BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for rate increase by
Progress Energy Florida, Inc.

Docket No. 050078-EI
Submitted for filing:
April 29, 2005

DIRECT TESTIMONY OF
JOHN B. CRISP

On behalf of PROGRESS ENERGY FLORIDA

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DIRECT TESTIMONY OF

JOHN B. CRISP

I. **Introduction and Purpose.**

Q. Please state your name and business address.

A. My name is John B. Crisp, and my business address is Progress Energy, Inc. ("Progress Energy"), P. O. Box 1551, Raleigh, North Carolina 27602.

Q. By whom are you employed and in what position?

A. I am employed by Progress Energy Carolinas as the Director of System Resource Planning.

Q. Please describe your duties and responsibilities as they relate to Florida.

A. My responsibilities include the development and implementation of energy system expansion plans and generation asset optimization plans for Progress Energy Carolinas and Progress Energy Florida ("PEF" or the "Company"). These expansion and optimization plans, otherwise known as integrated resource plans ("IRPs"), include detailed review and analysis of system load forecasts, and the corresponding determination of supply-side and demand-side resources available to meet the load requirements identified in the system load forecasts. The supply side and demand side resources include assets currently available on the existing system, and assets potentially available to the Company over its planning horizon.

These analyses result in recommended action to the Company's management for asset changes or additions that fulfill the Company's obligation to serve.

Q. Please summarize your educational background and employment experience.

A. I attended the Georgia Institute of Technology in Atlanta, Georgia, where I received a Bachelor of Science degree in Industrial and Systems Engineering in 1979. After working for a defense department contractor, my power industry employment began in 1988, when I joined Oglethorpe Power Corporation. Since 1988, I have worked for both regulated and non-regulated utilities in a variety of management positions. My responsibilities have included the management of power plant construction, generation plant operations, system dispatch, load and energy forecasting, integrated resource planning, and energy and fuels marketing. During my non-regulated utility tenure I implemented generation asset and portfolio optimization alliances through commercial marketing arrangements to sell excess generation capacity and energy.

In May 1999, I joined Florida Power Corporation as its Director of Integrated Resource Planning and Load Forecasting. Along with the supervision responsibility for demand side management programs and integrated resource planning, I directly supervised the group responsible for developing the Florida Power Corporation load and energy forecast. Following the creation of Progress Energy Corporation, which was a result of the merger of Florida Power Corporation and Carolina Power & Light, I assumed my current responsibilities as the Director of System Resource Planning for Progress Energy's regulated

utilities. In this role and in previous roles, I have provided testimony to several different state utility regulatory bodies, including the Florida Public Service Commission ("FPSC" or the "Commission"), on issues involving load forecasts and the most effective means for utilities to meet their obligation to serve the respective load forecast.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe the development and results of PEF's load forecast used in the preparation of this rate case. As I use the term "load forecast" in my testimony, I intend for it to include the Company's individual projections of customers, energy sales, and coincident peak demand.

Q. Have you prepared any exhibits to your testimony?

A. Yes, I have prepared or supervised the preparation of several exhibits, as follows:

- Exhibit No. ____ (JBC-1), a list of the Minimum Filing Requirements (MFRs) schedules I sponsor or co-sponsor.
- Exhibit No. ___ (JBC-2), Customer, Energy Sales & Seasonal Demand Forecast.
- Exhibit No. ____ (JBC-3), Forecast Process Flow Chart.
- Exhibit No. ____ (JBC-4), PEF Short Term Forecast Performance Review.
- Exhibit No. ____ (JBC-5), PEF Energy and Customer Forecasting Models.
- Exhibit No. ____ (JBC-6), PEF Historical Forecast Accuracy.

- Exhibit No. ___ (JBC-7), U.S. & Florida Economic Assumptions – 2002 – 2006.
- Exhibit No. ___ (JBC-8), PEF Historic & Projected Growth Rates.

These exhibits are true and accurate.

Q. What Minimum Filing Requirements ("MFRs") schedules do you sponsor?

A. I sponsor all or portions of the MFR schedules identified in Exhibit No. ____ (JBC-1). I have reviewed them and they are true and accurate, subject to being updated during the course of this proceeding.

