

ORIGINAL

City of Tallahassee  
Your Own Utilities™



2100 Jackson Bluff Road, Tallahassee, Florida 32304, (200) 891-4YOU (4968), talgov.com

*Handwritten:* 2003 4/15/03

April 18, 2003

Mr. Timothy Devlin, Director  
Division of Economic Regulation  
State of Florida Public Service Commission  
2540 Shumard Oak Blvd.  
Tallahassee, FL 32399-0850

Dear Mr. Devlin:

Attached is the City of Tallahassee's 2003 Ten Year Site Plan, provided pursuant to Section 186.801, F.S. If you have any questions about this plan, please call me at 891-3130.

Sincerely,

Paul D. Clark, II  
Chief Planning Engineer

Attachments

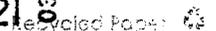
cc: Kevin Wailes

- AUS \_\_\_\_\_
- CAF \_\_\_\_\_
- CMP \_\_\_\_\_
- COM \_\_\_\_\_
- CTP \_\_\_\_\_
- ECP \_\_\_\_\_
- GCL \_\_\_\_\_
- OPC \_\_\_\_\_
- MMS \_\_\_\_\_
- SEC \_\_\_\_\_
- OTH \_\_\_\_\_

*Handwritten:* Hong - original + 1 copy

DOCUMENT NUMBER - DATE

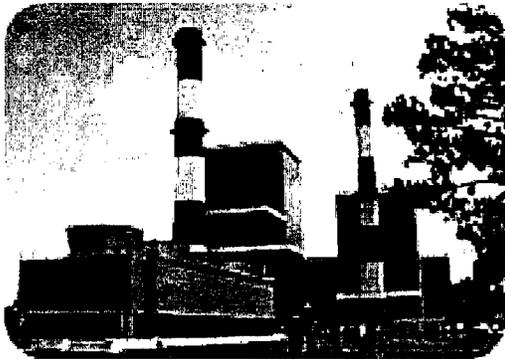
03614 APR 21 2003



FPSC-COMMISSION CLERK

# Ten Year Site Plan 2003 - 2012

City of Tallahassee  
Electric Utility



**City of Tallahassee**  
Your Own Utilities<sup>SM</sup>



Report Prepared By:  
City of Tallahassee, Electric Utility  
**System Planning**

DOCUMENT NUMBER: DATE

03614 APR 21 8

**CITY OF TALLAHASSEE**  
**TEN YEAR SITE PLAN FOR ELECTRICAL GENERATING FACILITIES**  
**AND ASSOCIATED TRANSMISSION LINES**  
**2003-2012**  
**TABLE OF CONTENTS**

**I. Description of Existing Facilities**

1.0	Introduction.....	1
1.1	System Capabilities.....	1
1.2	Purchased Power Agreements.....	2
Table 1.1	FPSC Schedule 1 Existing Generating Facilities .....	3

**II. Forecast of Energy/Demand Requirements and Fuel Utilization**

2.0	Introduction.....	4
2.1	System Demand and Energy Requirements .....	4
2.1.1	System Load and Energy Forecasts .....	4
2.1.2	Load Forecast Sensitivities .....	6
2.1.3	Energy Efficiency and Demand Side Management Programs .....	7
2.1.4	FEECA.....	7
2.2	Energy Sources and Fuel Requirements .....	8
Table 2.1	FPSC Schedule 2.1 History/Forecast of Energy Consumption (Residential and Commercial Classes) .....	9
Table 2.2	FPSC Schedule 2.2 History/Forecast of Energy Consumption (Industrial and Street Light Classes) .....	10
Table 2.3	FPSC Schedule 2.3 History/Forecast of Energy Consumption (Utility Use and Net Energy for Load) .....	11
Figure B1	Energy Consumption by Customer Class (1993-2012) .....	12
Figure B2	Energy Consumption: Comparison by Customer Class (2003 and 2012) .....	13
Table 2.4	FPSC Schedule 3.1.1 History/Forecast of Summer Peak Demand – Base Forecast .....	14
Table 2.5	FPSC Schedule 3.1.2 History/Forecast of Summer Peak Demand – High Forecast .....	15
Table 2.6	FPSC Schedule 3.1.3 History/Forecast of Summer Peak Demand – Low Forecast .....	16
Table 2.7	FPSC Schedule 3.2.1 History/Forecast of Winter Peak Demand – Base Forecast .....	17
Table 2.8	FPSC Schedule 3.2.2 History/Forecast of Winter Peak Demand – Base Forecast .....	18
Table 2.9	FPSC Schedule 3.2.3 History/Forecast of Winter Peak Demand – Low Forecast .....	19
Table 2.10	FPSC Schedule 3.3.1 History/Forecast of Annual Net Energy for Load – Base Forecast .....	20
Table 2.11	FPSC Schedule 3.3.2 History/Forecast of Annual Net Energy for Load – High Forecast .....	21
Table 2.12	FPSC Schedule 3.3.3 History/Forecast of Annual Net Energy for Load – Low Forecast .....	22
Table 2.13	FPSC Schedule 4 Previous Year Actual and Two Year Forecast Demand/Energy by Month .....	23
Table 2.14	Load Forecast: Key Explanatory Variables .....	24
Table 2.15	Load Forecast: Sources of Forecast Model Input Information .....	25
Figure B3	Banded Summer Peak Load Forecast vs. Supply Resources .....	26
Table 2.16	Projected DSM Energy Reductions .....	27
Table 2.17	Projected DSM Seasonal Demand Reductions .....	28
Table 2.18	FPSC Schedule 5.0 Fuel Requirements .....	29
Table 2.19	FPSC Schedule 6.1 Energy Sources (GWh) .....	30
Table 2.20	FPSC Schedule 6.2 Energy Sources (%) .....	31
Figure B4	Generation by Fuel Type (2003 and 2012) .....	32

**III. Projected Facility Requirements**

3.0 Introduction/City of Tallahassee Energy Policy ..... 33  
3.1 Planning Process ..... 33  
3.2 Projected Resource Requirements ..... 34  
Figure C Seasonal Peak Demands and Summer Reserve Margins ..... 41  
Table 3.1 FPSC Schedule 7.1 Forecast of Capacity, Demand and Scheduled Maintenance at Time of Summer Peak ... 42  
Table 3.2 FPSC Schedule 7.2 Forecast of Capacity, Demand and Scheduled Maintenance at Time of Winter Peak ..... 43  
Table 3.3 FPSC Schedule 8 Planned and Prospective Generating Facility Additions and Changes ..... 44  
Table 3.4 Generation Expansion Plan ..... 45

**IV. Proposed Plant Sites and Transmission Lines**

4.1 Proposed Plant Site ..... 46  
4.2 Transmission Line Additions ..... 47  
Table 4.1 FPSC Schedule 9 Status Report and Specifications of Proposed Generating Facilities - CT ..... 49  
Table 4.2 FPSC Schedule 9 Status Report and Specifications of Proposed Generating Facilities - DG ..... 50  
Table 4.3 FPSC Schedule 9 Status Report and Specifications of Proposed Generating Facilities - CC ..... 51  
Table 4.4 FPSC Schedule 10 Status Report and Spec. of Proposed Directly Associated Transmission Lines ..... 52  
Figure D1 Electric Transmission Map ..... 53

## **Chapter I**

### **Description of Existing Facilities**

#### **1.0 INTRODUCTION**

The City of Tallahassee (City) owns, operates, and maintains an electric generation, transmission, and distribution system that supplies electric power in and around the corporate limits of the City. The City was incorporated in 1825 and has operated since 1919 under the same charter. The City began generating its power requirements in 1902 and the City's Electric Department presently serves approximately 100,000 customers located within a 221 square mile service territory. The Electric Department operates three generating stations with a total summer season net generating capacity of 652 megawatts (MW).

The City has two fossil-fueled generating stations which contain combined cycle (CC), steam and combustion turbine (CT) electric generating facilities. The Sam O. Purdom Generating Station, located in the town of St. Marks, Florida has been in operation since 1952; and the Arvah B. Hopkins Generating Station, located on Geddie Road west of the City, has been in commercial operation since 1970. The City has also been generating electricity at the C.H. Corn Hydroelectric Station, located on Lake Talquin west of Tallahassee, since August of 1985.

#### **1.1 SYSTEM CAPABILITY**

The City maintains five points of interconnection with Progress Energy Florida ("Progress", formerly Florida Power Corporation); two at 69 kV, two at 115 kV, and one at 230 kV; and a 230 kV interconnection with Georgia Power Company (a subsidiary of the Southern Company ("Southern")).

As shown in Table 1.1 (Schedule 1), 233 MW (net summer rating) of CC generation, 48 MW (net summer rating) of steam generation and 20 MW (net summer rating) of CT generation facilities are located at the City's Sam O. Purdom Generating Station. The Arvah B. Hopkins Generating Station includes 304 MW (net summer rating) of steam generation and 36 MW (net summer rating) of CT generation facilities.

All of the City's available steam generating units at these sites can be fired with natural gas, residual oil or both. The CC and CT units can be fired on either natural gas or diesel oil but cannot burn these fuels concurrently. The total capacity of the three units at the C.H. Corn Hydroelectric Station is 11 MW.

The City's total net summer installed generating capability is 652 MW. The corresponding winter net peak installed generating capability is 699 MW. Table 1.1 contains the details of the individual generating units.

## **1.2 PURCHASED POWER AGREEMENTS**

The City has a long-term firm capacity and energy purchase agreement with Progress for 11.4 MW. The City also has short-term capacity and energy purchase agreements with Morgan Stanley Capital Group, Incorporated for 25 MW (financially firm purchase sourced from Oglethorpe Power Corporation for the summer months (May through September) of 2003 and 2004) and with Southern for 15 MW (system firm purchase for February through December 2003).

**City Of Tallahassee**

**Schedule 1  
Existing Generating Facilities  
As of December 31, 2002**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Plant	Unit No.	Location	Unit Type	Fuel Pri	Fuel Alt	Fuel Transport		Alt. Fuel Days Use	Commercial In-Service Month/Year	Expected Retirement Month/Year	Gen. Max. Nameplate (kW)	Net Capability		
						Primary	Alternate					Summer (MW)	Winter (MW)	
Sam O. Purdom	7	Wakulla	ST	NG	FO6	PL	WA	[1, 2]	6/66	3/11	50,000	48	50	
	8		CC	NG	FO2	PL	WA	[2, 3]	7/00	12/40	247,743	233	262	
	GT-1		GT	NG	FO2	PL	TK	[2, 3]	12/63	3/08	15,000	10	10	
	GT-2		GT	NG	FO2	PL	TK	[2, 3]	5/64	3/09	15,000	10	10	
<b>Plant Total</b>												<b>301</b>	<b>332</b>	
A. B. Hopkins	1	Leon	ST	NG	FO6	PL	TK	[1]	5/71	3/16	75,000	76	78	
	2		ST	NG	FO6	PL	TK	[1]	10/77	3/22	259,250	228	238	
	GT-1		GT	NG	FO2	PL	TK	8	2/70	3/15	16,320	12	14	
	GT-2		GT	NG	FO2	PL	TK	8	9/72	3/17	27,000	24	26	
<b>Plant Total</b>												<b>340</b>	<b>356</b>	
C. H. Corn Hydro Station	1	Leon/Gadsden	HY	WAT	WAT	WAT	WAT	NA	9/85	Unknown	4,440	4	4	
	2		HY	WAT	WAT	WAT	WAT	WAT	NA	8/85	Unknown	4,440	4	4
	3		HY	WAT	WAT	WAT	WAT	WAT	NA	1/86	Unknown	3,430	3	3
<b>Plant Total</b>												<b>11</b>	<b>11</b>	
<b>Total System Capacity as of December 31, 2002</b>												<b>652</b>	<b>699</b>	

**Notes**

- [1] The City maintains a minimum inventory of approximately 19 peak load days between the Purdom and Hopkins sites.
- [2] Due to the Purdom facility-wide emissions caps, utilization of liquid fuel at this facility is limited.
- [3] Purdom has sufficient diesel storage on site for approximately 30 full load hours of operation for all three combustion turbines units.

## CHAPTER II

### Forecast of Energy/Demand Requirements and Fuel Utilization

#### 2.0 INTRODUCTION

Chapter II includes the City of Tallahassee's forecasts of (i) demand and energy requirements, (ii) energy sources and (iii) fuel requirements. This chapter explains the City's 2003 Load Forecast and the Demand Side Management plan filed with the Florida Public Service Commission (FPSC) on March 1, 1996. Based on the forecast, the energy sources and the fuel requirements have been projected.

