	278400	4228	20730
1986	29605	2545004	11633	21509	290400	4339	22460
1987	30533	2632240	11600	22775	301200	4464	24270
1988	31451	2722107	11554	24178	312700	4559	26150
1989	32449	2815574	11525	25589	324200	4674	28130

^a The "High" represents a forecasted number for which there is a 10 percent chance that the actual value will be greater than the forecast.

Table 1.1-5C (Continued)

FLORIDA POWER & LIGHT COMPANY

HISTORY AND FORECAST OF ENERGY CONSUMPTION
HIGH BAND OF FORECAST^a

Year	Street & Highway Lighting GWH	Other Sales to Ultimate Consumers GWH	Total Sales to Ultimate Consumers GWH	Sales for Resale GWH	Utility Use & Losses GWH	Net Energy For Load GWH
1970	185	1810	22329	786	1998	25113
1971	204	1927	24842	947	2095	27884
1972	216	2080	27806	1122	2570	31498
1973	240	1119	31117	1350	2718	35185
1974	257	409	31236	1475	2754	35465
1975	285	524	32507	1604	3040	37151
1976	308	482	33129	1801	3095	38025
1977	329	474	35517	2012	3183	40712
1978	343	478	38298	2304	3104	43706
1979	358	463	39403	2563	3376	45342
1980	372	463	41705	3003	3742	48450
1981	385	482	43112	3548	3794	50454
1982	414	537	46746	3954	4230	54930
1983	430	594	50145	4360	4740	59245
1984	428	614	52171	4722	4947	61840
1985	422	641	54337	5048	5164	64549
1986	415	663	56531	5455	5390	67376
1987	412	686	58870	5831	5626	70327
1988	405	709	61302	6233	5873	73408
1989	400	740	63852	6641	6130	76623

^a The "High" represents a forecasted number for which there is a 10 percent chance that the actual value will be greater than the forecast.

Table 1.1-6A

FLORIDA POWER & LIGHT COMPANY
HISTORY AND FORECAST OF SEASONAL PEAK DEMAND AND ANNUAL NET ENERGY FOR LOAD
LOW BAND OF FORECAST^a

Year	Summer Peak Demand		Net Energy For Load - GWh	Load Factor %	Year	Winter Peak Demand	
	Interruptible ^b	Total				Interruptible ^b	Total
1970	30	5001	25113	57	1970-71	0	5059
1971	118	5378	27884	59	1971-72	0	4676
1972	0	6011	31498	60	1972-73	0	5953
1973	0	6894	35185	58	1973-74	0	6258
1974	0	7235	35465	56	1974-75	0	5807
1975	0	7076	37151	60	1975-76	0	7287
1976	0	7598	38025	57	1976-77	117	8606
1977	0	7841	40712	59	1977-78	0	8617
1978	0	8345	43706	60	1978-79	0	8791
1979	0	8650	45342	59	1979-80	178	9732c
1980	178	9623c	48450	NA	1980-81	200d	10738d
1981	180	9630	50454	NA	1981-82	183	9805
1982	183	9439	51781	NA	1982-83	185	9845
1983	185	9610	53607	NA	1983-84	187	10060
1984	187	9785	55188	NA	1984-85	190	10285
1985	190	9963	56816	NA	1985-86	192	10510
1986	192	10205	58493	NA	1986-87	195	10745
1987	195	10366	60220	NA	1987-88	197	10980
1988	197	10543	61996	NA	1988-89	200	11225
1989	200	10745	63825	NA	1989-90	203	11470

a The "Low" represents a forecasted number for which there is a 10 percent chance that the actual value will be less than the forecast.

b Historical values represent actual load curtailed. Future values are for curtailable load. FPL's Energy Management Plan for the 80's describes efforts to attract additional curtailable loads.

c Actual

d Actual as of January 13, 1981.

Table 1.1-6B

FLORIDA POWER & LIGHT COMPANY
HISTORY AND FORECAST OF SEASONAL PEAK DEMAND AND ANNUAL NET ENERGY FOR LOAD
MOST PROBABLE FORECAST^a

Year	Summer Peak Demand		Net Energy For Load - GWh	Load Factor %	Year	Winter Peak Demand ^a	
	Net MW Interruptible ^b	Total				Net MW Interruptible ^b	Total
1970	30	5001	25113	57	1970-71	0	5059
1971	118	5378	27884	59	1971-72	0	4676
1972	0	6011	31498	60	1972-73	0	5953
1973	0	6894	35185	58	1973-74	0	6258
1974	0	7235	35465	56	1974-75	0	5807
1975	0	7076	37151	60	1975-76	0	7287
1976	0	7598	38025	57	1976-77	117	8606
1977	0	7841	40712	59	1977-78	0	8617
1978	0	8345	43706	60	1978-79	0	8791
1979	0	8650	45342	59	1979-80	178	9732c
1980	178	9623c	48450	57	1980-81	200 ^d	10738 ^d
1981	183	9630	50454	54	1981-82	189	10330
1982	189	9972	53000	59	1982-83	194	10660
1983	194	10317	55878	60	1983-84	200	10950
1984	200	10690	58075	60	1984-85	206	11280
1985	206	11077	60369	61	1985-86	212	11620
1986	212	11445	62733	62	1986-87	218	11965
1987	218	11792	65200	62	1987-88	224	12325
1988	224	12179	67764	63	1988-89	231	12700
1989	231	12621	70429	63	1989-90	238	13080

a The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.

b Historical values represent actual load curtailed. Future values are for curtailable load. FPL's Energy Management Plan for the 80's describes efforts to attract additional curtailable loads.

c Actual

d Actual as of January 13, 1981.

Table 1.1-6C

FLORIDA POWER & LIGHT COMPANY
HISTORY AND FORECAST OF SEASONAL PEAK DEMAND AND ANNUAL NET ENERGY FOR LOAD
HIGH BAND OF FORECASTA

Year	Summer Peak Demand Net MW		Net Energy For Load - GWh	Load Factor %	Year	Winter Peak Demand Net MW	
	Interruptible ^b	Total				Interruptible ^b	Total
1970	30	5001	25113	57	1970-71	0	5059
1971	118	5378	27884	59	1971-72	0	4676
1972	0	6011	31498	60	1972-73	0	5953
1973	0	6894	35185	58	1973-74	0	6258
1974	0	7235	35465	56	1974-75	0	5807
1975	0	7076	37151	60	1975-76	0	7287
1976	0	7598	38025	57	1976-77	117	8606
1977	0	7841	40712	59	1977-78	0	8617
1978	0	8345	43706	60	1978-79	0	8791
1979	0	8650	45342	59	1979-80	178	9732c
1980	178	9623c	48450	NA	1980-81	200d	10738d
1981	185	9630	50454	NA	1981-82	192	10805
1982	192	10422	54930	NA	1982-83	200	11385
1983	200	10810	59245	NA	1983-84	207	11740
1984	207	11214	61840	NA	1984-85	216	12110
1985	216	11632	64549	NA	1985-86	224	12495
1986	224	12256	67376	NA	1986-87	233	12885
1987	233	12634	70327	NA	1987-88	242	13290
1988	242	13077	73408	NA	1988-89	251	13710
1989	251	13621	76623	NA	1989-90	261	14140

a The "High" represents a forecasted number for which there is a 10 percent chance that the actual value will be greater than the forecast.

b Historical values represent actual load curtailed. Future values are for curtailable load. FPL's Energy Management Plan for the 80's describes efforts to attract additional curtailable loads.

c Actual

d Actual as of January 13, 1981.

Table 1.1-7 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
GENERATION EXPANSION PLAN
GENERATION AND RESERVE ANALYSIS
AT TIME OF SUMMER PEAK

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capability (MW)	Net Summer Peak Load ^a (MW)	Reserves (MW)	(%)
1980	-	-	1350.9 ^b	1296 ^c	54.9	4.2
1981	262.4 Northside 1 ^d 118.0 Northside 3 ^d	Oil Oil	1731.3	1279	452.3	35.4
1982	85.0 Northside 2 ^d 12.9 Kennedy CT1 ^d 53.7 Kennedy CT3 ^d 53.7 Kennedy CT4 ^d	Oil Oil Oil Oil	1936.6	1329	607.6	45.7
1983	53.7 Kennedy CT6 ^d 300.0 Southerne ^e	Oil Coal	2290.3	1375	915.3	66.6
1984	330.0 Southerne	Coal	2290.3	1429	861.3	60.3
1985	300.0 Southerne	Coal	2290.3	1444	846.3	58.6
1986	275.0 SJRPP 1 300.0 Southerne	Coal Coal	2565.3	1485	1080.3	72.7
1987	275.0 SJRPP 2 500.0 Southerne	Coal Coal	3040.3	1514	1526.3	100.8
1988	400.0 Southerne	Coal	2940.3	1552	1388.3	89.5
1989	400.0 Southern (12.9 Kennedy CT1)	Coal Oil	2927.4	1596	1331.4	83.4

a Gilbert forecast

b Net capability reflects units which are currently derated

c Actual

d Restoration of existing unit

e Firm purchase of unit power from Southern Company

Table 1.1-8 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
GENERATION EXPANSION PLAN
GENERATION AND RESERVE ANALYSIS
AT TIME OF WINTER PEAK

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Winter Capability (MW)	Net Winter Peak Load ^a (MW)	Reserves (MW) (%)	
1980/81	-	-	1417.7 ^b	1169	248.7	21.3
1981/82	262.4 Northside 1 ^c 118.0 Northside 3 ^c	Oil Oil	1798.1	1244	554.1	44.5
1982/83	85.0 Northside 2 ^c 15.4 Kennedy CT1 ^c 62.5 Kennedy CT3 ^c 62.5 Kennedy CT4 ^c 62.5 Kennedy CT6 ^c 300.0 Southern ^d	Oil Oil Oil Oil Oil Coal	2386.0	1318	1068.0	81.0
1983/84	300.0 Southern ^d	Coal	2386.0	1401	985.0	70.3
1984/85	300.0 Southern ^d	Coal	2386.0	1464	922.0	63.0
1985/86	300.0 Southern ^d	Coal	2386.0	1544	842.0	54.5
1986/87	275.0 SJRPP 1 500.0 Southern ^d	Coal Coal	2861.0	1630	1231.0	75.5
1987/88	275.0 SJRPP 2 400.0 Southern ^d	Coal Coal	3036.0	1714	1322.0	77.1
1988/89	400.0 Southern ^d (15.4 Kennedy CT1)	Coal Oil	3020.6	1798	1222.6	68.0
1989/90	400.0 Southern ^d	Coal	3020.6	1874	1146.6	61.2

a Gilbert forecast

b Net capability reflects units which are currently derated

c Restoration of existing unit

d Firm purchase of unit power from Southern Company

Table 1.1-9 (Revision 1)