II. Load Forecast.

Q. What is the purpose of a load forecast?

A. In order to serve its customers in a cost-effective and reliable manner, PEF must estimate or project how much energy its customers (old and new) will consume in the future and when that consumption is likely to take place. The load forecast enables the Company to do just that. Specifically, the load forecast allows the Company to estimate into the future the likely number of customers it will serve, the amount of electric energy it will sell to those customers, and the time(s) at which the customers demand for electric energy will be greatest. PEF then uses this forecast in both its planning and budgeting process.

Q. Does the Company prepare more than one type of load forecast.

A. The Company normally prepares two forecasts each year. One is a long-range, ten-year trend forecast that is used for resource planning studies and other similar purposes. The second forecast is a shorter (typically five-year) forecast that takes into account current business and economic conditions. This forecast is used for developing the revenue forecast and for short-term financial planning. In a rate case such as this, the Company's five-year forecast serves as the basis for the development of the MFRs.

Q. When was the forecast utilized in this case developed?

A. The forecast used for this filing and for the development of the 2005 and 2006 budget years was completed in July 2004 and is titled "July 2004 Short Term Forecast - Customers - Sales - Demand." It is a five year (2004-2008) projection that seeks to capture the short-term impacts of economic and demographic fluctuations in Florida and the nation upon customer, energy sales, and peak demand growth. The Company's forecast of customers, energy sales, and demand for the test year (2006) is reflected in Exhibit No. ____ (JBC-2).

III. <u>Forecast Methodology</u>.

Q. Would you please give us an overview of the methodology used to develop the load forecast?

A. Yes. As reflected in Exhibit No. ___ (JBC-3), there are four main steps in the development of a load forecast: the assembly of the forecast assumptions, the

derivation of forecast model parameters, the calculation of the forecast, and adjustments to the forecast based upon the educated judgment of the forecaster.

• **Assembly of the Forecast Assumptions.** The first step in any forecasting procedure is to assemble a set of assumptions upon which the forecast is based. The assumptions describe the forecaster's educated prediction about how the future will unfold with respect to influences upon company energy sales, customer growth, and system peak. In developing these assumptions, the forecaster relies in part on the opinions of professional economists at Economy.Com, the University of Florida's Bureau of Economic and Business Research ("BEBR"), as well as other sources. Each of these groups develops forecasts of national and regional economic and demographic data. These forecasts are purchased by the Company. Some of the assumptions are derived from historical data like normal weather conditions. The assumptions utilized in the July 2004 forecast are set forth in Schedule F-8 of the MFRs. It is important to note that in all cases the assumptions made are based upon a "most-likely" forecast. Forecasted values of these forecast assumptions become inputs to the forecast models that lead to customer, energy and peak demand projections.

• **Derivation of Forecast Parameters.** Next, based on the assumptions, the forecaster derives the parameters for the forecast model. The parameters of a forecast model quantify the statistical relationship between the economic and demographic environment impacting a utility service area and the latest energy usage (and customer growth) patterns of its customers. These parameters are

updated each time a forecast is produced to ensure that the resulting forecasts reflect current energy consumption patterns in the Company's service territory.

For example, there are typically twelve months of additional "actual" data between each short-term forecast. Thus, each short-term forecasting model will incorporate this additional information along with any additional economic data reported since the previous short-term forecast was produced. In addition, when deriving model parameters the forecaster incorporates (to the extent possible) historical data from the ten most recent years into the model sample

• **Development of the Forecast.** The forecaster then proceeds to develop the new forecast. The Company's load forecast actually consists of three separate forecasts as follows:

- a customer forecast
- an energy sales forecast
- a coincident-peak demand forecast (primarily used for resource planning purposes)

Customer forecast – The Company's customer forecast (i.e., the number of customers it expects to serve during the forecast period) is developed primarily from county population projections produced by the University of Florida's Bureau of Economic and Business Research. In a service area like PEF's, where nearly 98.4 percent of the Company's customers are residential and commercial customers, these population projections serve as the best predictor of the Company's total customers. This is because an increasing service area population translates directly into a greater number of homes and commercial establishments to service these

homes. An annual econometric model is used to measure the historical relationship between service area population and residential customer growth. The resulting parameter becomes a "multiplier" that, when applied to the population growth forecast, results in a projection of new residential customers. Once the residential customer forecast is finalized, it is used as the "driving" variable in the commercial customer regression model. The customer forecasts for the remaining retail sectors are forecast using trend analysis because of their relatively stable historical patterns.