#### 2.1 SYSTEM DEMAND AND ENERGY REQUIREMENTS

Historical and forecast energy consumption and customer information are presented in Tables 2.1, 2.2 and 2.3 (Schedules 2.1, 2.2, and 2.3). Figure B1 shows the historical and forecast trends of energy sales by customer class. Figure B2 shows the percentage of energy sales by customer class for the base year of 2002 and the horizon year of 2011. Tables 2.4 through 2.12 (Schedules 3.1.1 - 3.3.3) contain historical and forecast peak demands and net energy for load for base, high, and low values. Table 2.13 (Schedule 4) compares actual and two-year forecast peak demand and energy values by month for the 2001 - 2003 period.

##### 2.1.1 SYSTEM LOAD AND ENERGY FORECASTS

The peak demand and energy forecasts contained in this plan are the results of the 2003 load and energy forecasting study performed by the engineering consulting firm of R. W. Beck.

The forecast models are the same as those used to develop previous years' forecasts. The forecast is developed utilizing a methodology that the City first employed in 1980, and has updated and revised every one or two years. The methodology consists of approximately ten multi-variable linear regression models based on detailed examination of the system's historical growth, usage patterns and population statistics. Several key regression formulas utilize econometric variables.

Table 2.14 lists the econometric-based linear regression forecasting models that are used as predictors. Note that the City uses regression models with the capability of separately predicting commercial customers and consumption by rate sub-class: general service non-demand (GS), general service demand (GSD), and general service large demand (GSLD). These, along with the residential class, represent the major classes of the City's electric customers. The key explanatory variables used in each of the models are indicated by an "X" on the table. Table 2.15 documents the City's internal and external sources for historical and forecast economic, weather and demographic data. These tables explain the details of the models used to generate the system customer, consumption and seasonal peak load forecasts. In addition to those explanatory variables listed, a component is also included in the models that reflect the acquisition of certain Talquin Electric Cooperative (TEC) customers over the study period consistent with the territorial agreement negotiated between the City and TEC and approved by the FPSC.

The customer models are used to predict number of customers by customer class which in turn serve as input into the customer class consumption models. The customer class consumption models are aggregated to form a total base system sales forecast. The effects of demand-side management programs and system losses are incorporated in this base forecast to produce the system net energy for load (NEL) requirements. Since 1992, the City has used two econometric models to separately predict summer and winter peak demand. Table 2.14 also shows the key explanatory variables used in the demand models. Based on the five-year average of the actual high temperature at the time of summer peak demand, the decision was made to increase the assumed normal high temperature for the base case forecast from 99° to 100° Fahrenheit for the 2000 and subsequent peak load forecasts. The City believes that this change, the routine update of forecast model coefficients and other minor model refinements have improved the accuracy of its forecast so that they are more consistent with the historical trend of growth in seasonal peak demand and energy consumption.

The most significant input assumption changes from the 2002 forecast were the incremental load additions at Florida State University (FSU), Florida A&M University (FAMU), Tallahassee Memorial Hospital (TMH) and Tallahassee Community Hospital (TCH). The construction plans of these customers, four of the City's largest, include

additional facilities that increase the summer and winter peak demand and annual NEL projected for the horizon year of 2012 by about 4 MW, 6 MW and 22 GWh, respectively. These incremental additions were not identified in previous years' forecast models. The City believes that the inclusion of these incremental additions, the routine update of forecast model coefficients and other minor model refinements have improved the accuracy of its forecast so that they are more consistent with the historical trend of growth in seasonal peak demand and energy consumption.

### **2.1.2 LOAD FORECAST SENSITIVITIES**

Uncertainty associated with the forecast input variables and the final forecast are addressed by adjusting selected input variables in the load forecast models, to establish "high load growth" and "low load growth" sensitivity cases. For the sensitivities to the base 2003 load forecast the key explanatory variables that were changed were Leon County population, Florida population, heating degree-days and cooling degree-days for the energy forecast. For the peak demand forecasts, the Leon County population and maximum & minimum temperature on the peak days for the summer and winter, respectively, were changed.

Sensitivities on the peak demand forecasts are useful in planning for future power supply resource needs. The graph shown in Figure B3 compares summer peak demand (multiplied by 117% for reserve margin requirements) for the three cases against the City's existing power supply resources. This graph allows for the review of the effect of load growth variations on the timing of new resource additions. The highest probability weighting, of course, is placed on the base case assumptions, and the low and high cases are given a smaller likelihood of occurrence.

### 2.1.3 ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT PROGRAMS

The City has a goal to improve the efficiency of customers' end-use of energy resources when such improvements provide a measurable economic and/or environmental benefit to the customers and the City utilities. On March 1, 1996 the City filed its Demand Side Management (DSM) Plan with the FPSC. This plan indicated the demand and energy reductions due to conservation efforts that are expected over the period 1997-2006. The individual program measures that were selected for inclusion in the plan were identified as cost effective in Integrated Resource Planning (IRP) studies conducted by the City.

The following menu of programs is included in the DSM plan, which was implemented in fiscal year 1997:

<u>Residential Programs</u>	<u>Commercial Programs</u>
Secured Loans	Custom Loans
Homebuilder Rebates	Secured Loans
Unsecured Payment Plan Loans	Unsecured Payment Plan Loans
Information	Demonstrations
Low Income Ceiling Insulation Rebate	Information

Energy and demand reductions attributable to the above DSM efforts have been incorporated into the future load and energy forecasts. Table 2.16 displays the estimated energy savings associated with the menu of DSM programs. Table 2.17 shows similar data for demand savings. The figures on these tables reflect the cumulative annual impacts of the DSM plan on system energy and demand requirements.

### 2.1.4 FEECA

Pursuant to the Florida Energy Efficiency and Conservation Act ("FEECA"), Sections 366.80-366.85, Florida Statutes (1995), and Chapter 25-17, Florida Administrative Code, the FPSC approved the City's conservation goals and program plan for the years 1996-2005. However effective July 1, 1996, the City no longer is a "utility"

for the purposes of FEECA (see Section 81, Ch. 96-321, Laws of Fla. (1996)) and Chapter 25-17, and the City's conservation goals and plan are no longer subject to FPSC approval. Nevertheless, the City does not plan to reduce its commitment to DSM and conservation. The City continues to pursue cost-effective conservation measures that promote demand reduction and offer benefits to both the City and its customers.

## **2.2 ENERGY SOURCES AND FUEL REQUIREMENTS**

Tables 2.18 (Schedule 5), 2.19 (Schedule 6.1), and 2.20 (Schedule 6.2) present the projections of fuel consumption, energy generated by fuel type, and the percentage of generation by fuel type, respectively, for the period 2003-2012. Figure B4 displays the percentage of energy by fuel type in 2003 and 2012. The City of Tallahassee uses renewable resources (hydroelectric and solar power), natural gas, residual and distillate fuel oil as well as capacity and energy purchases to satisfy its total energy requirements.

The projections of fuel consumption and energy generated are taken from the results of computer simulations using Henwood Energy Services, Inc.'s PROSYM production simulation model and based on the resource plan described in Chapter III.

City Of Tallahassee

**Schedule 2.1  
History and Forecast of Energy Consumption and  
Number of Customers by Customer Class**

**Base Load Forecast**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Rural & Residential				Commercial [3]			
	Population [1]	Members Per Household	(GWh)	Average No. of Customers [2]	Average kWh Consumption Per Customer	(GWh)	Average No. of Customers [2]	Average kWh Consumption Per Customer
1993	176,938	-	796	68,176	11,676	1,149	13,834	83,056
1994	181,577	-	799	69,907	11,429	1,205	14,277	84,401
1995	185,303	-	870	71,534	12,162	1,268	14,780	85,792
1996	189,987	-	893	72,998	12,233	1,316	15,142	86,911
1997	194,746	-	850	74,259	11,446	1,324	15,495	85,447
1998	199,078	-	940	75,729	12,413	1,396	15,779	88,472
1999	200,890	-	926	77,357	11,970	1,419	16,183	87,685
2000	204,129	-	971	79,108	12,274	1,457	15,891	91,687
2001	206,609	-	959	80,348	11,936	1,459	16,988	85,884
2002	210,629	-	1,048	81,208	12,905	1,527	16,831	90,725
2003	213,671	-	1,024	82,834	12,362	1,553	17,574	88,369
2004	216,712	-	1,038	84,050	12,350	1,612	17,807	90,526
2005	219,916	-	1,053	85,299	12,345	1,667	18,044	92,385
2006	223,175	-	1,068	86,602	12,332	1,711	18,288	93,559
2007	226,434	-	1,090	87,905	12,400	1,751	18,532	94,485
2008	229,694	-	1,111	89,208	12,454	1,783	18,775	94,967
2009	232,953	-	1,133	90,511	12,518	1,813	19,019	95,326
2010	236,159	-	1,155	91,803	12,581	1,843	19,262	95,681
2011	239,379	-	1,178	93,084	12,655	1,872	19,503	95,985
2012	242,643	-	1,200	94,383	12,714	1,902	19,746	96,323

Notes

- [1] Population data represents estimated Leon County population served by City of Tallahassee Electric Utility not the general population of Leon County.
- [2] Average end-of-month customers for the calendar year.
- [3] Includes Traffic Control and Security Lighting use.

**City Of Tallahassee**

**Schedule 2.2  
History and Forecast of Energy Consumption and  
Number of Customers by Customer Class**

**Base Load Forecast**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Year</u>	<u>Industrial</u>			<u>Railroads and Railways (GWh)</u>	<u>Street &amp; Highway Lighting (GWh)</u>	<u>Other Sales to Public Authorities (GWh)</u>	<u>Total Sales to Ultimate Consumers (GWh)</u>
	<u>(GWh)</u>	<u>Average No. of Customers [1]</u>	<u>Average kWh Consumption Per Customer</u>				
1993	-	-	-	-	11	-	1,956
1994	-	-	-	-	12	-	2,016
1995	-	-	-	-	12	-	2,150
1996	-	-	-	-	12	-	2,221
1997	-	-	-	-	12	-	2,186
1998	-	-	-	-	12	-	2,348
1999	-	-	-	-	13	-	2,358
2000	-	-	-	-	13	-	2,441
2001	-	-	-	-	13	-	2,431
2002	-	-	-	-	13	-	2,588
2003	-	-	-	-	13	-	2,590
2004	-	-	-	-	13	-	2,663
2005	-	-	-	-	13	-	2,733
2006	-	-	-	-	13	-	2,792
2007	-	-	-	-	13	-	2,854
2008	-	-	-	-	13	-	2,907
2009	-	-	-	-	14	-	2,960
2010	-	-	-	-	14	-	3,012
2011	-	-	-	-	14	-	3,064
2012	-	-	-	-	14	-	3,116

Notes

[1] Average end-of-month customers for the calendar year.

