



# Florida Power

A Progress Energy Company

ASSOCIATE GENERAL COUNSEL

ORIGINAL

JAMES A. MCGEE

April 1, 2002

Ms. Blanca S. Bayó, Director  
Division of the Commission Clerk  
and Administrative Services  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

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Re: Ten-Year Site Plan

Dear Ms. Bayó:

Enclosed for filing pursuant to Rule 25-22.071, F.A.C., are an original and fifteen copies of Florida Power Corporation's Ten-Year Site Plan as of December 31, 2001. Additional copies of this Ten-Year Site Plan are being provided to the organizations set forth in the attached distribution list.

Please acknowledge your receipt of the above filing on the enclosed copy of this letter and return to the undersigned. Also enclosed is a 3.5 inch diskette containing the above-referenced document in electronic format. Thank you for your assistance in this matter.

Very truly yours,

James A. McGee

JAM/scc  
Enclosure

cc: Per distribution list (attached)

- AUS \_\_\_\_\_
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Florida Power Corporation  
Ten Year Site Plan

Distribution List

Department of Community Affairs  
**Attention: Energy Planning**  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399-2100

Southwest Florida Water Management District  
Attention: Energy Planning  
2379 Broad Street  
Brooksville, FL 34604-6899

Department of Environmental Protection  
Siting Office  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

South Florida Water Management District  
Attention: Energy Planning  
P. O. Box 24680  
West Palm Beach, FL 33416-4680

Fish and Wildlife Conservation Commission  
Attention: Energy Planning  
620 South Meridian Street  
Tallahassee, FL 32399-1600

Mr. Merle Bishop, AICP  
Polk County Government  
P. O. Box 9005  
Drawer CS06  
Bartow, FL 33831

Florida Solar Energy Center  
Attention: Energy Planning  
1679 Clearlake Road  
Cocoa Beach, FL 32922-5703

Mr. Mike Kloehn  
Director of Planning  
Osceola County Government  
1 Court House Square  
Suite 1400  
Kissimmee, FL 34741

East Central Florida Regional Planning Council  
Attention: Energy Planning  
631 North Wymore Road  
Suite 100  
Maitland, FL 32751

Central Florida Regional Planning Council  
Attention: Energy Planning  
P. O. Drawer 2089  
Bartow, FL 33831



**Florida Power**

A Progress Energy Company

*Ten-Year  
Site Plan*

*APRIL, 2002*

DOCUMENT NUMBER DATE

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**Florida Power**

A Progress Energy Company

*Ten-Year  
Site Plan*

*2002-2011*

*Submitted To:*

*State of Florida  
Public Service Commission*

*APRIL, 2002*

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**FLORIDA POWER**  
**CODE IDENTIFICATION SHEET**

**Generating Unit Type**

ST - Steam Turbine - Non-Nuclear  
NP - Steam Power - Nuclear  
CT - Combustion Turbine (Gas Turbine)  
CC - Combined Cycle  
SPP - Small Power Producer  
COG - Cogeneration Facility

**Fuel Type**

NUC - Nuclear (Uranium)  
NG - Natural Gas  
RFO - No. 6 Residual Fuel Oil  
DFO - No. 2 Distillate Fuel Oil  
BIT - Bituminous Coal  
MSW - Municipal Solid Waste  
WH - Waste Heat  
BIO - Biomass

**Fuel Transportation**

WA - Water  
TK - Truck  
RR - Railroad  
PL - Pipeline  
UN - Unknown

**Future Generating Unit Status**

A - Generating unit capability increased  
FC - Existing generator planned for conversion to another fuel or energy source  
P - Planned for installation but not authorized; not under construction  
RP - Proposed for repowering or life extension  
RT - Existing generator scheduled for retirement  
T - Regulatory approval received but not under construction  
U - Under construction, less than or equal to 50% complete  
V - Under construction, more than 50% complete



## **INTRODUCTION**

Section 186.801 of the Florida Statutes requires generating electric utilities to submit a Ten-Year Site Plan (TYSP) to the Florida Public Service Commission (FPSC). The TYSP includes historical and projected data pertaining to the utility's load and resource needs as well as a review of those needs. It is compiled in accordance with FPSC Rules 25-22.070 through 25.072, Florida Administration Code.

Florida Power's TYSP is based on projections of long-term planning requirements that are dynamic in nature and subject to change. These planning documents should be used for general guidance concerning Florida Power's planning assumptions and projections, and they should not be taken as an assurance that particular events discussed in the TYSP will materialize or that particular plans will be implemented. Information and projections pertinent to periods further out in time are inherently subject to greater uncertainty.

The TYSP document contains four chapters as described below:

### **CHAPTER 1**

**Description of EXISTING FACILITIES**

### **CHAPTER 2**

**Forecast of ELECTRICAL POWER DEMAND and ENERGY CONSUMPTION**

### **CHAPTER 3**

**Forecast of FACILITIES REQUIREMENTS**

### **CHAPTER 4**

**ENVIRONMENTAL and LAND USE INFORMATION**

Detailed schedules and a description of Florida Power's TYSP follow.

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CHAPTER 1

*Description of  
EXISTING FACILITIES*



**Florida Power**  
A Progress Energy Company

## **CHAPTER 1**

### **Description of EXISTING FACILITIES**

#### **EXISTING FACILITIES OVERVIEW**

##### **OWNERSHIP**

Florida Power is a wholly owned subsidiary of Progress Energy, Inc. (Progress Energy), a registered holding company under the Public Utility Holding Company Act (PUHCA) of 1935. Progress Energy and its subsidiaries, including Florida Power, are subject to the regulatory provisions of the PUHCA. Progress Energy is the parent company of Florida Power and certain other subsidiaries.

##### **AREA OF SERVICE**

Florida Power provided electric service during 2001 to an average of 1.4 million customers in west central Florida. Its service area (see Area of Service Map) covers approximately 20,000 square miles and includes the densely populated areas around Orlando, as well as the cities of St. Petersburg and Clearwater. Florida Power is interconnected with 20 municipal and 9 rural electric cooperative systems. Major wholesale power sales customers include Seminole Electric Cooperative, Inc. (SECI) and Florida Municipal Power Agency (FMPA).

##### **TRANSMISSION/DISTRIBUTION**

The company is part of a nationwide interconnected power network that enables power to be exchanged between utilities. The Florida Power transmission system includes approximately 4,700 circuit miles of transmission lines and over 80 transmission substations. The distribution system includes approximately 27,000 circuit miles, with approximately 8,800 of those miles underground. Florida Power has approximately 270 distribution substations.

##### **ENERGY MANAGEMENT**

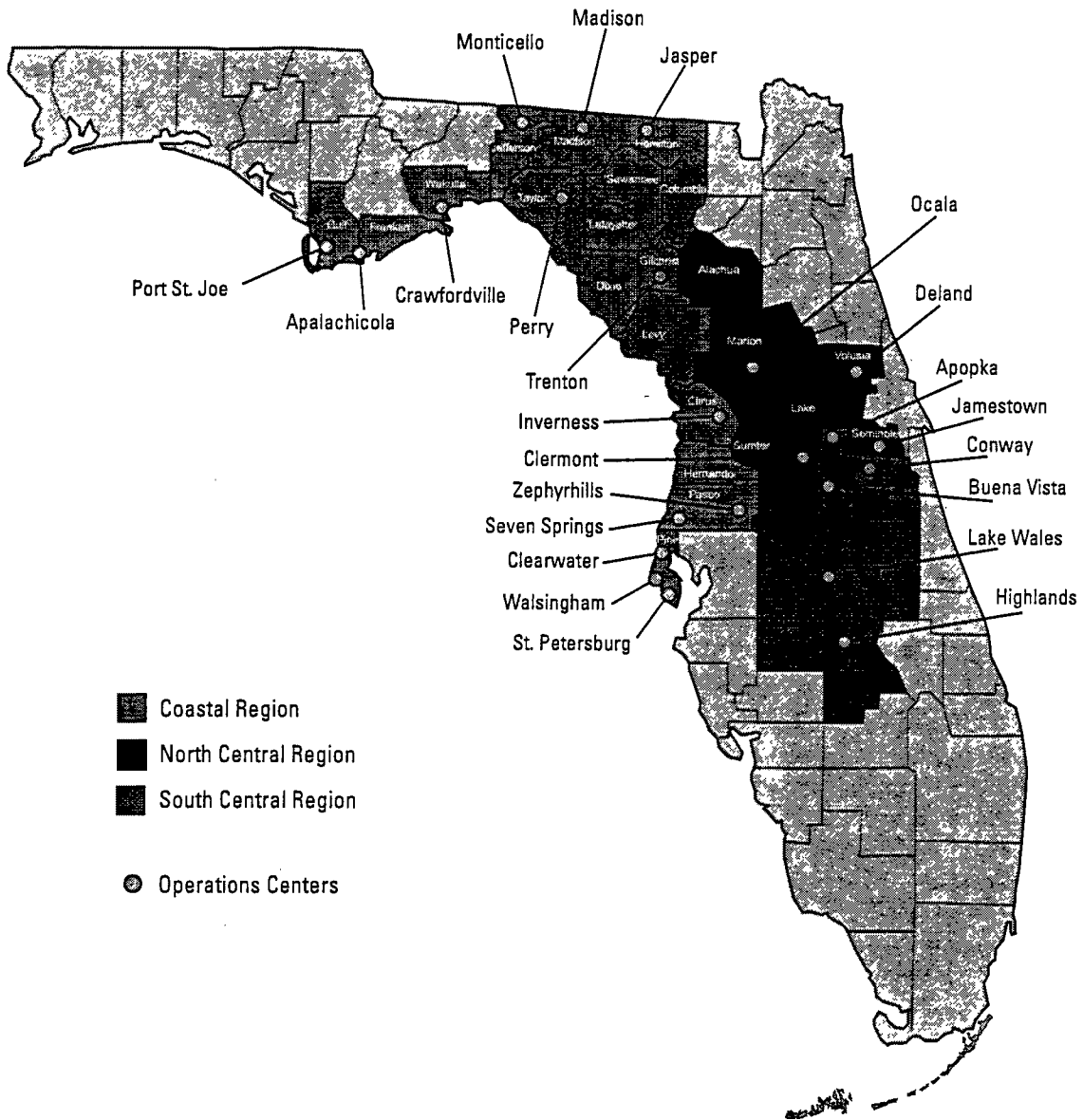
Florida Power customers participating in the company's Energy Management program are managing future growth and costs. Over 430,000 customers participated in the

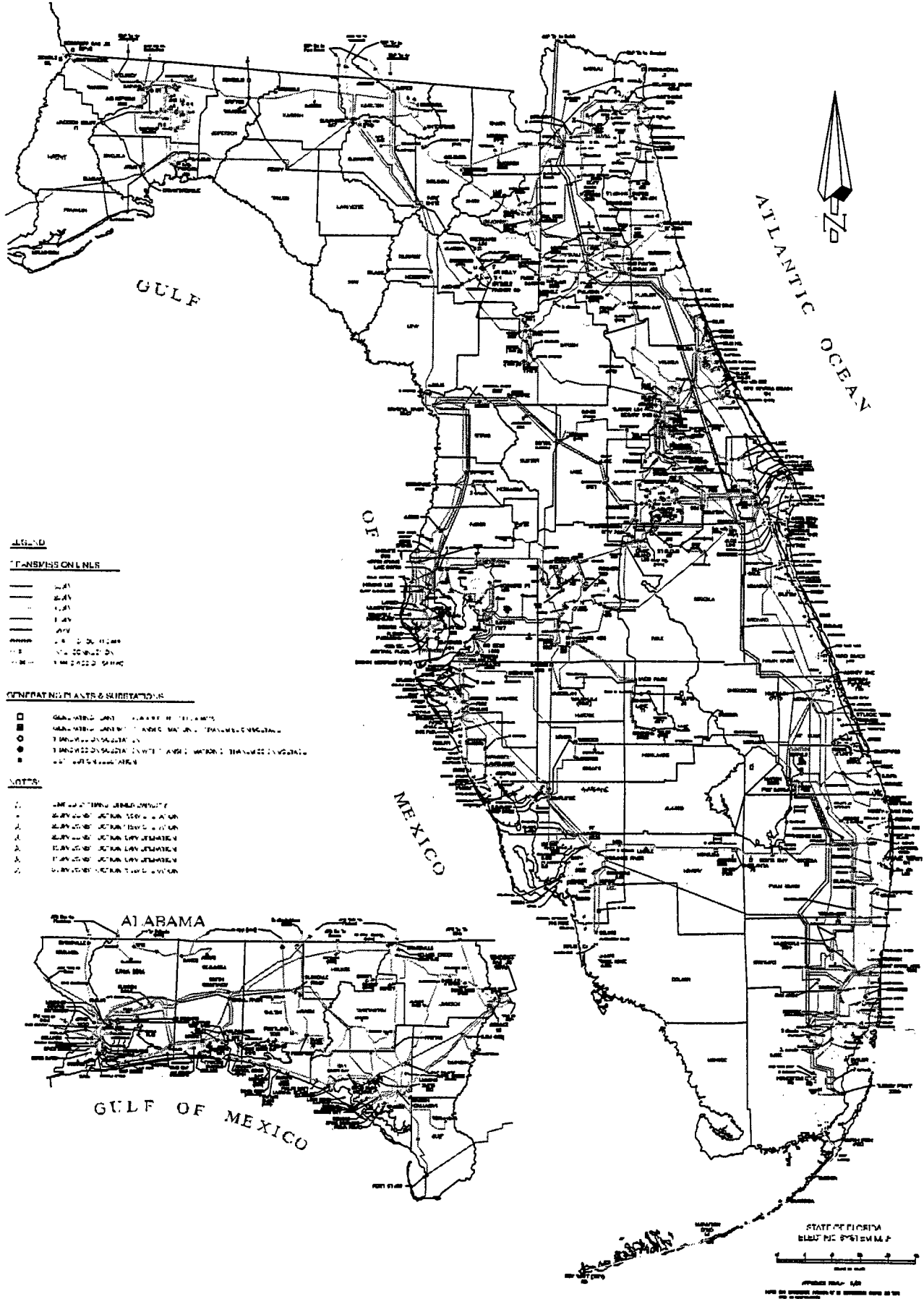
Energy Management program at the end of the year, contributing more than 760,000 kW of winter peak shaving capacity for use during high load periods.

#### **TOTAL CAPACITY RESOURCE**

As of December 31, 2001, Florida Power has a total summer capacity resource of 9,247 MW. This capacity resource includes utility and non-utility purchased power and combustion turbine, nuclear, fossil steam, and combined cycle plants. Additional information on Florida Power's existing generating facilities is shown on Schedule 1.

# Florida Power Regions





**LEGEND**

**TRANSMISSION LINES**

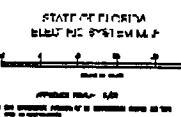
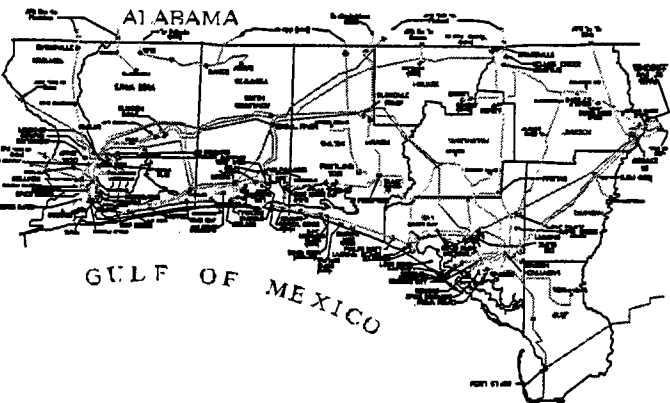
- 230 KV
- 345 KV
- 500 KV
- 765 KV
- 20 KV
- 35 KV
- 48 KV

**GENERATING PLANTS & SUBSTATIONS**

- GENERATING UNIT - STEAM ELECTRIC PLANTS
- GENERATING UNIT - GEOTHERMAL PLANTS
- SUBSTATION
- TRANSFORMER
- TRANSFORMER

**NOTES**

1. LINE CAPACITY LIMITED
2. SUBSTATION CAPACITY LIMITED
3. SUBSTATION CAPACITY LIMITED
4. SUBSTATION CAPACITY LIMITED
5. SUBSTATION CAPACITY LIMITED
6. SUBSTATION CAPACITY LIMITED



**FLORIDA POWER**

SCHEDULE 1  
EXISTING GENERATING FACILITIES  
AS OF DECEMBER 31, 2001

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
PLANT NAME	UNIT NO.	LOCATION (COUNTY)	UNIT TYPE	FUEL		FUEL TRANSPORT		DAYS USE	COM'L IN-SERVICE MO./YEAR	EXPECTED RETIREMENT MO./YEAR	GEN. MAX. NAMEPLATE KW	NET CAPABILITY		
				PRI	ALT	PRI	ALT					SUMMER MW	WINTER MW	
ANCLOTE	1	PASCO	ST	RFO	NG	PL	PL		10/1974		556,200	993	1,044	
	2			RFO	NG	PL	PL		10/1978		556,200	498	522	
AVON PARK	P1	HIGHLANDS	GT	NG	DFO	PL	TK	3	12/1968		33,790	52	64	
	P2		GT	DFO		TK			12/1968		33,790	26	32	
BARTOW	1	PINELLAS	ST	RFO		WA			09/1958		127,500	631	671	
	2			RFO		WA			08/1961		127,500	121	123	
	3			RFO	NG	WA	PL		07/1963		239,360	119	121	
	P1, P3			GT	DFO	WA			06/1972		111,400	204	208	
	P2			GT	NG	DFO	PL	WA	8	06/1972		55,700	92	106
	P4			GT	NG	DFO	PL	WA	8	06/1972		55,700	46	53
BAYBORO	P1-P4	PINELLAS	GT	DFO		WA,TK			04/1973		226,800	49	60	
CRYSTAL RIVER	1	CITRUS	ST	BIT		WA,RR			10/1966		440,550	184	232	
	2			BIT		WA,RR			11/1969		523,800	306	367	
	3 *			ST	NUC		TK		03/1977		890,460	486	491	
	4			ST	BIT		WA,RR		12/1982		739,260	765	782	
	5			ST	BIT		WA,RR		10/1984		739,260	720	735	
DEBARY	P1-P6	VOLUSIA	GT	DFO		TK,RR			04/1976		401,220	667	762	
	P7-P9		GT	NG	DFO	PL	TK,RR	8	11/1992		345,000	324	390	
	P10		GT	DFO		TK,RR			11/1992		115,000	258	279	
HIGGINS	P1-P2	PINELLAS	GT	NG	DFO	PL	TK	1	04/1969		67,580	122	134	
	P3-P4		GT	NG	DFO	PL	TK	1	12/1970		85,850	54	64	
HINES ENERGY COMPLEX	1	POLK	CC	NG	DFO	PL	TK	6	04/1999		546,550	68	70	
INTERCESSION CITY	P1-P6	OSCEOLA	GT	DFO		PL,TK			05/1974		340,200	482	529	
	P7-P10		GT	NG	DFO	PL	PL,TK	5	11/1993		460,000	1,029	1,194	
	P11 **		GT	DFO		PL,TK			01/1997		165,000	294	366	
	P12-P14		GT	NG	DFO	PL	PL,TK	5	12/2000		345,000	352	376	
RIO PINAR	P1	ORANGE	GT	DFO		TK		11/1970		19,290	143	170		
SUWANNEE RIVER	1	SUWANNEE	ST	RFO	NG	TK	PL		11/1953	12/2005	34,500	13	16	
	2			RFO	NG	TK	PL		11/1954	12/2005	37,500	307	347	
	3			RFO	NG	TK	PL		10/1956	12/2005	75,000	31	32	
	P1, P3			GT	NG	DFO	PL	TK	10	11/1980		122,400	80	81
	P2			GT	DFO		TK			11/1980		61,200	110	134
TIGER BAY	1	POLK	CC	NG		PL		08/1997		278,223	207	223		
TURNER	P1-P2	VOLUSIA	GT	DFO		TK			10/1970		38,580	154	194	
	P3		GT	DFO		TK		08/1974		71,200	26	32		
	P4		GT	DFO		TK		08/1974		71,200	65	82		
UNIV. OF FLA.	P1	ALACHUA	GT	NG		PL		01/1994		43,000	63	80		
											35	41		
											7,943	8,574		

\* REPRESENTS 91.78% FLORIDA POWER OWNERSHIP OF UNIT  
 \*\* SUMMER CAPABILITY (JUNE THROUGH SEPTEMBER) OWNED BY GEORGIA POWER COMPANY



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CHAPTER 2

*Forecast of  
ELECTRIC POWER DEMAND  
and ENERGY CONSUMPTION*



**Florida Power**  
A Progress Energy Company

**CHAPTER 2**  
**Forecast of ELECTRIC POWER DEMAND**  
**and**  
**ENERGY CONSUMPTION**

**OVERVIEW**

The following Schedules 2, 3 and 4 represent Florida Power's history and forecast of customers, energy sales (GWh), and peak demand (MW). High and low scenarios are also presented for sensitivity purposes.

