CITY OF TALLAHASSEE

ORIGINAL

April 1, 1998

Mr Joseph D Jenkins
Director - Division of Electric & Gas
State of Florida Public Service Commission
2540 Shumard Oak Blvd
Tallahassee, FL 32399-0850

Dear Mr Jenkins

Attached is the City of Tallahassee's 1998 Ten Year Site Plan, provided pursuant to Section 186 801, F S. The plan is presented in two sections 1) the bound volume is the main information and data requirements, and 2) attached to this letter is the City's responses to "Other Planning Assumptions and Information" If you have any questions about this plan, please call me at 891-3130

Sincerely,

David Byrne

David Byrne, P E
Chief Planning Engineer

attachments
cc KGW

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City of Tallahassee Electric Department
1998-2007 Ten Year Site Plan

Other Planning Assumptions and Information
Environmental and Land Use Information

April 1, 1998

This packet is intended to serve as a supplement to the information provided in the main 1998-2007 Ten Year Site Plan report

Other Planning Assumptions and Information

1. Describe how any transmission constraints were modeled and explain the impacts on the plan. Discuss any plans for alleviating any transmission constraints.

Transmission constraints that have an impact on the plan are addressed in the Ten Year Site Plan under section 4.1.3 "Transmission Upgrades." The critical facilities are the three lines which will deliver power from the Purdom plant site to the Tallahassee load center. With the addition of Purdom Unit 8, the capacity of the lines is insufficient that, for the loss of one of the three, the two remaining lines can carry the full output of all units at the plant. Upgrading two of the lines (by increasing the wire size) will resolve this constraint.

2. Discuss the extent to which the overall economics of the plan were analyzed. Discuss how the plan is determined to be cost-effective. Discuss any changes in the generation expansion plan as a result of sensitivity tests to the base case load forecast.

The economics of this plan were analyzed fully in the "Purdom Unit 8 Need Study" which was filed with the Commission on December 20, 1996. In this study, an Integrated Resource Planning (IRP) approach was taken to assure that the chosen plan was cost-effective under a wide range of scenarios. Among those scenarios were variations in the load forecast. The results of the studies showed that the plan's cost-effectiveness is not very sensitive to load forecast variations. Recent review under the 1998 load forecast indicates that this conclusion is still valid. Variations in the peak demand forecast do not impact the schedule May 2000 need date for Purdom Unit 8, nor do they significantly impact the projected need dates for resource beyond the year 2000. These issues are addressed further in the Ten Year Site Plan under sections 2.1.2 "Load Forecast Sensitivities" and 3.1 "Projected Resource Requirements."

3. Explain and discuss the assumptions used to derive the base case fuel price forecast. Explain the extent to which the utility tested the sensitivity of the base case plan to high and low fuel price scenarios. If high and low fuel price sensitivities were performed, explain the changes made to the base case fuel price forecast to generate the sensitivities. If high and low fuel price scenarios were performed as part of the planning process, discuss the resulting changes, if any, in the generation expansion plan under the high and low fuel price scenario. If high and low fuel price sensitivities were not evaluated, describe how the base case plan is tested for sensitivity to varying fuel prices.

The base fuel price forecast is derived by combining several sources. For Tallahassee, the natural gas price forecast attempts to reconcile the current market, two external forecasts (ICF and the EIA), and information from two direct offers (NGC and Duke Energy) to arrive at a consistent set of numbers to be used internally by the City. These prices do not reflect the effects of Tallahassee's existing long term contracts.

Although fuel price sensitivity was not specifically tested for the 1998-2007 Ten Year Site Plan, it was thoroughly tested in the "Purdom Unit 8 Need Study" which was filed with the Commission on December 20, 1996. In that study, the high and low fuel price sensitivities were based on a combination of Tallahassee's base forecast and the high and low forecasts from external sources. The results of the study showed that these fuel price variations did not affect the choice of resource plan.

4. Describe how the sensitivity of the plan was tested with respect to holding the differential between oil gas and coal constant over the planning horizon.

Tallahassee did not test the sensitivity of its current plan with respect to holding the differential between oil/gas and coal constant over the planning horizon. However, a review of coal-fired resources in the "Purdom Unit 8 Need Study," which was filed with the Commission on December 20, 1996, indicated that coal-fired resources were not cost-effective for Tallahassee. Tallahassee therefore has no plans for adding coal-fired resources in its 1998-2007 Ten Year Site Plan.

5. Describe how generating unit performance was modeled in the planning process.

Generating unit performance is modeled in the Proscreen production cost simulation model. Performance characteristics included in this model are unit heat rate, force outage rate, planned maintenance, and minimum and maximum output for each generator.

6. Describe and discuss the financial assumptions used in the planning process. Discuss how the sensitivity of the plan was tested with respect to varying financial assumptions.

Tallahassee uses a general inflation rate of 3.5%, a new unit cost inflation rate of 3.5%, a long-term debt/IDC rate of 7.25%, and a discount rate of 7.25% as its financial assumptions. Sensitivity testing conducted as part of the preliminary analyses for the "Purdom Unit 8 Need Study," which was filed with the Commission on December 20, 1996, showed that reasonable variations in the long-term debt rate and discount rate did not affect the selection of resources.

7. Describe in detail the electric utility's Integrated Resource Planning process. Discuss whether the optimization was based on revenue requirements, rates, or total resource cost.

The following section is an excerpt from the "Purdom Unit 8 Need Study," which was filed with the Commission on December 20, 1996. It describes Tallahassee's Integrated Resource Planning process.

> The Electric Department's System Planning Division regularly assesses the electric system's ability to serve its customers. When a resource deficiency is forecast, plans are made to upgrade the system in a way that provides diversity and reliability at the least cost to our customers. This is called "resource planning." There are many methods of resource planning. These range from the traditional "lowest cost of present worth revenue

requirements for supply" to today's "Integrated Resource Planning." Regardless of the method, certain steps are always taken and certain information is always needed.

In general terms, the process of resource planning involves the following steps.

- To begin, current system data are established. Characteristics of the electric load, including peak demand, load shapes, total energy usage, and load management impacts, are compiled. An assessment of the existing system resources is made. Generating capacity, purchase contracts, and reliability are considered. System constraints such as transmission capability, environmental regulation, and fuel supply are reviewed.

- Forecasting is the next step. Future peak demands for summer and winter are projected, along with expected energy usage, using a selected load forecast methodology. Fuel price projections are obtained. Purchased power cost projections are provided by the sellers.

- Based on the previous two items, an assessment of future needs can be made. Strategic objectives and policy issues must be settled. A determination of the annual resource surpluses or deficits is made. System objectives such as a reliability target and operating flexibility are defined.

Finally, a long-range plan is developed which will meet the constraints mentioned above, plus provide a sound financial picture for the period of study. In developing this plan many screening criteria will be employed. Committees from various interested and concerned parties, including Tallahassee citizen advisory groups, will be informed of the objectives of the resource planning process and their suggestions or criticisms will be considered. The planning staff will use advanced computer modeling methods to develop the optimal plan for the future, while meeting the various constraints which have been set.

The resource planning methodology that has been selected by the Electric Department for the next power supply study is "Integrated Resource Planning (IRP)." IRP can be defined as:

> "An approach to resource planning that treats both demand side and supply-side options equally as potential contributors to an optimum strategy for providing energy services at the least cost."
> This approach has been verified through the benchmarking process.

The Electric Department [used] the results of an IRP study in the development of a resource acquisition Request for Proposals (RFP). The evaluation of the bids received [would] favor projects that most closely [met] the needs of the City of Tallahassee as determined through this planning process.

The optimization in this IRP process was based on minimization of revenue requirements.

8. Define and discuss the electric utility's generation and transmission reliability criteria.

The City has determined that a 17% minimum reserve margin is sufficient to maintain acceptable generation and transmission system reliability. A 1994 study of the reliability of the system resulted in a change from the former level of 20% margin. A 17% reserve margin gives the equivalent of 0.1 days/year loss of load probability, which is the industry standard.

9. Discuss how the electric utility verifies the durability of energy savings for its DSM programs.

The City uses engineering calculations and contracted consultant studies to identify the quantity of energy savings from its DSM programs. The durability of savings is verified through the use of random sampie surveys of participating customers.

10. Discuss how strategic concerns are incorporated in the planning process.

Strategic concerns are incorporated in the planning process by attempting to provide the most cost-effective resources possible, and by testing the "robustness" of the plan under different future scenarios. The testing of robustness was conducted as part of the "Purdom Unit 8 Need Study," which was filed with the Commission on December 20, 1996.

11. Describe the procurement process the electric utility intends to utilize to acquire the additional supply-side resources identified in the electric utility's ten-year site plan.

To acquire the new generating resources identified in the Ten Year Site Plan, Tallahassee has already conducted an RFP process. Evaluation of the proposals through an IRP process resulted in the selection of "Purdom Unit 8" – a 250MW gas combined cycle unit. Future resource needs have not yet been specifically identified. However, it is likely that they will ultimately be procured through a similar process.

12. Provide the transmission construction and upgrade plans for electric utility system lines that must be certified under the Transmission Line Siting Act (403.52 - 403.536, F.S.) during the planning horizon. Also, provide the rationale for any new or upgraded line.

None of Tallahassee's planned transmission line upgrades or additions will be subject to the Transmission Line Siting Act.

Environmental and Land Use Information

1. The following information on potential sites for each new generating facility identified in the requirements forecast shall be provided in the utility has obtained a price for the site either through purchase, option, or other means.

This section is not applicable, since Tallahassee has not obtained a price for any site to be used for the addition of generating facilities

2. The following information on each identified preferred site for each required facility shall be provided if the utility has obtained a price for the site either through purchase, option, or other means. These sites shall be fully disclosed in the ten-year site plan as soon as all parcels of land making up the site have either been purchased by, or are under option to, the utility or are the subject of condemnation proceedings.

This section is not applicable, since Tallahassee has not obtained a price for any site to be used for the addition of generating facilities

3. Provide the status of the application for certification of the preferred site with the Department of Environmental Protection: certified, certification pending, or certification denied.

The Site Certification Application for Purdom Unit 8 awaits approval by the Florida Governor and Cabinet at this time

ORIGINAL

CITY OF TALLAHASSEE

ELECTRIC DEPARTMENT

CITY OF TALLAHASSEE, FLORIDA

1998 - 2007 TEN YEAR SITE PLAN

City Electric
TALLAHASSEE

THE ENERGY OF FLORIDA'S CAPITAL CITY

CITY OF TALLAHASSEE
TEN YEAR SITE PLANS FOR ELECTRICAL GENERATING FACILITIES
AND ASSOCIATED TRANSMISSION LINES
1998-2007
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III. Projected Facility Requirements

IV. Proposed Plant Sites and Transmission Lines

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 90,000 customers located within a 221 square mile service territory. The Electric Department operates three generating stations with a total capacity of approximately 500 megawatts (MW).

The City has two fossil-fueled generating stations, each of which contain both steam and gas turbine 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. The City has a 1.333% undivided ownership interest in Crystal River Unit No. 3, a nuclear generating unit located in Citrus County Florida, which is jointly owned by Florida Power Corporation and eleven other electric utilities. (See Section 1.2 below for additional information about a change in the status of the City's ownership of Crystal River 3.)

1.1 SYSTEM CAPABILITY

The City maintains five points of interconnection with 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).

As shown in Table 1.1 (Schedule 1), approximately 98 MW (net summer rating) of steam generation and 20 MW (net summer rating) of combustion turbine generation facilities are located at the City's Sam O. Purdom Generating Station. The Arvah B. Hopkins Generating Station includes approximately 314 MW (net summer rating) of steam generation and 36 MW (net summer rating) of combustion turbine generation facilities. All of the City's available generating units at these sites can be fired with either oil, natural gas or both. The total capacity of the three units at the C.H. Corn Hydroelectric Station is 11 MW.