**City Of Tallahassee**

**Schedule 2.3  
History and Forecast of Energy Consumption and  
Number of Customers by Customer Class**

**Base Load Forecast**

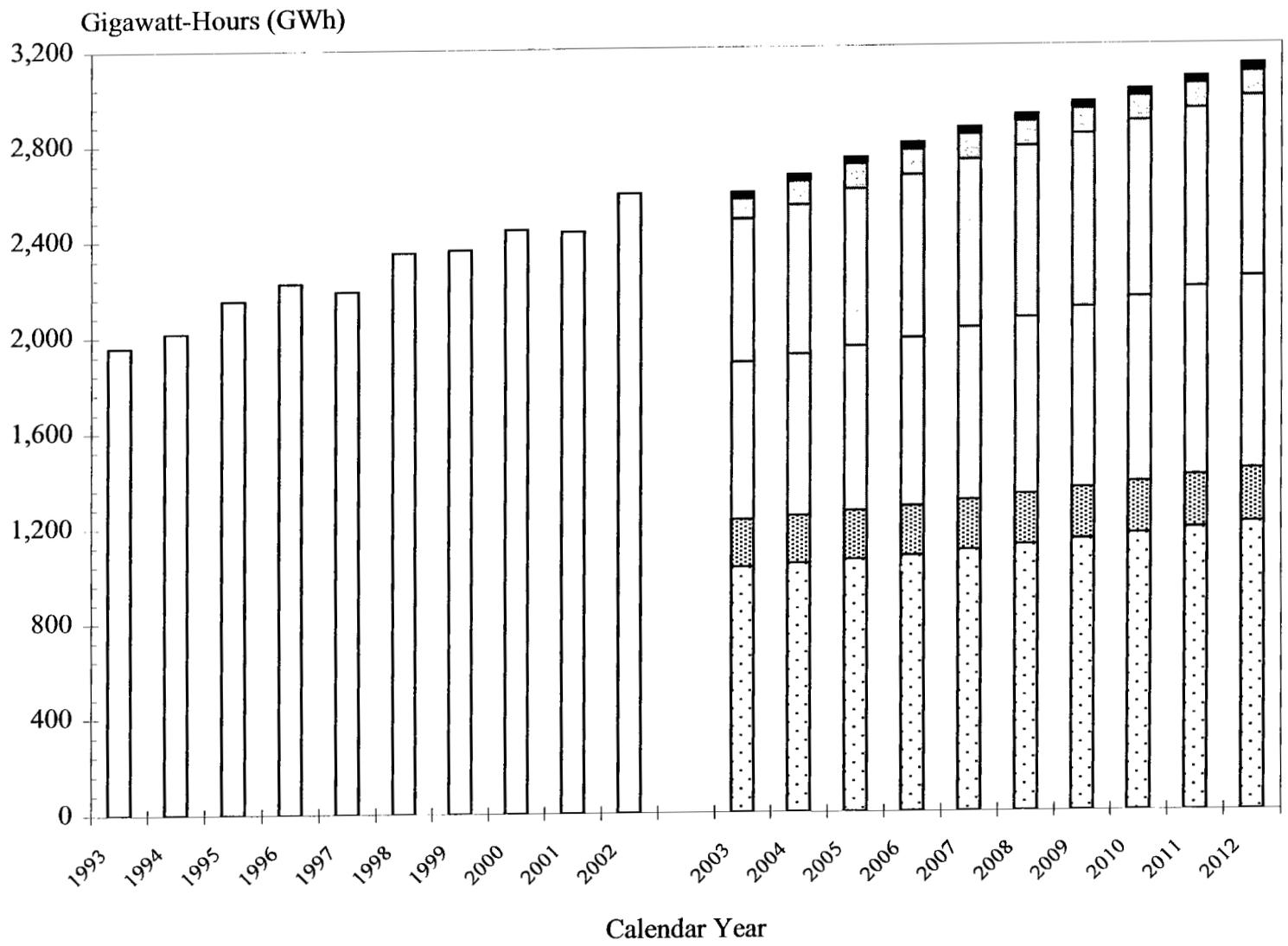
(1)	(2)	(3)	(4)	(5)	(6)
<u>Year</u>	<u>Sales for Resale (GWh)</u>	<u>Utility Use &amp; Losses (GWh) [1]</u>	<u>Net Energy for Load (GWh)</u>	<u>Other Customers (Average No.)</u>	<u>Total No. of Customers [1]</u>
1993	-	130	2,086	-	82,010
1994	-	134	2,150	-	84,184
1995	-	142	2,292	-	86,314
1996	-	147	2,368	-	88,140
1997	-	132	2,318	-	89,754
1998	-	129	2,477	-	91,508
1999	-	139	2,497	-	93,540
2000	-	155	2,596	-	94,999
2001	-	125	2,556	-	97,336
2002	-	153	2,741	-	98,039
2003	-	172	2,762	-	100,408
2004	-	176	2,839	-	101,857
2005	-	181	2,914	-	103,343
2006	-	185	2,977	-	104,890
2007	-	189	3,043	-	106,437
2008	-	193	3,100	-	107,983
2009	-	196	3,156	-	109,530
2010	-	200	3,212	-	111,065
2011	-	203	3,267	-	112,587
2012	-	206	3,322	-	114,129

**Notes**

[1] Average number of customers for the calendar year.

Table 2.3

## History and Forecast Energy Consumption By Customer Class

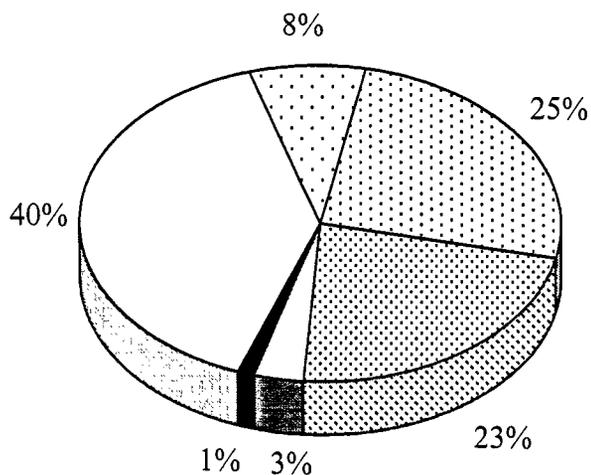


History
  Residential
  Non-Demand
  Demand
  Large Demand
  Curtail/Interrupt
  Traffic/Street/Security Lights

Figure B1

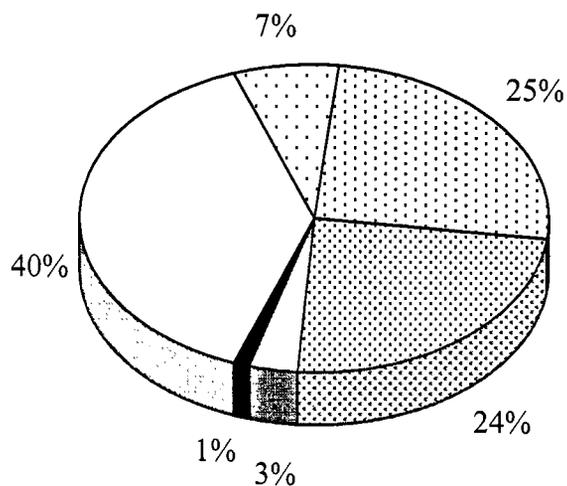
## Energy Consumption By Customer Class

### Calendar Year 2003



Total 2003 Sales = 2,590 GWh  
Values exclude DSM impacts

### Calendar Year 2012



Total 2012 Sales = 3,116 GWh  
Values exclude DSM impacts

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Residential             | <input type="checkbox"/> Non Demand        | <input type="checkbox"/> Demand                                    |
| <input checked="" type="checkbox"/> Large Demand | <input type="checkbox"/> Curtail/Interrupt | <input checked="" type="checkbox"/> Traffic/Street/Security Lights |

City Of Tallahassee

**Schedule 3.1.1  
History and Forecast of Summer Peak Demand  
Base Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total	Wholesale	Retail	Interruptible	Residential Load Management	Residential Conservation [1]	Comm./Ind Load Management	Comm./Ind Conservation [1]	Net Firm Demand [2]
1993	459	-	459	-	-	-	-	-	459
1994	433	-	433	-	-	-	-	-	433
1995	497	-	497	-	-	-	-	-	497
1996	500	-	500	-	-	-	-	-	500
1997	486	-	486	-	-	-	-	-	486
1998	530	-	530	-	-	-	-	-	530
1999	526	-	526	-	-	-	-	-	526
2000	550	-	550	-	-	-	-	-	550
2001	520	-	520	-	-	-	-	-	520
2002	581	-	581	-	-	1	-	0	580
2003	581	-	581	-	-	1	-	1	579
2004	592	-	592	-	-	3	-	1	588
2005	606	-	606	-	-	4	-	2	600
2006	622	-	622	-	-	6	-	2	614
2007	632	-	632	-	-	6	-	2	624
2008	642	-	642	-	-	6	-	2	634
2009	651	-	651	-	-	6	-	2	643
2010	661	-	661	-	-	6	-	2	653
2011	669	-	669	-	-	6	-	2	661
2012	679	-	679	-	-	6	-	2	671

Notes

[1] Reduction estimated at busbar. 2002 values are actual.

[2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 3.1.2  
History and Forecast of Summer Peak Demand  
High Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Year</u>	<u>Total</u>	<u>Wholesale</u>	<u>Retail</u>	<u>Interruptible</u>	<u>Residential Load Management</u>	<u>Residential Conservation [1]</u>	<u>Comm./Ind Load Management</u>	<u>Comm./Ind Conservation [1]</u>	<u>Net Firm Demand [2]</u>
1993	459	-	459	-	-	-	-	-	459
1994	433	-	433	-	-	-	-	-	433
1995	497	-	497	-	-	-	-	-	497
1996	500	-	500	-	-	-	-	-	500
1997	486	-	486	-	-	-	-	-	486
1998	530	-	530	-	-	-	-	-	530
1999	526	-	526	-	-	-	-	-	526
2000	550	-	550	-	-	-	-	-	550
2001	520	-	520	-	-	-	-	-	520
2002	581	-	581	-	-	1	-	0	580
2003	591	-	591	-	-	1	-	1	589
2004	602	-	602	-	-	3	-	1	598
2005	616	-	616	-	-	4	-	2	610
2006	632	-	632	-	-	6	-	2	624
2007	641	-	641	-	-	6	-	2	633
2008	651	-	651	-	-	6	-	2	643
2009	660	-	660	-	-	6	-	2	652
2010	670	-	670	-	-	6	-	2	662
2011	678	-	678	-	-	6	-	2	670
2012	688	-	688	-	-	6	-	2	680

Notes

[1] Reduction estimated at busbar. 2002 values are actual.

[2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 3.1.3  
History and Forecast of Summer Peak Demand  
Low Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Year</u>	<u>Total</u>	<u>Wholesale</u>	<u>Retail</u>	<u>Interruptible</u>	<u>Residential Load Management</u>	<u>Residential Conservation [1]</u>	<u>Comm./Ind Load Management</u>	<u>Comm./Ind Conservation [1]</u>	<u>Net Firm Demand [2]</u>
1993	459	-	459	-	-	-	-	-	459
1994	433	-	433	-	-	-	-	-	433
1995	497	-	497	-	-	-	-	-	497
1996	500	-	500	-	-	-	-	-	500
1997	486	-	486	-	-	-	-	-	486
1998	530	-	530	-	-	-	-	-	530
1999	526	-	526	-	-	-	-	-	526
2000	550	-	550	-	-	-	-	-	550
2001	520	-	520	-	-	-	-	-	520
2002	581	-	581	-	-	1	-	0	580
2003	572	-	572	-	-	1	-	1	570
2004	583	-	583	-	-	3	-	1	579
2005	597	-	597	-	-	4	-	2	591
2006	612	-	612	-	-	6	-	2	604
2007	622	-	622	-	-	6	-	2	614
2008	632	-	632	-	-	6	-	2	624
2009	641	-	641	-	-	6	-	2	633
2010	651	-	651	-	-	6	-	2	643
2011	659	-	659	-	-	6	-	2	651
2012	669	-	669	-	-	6	-	2	661

Notes

- [1] Reduction estimated at busbar. 2002 values are actual.
- [2] Values include DSM Impacts.

City Of Tallahassee

**Schedule 3.2.1  
History and Forecast of Winter Peak Demand  
Base Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Year</u>	<u>Total</u>	<u>Wholesale</u>	<u>Retail</u>	<u>Interruptible</u>	<u>Residential Load Management</u>	<u>Residential Conservation [1]</u>	<u>Comm./Ind Load Management</u>	<u>Comm./Ind Conservation [1]</u>	<u>Net Firm Demand [2]</u>
1993-1994	428	-	428	-	-	-	-	-	428
1994-1995	457	-	457	-	-	-	-	-	457
1995-1996	533	-	533	-	-	-	-	-	533
1996-1997	431	-	431	-	-	-	-	-	431
1997-1998	421	-	421	-	-	-	-	-	421
1998-1999	513	-	513	-	-	-	-	-	513
1999-2000	497	-	497	-	-	-	-	-	497
2000-2001	521	-	521	-	-	-	-	-	521
2001-2002	510	-	510	-	-	-	-	-	510
2002-2003	598	-	598	-	-	8	-	0	590
2003-2004	566	-	566	-	-	11	-	1	554
2004-2005	582	-	582	-	-	16	-	2	564
2005-2006	601	-	601	-	-	21	-	2	578
2006-2007	613	-	613	-	-	21	-	2	590
2007-2008	626	-	626	-	-	21	-	2	603
2008-2009	637	-	637	-	-	21	-	2	614
2009-2010	649	-	649	-	-	21	-	2	626
2010-2011	660	-	660	-	-	21	-	2	637
2011-2012	672	-	672	-	-	21	-	2	649
2012-2013	683	-	683	-	-	21	-	2	660

**City Of Tallahassee**

**Schedule 3.2.2  
History and Forecast of Winter Peak Demand  
High Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<u>Year</u>	<u>Total</u>	<u>Wholesale</u>	<u>Retail</u>	<u>Interruptible</u>	<u>Residential Load Management</u>	<u>Residential Conservation [1]</u>	<u>Comm./Ind Load Management</u>	<u>Comm./Ind Conservation [1]</u>	<u>Net Firm Demand [2]</u>
1993-1994	428	-	428	-	-	-	-	-	428
1994-1995	457	-	457	-	-	-	-	-	457
1995-1996	533	-	533	-	-	-	-	-	533
1996-1997	431	-	431	-	-	-	-	-	431
1997-1998	421	-	421	-	-	-	-	-	421
1998-1999	513	-	513	-	-	-	-	-	513
1999-2000	497	-	497	-	-	-	-	-	497
2000-2001	521	-	521	-	-	-	-	-	521
2001-2002	510	-	510	-	-	-	-	-	510
2002-2003	598	-	598	-	-	8	-	0	590
2003-2004	592	-	592	-	-	11	-	1	580
2004-2005	608	-	608	-	-	16	-	2	590
2005-2006	628	-	628	-	-	21	-	2	605
2006-2007	640	-	640	-	-	21	-	2	617
2007-2008	652	-	652	-	-	21	-	2	629
2008-2009	664	-	664	-	-	21	-	2	641
2009-2010	676	-	676	-	-	21	-	2	653
2010-2011	686	-	686	-	-	21	-	2	663
2011-2012	698	-	698	-	-	21	-	2	675
2012-2013	709	-	709	-	-	21	-	2	686

Notes

- [1] Reduction estimated at busbar. 2002-2003 values are actual.
- [2] Values include DSM Impacts.