The base case was developed using assumptions to predict a forecast with a 50/50 probability, or most likely scenario. The high and low scenarios, which have a 90/10 probability of occurrence or an 80 percent probability of an outcome falling between the high and low cases, employed a Monte Carlo simulation procedure that studied 1,000 possible outcomes of retail demand and energy.

Florida Power's customer growth is expected to average 1.6 percent between 2002 and 2011, less than the ten-year historical average of 2.3 percent. The ten-year historical growth rate falls to 2.0% when accounting for the creation of Florida Power's Seasonal Service Rate tariff, which artificially inflates customer growth figures. Slower population growth -- based on the latest projection from the University of Florida's Bureau of Economic and Business Research -- results in a lower base case customer projection when compared to the higher historical growth rate. The reduction in the projected energy and demand growth rates from historical rates is mainly due to an assumed loss of a short-term wholesale contract with Seminole Electric Cooperative, Incorporated.

Net energy for load, which had grown at an average of 4.0 percent between 1992 and 2001, is expected to increase by 2.0 percent per year from 2002-2011 in the base case, 2.4 percent in the high case and 1.6 percent in the low case.

Summer net firm demand is expected to grow an average of 2.0 percent per year during the next ten years; this compares to the 2.6 percent average annual growth rate experienced throughout the last ten years. High and low summer growth rates for net firm demand are 2.4 percent and 1.6 percent per year, respectively. Winter net firm demand is projected to grow at 2.0 percent per year after having increased by 5.4 percent per year from 1992 to 2001. High and low winter net firm demand growth rates are 2.4 percent and 1.6 percent, respectively.

Summer net firm retail demand is expected to grow an average of 2.4 percent per year during the next ten years; this compares to the 2.5 percent average annual growth rate experienced throughout the last ten years. High and low summer growth rates for net firm retail demand are 2.8 percent and 2.0 percent per year, respectively. Winter net firm retail demand is projected to grow at approximately 2.3 percent per year after having increased by 4.7 percent per year from 1992 to 2001. High and low winter net firm retail demand growth rates are 2.7 percent and 1.8 percent, respectively.

**ENERGY CONSUMPTION and FORECAST CONSUMPTION SCHEDULES**

Florida Power's History and Forecast of Energy Consumption and Number of Customers by Customer Class are shown on Schedules 2.1, 2.2 and 2.3.

Florida Power's History and Forecast of Base, High and Low Summer Peak Demand are shown on Schedules 3.1.1, 3.1.2 and 3.1.3.

Florida Power's History and Forecast of Base, High, and Low Winter Peak Demand are shown on Schedules 3.2.1, 3.2.2 and 3.2.3.

Florida Power's History and Forecast of Base, High and Low Annual Net Energy for Load are shown on Schedules 3.3.1, 3.3.2 and 3.3.3.

Florida Power's Previous Year Actual and Two-Year Forecast of Peak Demand and Net Energy for Load by Month are shown on Schedule 4.

FLORIDA POWER

SCHEDULE 2.1  
HISTORY AND FORECAST OF ENERGY CONSUMPTION AND  
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	RURAL AND RESIDENTIAL				COMMERCIAL			
	FLORIDA POWER POPULATION	MEMBERS PER HOUSEHOLD	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER	GWh	AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER
1992	2,595,234	2.471	12,826	1,050,077	12,214	7,544	116,727	64,629
1993	2,663,086	2.473	13,373	1,076,657	12,421	7,885	119,811	65,812
1994	2,734,821	2.485	13,863	1,100,537	12,597	8,252	122,987	67,097
1995	2,801,105	2.491	14,938	1,124,679	13,282	8,612	126,189	68,247
1996	2,847,802	2.494	15,481	1,141,671	13,560	8,848	129,440	68,356
1997	2,895,266	2.495	15,080	1,160,611	12,993	9,257	132,504	69,862
1998	2,959,509	2.502	16,526	1,182,786	13,972	9,999	136,345	73,336
1999	3,047,293	2.511	16,245	1,213,470	13,387	10,327	140,897	73,295
2000	3,044,460	2.467	17,116	1,234,286	13,867	10,813	143,475	75,365
2001	3,139,081	2.463	17,604	1,274,672	13,811	11,061	146,983	75,254
2002	3,189,430	2.461	18,489	1,295,937	14,267	11,283	148,264	76,101
2003	3,230,512	2.456	18,885	1,315,418	14,357	11,560	149,785	77,177
2004	3,254,722	2.443	19,277	1,332,486	14,467	11,858	151,389	78,328
2005	3,283,870	2.433	19,658	1,349,652	14,565	12,193	153,660	79,351
2006	3,321,018	2.426	20,067	1,368,906	14,659	12,584	156,672	80,321
2007	3,361,872	2.418	20,496	1,390,147	14,744	13,006	160,097	81,238
2008	3,401,015	2.407	20,959	1,412,749	14,836	13,424	163,534	82,087
2009	3,435,466	2.392	21,450	1,436,087	14,936	13,820	166,689	82,909
2010	3,472,550	2.379	21,974	1,459,538	15,055	14,186	169,435	83,725
2011	3,520,087	2.369	22,497	1,485,883	15,140	14,525	172,152	84,373

FLORIDA POWER

SCHEDULE 2.2

HISTORY AND FORECAST OF ENERGY CONSUMPTION AND  
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
YEAR	GWh	INDUSTRIAL		RAILROADS AND RAILWAYS	STREET & HIGHWAY LIGHTING	OTHER SALES TO PUBLIC AUTHORITIES	TOTAL SALES TO ULTIMATE CONSUMERS
		AVERAGE NO. OF CUSTOMERS	AVERAGE KWh CONSUMPTION PER CUSTOMER				
1992	3,254	3,137	1,037,297	0	24	1,765	25,413
1993	3,381	3,107	1,088,188	0	25	1,865	26,529
1994	3,580	3,186	1,123,666	0	26	1,954	27,675
1995	3,864	3,143	1,229,399	0	27	2,058	29,499
1996	4,224	2,927	1,443,116	0	26	2,205	30,784
1997	4,188	2,830	1,479,859	0	27	2,299	30,851
1998	4,375	2,707	1,616,180	0	27	2,459	33,386
1999	4,334	2,629	1,648,536	0	27	2,509	33,442
2000	4,249	2,535	1,676,134	0	28	2,626	34,832
2001	3,872	2,551	1,517,836	0	28	2,698	35,263
2002	3,908	2,567	1,522,400	0	28	2,891	36,599
2003	4,186	2,569	1,629,428	0	28	3,005	37,664
2004	4,269	2,571	1,660,443	0	28	3,121	38,553
2005	4,378	2,571	1,702,839	0	28	3,237	39,494
2006	4,455	2,571	1,732,789	0	29	3,353	40,488
2007	4,515	2,571	1,756,126	0	29	3,469	41,515
2008	4,525	2,571	1,760,016	0	29	3,587	42,524
2009	4,582	2,571	1,782,186	0	29	3,706	43,587
2010	4,640	2,571	1,804,745	0	29	3,828	44,657
2011	4,697	2,571	1,826,916	0	29	3,949	45,697

**FLORIDA POWER**

SCHEDULE 2.3

HISTORY AND FORECAST OF ENERGY CONSUMPTION AND  
NUMBER OF CUSTOMERS BY CUSTOMER CLASS

(1)	(2)	(3)	(4)	(5)	(6)
YEAR	SALES FOR RESALE GWh	UTILITY USE & LOSSES GWh	NET ENERGY FOR LOAD GWh	OTHER CUSTOMERS (AVERAGE NO.)	TOTAL NO. OF CUSTOMERS
1992	1,471	1,817	28,701	12,229	1,182,170
1993	1,695	2,020	30,244	15,077	1,214,652
1994	1,819	1,680	31,174	17,181	1,243,891
1995	1,846	2,322	33,667	17,774	1,271,785
1996	2,089	1,842	34,715	18,035	1,292,073
1997	1,758	1,996	34,605	18,562	1,314,507
1998	2,340	2,037	37,763	19,013	1,340,851
1999	3,267	2,451	39,160	19,601	1,376,597
2000	3,732	2,678	41,242	20,004	1,400,300
2001	3,896	1,774	40,933	20,752	1,444,958
2002	3,160	2,461	42,220	21,235	1,468,003
2003	2,422	2,354	42,440	21,792	1,489,564
2004	2,241	2,429	43,223	22,349	1,508,795
2005	2,196	2,458	44,148	22,906	1,528,789
2006	2,238	2,554	45,280	23,462	1,551,611
2007	1,872	2,557	45,944	24,019	1,576,834
2008	1,777	2,642	46,943	24,577	1,603,431
2009	1,832	2,704	48,123	25,135	1,630,482
2010	1,864	2,763	49,284	25,692	1,657,236
2011	1,917	2,823	50,437	26,336	1,686,942



**FLORIDA POWER**

SCHEDULE 3.1.1

HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)

BASE CASE

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
<u>YEAR</u>	<u>TOTAL</u>	<u>WHOLESALE</u>	<u>RETAIL</u>	<u>INTERRUPTIBLE</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>REDUCTIONS</u>	<u>DEMAND</u>
1992	6,519	813	5,706	150	287	39	25	58	141	5,819
1993	6,913	833	6,080	272	502	48	27	70	155	5,839
1994	6,880	787	6,093	262	527	52	30	81	154	5,774
1995	7,523	959	6,564	269	503	64	40	106	160	6,381
1996	7,470	828	6,642	309	565	69	41	120	167	6,199
1997	7,786	874	6,912	288	555	78	41	131	170	6,523
1998	8,367	943	7,424	291	438	97	42	142	182	7,175
1999	9,039	1,326	7,713	292	505	113	45	153	183	7,747
2000	8,911	1,319	7,592	277	455	127	48	155	75	7,774
2001	8,471	1,118	7,353	275	414	139	54	156	75	7,358
2002	8,912	1,159	7,753	296	359	153	56	159	75	7,815
2003	8,707	738	7,969	346	311	167	57	160	75	7,591
2004	8,819	713	8,106	354	273	180	58	161	75	7,718
2005	9,012	763	8,249	361	239	195	59	163	75	7,919
2006	9,205	795	8,410	364	210	209	61	164	75	8,122
2007	9,378	800	8,578	360	184	223	63	165	75	8,308
2008	9,631	874	8,757	358	162	237	65	166	75	8,568
2009	9,890	949	8,941	359	142	251	67	167	75	8,829
2010	10,115	992	9,123	360	125	257	67	168	75	9,064
2011	10,365	1,066	9,299	361	109	257	66	168	75	9,329

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) = forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

FLORIDA POWER

SCHEDULE 3.1.2

HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)

HIGH LOAD FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
<u>YEAR</u>	<u>TOTAL</u>	<u>WHOLESALE</u>	<u>RETAIL</u>	<u>INTERRUPTIBLE</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>REDUCTIONS</u>	<u>DEMAND</u>
1992	6,519	813	5,706	150	287	39	25	58	141	5,819
1993	6,913	833	6,080	272	502	48	27	70	155	5,839
1994	6,880	787	6,093	262	527	52	30	81	154	5,774
1995	7,523	959	6,564	269	503	64	40	106	160	6,381
1996	7,470	828	6,642	309	565	69	41	120	167	6,199
1997	7,786	874	6,912	288	555	78	41	131	170	6,523
1998	8,367	943	7,424	291	438	97	42	142	182	7,175
1999	9,039	1,326	7,713	292	505	113	45	153	183	7,747
2000	8,911	1,319	7,592	277	455	127	48	155	75	7,774
2001	8,471	1,118	7,353	275	414	139	54	156	75	7,358
2002	9,042	1,159	7,883	296	359	153	56	159	75	7,945
2003	8,857	738	8,119	346	311	167	57	160	75	7,742
2004	8,997	713	8,284	354	273	180	58	161	75	7,897
2005	9,214	763	8,451	361	239	195	59	163	75	8,121
2006	9,436	795	8,641	364	210	209	61	164	75	8,353
2007	9,634	800	8,834	360	184	223	63	165	75	8,564
2008	9,930	874	9,056	358	162	237	65	166	75	8,867
2009	10,246	949	9,297	359	142	251	67	167	75	9,185
2010	10,517	992	9,525	360	125	257	67	168	75	9,465
2011	10,839	1,066	9,773	361	109	257	66	168	75	9,803

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) = forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**FLORIDA POWER**

SCHEDULE 3.1.3

HISTORY AND FORECAST OF SUMMER PEAK DEMAND (MW)

LOW LOAD FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
<u>YEAR</u>	<u>TOTAL</u>	<u>WHOLESALE</u>	<u>RETAIL</u>	<u>INTERRUPTIBLE</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>REDUCTIONS</u>	<u>DEMAND</u>
1992	6,519	813	5,706	150	287	39	25	58	141	5,819
1993	6,913	833	6,080	272	502	48	27	70	155	5,839
1994	6,880	787	6,093	262	527	52	30	81	154	5,774
1995	7,523	959	6,564	269	503	64	40	106	160	6,381
1996	7,470	828	6,642	309	565	69	41	120	167	6,199
1997	7,786	874	6,912	288	555	78	41	131	170	6,523
1998	8,367	943	7,424	291	438	97	42	142	182	7,175
1999	9,039	1,326	7,713	292	505	113	45	153	183	7,747
2000	8,911	1,319	7,592	277	455	127	48	155	75	7,774
2001	8,471	1,118	7,353	275	414	139	54	156	75	7,358
2002	8,728	1,159	7,569	296	359	153	56	159	75	7,631
2003	8,505	738	7,767	346	311	167	57	160	75	7,390
2004	8,594	713	7,881	354	273	180	58	161	75	7,494
2005	8,759	763	7,996	361	239	195	59	163	75	7,666
2006	8,914	795	8,119	364	210	209	61	164	75	7,831
2007	9,050	800	8,250	360	184	223	63	165	75	7,980
2008	9,259	874	8,385	358	162	237	65	166	75	8,196
2009	9,488	949	8,539	359	142	251	67	167	75	8,427
2010	9,656	992	8,664	360	125	257	67	168	75	8,604
2011	9,851	1,066	8,785	361	109	257	66	168	75	8,815

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**FLORIDA POWER**

SCHEDULE 3.2.1

HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)

BASE CASE

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
YEAR	TOTAL	WHOLESALE	RETAIL	INTERRUPTIBLE						
1991/92	7,163	972	6,191	181	611	60	0	55	155	6,101
1992/93	7,191	851	6,340	155	599	67	0	57	159	6,154
1993/94	7,184	972	6,212	199	759	90	2	66	165	5,903
1994/95	9,084	1,145	7,939	281	997	101	5	75	131	7,494
1995/96	10,562	1,489	9,073	255	1,156	106	15	95	201	8,734
1996/97	8,486	1,235	7,251	290	917	133	16	104	190	6,836
1997/98	7,717	941	6,776	318	663	124	17	117	168	6,310
1998/99	10,473	1,741	8,732	305	874	196	18	117	187	8,776
1999/00	10,040	1,728	8,312	225	849	229	20	119	182	8,416
2000/01	11,442	1,984	9,458	248	809	254	29	120	221	9,762
2001/02	10,223	1,602	8,621	297	761	278	32	121	204	8,530
2002/03	10,273	1,360	8,913	336	713	303	36	122	204	8,559
2003/04	10,302	1,193	9,109	340	683	330	39	123	204	8,583
2004/05	10,518	1,266	9,252	350	659	359	42	124	206	8,778
2005/06	10,726	1,321	9,405	354	640	388	45	125	209	8,965
2006/07	10,976	1,401	9,575	355	623	417	48	126	212	9,195
2007/08	11,197	1,448	9,749	348	608	446	51	127	214	9,402
2008/09	11,486	1,548	9,938	349	594	475	54	128	218	9,668
2009/10	11,742	1,616	10,126	350	582	503	57	129	221	9,900
2010/11	12,025	1,715	10,310	351	571	503	57	129	224	10,190

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) = forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**FLORIDA POWER**

SCHEDULE 3.2.2

HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)