Including the City's ownership interest in Crystal River 3, the total net summer installed capability of the City is 490 MW. The corresponding winter net peak installed capability is 512 MW. Tables 1.1, 1.2, and 1.3 contain the details of the individual generating units, land use and investment, and certain environmental considerations.

1.2 Crystal River Unit 3 Divestiture / Purchased Power Agreement

On February 25, 1998, the City Commission approved subject to final negotiations by management, the divestiture of the City's 11.4 MW, or 1.333%, ownership interest in Crystal River Unit No. 3. This proposal provides for the (i) transfer of the City's Crystal River Unit No. 3 ownership interest and decommissioning trust account balance to Florida Power Corporation, and (ii) purchase by the City of replacement electric capacity and energy equal to the Crystal River Unit No. 3 interest (11.4 MW) from Florida Power.

This transaction is a one-for-one transfer and therefore will have no impact on the City's total capacity. The transaction is reflected in the tables in this report with the assumption that the transaction will be effective October 1, 1998.

City Of Tallahassee

Schedule 1
Existing Generating Facilities
As of December 31, 1997

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
								Alt Fuel	Commercial	Expected	Gen. Max.	Net Capability	
	Unit		Unit	Fuel		Fuel Transport		Days	In-Service	Retirement	Nameplate	Summer	Winter
Plant	No.	Location	Type	Pri	Alt	Primary	Alternate	Use	Month/Year	Month/Year	(kW)	(MW)	(MW)
Sam O. Purdom	5		ST	NG	FO6	PL	WA		4/58	3/03	(1) 23,000	24	24
	6		ST	NG	FO6	PL	WA		1/61	3/06	(1) 23,000	24	24
	7		ST	NG	FO6	PL	WA		6/66	3/11	44,000	50	50
												98	98
	GT-1		GT	NG	FO2	PL	TK		12/63	3/08	12,500	10	10
	GT-2		GT	NG	FO2	PL	TK		5/64	3/09	12,500	10	10
												20	20
A. B. Hopkins	1	Leon	ST	NG	FO6	PL	TK		5/71	3/16	75,000	76	80
	2	26/1N/2W	ST	NG	FO6	PL	TK		10/77	3/22	259,250	238	248
												314	328
	GT-1		GT	NG	FO2	PL	TK		2/70	3/15	16,320	12	14
	GT-2		GT	NG	FO2	PL	TK		9/72	3/17	27,000	24	26
												36	40
Crystal River	3	Citrus Co. Red Level, Florida	NP	UR	UR	TK	TK		3/77	UNKNOWN	(2) 11,872	11	11
												11	11
C. H. Corn Hydro Station	1	Leon/ Gadsden	HY	WAT	WAT	WAT	WAT		9/85	UNKNOWN	4,440	4	4
	2		HY	WAT	WAT	WAT	WAT		8/85	UNKNOWN	4,440	4	4
	3		HY	WAT	WAT	WAT	WAT		1/86	UNKNOWN	3,430	3	3
												11	11
TOTAL SYSTEM CAPACITY AS OF DECEMBER 31, 1997											516,752	490	508

(1) Will be retired in conjunction with Purdom Unit 8 construction
(2) See Section 1.2 for update on Crystal River Unit 3

Table 1.1

City Of Tallahassee

EXISTING GENERATING FACILITIES
LAND USE AND INVESTMENT

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Land Area		Plant Capital Investments in ($000)			
Plant Name	Total Acres	In Use Acres	Land	Site Improvements	Buildings & Equipment	Total
Sam O Purdom	63	38	15	129	42,273	42,417
Arvah B Hopkins	230	35	220	126	83,400	83,746
C H Corn (Jackson Bluff)	10,200	10,200	-	-	12,672	12,672
Electric System Totals [1]			235	255	138,345	138,835

[1] The totals shown represent the fixed assets of those categories as of September 30 , 1997

City Of Tallahassee

Existing Generating Facilities
Environmental Considerations for Steam Generating Units

(1)	(2)	(3)	(4)	(5)	(6)
		Air Pollution Control Strategy			
Plant Name	Unit	PM	SOx	NOx	Cooling Type
Arvah B. Hopkins	1	None	L.S.	None	WCTM
	2	None	L.S.	B.M.	WCTM
Sam O. Purdom	5 & 6	None	L.S.	None	OTF
	7	None	L.S.	None	OTF
C. H. Corn Hydro (Jackson Bluff Hydro)		Not Applicable			

Notes:
Environmental Considerations for the regulated air pollutants particulate matter, sulfur dioxide, and/or nitrogen oxides are any formal control measures implemented during the operation of the boiler in order to meet permit limits.

WCTM	Wet cooling tower, mechanical draft
OTF	Once through fresh water
L. S.	Low Sulfur (No. 6 fuel oil with no greater than 1.0 percent sulfur content and natural gas
B.M.	Best Management Practices
PM	Particulate Matter
SOx	Sulfur Dioxide
NOx	Nitrogen Oxides

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 recent Load Forecast and summarizes the Demand Side Management plan filed with the Florida Public Service Commission (PSC). Based on the forecast, the energy sources and the fuel requirements have been projected.

2.1 SYSTEM DEMAND AND ENERGY REQUIREMENTS

Historical and forecasted energy consumption and customer information are presented in Tables 2.1, 2.2 and 2.3 (Schedules 2.1, 2.2, and 2.3). Figures B1 and B2 show the trend of energy consumption by customer class and the split of energy consumption by customer class. Tables 2.4 through 2.12 (Schedules 3.1.1 - 3.3.3) contain historical and forecasted peak demands and net energy for load for base, high, and low values. Table 2.13 (Schedule 4) compares actual and two-year forecasted peak demand and energy values by month for the 1997-1999 period.

2.1.1 SYSTEM LOAD FORECAST

The peak demand and energy forecasts contained in this plan are the results of an annual update of the load forecasting study performed by the City and reviewed by engineering consultants. The energy forecast is developed utilizing a methodology which the City has employed since 1980, consisting of *13 multi-variable linear regression models based on detailed examination of the system's historical* growth, usage patterns and population statistics. The same regression coefficients had been used in these models since 1992. For the 1997 forecast, however, the coefficients were completely updated to reflect the previous five years' historic data. As a result, it is expected that the accuracy of the models has been improved. These coefficients were again reviewed for the 1998 forecast. These models are used to predict number of customers and retail sales by customer class, and seasonal system peak demand. Several key regression formulas utilize econometric variables. The customer class models are aggregated to form a total system sales forecast. The effects of demand-side management programs are incorporated in this base forecast to produce the system net energy requirements.

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 customer consumption by rate sub-class (1) general service non-demand, (2) general service demand, and (3) general service large demand. 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. This table, along with Table 2.15 (which gives the sources of the explanatory variables), explains the details of the models used to generate the system sales forecast. In addition to these explanatory variables, a component is also included in the models which reflects 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 PSC.

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.

2.1.2 LOAD FORECAST SENSITIVITIES

By adjusting selected input variables in the load forecast models, cases of "high load growth" and "low load growth" were established. The key explanatory variables that were changed were Leon County population, Florida population, heating degree days, cooling degree days, and Tallahassee taxable sales 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 generating capacity 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 generating capacity. This graph indicates 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 small 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 PSC. 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 is slated for implementation beginning in fiscal year 1997:

Residential Programs	Commercial Programs
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 impacts of the DSM plan plus the expected impact of the 1996 conservation efforts. The 1997 impacts are based on a continuation of the City's current conservation offerings.

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 PSC 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 PSC approval. Nevertheless, the City does not plan to reduce its commitment to DSM and conservation. The City intends to continue 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 1998-2007. Figure B4 displays the percentage of energy by fuel type. Presently, the City of Tallahassee uses renewable resources (hydroelectric power), residual oil, natural gas, and nuclear fueled facilities, as well as coal-by-wire purchases from the Southern Company and Entergy Power, Inc., to satisfy its energy requirements.

The projections of fuel consumption and energy generated are taken from the results of PROSCREEN II simulations based on a representative resource plan as 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)
	Rural & Residential					Commercial [4]		
Year	[1] Population	Members Per Household	[2] GWH	[3] Average No of Customers	Average KWH Consumption Per Customer	[2] GWH	[3] Average No of Customers	Average KWH Consumption Per Customer
1988	183,172	-	674	59,073	11,410	897	11,583	77,441
1989	189,980	-	708	60,159	11,769	943	11,967	78,800
1990	197,388	-	767	63,555	12,068	1,044	12,954	80,593
1991	201,486	-	759	64,997	11,677	1,060	13,208	80,254
1992	205,363	-	766	66,616	11,499	1,080	13,616	79,318
1993	210,641	-	796	68,176	11,676	1,149	13,834	83,056
1994	216,164	-	799	69,907	11,429	1,205	14,277	84,401
1995	220,599	-	870	71,534	12,162	1,268	14,780	85,792
1996	226,175		893	72,998	12,231	1,316	15,142	86,908
1997	230,921		850	74,259	11,446	1,325	15,490	85,539
1998	235,342	-	895	76,558	11,690	1,395	15,670	89,024
1999	240,008	-	924	78,359	11,792	1,444	15,976	90,386
2000	244,283	-	952	80,157	11,877	1,491	16,282	91,574
2001	248,404	-	978	81,822	11,953	1,536	16,572	92,686
2002	252,524	-	1,004	83,488	12,026	1,572	16,861	93,233
2003	256,644	-	1,029	85,157	12,084	1,614	17,150	94,111
2004	260,764	-	1,054	86,765	12,148	1,654	17,433	94,878
2005	264,839	-	1,078	88,199	12,222	1,690	17,693	95,518
2006	268,899	-	1,102	89,607	12,298	1,727	17,950	96,212
2007	272,959	-	1,126	91,015	12,372	1,765	18,207	96,941

[1] Leon County Population
[2] Raw Forecast, does not include effects of conservation/Load Management
[3] Average end-of-month customers for the calendar year
[4] Includes Traffic Control and Security Lighting use

Table 2.1

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)
	Industrial						
Year	[1] GWH	[2] Average No. of Customers	Average KWH Consumption Per Customer	Railroads and Railways GWH	Street & Highway Lighting GWH	Other Sales to Public Authorities GWH	Total Sales to Ultimate Consumers GWH
1988	-	-	-	-	11		1,582
1989	-	-	-	-	11		1,662
1990	-	-	-	-	11		1,822
1991	-	-	-	-	11		1,830
1992	-	-	-	-	11		1,857
1993	-	-	-	-	11		1,956
1994	-	-	-	-	11		2,015
1995	-	-	-	-	12		2,150
1996	-	-	-	-	12		2,221
1997	-	-	-	-	12		2,187
1998	-	-	-		13		2,303
1999	-	-	-		13		2,381
2000	-	-	-		14		2,457
2001	-	-	-		14		2,528
2002	-	-	-		14		2,590
2003	-	-	-		15		2,658
2004	-	-	-		15		2,723
2005	-	-	-		15		2,783
2006	-	-	-		16		2,845
2007					16		2,907