In producing the customer forecast, the Company also reviews the performance of the current forecast in light of the latest actual data available. This permits us to evaluate the performance of the Company's most recent forecast to aid in the development of its new forecast. For the November 2003 forecast, a comparative analysis was performed in January 2005. As shown in Exhibit No. ___ (JBC-4), the November 2003 Short-Term Forecast of customers is compared to actual year-to-date results through December 2004. In this case, the system customer count was 0.54% percent higher than forecast for the year. This variance may be explained in part by historically low mortgage rates that have remained lower than expected. Nonetheless, based on this variance, the Company adjusted its customer growth rate upward in preparing the July 2004 forecast used in this proceeding.

Energy Sales Forecast – The Company's energy sales forecast is developed using monthly econometric models. These short-term models project monthly energy sales by revenue class (residential, commercial, industrial, street lighting and public authority) and require the forecaster to have a thorough understanding of each

variable to be projected (i.e., residential customer growth or average residential use per customer) and the influences or events that create monthly variation or movement in those variables. Sales are regressed using "driver" variables that best explain monthly fluctuations over a sample period. For example, in order to project average KWh energy usage per customer, driver variables such as weather and economic conditions are utilized to capture the statistical relationship to changes in kWh consumption per customer. This approach enables the forecaster to incorporate the most recent historical data as well as the most current outlook on the economy. The modeling specifications for each retail class energy model (and residential and commercial customer models) are set forth in Exhibit No. ___ (JBC-5).

The result of this customer and energy sales forecast is shown in Exhibit No. ____ (JBC-2). This forecast is the basis for the development of the revenue forecast that is incorporated into the Company's budgeting process and serves as the basis for the 2006 revenue forecast in this rate proceeding. Two additional procedures are required before the final billing determinants are created for input into the Company's financial model. The first procedure transforms the monthly energy forecast from a "billing month" basis to a "calendar month" basis. This involves forecasting the amount of "unbilled retail energy" in a calendar month and allocating it down to each retail revenue class. The forecast of monthly retail unbilled energy is derived using ten years of historical monthly averages of "billed energy generated in prior month" divided by "total billed in current month". Each retail class receives its respective share of total retail unbilled energy sales according to the percentage share it makes up of total retail billed month energy sales.

The second procedure required to finalize the billing determinants takes the calendar month revenue class energy and customer projections and disaggregates them to the major rate class level. This is made possible by determining the revenue class to rate class proportions for the most recent calendar year available (2003). Allocating the forecast to this more detailed level allows monthly revenues to be generated in the PEF revenue model. For rate classes that have a "billing KW" charge as part of its billing determinant, a historic load factor is also developed at this time which, when applied to the rate class projection of energy, derives the class projection of billing KW. Customer, energy and billing KW projections are shown in MFR E-15.

Coincident Peak Demand Forecast – The coincident peak demand forecast (used for resource planning as opposed to revenue forecasts) is developed using a disaggregation technique followed by econometrically modeling several of the disaggregated components. The disaggregation technique separates monthly system demand into four major components: potential firm retail demand, nondispatchable and dispatchable direct load control (MW) capability, sales for resale demand, and Company use. Each of the peak demand components is then separately forecast and added arithmetically to the next or, in the case of demand side management ("DSM"), subtracted, to arrive at total system firm peak demand.

• **Forecaster's Judgment.** Finally, after all of the parts of the load forecast are complete, the forecaster evaluates the cumulative modeling results and makes adjustments as appropriate based on his or her professional judgment as well as such

adjustments as may be reasonably necessary to capture the impact of events that the model is unable to capture.