HIGH LOAD FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM. / IND. LOAD MANAGEMENT	COMM. / IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
YEAR	TOTAL	WHOLESALE	RETAIL	INTERRUPTIBLE						
1991/92	7,163	972	6,191	181	611	60	0	55	155	6,101
1992/93	7,191	851	6,340	155	599	67	0	57	159	6,154
1993/94	7,184	972	6,212	199	759	90	2	66	165	5,903
1994/95	9,084	1,145	7,939	281	997	101	5	75	131	7,494
1995/96	10,562	1,489	9,073	255	1,156	106	15	95	201	8,734
1996/97	8,486	1,235	7,251	290	917	133	16	104	190	6,836
1997/98	7,717	941	6,776	318	663	124	17	117	168	6,310
1998/99	10,473	1,741	8,732	305	874	196	18	117	187	8,776
1999/00	10,040	1,728	8,312	225	849	229	20	119	182	8,416
2000/01	11,442	1,984	9,458	248	809	254	29	120	221	9,762
2001/02	10,371	1,602	8,769	297	761	278	32	121	204	8,677
2002/03	10,443	1,360	9,083	336	713	303	36	122	204	8,729
2003/04	10,505	1,193	9,312	340	683	330	39	123	204	8,786
2004/05	10,746	1,266	9,480	350	659	359	42	124	206	9,006
2005/06	10,986	1,321	9,665	354	640	388	45	125	209	9,225
2006/07	11,261	1,401	9,860	355	623	417	48	126	212	9,480
2007/08	11,529	1,448	10,081	348	608	446	51	127	214	9,735
2008/09	11,878	1,548	10,330	349	594	475	54	128	218	10,060
2009/10	12,182	1,616	10,566	350	582	503	57	129	221	10,340
2010/11	12,543	1,715	10,828	351	571	503	57	129	224	10,708

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) = forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**FLORIDA POWER**

**SCHEDULE 3.2.3**

**HISTORY AND FORECAST OF WINTER PEAK DEMAND (MW)  
LOW LOAD FORECAST**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(OTH)	(10)
					RESIDENTIAL LOAD MANAGEMENT	RESIDENTIAL CONSERVATION	COMM./IND. LOAD MANAGEMENT	COMM./IND. CONSERVATION	OTHER DEMAND REDUCTIONS	NET FIRM DEMAND
<u>YEAR</u>	<u>TOTAL</u>	<u>WHOLESALE</u>	<u>RETAIL</u>	<u>INTERRUPTIBLE</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>MANAGEMENT</u>	<u>CONSERVATION</u>	<u>REDUCTIONS</u>	<u>DEMAND</u>
1991/92	7,163	972	6,191	181	611	60	0	55	155	6,101
1992/93	7,191	851	6,340	155	599	67	0	57	159	6,154
1993/94	7,184	972	6,212	199	759	90	2	66	165	5,903
1994/95	9,084	1,145	7,939	281	997	101	5	75	131	7,494
1995/96	10,562	1,489	9,073	255	1,156	106	15	95	201	8,734
1996/97	8,486	1,235	7,251	290	917	133	16	104	190	6,836
1997/98	7,717	941	6,776	318	663	124	17	117	168	6,310
1998/99	10,473	1,741	8,732	305	874	196	18	117	187	8,776
1999/00	10,040	1,728	8,312	225	849	229	20	119	182	8,416
2000/01	11,442	1,984	9,458	248	809	254	29	120	221	9,762
2001/02	10,023	1,602	8,421	297	761	278	32	121	204	8,329
2002/03	10,051	1,360	8,691	336	713	303	36	122	204	8,337
2003/04	10,055	1,193	8,862	340	683	330	39	123	204	8,336
2004/05	10,239	1,266	8,973	350	659	359	42	124	206	8,499
2005/06	10,407	1,321	9,086	354	640	388	45	125	209	8,646
2006/07	10,617	1,401	9,216	355	623	417	48	126	212	8,836
2007/08	10,791	1,448	9,343	348	608	446	51	127	214	8,997
2008/09	11,048	1,548	9,500	349	594	475	54	128	218	9,230
2009/10	11,242	1,616	9,626	350	582	503	57	129	221	9,400
2010/11	11,465	1,715	9,750	351	571	503	57	129	224	9,630

**Historical Values (1992 - 2001):**

Col. (2) = recorded peak + implemented load control + residential and commercial/industrial conservation and customer-owned self-service cogeneration.

Cols. (5) - (9) = Represent total cumulative capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = Residential Heat Works load control, voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

**Projected Values (2002 - 2011):**

Cols. (2) - (4) = forecasted peak without load control and conservation.

Cols. (5) - (9) = Represent cumulative conservation and load control capabilities at peak. Col. (8) includes commercial load management and standby generation.

Col. (OTH) = voltage reduction and customer-owned self-service cogeneration.

Col. (10) = (2) - (5) - (6) - (7) - (8) - (9) - (OTH).

FLORIDA POWER

SCHEDULE 3.3.1

HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)  
BASE CASE

(1)	(2)	(3)	(4)	(OTH)	(5)	(6)	(7)	(8)	(9)
		RESIDENTIAL	COMM. / IND.	OTHER			UTILITY USE	NET ENERGY	LOAD
YEAR	TOTAL	CONSERVATION	CONSERVATION	REDUCTIONS	RETAIL	WHOLESALE	& LOSSES	FOR LOAD	FACTOR
1992	29,561	174	170	516	25,414	1,471	1,817	28,702	46.8
1993	31,150	188	195	524	26,528	1,695	2,020	30,243	51.3
1994	32,135	205	220	536	27,675	1,819	1,680	31,174	51.2
1995	34,682	219	246	549	29,499	1,846	2,322	33,667	49.8
1996	35,797	235	285	562	30,785	2,089	1,841	34,715	44.9
1997	35,739	254	317	563	30,850	1,758	1,997	34,605	49.0
1998	38,936	275	333	565	33,387	2,340	2,036	37,763	53.9
1999	40,362	298	339	565	33,441	3,267	2,452	39,160	53.7
2000	42,471	319	345	565	34,832	3,732	2,678	41,242	50.5
2001	42,200	354	349	564	35,263	3,896	1,774	40,933	47.7
2002	43,507	372	351	564	36,599	3,160	2,461	42,220	56.5
2003	43,748	392	352	564	37,665	2,422	2,353	42,440	56.6
2004	44,554	412	354	565	38,553	2,241	2,429	43,223	57.5
2005	45,500	433	355	564	39,494	2,196	2,458	44,148	57.3
2006	46,655	454	357	564	40,487	2,238	2,555	45,280	57.7
2007	47,340	474	358	564	41,515	1,872	2,557	45,944	57.0
2008	48,362	494	360	565	42,524	1,777	2,642	46,943	57.0
2009	49,562	514	361	564	43,588	1,832	2,703	48,123	56.7
2010	50,723	514	361	564	44,657	1,864	2,763	49,284	56.8
2011	51,876	514	361	564	45,698	1,917	2,822	50,437	56.5

NOTE : COLUMN (OTH) INCLUDES CONSERVATION ENERGY FOR LIGHTING AND PUBLIC AUTHORITY CUSTOMERS, CUSTOMER-OWNED SELF-SERVICE COGENERATION AND LOAD CONTROL PROGRAMS.

\* LOAD FACTORS FOR HISTORICAL YEARS ARE CALCULATED USING THE ACTUAL WINTER PEAK DEMAND EXCEPT 1993 AND 1998 HISTORICAL LOAD FACTORS ARE BASED ON THE ACTUAL SUMMER PEAK DEMAND.

LOAD FACTORS FOR FUTURE YEARS ARE CALCULATED USING THE NET FIRM WINTER PEAK DEMAND (SCHEDULE 3.2.1).

FLORIDA POWER

SCHEDULE 3.3.2

HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)  
HIGH LOAD FORECAST

(1)	(2)	(3)	(4)	(OTH)	(5)	(6)	(7)	(8)	(9)
		RESIDENTIAL	COMM. / IND.	OTHER			UTILITY USE	NET ENERGY	LOAD
YEAR	TOTAL	CONSERVATION	CONSERVATION	REDUCTIONS	RETAIL	WHOLESALE	& LOSSES	FOR LOAD	(%) *
1992	29,561	174	170	516	25,414	1,471	1,817	28,702	46.8
1993	31,150	188	195	524	26,528	1,695	2,020	30,243	51.3
1994	32,135	205	220	536	27,675	1,819	1,680	31,174	51.2
1995	34,682	219	246	549	29,499	1,846	2,322	33,667	49.8
1996	35,797	235	285	562	30,785	2,089	1,841	34,715	44.9
1997	35,739	254	317	563	30,850	1,758	1,997	34,605	49.0
1998	38,936	275	333	565	33,387	2,340	2,036	37,763	53.9
1999	40,362	298	339	565	33,441	3,267	2,452	39,160	53.7
2000	42,471	319	345	565	34,832	3,732	2,678	41,242	50.5
2001	42,200	354	349	564	35,263	3,896	1,774	40,933	47.7
2002	44,190	372	351	564	37,373	3,160	2,370	42,903	56.4
2003	44,673	392	352	564	38,535	2,422	2,408	43,365	56.7
2004	45,637	412	354	565	39,574	2,241	2,491	44,306	57.4
2005	46,712	433	355	564	40,636	2,196	2,528	45,360	57.5
2006	48,035	454	357	564	41,789	2,238	2,633	46,660	57.7
2007	48,868	474	358	564	42,953	1,872	2,647	47,472	57.2
2008	50,135	494	360	565	44,189	1,777	2,750	48,716	57.0
2009	51,648	514	361	564	45,553	1,832	2,824	50,209	57.0
2010	53,070	514	361	564	46,863	1,864	2,904	51,631	57.0
2011	54,613	514	361	564	48,285	1,917	2,972	53,174	56.7

NOTE : COLUMN (OTH) INCLUDES CONSERVATION ENERGY FOR LIGHTING AND PUBLIC AUTHORITY CUSTOMERS, CUSTOMER-OWNED SELF-SERVICE COGENERATION AND LOAD CONTROL PROGRAMS.

- LOAD FACTORS FOR HISTORICAL YEARS ARE CALCULATED USING THE ACTUAL WINTER PEAK DEMAND EXCEPT 1993 AND 1998 HISTORICAL LOAD FACTORS ARE BASED ON THE ACTUAL SUMMER PEAK DEMAND.

LOAD FACTORS FOR FUTURE YEARS ARE CALCULATED USING THE NET FIRM WINTER PEAK DEMAND (SCHEDULE 3.2.2).



FLORIDA POWER

SCHEDULE 3.3.3

HISTORY AND FORECAST OF ANNUAL NET ENERGY FOR LOAD (GWh)  
LOW LOAD FORECAST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
		RESIDENTIAL	COMM. / IND.	OTHER ENERGY	RETAIL	WHOLESALE	UTILITY USE & LOSSES	NET ENERGY FOR LOAD	LOAD FACTOR (%) *
YEAR	TOTAL	CONSERVATION	CONSERVATION	REDUCTIONS					
1992	29,561	174	170	516	25,414	1,471	1,817	28,702	46.8
1993	31,150	188	195	524	26,528	1,695	2,020	30,243	51.3
1994	32,135	205	220	536	27,675	1,819	1,680	31,174	51.2
1995	34,682	219	246	549	29,499	1,846	2,322	33,667	49.8
1996	35,797	235	285	562	30,785	2,089	1,841	34,715	44.9
1997	35,739	254	317	563	30,850	1,758	1,997	34,605	49.0
1998	38,936	275	333	565	33,387	2,340	2,036	37,763	53.9
1999	40,362	298	339	565	33,441	3,267	2,452	39,160	53.7
2000	42,471	319	345	565	34,832	3,732	2,678	41,242	50.5
2001	42,200	354	349	564	35,263	3,896	1,774	40,933	47.7
2002	42,528	372	351	564	35,804	3,160	2,277	41,241	56.5
2003	42,803	392	352	564	36,775	2,422	2,298	41,495	56.8
2004	43,484	412	354	565	37,546	2,241	2,366	42,153	57.7
2005	44,260	433	355	564	38,327	2,196	2,385	42,908	57.5
2006	45,207	454	357	564	39,124	2,238	2,470	43,832	57.9
2007	45,685	474	358	564	39,957	1,872	2,460	44,289	57.2
2008	46,465	494	360	565	40,733	1,777	2,536	45,046	57.2
2009	47,488	514	361	564	41,632	1,832	2,585	46,049	56.8
2010	48,319	514	361	564	42,392	1,864	2,624	46,880	56.9
2011	49,164	514	361	564	43,141	1,917	2,667	47,725	56.6

NOTE : COLUMN (OTH) INCLUDES CONSERVATION ENERGY FOR LIGHTING AND PUBLIC AUTHORITY CUSTOMERS, CUSTOMER-OWNED SELF-SERVICE COGENERATION AND LOAD CONTROL PROGRAMS.

\* LOAD FACTORS FOR HISTORICAL YEARS ARE CALCULATED USING THE ACTUAL WINTER PEAK DEMAND EXCEPT 1993 AND 1998 HISTORICAL LOAD FACTORS ARE BASED ON THE ACTUAL SUMMER PEAK DEMAND.

LOAD FACTORS FOR FUTURE YEARS ARE CALCULATED USING THE NET FIRM WINTER PEAK DEMAND (SCHEDULE 3.2.3).

**FLORIDA POWER**

SCHEDULE 4

PREVIOUS YEAR ACTUAL AND TWO-YEAR FORECAST OF PEAK DEMAND  
AND NET ENERGY FOR LOAD BY MONTH

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ACTUAL		FORECAST		FORECAST	
	2001		2002		2003	
MONTH	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh	PEAK DEMAND MW	NEL GWh
JANUARY	9,839	3,734	8,530	3,320	8,559	3,341
FEBRUARY	7,735	2,655	7,663	2,899	7,409	2,945
MARCH	6,271	2,963	6,469	3,084	6,172	3,122
APRIL	7,157	3,127	6,039	2,994	5,910	3,038
MAY	7,752	3,486	7,107	3,649	6,854	3,699
JUNE	8,269	3,880	7,535	3,898	7,287	3,915
JULY	8,163	4,012	7,836	4,224	7,592	4,228
AUGUST	8,471	4,290	7,815	4,386	7,592	4,377
SEPTEMBER	7,930	3,612	7,213	3,931	6,946	3,914
OCTOBER	6,909	3,300	6,538	3,438	6,333	3,448
NOVEMBER	5,386	2,806	5,933	3,027	5,629	3,042
DECEMBER	6,465	<u>3,068</u>	7,350	<u>3,370</u>	7,042	<u>3,371</u>
TOTAL		40,933		42,220		42,440

## **FUEL REQUIREMENTS and ENERGY SOURCES**

Florida Power's two-year actual and ten-year projected nuclear, coal, oil, and gas requirements (by fuel units) are shown on Schedule 5. Florida Power's two-year actual and ten-year projected energy sources, in GWh and percent, are shown by fuel type on Schedules 6.1 and 6.2, respectively. Florida Power's fuel requirements and energy sources reflect a diverse fuel supply system that is not dependent on any one fuel source. Florida Power expects its fuel diversity to be further enhanced with the addition of future planned combined cycle generation units fueled by natural gas. Natural gas consumption is projected to increase as plants are added to meet future load growth. Florida Power's coal, nuclear, and purchased power requirements are projected to remain relatively stable over the planning horizon.

FLORIDA POWER

SCHEDULE 5  
FUEL REQUIREMENTS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				-ACTUAL-											
<u>FUEL REQUIREMENTS</u>			<u>UNITS</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
(1)	NUCLEAR		TRILLION BTU	67	62	67	62	68	61	67	59	68	55	67	62
(2)	COAL		1,000 TON	5,476	5,468	5,210	5,751	6,112	6,167	6,132	6,222	6,360	6,230	6,235	6,323
(3)	RESIDUAL	TOTAL	1,000 BBL	8,505	9,726	7,457	7,285	5,969	5,924	5,013	5,384	5,012	6,198	5,664	5,906
(4)		STEAM	1,000 BBL	8,505	9,726	7,457	7,285	5,969	5,924	5,013	5,384	5,012	6,198	5,664	5,906
(5)		CC	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CT	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7)		DIESEL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(8)	DISTILLATE	TOTAL	1,000 BBL	1,964	1,434	2,981	1,893	836	1,022	852	934	993	1,697	1,321	1,306
(9)		STEAM	1,000 BBL	169	122	142	101	141	125	124	115	141	132	128	118
(10)		CC	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CT	1,000 BBL	1,795	1,312	2,839	1,792	695	897	728	819	852	1,565	1,193	1,188
(12)		DIESEL	1,000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(13)	NATURAL GAS	TOTAL	1,000 MCF	52,991	48,932	66,185	67,125	66,780	76,163	81,881	90,812	89,780	109,046	111,057	120,527
(14)		STEAM	1,000 MCF	7,055	4,793	1,694	1,488	1,152	1,262	982	1,103	911	1,127	957	914
(15)		CC	1,000 MCF	32,268	30,733	36,172	35,243	46,736	53,100	65,319	69,386	72,634	84,488	89,616	102,542
(16)		CT	1,000 MCF	13,668	13,406	28,319	30,394	18,892	21,801	15,580	20,323	16,235	23,431	20,484	17,071
(17)	OTHER (SPECIFY)			0	0	0	0	0	0	0	0	0	0	0	0

**FLORIDA POWER**

**SCHEDULE 6.1**

**ENERGY SOURCES (GWh)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
				-ACTUAL-											
	<u>ENERGY SOURCES</u>	<u>UNITS</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	
(1)	ANNUAL FIRM INTERCHANGE 1/	GWh	21	645	366	285	248	318	272	327	308	469	502	69	
(2)	NUCLEAR	GWh	6,609	5,979	6,502	5,978	6,520	5,920	6,507	5,668	6,522	5,257	6,504	5,956	
(3)	COAL	GWh	14,426	14,164	13,529	15,074	16,001	16,163	16,106	16,359	16,716	16,392	16,404	16,661	
(4)	RESIDUAL	TOTAL	GWh	5,484	6,167	4,644	4,511	3,639	3,617	3,045	3,302	3,056	3,849	3,502	3,672
(5)		STEAM	GWh	5,484	6,167	4,644	4,511	3,639	3,617	3,045	3,302	3,056	3,849	3,502	3,672
(6)		CC	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(7)		CT	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(8)		DIESEL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(9)	DISTILLATE	TOTAL	GWh	763	558	1,131	705	275	361	288	322	334	633	482	497
(10)		STEAM	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(11)		CC	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(12)		CT	GWh	763	558	1,131	705	275	361	288	322	334	633	482	497
(13)		DIESEL	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(14)	NATURAL GAS	TOTAL	GWh	6,106	5,764	7,447	7,282	7,917	9,167	10,454	11,401	11,526	13,943	14,402	16,091
(15)		STEAM	GWh	718	488	166	141	106	117	89	102	84	106	89	84
(16)		CC	GWh	4,382	4,237	5,091	4,835	6,352	7,363	9,141	9,726	10,170	12,004	12,704	14,650
(17)		CT	GWh	1,006	1,039	2,190	2,306	1,459	1,687	1,224	1,573	1,272	1,833	1,609	1,357
(18)	OTHER 2/														
	QF PURCHASES	GWh	5,236	5,216	5,646	5,621	5,635	5,619	5,621	5,578	5,487	4,601	4,509	4,507	
	IMPORT FROM OUT OF STATE	GWh	3,160	2,808	2,955	2,984	2,988	2,983	2,987	2,987	2,994	2,979	2,979	2,984	
	EXPORT TO OUT OF STATE	GWh	-563	-368	0	0	0	0	0	0	0	0	0	0	
(19)	NET ENERGY FOR LOAD	GWh	41,242	40,933	42,220	42,440	43,223	44,148	45,280	45,944	46,943	48,123	49,284	50,437	

1/ NET ENERGY PURCHASED (+) OR SOLD (-) WITHIN THE FRCC REGION.