FLORIDA POWER & LIGHT COMPANY
PLANNING GENERATION AND RESERVE ANALYSIS

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capacity (MW)	Net Summer Peak Load (MW)	Reserves	
					(MW)	(%)
1980	-	-	10955a	9623c	1332	13.8
1981	783 Martin 1d 783 Martin 2 60 Dade	Oil Oil Solid Waste	12581	9630	2951	30.6
1982	67 Cutler 5e 130 Cutler 6e (646) (Turkey Point 4)f	Oil Oil Nuclear	12132	9972	2160	21.7
1983	634 St. Lucie 2g (646) (Turkey Point 3)f 666 Turkey Point 4f 350 Southernh	Nuclear Nuclear Nuclear Coal	13136	10317	2819	27.3
1984	666 Turkey Point 3f 350 Southernh	Nuclear Coal	13802	10690	3112	29.1
1985	292 TECO1 350 Southernh	Coal Coal	14094	11077	3017	27.2
1986	208 TECO1 350 Southernh 275 SJRPP 1j	Coal Coal Coal	14285	11445	2840	24.8
1987	104 TECO1 650 Southernh 700 Martin 3	Coal Coal Coal	15181	11792	3389	28.7
1988	275 SJRPP 2j 1000 Southernh	Coal Coal	15702	12179	3523	28.9
1989	700 Martin 4 1000 Southernh	Coal Coal	16402	12621	3781	30.0

Table 1.1-9 (Revision 1) (Continued)

FLORIDA POWER & LIGHT COMPANY
PLANNING GENERATION AND RESERVE ANALYSIS

- a Excludes units on cold-standby status: Palatka 107 MW and Cutler 197 MW. Cutler Unit No. 4 retired.
- b Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.
- c Actual-occurred on July 14, 1980.
- d Martin Unit No. 1 was placed in commercial operation in December, 1980.
- e Reactivation of Cutler Plant from cold-standby status (Units No. 5 and 6).
- f Turkey Point Steam Generator replacement. Increase of 20 MW anticipated after replacement.
- g Total capability is 802 MW. Sale of 168 MW has been offered to other utilities.
- h Purchase of unit power from Southern Company.
- i Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.
- j FPL's share of output from proposed unit to be jointly owned with Jacksonville Electric Authority. Combination of joint ownership and firm power purchases. For planning purposes, the in-service date of the SJRPP units are as shown above. The contract between JEA and their architect/engineer specifies the first unit in December, 1985 and the second unit in May, 1987.

Table 1.1-10 (Revision 1)

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS

		Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capability (MW)	Net Summer ^b Peak Load (MW)	Reserves (MW)	Reserves (%)
1980		-	-	10955 ^a	9623 ^c	1332	13.8
1981	783	Martin 1 ^d	Oil				
	783	Martin 2	Oil				
	60	Dade	Solid Waste	12581	9630	2951	30.6
1982	67	Cutler 5 ^e	Oil				
	130	Cutler 6 ^e	Oil				
	(646)	(Turkey Point 4) ^f	Nuclear	12132	9972	2160	21.7
1983	634	St. Lucie 2 ^g	Nuclear				
	(646)	(Turkey Point 3) ^f	Nuclear				
	666	Turkey Point 4 ^f	Nuclear				
	350	Southern ^h	Coal	13136	10317	2819	27.3
1984	666	Turkey Point 3 ^f	Nuclear				
	350	Southern ^h	Coal	13802	10690	3112	29.1
1985	292	TECO ⁱ	Coal				
	350	Southern ^h	Coal	14094	11077	3017	27.2
1986	208	TECO ⁱ	Coal				
	350	Southern ^h	Coal				
	275	SJRPP 1 ^j	Coal	14285	11445	2840	24.8
1987	275	SJRPP 2 ^j	Coal				
	104	TECO ⁱ	Coal				
	650	Southern ^h	Coal				
	700	Martin 3	Coal	15456	11792	3664	31.1
1988	1000	Southern ^h	Coal	15702	12179	3523	28.9
1989	700	Martin 4	Coal				
	1000	Southern ^h	Coal	16402	12621	3781	30.0

Table 1.1-10 (Revision 1) (Continued)

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS

- a Excludes units on cold-standby status: Palatka 107 MW and Cutler 197 MW. Cutler Unit No. 4 retired.
- b Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.
- c Actual-occurred on July 14, 1980.
- d Martin Unit No. 1 was placed in commercial operation in December, 1980.
- e Reactivation of Cutler Plant from cold-standby status (Units No. 5 and 6).
- f Turkey Point Steam Generator replacement. Increase of 20 MW anticipated after replacement.
- g Total capability is 802 MW. Sale of 168 MW has been offered to other utilities.
- h Purchase of unit power from Southern Company.
- i Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.
- j FPL's share of output from proposed unit to be jointly owned with Jacksonville Electric Authority. Combination of joint ownership and firm power purchases.