For example, econometric models develop parameters ("beta coefficients") that are applied to projections of "driver" variables that are purchased from an economic forecasting firm and may be three or more months old. Occasionally, economic events unfold very rapidly and sometimes out-of-date projections are used in the models. Even historical economic data get revised by government agencies and can paint a picture that differs subtly from what is reflected in the original economic data. When this occurs, the forecaster will incorporate the latest information he or she understands is influencing company sales or customer growth levels. Other times, events such as rate migrations may require special adjustments to the rate schedule level forecast that cannot possibly be captured by an econometric model.

IV. Forecast Performance.

Q. Historically, how accurate has the Company's forecast been of customers and energy sales when compared to actual data?

A. In order to respond to this question, I conducted a study of the Company's accuracy in forecasting customers and energy sales, which is presented in Exhibit No. ____ (JBC-6). In this study, I included every forecast used in PEF's corporate budget since 1990. As shown on Exhibit No. ___ (JBC-6), I compared each year's actual retail energy sales and customer data to the budget projection made during the prior year. For example, actual 1990 retail sales of 24,878 GWh are

compared to the forecast completed in 1989 which projected 25,087 GWh for 1990. The percent forecast variance is shown for each year. A review of the 15-year period 1990-2004, shows that the average forecast error was a respectable -0.39 percent with the year 2004 variance at -2.2 percent (-1.3 percent adjusting for Hurricane impacted lost sales). The magnitude of the energy sales variances as measured by the mean absolute percent error ("MAPE") for the 15-year period is 1.87 percent. A similar review of the retail customer forecast at Sheet 2 of Exhibit No. ___ (JBC-6) reveals an average forecast variance over the past 15 years (1990-2004) of +0.08 percent. The MAPE of these customer forecasts is an exceptional 0.53 percent.

At bottom, this study shows that the Company is forecasting customers and energy sales very accurately. Notably, as reflected in the Commission's Staff Review of Florida Utilities 2004 ten-year site plans, the Company's energy sales forecast accuracy for the period considered in Staff's study out-performed all but one Florida utility on an average absolute forecast error basis with a score of 0.62 percent versus the nine utility average of 1.40 percent. (See "A Review of Florida Electric Utility 2004 Ten Year Site Plans - Table 3.)

V. <u>July 2004 Forecast Summary</u>.

Q. Can you briefly summarize the conclusions to be drawn from PEF's July 2004 load forecast?

A. Yes. Based on the July 2004 forecast, PEF expects that its customer base, energy sales, and peak demand will grow at similar growth rates as the Company has

experienced in the recent past. While the Company has experienced an abnormally high rate of customer growth in 2003-2004 – driven in part by 46-year lows in mortgage interest rates – the forecast calls for a more normal level of net new customer growth in 2005 and 2006 as interest rates rise and demand for housing subsides. The Federal Reserve Board had increased interest rates five times in 2004 with the goal of stabilizing rates at higher levels typical of periods with normal economic expansion. This is expected to keep the economy from overheating and igniting inflationary pressures. It has been stated that this policy will continue through 2005.

This slowdown is not reflected in the projected energy sales growth rate, however. As just previously mentioned, the U.S. economy is returning to a more normal rate of expansion and this is expected to drive energy sales accordingly. A list of U.S. and Florida economic variables with historic and projected growth rates is shown in Exhibit No. ___ (JBC-7). Several of these economic series call for higher average rates of change over the 2005 to 2006 period than experienced over 2002 and 2003. PEF weather normalized retail energy sales reflect this same pattern. The two-year growth rate (2002-2003) of retail energy sales was 5.6 percent while the expected increase in energy sales for 2005-2006 is 6.7 percent. The main assumption underlying this optimism is a return to higher job growth. Coincidentally, forecasted rates of change for both U.S. and Florida residential building permits were expected to fall drastically in 2004 and again in 2005 reinforcing my pessimism for the Florida housing market. PEF historic and

projected growth rates for weather normalized billed sales and customers are shown in Exhibit No. ___ (JBC-8).