2/ NET ENERGY PURCHASED (+) OR SOLD (-).

**FLORIDA POWER**

**SCHEDULE 6.2**

**ENERGY SOURCES (PERCENT)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
-ACTUAL-															
	<u>ENERGY SOURCES</u>		<u>UNITS</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
(1)	ANNUAL FIRM INTERCHANGE 1/		%	0.1%	1.6%	0.9%	0.7%	0.6%	0.7%	0.6%	0.7%	0.7%	1.0%	1.0%	0.1%
(2)	NUCLEAR		%	16.0%	14.6%	15.4%	14.1%	15.1%	13.4%	14.4%	12.3%	13.9%	10.9%	13.2%	11.8%
(3)	COAL		%	35.0%	34.6%	32.0%	35.5%	37.0%	36.6%	35.6%	35.6%	35.6%	34.1%	33.3%	33.0%
(4)	RESIDUAL	TOTAL	%	13.3%	15.1%	11.0%	10.6%	8.4%	8.2%	6.7%	7.2%	6.5%	8.0%	7.1%	7.3%
(5)		STEAM	%	13.3%	15.1%	11.0%	10.6%	8.4%	8.2%	6.7%	7.2%	6.5%	8.0%	7.1%	7.3%
(6)		CC	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(7)		CT	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(8)		DIESEL	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(9)	DISTILLATE	TOTAL	%	1.9%	1.4%	2.7%	1.7%	0.6%	0.8%	0.6%	0.7%	0.7%	1.3%	1.0%	1.0%
(10)		STEAM	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(11)		CC	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(12)		CT	%	1.9%	1.4%	2.7%	1.7%	0.6%	0.8%	0.6%	0.7%	0.7%	1.3%	1.0%	1.0%
(13)		DIESEL	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(14)	NATURAL GAS	TOTAL	%	14.8%	14.1%	17.6%	17.2%	18.3%	20.8%	23.1%	24.8%	24.6%	29.0%	29.2%	31.9%
(15)		STEAM	%	1.7%	1.2%	0.4%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
(16)		CC	%	10.6%	10.4%	12.1%	11.4%	14.7%	16.7%	20.2%	21.2%	21.7%	24.9%	25.8%	29.0%
(17)		CT	%	2.4%	2.5%	5.2%	5.4%	3.4%	3.8%	2.7%	3.4%	2.7%	3.8%	3.3%	2.7%
(18)	OTHER 2/														
	QF PURCHASES		%	12.7%	12.7%	13.4%	13.2%	13.0%	12.7%	12.4%	12.1%	11.7%	9.6%	9.1%	8.9%
	IMPORT FROM OUT OF STATE		%	7.7%	6.9%	7.0%	7.0%	6.9%	6.8%	6.6%	6.5%	6.4%	6.2%	6.0%	5.9%
	EXPORT TO OUT OF STATE		%	-1.4%	-0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(19)	NET ENERGY FOR LOAD		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

1/ NET ENERGY PURCHASED (+) OR SOLD (-) WITHIN THE FRCC REGION.

2/ NET ENERGY PURCHASED (+) OR SOLD (-).

## **FORECASTING METHODS AND PROCEDURES**

### **INTRODUCTION**

The need for accurate forecasts of long-range electric energy consumption, customer growth and peak demand shape is a crucial planning function for any electric utility. Accurate projections of a utility's future load growth require a forecasting methodology with the ability to account for a variety of factors influencing electric energy usage over the planning horizon. Florida Power's forecasting framework utilizes a set of econometric models to achieve this end. This chapter will describe the underlying methodology of the customer, energy, and peak demand forecast including any assumptions incorporated within each. Also included is a description as to how Demand-Side Management (DSM) impacts affect the forecast, the development of high and low forecast scenarios, and a review of DSM programs.

The following flow diagram entitled "Customer, Energy, and Demand Forecast" gives a general description of Florida Power's forecasting process. Highlighted in the diagram is a disaggregated modeling approach that blends the impacts of average class usage as well as class customer growth based on a specific set of assumptions for each class. Also accounted for is some direct contact with large customers. These inputs provide the forecaster at Florida Power with the tools needed to frame the most likely scenario of the company's future demand.

### **FORECAST ASSUMPTIONS**

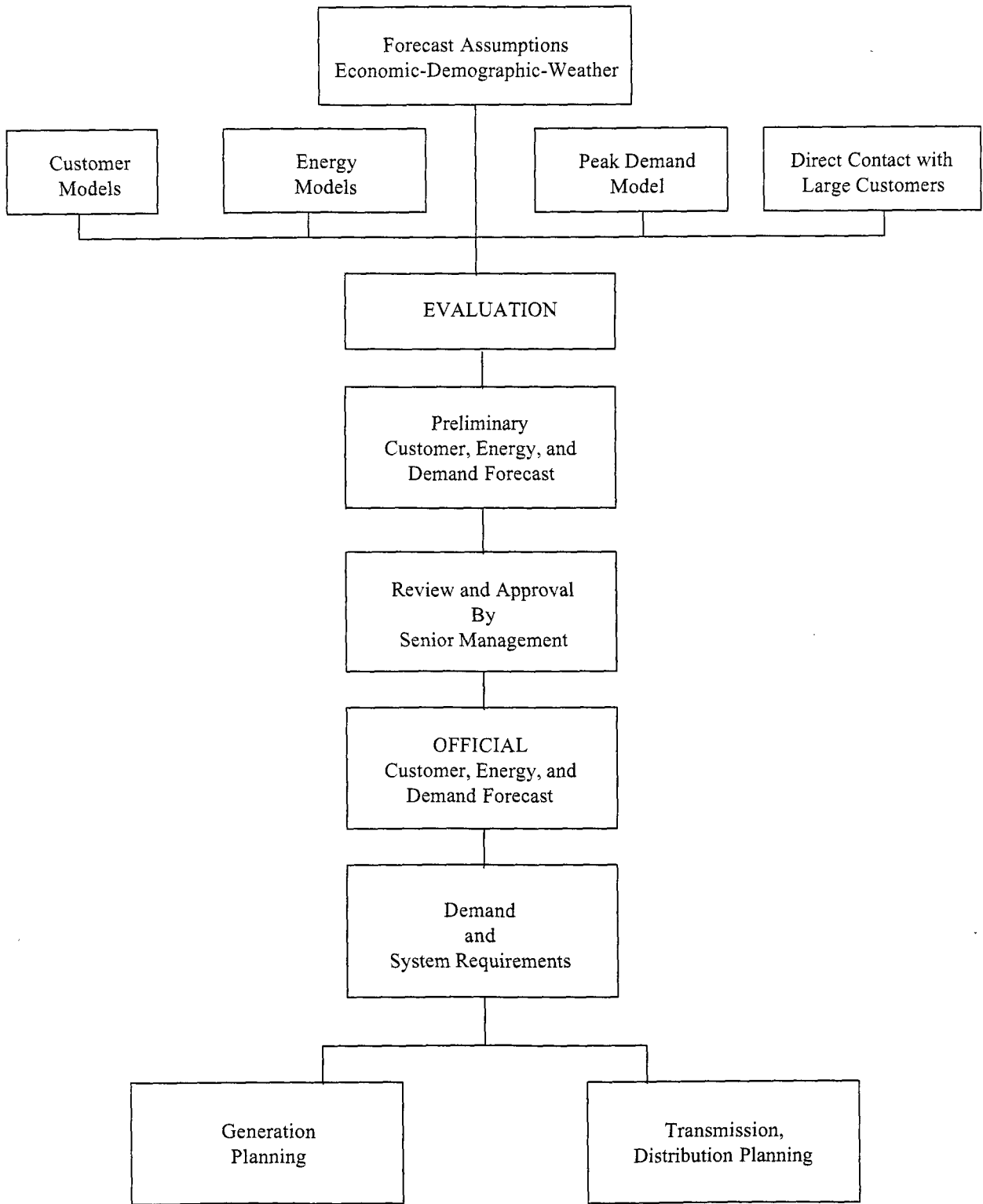
The first step in any forecasting effort is the development of assumptions upon which the forecast is based. The Financial Planning Section of the Florida Finance Department develops these assumptions based on discussions with a number of departments within Florida Power, as well as through the research efforts of a number of external sources. These assumptions specify major factors that influence the level of customers, energy sales, or peak demand over the forecast horizon. The following set of assumptions forms the basis for the forecast presented in this document.

## GENERAL ASSUMPTIONS

1. Normal weather conditions are assumed over the forecast horizon. For kilowatt-hour sales projections, normal weather is based on a historical twenty-five year average of service area weighted billing month degree-days. Peak demand projections are based on a twenty-five year historical average of system-weighted temperatures at time of peak.
2. The population projections produced by the Bureau of Economic and Business Research (BEBR) at the University of Florida as published in "Florida Population Studies Bulletin No. 128 (May 2001) provide the basis for development of the customer forecast. State and national economic assumptions produced by WEFA in their national and Florida forecasts (March 2001) are also incorporated. A short-term economic re-projection for several statewide economic variables was performed to reflect the impact of Sept 11<sup>th</sup> upon the service area sales. This re-projection attempted to replicate the growth trend for specific economic variables experienced during the 1990-91 economic recession, but for a much shorter duration. A recession lasting until mid-2002 was incorporated in these economic variables.
3. Within the State of Florida the phosphate mining industry accounts for 75% of the U.S. phosphate supply and 35% of the global need. This energy intensive industry, which in the Florida Power service area consists of six major producers with either national and/or international influence upon the supply of phosphate-based fertilizers, consumed 30.5% of industrial class kWh energy sales in 2000. Load and energy consumption at the Florida Power-served mining or chemical processing sites depend heavily on plant operations which are heavily influenced by both micro- and macroeconomic conditions. There is presently excess mining capacity in the industry due to weak farm commodity prices worldwide. Weak farm commodity prices lead to lower crop production, which results in less demand for fertilizer products. In addition, the export market for fertilizer has dried up since the Asian/Russian financial crisis. Going forward, energy consumption is expected to remain weak. Phosphate energy consumption - as a percentage of total Florida Power Industrial class usage - is expected to fall to 27% in



# CUSTOMER, ENERGY, AND DEMAND FORECAST



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the 2001-2002 timeframe, the second lowest share ever seen. A return to even a 35% share – recorded just a year ago – is not expected in the short term.

4. Florida Power supplies load and energy service to wholesale customers on a "full," "partial," and "supplemental" requirement basis. Full requirements customers' demand and energy is assumed to grow at a rate that approximates their historical trend. Partial requirements customer load is assumed to reflect the current contractual obligations received by Florida Power as of May 31, 2001. The forecast of energy and demand to the partial requirements customers reflects the nature of the stratified load they have contracted for, plus their ability to receive dispatched energy from power marketers any time it is more economical for them to do so. Contracts for partial requirements service included in this forecast are with FMPA, the cities of New Smyrna Beach, Tallahassee and Homestead, Reedy Creek Utilities, Tampa Electric, and Florida Power & Light. Florida Power's arrangement with Seminole Electric Cooperative, Inc. (SECI) is to serve "supplemental" service over and above stated levels they commit to supply themselves. SECI's projection of its system's requirements in the Florida Power control area has been incorporated into this forecast. This forecast also incorporates a firm bulk power contract with SECI. This agreement is to sell up to 300 MW of peaking power ending in December 2002.
5. This forecast assumes that Florida Power will successfully renew all future franchise agreements.
6. This forecast incorporates demand and energy reductions from Florida Power's dispatchable and non-dispatchable DSM programs required to meet the approved goals set by the Florida Public Service Commission.
7. Expected energy and demand reductions from self-service cogeneration are also included in this forecast. Florida Power will supply the supplemental load of self-service cogeneration customers. While Florida Power offers "standby" service to all

cogeneration customers, the forecast does not assume an unplanned need for standby power.

8. This forecast assumes that the regulatory environment and the obligation to serve Florida Power retail customers will continue throughout the forecast horizon. The ability of wholesale customers to switch suppliers has ended the company's obligation to serve these customers beyond their contract life. As a result, the company does not plan for generation resources unless a long-term contract is in place. Current "all requirements" customers are assumed to not renew their contracts with Florida Power. Current "partial requirements" contracts are projected to terminate as terms reach their expiration date. Deviation from these assumptions can occur if it is determined that a wholesale customer has limited options in the marketplace to replace Florida Power capacity more economically.

#### **SHORT-TERM ECONOMIC ASSUMPTIONS**

The short-term economic outlook (one year out) is significantly influenced by the terrorist events of September 11<sup>th</sup>. It is projected that a weakening economy up to this point was suddenly thrown into recession by the dramatic drop in consumer confidence that ensued. The immediate reaction on the part of the Federal Reserve Board to continue to reduce interest rates after the attack was a sign that it believed the economy was contracting. This forecast incorporates a moderate economic downturn similar in drop-off to the last national recession in 1990-1991. It expects the economy to begin expanding again by mid-2002. Beyond this period, however, no additional terrorist events, nor any further "shocks" to any supply or demand condition in the national economy, are expected. This means a return to "trend" level economic growth for the remaining years of the planning horizon is assumed.

The U.S. economy, which as of March 2001 surpassed the previous record for longest business cycle expansion in the history of the country, now ten years, began to slow significantly in 2001. The stock market bubble that generated so much wealth and investment the past few years has burst leaving both consumers and business cautious.

Talk of a “new economy” able to handle endless, inflation-free growth is no longer taken seriously. In the recent past, energy prices have become more volatile. Many corporations have announced layoffs and are working off bloated inventories. The U.S. economy has come through a period of an unprecedented amount of capital investment. Some believe that particular industries significantly over-invested and now can not meet financial commitments. These industries are not expected to add to economic growth until consumer demand catches up with available supply. The housing industry, which has showed absolutely no sign of slowing during the second half of 2001, is also not expected to supply it’s usual boost to the economy coming out of a recession. The reason is that no pent-up demand has occurred during this recession to supply an added boost.

Going forward, this forecast assumes that the Federal Reserve Board (FRB) will orchestrate a proper balance of economic growth with low inflation via monetary policy measures. A shift from pursuing inflationary pressures to maintaining economic growth will keep the economy from slipping back into recession. Energy prices are also expected to settle at an equilibrium level between the depressed prices of the 1998-1999 period and the peaks reached in the winter 2000-2001.

On a regional basis, the aftermath of the September 11<sup>th</sup> attack will have a significant impact on the travel and tourism industries in Florida. The airline industry retrenchment will limit volume of passenger service for quite a while. Some time will need to pass before airline travelers will attain their previous comfort level. Interest rate levels will continue to influence the pace of economic growth in the State through its impact on the construction industry. Personal income growth is expected to continue growing but not at the torrid pace experienced in recent years. Employment growth will return by mid-2002 but not at the strong pace experienced in the latter 1990s.

#### **LONG-TERM ECONOMIC ASSUMPTIONS**

The long-term economic outlook assumes that changes in economic and demographic conditions will follow a trended behavior pattern. The main focus involves identifying these trends. No attempt is made to predict business cycle fluctuations during this period.

### ***Population Growth Trends***

This forecast assumes Florida will experience slower in-migration and population growth over the long term, as reflected in the BEBR projections.

Florida's climate and low cost of living have historically attracted a major share of the retirement population from the eastern half of the United States. This will continue to occur, but at less than historic rates for two reasons. First, Americans entering retirement age during the late 1990s and early twenty-first century were born during the Great Depression era of the 1930s. This decade experienced a low birth rate due to the economic conditions at that time. Sixty years later, there now exists a smaller pool of retirees capable of migrating to Florida. Second, the enormous growth in population and corresponding development of the 1980s and 1990s made portions of Florida less desirable for retirement living. This diminished the quality of retiree life, and along with increasing competition from neighboring states, is expected to cause a slight decline in Florida's share of these prospective new residents over the long term.

With the bulk of Florida's in-migrants under age 45, the baby boom generation born between 1945 and 1963 helped fuel the rapid population increase Florida experienced during the 1980s. In fact, slower population in-migration to Florida can be expected as the baby boom generation enters the 40s and 50s age bracket. This age group has been significantly characterized as immobile when studies focusing on interstate population flows or job changes are conducted.

### ***Economic Growth Trends***

Florida's rapid population growth of the 1980s created a period of strong job creation, especially in the service sector industries. While the service-oriented economy expanded to support an increasing population level, there were also significant numbers of corporations migrating to Florida capitalizing on the low cost, low tax business environment. In this situation, increased job opportunities in Florida created greater in-migration among the nation's working age population. Florida's ability to attract businesses from other states because of its "comparative advantage" is expected to continue throughout the forecast

period. A cause for concern, however, is the passage of the North American Free Trade Agreement (NAFTA) as well as future trade agreements. At risk here is the bypassing of Florida by manufacturers looking to relocate to a lower cost foreign environment. Mexico is expected to attract a formidable share of American manufacturing jobs that may have otherwise moved to Florida. Also, the stability of Florida's citrus and vegetable industry may be threatened when faced with greater competition from Mexico as tariffs are eliminated.

The forecast assumes negative growth in real electricity price. That is, the change in the nominal, or current dollar, price of electricity over time is expected to be less than the overall rate of inflation. This also implies that fuel price escalation will track at or below the general rate of inflation throughout the forecast horizon.

Real personal incomes are assumed to increase throughout the forecast period thereby boosting the average customer's ability to purchase electricity -- especially since the price of electricity is expected to increase at a rate below general inflation. As incomes grow faster than the price of electricity, consumers, on average, will remain inclined to purchase additional electric appliances and increase their utilization of existing end-uses.

#### **FORECAST METHODOLOGY**

The Florida Power forecast of customers, energy sales, and peak demand is developed using customer class-specific econometric models. These models are expressly designed to capture class-specific variation over time. By modeling customer growth and average energy usage individually, the forecaster can better capture subtle changes in existing customer usage as well as growth from new customers. Peak demand models are projected on a disaggregated basis as well. This allows for appropriate handling of individual assumptions in the areas of wholesale contracts, load management, and interruptible service.

## **ENERGY AND CUSTOMER FORECAST**

In the retail jurisdiction, customer class models have been specified showing a historical relationship to weather and economic/demographic indicators using monthly data for sales models and annual data for customer models. Sales are regressed against "driver" variables that best explain monthly fluctuations over the historical sample period. Forecasts of these input variables are either derived internally or come from a review of the latest projections made by several independent forecasting concerns. The external sources of data include DRI\*WEFA and the University of Florida's Bureau of Economic and Business Research (BEBR). Internal company forecasts are used for projections of electric price, weather conditions, and the length of the billing month. Normal weather, which is assumed throughout the forecast horizon, is equal the 25-year average of heating and cooling degree days by month as measured at the St Petersburg, Orlando, and Tallahassee weather stations. Projections of Florida Power's demand-side management (conservation programs) are also incorporated into the forecast. Specific sectors are modeled as follows:

### ***Residential Sector***

Residential kWh usage per customer is modeled as a function of real Florida personal income, cooling degree days, heating degree days, the real price of electricity to the residential class, and the average number of billing days in each sales month. This equation captures significant variation in residential usage caused by economic cycles, weather fluctuations, electric price movements, and sales month duration. Projections of kWh usage per customer combined with the customer forecast provide the forecast of total residential energy sales. The residential customer forecast is developed by correlating annual net new customers with Florida Power service area population growth. County level population projections for the 29 counties, where Florida Power serves residential customers, are provided by the BEBR.