City Of Tallahassee

**Schedule 3.2.3  
History and Forecast of Winter Peak Demand  
Low Forecast  
(MW)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total	Wholesale	Retail	Interruptible	Residential Load Management	Residential Conservation [1]	Comm./Ind Load Management	Comm./Ind Conservation [1]	Net Firm Demand [2]
1993-1994	428	-	428	-	-	-	-	-	428
1994-1995	457	-	457	-	-	-	-	-	457
1995-1996	533	-	533	-	-	-	-	-	533
1996-1997	431	-	431	-	-	-	-	-	431
1997-1998	421	-	421	-	-	-	-	-	421
1998-1999	513	-	513	-	-	-	-	-	513
1999-2000	497	-	497	-	-	-	-	-	497
2000-2001	521	-	521	-	-	-	-	-	521
2001-2002	510	-	510	-	-	-	-	-	510
2002-2003	598	-	598	-	-	8	-	0	590
2003-2004	534	-	534	-	-	11	-	1	522
2004-2005	550	-	550	-	-	16	-	2	532
2005-2006	570	-	570	-	-	21	-	2	547
2006-2007	582	-	582	-	-	21	-	2	559
2007-2008	594	-	594	-	-	21	-	2	571
2008-2009	605	-	605	-	-	21	-	2	582
2009-2010	617	-	617	-	-	21	-	2	594
2010-2011	627	-	627	-	-	21	-	2	604
2011-2012	639	-	639	-	-	21	-	2	616
2012-2013	650	-	650	-	-	21	-	2	627

Notes

- [1] Reduction estimated at busbar. 2002-2003 values are actual.
- [2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 3.3.1  
History and Forecast of Annual Net Energy for Load  
Base Forecast  
(GWh)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year	Total Sales	Residential Conservation [1]	Comm./Ind Conservation [1]	Retail Sales [2]	Wholesale	Utility Use & Losses	Net Energy for Load [2]	Load Factor % [2]
1993	1,956	-	-	1,956	-	130	2,086	52
1994	2,016	-	-	2,016	-	134	2,150	57
1995	2,150	-	-	2,150	-	142	2,292	53
1996	2,221	-	-	2,221	-	147	2,368	54
1997	2,186	-	-	2,186	-	132	2,318	54
1998	2,349	-	-	2,349	-	128	2,477	53
1999	2,358	-	-	2,358	-	139	2,497	54
2000	2,441	-	-	2,441	-	154	2,595	54
2001	2,431	-	-	2,431	-	125	2,556	56
2002	2,601	13	0	2,588	-	153	2,741	54
2003	2,598	6	2	2,590	-	172	2,762	54
2004	2,678	12	3	2,663	-	176	2,839	55
2005	2,756	18	5	2,733	-	181	2,914	55
2006	2,822	24	6	2,792	-	185	2,977	55
2007	2,884	24	6	2,854	-	189	3,043	56
2008	2,937	24	6	2,907	-	193	3,100	56
2009	2,990	24	6	2,960	-	196	3,156	56
2010	3,042	24	6	3,012	-	200	3,212	56
2011	3,094	24	6	3,064	-	203	3,267	56
2012	3,146	24	6	3,116	-	206	3,322	57

**Notes**

- [1] Reduction estimated at customer meter. 2002 values are actual.
- [2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 3.3.2  
History and Forecast of Annual Net Energy for Load  
High Forecast  
(GWh)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Year</u>	<u>Total Sales</u>	Residential Conservation [1]	Comm./Ind Conservation [1]	Retail Sales [2]	<u>Wholesale</u>	Utility Use & Losses	Net Energy for Load [2]	Load Factor % [2]
1993	1,956	-	-	1,956	-	130	2,086	52
1994	2,016	-	-	2,016	-	134	2,150	57
1995	2,150	-	-	2,150	-	142	2,292	53
1996	2,221	-	-	2,221	-	147	2,368	54
1997	2,186	-	-	2,186	-	132	2,318	54
1998	2,349	-	-	2,349	-	128	2,477	53
1999	2,358	-	-	2,358	-	139	2,497	54
2000	2,441	-	-	2,441	-	154	2,595	54
2001	2,431	-	-	2,431	-	125	2,556	56
2002	2,601	13	0	2,588	-	153	2,741	54
2003	2,784	6	2	2,776	-	184	2,960	57
2004	2,865	12	3	2,850	-	189	3,039	58
2005	2,946	18	5	2,923	-	194	3,117	58
2006	3,015	24	6	2,985	-	198	3,183	58
2007	3,079	24	6	3,049	-	202	3,251	59
2008	3,136	24	6	3,106	-	206	3,312	59
2009	3,191	24	6	3,161	-	209	3,370	59
2010	3,246	24	6	3,216	-	213	3,429	59
2011	3,299	24	6	3,269	-	217	3,486	59
2012	3,355	24	6	3,325	-	220	3,545	60

Notes

- [1] Reduction estimated at customer meter. 2002 values are actual.
- [2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 3.3.3  
History and Forecast of Annual Net Energy for Load  
Low Forecast  
(GWh)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Year</u>	<u>Total Sales</u>	Residential Conservation [1]	Comm./Ind Conservation [1]	Retail Sales [2]	<u>Wholesale</u>	<u>Utility Use &amp; Losses</u>	Net Energy for Load [2]	Load Factor % [2]
1993	1,956	-	-	1,956	-	130	2,086	52
1994	2,016	-	-	2,016	-	134	2,150	57
1995	2,150	-	-	2,150	-	142	2,292	53
1996	2,221	-	-	2,221	-	147	2,368	54
1997	2,186	-	-	2,186	-	132	2,318	54
1998	2,349	-	-	2,349	-	128	2,477	53
1999	2,358	-	-	2,358	-	139	2,497	54
2000	2,441	-	-	2,441	-	154	2,595	54
2001	2,431	-	-	2,431	-	125	2,556	56
2002	2,601	13	0	2,588	-	153	2,741	54
2003	2,441	6	2	2,433	-	161	2,594	52
2004	2,519	12	3	2,504	-	166	2,670	53
2005	2,596	18	5	2,573	-	170	2,743	53
2006	2,660	24	6	2,630	-	174	2,804	53
2007	2,719	24	6	2,689	-	178	2,867	53
2008	2,771	24	6	2,741	-	182	2,923	53
2009	2,822	24	6	2,792	-	185	2,977	54
2010	2,872	24	6	2,842	-	188	3,030	54
2011	2,921	24	6	2,891	-	191	3,082	54
2012	2,971	24	6	2,941	-	195	3,136	54

Notes

- [1] Reduction estimated at customer meter. 2002 values are actual.
- [2] Values include DSM Impacts.

**City Of Tallahassee**

**Schedule 4**

**Previous Year and 2-Year Forecast of Retail Peak Demand and Net Energy for Load by Month**

(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Month</u>	<u>2002 Actual</u>		<u>2003 Forecast [1]</u>		<u>2004 Forecast [1]</u>	
	<u>Peak Demand (MW)</u>	<u>NEL (GWh)</u>	<u>Peak Demand (MW)</u>	<u>NEL (GWh)</u>	<u>Peak Demand (MW)</u>	<u>NEL (GWh)</u>
January	510	219	554	230	564	237
February	489	190	481	192	490	198
March	500	200	433	198	441	203
April	453	210	426	202	433	207
May	490	237	504	241	512	247
June	535	243	533	252	541	260
July	580	267	579	274	588	282
August	535	270	556	278	564	286
September	524	262	521	250	529	257
October	498	233	479	223	486	229
November	391	196	423	200	431	205
December	422	214	480	222	489	228
Total		2,741		2,762		2,839

Notes

[1] Peak Demand and NEL include projected DSM impacts.

City Of Tallahassee

**2003 Electric System Load Forecast**

**Key Explanatory Variables**

<u>Model Name</u>	<u>Leon County Population</u>	<u>Residential Customers</u>	<u>Total Customers</u>	<u>Cooling Degree Days</u>	<u>Heating Degree Days</u>	<u>Tallahassee Per Capita Taxable Sales</u>	<u>Price of Electricity</u>	<u>State of Florida Population</u>	<u>Minimum Winter Peak day Temp.</u>	<u>Maximum Summer Peak day Temp.</u>	<u>Appliance Saturation</u>	<u>R Squared [1]</u>
Residential Customers	X											0.995
Residential Consumption		X		X	X	X	X				X	0.924
Florida State University Consumption				X			X	X				0.930
State Capitol Consumption				X			X	X				0.892
Florida A & M University Consumption				X				X				0.926
Street Lighting Consumption	X											0.961
General Service Non-Demand Customers		X										0.958
General Service Demand Customers		X										0.927
General Service Non-Demand Consumption	X			X	X	X	X					0.916
General Service Demand Consumption	X			X	X							0.964
General Service Large Demand Consumption	X			X	X							0.950
Summer Peak Demand			X				X			X	X	0.982
Winter Peak demand			X						X		X	0.965

[1] R Squared, sometimes called the coefficient of determination, is a commonly used measure of goodness of fit of a linear model. If the observations fall on the model regression line, R Squared is 1. If there is no linear relationship between the dependent and independent variable, R Squared is 0. A reasonably good R Squared value could be anywhere from 0.6 to 1.