Q. Does this conclude your testimony?

A. Yes.

MINIMUM FILING REQUIREMENT SCHEDULES

Sponsored, All or in Part, by J. Ben Crisp

Schedule #	Schedule Title
C-33	Performance Indices
C-34	Statistical Information
E-17	Load Research Data
E-18	Monthly Peaks
F-5	Forecasting Models
F-6	Forecasting Models – Sensitivity of Output to Changes in Input Data
F-7	Forecasting Models – Historical Data
F-8	Assumptions

PROGRESS ENERGY FLORIDA CORPORATION
JULY 2004 FORECAST SALES - CUSTOMERS - COINCIDENT DEMAND

PROJECTED MONTHLY MWH ENERGY SALES - CALENDAR MONTH

YEAR	M	RESID	COML	INDUST	SHL	SPA	TOTAL RETAIL	TOTAL WHOLESALE	TOTAL SYSTEM
2005	1	1,689,253	884,627	339,149	2,252	217,929	3,133,210	376,946	3,510,156
2005	2	1,427,348	806,016	317,042	2,008	229,857	2,782,271	376,481	3,158,752
2005	3	1,367,464	946,713	394,772	2,501	254,909	2,966,359	420,102	3,386,461
2005	4	1,269,526	976,359	360,136	2,306	253,992	2,862,319	410,602	3,272,921
2005	5	1,634,721	1,158,358	416,920	2,676	303,911	3,516,586	434,253	3,950,839
2005	6	1,969,699	1,140,364	352,859	2,221	297,002	3,762,145	358,674	4,120,819
2005	7	2,197,829	1,219,455	371,026	2,292	292,790	4,083,392	375,287	4,458,679
2005	8	2,192,267	1,234,050	381,554	2,463	306,168	4,116,502	378,176	4,494,678
2005	9	1,962,544	1,137,760	355,331	2,212	306,211	3,764,058	335,673	4,099,731
2005	10	1,641,952	1,067,757	366,396	2,213	279,530	3,357,848	314,714	3,672,562
2005	11	1,250,179	991,462	375,723	2,268	262,087	2,881,719	291,007	3,172,726
2005	12	1,488,432	981,358	377,669	2,648	264,797	3,114,904	316,276	3,431,180
2005 Budget=		20,091,214	12,544,279	4,408,577	28,060	3,269,183	40,341,313	4,388,191	44,729,504
2006	1	1,729,795	930,471	342,754	2,273	229,341	3,234,634	226,967	3,461,601
2006	2	1,481,490	836,287	324,185	1,995	237,846	2,881,803	213,886	3,095,689
2006	3	1,423,759	988,930	400,160	2,507	264,338	3,079,694	255,634	3,335,328
2006	4	1,310,808	1,004,825	375,732	2,283	260,553	2,954,201	242,934	3,197,135
2006	5	1,658,723	1,210,440	421,122	2,693	316,777	3,609,755	283,109	3,892,864
2006	6	2,014,680	1,181,392	356,725	2,223	307,571	3,862,591	348,917	4,211,508
2006	7	2,256,421	1,262,429	371,074	2,293	303,306	4,195,523	374,629	4,570,152
2006	8	2,244,541	1,277,837	392,595	2,463	317,221	4,234,657	362,490	4,597,147
2006	9	2,013,440	1,176,359	364,841	2,210	316,695	3,873,545	292,340	4,165,885
2006	10	1,687,769	1,106,313	367,350	2,213	289,631	3,453,276	254,892	3,708,168
2006	11	1,266,246	1,030,672	393,939	2,271	272,340	2,965,468	245,602	3,211,070
2006	12	1,534,654	1,017,053	376,154	2,644	274,321	3,204,826	265,335	3,470,161
2006 Budget=		20,622,326	13,023,008	4,486,631	28,068	3,389,940	41,549,973	3,366,735	44,916,708