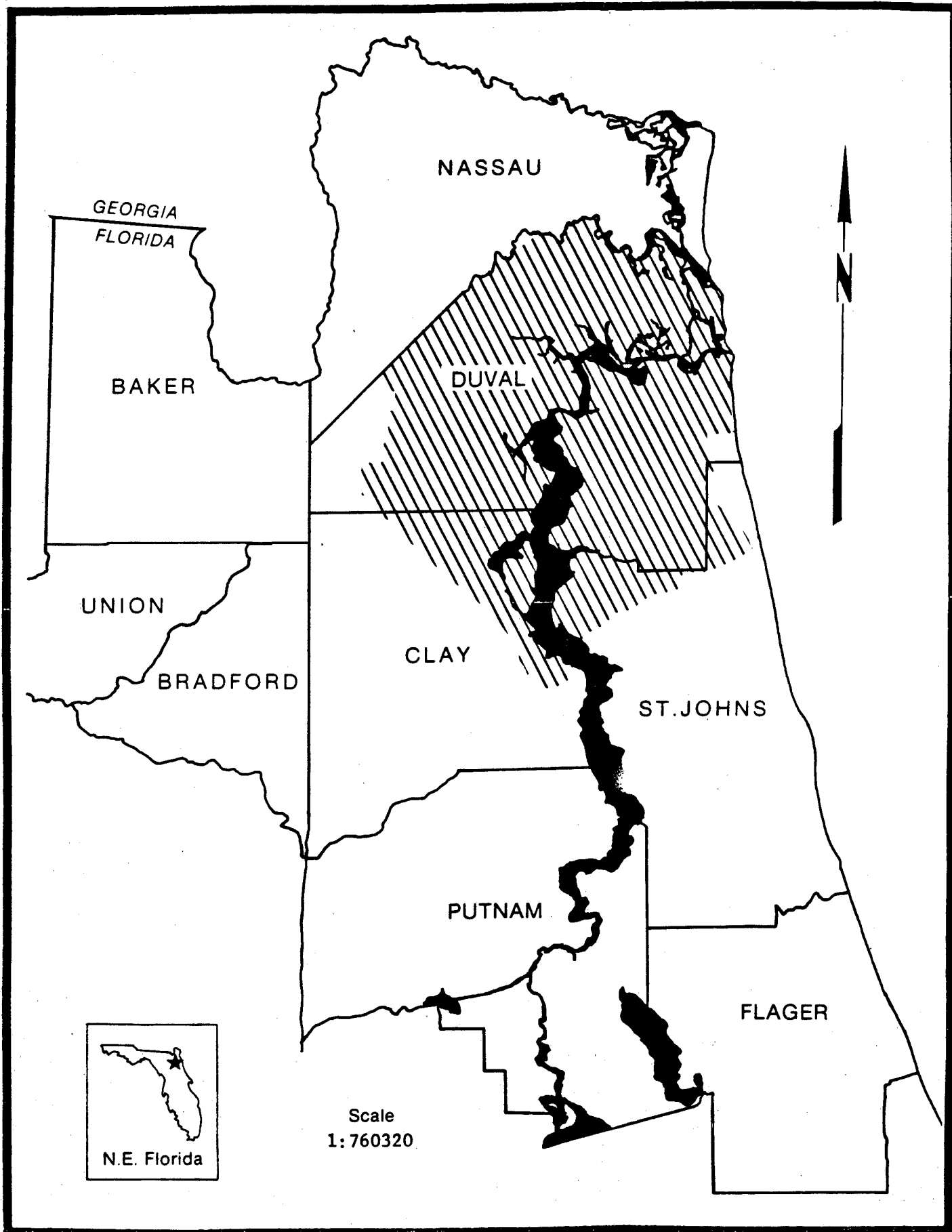


Figure 1.1-1 Jacksonville Electric Authority - Service Area

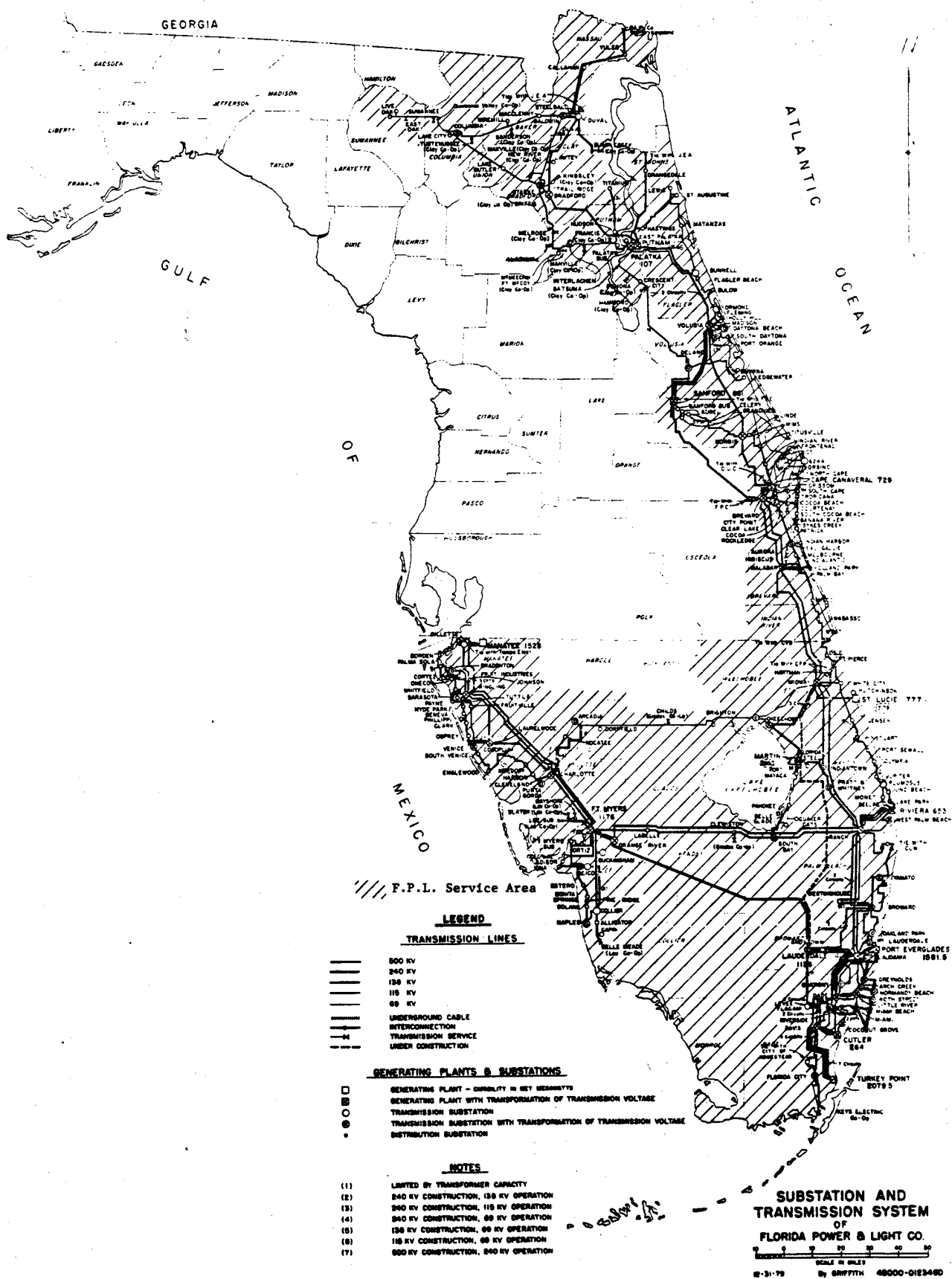


Figure 1.1-2 Florida Power & Light Company - Service Area

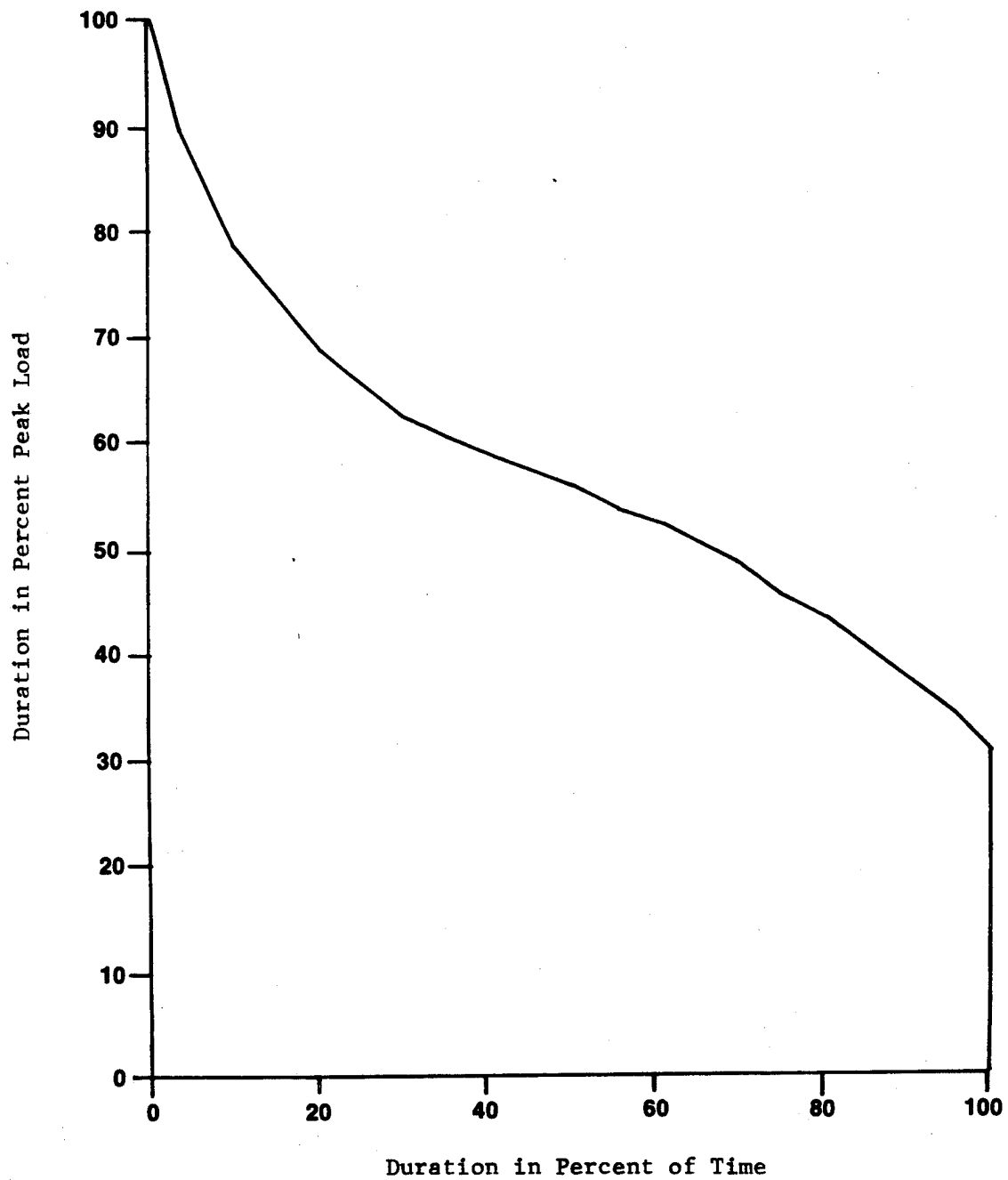


Figure 1.1-3 Jacksonville Electric Authority-1979 Annual Duration Curve

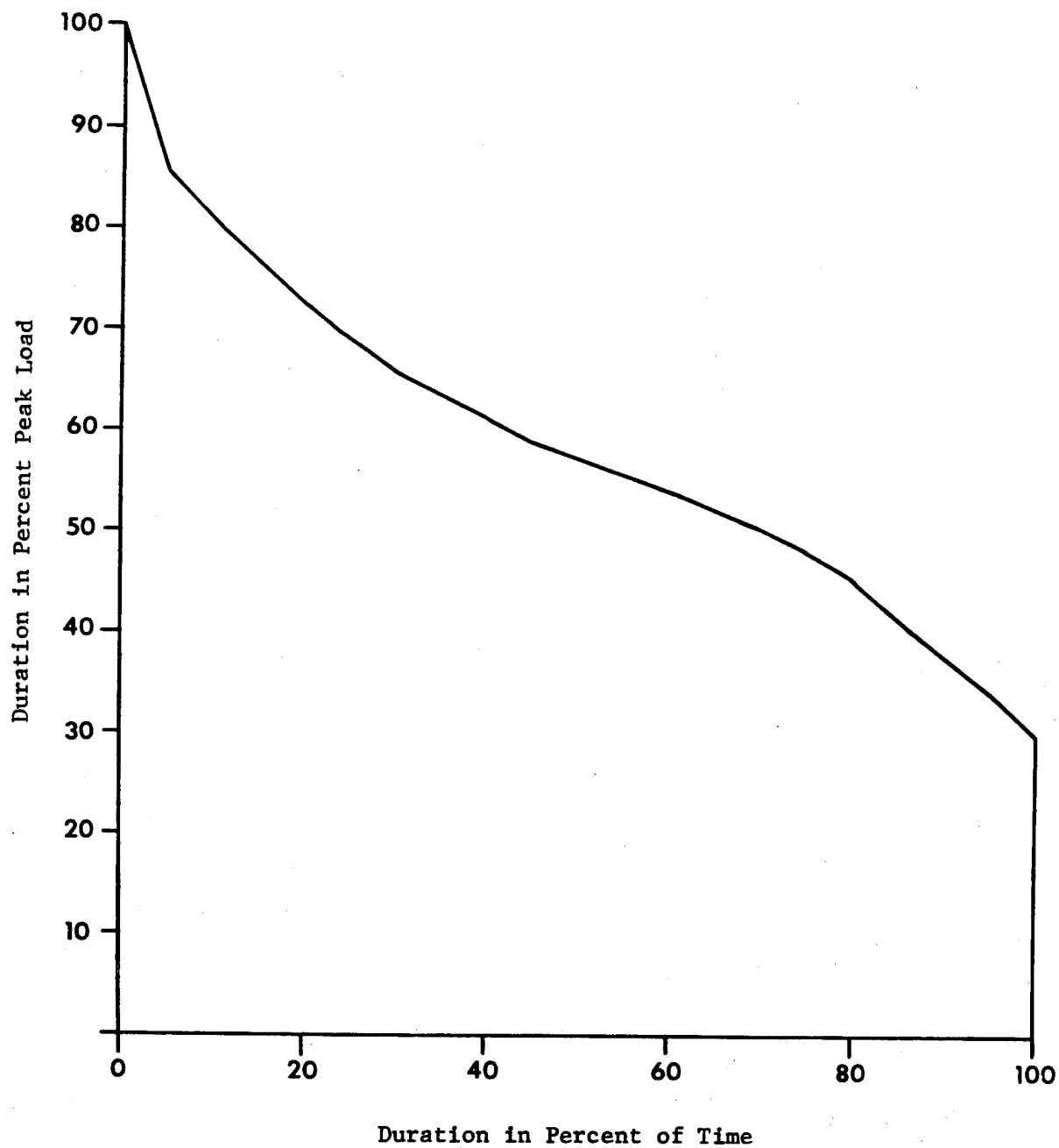


Figure 1.1-4 Florida Power & Light Company-1979 Annual Load Duration Curve

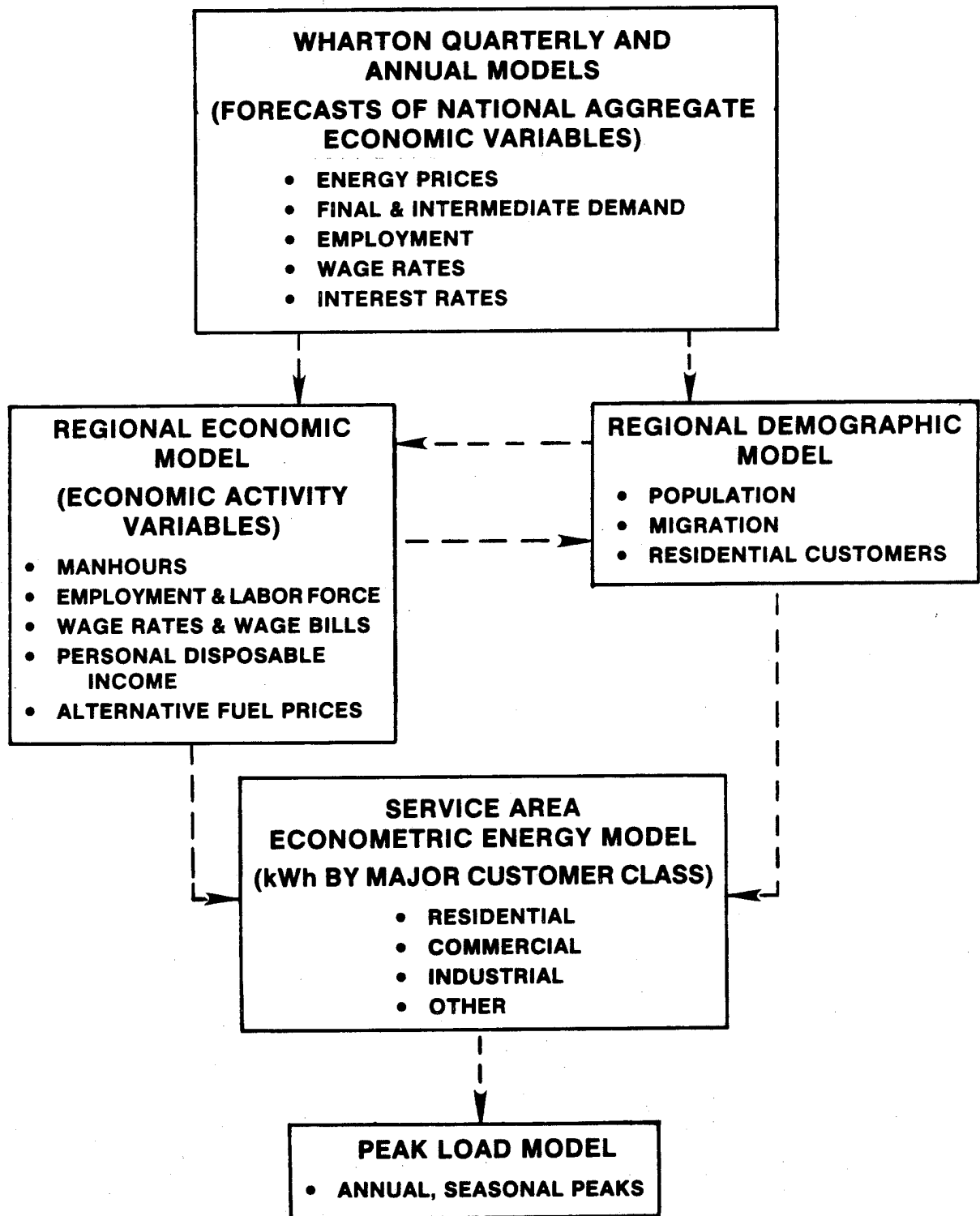


Figure 1.1-5 Jacksonville Electric Authority-Integrated Electric Energy and Demand Forecasting System

1.2 OTHER OBJECTIVES

Historically the decision to construct a new generating facility has been based on the need to adequately serve the expected growth in peak demand. Today, in an ever changing environment, other considerations must be evaluated in the decision making process. One of the most important considerations is the dependence of the utilities in Florida on foreign oil supplies. Accordingly, Florida utilities are adopting measures to reduce this dependence. This section will demonstrate that it is cost effective to reduce this dependence and that customers of both utilities would benefit financially from the burning of coal as a displacement for oil.

Both JEA and FPL believe that there is no single, exclusive solution to oil reduction. Therefore, actions must be taken that will produce a multi-pronged approach to reduce oil consumption. These actions must be judged in accordance with criteria which insure that both utilities can continue to responsibly discharge their obligations as public utilities to their customers. These criteria must provide for a careful evaluation of alternatives for oil reduction that include, not only those which are currently available and proven, but those which are under development or could be proven with additional development effort and are expected to be available in sufficient time to permit their orderly and economic implementation. (Alternatives are discussed in Chapter 8, Sections 8.2.1 and 8.2.2.)

One of the major criteria used in the evaluation of alternatives is cost effectiveness. The cost effectiveness evaluations are further complicated by the uncertainty as to the future behavior of fuel cost and supply. Estimates of future fuel costs vary widely from expert to expert. Predictions of oil supply have equally wide ranges. Therefore, cost effectiveness evaluations boil down to risk evaluations. The risk of oil price increases and supply disruptions must be weighed against the risks of higher costs for currently available options, against the future availability of more desirable options, and against the risk of coal price increases and supply problems.

Jacksonville Electric Authority

As discussed in Section 1.1.3, JEA develops a need for the proposed project to adequately serve the expected peak of 1991 and 1993 based on JEA's official load forecast. However, the combination of recent and projected crude oil price increases and JEA's 100 percent dependence on installed oil-fired generation has required JEA to evaluate the possible cost effectiveness and feasibility of options that are available to reduce its dependence on oil.

JEA is aggressively evaluating and pursuing multiple programs to develop alternative sources of energy which will reduce its dependence on oil. A major conceptual engineering study is currently under way to evaluate the potential of converting oil-fired units to burn coal. Another study will investigate the feasibility of using coal-oil-mixtures, natural gas or synthetic gas as a boiler fuel. At present, JEA is purchasing "coal-by-wire" from the Southern Company and will increase these purchases, where cost effective, when a 500 kV Florida-Southern interconnection is completed in late 1982. In addition, JEA will purchase firm power from coal units on the Southern Company system starting in 1983. (See Chapter 8, Section 8.1.3.)