[1] Raw Forecast, does not include effects of conservation/Load Management
[2] 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) Year	(2) Sales for Resale GWH	(3) [1] Utility Use & Losses GWH	(4) Net Energy for Load GWH [3]	(5) Other Customers (Average No.)	(6) [2] Total No. of Customers
1988	0	136	1,718		70,656
1989	0	123	1,785		72,126
1990	0	81	1,903		76,509
1991	0	122	1,952		78,205
1992	0	123	1,980		80,232
1993	0	130	2,086		82,010
1994	0	134	2,149		84,184
1995	0	142	2,292		86,314
1996	0	147	2,368		88,140
1997	0	132	2,319		89,749
1998	0	153	2,456		92,228
1999	0	158	2,539		94,335
2000	0	162	2,619		96,439
2001	0	167	2,695		98,394
2002	0	172	2,762		100,349
2003	0	176	2,834		102,303
2004	0	181	2,904		104,198
2005	0	184	2,967		105,892
2006	0	188	3,033		107,557
2007	0	192	3,099		109,222

[1] Includes utility use
[2] Average number of customers for the calendar year
[3] Raw Forecast, does not include effects of conservation/Load Management

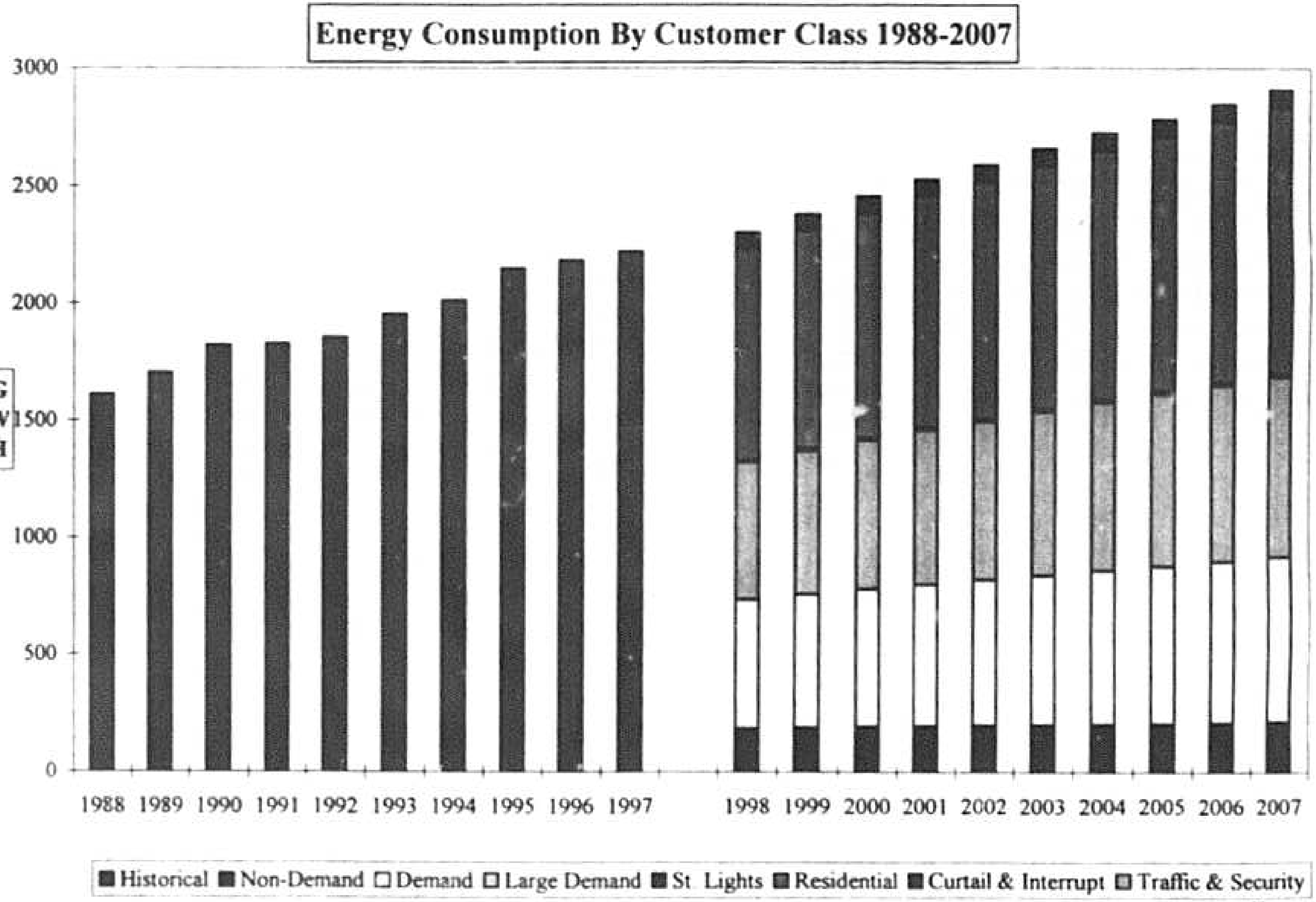
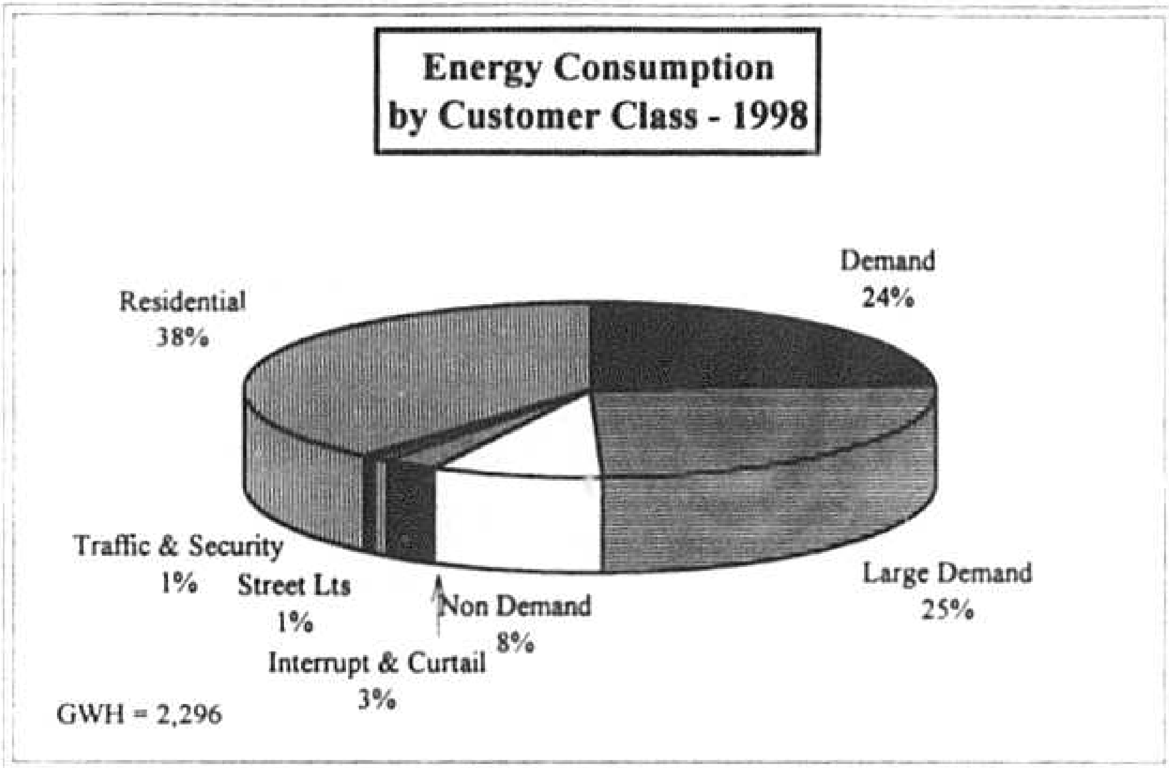
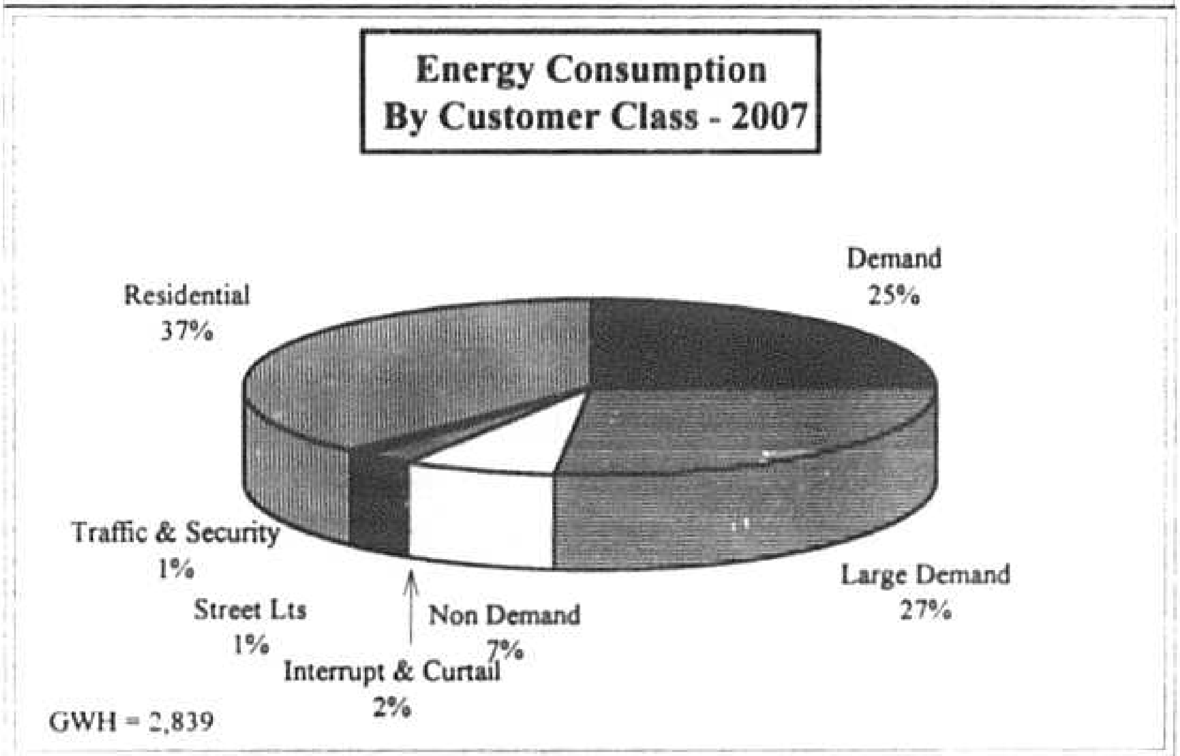

Energy Consumption By Customer Class 1988-2007
GWH
3000
2500
2000
1500
1000
500
0
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Historical
Non-Demand
Demand
Large Demand
St. Lights
Residential
Curtail & Interrupt
Traffic & Security

Figure B1

Figure B2


Energy Consumption
by Customer Class - 1998
Demand
24%
Residential
38%
Traffic & Security
1%
Street Lts
1%
Non Demand
8%
Interrupt & Curtail
3%
Large Demand
25%
GWH = 2,296


Energy Consumption
By Customer Class - 2007
Demand
25%
Residential
37%
Traffic & Security
1%
Street Lts
1%
Non Demand
7%
Interrupt & Curtail
2%
Large Demand
27%
GWH = 2,839

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 Managemen.	Residential Conservation	Comm./Ind Load	Comm./Ind Conservation	* Net Firm Demand
1988	374		374						374
1989	403		403						403
1990	415		415						415
1991	412		412						412
1992	428		428						428
1993	459		459						459
1994	433		433						433
1995	497		497						497
1996	500		500						500
1997	486		486						486
1998	503		503			1.55		0.37	501
1999	518		518			3.01		0.88	515
2000	533		533			4.43		1.39	527
2001	547		547			5.85		1.96	539
2002	559		559			7.28		2.42	549
2003	574		574			8.70		3.00	562
2004	585		585			10.12		3.46	571
2005	595		595			11.54		4.03	579
2006	606		606			12.96		4.49	589
2007	616		616			12.96		4.49	598