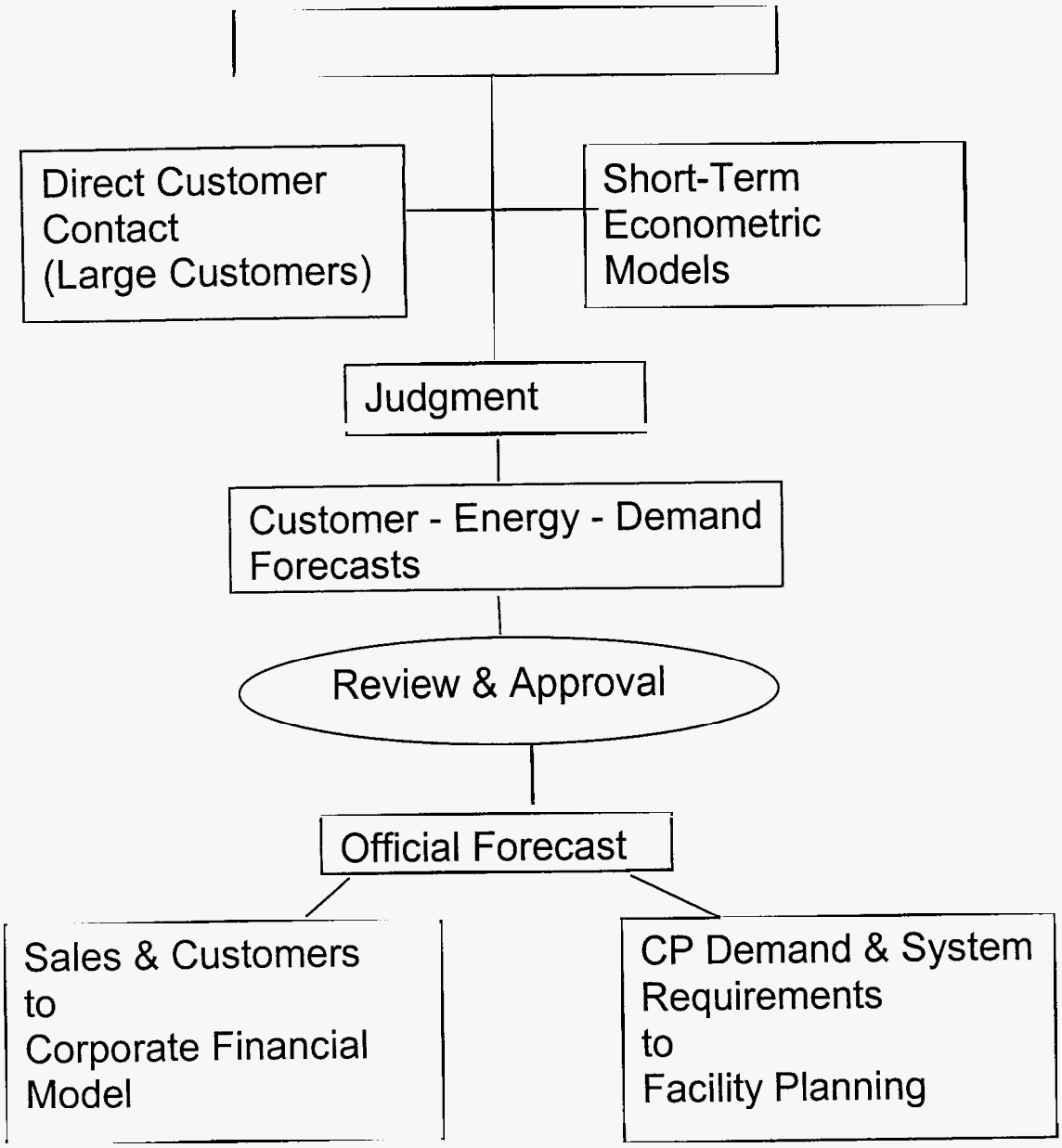
PROJECTED MONTHLY BILLED ACCOUNTS

YEAR	M	RESID	COML	INDUST	SHL	SPA	TOTAL RETAIL	TOTAL WHOLESALE	TOTAL SYSTEM
2005	1	1,379,271	159,281	2,813	1,850	20,784	1,563,999	24	1,564,023
2005	2	1,384,067	159,680	2,813	1,850	20,833	1,569,243	24	1,569,267
2005	3	1,386,726	159,875	2,813	1,850	20,877	1,572,141	24	1,572,165
2005	4	1,384,999	160,991	2,813	1,850	20,927	1,571,580	24	1,571,604
2005	5	1,382,717	161,070	2,813	1,850	20,974	1,569,424	24	1,569,448
2005	6	1,383,186	160,978	2,813	1,850	21,024	1,569,851	23	1,569,874
2005	7	1,385,134	161,366	2,813	1,850	21,071	1,572,234	23	1,572,257
2005	8	1,387,329	161,524	2,813	1,850	21,121	1,574,637	23	1,574,660
2005	9	1,388,688	161,810	2,813	1,850	21,170	1,576,331	23	1,576,354
2005	10	1,391,354	162,224	2,813	1,850	21,218	1,579,459	23	1,579,482
2005	11	1,396,841	162,604	2,813	1,850	21,267	1,585,375	23	1,585,398
2005	12	1,400,451	162,371	2,813	1,850	21,315	1,588,800	23	1,588,823
2005 Budget=		1,387,564	161,148	2,813	1,850	21,048	1,574,423	23	1,574,446
2006	1	1,404,625	162,429	2,813	1,850	21,364	1,593,081	20	1,593,101
2006	2	1,409,421	162,833	2,813	1,850	21,413	1,598,330	20	1,598,350
2006	3	1,412,086	163,033	2,813	1,850	21,458	1,601,240	20	1,601,260
2006	4	1,410,364	164,154	2,813	1,850	21,507	1,600,688	20	1,600,708
2006	5	1,408,089	164,237	2,813	1,850	21,555	1,598,544	20	1,598,564
2006	6	1,408,572	164,149	2,813	1,850	21,604	1,598,988	20	1,599,008
2006	7	1,410,532	164,540	2,813	1,850	21,652	1,601,387	20	1,601,407
2006	8	1,412,743	164,702	2,813	1,850	21,701	1,603,809	20	1,603,829
2006	9	1,414,119	164,992	2,813	1,850	21,750	1,605,524	20	1,605,544