### ***Commercial Sector***

Commercial kWh use per customer is forecast based on commercial (non-agricultural, non-manufacturing, and non-governmental) employment, the real price of electricity to the commercial class, the average number of billing days in each sales month, and heating and cooling degree days. The measure of cooling degree days utilized here differs slightly from that used in the residential sector reflecting the unique behavior pattern of this class with respect to its cooling needs. Commercial customers are projected as a function of the number of residential customers served.

### ***Industrial Sector***

Energy sales to this sector are separated into two sub-sectors. A significant portion of industrial energy use was consumed by the phosphate mining industry. Because this one industry comprises more than a 30% share of the total industrial class, it is separated and modeled apart from the rest of the class. The term "non-phosphate industrial" is used to refer to those customers who comprise the remaining portion of total industrial class sales. Both groups are impacted significantly by changes in economic activity. However, adequately explaining sales levels require separate explanatory variables. Non-phosphate industrial energy sales are modeled using a Florida industrial production index developed by DRI\*WEFA, the real price of electricity to the industrial class, and the average number of sales month billing days.

The industrial phosphate mining industry is modeled using customer-specific information with respect to expected market conditions. Since this sub-sector is comprised of only five customers, the forecast is dependent upon information received from direct customer contact. Florida Power industrial customer representatives provide specific phosphate customer information regarding customer production schedules, inventory levels, area mine-out and start-up predictions, and changes in self-generation or energy supply situations over the forecast horizon.

### ***Street Lighting***

Electricity sales to the street & highway lighting class are projected to increase due to growth in the service area population base. Because this class comprised less than 0.01% of Florida Power's 2001 electric sales and just 0.1% of total customers, a simple time trend was used to project energy consumption and customer growth in this class.

### ***Public Authorities***

Energy sales to public authorities (SPA), comprised mostly of government operated services, are also projected to grow with the size of the service area. The level of government services, and thus energy use per customer, can be tied to the population base, as well as to the state of the economy. Factors affecting population growth will impact the need for additional governmental services (i.e., schools, city services, etc.) thereby increasing SPA energy usage per customer. Government employment has been determined to be the best indicator of the level of government services provided. This variable, along with heating and cooling degree days, the real price of electricity, and the average number of sales month billing days, results in a significant level of explained variation over the historical sample period. Intercept shift variables are also included in this model to account for the large change in school-related energy use in the billing months of January, July, and August. SPA customers are projected linearly as a function of a time-trend.

### ***Sales For Resale Sector***

The Sales for Resale sector encompasses all firm sales to other electric power entities. This includes sales to other utilities (municipal or investor-owned) as well as power agencies (Rural Electric Authority or Municipal).

Seminole Electric Cooperative, Incorporated (SECI) is a wholesale, or sales for resale, customer of Florida Power on both a supplemental contract basis and contract demand basis. Under the supplemental contract Florida Power provides service for those energy requirements above the level of generation capacity served by either SECI's own facilities or firm purchase obligations. SECI provides Florida Power with a forecast of total monthly peak demands and energy for its load within the Florida Power control

area. Monthly supplemental demands are calculated from the total demand levels it projects in Florida Power's control area less its own ("committed") resources. Beyond supplemental service, Florida Power has signed two firm power or "contract demand" agreements with SECI to serve stratified intermediate and peaking load. The first contract, an October 1995 agreement, has one remaining piece that has not yet expired. This piece involves serving 150 MW of stratified intermediate demand and is assumed to remain a requirement on the Florida Power system throughout the forecast horizon. The load tied to this piece of the contract was carved out of the supplemental "pay as you take" contract and restructured to a contract demand. The second firm power agreement with SECI, a three-year contract signed in July 1997, also involves load that would otherwise have been served via the supplemental service agreement. It began in the year 2000 and will expire in December 2002. Florida Power is obligated to supply up to 300 MW of peaking service under this agreement. Energy usage under this contract is projected to occur in the winter and summer peak months with a very low load factor.

The municipal sales for resale class includes a number of customers, divergent not only in scope of service, (i.e., full or partial requirement), but also in composition of ultimate consumers. Each customer is modeled separately in order to accurately reflect its individual profile. The majority of customers in this class are municipalities whose full energy requirements are met by Florida Power. The full requirement customers are modeled individually using local weather station data and population growth trends for each vicinity. Since the ultimate consumers of electricity in this sector are, to a large degree, residential and commercial customers, it is assumed that their use patterns will follow those of the Florida Power retail-based residential and commercial customer classes. Florida Power serves partial requirement service (PR) to a municipality (New Smyrna Beach), a power authority (Florida Municipal Power Agency), and a utility district (Reedy Creek Improvement District). In each case, these customers contract with Florida Power for a specific level and type of demand needed to provide their particular electrical system with an appropriate level of reliability. The certain terms of each contract are subject to change each year. More specifically, this means that the level and type of demand under contract can increase or decrease for each year of their contract. The demand forecast for each PR

wholesale customer is derived using its historical coincident demand to contract demand relationship (including transmission delivery losses). The demand projections for the Florida Municipal Power Agency (FMPA) also include a "losses service" MW amount to account for the transmission losses Florida Power incurs when "wheeling" power to FMPA's customers in Florida Power's transmission area. The contract demand level for each PR customer in its last contract year determines the load upon the Florida Power system for the remaining years of the forecast horizon unless the customer has notified Florida Power of a willingness to not renew their contract.

The methodology for projecting MWh energy usage for the PR customers differs slightly from customer to customer. This category of service is sporadic in nature and exceptionally difficult to forecast because PR customers are capable of buying "spot" energy in the wholesale market if it is cheaper than the energy under the Florida Power capacity contract. For example, FMPA utilizes Florida Power's wholesale energy service only when more economical energy is unavailable. The forecast for FMPA is derived using annual historical load factor calculations to provide the expected level of energy sales based on the level of contracted MW nominated by FMPA. Average monthly-to-annual energy ratios are applied to the forecast in order to obtain monthly profiles. For New Smyrna Beach, recent growth trends and historic load factor calculations are utilized to provide the expected level of MWh sales. Again, these customers have alternative sources of supply to meet their needs. Purchases of energy from Florida Power will depend heavily on the price of available energy from other sources in the marketplace. Beginning in late 1999, the City of Tallahassee sold back its ownership share of Crystal River 3 nuclear plant to Florida Power. It replaced this capacity with a long-term contract of 11.4 MW with an expected high load factor.

#### **PEAK DEMAND FORECAST**

The forecast of peak demand also employs a disaggregated econometric methodology. For seasonal (winter and summer) peak demands, as well as each month of the year, Florida Power's coincident system peak is dissected into five major components. These

components consist of potential firm retail load, demand-side management program capability, wholesale demand, company use demand, and interruptible demand.

Potential firm retail load refers to projections of Florida Power retail hourly seasonal net peak demand (excluding the non-firm interruptible/curtailable/standby services) before the cumulative effects of any conservation activity or the activation of Florida Power's Load Management program. The historical values of this series are constructed to show the size of Florida Power's firm retail net peak demand had no utility-induced conservation or load control ever taken place. The value of constructing such a "clean" series enables the forecaster to observe and correlate the underlying trend in retail peak demand to total system customer levels and coincident weather conditions at the time of the peak without the impacts of year-to-year variation in conservation activity or load control reductions. Seasonal peaks are projected using historical seasonal peak data regardless of which month the peak occurred. The projections become the potential retail demand projection for the month of January (winter) and August (summer) since this is typically when the seasonal peaks occur. The non-seasonal peak months are projected the same as the seasonal peaks, but the analysis is limited to the specific month being projected.

Energy conservation and direct load control estimates are consistent with Florida Power's DSM goals that have been filed with the Florida Public Service Commission in the 1999 DSM Goals Docket. These estimates are incorporated into the MW forecast. Projections of dispatchable and cumulative non-dispatchable DSM are subtracted from the projection of potential firm retail demand resulting in a projected series of retail demand figures one would expect to occur.

Sales For Resale demand projections represent load supplied by Florida Power to other electric utilities such as Seminole Electric Cooperative, Incorporated, the Florida Municipal Power Agency, and other electric distribution companies. The SECI supplemental demand projection is based on its forecast of its service area within the Florida Power control area. The level of MW to be served by Florida Power is dependent upon the amount of resources SECI supplies to itself or contracts with others. An assumption has been made that beyond

the last year of committed capacity declaration (five years out) SECI will hold constant its level of self-serve resources. For the partial requirements customers demand projections, historical ratios of coincident-to-contract levels of demand are applied to future MW contract levels. Demand requirements continue out at the level indicated by the final year in their respective contract declaration letter. The full requirements municipal demand forecast is estimated for individual cities using linear econometric equations modeling both weather and economic impacts specific to each locale. The seasonal (winter and summer) projections become the January and August peak values, respectively. The non-seasonal peak months are calculated using monthly allocation factors derived from applying the historical relationship between each winter month (November to March) relative to the winter peak, and each summer month (April to October) in relation to the summer peak demand.

Florida Power "Company Use" at the time of system peak is estimated using load research metering studies and is assumed to remain stable over the forecast horizon. The interruptible and curtailable service (IS and CS) load component is developed from historic trends, as well as the incorporation of specific information obtained from Florida Power's industrial service representatives.

Each of the peak demand components described above is a positive value except for the DSM program MW impacts and IS and CS load. These impacts represent a reduction in peak demand and are assigned a negative value. Total system peak demand is then calculated as the arithmetic sum of the five components.

### ***Demand-Side Management***

Each projection of every retail class-of-business MWh energy sales forecast is reduced by estimated future energy savings due to Florida Power-sponsored and Florida Public Service Commission-approved dispatchable and non-dispatchable Demand-Side Management programs. Estimated energy savings for every non-dispatchable DSM program are calculated on a program-by-program basis and aggregated for each class-of-business on the program. Dispatchable DSM program energy impacts are estimated

within the System Planning & Operations Department's production costing models. These models determine the most cost-effective means to meet system requirements, including load control. The DSM projections incorporated in this demand and energy forecast meet the new conservation goals established by the FPSC in Order No. PSC-99-1942-FOF-EG, issued October 1, 1999 in Docket No. 971005-EG.

### **HIGH AND LOW FORECAST SCENARIOS**

The high and low bandwidth scenarios around the base MWh energy sales forecast are developed using a Monte Carlo simulation applied to a multivariate regression model that closely replicates the base retail MWh energy forecast in aggregate. This model accounts for variation in Gross Domestic Product, retail customers, and electric price. The base forecasts for these variables were developed based on input from Data Resources Inc. and internal company price projections. Variation around the base forecast predictor variables used in the Monte Carlo simulation was based on an 80 percent confidence interval calculated around variation in each variable's historic growth rate. While the total number of degree days (weather) were also incorporated into the model specification, the high and low scenarios do not attempt to capture extreme weather conditions. Normal weather conditions were assumed in all three scenarios.

The Monte Carlo simulation was produced through the estimation of 1,000 scenarios for each year of the forecast horizon. These simulations allowed for random normal variation in the growth trajectories of the economic input variables (while accounting for cross-correlation amongst these variables), as well as simultaneous variation in the equation (model error) and coefficient estimates. These scenarios were then sorted and rank ordered from one to a thousand, while the simulated scenario with no variation was adjusted to equal the base forecast.

The low and high scenarios were chosen from among the ranked alternatives to create a bandwidth forecast reflecting an approximate 80% probability that actual retail energy and demand will fall somewhere between the low and high scenarios. This bandwidth forecast also reflects an approximate 10% probability of falling at or below the low

scenario, as well as a 10% probability of meeting or exceeding the high scenario. In both cases, the high and low scenario forecasts were projected from the energy forecasts using the load factor implicit in the base case forecast.



## **CONSERVATION**

In October 1999, the FPSC established new conservation goals for Florida Power that span the ten-year period from 2000 through 2009 (in Docket 971007-EG, Order No. PSC-99-1942-FOF-EG). As required by Rule 25-17.0021(4), Florida Administrative Code, Florida Power then submitted for Commission approval a new DSM Plan that was specifically designed to meet the new conservation goals. Florida Power's DSM Plan was subsequently approved by the Commission on April 17, 2000 (in Docket 991789-EG, Order No. PSC-00-750-PAA-EG). The following tables present Florida Power's historical DSM performance by showing the Commission approved conservation goal as well as the conservation savings actually achieved through Florida Power's DSM programs for the reporting years of 2000-2001

### **Historical Residential Conservation Savings Goals and Achievements**

Year	Cumulative Summer MW		Cumulative Winter MW		Cumulative GWh Energy	
	Goal	Achieved	Goal	Achieved	Goal	Achieved
2000	10	17	30	35	15	21
2001	20	34	64	69	32	42

### **Historical Commercial/Industrial Conservation Savings Goals and Achievements**

Year	Cumulative Summer MW		Cumulative Winter MW		Cumulative GWh Energy	
	Goal	Achieved	Goal	Achieved	Goal	Achieved
2000	4	12	4	12	2	6
2001	8	18	7	17	4	10

The forecasts contained in this Ten-Year Site Plan document are based on Florida Power's DSM Plan and, therefore, appropriately reflect the level of DSM savings required to meet the Commission-established conservation goals. Florida Power's DSM Plan consists of five residential programs, eight commercial and industrial programs, and one research and development program. The programs are subject to periodic monitoring and evaluation for the purpose of ensuring that all DSM resources are acquired in a cost-effective manner and that the program savings are durable. Following is a brief description of these programs.

## **RESIDENTIAL PROGRAMS**

### **Home Energy Check Program**

This energy audit program provides customers with an analysis of their current energy use and recommendations on how they can save on their electricity bill through low-cost or no-cost energy-saving practices and measures. The program provides customers with four types of energy audits: Level 1 - customer-completed mail-in audit; Level 2 - free walk-through audit; Level 3 - paid walk-through audit; and Level 4 - home energy rating. The Home Energy Check Program serves as the foundation of the Home Energy Improvement Program in that the audit is a prerequisite for participation in the energy saving measures offered in the Home Energy Improvement Program.

### **Home Energy Improvement Program**

This is the umbrella program to increase energy efficiency for existing residential homes. It combines efficiency improvements to the thermal envelope with upgraded electric appliances. The program provides incentives for attic insulation upgrades, duct testing and repair, high efficiency electric heat pumps, heat recovery units, and dedicated heat pump water heaters.

### **Residential New Construction Program**

This program promotes energy efficient new home construction in order to provide customers with more efficient dwellings combined with improved environmental comfort. The program provides education and information to the design and building

community on energy efficient equipment and construction. It also facilitates the design and construction of energy efficient homes by working directly with the builders to comply with program requirements. The program provides incentives to the builder for high efficiency electric heat pumps, heat recovery units, and dedicated heat pump water heaters. The highest level of the program incorporates the Environmental Protection Agency's Energy Star Homes Program and qualifies participants for cooperative advertising.

#### **Low Income Weatherization Assistance Program**

This umbrella program seeks to improve energy efficiency for low-income customers in existing residential dwellings. It combines efficiency improvements to the thermal envelope with upgraded electric appliances. The program provides incentives for attic insulation upgrades, duct testing and repair, reduced air infiltration, water heater wrap, HVAC maintenance, high efficiency heat pumps, heat recovery units, and dedicated heat pump water heaters.

#### **Residential Energy Management Program**

This is a voluntary customer program that allows Florida Power to reduce peak demand and thus defer generation construction. Peak demand is reduced by interrupting service to selected electrical equipment with radio controlled switches installed on the customer's premises. These interruptions are at Florida Power's option, during specified time periods, and coincident with hours of peak demand. Participating customers receive a monthly credit on their electricity bills. Due to the cost of new installations, this program was modified in the 1999 filing to allow for participation in a winter-only program that provides for direct load control of water heating and central heating appliances between November and March.

### **COMMERCIAL/INDUSTRIAL (C/I) PROGRAMS**

#### **Business Energy Check Program**

This energy audit program provides commercial and industrial customers with an assessment of the current energy usage at their facilities, recommendations on how they

can improve the environmental conditions of their facilities while saving on their electricity bills, and information on low-cost energy efficiency measures. The Business Energy Check consists of two types of audits: Level 1 - free walk-through audit, and Level 2 - paid walk-through audit. In most cases, this program is a prerequisite for participation in the other C/I programs.

### **Better Business Program**

This is the umbrella efficiency program for existing commercial and industrial customers. The program provides customers with information, education, and advice on energy-related issues and incentives on efficiency measures that are cost-effective to Florida Power and its customers. The Better Business Program promotes energy efficient heating, ventilation, air conditioning (HVAC), motors, and some building retrofit measures (in particular, roof insulation upgrade, duct leakage test and repair, and window film retrofit).

### **Commercial/Industrial New Construction Program**

The primary goal of this program is to foster the design and construction of energy efficient buildings. The new construction program: 1) provides education and information to the design community on all aspects of energy efficient building design; 2) requires that the building design, at a minimum, surpass the state energy code; 3) provides financial incentives for specific energy efficient equipment; and 4) provides energy design awards to building design teams. Incentives will be provided for high efficiency HVAC equipment, motors, and heat recovery units.

### **Innovation Incentive Program**

This program promotes a reduction in demand and energy by subsidizing energy conservation projects for customers in Florida Power's service territory. The intent of the program is to encourage legitimate energy efficiency measures that reduce kW demand and/or kWh energy, but are not addressed by other programs. Energy efficiency opportunities are identified by Florida Power representatives during a Business Energy

Check audit. If a candidate project meets program specifications, it will be eligible for an incentive payment, subject to Florida Power approval.

**Commercial Energy Management Program (Rate Schedule GSLM-1)**

This direct load control program reduces Florida Power's demand during peak or emergency conditions. The program is available to customers who have electric space cooling equipment suitable for interruptible operation and are eligible for service under the Rate Schedule GS-1, GST-1, GSD-1, or GSDT-1. The program is also applicable to customers who have any of the following electrical equipment installed on permanent residential structures and utilized for domestic (household) purposes: 1) water heater(s), 2) central electric heating systems(s), 3) central electric cooling system(s), and/or 4) swimming pool pump(s). Customers will receive a monthly credit on their bills depending on the type of equipment in the program and the interruption schedule. As described in Florida Power's DSM Plan, this program is currently closed to new participants.