While these programs offer the potential of reducing JEA's oil consumption, each alternative is limited by either magnitude of oil reductions, technical feasibilities, potential environmental restrictions, or cost. Based on evaluations performed by JEA, the most cost effective measure to reduce JEA's dependence on oil is a combination of constructing these two coal-fired units with the additional purchase of firm power from Georgia scheduled to commence in 1983. The magnitude of this purchase was sized to provide JEA with the most cost-effective combination of power purchases and new generating capacity. As the lead utility in this project and to reduce its dependence on oil at the earliest date, JEA plans to construct these units for an in-service date of December, 1985 for the first unit and May, 1987 for the second unit. Table 1.2-1 shows the expected JEA oil displacement with the construction of the proposed

project. Approximately 5 million barrels of oil will be displaced annually on the JEA system once the two units are in operation with a total savings of 25 million barrels of oil on the JEA system by 1990.

If JEA achieves its conservation goals under the Florida Energy Efficiency and Conservation Act, the first unit would not be needed until the early 1990's for capacity purposes based on the LOLH criterion discussed in Section 1.1.3. However, even if the conservation goals are achieved, the potential for oil savings still exists as a result of JEA's dependence on existing oil-fired capacity to serve the needs of its customers. This means that JEA should move to construct these two coal units so that the earliest in-service date may be obtained. Tables 1.2-2 and 1.2-3 illustrate the reserve margins at the time of summer peak both with and without the proposed project, assuming the FPSC conservation goals are fully achieved. Tables 1.2-4 and 1.2-5 do the same for the winter peak.

The JEA management believes that this project is a critical factor in the total plan to reduce JEA's current dependence on oil.

Florida Power & Light Company

As discussed in Section 1.1.3, FPL will need the proposed units to adequately serve the expected peaks of 1988 and 1990.

The need for these units still exists in the late 1980's time frame even if FPL's conservation programs are successful in reducing load. The present schedule calls for these units to be commercially available by December, 1985 and May, 1987. It is FPL's objective to use the output of these units as a direct means of reducing oil consumption until such time as the additional capacity is required for load growth. Tables 1.2-6 and 1.2-7 show FPL's reserves under the current load and energy forecast which was filed with FPL's response to the FPSC conservation goals adopted November 13, 1980 with and without the proposed project.

At present, approximately 82 percent of FPL's installed generating capacity is oil or natural gas-fired supplying 68 percent of its energy requirements. To reduce this dependence on oil, FPL is evaluating several alternatives in addition to its conservation and load management programs.

A potential alternative is to convert the existing oil and gas-fired units to another fuel source. FPL has performed an experimental test burn of coal-oil mixture (COM) in its Sanford Unit 4, but several uncertainties remain. FPL is, therefore, evaluating other conversion alternatives, including direct coal firing at Sanford or other plants, as well as attempting to resolve these uncertainties before a final conversion determination is made. The long-term operating characteristics which will enable the Company to judge operating reliability and cost of coal or COM are unknown. Coal or COM cannot be used at all of FPL's plants due to site limitations. Further, the Company does not know what environmental requirements will be imposed or recommended on commercial installations as opposed to test installations. These requirements will affect the initial capital and operating costs. Consequently, the comparative cost effectiveness of these options cannot be determined.