2006	10	1,416,806	165,409	2,813	1,850	21,798	1,608,676	20	1,608,696
2006	11	1,422,316	165,790	2,813	1,850	21,847	1,614,616	20	1,614,636
2006	12	1,425,951	165,560	2,813	1,850	21,895	1,618,069	21	1,618,090
2006 Budget=		1,412,969	164,319	2,813	1,850	21,629	1,603,579	20	1,603,599

PROJECTED MONTHLY MW COINCIDENT DEMANDS

		RETAIL			COMPANY	WHOLESALE			TOTAL SYSTEM	
YEAR	M	PRE DLC	ALL DLC	FIRM	USE	PRE DLC	IS	FIRM*	PRE DLC	FIRM
2005	1	8,822	1,271	7,551	24	1,656	415	1,236	**10,502**	**8,812**
2005	2	7,317	1,101	6,216	24	1,131	415	711	8,472	6,952
2005	3	6,493	966	5,527	24	785	400	380	7,302	5,932
2005	4	6,885	535	6,350	24	793	405	383	7,702	6,757
2005	5	7,809	577	7,232	24	994	420	569	8,827	7,825
2005	6	8,277	636	7,641	24	888	270	613	9,189	8,278
2005	7	8,114	632	7,482	24	988	270	713	9,126	8,219
2005	8	8,158	652	7,506	24	968	270	693	9,150	8,223
2005	9	7,942	630	7,312	24	845	265	575	8,811	7,911
2005	10	7,385	514	6,871	24	643	250	388	8,052	7,283
2005	11	6,372	818	5,554	24	624	250	369	7,020	5,948
2005	12	7,399	889	6,510	24	1,090	265	820	8,513	7,355
2006	1	8,998	1,271	7,727	24	1,363	45	1,313	10,385	9,064
2006	2	7,420	1,076	6,344	24	798	45	748	8,242	7,116
2006	3	6,614	971	5,643	24	490	45	440	7,128	6,107
2006	4	7,070	524	6,546	24	500	45	450	7,594	7,020
2006	5	8,010	572	7,438	24	632	45	582	8,666	8,044
2006	6	8,473	617	7,856	24	847	45	797	9,344	8,677
2006	7	8,316	623	7,693	24	1,009	45	959	9,349	8,676
2006	8	8,359	642	7,717	24	986	45	936	9,369	8,677
2006	9	8,124	613	7,511	24	799	45	749	8,947	8,284
2006	10	7,569	518	7,051	24	658	45	608	8,251	7,683
2006	11	6,516	822	5,694	24	630	45	580	7,170	6,298
2006	12	7,549	902	6,647	24	1,178	45	1,128	8,751	7,799