**Standby Generation Program**

This demand control program reduces Florida Power's demand based upon the indirect control of customer generation equipment. This is a voluntary program available to all commercial, industrial, and agricultural customers who have on-site generation capability and are willing to reduce their Florida Power demand when Florida Power deems it necessary. The customers participating in the Standby Generation program receive a monthly credit on their electricity bills according to the demonstrated ability of the customer to reduce demand at Florida Power's request.

**Interruptible Service Program**

This direct load control program reduces Florida Power's demand at times of capacity shortage during peak or emergency conditions. The program is available to qualified non-residential customers with an average billing demand of 500 kW or more, who are willing to have their power interrupted. Florida Power will have remote control of the circuit breaker or disconnect switch supplying the customer's equipment. In return for

this ability to interrupt load, customers participating in the Interruptible Service program receive a monthly interruptible demand credit applied to their electric bills. In response to customer requests, Florida Power has implemented improvements in the way in which these customer resources are called upon during periods of capacity shortage. Customer response has been favorable to the improvements that have been implemented.

### **Curtable Service**

This direct load control program reduces Florida Power's demand at times of capacity shortage during peak or emergency conditions. The program is available to qualified non-residential customers with an average billing demand of 500 kW or more, who are willing to curtail 25 percent of their average monthly billing demand. Customers participating in the Curtable Service program receive a monthly curtable demand credit applied to their electric bills.

## **RESEARCH AND DEVELOPMENT PROGRAMS**

### **Technology Development Program**

The primary purpose of this program is to establish a system to "pursue research, development and demonstration projects jointly with others as well as individual projects" (Rule 25-17.001, {5}(f), Florida Administration Code). Florida Power will undertake certain development and demonstration projects that have promise to become cost-effective demand and energy efficiency programs. In most cases, each demand reduction and energy efficiency project that is proposed and investigated under this program requires field testing with actual customers.

CHAPTER 3

*Forecast of*  
**FACILITIES REQUIREMENTS**



**Florida Power**

A Progress Energy Company

## CHAPTER 3

### Forecast of FACILITIES REQUIREMENTS

#### RESOURCE PLANNING FORECAST

##### **OVERVIEW OF CURRENT FORECAST**

*Supply-Side Resources:* Florida Power has a summer total capacity resource of 9,247 MW, as shown in Table 3.1. This capacity resource includes utility purchased power (473 MW), non-utility purchased power (831 MW), combustion turbine (2,607 MW), nuclear (765 MW), fossil steam (3,882 MW) and combined cycle plants (689 MW). Table 3.2 shows Florida Power's contracts for firm capacity provided by QFs.

*Demand-Side Programs:* Florida Power has experienced excellent levels of participation in its Demand-Side Management Programs. Total DSM resources are shown in Schedules 3.1.1 and 3.2.1 of Chapter 2. These programs include Non-Dispatchable DSM, Interruptible Load, and Dispatchable Load Control resources. Florida Power's 2002 Ten-Year Site Plan Demand-Side Management projections are consistent with the DSM Goals established by the Commission in Docket No. 971005-EG.

*Capacity and Demand Forecast:* Florida Power's forecasts of capacity and demand for the projected summer and winter peaks are shown on Schedules 7.1 and 7.2, respectively. Florida Power's forecasts of capacity and demand are based on serving expected growth in retail requirements in its regulated service area and meeting commitments to wholesale power customers who have entered into supply contracts with Florida Power. In its planning process, Florida Power balances its supply plan for the needs of retail and wholesale customers and endeavors to ensure that cost-effective resources are available to meet the needs across the customer base. Over the years, as wholesale markets have grown more competitive, Florida Power has remained active in the competitive solicitations while planning in a manner that maintains an appropriate balance of commitments and resources within the overall regulated supply framework.



*Base Expansion Plan:* Florida Power's planned supply resource additions and changes are shown in Schedule 8 and are referred to as Florida Power's Base Expansion Plan. This Plan includes 2,792 MW of proposed new capacity additions over the next ten years. As identified in Schedule 8, Florida Power's next planned need is a 516 MW (summer) power block in November 2003. Florida Power's self-build option for Hines Unit 2 was determined to be the most cost-effective alternative (FPSC Docket No. 001064-EI, Order No. PSC-01-0029-FOF-EI, Issued January 5, 2001).

Florida Power's Base Expansion Plan projects requirements for additional combined cycle units with proposed in-service dates of 2005, 2007, 2009, and 2010. These high efficiency gas-fired combined cycle units, together with new combustion turbines at Florida Power's existing Intercession City site with a proposed in-service date of 2004 and 2008, help the Florida Power system meet the growing energy requirements of its customer base and also contribute to meeting the requirements of the 1990 Clean Air Act Amendments. Fuel switching, SO<sub>2</sub> emission allowance purchases, re-dispatching of system generation and technology improvements are additional options available to Florida Power to ensure compliance with these important environmental requirements. Status reports and specifications for new generation facilities are included in Schedule 9.

TABLE 3.1

**FLORIDA POWER  
TOTAL CAPACITY RESOURCE  
POWER PLANTS AND PURCHASED POWER CONTRACTS  
AS OF DECEMBER 31, 2001**

PLANTS	NUMBER OF UNITS	NET DEPENDABLE CAPABILITY MW SUMMER
<b>Nuclear Steam</b>		
Crystal River	1	765 *
<b>Fossil Steam</b>		
Crystal River	4	2,302
Anclote	2	993
Paul L. Bartow	3	444
Suwannee River	<u>3</u>	<u>143</u>
Total Fossil Steam	12	3,882
<b>Combined Cycle</b>		
Hines Energy Complex	1	482
Tiger Bay	<u>1</u>	<u>207</u>
Total Combined Cycle	2	689
<b>Combustion Turbine</b>		
DeBary	10	667
Intercession City	14	1,029
Bayboro	4	184
Bartow	4	187
Suwannee	3	164
Turner	4	154
Higgins	4	122
Avon Park	2	52
University of Florida	1	35
Rio Pinar	<u>1</u>	<u>13</u>
Total Combustion Turbine	47	2,607
<b>Total Units</b>	<b>62</b>	
<b>Total Net Generating Capability</b>		<b>7,943</b>
<i>* Adjusted for sale of 8.2% of total capacity</i>		
<b>Purchased Power</b>		
Qualifying Facilities	15	831
Investor Owned Utilities	2	473
<b>TOTAL CAPACITY RESOURCE</b>		<b>9,247</b>

<p style="text-align: center;"><b>TABLE 3.2</b></p> <p style="text-align: center;"><b>FLORIDA POWER</b></p> <p style="text-align: center;"><b>QUALIFYING FACILITY GENERATION CONTRACTS</b></p> <p style="text-align: center;"><b>AS OF DECEMBER 31, 2001</b></p>	
Facility Name	Firm Capacity (MW)
Bay County Resource Recovery	11.0
Cargill	15.0
CFR-Biogen (Orange Cogen)	74.0
Dade County Resource Recovery	43.0
El Dorado	114.2
Lake Cogen	110.0
Lake County Resource Recovery	12.8
LFC Jefferson	8.5
LFC Madison	8.5
Mulberry	79.2
Orlando Cogen	79.2
Pasco Cogen	109.0
Pasco County Resource Recovery	23.0
Pinellas County Resource Recovery 1	40.0
Pinellas County Resource Recovery 2	14.8
Ridge Generating Station	39.6
Royster	30.8
Timber Energy 1	12.8
US Agrichem	5.6
<b>TOTAL</b>	<b>831.0</b>

FLORIDA POWER

SCHEDULE 7.1

FORECAST OF CAPACITY, DEMAND AND SCHEDULED MAINTENANCE

AT TIME OF SUMMER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TOTAL	FIRM	FIRM		TOTAL	SYSTEM FIRM					
	INSTALLED	CAPACITY	CAPACITY		CAPACITY	SUMMER PEAK	RESERVE MARGIN		SCHEDULED	RESERVE MARGIN	
	CAPACITY	IMPORT	EXPORT	QF	AVAILABLE	DEMAND	BEFORE MAINTENANCE	% OF PEAK	MAINTENANCE	AFTER MAINTENANCE	% OF PEAK
YEAR	MW	MW	MW	MW	MW	MW	MW	% OF PEAK	MW	MW	% OF PEAK
2002	7,812	473	0	818	9,103	7,814	1,289	16%	0	1,289	16%
2003	7,812	473	0	818	9,103	7,592	1,511	20%	0	1,511	20%
2004	8,328	473	0	818	9,619	7,718	1,901	25%	0	1,901	25%
2005	8,482	483	0	818	9,783	7,921	1,863	24%	0	1,863	24%
2006	8,855	483	0	818	10,156	8,122	2,034	25%	0	2,034	25%
2007	8,855	483	0	813	10,151	8,309	1,842	22%	0	1,842	22%
2008	9,335	483	0	798	10,616	8,569	2,047	24%	0	2,047	24%
2009	9,489	483	0	689	10,661	8,829	1,831	21%	0	1,831	21%
2010	9,969	483	0	658	11,110	9,065	2,045	23%	0	2,045	23%
2011	10,449	413	0	658	11,520	9,330	2,189	23%	0	2,189	23%

FLORIDA POWER

SCHEDULE 7.2

FORECAST OF CAPACITY, DEMAND AND SCHEDULED MAINTENANCE

AT TIME OF WINTER PEAK

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TOTAL INSTALLED CAPACITY	FIRM CAPACITY IMPORT	FIRM CAPACITY EXPORT	QF	TOTAL CAPACITY AVAILABLE	SYSTEM FIRM WINTER PEAK DEMAND	RESERVE MARGIN BEFORE MAINTENANCE	% OF PEAK	SCHEDULED MAINTENANCE	RESERVE MARGIN AFTER MAINTENANCE	% OF PEAK
YEAR	MW	MW	MW	MW	MW	MW	MW		MW	MW	
2002 / 03	8,586	473	0	818	9,877	8,559	1,318	15%	0	1,318	15%
2003 / 04	9,168	473	0	818	10,459	8,583	1,876	22%	0	1,876	22%
2004 / 05	9,352	483	0	818	10,653	8,779	1,874	21%	0	1,874	21%
2005 / 06	9,788	483	0	818	11,089	8,966	2,123	24%	0	2,123	24%
2006 / 07	9,788	483	0	813	11,084	9,195	1,888	21%	0	1,888	21%
2007 / 08	10,338	483	0	798	11,619	9,403	2,216	24%	0	2,216	24%
2008 / 09	10,522	483	0	689	11,694	9,668	2,026	21%	0	2,026	21%
2009 / 10	11,072	483	0	658	12,213	9,900	2,313	23%	0	2,313	23%
2010 / 11	11,622	483	0	658	12,763	10,190	2,573	25%	0	2,573	25%
2011 / 12	11,622	413	0	658	12,693	10,469	2,224	21%	0	2,224	21%

FLORIDA POWER

SCHEDULE 8

PLANNED AND PROSPECTIVE GENERATING FACILITY ADDITIONS AND CHANGES

AS OF JANUARY 1, 2002 THROUGH DECEMBER 31, 2011

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PLANT NAME	UNIT NO.	LOCATION (COUNTY)	UNIT TYPE	FUEL		FUEL TRANSPORT		CONST. START	COMPL IN-SERVICE	EXPECTED RETIREMENT	GEN. MAX. NAMEPLATE	NET CAPABILITY		STATUS	NOTES
				PRI.	ALT.	PRI.	ALT.	MO./YR	MO./YR	MO./YR	KW	SUMMER MW	WINTER MW		
INTERCESSION CITY	P12	OSCEOLA	GT	NG	DFO	PL	PL		5/2002			4	4	A	1
INTERCESSION CITY	P13	OSCEOLA	GT	NG	DFO	PL	PL		5/2002			4	4	A	1
INTERCESSION CITY	P14	OSCEOLA	GT	NG	DFO	PL	PL		5/2002			4	4	A	1
HINES ENERGY COMPLEX	2	POLK	CC	NG	DFO	PL	TK	3/2002	11/2003			516	582	T	
INTERCESSION CITY	P15	OSCEOLA	GT	NG	DFO	PL	PL	11/2003	11/2004			154	184	P	
HINES ENERGY COMPLEX	3	POLK	CC	NG	DFO	PL	TK	3/2004	11/2005			516	582	P	
SUWANNEE RIVER	1	SUWANNEE	ST	RFO	NG	TK	PL			12/2005	34,500	32	33	RT	2
SUWANNEE RIVER	2	SUWANNEE	ST	RFO	NG	TK	PL			12/2005	37,500	31	32	RT	2
SUWANNEE RIVER	3	SUWANNEE	ST	RFO	NG	TK	PL			12/2005	75,000	80	81	RT	2
HINES ENERGY COMPLEX	4	POLK	CC	NG	DFO	PL	TK	3/2006	11/2007			480	550	P	
INTERCESSION CITY	P16	OSCEOLA	GT	NG	DFO	PL	PL	11/2007	11/2008			154	184	P	
HINES ENERGY COMPLEX	5	POLK	CC	NG	DFO	PL	TK	3/2008	11/2009			480	550	P	
HINES ENERGY COMPLEX	6	POLK	CC	NG	DFO	PL	TK	3/2009	11/2010			480	550	P	

NOTES :

1/ CAPABILITY INCREASE (FIRING TEMPERATURE UPRATE).

2/ CONSIDERATION FOR POTENTIAL LIFE EXTENSIONS OF THESE FACILITIES WILL BE INCLUDED IN FUTURE STUDIES.

**FLORIDA POWER**

**SCHEDULE 9**

**STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES**

**AS OF JANUARY 1, 2002**

- |      |   |  |
|------|---|--|
| (1)  | Plant Name and Unit Number:                 | HINES ENERGY COMPLEX UNIT #2   |
| (2)  | Capacity                                    |  |
|      | a. Summer:                                  | 516  |
|      | b. Winter:                                  | 582  |
| (3)  | Technology Type:                            | COMBINED CYCLE   |
| (4)  | Anticipated Construction Timing             |  |
|      | a. Field construction start date:           | 3/2002   |
|      | b. Commercial in-service date:              | 11/2003 (EXPECTED)   |
| (5)  | Fuel  |  |
|      | a. Primary fuel:                            | NATURAL GAS  |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL  |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION<br>with SELECTIVE CATALYTIC REDUCTION |
| (7)  | Cooling Method:                             | COOLING PONDS  |
| (8)  | Total Site Area:                            | 8,200 ACRES  |
| (9)  | Construction Status:                        | REGULATORY APPROVAL RECEIVED   |
| (10) | Certification Status:                       | SITE PERMITTED   |
| (11) | Status with Federal Agencies:               | SITE PERMITTED   |
| (12) | Projected Unit Performance Data             |  |
|      | a. Planned Outage Factor (POF):             | 2.92 %   |
|      | b. Forced Outage Factor (FOF):              | 3.50 %   |
|      | c. Equivalent Availability Factor (EAF):    | 93.70 %  |
|      | d. Resulting Capacity Factor (%):           | 50.00 %  |
|      | e. Average Net Operating Heat Rate (ANOHR): | 7,306 BTU/kWh  |

FLORIDA POWER

SCHEDULE 9

STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

AS OF JANUARY 1, 2002

- |      |   |   |
|------|---|---|
| (1)  | Plant Name and Unit Number:                 | INTERCESSION CITY P15   |
| (2)  | Capacity                                    |   |
|      | a. Summer:                                  | 154   |
|      | b. Winter:                                  | 184   |
| (3)  | Technology Type:                            | COMBUSTION TURBINE  |
| (4)  | Anticipated Construction Timing             |   |
|      | a. Field construction start date:           | 11/2003   |
|      | b. Commercial in-service date:              | 11/2004 (EXPECTED)  |
| (5)  | Fuel  |   |
|      | a. Primary fuel:                            | NATURAL GAS   |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL   |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION (NATURAL GAS)<br>WATER INJECTION (DISTILLATE FUEL OIL) |
| (7)  | Cooling Method:                             | AIR   |
| (8)  | Total Site Area:                            | 162 ACRES   |
| (9)  | Construction Status:                        | PLANNED   |
| (10) | Certification Status:                       | SITE PERMITTED  |
| (11) | Status with Federal Agencies:               | SITE PERMITTED  |
| (12) | Projected Unit Performance Data             |   |
|      | a. Planned Outage Factor (POF):             | 6.85 %  |
|      | b. Forced Outage Factor (FOF):              | 4.70 %  |
|      | c. Equivalent Availability Factor (EAF):    | 88.80 %   |
|      | d. Resulting Capacity Factor (%):           | 15.00 %   |
|      | e. Average Net Operating Heat Rate (ANOHR): | 12,103 BTU/kWh  |



**FLORIDA POWER**

**SCHEDULE 9**

**STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES**

**AS OF JANUARY 1, 2002**

- |      |   |  |
|------|---|--|
| (1)  | Plant Name and Unit Number:                 | HINES ENERGY COMPLEX UNIT #3   |
| (2)  | Capacity                                    |  |
|      | a. Summer:                                  | 516  |
|      | b. Winter:                                  | 582  |
| (3)  | Technology Type:                            | COMBINED CYCLE   |
| (4)  | Anticipated Construction Timing             |  |
|      | a. Field construction start date:           | 3/2004   |
|      | b. Commercial in-service date:              | 11/2005 (EXPECTED)   |
| (5)  | Fuel  |  |
|      | a. Primary fuel:                            | NATURAL GAS  |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL  |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION<br>with SELECTIVE CATALYTIC REDUCTION |
| (7)  | Cooling Method:                             | COOLING PONDS  |
| (8)  | Total Site Area:                            | 8,200 ACRES  |
| (9)  | Construction Status:                        | PLANNED  |
| (10) | Certification Status:                       | SITE PERMITTED   |
| (11) | Status with Federal Agencies:               | SITE PERMITTED   |
| (12) | Projected Unit Performance Data             |  |
|      | a. Planned Outage Factor (POF):             | 5.75 %   |
|      | b. Forced Outage Factor (FOF):              | 3.00 %   |
|      | c. Equivalent Availability Factor (EAF):    | 91.40 %  |
|      | d. Resulting Capacity Factor (%):           | 50.00 %  |
|      | e. Average Net Operating Heat Rate (ANOHR): | 7,306 BTU/kWh  |