In addition, FPL is pursuing efforts to develop non-oil sources. These include power purchases from Tampa Electric Company's Big Bend Unit No. 4, FPL's fourth nuclear unit, St. Lucie No. 2, the construction of two coal-fired units at FPL's Martin Site and the joint participation in the proposed plant. Furthermore, FPL is purchasing "coal-by-wire" from Southern and expects to substantially increase such purchases when a 500 kV Florida-Southern interconnection is completed in late 1982. FPL will then purchase firm power from coal units on the Southern Company starting in 1983. (See Chapter 8, Section 8.1.3)

Notwithstanding these determined efforts to develop non-oil sources, FPL is expected to remain uncomfortably dependent on oil through the 1980's. FPL's projected annual oil consumption will continue to be at substantial levels between 1980 and 1989. Table 1.2-8 shows FPL's expected

oil displacement from the construction of this project. Approximately 5 million barrels of oil will be displaced annually on the FPL system once the two units are in operation.

There are many uncertainties that complicate the development of an oil reduction plan. However, the technological uncertainties associated with an alternative are usually the hardest to quantify. As a result, a technology must be demonstrated under actual conditions before prudent judgments can be made about costs and operating performance which are essential to cost effectiveness evaluations.

FPL also believes that it is in the customers' long-term interest to keep available a suitable wide range of alternatives, since these alternatives tend to compete against one another. The "competition" of one technology against another helps create the necessary climate for obtaining the most favorable commercial terms for insuring long-term cost effectiveness and reliability.

Cost Effectiveness

JEA and FPL believe that the proposed coal-fired units offer a cost effective means of meeting capacity requirements and reducing their dependence on oil in the 1985-1990 time frame. Consequently, JEA and FPL have performed a cost effectiveness calculation for the proposed project. Table 1.2-9 for JEA and Tables 1.2-10 and 1.2-11 for FPL show the expected revenue requirements of the proposed plant compared to expected oil costs for both utilities.

The cost effectiveness analysis for JEA was based on an initial (1981) fuel cost of approximately 28 \$/BBL for oil and approximately 45 \$/Ton for coal. It is expected that these fuels will escalate annually at 10.6 and 9.4 percent respectively. As a result of these assumptions, the total cumulative present value of the savings to JEA over the period (1986-2015) was \$3,508 million.

The cost effectiveness analysis for FPL was based on the same cost for coal as JEA, approximately 45 \$/Ton with an annual escalation rate of 9.4 percent. Based on the uncertainties associated with future price increases for oil, FPL used an optimistic and a pessimistic oil price forecast which resulted in FPL's initial (1980) oil cost of approximately 24 \$/BBL escalating at an average annual rate of 10.9 percent through 1990 and 8.0 percent thereafter for the low band and 15.2 percent through 1990 and 8.0 percent thereafter for the high band. These assumptions resulted in a total cumulative present value of the savings to FPL over the period (1986-2015) of \$1,348 to \$2,892 million.

During the course of the FPSC hearings on the need for SJRPP, the FPSC instructed the utilities to perform a cost-benefit analysis using coal and oil price assumptions selected by the Commission. This analysis showed a cumulative net savings of \$8,039 million (nominal dollars) by the year 2000 under the "worse" case and \$10,081 million (nominal dollars) under the "expected" case. This analysis is attached as an exhibit to the FPSC Order Number 10108 (the full text of this order is presented in the introduction to this document).

As can be seen, the project is cost effective even if viewed exclusively from its oil displacement value. Thus, even disregarding the capacity benefits of this project, it is cost effective to build these units on their present schedules.

Table 1.2-1

JACKSONVILLE ELECTRIC AUTHORITY

PROJECTED REDUCTION IN ANNUAL OIL CONSUMPTION
DUE TO PROPOSED PROJECT

	<u>Expected Annual Coal-Fired Energy</u> (MWH)	<u>Expected Annual Oil Displacement</u> (1000 BBLs)
1986	1,662,210	2,913
1987	2,636,766	4,621
1988	3,348,510	5,868
1989	3,396,690	5,952
1990	3,372,600	5,910
1991-2000	3,372,600	5,910
2001-2015	2,890,800	5,066
Average Annual Oil Displacement		5,345
Total Oil Displacement		160,354

Assumptions:

average heat content of oil - 6.2 MBtu/BBL
average system oil heat rate - 10,865 Btu/kWh
in-service date 1st unit - December, 1985
in-service date 2nd unit - May, 1987

Table 1.2-2 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
 GENERATION EXPANSION PLAN
 GENERATION AND RESERVE ANALYSIS
 FPSC CONSERVATION GOALS
 AT TIME OF SUMMER PEAK

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capability (MW)	Net Summer Peak Load ^a (MW)	Reserves (MW)	(%)
1980	-	-	1350.9 ^b	1296 ^c	54.9	4.2
1981	262.4 Northside 1 ^c	Oil				
	118.0 Northside 3 ^c	Oil	1731.3	1325	406.3	30.7
1982	85.0 Northside 2 ^c	Oil				
	12.9 Kennedy CT1 ^c	Oil				
	53.7 Kennedy CT3 ^c	Oil				
	53.7 Kennedy CT4 ^c	Oil	1936.6	1345	591.3	44.0
1983	53.7 Kennedy CT6 ^c	Oil				
	300.0 Southernd ^d	Coal	2290.3	1324	966.3	73.0
1984	300.0 Southernd	Coal	2290.3	1339	951.3	71.0
1985	300.0 Southernd	Coal	2290.3	1355	935.3	69.0
1986	275.0 SJRPP 1	Coal				
	300.0 Southernd	Coal	2565.3	1372	1193.3	87.0
1987	275.0 SJRPP 2	Coal				
	500.0 Southernd	Coal	3040.3	1390	1650.3	118.7
1988	400.0 Southernd	Coal	2940.3	1406	1534.3	109.1
1989	400.0 Southernd	Coal				
	(12.9 Kennedy CT1)	Oil	2927.4	1424	1503.4	105.6

a FPSC conservation goals forecast

b Net capability reflects units which are currently derated

c Actual

d Restoration of existing units

e Firm purchase of unit power from Southern Company

Table 1.2-3 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
GENERATION EXPANSION PLAN
GENERATION AND RESERVE ANALYSIS
FPSC CONSERVATION GOALS AT TIME OF SUMMER PEAK
WITHOUT PROPOSED PROJECT

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capability (MW)	Net Summer Peak Load ^a (MW)	Reserves (MW)	(%)
1980	-	-	1350.9 ^b	1296	54.9	4.2
1981	262.4 Northside 1c 118.0 Northside 3c	Oil Oil	1731.3	1325	406.3	30.7
1982	85.0 Northside 2c 12.9 Kennedy CT1c 53.7 Kennedy CT3c 53.7 Kennedy CT4c	Oil Oil Oil Oil	1936.6	1345	591.6	44.0
1983	53.7 Kennedy CT6c 300.0 Southernd	Oil Coal	2290.3	1324	966.3	73.0
1984	300.0 Southernd	Coal	2290.3	1339	951.3	71.0
1985	300.0 Southernd	Coal	2290.3	1355	935.3	69.0
1986	300.0 Southernd	Coal	2290.3	1372	918.3	66.9
1987	500.0 Southernd	Coal	2490.3	1390	1100.3	79.2
1988	400.0 Southernd	Coal	2390.3	1406	984.3	70.0
1989	400.0 Southernd (12.9 Kennedy CT1)	Coal Oil	2377.4	1424	953.4	67.0

a FPSC conservation goals forecast

b Net capability reflects units which are currently derated

c Restoration of existing units

d Firm purchase of unit power from Southern Company

Table 1.2-4 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
 GENERATION EXPANSION PLAN
 GENERATION AND RESERVE ANALYSIS
 FPSC CONSERVATION GOALS
 AT TIME OF WINTER PEAK

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Winter Capability (MW)	Net Winter Peak Load ^a (MW)	Reserves (MW)	(%)
1980/81	-	-	1417.7 ^b	1168	249.7	21.4
1981/82	262.4 Northside 1 ^c 118.0 Northside 3 ^c	Oil Oil	1798.1	1186	612.1	51.6
1982/83	85.0 Northside 2 ^c 15.4 Kennedy CT1 ^c 62.5 Kennedy CT3 ^c 62.5 Kennedy CT4 ^c 62.5 Kennedy CT6 ^c 300.0 Southern ^d	Oil Oil Oil Oil Oil Coal	2386.0	1166	1220.0	104.6
1983/84	300.0 Southern ^d	Coal	2386.0	1178	1208.0	102.5
1984/85	300.0 Southern ^d	Coal	2386.0	1193	1193.0	100.0
1985/86	300.0 Southern ^d	Coal	2386.0	1208	1178.0	97.5
1986/87	275.0 SJRPP 1 500.0 Southern ^d	Coal Coal	2861.0	1222	1639.0	134.1
1987/88	275.0 SJRPP 2 400.0 Southern ^d	Coal Coal	3036.0	1238	1798.0	145.2
1988/89	400.0 Southern ^d (15.4 Kennedy CT1)	Coal Oil	3020.6	1253	1767.6	141.1
1989/90	400.0 Southern ^d	Coal	3020.6	1267	1753.6	138.4

a FPSC conservation goals forecast

b Net capability reflects units which are currently derated

c Restoration of existing units

d Firm purchase of unit power from Southern Company

Table 1.2-5 (Revision 1)

JACKSONVILLE ELECTRIC AUTHORITY
GENERATION EXPANSION PLAN
GENERATION AND RESERVE ANALYSIS
FPSC CONSERVATION GOALS AT TIME OF WINTER PEAK
WITHOUT PROPOSED PROJECT