* Values include DSM Impacts

Table 2.4

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)
Year	Total	Wholesale	Retail	Interruptible	Residential Load Management	Residential Conservation	Comm./Ind Load	Comm./Ind Conservation	* Net Firm Demand
1988	374		374						374
1989	403		403						403
1990	415		415						415
1991	412		412						412
1992	428		428						428
1993	459		459						459
1994	433		433						433
1995	497		497						497
1996	500		500						500
1997	486		486						486
1998	513		513			1.55		0.37	511
1999	528		528			3.01		0.88	524
2000	543		543			4.43		1.39	537
2001	557		557			5.85		1.96	549
2002	569		569			7.28		2.42	559
2003	583		583			8.70		3.00	572
2004	595		595			10.12		3.46	581
2005	604		604			11.54		4.03	589
2006	616		616			12.96		4.49	598
2007	625		625			12.96		4.49	608

* Values include DSM impacts

Table 2.5

City Of Tallahassee

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

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Residential Load Management	(7) Residential Conservation	(8) Comm./Ind Load	(9) Comm./Ind Conservation	(10) * Net Firm Demand
1988	374		374						374
1989	403		403						403
1990	415		415						415
1991	412		412						412
1992	428		428						428
1993	459		459						459
1994	433		433						433
1995	497		497						497
1996	500		500						500
1997	486		486						486
1998	493		493			1.55		0.37	491
1999	509		509			3.01		0.88	505
2000	524		524			4.43		1.39	518
2001	538		538			5.85		1.96	530
2002	550		550			7.28		2.42	540
2003	564		564			8.70		3.00	552
2004	576		576			10.12		3.46	562
2005	585		585			11.54		4.03	570
2006	597		597			12.96		4.49	579
2007	606		606			12.96		4.49	589

* Values include DSM Impacts

Table 2.6

City Of Tallahassee

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

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Residential Load Management	(7) Residential Conservation	(8) Comm./Ind Load	(9) Comm./Ind Conservation	(10) * Net Firm Demand
1987 -1988	367		367						367
1988 -1989	374		374						374
1989 -1990	403		403						403
1990 -1991	415		415						415
1991 -1992	412		412						412
1992 -1993	428		428						428
1993 -1994	459		459						459
1994 -1995	433		433						433
1995 -1996	533		533						533
1996 -1997	431		431						431
1997 -1998	459		459			5.38		0.39	453
1998 -1999	478		478			10.67		0.89	467
1999 -2000	499		499			15.92		1.39	481
2000 -2001	517		517			21.18		1.93	494
2001 -2002	532		532			26.43		2.38	503
2002 -2003	550		550			31.68		2.92	516
2003 -2004	565		565			36.93		3.37	525
2004 -2005	578		578			42.18		3.92	532
2005 -2006	592		592			47.44		4.37	541
2006 -2007	605		605			47.44		4.37	553

* Values include DSM Impacts

Table 2.7

City Of Tallahassee

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

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Residential Load Management	(7) Residential Conservation	(8) Comm./Ind Load	(9) Comm./Ind Conservation	(10) * Net Firm Demand
1987 -1988	367		367						367
1988 -1989	374		374						374
1989 -1990	403		403						403
1990 -1991	415		415						415
1991 -1992	412		412						412
1992 -1993	428		428						428
1993 -1994	459		459						459
1994 -1995	433		433						433
1995 -1996	533		533						533
1996 -1997	431		431						431
1997 -1998	491		491			5.38		0.39	486
1998 -1999	511		511			10.67		0.89	499
1999 -2000	531		531			15.92		1.39	513
2000 -2001	549		549			21.18		1.93	526
2001 -2002	564		564			26.43		2.38	535
2002 -2003	582		582			31.68		2.92	548
2003 -2004	597		597			36.93		3.37	557
2004 -2005	610		610			42.18		3.92	564
2005 -2006	625		625			47.44		4.37	573
2006 -2007	637		637			47.44		4.37	585

* Values include DSM Impacts

City Of Tallahassee

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

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Residential Load Management	(7) Residential Conservation	(8) Comm./Ind Load	(9) Comm./Ind Conservation	(10) * Net Firm Demand
1987 -1988	367		367						367
1988 -1989	374		374						374
1989 -1990	403		403						403
1990 -1991	415		415						415
1991 -1992	412		412						412
1992 -1993	428		428						428
1993 -1994	459		459						459
1994 -1995	433		433						433
1995 -1996	533		533						533
1996 -1997	431		431						431
1997 -1998	432		432			5.38		0.39	426
1998 -1999	451		451			10.67		0.89	440
1999 -2000	471		471			15.92		1.39	454
2000 -2001	490		490			21.18		1.93	466
2001 -2002	505		505			26.43		2.38	476
2002 -2003	523		523			31.68		2.92	488
2003 -2004	538		538			36.93		3.37	498
2004 -2005	551		551			42.18		3.92	505
2005 -2006	565		565			47.44		4.37	513
2006 -2007	578		578			47.44		4.37	526

* Values include DSM Impacts

Table 2 9

City Of Tallahassee

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

(1) Year	(2) Total Sales	(3) Residential Conservation	(4) Comm./Ind Conservation	(5) * Retail Sales	(6) Wholesale	(7) Utility Use & Losses	(8) * Net Energy for Load	(9) * Load Factor %
1988	1,582			1,582		136	1,718	52
1989	1,662			1,662		123	1,785	51
1990	1,822			1,822		81	1,903	52
1991	1,830			1,830		122	1,952	54
1992	1,857			1,857		123	1,980	53
1993	1,956			1,956		130	2,086	52
1994	2,015			2,015		134	2,149	57
1995	2,150			2,150		142	2,292	53
1996	2,221			2,221		147	2,368	54
1997	2,187			2,187		132	2,319	54
1998	2,303	6.01	1.28	2,296		152	2,448	56
1999	2,381	11.98	2.89	2,366		157	2,523	56
2000	2,457	17.93	4.50	2,435		161	2,596	56
2001	2,528	23.88	6.19	2,498		165	2,663	56
2002	2,590	29.83	7.61	2,553		169	2,722	57
2003	2,658	35.78	9.30	2,613		173	2,786	57
2004	2,723	41.73	10.73	2,671		177	2,847	57
2005	2,784	47.68	12.42	2,724		180	2,904	57
2006	2,845	53.63	13.84	2,778		184	2,962	57
2007	2,906	53.63	13.84	2,839		188	3,027	58

* Values include DSM Impacts

City Of Tallahassee

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

(1) Year	(2) Total Sales	(3) Residential Conservation	(4) Comm./Ind. Conservation	(5) * Retail Sales	(6) Wholesale	(7) Utility Use & Losses	(8) * Net Energy for Load	(9) * Load Factor %
1988	1,582			1,582		136	1,718	52
1989	1,662			1,662		123	1,785	51
1990	1,822			1,822		81	1,903	52
1991	1,830			1,830		122	1,952	54
1992	1,857			1,857		123	1,980	53
1993	1,956			1,956		130	2,086	52
1994	2,015			2,015		134	2,149	57
1995	2,150			2,150		142	2,292	53
1996	2,221			2,221		147	2,368	54
1997	2,187			2,187		132	2,319	54
1998	2,473	6.01	1.28	2,466		163	2,629	59
1999	2,555	11.98	2.89	2,540		168	2,708	59
2000	2,633	17.93	4	2,611		173	2,783	59
2001	2,707	23.88	6.[illegible]9	2,677		177	2,854	59
2002	2,774	29.83	7.61	2,737		181	2,918	60
2003	2,845	35.78	9.30	2,800		185	2,985	60
2004	2,913	41.73	10.73	2,861		189	3,050	60
2005	2,980	47.68	12.42	2,920		193	3,113	60
2006	3,044	53.63	13.84	2,977		197	3,174	61
2007	3,108	53.63	13.84	3,041		201	3,242	61

* Values include DSM Impacts

Table 2 12

City Of Tallahassee

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

(1) Year	(2) Total Sales	(3) Residential Conservation	(4) Comm./Ind Conservation	(5) * Retail Sales	(6) Wholesale	(7) Utility Use & Losses	(8) * Net Energy for Load	(9) * Load Factor %
1988	1,582			1,582		136	1,718	52
1989	1,662			1,662		123	1,785	51
1990	1,822			1,822		81	1,903	52
1991	1,830			1,830		122	1,952	54
1992	1,857			1,857		123	1,980	53
1993	1,956			1,956		130	2,086	52
1994	2,015			2,015		134	2,149	57
1995	2,150			2,150		142	2,292	53
1996	2,221			2,221		147	2,368	54
1997	2,187			2,187		132	2,319	54
1998	2,153	6.01	1.28	2,146		142	2,288	53
1999	2,229	11.98	2.89	2,214		147	2,361	53
2000	2,302	17.93	4.50	2,280		151	2,431	54
2001	2,371	23.88	6.19	2,341		155	2,496	54
2002	2,430	29.83	7.61	2,393		158	2,551	54
2003	2,495	35.78	9.30	2,450		162	2,612	54
2004	2,558	41.73	10.73	2,506		166	2,672	54
2005	2,613	47.68	12.42	2,553		169	2,722	55
2006	2,673	53.63	13.84	2,606		173	2,778	55
2007	2,732	53.63	13.84	2,665		177	2,841	55

* 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)
	1997 Actual		1998 * Forecast		1999 * Forecast	
Month	Peak Demand MW	NEL GWH	Peak Demand MW	NEL GWH	Peak Demand MW	NEL GWH
January	430	190	442	201	455	207
February	402	163	414	172	425	177
March	322	170	332	179	341	185
April	339	163	349	172	359	177
May	422	186	435	196	447	202
June	420	198	432	209	444	216
July	481	239	495	252	509	260
August	486	235	501	248	515	256
September	468	227	482	240	495	247
October	421	190	433	201	445	207
November	377	167	389	176	400	182
December	374	191	386	202	396	208
TOTAL		2,319		2,448		2,524

* Peak Demand and NEL include DSM Impacts

City Of Tallahassee

1997 Electric System Load Forecast

Key Explanatory Variables

Model Name	Leon County Population	Residentia Customers	Total ustomer	Cooling Degree Days	Heating Degree Days	Tallahassee Per Capita Taxable Sales	Price of Electricit	State of Florida Population	Minimum Winter Peak day Temp.	Maximum Summer Peak day Temp.	Appliance Saturation	[1] R Squared
Residential Customers	X											0.989
Residential Consumption		X		X	X	X	X				X	0.921
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 Consum	X			X	X	X	X					0.961
General Service Demand Consumption	X			X	X							0.990
General Service Large Demand Consu	X			X	X							0.974
Summer Peak Demand			X							X	X	0.982
Winter Peak demand									X		X	0.965

[1] R Squared, sometimes called the coefficient of determination, is a commonly used measure of goodness od 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.