**FLORIDA POWER**

**SCHEDULE 9**

**STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES**

**AS OF JANUARY 1, 2002**

- |      |   |  |
|------|---|--|
| (1)  | Plant Name and Unit Number:                 | HINES ENERGY COMPLEX UNIT #4   |
| (2)  | Capacity                                    |  |
|      | a. Summer:                                  | 480  |
|      | b. Winter:                                  | 550  |
| (3)  | Technology Type:                            | COMBINED CYCLE   |
| (4)  | Anticipated Construction Timing             |  |
|      | a. Field construction start date:           | 3/2006   |
|      | b. Commercial in-service date:              | 11/2007 (EXPECTED)   |
| (5)  | Fuel  |  |
|      | a. Primary fuel:                            | NATURAL GAS  |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL  |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION<br>with SELECTIVE CATALYTIC REDUCTION |
| (7)  | Cooling Method:                             | COOLING PONDS  |
| (8)  | Total Site Area:                            | 8,200 ACRES  |
| (9)  | Construction Status:                        | PLANNED  |
| (10) | Certification Status:                       | SITE PERMITTED   |
| (11) | Status with Federal Agencies:               | SITE PERMITTED   |
| (12) | Projected Unit Performance Data             |  |
|      | a. Planned Outage Factor (POF):             | 6.85 %   |
|      | b. Forced Outage Factor (FOF):              | 6.70 %   |
|      | c. Equivalent Availability Factor (EAF):    | 86.90 %  |
|      | d. Resulting Capacity Factor (%):           | 50.00 %  |
|      | e. Average Net Operating Heat Rate (ANOHR): | 7,336 BTU/kWh  |

**FLORIDA POWER**

**SCHEDULE 9**

**STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES**

**AS OF JANUARY 1, 2002**

- |      |   |   |
|------|---|---|
| (1)  | Plant Name and Unit Number:                 | INTERCESSION CITY P16   |
| (2)  | Capacity                                    |   |
|      | a. Summer:                                  | 154   |
|      | b. Winter:                                  | 184   |
| (3)  | Technology Type:                            | COMBUSTION TURBINE  |
| (4)  | Anticipated Construction Timing             |   |
|      | a. Field construction start date:           | 11/2007   |
|      | b. Commercial in-service date:              | 11/2008 (EXPECTED)  |
| (5)  | Fuel  |   |
|      | a. Primary fuel:                            | NATURAL GAS   |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL   |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION (NATURAL GAS)<br>WATER INJECTION (DISTILLATE FUEL OIL) |
| (7)  | Cooling Method:                             | AIR   |
| (8)  | Total Site Area:                            | 162 ACRES   |
| (9)  | Construction Status:                        | PLANNED   |
| (10) | Certification Status:                       | SITE PERMITTED  |
| (11) | Status with Federal Agencies:               | SITE PERMITTED  |
| (12) | Projected Unit Performance Data             |   |
|      | a. Planned Outage Factor (POF):             | 6.85 %  |
|      | b. Forced Outage Factor (FOF):              | 4.70 %  |
|      | c. Equivalent Availability Factor (EAF):    | 88.80 %   |
|      | d. Resulting Capacity Factor (%):           | 15.00 %   |
|      | e. Average Net Operating Heat Rate (ANOHR): | 12,103 BTU/kWh  |

FLORIDA POWER

SCHEDULE 9

STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

AS OF JANUARY 1, 2002

- |      |   |  |
|------|---|--|
| (1)  | Plant Name and Unit Number:                 | HINES ENERGY COMPLEX UNIT #5   |
| (2)  | Capacity                                    |  |
|      | a. Summer:                                  | 480  |
|      | b. Winter:                                  | 550  |
| (3)  | Technology Type:                            | COMBINED CYCLE   |
| (4)  | Anticipated Construction Timing             |  |
|      | a. Field construction start date:           | 3/2008   |
|      | b. Commercial in-service date:              | 11/2009 (EXPECTED)   |
| (5)  | Fuel  |  |
|      | a. Primary fuel:                            | NATURAL GAS  |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL  |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION<br>with SELECTIVE CATALYTIC REDUCTION |
| (7)  | Cooling Method:                             | COOLING PONDS  |
| (8)  | Total Site Area:                            | 8,200 ACRES  |
| (9)  | Construction Status:                        | PLANNED  |
| (10) | Certification Status:                       | SITE PERMITTED   |
| (11) | Status with Federal Agencies:               | SITE PERMITTED   |
| (12) | Projected Unit Performance Data             |  |
|      | a. Planned Outage Factor (POF):             | 6.85 %   |
|      | b. Forced Outage Factor (FOF):              | 6.70 %   |
|      | c. Equivalent Availability Factor (EAF):    | 86.90 %  |
|      | d. Resulting Capacity Factor (%):           | 50.00 %  |
|      | e. Average Net Operating Heat Rate (ANOHR): | 7,336 BTU/kWh  |

FLORIDA POWER

SCHEDULE 9

STATUS REPORT AND SPECIFICATIONS OF PROPOSED GENERATING FACILITIES

AS OF JANUARY 1, 2002

- |      |   |  |
|------|---|--|
| (1)  | Plant Name and Unit Number:                 | HINES ENERGY COMPLEX UNIT #6   |
| (2)  | Capacity                                    |  |
|      | a. Summer:                                  | 480  |
|      | b. Winter:                                  | 550  |
| (3)  | Technology Type:                            | COMBINED CYCLE   |
| (4)  | Anticipated Construction Timing             |  |
|      | a. Field construction start date:           | 3/2009   |
|      | b. Commercial in-service date:              | 11/2010 (EXPECTED)   |
| (5)  | Fuel  |  |
|      | a. Primary fuel:                            | NATURAL GAS  |
|      | b. Alternate fuel:                          | DISTILLATE FUEL OIL  |
| (6)  | Air Pollution Control Strategy:             | DRY LOW NO <sub>x</sub> COMBUSTION<br>with SELECTIVE CATALYTIC REDUCTION |
| (7)  | Cooling Method:                             | COOLING PONDS  |
| (8)  | Total Site Area:                            | 8,200 ACRES  |
| (9)  | Construction Status:                        | PLANNED  |
| (10) | Certification Status:                       | SITE PERMITTED   |
| (11) | Status with Federal Agencies:               | SITE PERMITTED   |
| (12) | Projected Unit Performance Data             |  |
|      | a. Planned Outage Factor (POF):             | 6.85 %   |
|      | b. Forced Outage Factor (FOF):              | 6.70 %   |
|      | c. Equivalent Availability Factor (EAF):    | 86.90 %  |
|      | d. Resulting Capacity Factor (%):           | 50.00 %  |
|      | e. Average Net Operating Heat Rate (ANOHR): | 7,336 BTU/kWh  |

**FLORIDA POWER**

**SCHEDULE 10**

**STATUS REPORT AND SPECIFICATIONS OF PROPOSED DIRECTLY ASSOCIATED TRANSMISSION LINES**

**HINES ENERGY COMPLEX SITE**

- (1) POINT OF ORIGIN AND TERMINATION: BARCOLA SUBSTATION - HINES ENERGY COMPLEX
- (2) NUMBER OF LINES: 1 (SECOND CIRCUIT OF DOUBLE CIRCUIT CONSTRUCTION)
- (3) RIGHT-OF-WAY: EXISTING TRANSMISSION LINE AND HINES ENERGY COMPLEX SITE
- (4) LINE LENGTH: 3 MILES
- (5) VOLTAGE: 230 KV
- (6) ANTICIPATED CONSTRUCTION TIMING: EARLY 2003 IN-SERVICE, START CONSTRUCTION LATE 2002
- (7) ANTICIPATED CAPITAL INVESTMENT: \$ 1,800,000
- (8) SUBSTATIONS: N/A
- (9) PARTICIPATION WITH OTHER UTILITIES: N/A

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## **INTEGRATED RESOURCE PLANNING OVERVIEW**

Florida Power employs an Integrated Resource Planning (IRP) process to determine the most cost-effective mix of supply- and demand-side alternatives that will reliably satisfy our customer's future energy needs. Florida Power's IRP process incorporates state-of-the-art computer models used to evaluate a wide range of future generation alternatives and cost-effective conservation and dispatchable demand-side management programs on a consistent and integrated basis.

An overview of Florida Power's IRP Process is shown in Figure 1. The process begins with the development of various forecasts, including demand and energy, fuel prices, and economic assumptions. Future supply- and demand-side resource alternatives are identified and extensive cost and operating data are collected to enable these to be modeled in detail. These alternatives are optimized together to determine the most cost-effective plan for Florida Power to pursue over the next ten years to meet the company's reliability criteria. The resulting ten year plan, the Integrated Optimal Plan, is then tested under different sensitivity scenarios to identify variances, if any, that would warrant reconsideration of any of the base plan assumptions. If the plan is judged robust under sensitivity analysis and works within the corporate framework, it evolves as the Base Expansion Plan. This process is discussed in more detail in the following section titled "The IRP Process".

The Integrated Resource Plan provides Florida Power with substantial guidance in assessing and optimizing the Company's overall resource mix on both the supply side and the demand side. When a decision supporting a significant resource commitment is being developed (e.g. plant construction, power purchase, DSM program implementation), the Company will move forward with directional guidance from the IRP and delve much further into the specific levels of examination required. This more detailed assessment will typically address very specific technical requirements and cost estimates, detailed corporate financial considerations, and the most current dynamics of the business and regulatory environments.



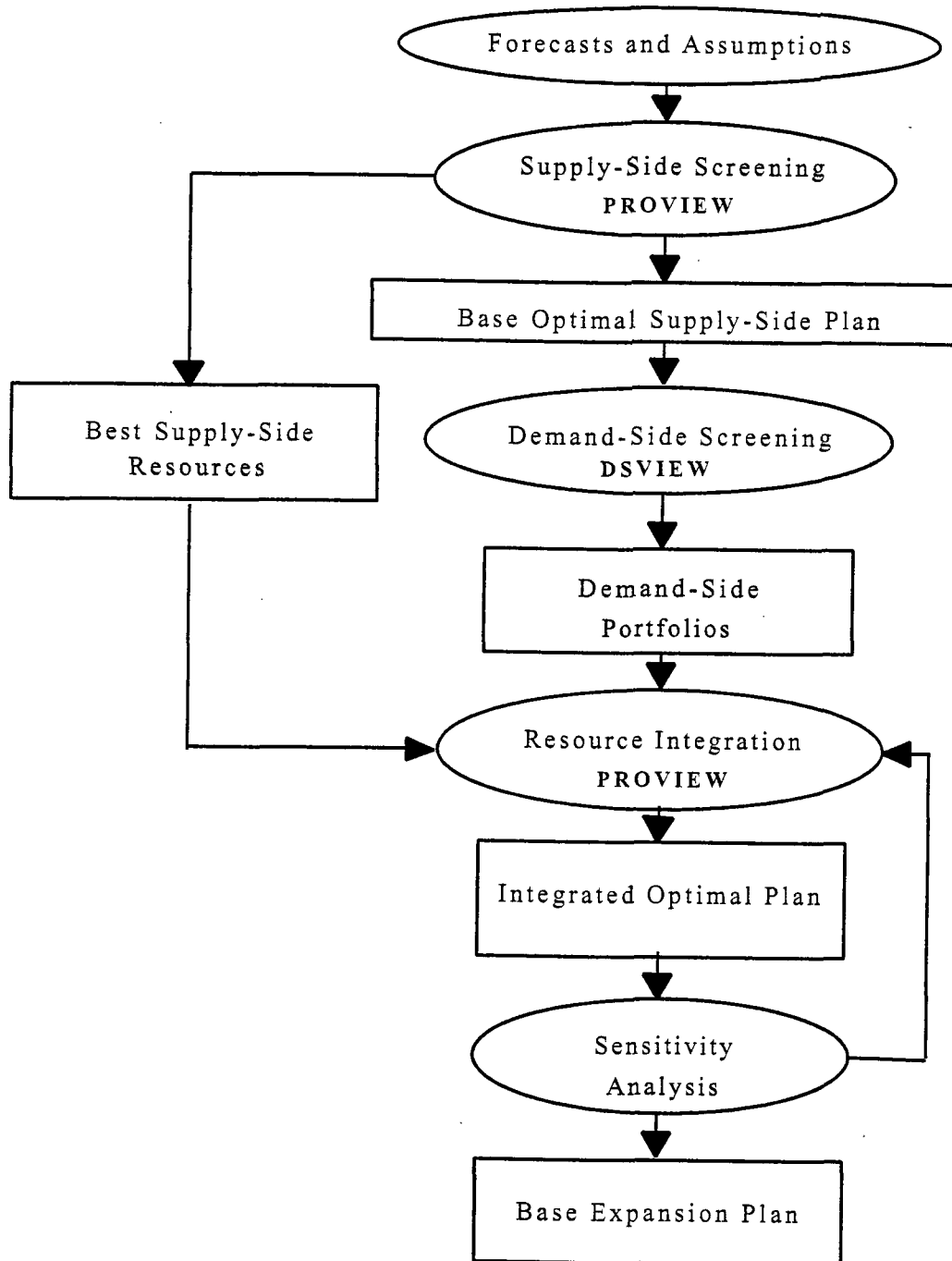


Figure 1: IRP Process Overview

## **THE IRP PROCESS**

### ***FORECASTS AND ASSUMPTIONS***

The evaluation of possible supply-side and demand-side alternatives, and development of the optimal plan, is the longest and most demanding part of the IRP process. These steps together comprise the integration process that begins with the development of forecasts and collection of input data. Base forecasts that reflect Florida Power's view of the most likely future scenarios are developed, along with high and low forecasts that reflect alternative future scenarios. Computer models used in the process are brought up-to-date to reflect this data, along with the latest operating parameters and maintenance schedules for Florida Power's existing generating units. This establishes a consistent starting point for all further analysis.

### ***RELIABILITY CRITERIA***

Florida Power plans its resources to meet dual reliability criteria; reserve margin (over forecasted firm peak demand) and Loss of Load Probability (LOLP). The reserve margin criterion is deterministic and provides a measure of Florida Power's ability to meet its forecasted seasonal peak load. In December 1999, the Florida Public Service Commission (FPSC) approved a joint proposal from the three major investor-owned utilities (Florida Power, Florida Power & Light, and Tampa Electric) to increase minimum planning reserve levels to 20 percent by the summer of 2004 (Docket No. 981890-EU, Order No. PSC-99-2507-S-EU). Upon receiving acceptance from the FPSC of this proposal, Florida Power raised its targeted minimum reserve margin to 20 percent for the summer of 2004 and beyond. In the interim period, Florida Power will maintain reserves above the current minimum threshold of 15 percent.

LOLP is a probabilistic criterion, which is a measure of Florida Power's ability to meet its load throughout the year taking into consideration unit failures, unit maintenance, and assistance from other utilities. Florida Power's minimum reliability level threshold of 0.1 days per year LOLP is an appropriate target for Florida Power's system and is very well supported in the industry. Typically, resource additions are triggered to meet reserve margin

thresholds before LOLP becomes a factor, but Florida Power feels that this is still a meaningful supplemental reliability measure.

### **Supply-Side Screening**

Potential supply-side resources are screened to determine those that are the most cost-effective. Data used for the screening analysis is compiled from various industry sources and Florida Power's experiences. The wide range of resource options is pre-screened to set aside those that do not warrant a detailed cost-effectiveness analysis. Typical screening criteria are costs, fuel source, technology maturity, environmental parameters, and overall resource feasibility.

Economic evaluation of generation alternatives is performed using the PROVIEW optimization program. The optimization program evaluates revenue requirements for specific resource plans generated from multiple combinations of future resource additions that meet system reliability criteria and other system constraints. All resource plans are then ranked by system revenue requirements. The optimization run produces the optimal supply-side only resource plan, which is considered the "Base Optimal Supply-Side Plan."

### **Demand-Side Screening**

Like supply-side resources, data about large numbers of potential demand-side resources is also collected. These resources are pre-screened to eliminate those alternatives that are still in research and development, addressed by other regulations (building code), or not applicable to Florida Power's customers. The demand-side screening model, DSVIEW, is updated with cost data and load impact parameters for each potential DSM measure to be evaluated.

The Base Optimal Supply-Side Plan is used to establish avoidable units for screening future demand-side resources. Each future demand-side alternative is individually tested in this plan over the ten year planning horizon to determine the benefit or detriment that the addition of this demand-side resource provides to the overall system. DSVIEW calculates the benefits and costs for each demand-side measure evaluated and reports the appropriate

ratios for the Rate Impact Measure (RIM), the Total Resource Cost Test (TRC), and the Participant Test. Demand-side programs that pass the RIM test are then bundled together to create demand-side portfolios. These portfolios contain the appropriate DSM options and make the optimization solvable with the DSVIEW model.

### **Resource Integration And The Integrated Optimal Plan**

The cost-effective generation alternatives and the demand-side portfolios developed in the screening process can then be optimized together to formulate an Integrated Optimal Plan. The optimization program considers all possible future combinations of supply-side and demand-side alternatives that meet the company's reliability criteria in each year of the ten-year study period and reports those that provide both flexibility and low revenue requirements for Florida Power's ratepayers.

### **Developing the Base Expansion Plan**

The plans that provide the lowest revenue requirements are then further tested using sensitivity analysis. The economics of the plan are evaluated under high and low forecast scenarios for load, fuel, and financial assumptions to ensure that the plan does not unduly burden the company or the ratepayers if the future unfolds in a manner significantly different from the base forecasts. From the sensitivity assessment, the ten year plan that is identified as achieving the best balance of flexibility and cost is then reviewed within the corporate framework to determine how the plan potentially impacts or is impacted by many other factors. If the plan is judged robust under this review it evolves as the Base Expansion Plan.

## **KEY CORPORATE FORECASTS**

### **Fuel Forecast**

*Base Fuel Case:* The base case fuel price forecast was developed from the expected or most likely course of events. General market conditions for all fuels are expected to be relatively stable when viewed from an average annual cost basis. Coal prices are also expected to be relatively stable month to month; however, oil and natural gas prices are expected to be more volatile on a day to day and month to month basis.

The base cost for coal is based on the existing contractual structure between Progress Fuels Corporation (PFC) and Florida Power and both contract and spot market coal and transportation arrangements between PFC and its various suppliers. Oil and natural gas prices are estimated based on current and expected contracts and spot purchase arrangements. Oil and natural gas commodity prices are driven primarily by open market forces of supply and demand. Natural gas firm transportation cost is determined primarily by tariff and rates tend to change less frequently than commodity prices.

*High Fuel Case:* Florida Power's high case fuel forecast is based on the premise that fuel prices are high in a relatively high inflation economic environment on a worldwide basis. Coal prices in the high case were developed based on the effect the coal market and inflation have on contract supply, spot supply, quality differences, and the various transportation cost drivers. Florida Power developed the high case oil and natural gas forecast based on the same general market environment and inflation levels as those used for coal. Since oil and natural gas supply are primarily purchased at market prices, consideration for current contract escalation was not required. Any expected increase in transportation cost is also included in the overall projected price increases.

*Low Fuel Case:* Florida Power's low case fuel forecast is based on the premise that fuel prices are low in a low inflation economic environment on a worldwide basis. Coal prices in the low case were developed based on the effect the coal market and inflation have on contract supply, spot supply, quality differences, and the various transportation cost drivers. Florida Power developed the low case oil and natural gas forecast based on the same general market environment and inflation levels as those used for coal. Since oil and natural gas supply are primarily purchased at market prices, no consideration is given for current contract escalation. Any expected change in transportation cost is also included in the overall projected price variations.

*Special Fuel Case:* A constant oil and gas to coal differential fuel sensitivity forecast was also developed to examine the premise that the current differential price of oil and gas to coal could remain constant over time.