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Winter Capability (MW)	Net Winter Peak Load ^a (MW)	Reserves (MW)	(%)
1980/81	-	-	1417.7 ^b	1168	249.7	21.4
1981/82	262.4 Northside 1 ^c 118.0 Northside 3 ^c	Oil Oil	1798.1	1186	612.1	51.6
1982/83	85.0 Northside 2 ^c 15.4 Kennedy CT1 ^c 62.5 Kennedy CT3 ^c 62.5 Kennedy CT4 ^c 62.5 Kennedy CT6 ^c 300.0 Southern ^d	Oil Oil Oil Oil Oil Coal	2386.0	1166	1220.0	104.6
1983/84	300.0 Southern ^d	Coal	2386.0	1178	1208.0	102.5
1984/85	300.0 Southern ^d	Coal	2386.0	1193	1193.0	100.0
1985/86	300.0 Southern ^d	Coal	2386.0	1208	1178.0	97.5
1986/87	500.0 Southern ^d	Coal	2586.0	1222	1364.0	111.6
1987/88	400.0 Southern ^d	Coal	2486.0	1238	1248.0	100.8
1988/89	400.0 Southern ^d (15.4 Kennedy CT1)	Coal Oil	2470.6	1253	1217.6	97.2
1989/90	400.0 Southern ^d	Coal	2470.6	1267	1203.6	95.0

a FPSC conservation goals forecast

b Net capability reflects units which are currently derated

c Restoration of existing units

d Firm purchase of unit power from Southern Company

Table 1.2-6 (Revision 1)

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS

	<u>Generation Added/ (Retired) (MW)</u>	<u>Fuel Type</u>	<u>Total Net Summer Capability (MW)</u>	<u>Net Summer^b Peak Load (MW)</u>	<u>Reserves</u> (MW) (%)	
1980	-	-	10955 ^a	9623 ^c	1332	13.8
1981	783 Martin 1 ^d 783 Martin 2 60 Dade	Oil Oil Solid Waste	12581	9630	2951	30.6
1982	67 Cutler 5 ^e 130 Cutler 6 ^e (646) (Turkey Point 4) ^f	Oil Oil Nuclear	12132	9972	2160	21.7
1983	634 St. Lucie 2 ^g (646) (Turkey Point 3) ^f 666 Turkey Point 4 ^f 350 Southern ^h	Nuclear Nuclear Nuclear Coal	13136	10317	2819	27.3
1984	666 Turkey Point 3 ^f 350 Southern ^h	Nuclear Coal	13802	10690	3112	29.1
1985	292 TECO ⁱ 350 Southern ^h	Coal Coal	14094	11077	3017	27.2
1986	208 TECO ⁱ 275 SJRPP 1 ^j 350 Southern ^h	Coal Coal Coal	14285	11445	2840	24.8
1987	275 SJRPP 2 ^j 104 TECO ⁱ 650 Southern ^h 700 Martin 3	Coal Coal Coal Coal	15456	11792	3664	31.1
1988	1000 Southern ^h	Coal	15702	12179	3523	28.9
1989	700 Martin 4 1000 Southern ^h	Coal Coal	16402	12621	3781	30.0

Table 1.2-6 (Revision 1) (Continued)

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS

- a Excludes units on cold-standby status: Palatka 107 MW and Cutler 197 MW. Cutler Unit No. 4 retired.
- b Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.
- c Actual-occurred on July 14, 1980.
- d Martin Unit No. 1 was placed in commercial operation in December, 1980.
- e Reactivation of Cutler Plant from cold-standby status (Units No. 5 and 6).
- f Turkey Point Steam Generator replacement. Increase of 20 MW anticipated after replacement.
- g Total capability is 802 MW. Sale of 168 MW has been offered to other utilities.
- h Purchase of unit power from Southern Company.
- i Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.
- j FPL's share of output from proposed unit to be jointly owned with Jacksonville Electric Authority. Combination of joint ownership and firm power purchases.

Table 1.2-7

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS
WITHOUT PROPOSED PROJECT
AND MARTIN UNITS NO. 3 AND 4

	Generation Added/ (Retired) (MW)	Fuel Type	Total Net Summer Capability (MW)	Net Summer ^b Peak Load (MW)	Reserves (MW)	Reserves (%)
1980	-	-	10955a	9623c	1332	13.8
1981	783 Martin 1d 783 Martin 2 60 Dade	Oil Oil Solid Waste	12581	9630	2951	30.6
1982	67 Cutler 5e 130 Cutler 6e (646) (Turkey Point 4)f	Oil Oil Nuclear	12132	9972	2160	21.7
1983	634 St. Lucie 2g (646) (Turkey Point 3)f 666 Turkey Point 4f	Nuclear Nuclear Nuclear	12786	10317	2469	23.9
1984	666 Turkey Point 3f	Nuclear	13452	10690	2762	25.8
1985	292 TECO ^h	Coal	13744	11077	2667	24.1
1986	208 TECO ^h	Coal	13660	11445	2215	19.4
1987	104 TECO ^h	Coal	13556	11792	1764	15.0
1988	-	-	13452	12179	1273	10.5
1989	-	-	13452	12621	831	6.7

Table 1.2-7 (Continued)

FLORIDA POWER & LIGHT COMPANY
GENERATION AND RESERVE ANALYSIS
WITHOUT PROPOSED PROJECT

- a Excludes units on cold-standby status: Palatka 107 MW and Cutler 197 MW. Cutler Unit No. 4 retired.
- b Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.
- c Actual-occurred on July 14, 1980.
- d Martin Unit No. 1 was placed in commercial operation in December, 1980.
- e Reactivation of Cutler Plant from cold-standby status (Units No. 5 and 6).
- f Turkey Point Steam Generator replacement. Increase of 20 MW anticipated after replacement.
- g Total capability is 802 MW. Sale of 168 MW has been offered to other utilities.
- h Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.

Table 1.2-8

FLORIDA POWER & LIGHT

PROJECTED REDUCTION IN ANNUAL OIL CONSUMPTION
DUE TO PROPOSED PROJECT

	<u>Expected Annual Coal-Fired Energy</u> (MWH)	<u>Expected Annual Oil Displacement</u> (1000 BBLs)
1986	1,662,210	2,703
1987	2,636,766	4,287
1988	3,348,510	5,445
1989	3,396,690	5,523
1990	3,372,600	5,484
1991-2000	3,372,600	5,484
2001-2015	2,890,800	4,700
Average Annual Oil Displacement		4,959
Total Oil Displacement		148,782

Assumptions:

average heat content of oil - 6.15 MBtu/BBL
average system oil heat rate - 10,000 Btu/kWh
in-service date 1st unit - December, 1985
in-service date 2nd unit - May, 1987

JACKSONVILLE ELECTRIC AUTHORITY
COST BENEFIT OF PROPOSED PROJECT

Table 1.2-9

Year	Fuel Price ^a				Fuel Cost Savings		Non-Levelized Fixed Charges ^b Million \$	Total Annual Savings		
	\$/Mbtu		\$/Mwh		\$/Mwh	Million \$		Present Worth	Cumulative ^{cd} Present Worth	
	Oil	Coals	Oil	Coal						
1986e	738	291	80	29	51	85	0	85	55	55
1987f	816	318	88	32	56	148	0	148	88	143
1988	903	348	98	35	63	211	102	109	60	203
1989	998	381	108	38	70	238	93	145	73	276
1990	1104	417	119	42	77	260	91	169	78	354
1991	1221	456	132	46	86	290	89	201	85	439
1992	1351	499	146	50	96	324	87	237	92	531
1993	1494	546	161	55	106	358	86	272	97	628
1994	1652	597	178	60	118	398	86	312	102	730
1995	1827	653	197	66	131	442	86	356	107	837
1996	2021	715	218	72	146	492	86	406	111	948
1997	2235	782	241	79	162	546	86	460	116	1064
1998	2472	855	267	86	181	610	86	524	121	1185
1999	2734	936	295	95	200	675	86	589	125	1310
2000	3024	1024	327	103	224	755	86	669	130	1440
2001	3345	1120	361	113	248	877	86	709	133	1553
2002	3699	1225	399	124	275	795	86	801	136	1669
2003	4092	1340	442	135	307	887	86	900	142	1789
2004	4525	1466	489	143	341	986	86	1010	124	1913
2005	5005	1604	541	162	379	1096	86	1131	128	2041
2006	5536	1755	596	177	421	1217	86	1264	131	2172
2007	6122	1920	661	194	467	1350	86	1414	134	2306
2008	6771	2100	731	212	519	1500	86	1582	138	2444
2009	7489	2218	809	232	577	1668	86	1767	142	2586
2010	8283	2514	895	254	641	1853	86	1970	145	2731
2011	9161	2750	989	278	711	2056	86	2198	148	2879
2012	10132	3008	1094	304	790	2284	86	2452	152	3031
2013	11206	3291	1210	332	878	2538	86	2733	156	3187
2014	12394	3601	1339	364	975	2819	86	3042	159	3346
2015	13707	3939	1480	398	1082	3128	86		162	3508

^a Coal escalation rate of 9.4 percent, oil escalation of 10.6

^b Assumed interest cost of money of 8.5 percent

^c Present worth discount rate of 9.0 percent

^d 1981 dollars

^e Unit No. 1 in-service December, 1985

^f Unit No. 2 in-service May, 1987

^g Coal cost provided by JEA

FLORIDA POWER & LIGHT COMPANY
COST BENEFIT OF PROPOSED PROJECT
LOW BAND OIL ESTIMATES

Table 1.2-10

Year	Fuel Price ^a				Fuel Cost Savings		Non-Levelized ^f Fixed Charges Million \$	Total Annual Savings ^{b,c}		
	\$/Mbtu		\$/Mwh		Million \$	Million \$		Present Worth	Cumulative ^d Present Worth	
	Oil	Coal ^e	Oil	Coal						
1986 ^d	745	291	75	29	46	78	47	31	19	
1987 ^e	823	318	82	32	50	126	67	59	51	
1988	915	348	92	35	57	192	149	43	72	
1989	1015	381	102	38	64	216	145	71	104	
1990	1124	417	112	42	70	236	142	94	142	
1991	1214	456	121	46	75	253	139	114	184	
1992	1311	499	131	50	81	273	136	137	230	
1993	1416	546	142	55	87	293	133	160	278	
1994	1529	597	153	60	93	314	130	184	328	
1995	1652	653	165	66	99	339	127	212	380	
1996	1784	715	178	72	106	357	125	232	432	
1997	1926	782	193	79	114	384	122	262	485	
1998	2080	855	208	86	122	411	120	291	538	
1999	2247	936	225	95	129	435	117	318	591	
2000	2427	1024	243	103	140	472	115	357	645	
2001	2621	1120	262	113	149	503	113	390	698	
2002	2830	1225	283	124	159	536	111	425	750	
2003	3057	1340	306	135	171	577	108	469	802	
2004	3301	1466	330	143	187	631	106	525	854	
2005	3566	1604	357	162	195	658	104	554	904	
2006	3851	1755	385	177	208	702	101	601	954	
2007	4159	1920	416	194	222	749	99	650	1002	
2008	4492	2100	449	212	237	799	97	702	1049	
2009	4851	2218	485	232	253	853	94	759	1095	
2010	5239	2514	524	254	270	911	93	818	1140	
2011	5658	2750	566	278	288	971	91	880	1184	
2012	6111	3008	611	304	307	1035	90	945	1227	
2013	6600	3291	660	332	328	1106	88	1018	1269	
2014	7127	3601	713	364	349	1177	87	1090	1309	
2015	7697	3939	710	398	372	1255	85	1170	1348	