**City of Tallahassee**

**2003 Electric System Load Forecast**

**Sources of Forecast Model Input Information**

<u>Energy Model Input Data</u>	<u>Source</u>
1. Leon County Population	City Planning Office
2. Talquin Customers Transferred	City Power Engineering
3. Cooling Degree Days	NOAA reports
4. Heating Degree Days	NOAA reports
5. AC Saturation Rate	Residential Utility Customer Trends
6. Heating Saturation Rate	City Utility Research
7. Real Tallahassee Taxable Sales	Department of Revenue
8. Florida Population	Governor's Office of Budget & Planning
9. State Capitol Incremental	Department of Management Services
10. FSU Incremental Additions	FSU Planning Department
11. FAMU Incremental Additions	FAMU Planning Department
12. GSLD Incremental Additions	City Utility Services
13. Other Commercial Customers	Utility Services
14. Tall. Memorial Curtailable	System Planning/ Utilities Accounting.
15. FSU 4th Meter Additions	System Planning/ Utilities Accounting.
16. State Capital Center 2 Special Accounts	Utilities Accounting
17. Customer Definitions	Utility Services
18. System Peak Historical Data	City System Planning
19. Historical Customer Projections by Class	System Planning & Customer Accounting
20. Historical Customer Class Energy	System Planning & Customer Accounting
21. GDP Forecast	Governor's Planning & Budgeting Office
22. CPI Forecast	Governor's Planning & Budgeting Office
23. Florida Taxable Sales	Governor's Planning & Budgeting Office
24. Interruptible, Traffic Light Sales, & Security Light Additions	System Planning & Customer Accounting
25. Historical Residential Real Price of Electricity	Calculated from Revenues, Kwh sold, and CPI
26. Historical Commercial Real Price Of Electricity	Calculated from Revenues, Kwh sold, and CPI

**Banded Summer Peak Load Forecast Vs. Supply Resources  
(Load Includes 17% Reserve Margin)**

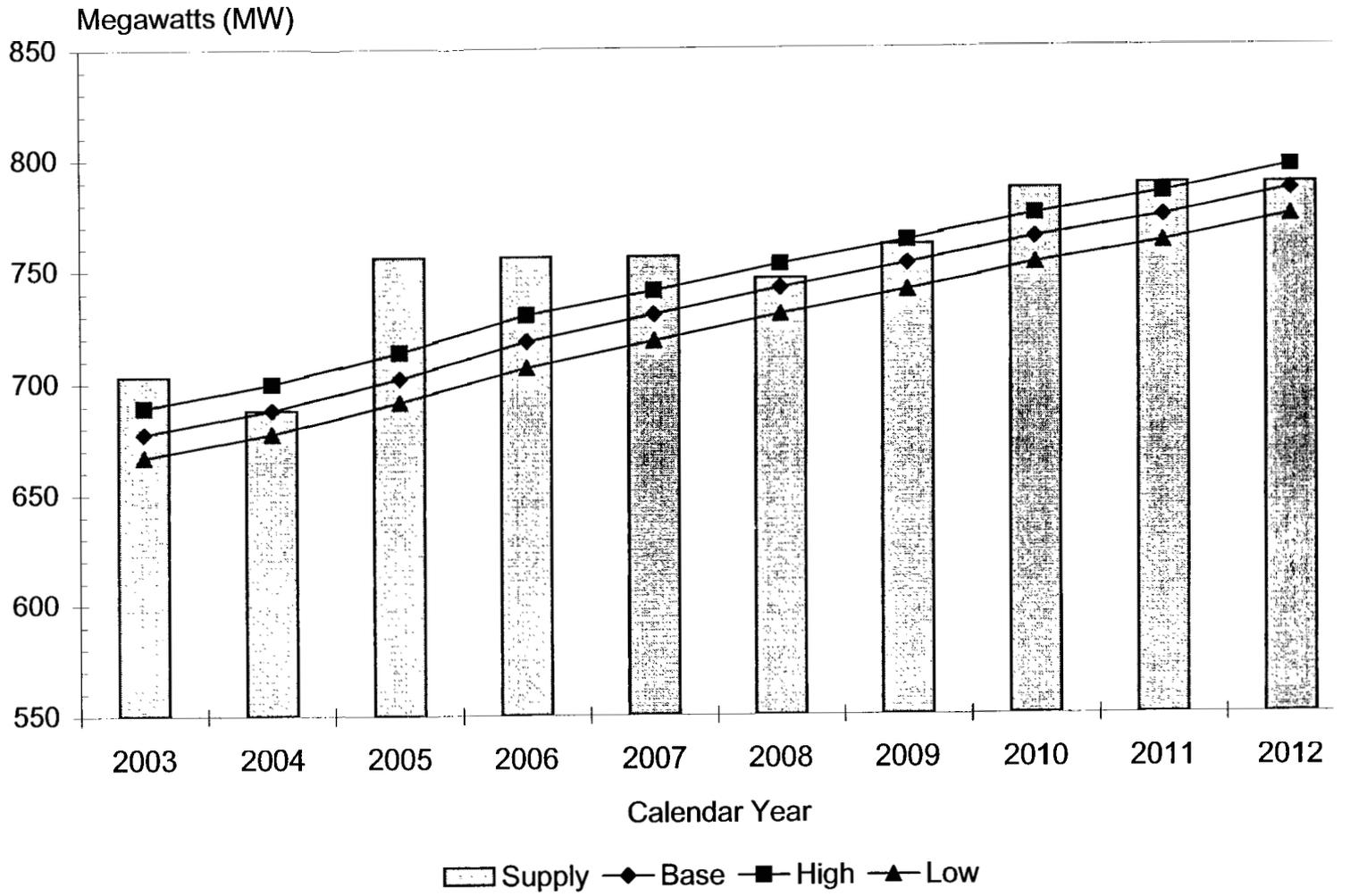


Figure B3

**City Of Tallahassee**  
**2003 Electric System Load Forecast**  
**Projected Demand Side Management**  
**Energy Reductions [1]**

**Calendar Year Basis**

<u>Year</u>	Residential Impact (MWh)	Commercial Impact (MWh)	Total Impact (MWh)
2003	6,343	1,801	8,144
2004	12,686	3,322	16,008
2005	19,030	5,122	24,152
2006	25,373	6,643	32,016
2007	25,373	6,643	32,016
2008	25,373	6,643	32,016
2009	25,373	6,643	32,016
2010	25,373	6,643	32,016
2011	25,373	6,643	32,016
2012	25,373	6,643	32,016

Notes

[1] Reductions estimated at busbar.

**City Of Tallahassee**  
**2003 Electric System Load Forecast**  
**Projected Demand Side Management**  
**Seasonal Demand Reductions [1]**

<u>Summer</u>	<u>Year</u>		<u>Residential</u> <u>Energy Efficiency</u> <u>Impact</u>		<u>Commercial</u> <u>Energy Efficiency</u> <u>Impact</u>		<u>Demand Side</u> <u>Management</u> <u>Total</u>	
	<u>Summer</u>	<u>Winter</u>	<u>Summer</u> <u>(MW)</u>	<u>Winter</u> <u>(MW)</u>	<u>Summer</u> <u>(MW)</u>	<u>Winter</u> <u>(MW)</u>	<u>Summer</u> <u>(MW)</u>	<u>Winter</u> <u>(MW)</u>
2003	2003-2004		1	11	1	1	2	12
2004	2004-2005		3	16	1	2	4	18
2005	2005-2006		4	21	2	2	6	23
2006	2006-2007		6	21	2	2	8	23
2007	2007-2008		6	21	2	2	8	23
2008	2008-2009		6	21	2	2	8	23
2009	2009-2010		6	21	2	2	8	23
2010	2010-2011		6	21	2	2	8	23
2011	2011-2012		6	21	2	2	8	23
2012	2012-2013		6	21	2	2	8	23

Notes

[1] Reductions estimated at busbar.

**City Of Tallahassee**

**Schedule 5  
Fuel Requirements**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	<b>Fuel Requirements</b>		<b>Units</b>	<b>Actual 2001</b>	<b>Actual 2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
(1)	Nuclear		Billion Btu	0	0	0	0	0	0	0	0	0	0	0	0
(2)	Coal		1000 Ton	0	0	0	0	0	0	0	0	0	0	0	0
(3)	Residual	Total	1000 BBL	127	91	0	0	0	0	0	0	0	0	0	0
(4)		Steam	1000 BBL	127	91	0	0	0	0	0	0	0	0	0	0
(5)		CC	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CT	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(7)		Diesel	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(8)	Distillate	Total	1000 BBL	14	9	0	0	0	0	0	0	0	0	0	0
(9)		Steam	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0
(10)		CC	1000 BBL	11	4	0	0	0	0	0	0	0	0	0	0
(11)		CT	1000 BBL	3	5	0	0	0	0	0	0	0	0	0	0
(12)	Diesel	1000 BBL	0	0	0	0	0	0	0	0	0	0	0	0	0
(13)	Natural Gas	Total	1000 MCF	19,082	19,269	22,019	22,561	23,483	24,360	24,205	25,039	25,299	25,683	25,840	26,847
(14)		Steam	1000 MCF	8,153	7,656	9,764	9,099	9,166	10,326	8,457	9,423	8,703	8,132	6,753	7,662
(15)		CC	1000 MCF	10,828	11,546	12,030	13,210	12,990	11,792	13,563	12,909	13,792	15,060	17,026	16,902
(16)		CT	1000 MCF	101	67	225	252	1,327	2,242	2,185	2,707	2,804	2,491	2,061	2,283
(17)	Other (Specify)		Trillion Btu	0	0	0	0	0	0	0	0	0	0	0	0

**City Of Tallahassee**

**Schedule 6.1  
Energy Sources**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	<u>Energy Sources</u>		<u>Units</u>	<u>Actual 2001</u>	<u>Actual 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>	<u>2012</u>
(1)	Annual Firm Interchange		GWh	162	140	201	157	109	120	124	122	117	97	62	23
(2)	Nuclear		GWh	0	0	0	0	0	0	0	0	0	0	0	0
(3)	Residual	Total	GWh	75	52	0	0	0	0	0	0	0	0	0	0
(4)		Steam	GWh	75	52	0	0	0	0	0	0	0	0	0	0
(5)		CC	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(6)		CT	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(7)		Diesel	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(8)	Distillate	Total	GWh	10	4	0	0	0	0	0	0	0	0	0	0
(9)		Steam	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(10)		CC	GWh	9	3	0	0	0	0	0	0	0	0	0	0
(11)		CT	GWh	1	1	0	0	0	0	0	0	0	0	0	0
(12)		Diesel	GWh	0	0	0	0	0	0	0	0	0	0	0	0
(13)	Natural Gas	Total	GWh	2,265	2,308	2,552	2,673	2,796	2,848	2,910	2,969	3,030	3,106	3,196	3,290
(14)		Steam	GWh	734	690	905	843	850	965	778	873	802	747	615	708
(15)		CC	GWh	1,527	1,616	1,633	1,815	1,800	1,639	1,894	1,803	1,926	2,091	2,361	2,339
(16)		CT	GWh	4	2	14	15	146	244	238	293	302	268	220	243
(17)	Hydro		GWh	17	14	9	9	9	9	9	9	9	9	9	9
(18)	Economy Interchange		GWh	27	223	0	0	0	0	0	0	0	0	0	0
(19)	Net Energy for Load		GWh	2,556	2,741	2,762	2,839	2,914	2,977	3,043	3,100	3,156	3,212	3,267	3,322

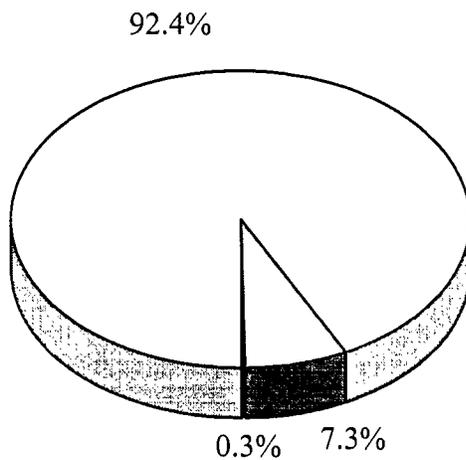
**City Of Tallahassee**

**Schedule 6.2  
Energy Sources**

(1)	(2)	(3)	(4)	5	6	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	<u>Energy Sources</u>		<u>Units</u>	<u>Actual 2001</u>	<u>Actual 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>	2012
(1)	Annual Firm Interchange		%	6.3	5.1	7.3	5.5	3.7	4.0	4.1	3.9	3.7	3.0	1.9	0.7
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(2)	Nuclear		%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(3)	Residual	Total	%	2.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(4)		Steam	%	2.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(5)		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
(6)		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
(7)		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
(8)	Distillate	Total	%	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(9)		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
(10)		CC	%	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(11)		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
(12)		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
(13)	Natural Gas	Total	%	88.6	84.2	92.4	94.2	96.0	95.7	95.6	95.8	96.0	96.7	97.8	99.0
(14)		Steam	%	28.7	25.2	32.8	29.7	29.2	32.4	25.6	28.2	25.4	23.3	18.8	21.3
(15)		CC	%	59.7	59.0	59.1	63.9	61.8	55.1	62.2	58.2	61.0	65.1	72.3	70.4
(16)		CT	%	0.2	0.1	0.5	0.5	5.0	8.2	7.8	9.5	9.6	8.3	6.7	7.3
(17)	Hydro		%	0.7	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
(18)	Economy Interchange		%	1.1	8.1	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

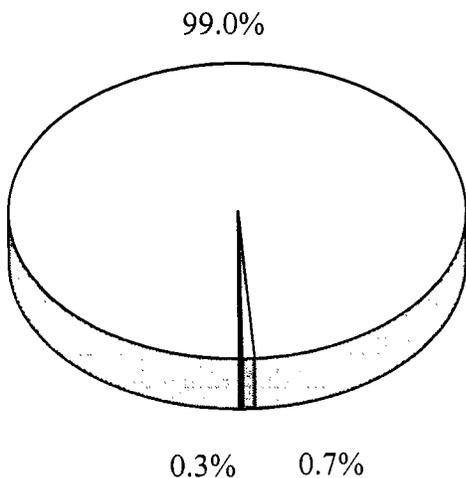
### Generation By Fuel Type

#### Calendar Year 2003



Total 2003 NEL = 2,762 GWh

#### Calendar Year 2012



Total 2012 NEL = 3,322 GWh

□ Gas and Oil    □ Purchases    ■ Hydro

## Chapter III

### Projected Facility Requirements

#### 3.0 INTRODUCTION

The review and approval by the City Commission of the electric utility's recommended resource plan is guided by the objectives in the City's Energy Policy:

*It is the policy of the City of Tallahassee to provide a reliable, economically-competitive energy system which meets citizens' energy needs and reduces total energy requirements. These requirements will be reduced through energy conservation, public education, and appropriate technologies. The energy system will protect and improve the quality of life and the environment.*

#### 3.1 PLANNING PROCESS

The City and Black & Veatch Consultants concluded Phase I of a comprehensive integrated resource planning (IRP) study in June 2002. The purpose of this study was to review future power supply options that are consistent with the objectives of the City's Energy Policy stated above in Section 3.0. The City's proposed generation expansion plan described in Section 3.2 is based on the results of this study.