Table 2.14

1997 Electric Load Forecast
Sources of Forecast Model Input Information

Energy Model Input Data	Source
1 Leon County Population	City Planning Office
2 Talquin Customers Transferred	City Power Engineering
3 Cooling Degree Days	NOAA reports & staff
4 Heating Degree Days	NOAA reports & staff
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
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	Utility Services
26 Historical Commercial Real Price Of Electricity	Utility Services

**Summer Peak Demand Vs. Capacity
(includes reserve margin of 17%)**

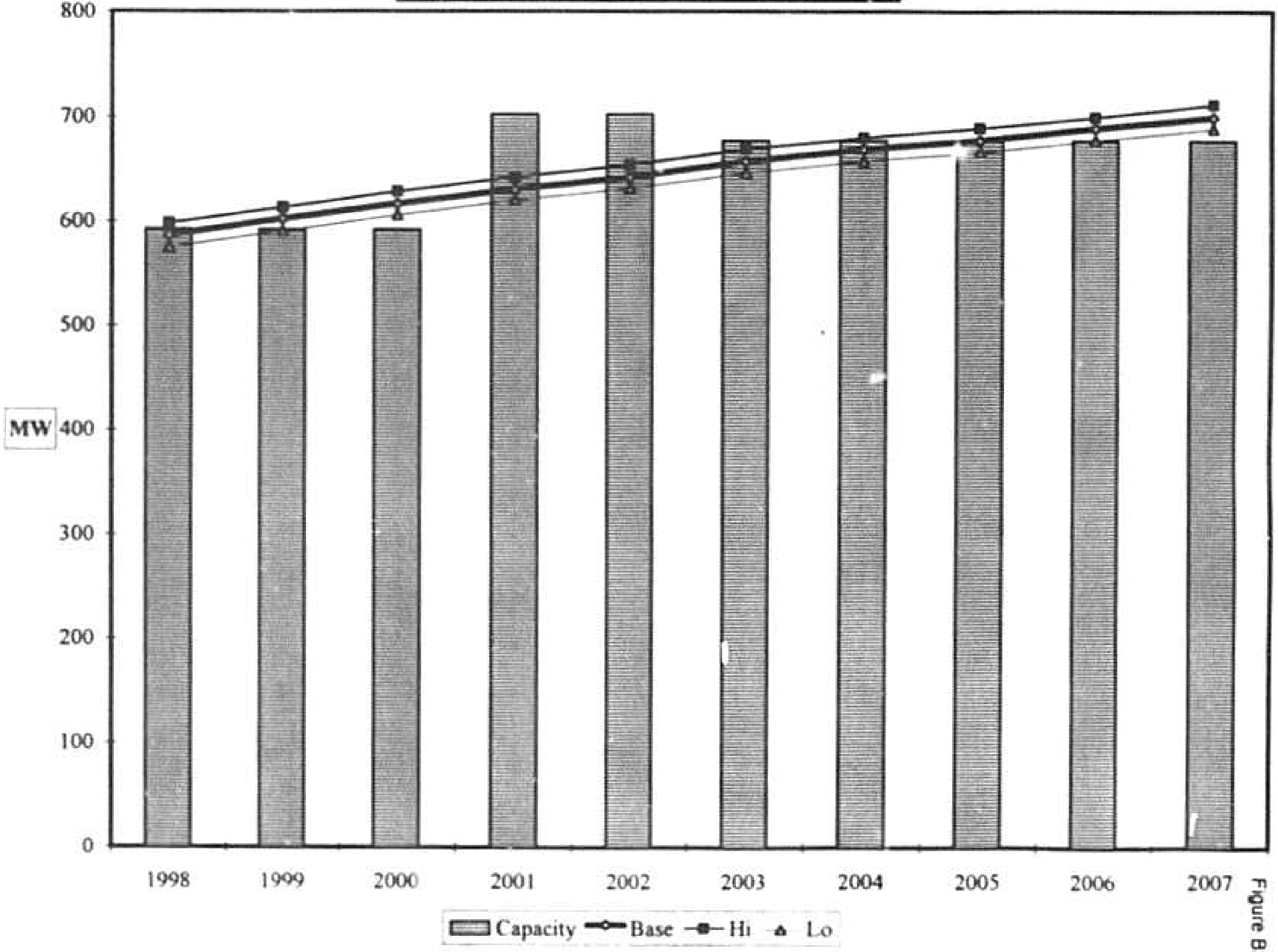


Figure B3

City Of Tallahassee
1998 Electric System Load Forecast

Projected Demand Side Management
Energy Reductions

Calendar Year Basis

YEAR	Residential Impact (MWH)	Commercial Impact (MWH)	Total Impact (MWH)
1998	6,410	1,367	7,777
1999	12,775	3,082	15,857
2000	19,118	4,798	23,916
2001	25,462	6,598	32,060
2002	31,805	8,119	39,924
2003	38,148	9,919	48,067
2004	44,492	11,440	55,932
2005	50,835	13,240	64,075
2006	57,178	14,761	71,939
2007	57,178	14,761	71,939

City Of Tallahassee
1998 Electric System Load Forecast

Projected Demand Side Management
Seasonal Demand Reductions

Year		Residential Energy Efficiency Impact		Commercial Energy Efficiency Impact		Demand Side Management Total	
Summer	Winter	Summer (MW)	Winter (MW)	Summer (MW)	Winter (MW)	Summer (MW)	Winter (MW)
1998	1997-1998	1.5	5.4	0.4	0.4	2	6
1999	1998-1999	3.0	10.7	0.9	0.9	4	12
2000	1999-2000	4.4	16.0	1.4	1.4	6	17
2001	2000-2001	5.9	21.2	2.0	1.9	8	23
2002	2001-2002	7.3	26.4	2.4	2.4	10	29
2003	2002-2003	8.7	31.7	3.0	2.9	12	35
2004	2003-2004	10.1	37.0	3.4	3.4	14	40
2005	2004-2005	11.5	42.0	4.0	3.9	16	46
2006	2005-2006	13.0	47.0	4.5	4.4	18	51
2007	2006-2007	13.0	47.0	4.5	4.4	18	51

City Of Tallahassee

Schedule 5
Fuel Requirements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Fuel Requirements		Units	Actual 1996	Actual 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
(1)	Nuclear		Trillion BT	0	0	1									
(2)	Coal		1000 Ton												
(3)	Residual	Total	1000 BBL	31	35										
(4)		Steam	1000 BBL	31	35										
(5)		CC	1000 BBL												
(6)		CT	1000 BBL												
(7)		Diesel	1000 BBL												
(8)	Distillate	Total	1000 BBL												
(9)		Steam	1000 BBL												
(10)		CC	1000 BBL												
(11)		CT	1000 BBL												
(12)		Diesel	1000 BBL												
(13)	Natural Gas	Total	1000 MCF	15,272	15,874	17,874	17,591	19,563	20,823	22,241	22,927	23,365	23,826	25,154	24,878
(14)		Steam	1000 MCF	15,166	15,600	17,719	18,378	12,010	8,450	9,257	10,016	10,078	10,450	13,604	11,268
(15)		CC	1000 MCF					7,485	12,362	12,958	12,876	13,245	13,325	11,185	13,532
(16)		CT	1000 MCF	106	274	155	215	68	11	26	35	42	51	365	78
(17)	Other (Specify)		Trillion BTU												

Table 2.18

City Of Tallahassee

Schedule 6.1
Energy Sources

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Energy Sources		Units	Actual 1996	Actual 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
(1)	Annual Firm Interchange		GWH	909	821	677	745	452	237	108	96	96	96	96	96
(2)	Nuclear		GWH	33	-	63									
(3)	Residual	Total	GWH	17	20										
(4)		Steam	GWH	17	20										
(5)		CC	GWH												
(6)		CT	GWH												
(7)		Diesel	GWH												
(8)	Distillate	Total	GWH												
(9)		Steam	GWH												
(10)		CC	GWH												
(11)		CT	GWH												
(12)		Diesel	GWH												
(13)	Natural Gas	Total	GWH	1,351	1,449	1,683	1,753	2,118	2,401	2,589	2,665	2,727	2,783	2,841	2,906
(14)		Steam	GWH	1,346	1,435	1,673	1,739	1,117	789	871	948	954	992	1,301	1,075
(15)		CC	GWH					996	1,611	1,716	1,715	1,770	1,788	1,516	1,826
(16)		CT	GWH	5	14	10	14	5	1	2	2	3	3	24	5
(17)	Other (Hydro)		GWH	22	29	25	25	25	25	25	25	25	25	25	25
(18)	Net Energy for Load		GWH	2,332	2,319	2,448	2,523	2,595	2,663	2,722	2,786	2,848	2,904	2,962	3,027

Notes
(1) Values for 1996 and 1997 include economy interchange
(2) Values for the period 1998-2007 do not include economy interchange