^a Coal escalation rate of 9.4 percent, oil escalation of 10.9 percent through 1990; 8.0 percent thereafter
^b Present worth discount rate of 10.5 percent
^c 1981 dollars
^d Unit No. 1 in-service December, 1985
^e Unit No. 2 in-service May, 1987
^f Cost schedules may vary subject to final contract terms between JEA and FPL.
^g Coal cost provided by JEA

Table 1.2-11

FLORIDA POWER & LIGHT COMPANY
COST BENEFIT OF PROPOSED PROJECT
HIGH BAND OIL ESTIMATES

Year	Fuel Price ^a				Fuel Cost Savings		Non-levelized ^f Fixed Charges Million \$	Total Annual Savings			
	Oil \$/Mbtu	Coals \$/Mbtu	Oil \$/Mwh	Coal \$/Mwh	\$/Mwh	Million \$		Million \$	bc Present Worth		Cumulative ^{bc} Present Worth
1986 ^d	1174	291	117	29	88	148	47	101	61	61	
1987 ^e	1269	318	127	32	95	240	67	173	95	156	
1988	1371	348	137	35	102	344	149	195	97	253	
1989	1481	381	148	38	110	371	145	226	102	355	
1990	1601	417	160	42	118	398	142	256	104	459	
1991	1725	456	173	46	127	428	139	289	106	565	
1992	1863	499	186	50	136	459	136	323	108	673	
1993	2013	546	201	55	146	492	133	359	108	781	
1994	2174	597	217	60	157	529	130	399	110	891	
1995	2347	653	235	66	169	570	127	443	109	1000	
1996	2535	715	254	72	182	614	125	489	109	1109	
1997	2738	782	274	79	195	658	122	536	108	1217	
1998	2957	855	296	86	210	708	120	588	108	1325	
1999	3194	936	319	95	224	755	117	638	106	1431	
2000	3449	1024	345	103	242	816	115	701	105	1536	
2001	3725	1120	373	113	260	877	113	764	104	1640	
2002	4023	1225	402	124	278	938	111	827	102	1742	
2003	4345	1340	435	135	300	1012	108	904	101	1843	
2004	4693	1466	469	143	326	1099	106	993	100	1943	
2005	5068	1604	507	162	345	1164	104	1060	97	2040	
2006	5473	1755	547	177	370	1248	101	1147	95	2135	
2007	5911	1920	591	194	392	1339	99	1240	92	2227	
2008	6384	2100	638	212	426	1437	97	1340	90	2317	
2009	6895	2218	690	232	458	1545	94	1451	87	2404	
2010	7446	2514	745	254	491	1656	93	1563	86	2490	
2011	8042	2750	804	278	526	1774	91	1683	84	2574	
2012	8686	3008	869	304	565	1906	90	1816	82	2656	
2013	9380	3291	938	332	606	2044	88	1956	80	2736	
2014	10131	3601	1013	364	649	2189	87	2102	80	2816	
2015	10938	3939	1094	398	696	2351	85	2266	76	2892	

^a Coal escalation rate of 9.4 percent, oil escalation of 15.2 percent through 1990; 8.0 percent thereafter

^b Present worth discount rate of 10.5 percent

^c 1981 dollars

^d Unit No. 1 in-service December, 1985

^e Unit No. 2 in-service May, 1987

^f Cost schedules may vary subject to final contract terms between JEA and FPL.

^g Coal cost provided by JEA

1.3 CONSEQUENCES OF DELAY

Failure of JEA and FPL to complete the proposed facility as planned would result in detrimental effects on future system reliability and on levels of oil consumption. Changes to these system supply parameters would ultimately cause significant impacts on the customers of both utilities.

Effects on the customers of both utilities of omission of the proposed facility would be twofold:

- . If the units are delayed beyond the late 1980's to early 1990's, the level of service would be degraded below that normally provided to the customer. Degradation of projected reserve margins and reliability indices indicates that curtailment of service could be more frequent.
- . Cost to customers would be increased. This increased cost would be a direct result of continued dependence on oil as a fuel source.

While JEA and FPL do not have an immediate capacity need for SJRPP, delays of one, two, and three years in the commercial in-service date of the proposed units will also produce the following effects on the reserve margins of the Florida Subregion of SERC.

Peninsular Florida Reserves
At Time of Winter Peak

<u>Year</u>	<u>Percent Reserves</u> <u>Delay Time (Years)a</u>			
	0 (%)	1 (%)	2 (%)	3 (%)
1985/86	21.4	21.4	21.4	21.4
1986/87	22.4	20.2	20.2	20.2
1987/88	24.0	22.0	19.9	19.9
1988/89	22.7	22.7	20.7	18.7

(a) Assumes that only the JEA/FPL project is delayed.

Studies performed by the FCG have shown that a 25 to 30 percent reserve margin level is needed to maintain a LOLP of one day in ten for Peninsular Florida. Delay of these units would result in Peninsular Florida reserves being substantially below this desired range.

As a result of the northeast blackout of 1965, there were congressional hearings on utilities' reserve criteria, and National Electric Reliability Councils were established to examine and improve, where necessary, the power supply situation in the various geographical regions of the country. The purpose of planned reserves, therefore, is to provide the future operating system with a capacity margin sufficient to insure a reliable power supply. The appropriate standard for system reliability is largely a social policy question. It has been generally accepted that a reliable power supply is desirable, and this position has been reflected in laws at both the federal and state level.

Without adequate reserves, customers would be subject to frequent service interruptions. These service interruptions would generally affect a large number of customers, and at a minimum, would result in personal inconvenience. In addition, service interruptions, depending on the severity and duration of the outage, result in adverse effects in public health, safety, and economic losses.

Any delay in the scheduled in-service dates of SJRPP Units 1 and 2 would result in the loss of substantial fuel cost savings to JEA and FPL customers. Based on U.S. Department of Energy fuel price forecasts presented at the need for power hearing before the FPSC, delaying the SJRPP units from 1985/1987 to 1991/1993 would result in the loss of \$850 million (present worth to 1981) of oil displacement benefits to JEA. FPL has estimated that cumulative savings from constructing SJRPP as scheduled would total \$259 million (present worth to 1981 dollars) by 1990.

In addition, both JEA and FPL are concerned about the security of fuel supply if this facility is not built. As shown on Tables 1.2-1 and 1.2-8, construction of the facility as proposed would displace a combined total of approximately 10 million barrels of oil per year for JEA and FPL when both units are on-line. If the facility is not built, both utilities would be faced with continued dependence on foreign oil and their customers would continue to be vulnerable to the potential widespread effects of disruption of oil supply.

In conclusion, the proposed plant provides a portion of the new capacity projected to be needed by JEA, FPL, and Peninsular Florida over the next decade. Furthermore, the plant will provide social and economic benefits directly related to oil reduction and fuel flexibility, and allows both utilities to move towards meeting federal and state goals of minimizing dependence on foreign oil.

Table 1.3-1

**EFFECT OF DELAYS OF GENERATION ADDITIONS
ON JACKSONVILLE ELECTRIC AUTHORITY'S SYSTEM**

<u>Year</u>	<u>Generation Added/(Retired) (MW)</u>	<u>Net Winter Capability (MW)</u>	<u>Winter Peak Load (MW)</u>	<u>No Delays</u>	
				<u>Reserves</u>	
				<u>MW</u>	<u>%</u>
1986/87	275 SJRPP 1 ^a	2361	1630	731	44.8
1987/88	275 SJRPP 2 ^a	2636	1714	922	53.8
1988/89	-	2636	1798	838	46.6
1989/90	-	2636	1874	762	40.7
1990/91	-	2636	1929	707	36.7

<u>1 Year Delay</u>					
1986/87	-	2086	1630	456	28.0
1987/88	275 SJRPP 1 ^a	2361	1714	647	37.7
1988/89	275 SJRPP 2 ^a	2636	1798	838	46.6
1989/90	-	2636	1874	762	40.7
1990/91	-	2636	1929	707	36.7

^a Share of output from proposed unit to be jointly owned with Florida Power & Light Company.

Table 1.3-1 (Continued)

**EFFECT OF DELAYS OF GENERATION ADDITIONS
ON JACKSONVILLE ELECTRIC AUTHORITY'S SYSTEM**

<u>2 Year Delay</u>					
<u>Year</u>	<u>Generation Added/(Retired) (MW)</u>	<u>Net Winter Capability (MW)</u>	<u>Net Winter Peak Load (MW)</u>	<u>Reserves</u>	
				<u>MW</u>	<u>%</u>
1986/87	-	2086	1630	456	28.0
1987/88	-	2086	1714	372	21.7
1988/89	275 SJRPP 1 ^a	2361	1798	563	31.3
1989/90	275 SJRPP 2 ^a	2336	1874	762	40.7
1990/91	-	2636	1929	707	36.7
<u>3 Year Delay</u>					
1986/87	-	2086	1630	456	28.0
1987/88	-	2086	1714	372	21.7
1988/89	-	2086	1798	288	16.0
1989/90	275 SJRPP 1 ^a	2361	1874	487	26.0
1990/91	275 SJRPP 2 ^a	2636	1929	707	36.7

^a Share of output from proposed unit to be jointly owned with Florida Power & Light Company.