At the conclusion of the IRP study the City's internal energy strategy and business development groups reviewed the study results and strategic considerations. Early in the summer of 2002 the City hosted public meetings to discuss the IRP study results and strategic considerations and provide information to the general community, the business community and environmental interest groups. City staff later met with FPSC staff to discuss the study results and provide a copy of the study document.

On July 10, 2002 the City Commission approved i) Phase I of the Integrated Resource (IRP) Plan, and ii) initiation of a request for proposals (RFP) solicitation and evaluation process for the provision of the City's future short- and long-term electric capacity and energy needs. Staff will continue to revisit and (if necessary) revise the Phase I IRP situation analysis and goals. This review process will include updating

options with regard to the availability, performance and pricing of electric generating equipment and new power purchase agreements. In addition, the City must also continue to review and develop means to mitigate the potential impacts of significant events in the electric utility industry. Among these considerations are the collapse of Enron, other former energy trading companies and merchant generators and the subsequent impact on energy sector investment and financial markets, the ongoing initiatives for the formation of regional transmission organizations (RTO) and implementation of a standard market design (SMD) and the recent introduction of federal legislation related to electric utility industry restructuring. The City will further refine/revise/screen/analyze the available resource alternatives and plan combinations as necessary in consideration of these developments.

### **3.2 PROJECTED RESOURCE REQUIREMENTS**

The City has projected that additional resources will be required during the 2003-2012 Ten Year Site Plan time frame to maintain a reliable electric system. The City's projected transmission import capability is a major determinant of the type and timing of future power resource additions. The City has worked with its neighboring utilities, Progress and Southern, to plan and maintain sufficient transmission import capability to allow the City to make emergency power purchases in the event of the most severe single contingency, the loss of the system's largest generating unit. As has been seen in other parts of the country since the passage of the Energy Policy Act of 1992, there has been little investment in the regional transmission system around Tallahassee. Consequently, the City's internal transmission studies have reflected a gradual deterioration of the system's transmission import (and export) capability into the future. The prospects for significant expansion of the regional transmission system around Tallahassee hinges greatly on (i) the City's ongoing discussions with Progress and Southern, (ii) the RTO development activities of both SeTrans and GridFlorida, and (iii) the alternative mechanisms envisioned by recently introduced federal legislation on electric industry restructuring. Unfortunately, none of these efforts is expected to produce substantive improvements to the City's transmission import/export capability in the time frame of the system's short-term resource needs. Therefore, in consideration of the City's projected

transmission import capability, the results of the IRP study tend to favor local generation alternatives as the means to satisfy future power supply requirements.

As part of its continuing commitment to explore clean energy alternatives, the City has been investigating opportunities to develop viable solar photovoltaic (PV) projects as part of our efforts to offer “green power” to our customers. The City believes that offering a green power alternative to its customers is a sound business strategy: it will provide for supply diversification, reduce dependence on fossil fuels, promote cleaner energy sources, and enhance the City’s already strong commitment to protecting the environment and the quality of life in Tallahassee.

The City’s existing solar power resources consist of both solar PV and solar thermal installations: a 10 kW PV system on the Trousdell Aquatics Center bathhouse; an 18 kW PV system located behind the Florida Public Service Commission conference center; a solar pool heating system at the Hilaman Park Golf Course; and several solar domestic hot water systems at various City facilities. In addition to these renewable resources, the City also operates an 11 MW hydroelectric generating station at Lake Talquin. In April 2002 the City Commission approved a major expansion of the City’s solar resource portfolio by committing to the development of a 126 kW rooftop PV project to be installed at the Summit East office park. This project has a projected electric output of about 198,000 kWh/yr and will substantially increase the amount of green energy the City can offer its customers. It is anticipated that the system will be operational by August 2003.

In November 2002 the City began offering a green power option to its customers called *Green For You*. In this program, customers can promote development of renewable resources through a green premium, which the City uses to purchase tradable renewable certificates (also called green tags) from both local and regional sources. The City offers two products in *Green For You*: a blended product using solar and regional biomass sources, and a solar-only product using City solar projects supplemented with other in-state resources.

The City’s *Green For You* program is offered through Sterling Planet, a company previously selected as the City’s program partner and under contract to the City to both

manage the retail offering to the City's customers and acquire the qualifying supply necessary to support customer demand. As part of the program design, the City has made a commitment (based on direction from the City Commission) to ensure that it will produce green energy from local resources equivalent to a majority of the amount of renewable energy that our customers subscribe to in *Green For You* - enabling the City to make more effective statements about the local environmental benefits of supporting these kind of power production facilities (solar, biomass, etc). Based on the City's analysis of feasible technologies that can be sited in its service area, the program design team has decided that local supply will be primarily from solar resources – PV systems and also solar thermal projects (water heating systems). The City believes that solar energy technology makes sense for its customers and the nature of its service territory (urban rooftops). The City is continuing the initial rollout of the program, and plan a coordinated marketing campaign that will coincide with the dedication of the new 126 kW rooftop PV system in late summer.

Historically, the City has planned to maintain a load reserve margin of 17%. However, in previous Ten Year Site Plan reports, the City has discussed the possibility of increasing its reserve margin criterion. The perceived need to evaluate alternative reliability criteria/levels arose primarily from three considerations: (i) the projected deterioration of the City's transmission import capability discussed in the previous paragraph, (ii) the stipulation made by the state's three investor-owned utilities (Florida Power & Light, Progress Energy Florida and Tampa Electric Company) to increase their respective reserve margins to 20% by 2004 in response to the FPSC's reserve margin docket of 1998, and (iii) the size of the City's individual generating units as a percent of its total supply resource capability.

An evaluation of alternative reliability criteria/levels was performed in the IRP study conducted by the City and Black & Veatch Consultants. Two specific reliability criteria were evaluated. First, a traditional reserve margin approach was used to determine the reserve margin level at which the City's total system cost is minimized. Second, the loss of load probability was analyzed.

The traditional reserve margin approach showed that a 15 percent reserve margin was the least cost point to operate the City's system. The loss of load probability

approach demonstrated that, for an isolated system, a 28 percent reserve margin was required to meet the commonly accepted 1 day in ten year criterion. This result was primarily due to the fact that a large percentage of the City's generating capability comes from just two units, namely Purdom 8 and Hopkins 2. However, considering that the City is an assisted system and assuming base case transmission import capabilities, only a 12.5 percent reserve margin would be required to minimize total system costs.

Therefore, the 17 percent reserve margin target currently used by the City is believed to represent a reasonable compromise and an appropriate reliability criteria/level for the City's system. The City will revisit the issue of the appropriate reliability index/level as changes to the City's power supply and the regional transmission system are realized in the future and again consider whether any adjustments are needed.

Assuming the base case load forecast, additional power supply need to maintain a 17% planning reserve margin first occurs in the summer of 2005; assuming the high load forecast, additional power supply would be needed a year earlier, in the summer of 2004. The IRP study results suggest that the addition of an aeroderivative CT(s) and/or other peaking technologies with comparable cost and performance characteristics would best satisfy the need in 2005 as part of a least-cost plan under the base case conditions. Among the most promising aeroderivative CT units considered are the General Electric LM 6000 and the Pratt and Whitney PT 8 machines. The addition of these units could easily be accommodated at the City's existing Hopkins Plant site. The City has included these new units in its current ten-year financial plan and proposed five-year capital improvement plan.

The more recently considered alternative of adding multiple natural gas/diesel-fired internal combustion generators similar to those installed by the City of Lakeland at their Winston Substation continues to hold promise. These distributed generation (DG) units are of comparable efficiency to the 50 MW class CT contemplated by the City's IRP study results and provide additional reliability versus the addition of fewer units of greater capability. These units would also afford greater flexibility with regard to siting. As Lakeland's application of these units has shown, they could be installed at one or more substations on the City's electric system and, in this way, address localized transmission and distribution loading concerns.

In the fall of 2002 the City contracted with the engineering consulting firm of Sargent & Lundy to perform preliminary feasibility reviews of locating DG units at a number of its existing substations. The results of their review indicated no major technical obstacles to locating DG units at these sites. As of the time of this report a Phase I environmental study is underway regarding three of the substations being considered as potential DG sites. Electric Utility staff intends to solicit City Commission approval for Sargent & Lundy to develop equipment technical specifications for both the DG and aeroderivative units. Once pricing information for the specified equipment is obtained, targeted for the summer of 2003, determinations with regard to the technology type(s) and size(s) will be finalized soon thereafter. It is intended that final site selection, community involvement and the development of construction specifications will be concurrently performed during the fall of 2003. Subsequently the construction bid package will be released with award of the construction project to follow by late spring to early summer of 2004. Based on information obtained thus far a project schedule of fourteen (14) months (including the construction bid process and construction of the facilities) appears adequate for either technology.

Although some older, less efficient CTs are already part of the City's existing fleet of generating units at the Hopkins and Purdom plants, those CTs don't provide the potential benefit of "quick start" units. The operational flexibility provided by the addition of "quick start" generating units, whether they are aeroderivative CTs or smaller, DG units, would produce immediate and significant annual cost savings. First, these units would allow the City to reduce the amount of operating reserves that must be maintained as spinning reserves by 75%. Also, without "quick start" generating capability, the City has had to reserve use of its transmission import capability to allow for the purchase of sufficient replacement power in the event of the worst single contingency (loss of the system's largest generating unit). The addition of "quick start" units would allow the City to back up the aforementioned contingency in part with those units. This would free up a portion of the system's transmission import capability and afford the City the option of entering into a purchase contract(s), an option that has previously been dismissed as infeasible due to concerns about reliability.

Purchase contracts could provide some of the diversity desired in the City's power supply resource portfolio. Resource diversity, particularly with regard to fuels, has long been sought after by the City because of the system's heavy reliance on natural gas as its primary fuel source and has received even greater emphasis in light of the volatility in natural gas prices seen over recent years. The City has also attempted to address this concern by implementing an Energy Risk Management (ERM) program in 2002 in an effort to limit the City's exposure to energy price fluctuations. The ERM program established a new organizational structure of interdepartmental committees and working groups and identified acceptable risk mitigation products to prevent asset value losses, ensure price stability and provide protection against market volatility for fuels and energy to the City's electric and gas utilities and their customers.