Table 2.19

City Of Tallahassee

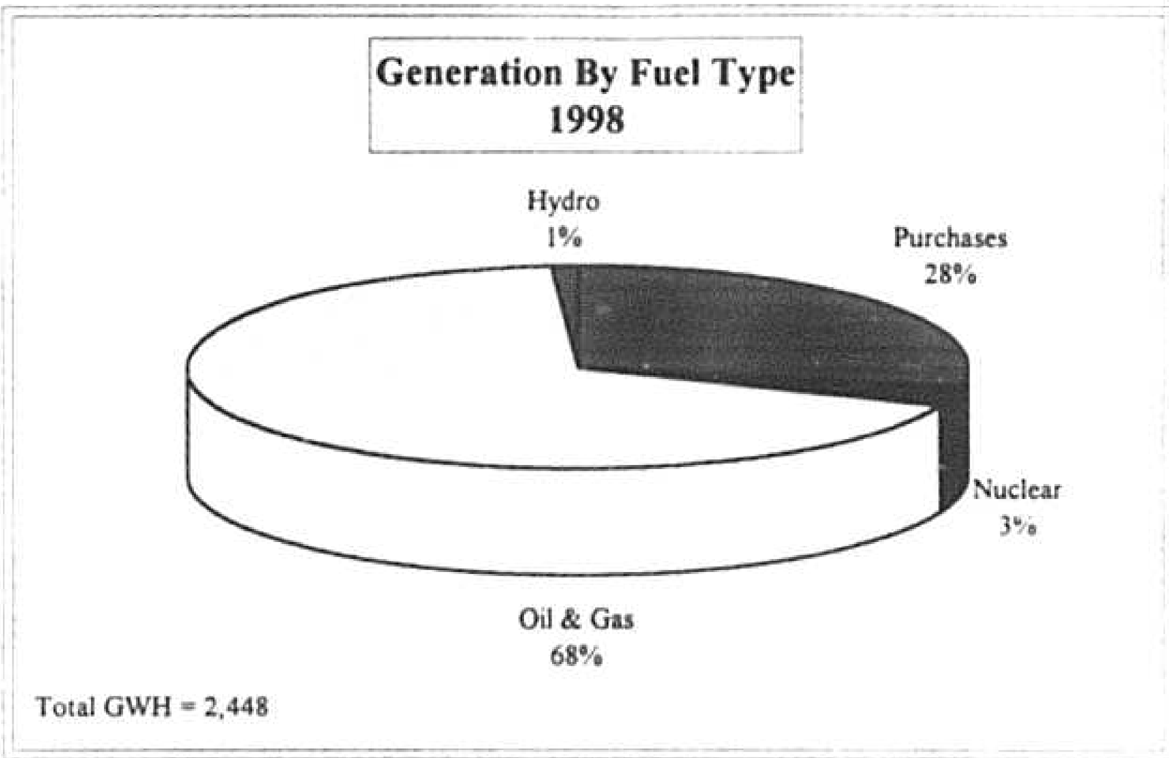
Schedule 6.2
Energy Sources

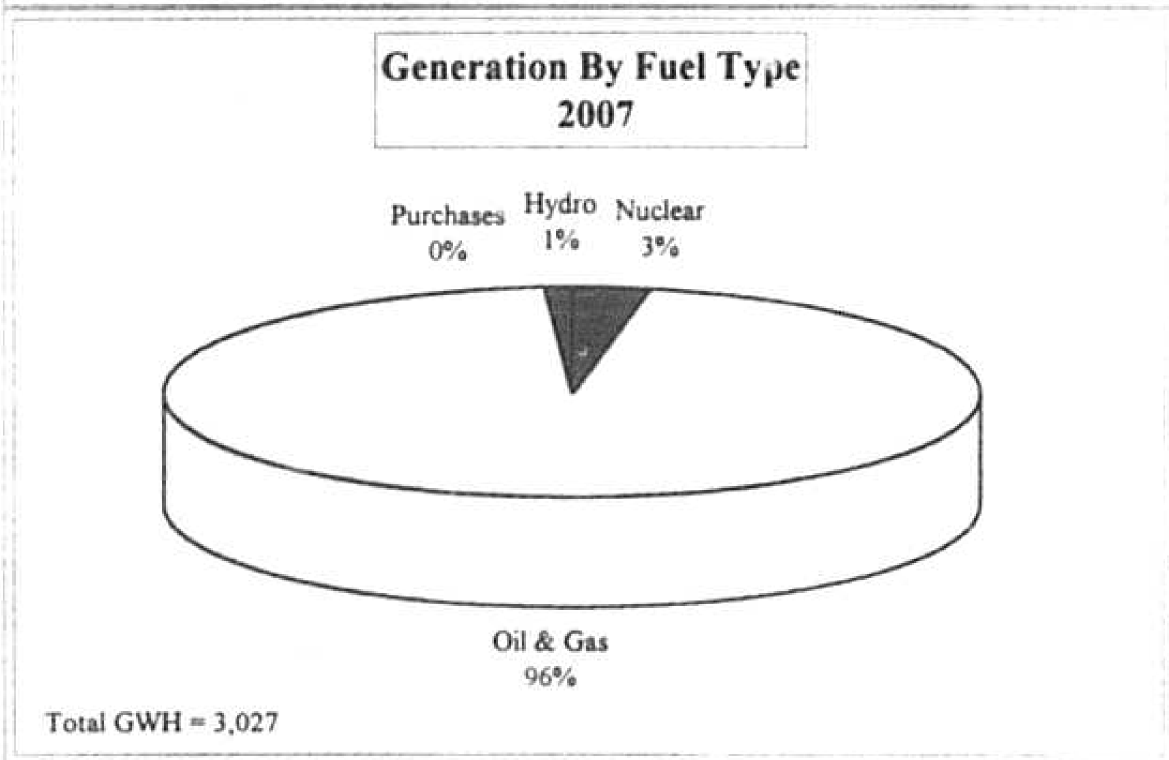
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Energy Sources		Units	Actual 1996	Actual 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
(1)	Annual Firm Interchange		%	39	35	28	30	17	9	4	3	3	3	3	3
(2)	Nuclear		%	1	0	3	0	0	0	0	0	0	0	0	0
(3)	Residual	Total	%	1	1										
(4)		Steam	%	1	1										
(5)		CC	%												
(6)		CT	%												
(7)		Diesel	%												
(8)	Distillate	Total	%												
(9)		Steam	%												
(10)		CC	%												
(11)		CT	%												
(12)		Diesel	%												
(13)	Natural Gas	Total	%	58	63	68	69	82	90	95	96	96	96	96	96
(14)		Steam	%	58	63	68	69	43	29	32	34	33	34	44	35
(15)		CC	%					38	61	63	62	62	62	51	60
(16)		CT	%												
(17)	Other (Hydro)		%	1	1	1	1	1	1	1	1	1	1	1	1
(18)	Net Energy for Load		%	100	100	100	100	100	100	100	100	100	100	100	100

Notes
(1) Values for 1996 and 1997 include economy interchange
(2) Values for the period 1998-2007 do not include economy interchange

Table 2.20

Figure B4


Generation By Fuel Type
1998
Hydro
1%
Purchases
28%
Nuclear
3%
Oil & Gas
68%
Total GWH = 2,448


Generation By Fuel Type
2007
Purchases
0%
Hydro
1%
Nuclear
3%
Oil & Gas
96%
Total GWH = 3,027

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 PROJECTED RESOURCE REQUIREMENTS

The City has projected that additional resources will be required during the 1998-2007 Ten Year Site Plan time frame to maintain a reliable electric system. Based on the current load growth projection and capacity schedule, the City has determined that a significant capacity shortfall of about 102 MW exists in the year 2000, assuming a 17% reserve margin criterion (as determined in a recent reliability study.) This shortfall is primarily the result of the termination of a 75MW purchased power contract with the Southern Company. The cumulative shortfall (considering only existing resources) during the reporting period covered by this Ten Year Site Plan is shown in the table below.

Cumulative Capacity Shortfall (17% Reserve Margin)	
Year	***MW***
2000	*102*
2001	*116*
2002	*153*
2003	*191*
2004	*203*
2005	*212*
2006	*247*
2007	*258*

To meet the large capacity shortfall that is anticipated in the summer of 2000, the City engaged in a comprehensive integrated resource planning and procurement process with the intent of acquiring a resource that could reliably meet the City's needs at the lowest cost to its customers. This planning and procurement process included a Needs Determination hearing with the Florida Public Service Commission, Site Certification, and a market power cost study. The result of this process was the decision to build a 233 MW (summer rating) gas combined-cycle unit (Purdom Unit 8) and retire Purdom units 5 & 6. (See Table 3.3 for details on these facility changes.)

Note that a minor reserve margin shortfall is projected for the year 1999 (about 9 MW.) Additionally, after the addition of Purdom Unit 8, there may still be minor shortfalls for the years 2005, 2006, and 2007 (about 1, 12, and 23 MW, respectively.) These shortfalls will be met with short term operating solutions, such as peak-season purchases from other systems. The later-year shortfalls may also be met by the advancement of resources that are currently outside the 10-year planning horizon.

3.2 PLANNING PROCESS / THE NEED STUDY

On December 20, 1996, the City filed a Petition to Determine Need for Electrical Power Plant with the Florida Public Service Commission. As part of this filing, the City prepared the Purdom Unit 8 Need Study. This study described the planning process employed by the City in its selection of a resource plan which includes the addition of a 233 MW Gas Combined Cycle unit at the Purdom Station in the year 2000. The following is an excerpt from the Need Study:

> In late 1993, the City recognized that an opportunity would exist at the termination of the Southern Company contract to reduce the cost of supplying power to its customers. Improvements in generating technology made it clear that a new gas-fired generator could be installed and operated for significantly less than the price being paid for purchased power. The City began the process of screening various generating technologies and other resources for evaluation in an Integrated Resource Planning ("IRP") study.
>
> The City's Initial IRP Study, completed in May, 1995, showed that the optimal resource type for meeting the year 2000 need would be a combination of demand side management programs and a long-term base-

load-type supply resource, most likely using gas-fired combined-cycle technology. In order to determine the most cost-effective alternative for meeting the year 2000 need, the City conducted a competitive Request for Proposals (RFP) process in parallel with the development and evaluation of self-build options.

On August 31, 1995, the City released an RFP for the supply of electric capacity and energy. This RFP solicited proposals for purchased power and/or generating projects in amounts from 10 MW to 250 MW. Including five external proposals, and two alternatives proposed by the City, a total of 1,410 MW was submitted in response to the request for up to 250 MW of supply-side resources. All of these proposals included gas-fired capacity, and some also included options for additional purchased power.

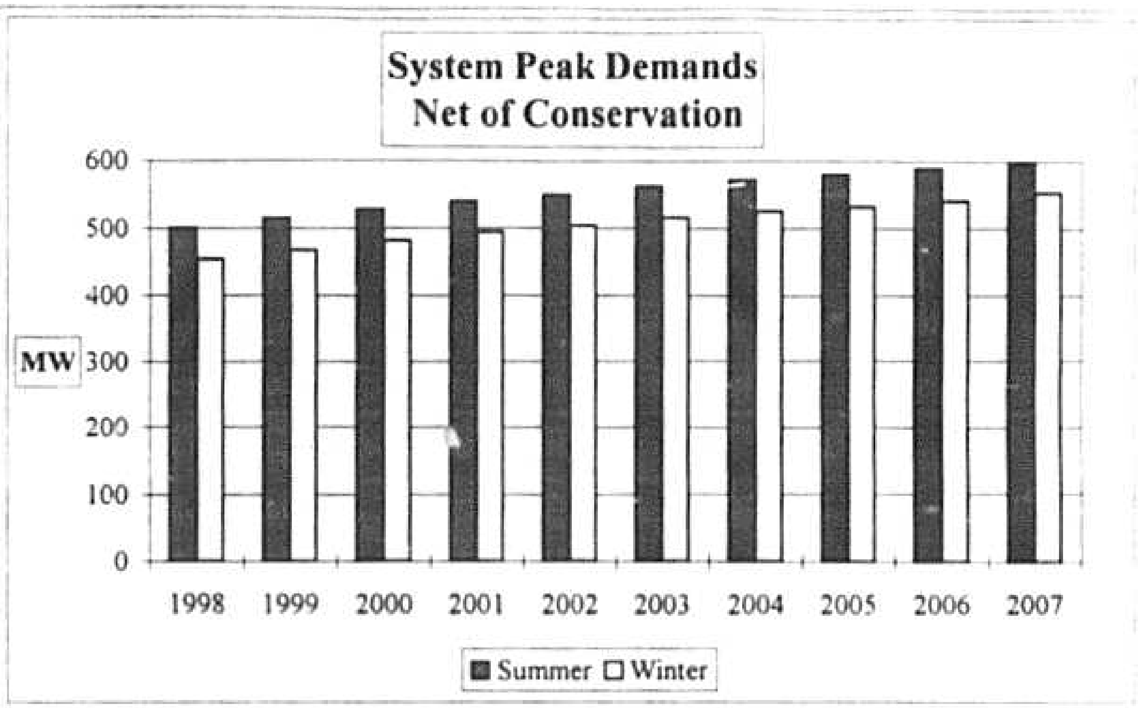
After an extensive evaluation process, the City selected the Purdom Unit 8 alternative as the best economic choice for meeting the year 2000 need for power. This unit has a guaranteed heat rate of 7,040 Btu/kWh at an ambient temperature of 95 degrees F. The total construction cost of Purdom Unit 8 is approximately $434/kW exclusive of contingency, capitalized interest, and transmission upgrades (and based on a rating of 251,054 kW at ISO conditions). Under base case planning assumptions, the resource plan including Purdom Unit 8 produces savings of approximately $91 million in present worth of revenue requirements (PWRR) over a 20-year period compared to the next best alternative identified through the RFP process. The Purdom Unit 8 plan also performs best under a wide range of alternative future scenarios.

In addition, the Need Study discusses the load forecast, DSM plan, reliability considerations, potential consequences of delay of the project, consistency with statewide need, and the environmental benefits of Purdom Unit 8.