## **Financial Forecast**

*Base Financial Case:* For the Base Financial Case the income tax, depreciation rates, capital structure, inflation rates and debt interest rates were based on Florida Power's current financial assumptions. In general, the economy has a balanced growth path and a stable inflation rate.

*Optimistic Financial Case:* In the Optimistic Financial Case there is high growth and low stable inflation rate. Due to low inflation, interest rates remain low, which enhances business development. Florida Power's composite cost of capital was adjusted to reflect the low inflation rates.

*Pessimistic Financial Case:* In the Pessimistic Financial Case there is low growth and high inflation. Due to high inflation, interest rates remain high, which depresses consumer expenditures. Florida Power's composite cost of capital was adjusted to reflect the high inflation rates.

## **CURRENT PLANNING RESULTS**

### **TYSP Supply-Side Resources**

In this TYSP, Florida Power's supply-side resources include the projected combined cycle expansion of the Hines Energy Complex (HEC) with Units 2 through 6 forecasted to be in service by November 2003, 2005, 2007, 2009, and 2010, respectively. The new units at Hines are state-of-the-art combined cycle units similar to HEC Unit 1. As new advancements in combined cycle technologies mature, Florida Power will continue to examine the merits of these new alternatives to ensure the lowest possible expansion costs. Also included in this TYSP are combustion turbine additions at Florida Power's existing Intercession City site, forecasted to be in service by November 2004 and November 2008.

### **Plan Sensitivities**

Sensitivities to load, fuel and financial forecasts were analyzed against the base plan. The base plan of constructing combined cycle and combustion turbine units on gas was

determined to be robust with respect to changes in the load, fuel and financial forecasts. The low load forecast sensitivity required less combined cycle generation; the high load forecast indicated that additional combustion turbine units would potentially be required.

The high and low fuel forecast sensitivity results did not suggest any significant reconsideration of the base plan. The high and low financial forecast sensitivity results did not point to any changes to the base plan. The additional sensitivity, which assumes the current differential in the prices of oil and gas relative to coal remains constant over time, indicated essentially the same expansion plan as the base plan. Florida Power will continue to monitor these fuel price relationships and watch for any signs of a long-term structural change.

#### **Request for Proposals**

In accordance with Rule 25-22.082 (F.A.C.), Florida Power issued a request for proposals (RFP) on November 26, 2001, to solicit competitive proposals for supply-side alternatives to its next planned combined cycle unit, a third gas-fired combined cycle unit at the Hines Energy Complex. Bids have been received and are currently being evaluated.

## TRANSMISSION PLANNING

Florida Power's transmission planning assessment practices are developed to test the ability of the planned system to meet criteria. This involves the use of loadflow and transient stability programs to model various contingency situations that may occur, and determining if the system response meets criteria. In general, this involves running simulations for the loss of any single line, generator, or transformer, with any one generator scheduled out for maintenance. Florida Power normally runs this analysis for system load levels from minimum to peak for all possible contingencies, and for both summer and winter. Additional studies are performed to determine the system response to credible, less probable criteria, to assure the system meets Florida Power and Florida Reliability Coordinating Council, Inc. (FRCC) criteria. These studies include the loss of multiple generators or lines, and combinations of each, and some load loss is permissible under these more severe disturbances. These credible, less probable scenarios are also evaluated at various load levels, since some of the more severe situations occur at average or minimum load conditions. In particular, critical fault clearing times are typically the shortest (most severe) at minimum load conditions, with just a few large base load units supplying the system needs.

As noted in the Florida Power reliability criteria, some remedial actions are allowed to reduce system loadings, in particular, sectionalizing is allowed to reduce loading on lower voltage lines for bulk system contingencies, but the risk to load on the sectionalized system must be reasonable (it would not be considered prudent to operate for long periods with a sectionalized system). Also, the number of remedial action steps and the overall complexity of the scheme are evaluated to determine overall acceptability.

Presently, Florida Power uses the following reference documents to calculate Available Transfer Capability (ATC) for required transmission path postings on the Florida Open Access Same-Time Information System (OASIS):

- FRCC: FRCC ATC Calculation and Coordination Procedures, November 8<sup>th</sup> 2000, which is posted on the FRCC website:

(<http://www.frcc.com/downloads/frccatc.pdf>)



- NERC: Transmission Transfer Capability, May 1995
- NERC: Available Transfer Capability – Definitions and Determination, May 1996

Florida Power uses the FRCC Capacity Benefit Margin (CBM) methodology to assess its CBM needs. This methodology is:

“FRCC Transmission Providers make an assessment of the CBM needed on their respective systems by using either deterministic or probabilistic generation reliability analysis. The appropriate amount of transmission interface capability is then reserved for CBM on a per interface basis, taking into account the amount of generation available on other interconnected systems, the respective load peaking diversities of those systems, and Transmission Reliability Margin (TRM). Operating reserves may be included if appropriate in TRM and subsequently subtracted from the CBM if needed.”

Florida Power currently has zero CBM reserved on each of its interfaces (posted paths). Florida Power’s CBM on each path is currently established through the transmission provider functions within Florida Power using deterministic and probabilistic generation reliability analysis.

Currently, Florida Power proposes no bulk transmission additions that must be certified under the Florida Transmission Line Siting Act (TLSA). Florida Power’s proposed future bulk transmission line additions are shown below:

FLORIDA POWER  
LIST OF PROPOSED BULK TRANSMISSION LINE ADDITIONS  
2002-2011

LINE OWNERSHIP	TERMINALS		LINE LENGTH CKT. MILES	COMMERCIAL IN-SERVICE DATE (MO./YEAR)	NOMINAL VOLTAGE (kV)
FP	HINES ENERGY COMPLEX	BARCOLA #2	3	5 / 2003	230
FP/TECO	BARCOLA	PEBBLEDALE	1 *	5 / 2003	230
FP/FPL	VANDOLAH	WHIDDEN	14	7 / 2004	230
FP	HINES ENERGY COMPLEX	WEST LAKE WALES #1	21	5 / 2005	230
FP	LAKE BRYAN	WINDERMERE #1	10 *	4 / 2006	230
FP	LAKE BRYAN	WINDERMERE #2	10	4 / 2006	230
FP	HIGGINS	GRIFFIN	44 **	5 / 2007	230
FP	INTERCESSION CITY	GIFFORD	10	11 / 2007	230
FP	INTERCESSION CITY	WEST LAKE WALES #1	30 *	8 / 2008	230
FP	INTERCESSION CITY	WEST LAKE WALES #2	30	8 / 2008	230
FP	HINES ENERGY COMPLEX	WEST LAKE WALES #2	21	5 / 2009	230
FP	PERRY	DRIFTON	35	5 / 2010	230

\* Rebuild existing circuit

\*\* Upgrade to 230 kV

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CHAPTER 4

*ENVIRONMENTAL and  
LAND USE INFORMATION*



**Florida Power**

A Progress Energy Company

**CHAPTER 4**  
**ENVIRONMENTAL and LAND USE INFORMATION**

**PREFERRED SITES**

Florida Power's base expansion plan proposes new combined cycles at the Hines Energy Complex (HEC) site in Polk County. New peaking generation is proposed at the Intercession City (IC) site in Osceola County. While Intercession City is the currently identified preferred site for new peaking generation, Florida Power continues to evaluate other available sites, such as the DeBary site in Volusia County and the Higgins site in Pinellas County, until the final site selection is made for future combustion turbine additions.

The HEC site is an existing site with the next additional combined cycle unit scheduled for in-service November 2003. The IC site is an existing site with two additional combustion turbine units planned for November 2004 and November 2008. The preferred sites of HEC and IC meet all of Florida Power's siting requirements for capacity throughout the planning horizon. Florida Power's existing sites, as identified in Table 3.1 of Chapter 3 include the capability to further develop generation. All appropriate permitting requirements will be addressed for Florida Power's preferred sites as discussed in the following site descriptions. Therefore, detailed environmental or land use data are not included. The base expansion plan does not include any potential new sites for generating additions.

### **HINES ENERGY COMPLEX SITE**

In 1990, Florida Power completed a statewide search for a new 3,000 MW coal capable power plant site. As a result of this work, a large tract of mined out phosphate land in south central Polk County was selected as the primary alternative. This 8,200 acre site is located south of the City of Bartow, near the cities of Fort Meade and Homeland, south of S.R. 640 and west of U.S. 17/98 (reference the Polk County Site map). It is an area that has been extensively mined and remains predominantly unreclaimed.

The governor and cabinet approved site certification for ultimate site development and construction of the first 470 MW increment on January 25, 1994, in accordance with the rules of the Power Plant Siting Act. Due to the thorough screening during the selection process, and the disturbed nature of the site, there were no major environmental limitations. As would be the situation at any location in the state, air emissions and water consumption were significant issues during the licensing process.

The site's initial preparation involved moving over 10 million cubic yards of soil and draining 4 billion gallons of water. Construction of the energy complex will recycle the land for a beneficial use and promote habitat restoration.

The Hines Energy Complex is visited by several species of wildlife; including alligators, bobcats, turtles, and over 50 species of birds. The Hines site also contains a wildlife corridor, which creates a continuous connection between the Peace River and the Alafia River.

Florida Power has arranged for the City of Bartow to provide treated effluent for cooling pond make-up. The complex's cooling pond initially covered 722 acres with an eventual expansion to 2,500 acres.

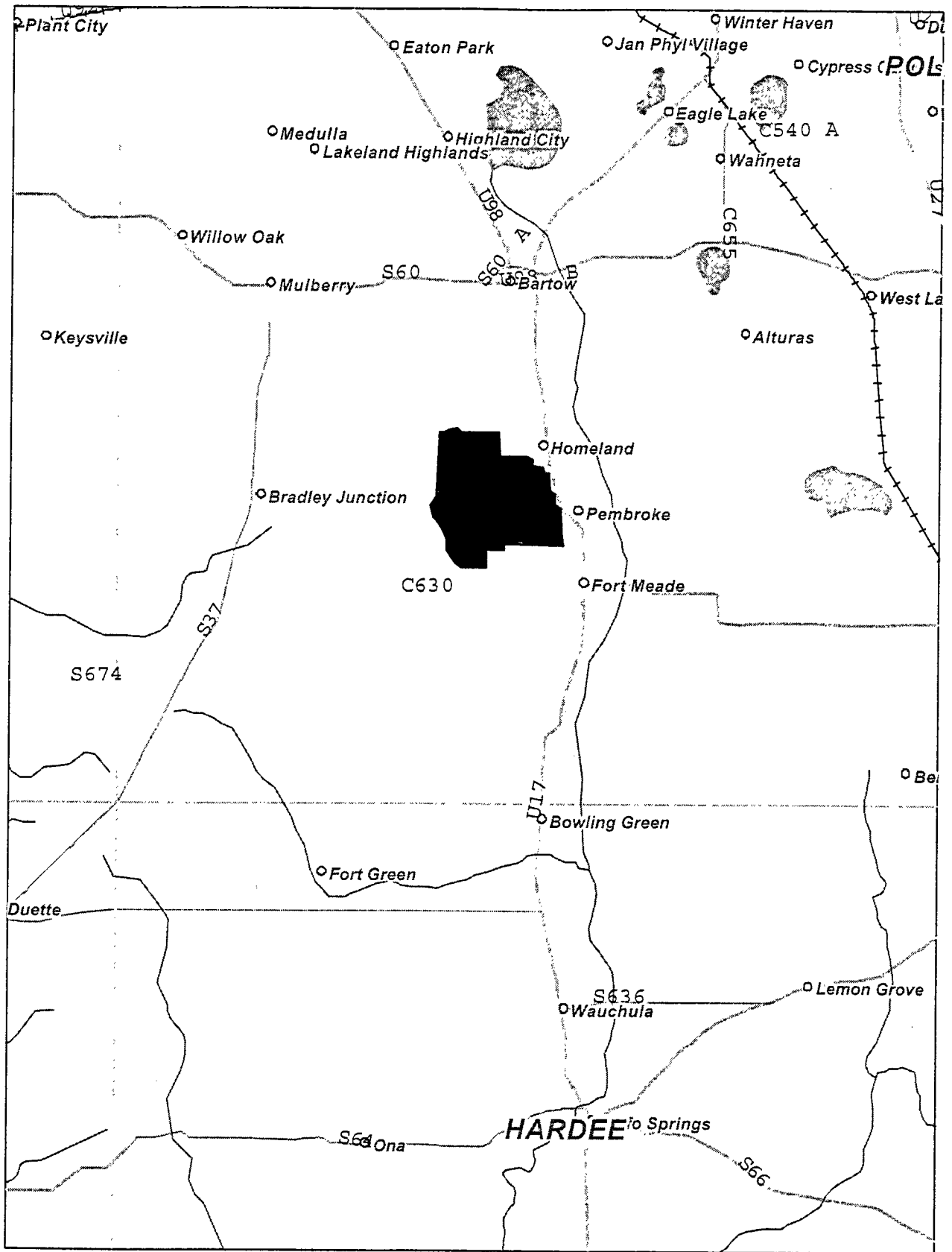
The Hines Energy Complex is designed and permitted to be a zero discharge site. This means that there will be no discharges to surface waters either from the power plant facilities

or from storm water runoff. Based on this design, storm water runoff from the site can be used as cooling pond make-up, minimizing groundwater withdrawals.

As future generation units are added, the remaining network of on-site clay settling ponds will be converted to cooling ponds and combustion waste storage areas to support power plant operations. Given the disturbed nature of the property, considerable development has been required in order to make it usable for electric utility application. An industrial rail network and an adequate road system service the site.

The first combined cycle unit at this site, with a capacity of 482 MW summer and 529 MW winter, began commercial operation in April 1999. The transmission improvements associated with this first unit were the rebuilding of the 230/115 kV double circuit Barcola to Ft. Meade line by increasing the conductor sizes and converting the line to double circuit 230 kV operation.

The transmission improvement associated with the second combined cycle unit at this site, planned for November 2003 with a capacity of 516 MW summer and 582 MW winter, is an additional 230 kV circuit from the Hines Energy Complex to Barcola.



*Hines Energy Complex (Polk County)*



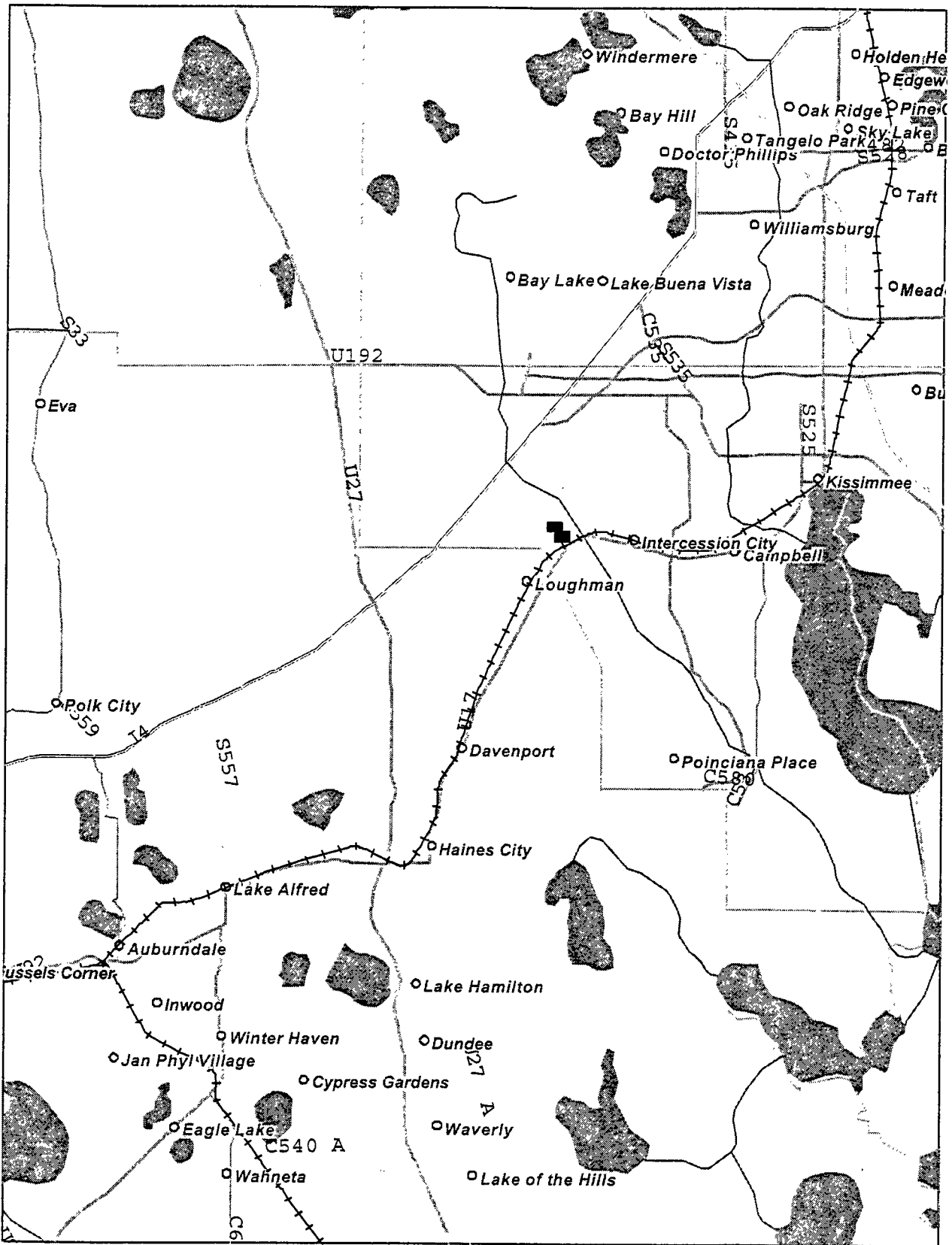
### **INTERCESSION CITY SITE**

Intercession City was chosen as the preferred site for installation of two additional combustion turbine peaking units by November 2004 and November 2008. The seasonal ratings for each of the Intercession City capacity additions are projected to be 154 MW summer and 184 MW winter.

The Intercession City Site consists of 162 acres in Osceola County, two miles west of Intercession City (reference the Osceola County Site map). The site is immediately west of Reedy Creek and the adjacent Reedy Creek Swamp. The site is adjacent to a secondary effluent pipeline from a municipal waste-water treatment plant, an oil pipeline, and a natural gas lateral serving the Kissimmee Utility Authority Cane Island facility. In addition, the GulfStream Pipeline, scheduled to be in service in June 2002, will provide an additional source of natural gas to both the existing units and the proposed combustion turbine additions.

The Florida Department of Environmental Protection air rules currently lists all of Osceola County as attainment for ambient air quality standards. The environmental impact on the site will be minimized by Florida Power's close coordination with regulatory agencies to ensure compliance with all applicable environmental regulations.

The existing Florida Power transmission grid will accommodate the additional combustion turbine peaking units identified in this expansion plan.



***Intercession City Site (Osceola County)***