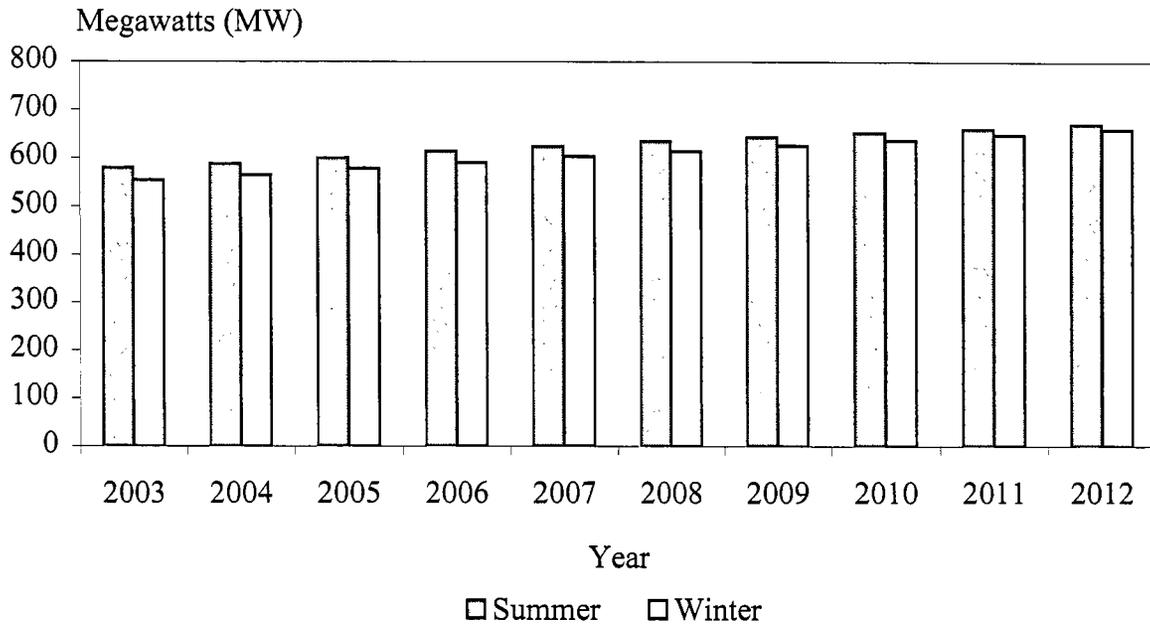
The City's proposed resource addition to meet system needs in the summer of 2009 and beyond is represented in this report as an increasing ownership/purchase of capacity and energy from the equivalent of a new 1-on-1 combined cycle (CC) unit. Possible CC alternatives include a self-built unit; an asset modification (repowering of an existing conventional oil and gas-fired steam unit to combined cycle operation); an alliance purchase by wire (if transmission is available) or a combination thereof. The City will be continuing its evaluation of the different CC alternatives and update the FPSC in future TYSP reports.

The CC ownership/purchase reflected in this report begins with 25 MW in 2009. The CC ownership/purchase increases to 50 MW by the summer of 2010 and to 100 MW by the summer of 2011 to meet the balance of needs throughout the 2003-2012 study period.

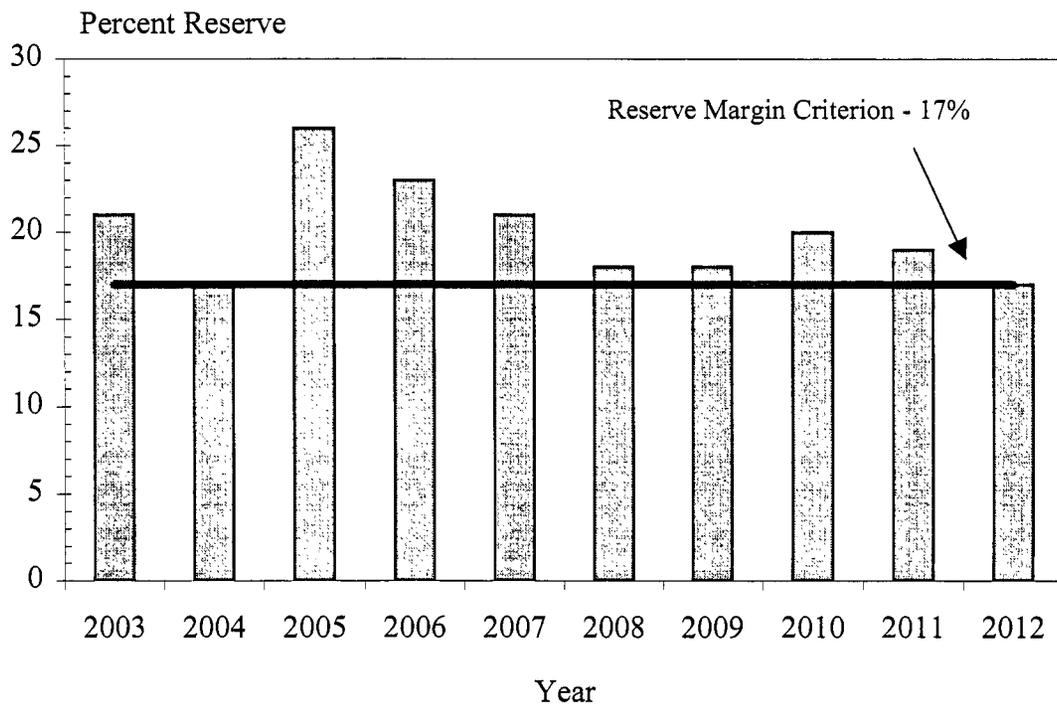
Tables 3.1 and 3.2 (Schedules 7.1 and 7.2) provide information on the resources and reserve margins during the next ten years for the City's system. The City has specified its planned capacity additions, retirements and changes on Table 3.3 (Schedule 8). These capacity resources have been incorporated into the City's dispatch simulation model in order to provide information related to fuel consumption and energy mix (see Tables 2.18, 2.19 and 2.20). Figure C compares seasonal net peak load and the system reserve margin based on summer peak load requirements. Table 3.4 provides the City's

generation expansion plan. The additional supply capacity required to maintain the City's 17% reserve margin criterion is included in the "Resource Additions" column.

### System Peak Demands Net of Conservation



### Summer Reserve Margin



**City Of Tallahassee**

**Schedule 7.1**

**Forecast of Capacity, Demand, and Scheduled Maintenance at Time of Summer Peak [1]**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year	Total Installed Capacity (MW)	Firm Capacity Import (MW)	Firm Capacity Export (MW)	QF (MW)	Total Capacity Available (MW)	System Firm Summer Peak Demand (MW)	Reserve Margin Before Maintenance (MW)	% of Peak	Scheduled Maintenance (MW)	Reserve Margin After Maintenance (MW)	% of Peak
2003	652	51			703	579	124	21		124	21
2004	652	36			688	588	100	17		100	17
2005	745	11			756	600	156	26		156	26
2006	745	11			756	614	142	23		142	23
2007	745	11			756	624	132	21		132	21
2008	735	11			746	634	112	18		112	18
2009	750	11			761	643	118	18		118	18
2010	775	11			786	653	133	20		133	20
2011	777	11			788	661	127	19		127	19
2012	777	11			788	671	117	17		117	17

**Notes**

[1] All installed and firm import capacity changes are identified in the proposed generation expansion plan (Table 3.4).

**City Of Tallahassee**

**Schedule 7.2**

**Forecast of Capacity, Demand, and Scheduled Maintenance at Time of Winter Peak [1]**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year	Total Installed Capacity (MW)	Firm Capacity Import (MW)	Firm Capacity Export (MW)	QF (MW)	Total Capacity Available (MW)	System Firm Winter Peak Demand (MW)	Reserve Margin Before Maintenance (MW)	% of Peak	Scheduled Maintenance (MW)	Reserve Margin After Maintenance (MW)	% of Peak
2003/04	699	11			710	554	156	28		156	28
2004/05	699	11			710	564	146	26		146	26
2005/06	797	11			808	578	230	40		230	40
2006/07	797	11			808	590	218	37		218	37
2007/08	797	11			808	603	205	34		205	34
2008/09	787	11			798	614	184	30		184	30
2009/10	802	11			813	626	187	30		187	30
2010/11	827	11			838	637	201	32		201	32
2011/12	827	11			838	649	189	29		189	29
2012/13	827	11			838	660	178	27		178	27

Notes

[1] All installed and firm import capacity changes are identified in the proposed generation expansion plan (Table 3.4).

**City Of Tallahassee**

**Schedule 8  
Planned and Prospective Generating Facility Additions and Changes**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Plant Name	Unit No.	Location	Unit Type	Fuel Pri	Fuel Alt	Fuel Transportation		Const. Start Mo/Yr	Commercial In-Service Mo/Yr	Expected Retirement Mo/Yr	Gen. Max. Nameplate (kW)	Net Capability		Status
						Pri	Alt					Summer (MW)	Winter (MW)	
Combustion Turbine A [1]		Undetermined	GT	NG	DFO	PL	TK	Unknown	May-05			50	50	P
Distributed Generation [2]		Undetermined	IC	NG	DFO	PL	TK	Unknown	May-05			48	48	P
Combined Cycle A [3]		Undetermined	CC	NG	DFO	PL	TK	Unknown	May-09	May-10		25	25	P
									May-10	May-11		50	50	P
									May-11			100	100	P

**Notes**

- [1] Depending on further analysis, prospective generating unit Combustion Turbine A may be substituted with additional distributed generation. The only prospective location identified thus far is Hopkins Plant though a new green field site may yet be identified.
- [2] Distributed generating units are currently expected to be a total of 8 units with peak output of 6 MW each. Prospective locations identified thus far include Substation 12 and Hopkins Plant. Additional prospective substation locations may be identified at a later date.
- [3] This combined cycle capability is reflected as an alliance ownership/purchase beginning with 25 MW in May 2009, increasing to 50 MW in 2010 and to 100 MW in 2011. This capacity could take the form of a new, self-build unit; an asset modification (repowering of an existing conventional oil and gas-fired steam unit to combined cycle operation); an alliance purchase "by wire" (if transmission is available) and/or joint generation project; or a combination thereof. The City's back up plan for this capacity would be to self-build a combined cycle unit. Please see Section 3.1 for details.

Acronym	Definition
IC	Internal Combustion
GT	Gas Turbine
PRI	Primary Fuel
ALT	Alternate Fuel
NG	Natural Gas
DFO	Diesel Fuel Oil
PL	Pipeline
TK	Truck
P	Planned
kW	Kilowatts
MW	Megawatts

**City Of Tallahassee**  
**Generation Expansion Plan**

Year	Load Forecast & Adjustments			Existing Capacity Net (MW)	Firm Imports (MW)	Firm Exports (MW)	Resource Additions (Cumulative) (MW)	Total Capacity (MW)	Res %	New Resources
	Forecast Peak Demand (MW)	DSM [1] (MW)	Net Peak Demand (MW)							
2003	581	2	579	652	51 [2]			703	21	
2004	592	4	588	652	36 [2]			688	17	
2005	606	6	600	652	11		93	756	26	[3]
2006	622	8	614	652	11		93	756	23	
2007	632	8	624	652	11		93	756	21	
2008	642	8	634	642 [4]	11		93	746	18	
2009	651	8	643	632 [5]	11		118	761	18	[6]
2010	661	8	653	632	11		143	786	20	[6]
2011	669	8	661	584 [7]	11		193	788	19	[6]
2012	679	8	671	584	11		193	788	17	

**Notes**

- [1] Demand Side Management
- [2] Firm imports include 11 MW purchase from Progress Energy Florida (formerly Florida Power Corporation), 25 MW summer peak season (May-Sep of 2003 and 2004) purchase from Morgan Stanley Capital Group (sourced from Oglethorpe Power Company) and 15 MW purchase from Southern Company (Feb-Dec 2003).
- [3] New 45 MW (summer net) combustion turbines in 2005 and 48 MW distributed generation.
- [4] Purdom CT 1 official retirement currently scheduled for March 2008.
- [5] Purdom CT 2 official retirement currently scheduled for March 2009.
- [6] This combined cycle capability is reflected as an alliance ownership/purchase beginning with 25 MW in May 2009, increasing to 50 MW in 2010 and to 100 MW in 2011. This capacity could take the form of a new, self-build unit; an asset modification (repowering of an existing conventional oil and gas-fired steam unit to combined cycle operation); an alliance purchase "by wire" (if transmission is available) and/or joint generation project; or a combination thereof. The City's back up plan for this capacity would be to self-build a combined cycle unit. Please see Section 3.1 for details.
- [7] Purdom 7 official retirement currently scheduled for March 2011.

## Chapter IV

### Proposed Plant Sites and Transmission Lines

#### 4.1 PROPOSED PLANT SITE

As discussed in Chapter III, resource planning studies conducted by the City have identified the addition of approximately 100 MW of “quick start” peaking capacity in 2005 as part of the least-cost plan under the base case conditions. The City identified the addition of one (1) 50 MW class combustion turbine and eight 6 MW DG units as an effective way to meet this need and is currently evaluating a number of potential substation sites for the DG units. If a suitable, alternative site is not determined, the City could easily accommodate the addition of DG units as well as that of an aeroderivative CT at its existing Hopkins Plant site. This additional generating capacity would meet the additional capacity needs identified through the summer of 2008.