Table 1.3-2

EFFECT OF DELAYS OF GENERATION ADDITIONS
ON FLORIDA POWER & LIGHT'S SYSTEM

<u>Year</u>	<u>Generation Added/(Retired) (MW)</u>	<u>No Delays</u>			
		<u>Net Summer Capability (MW)</u>	<u>Net Summer^c Peak Load (MW)</u>	<u>Reserves</u>	
				<u>MW</u>	<u>%</u>
1986	208 TECO ^a 275 SJRPP 1 ^b	13935	11445	2490	21.7
1987	104 TECO ^a 700 Martin 3 275 SJRPP 2 ^b	14806	11792	3014	25.6
1988	-	14702	12179	2523	20.7
1989	700 Martin 4	15402	12621	2781	22.0
1990	-	15402	12858	2544	19.8
<u>1 Year Delay</u>					
1986	208 TECO ^a	13660	11445	2215	19.4
1987	104 TECO ^a 275 SJRPP 1 ^b	13831	11792	2039	17.3
1988	275 SJRPP 2 ^b 700 Martin 3	14702	12179	2523	20.7
1989	-	14702	12621	2081	16.5
1990	700 Martin 4	15402	12858	2544	19.8

-
- a Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.
b FPL's share of output from proposed unit to be jointly owned with Jacksonville Electric Authority by a combination of joint ownership and firm power purchases.
c Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.

Table 1.3-2 (Continued)

EFFECT OF DELAYS OF GENERATION ADDITIONS
ON FLORIDA POWER & LIGHT'S SYSTEM

Year	Generation Added/(Retired) (MW)	<u>2 Year Delay</u>			
		Net Summer Capability (MW)	Net Summer ^c Peak Load (MW)	Reserves	
				MW	%
1986	208 TECOa	13660	11445	2215	19.4
1987	104 TECOa	13556	11792	1764	15.0
1988	275 SJRPP 1b	13727	12179	1548	12.7
1989	275 SJRPP 2b 700 Martin 3	14702	12621	2081	16.5
1990	-	14702	12858	1844	14.3
<u>3 Year Delay</u>					
1986	208 TECOa	13660	11445	2215	19.4
1987	104 TECOa	13556	11792	1764	15.0
1988	-	13452	12179	1273	10.5
1989	275 SJRPP 1b	13727	12621	1106	8.8
1990	275 SJRPP 2b 700 Martin 3	14702	12858	1844	14.3

a Purchase of unit power from Tampa Electric Company's Big Bend Unit No. 4.

b FPL's share of output from proposed unit to be jointly owned with Jacksonville Electric Authority by a combination of joint ownership and firm power purchases.

c Most Probable load forecast. The "Most Probable" represents a forecasted number for which there is an equal probability of being above or below.

1.4 ASSOCIATED TRANSMISSION

A joint study by JEA and FPL was performed with the objective of specifying the transmission system required to integrate the proposed coal units into the existing transmission network (Figure 1.4-1).

The proposed plant was assumed to consist of two 600 MW coal-fired units with each unit to be jointly owned by JEA and FPL. The scheduled in-service dates for the proposed plant were projected as 1986 and 1987 for Units 1 and 2, respectively.

Other assumptions pertaining to the scope and timing of 500 kV transmission lines in Florida had a significant impact on the results of the study. Currently planned additions include: (1) Duval-Georgia 500 kV lines No. 1 and No. 2 by 1983; (2) Martin-Poinsett 500 kV transmission line in 1984; (3) Duval-Poinsett 500 kV transmission line in 1985. It was assumed for the study that power flows into Peninsular Florida would range up to approximately 2000 MWs in 1986 and 1987.

Loadflow studies were performed for the years 1986 and 1987. These years were selected because the generation additions of Units 1 and 2 of the proposed plant would impact the transmission network in the area. From this analysis, three preferred configurations were established based on cost and system performance.

Alternative No. 1

- . Proposed Plant to Northside - 230 kV (3 lines)
- . Northside to Normandy - 230 kV (1 line)
- . Northside to Robinwood - 230 kV (1 line)

Alternative No. 2

- . Proposed Plant to Northside - 230 kV (3 lines)
- . Proposed Plant to Yulee - 230 kV (1 line)
- . Northside to Robinwood - 230 kV (1 line)

Alternative No. 3

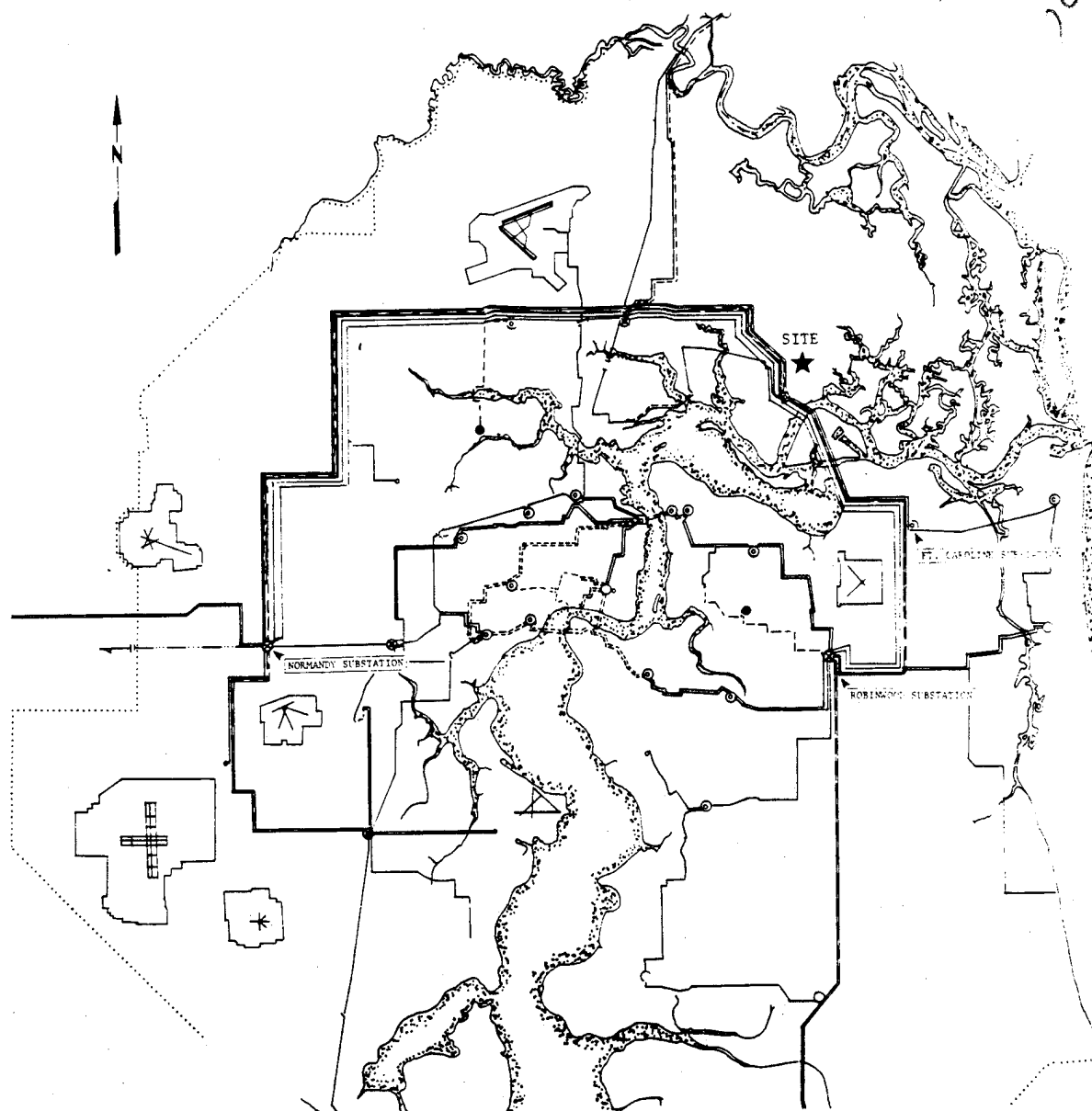
- . Proposed Plant to Normandy - 230 kV (2 lines)
- . Proposed Plant to Robinwood - 230 kV (1 line)
- . Move termination of Northside to Fort Caroline - 230 kV line from Northside to Proposed Plant

These alternatives were evaluated and ranked based on relative capital costs and steady-state electrical performance. Although the three alternatives were nearly equivalent in cost and performance, Alternative No. 2 was initially chosen as preferred based on lowest capital requirements and highest steady-state transfer capabilities.

Alternative No. 2 was then studied to determine its suitability under dynamic stability criteria. Instances of three phase faults on lines terminating at the Northside bus were found to be most critical in affecting dynamic stability. Alternative No. 2 was found to be unsatisfactory based on its performance under breaker failure criteria. Alternative No. 3, which requires no direct transmission lines to the Northside Station, was studied and found acceptable with fast valving at the proposed plant and Northside 3 units. This feature detects mismatches between turbine mechanical power and generator electric output. If this mismatch exceeds a preset level, the turbine intercept valves are rapidly closed and left closed for approximately one second. This reduces the accelerating power to the generator and significantly increases the time which the fault can be sustained.

As a result of this study, JEA is implementing the recommendations of fast valving at the proposed plant and Northside 3 along with the construction of the transmission lines associated with Alternate No. 3. Chapter 9, Section 9.6, presents the details of the corridor selection process and the proposed corridor for Alternative No. 3. The construction of this associated transmission will enable the reliable integration of the proposed plant into the Peninsular Florida Transmission grid.

*Need
clear
map*



- Generating Plant
 - Transmission Substation
 - ⊗ Transmission Substation with Transformation of Transmission Voltage
 - Distribution Substation
 - Proposed Substation
-
- 240 kV
 - 138 kV
 - 115 kV
 - Underground cable
 - - - Interconnection
 - - - Under Construction

1 0 1 2 3
MILES

Figure 1.4-1 Existing Jacksonville Electric Authority Transmission System