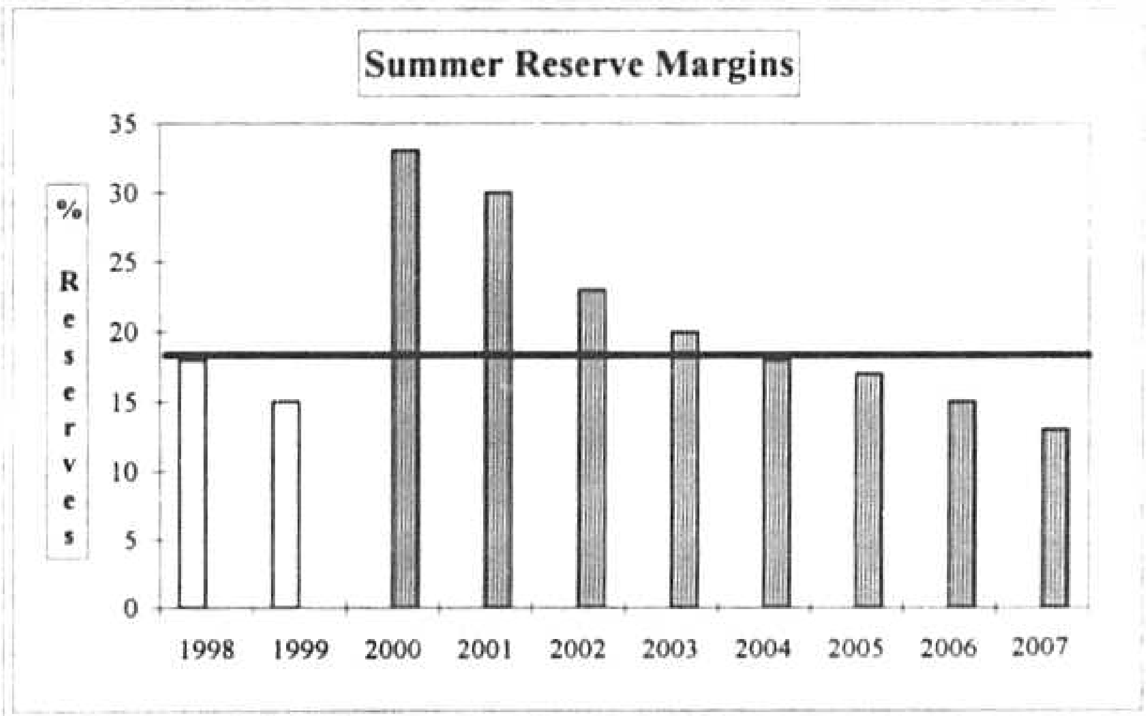
Following hearings, the Florida Public Service Commission announced, in an order issued June 9, 1997, that the City's petition for determination of need for Purdom Unit 8 should be granted. Since that date, the City has completed a study of the power markets which verified the economics of Purdom Unit 8. The City now awaits approval by the Governor and Cabinet of the Site Certification Application.

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 plans it system to maintain a generating capacity margin at least 17% greater than the projected base case peak demand. Based on the plan discussed above, 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 corresponding system reserve margin. Table 3.4 provides the City's generation expansion plan, including the addition of Purdom Unit 8 in 2000.

Figure C



System Peak Demands
Net of Conservation
MW
600
500
400
300
200
100
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Summer
Winter



Summer Reserve Margins
% Reserves
35
30
25
20
15
10
5
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007

City Of Tallahassee

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 Installed Capacity	Firm Capacity Import	Firm Capacity Export		Total Capacity Available	System Firm Summer Peak Demand	Reserve Margin Before Maintenance		Scheduled Maintenance	Reserve Margin After Maintenance	
MW	MW	MW	MW	QF MW	MW	MW	MW	% OF PK	MW	MW	% OF PK
1998	490	103			593	501	92	18		92	18
1999	479	114			593	515	78	15		78	15
2000	666	36			702	527	175	33		175	33
2001	666	36			702	539	163	30		163	30
2002	666	11			677	549	128	23		128	23
2003	666	11			677	562	115	20		115	20
2004	666	11			677	572	105	18		105	18
2005	666	11			677	579	98	17		98	17
2006	666	11			677	589	88	15		88	15
2007	666	11			677	598	79	13		79	13

City Of Tallahassee

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 nstalled Capacity	Firm Capacity Import	Firm Capacity Export	QF	Total Capacity Available	System Firm Winter Peak Demand	Reserve Margin Before Maintenance		Scheduled Maintenance	Reserve Margin After Maintenance	
MW	MW	MW	MW	MW	MW	MW	MW	% OF PK	MW	MW	% OF PK
1997/98	512	103			615	453	162	36		162	36
1998/99	501	114			615	467	148	32		148	32
1999/00	453	114			567	481	86	18		86	18
2000/01	713	36			749	494	255	52		255	52
2001/02	713	36			749	503	246	49		246	49
2002/03	713	11			724	515	209	41		209	41
2003/04	713	11			724	525	199	38		199	38
2004/05	713	11			724	532	192	36		192	36
2005/06	713	11			724	541	183	34		183	34
2006/07	713	11			724	553	171	31		171	31

Table 3.2

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)
								Const.	Commercial	Expected	Gen. Max	Net Capability		
	Unit		Unit	Fuel		Fuel Transportation		Start	In-Service	Retirement	Nameplate	Summer	Winter	
Plant Name	No	Location	Type	Pri	Alt	Pri	Alt	Mo/Yr	Mo/Yr	Mo/Yr	kW	MW	MW	Status
Purdom [1]	8	Wakulla Co	CC	NG	FO2	PL	TK	N/A	5/15/00		259,800	233	260	P
Purdom [2]	5	"	ST	NG	FO6	PL	TK			10/1/99	25,000	-23	-24	P
Purdom [2]	6	"	ST	NG	FO6	PL	TK			10/1/99	25,000	-23	-24	P

Notes: [1] Unit No. 8 selection is pending site certification approval by the Florida Governor and Cabinet.

[2] The early retirement of Purdom units 5 & 6 is contingent upon the installation of Purdom No. 8 combined cycle unit. The scheduled retirement dates for these units are shown on Table 1.1.

Abbreviations:
- CC - Combined Cycle
- GT - Gas Turbine
- PRI - Primary Fuel
- ALT - Alternate Fuel
- NG - Natural Gas
- FO2 - No. 2 Fuel Oil
- PL - Pipeline
- TK - Truck
- P - Planned
- kW - kilowatts
- MW - Megawatts

Table 3.3

City Of Tallahassee

GENERATION EXPANSION PLAN

	Load Fcst & Adj									
Year	Fcst Peak Demand	SM (1)	Net Peak DMD	Existing Capacity Net		Firm Imports	Resource Additions (Cumulative)	Total Capacity	Res %	New Resources
1998	503	2	501	490		103		593	18	
1999	518	4	514	479		114		593	15	
2000	533	6	527	433		36	233	702	33	
2001	547	8	539	433	(2)	36	233	702	30	(3)
2002	559	10	549	433	(2)	11	233	677	23	(3)
2003	574	12	562	433	(2)	11	233	677	20	(3)
2004	585	14	571	433	(2)	11	233	677	19	(3)
2005	595	16	579	433	(2)	11	233	677	17	(3)
2006	606	18	588	433	(2)	11	233	677	15	(3)
2007	618	18	600	433	(2)	11	233	677	13	(3)

NOTES

(1) DSM = Demand Side Management

(2) Purdom units 5 & 6 will be retired with the installation of Purdom No. 8

(3) New Resource assumed to be Purdom No. 8, having a 233 MW summer capacity. (Unit No. 8 selection is pending site certification approved by the Florida Governor and Cabinet)

Chapter IV

Proposed Plant Sites and Transmission Lines

4.1 PROPOSED PLANT SITE

As identified in Chapter III, the Need Study, the subsequent order from the Florida Public Service Commission, and finally the market power cost study indicated that the least-cost generation expansion plan includes the development of a 233 MW (summer rating) gas-fired combined-cycle plant at the Purdom Generating Station in St Marks, Florida. This section will describe that proposed plant, its site, and related transmission improvements.

4.1.1 DESCRIPTION OF NEW POWER PLANT

The proposed power plant (to be designated Purdom Unit 8) is comprised of an advanced technology gas turbine in a combined-cycle configuration. In this configuration, the City will enjoy the highest efficiency available in a large central station facility. The unit has a guaranteed summer rating of 232,900 kW and 7,040 btu/kWh at 95°F, 50% Relative Humidity, and at the Higher Heating Value (HHV) of gas. With the addition of this unit, the City will be able to retire Purdom Units 5 & 6 early, and reduce the utilization of Purdom Unit 7. As a result of these early retirements and reduced utilization, the City's electrical demand will be met at a reduced cost and with a significantly improved environmental profile. This alternative is expected to provide the following benefits:

Financial Benefits:

- The addition of Unit 8 will make a significant improvement in system efficiency. Unit 8 has an average heat rate of 6,960 btu/kWh, which is 39% better than the City's fiscal year 1994 average annual heat rate of 11,400 btu/kWh
- The project utilizes existing facilities in lieu of developing a new site
- The debt service payments for 233 MW are lower than the capacity payments historically paid by the City for 100 MW of coal-fired capacity from Southern Company
- The City's wholesale competitiveness will be improved through higher efficiency

Environmental Benefits:

- A "zero discharge" water treatment plant will be installed to significantly improve the environmental impact on the St. Marks River. This treatment facility will allow elimination of the existing low volume waste (LVW) discharge and metal cleaning waste (MCW) discharge. The zero discharge treatment plant will also allow all of the City of St. Marks sewage treatment plant effluent to be used as make-up to the Unit 8 cooling tower. This will eliminate an existing waste stream discharge to the St. Marks River.
- Thermal discharge to the St. Marks River will be reduced through the early retirement of Units 5 & 6. There is no additional thermal discharge from Unit 8 due to the use of a cooling tower and the zero discharge facility.
- Best Available Control Technology (BACT) for NOx control will be used.
- Natural gas will be utilized as the primary fuel. Clean, low sulfur (0.05%) #2 fuel oil will only be used as the backup fuel. The current expectation is that utilization of #2 fuel oil will be less than 1,000 hours annually.
- There will be a net reduction in permitted air emissions through retirement of Units 5 & 6, and reduced utilization of Unit 7 coupled with the excellent performance of Unit 8. NOx and SO2 emissions from Unit 8 are expected to be at or below the actual NOx and SO2 emissions from the Purdom Plant in the past 2 years. There will be some increase in actual amounts for other pollutants but the ambient air quality impacts will be below the allowable standards.
- Groundwater withdrawal from the existing Purdom wells will be eliminated.
- The project utilizes existing transmission rights-of-way and voltages, and thereby does not require acquisition and clearing of additional rights-of-way.

St. Marks Community Benefits:

- The St. Marks River environment will be improved through the elimination of the Purdom LVW and MCW discharges, of thermal discharge from Units 5 & 6, and of the discharge of the City of St. Marks sewage treatment plant to the river.
- Aesthetics along the St. Marks River will be improved.
- The project will utilize the City of St. Marks potable water system for supplemental process water.
- The project makes the existing water high tank available to the City of St. Marks for additional storage.

4.1.2 PLANT SITE

The new power plant will be sited at the Purdom Generating Station in St. Marks, Florida, approximately 25 miles south of Tallahassee, in Wakulla County. This generating station currently consists of three steam electric units and two gas combustion turbine units. Steam Units No. 5 and 6 are rated at 24 MW each and Unit 7 is rated at 50 MW. The three steam units can burn either natural gas or No. 6 fuel oil. The two gas turbines are rated at 10 MW each, and are used for peaking. They can burn either gas or No. 2 fuel oil.

The proposed power plant (Purdom Unit 8) will be a 233 MW (summer rating) gas combined cycle unit, which is expected to be primarily base-loaded. Concurrent with the installation of Unit 8, Units 5 and 6 will be decommissioned. Unit 7 and the gas turbines will remain in operation. Specifications for the proposed plant are shown on Table 4.1 (Schedule 9).

A site map is included as Figure D1. Unit 8 will be located west of the Unit 6 & 7 Discharge Canal, to the south of the Plant access road. The combustion turbine-generator (CT-G) and heat recovery steam generator (HRSG) will be oriented north-south and adjacent to the discharge canal. The steam turbine-generator (ST-G) will be west of the CT-G. The existing warehouse will be relocated and the cooling tower will be located where the warehouse is presently. To fit the 225 MW alternative, the existing gas yard will be relocated. A new Plant access road will be constructed along the west, south, nd east perimeter of the new Unit 8. This site layout is consistent with the special development zone requirements of the St. Marks Land Development Code and avoids impacts to all existing on-site environmental features.