The City’s proposed resource addition to meet system needs in the summer 2009 and beyond is an increasing ownership/purchase of capacity and energy from a new 1-on-1 combined cycle unit beginning with 25 MW in 2009. The ownership increases to 50 MW by the summer of 2010 and to 100 MW by the summer of 2011 to meet the balance of needs throughout the 2003-2012 study period. This is a proposed resource addition as previously mentioned and is not final. Other possible combined cycle opportunities include a self-built unit, an asset modification (repowering of an existing conventional oil and gas-fired steam unit to combined cycle operation) and an alliance purchase by wire (if transmission is available) or a combination thereof. In addition to the CT and DG units previously discussed, any of the contemplated combined cycle unit options could also be accommodated at the City’s existing Hopkins Plant Site. It is also possible that a new “green field” site might be identified (see Schedule 9) if the self-build option is pursued.

## 4.2 TRANSMISSION LINE ADDITIONS/UPGRADES

Internal studies of the transmission system have identified a number of system improvements and additions that will be required to reliably serve future load. The attached transmission system map (Figure D1) shows the planned transmission additions covered by this Ten Year Site Plan.

The City is currently planning several new substations on the east side of its system. These are intended to serve future load in this rapidly growing area. The new substations (14, 15, 17, and 18) will be connected to the City's 115 kV transmission system, which is the standard voltage throughout the City's service territory. When complete, the area will be served by two reliable "loops" between substations 7 and 9 and between substations 9 and 5. The anticipated in-service dates for these new substations and lines are shown on Figure D1.

As discussed in Section 3.2, the City has been working with its neighboring utilities, Progress and Southern, to identify improvements to assure the continued reliability and commercial viability of the transmission systems in and around Tallahassee. At a minimum, the City attempts to plan for and maintain sufficient transmission import capability to allow for emergency power purchases in the event of the most severe single contingency, the loss of the system's largest generating unit. The City's internal transmission studies have reflected a gradual deterioration of the system's transmission import (and export) capability into the future. The prospect for improvements to the regional transmission system around Tallahassee hinges greatly on (i) the City's ongoing discussions with Progress and Southern, and (ii) the Regional Transmission Organization (RTO) development activities of both SeTrans and GridFlorida, and (iii) the alternative mechanisms envisioned by recently introduced federal legislation on electric industry restructuring. Unfortunately, none of these efforts

is expected to produce substantive improvements to the City's transmission import/export capability in the short term. The City is committed to continue to work with Progress and Southern and the developing RTOs as well as existing and prospective regulatory bodies in an effort to pursue improvements to the regional transmission systems that will allow the City to continue to provide reliable and affordable electric service to the citizens of Tallahassee in the future. The City will provide the FPSC with information regarding any such improvements as it becomes available.

City Of Tallahassee

**Schedule 9**

**Status Report and Specifications of Proposed Generating Facilities**

(1)	Plant Name and Unit Number:	Combustion Turbine A
(2)	Capacity	
	a.) Summer:	45
	b.) Winter:	50
(3)	Technology Type:	CT
(4)	Anticipated Construction Timing	
	a.) Field Construction start - date:	Unknown
	b.) Commercial in-service date:	May-05
(5)	Fuel	
	a.) Primary fuel:	NG
	b.) Alternate fuel:	DFO
(6)	Air Pollution Control Strategy:	Unknown
(7)	Cooling Status:	Unknown
(8)	Total Site Area:	Unknown
(9)	Construction Status:	Planned
(10)	Certification Status:	
(11)	Status with Federal Agencies:	
(12)	Projected Unit Performance Data	Data dependent on selected unit manufacturer, nature of contracts, etc. To be determined.
	Planned Outage Factor (POF):	
	Forced Outage Factor:	
	Equivalent Availability Factor (EAF):	
	Resulting Capacity Factor (%):	
	Average Net Operating Heat Rate (ANOHR):	
(13)	Projected Unit Financial Data	
	Book Life (Years)	
	Total Installed Cost (In-Service Year \$/kW)	
	Direct Construction Cost (\$/kW):	
	AFUDC Amount (\$/kW):	
	Escalation (\$/kW):	
	Fixed O & M (\$kW-Yr):	
	Variable O & M (\$/MWH):	
	K Factor:	

City Of Tallahassee

**Schedule 9  
Status Report and Specifications of Proposed Generating Facilities**

(1) Plant Name and Unit Number: Distributed Generation

(2) Capacity  
 a.) Summer: 48  
 b.) Winter: 48

(3) Technology Type: IC

(4) Anticipated Construction Timing  
 a.) Field Construction start - date: Unknown  
 b.) Commercial in-service date: May-05

(5) Fuel  
 a.) Primary fuel: NG  
 b.) Alternate fuel: DFO

(6) Air Pollution Control Strategy: Unknown

(7) Cooling Status: Unknown

(8) Total Site Area: Unknown

(9) Construction Status: Planned

(10) Certification Status:

(11) Status with Federal Agencies:

(12) Projected Unit Performance Data  
 Planned Outage Factor (POF):  
 Forced Outage Factor:  
 Equivalent Availability Factor (EAF):  
 Resulting Capacity Factor (%):  
 Average Net Operating Heat Rate (ANOHR):

Data dependent on selected unit manufacturer, nature of contracts, etc. To be determined.

(13) Projected Unit Financial Data  
 Book Life (Years)  
 Total Installed Cost (In-Service Year \$/kW)  
     Direct Construction Cost (\$/kW):  
     AFUDC Amount (\$/kW):  
     Escalation (\$/kW):  
 Fixed O & M (\$kW-Yr):  
 Variable O & M (\$/MWH):  
 K Factor:

City Of Tallahassee

**Schedule 9  
Status Report and Specifications of Proposed Generating Facilities**

(1)	Plant Name and Unit Number:	Combined Cycle A
(2)	Capacity a.) Summer: b.) Winter:	Note [1]
(3)	Technology Type:	CC
(4)	Anticipated Construction Timing a.) Field Construction start - date: [1] b.) Commercial in-service date:	Unknown Unknown
(5)	Fuel a.) Primary fuel: b.) Alternate fuel:	NG DFO
(6)	Air Pollution Control Strategy:	Unknown
(7)	Cooling Status:	Unknown
(8)	Total Site Area:	Unknown
(9)	Construction Status:	Planned
(10)	Certification Status:	
(11)	Status with Federal Agencies:	
(12)	Projected Unit Performance Data Planned Outage Factor (POF): [3] Forced Outage Factor: Equivalent Availability Factor (EAF): [3] Resulting Capacity Factor (%): [3] Average Net Operating Heat Rate (ANOHR):	Data dependent on selected unit manufacturer, nature of contracts, etc. To be determined.
(13)	Projected Unit Financial Data Book Life (Years) Total Installed Cost (In-Service Year \$/kW) Direct Construction Cost (\$/kW): AFUDC Amount (\$/kW): Escalation (\$/kW): Fixed O & M (\$kW-Yr): Variable O & M (\$/MWH): K Factor:	

Notes

[1] This combined cycle capability is reflected as an alliance ownership/purchase beginning with 25 MW in May 2009, increasing to 50 MW in 2010 and to 100 MW in 2011. This capacity could take the form of a new, self-build unit; an asset modification (repowering of an existing conventional oil and gas-fired steam unit to combined cycle operation); an alliance purchase "by wire" (if transmission is available) and/or joint generation project; or a combination thereof. The City's back up plan for this capacity would be to self-build a combined cycle unit. Please see Section 3.1 for details.

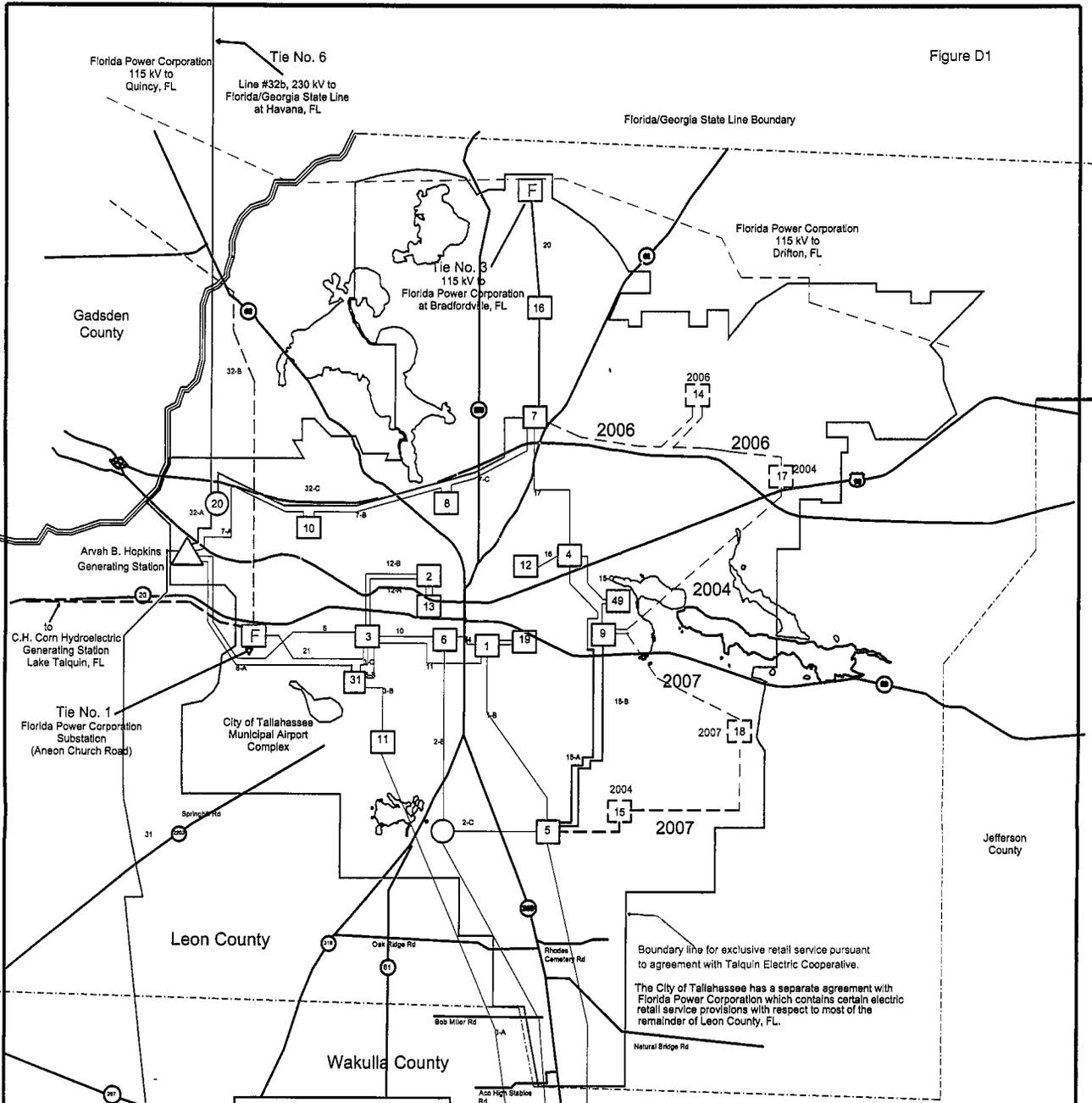
City Of Tallahassee

**Schedule 10  
Status Report and Specifications of Proposed  
Directly Associated Transmission Lines**

- (1) Point of Origin and Termination:
- (2) Number of Lines:
- (3) Right-of -Way:
- (4) Line Length:
- (5) Voltage:
- (6) Anticipated Capital Timing:
- (7) Anticipated Capital Investment:
- (8) Substations:
- (9) Participation with Other Utilities:

No facility additions or improvements to report at this time.
---

Figure D1



Boundary line for exclusive retail service pursuant to agreement with Talquin Electric Cooperative.  
 The City of Tallahassee has a separate agreement with Florida Power Corporation which contains certain electric retail service provisions with respect to most of the remainder of Leon County, FL.

**LEGEND**

- Existing City of Tallahassee 115 kV
- Existing City of Tallahassee 230 kV
- - - Proposed City of Tallahassee 115 kV
- - - Proposed City of Tallahassee 230 kV
- Florida Power Corporation Facilities
- Existing City of Tallahassee Substation
- Proposed City of Tallahassee Substation
- Existing City of Tallahassee Switching Station
- △ Generating Station
- F Florida Power Corporation Substation

Plate II-1

**City of Tallahassee**

Electric Transmission System  
 January 1, 2003

revision  
 10022003