4.1.3 TRANSMISSION UPGRADES

The project utilizes existing transmission rights-of-way and voltages, and thereby does not require acquisition and clearing of additional rights-of-way. Specifications for the proposed directly-associated transmission lines are shown on Table 4.2 (Schedule 10). In order to reliably carry the additional power in certain contingency situations from the Purdom site north to the City's service territory, the upgrading of the following transmission lines will be necessary:

Existing Line	Miles	Existing Conductor	Required Upgrade
Purdom - Sub 5	15	4/0 copper	477 ACSR
Purdom - Switch	15.6	4/0 copper	477 ACSR

4.2 TRANSMISSION LINE ADDITIONS

A study of the transmission system has identified a number of system improvements and additions that will be required to reliably serve future load. The attached transmission system map (Figure D2), shows the planned transmission additions covered by this Ten Year Site Plan.

The City plans 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, 17, 18) will be connected with 115 kV transmission, 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 in Figure D2.

Other improvements to the transmission system will take the form of line upgrades. Specifically, the upgrade of the lines out of the Purdom Station (as described in section 4.1.3) will be timed to be in-service prior to the May 2000 commission date for Purdom Unit 8.

Table 4.1

City Of Tallahassee

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

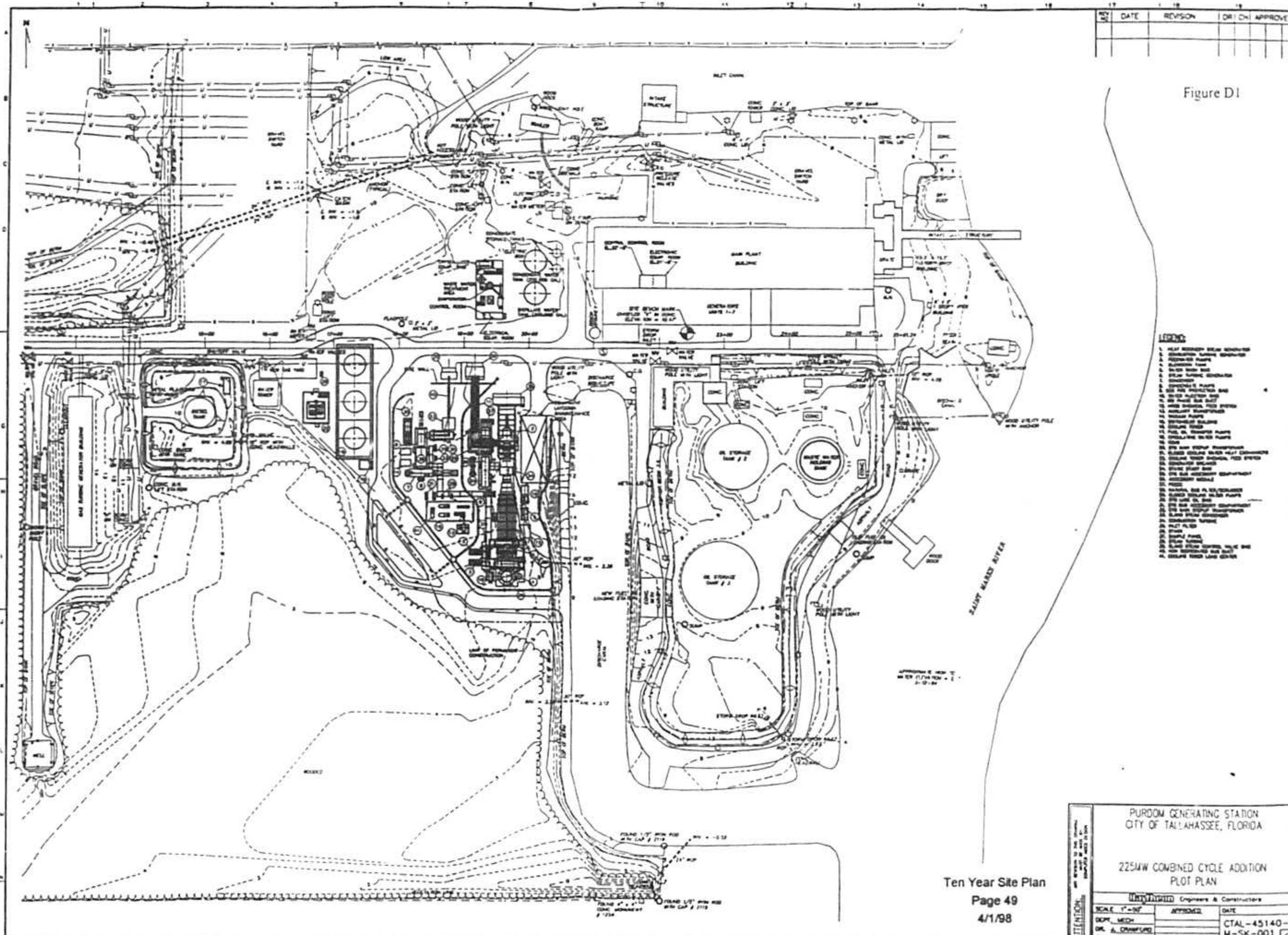
(1)	Plant Name and Unit Number	Purdom Unit 8
(2)	Capacity	
	a) Summer	233 @ 95F
	b) Winter	260 @ 40F
(3)	Technology Type	Combined Cycle
(4)	Anticipated Construction Timing	
	a) Field Construction start - date	1/2/99 start engineering 3/31/98
	b) Commercial in-service date	5/15/00
(5)	Fuel	
	a) Primary fuel	Natural Gas
	b) Alternate fuel	No. 2 Diesel Fuel
(6)	Air Pollution Control Strategy	Natural Gas -- Dry Low Nox Combustor Technology Diesel -- Water Injection
(7)	Cooling Status	Cooling Tower
(8)	Total Site Area [1]	63 acres
(9)	Construction Status	Planned
(10)	Certification Status	Application Filed
(11)	Status with Federal Agencies	N/A
(12)	Projected Unit Performance Data	
	Planned Outage Factor (POF)	
	Forced Outage Factor	5.0%
	Equivalent Availability Factor (EAF)	
	Resulting Capacity Factor (%)	
	Average Net Operating Heat Rate (ANOHR)	6,940 (7,040 was summer heat rate)
(13)	Projected Unit Financial Data	
	Book Life (Years)	30
	Total Installed Cost (In-Service Year $/kW)	$ 121,359,572
	Direct Construction Cost ($/kW) [2]	$434/kW
	AFUDC Amount ($/kW)	$45.91/kW
	Escalation ($/kW)	
	Fixed O & M ($/kW-Yr)	
	Variable O & M ($/MWH)	
	K Factor	

[1] The site will be shared with 3 existing units. (Includes developed and undeveloped land)
[2] $/kW is based on a rating of 251,054 kw at ISO conditions
[3] Includes capitalized interest and contingency funds

City Of Tallahassee

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

(1)	Point of Origin and Termination:	Upgrade Purdom Plant to Tallahassee Switching Station and Purdom Plant to Substation No. 5
(2)	Number of Lines:	2
(3)	Right-of -Way:	N/A
(4)	Line Length:	N/A
(5)	Voltage:	N/A
(6)	Anticipated Capital Timing:	After 3/31/98
(7)	Anticipated Capital Investment:	$1,300,000 (For transmission line upgrades only)
(8)	Substations:	Switching Station and Substation No. 5
(9)	Participation with Other Utilities:	N/A



Ten Year Site Plan
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4/1/98

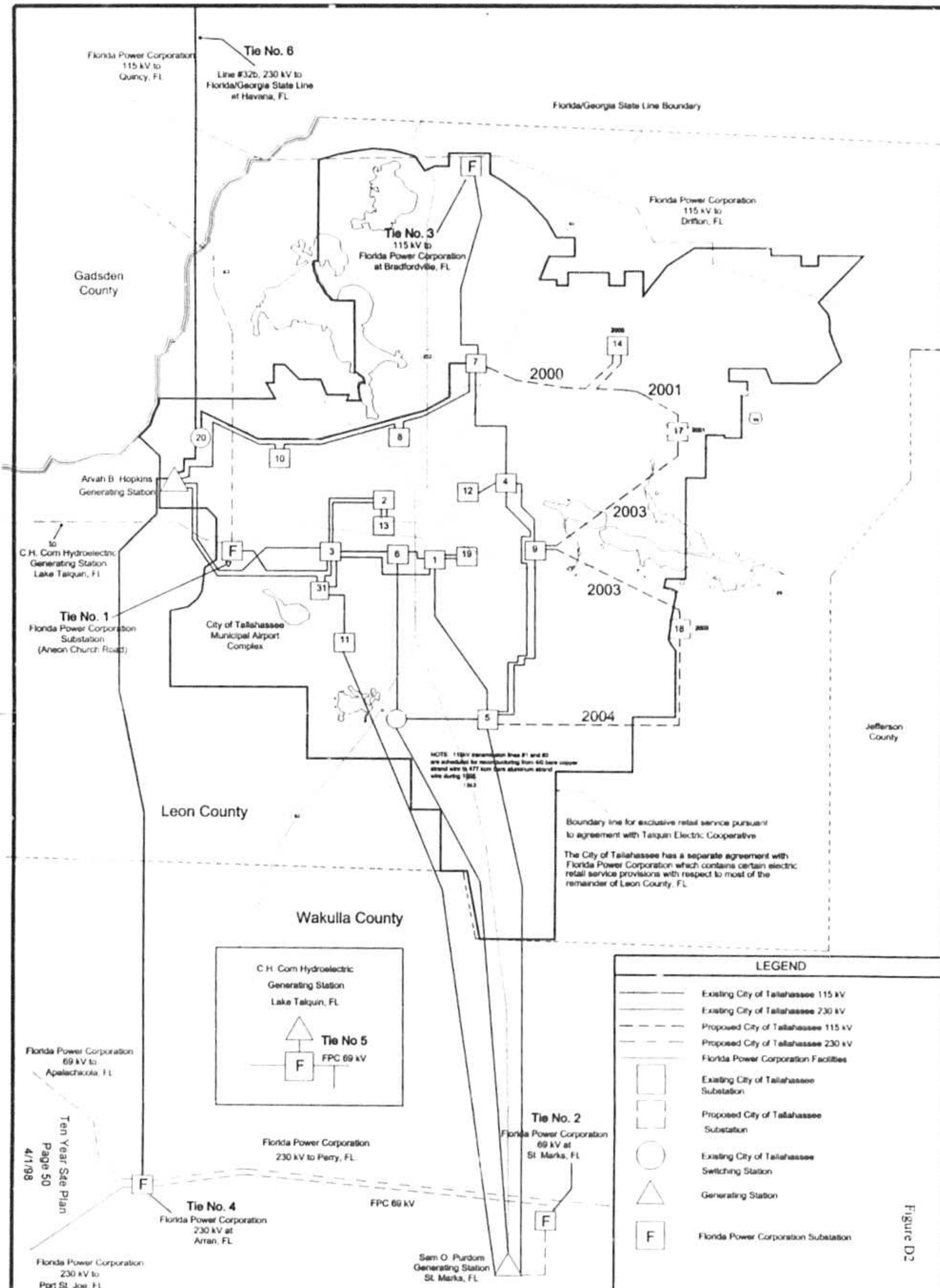

Plate II-1

Revised 1/1/98 rpc

City of Tallahassee

Electric Transmission System
January 1, 1998