FORECAST PROCESS FLOW CHART



PEF SHORT TERM FORECAST PERFORMANCE REVIEW

ACTUAL BILLED ACCOUNTS VS NOVEMBER 2003 FORECAST
YEAR-TO-DATE DECEMBER 2004

CLASS OF BUSINESS	ACTUAL	FORECAST	DIFF	% DIFF
RESIDENTIAL	1,364,677	1,358,414	6,263	0.5%
COMMERCIAL	158,780	156,903	1,878	1.2%
INDUSTRIAL	2,733	2,625	108	4.1%
ST & HIGHWAY	1,856	1,900	-44	-2.3%
PUBLIC AUTHORITY	20,557	20,238	319	1.6%
TOTAL RETAIL	1,548,603	1,540,079	8,523	0.6%
REA	6	5	1	20.0%
MUNICIPAL	19	15	4	26.7%
TOTAL WHOLESALE	25	20	5	25.0%
TOTAL SYSTEM	1,548,628	1,540,099	8,528	0.6%

PEF SHORT TERM FORECAST PERFORMANCE REVIEW

ACTUAL BILLED MWH VS NOVEMBER 2003 FORECAST
YEAR-TO-DATE DECEMBER 2004

CLASS OF BUSINESS	ACTUAL	WEATHER ADJUSTED	FORECAST	ACTUAL % DIFF	ADJUSTED % DIFF
RESIDENTIAL	19,347,267	19,560,961	19,706,693	-1.8%	-0.7%
COMMERCIAL	11,733,537	11,834,324	12,108,256	-3.1%	-2.3%
INDUSTRIAL	4,068,627	4,068,627	4,144,312	-1.8%	-1.8%
ST & HIGHWAY	27,927	27,927	28,794	-3.0%	-3.0%
PUBLIC AUTHORITY	3,015,746	3,041,724	3,066,445	-1.7%	-0.8%
TOTAL RETAIL	38,193,103	38,533,563	39,054,500	-2.2%	-1.3%
REA	1,090,770	1,090,770	925,901	17.8%	17.8%
MUNICIPAL	4,010,077	4,010,077	3,280,112	22.3%	22.3%
TOTAL WHOLESALE	5,100,847	5,100,847	4,206,013	21.3%	21.3%
TOTAL SYSTEM	43,293,950	43,634,410	43,260,513	0.1%	0.9%

Note: Wholesale forecast has energy for newly signed contracts added to original forecast.

PEF ENERGY AND CUSTOMER FORECASTING MODELS

RESIDENTIAL CLASS SALES

RUPC = F (CON, ABDAYS, LRP2, RHDD, CDD, LnRFLPY2, DSSR, A02)

where:

RUPC	=	Residential KWh use per customer adjusted for historical DSM program impacts
CON	=	Intercept term
ABDAYS	=	Average number of billing days in sales month
HDD	=	Heating degree days - system-weighted using St. Pete, Orlando, and Tallahassee weather stations
CDD	=	Residential cooling degree days - system-weighted using St. Pete, Orlando, and Tallahassee weather stations
LnRFLPY2	=	Log of Florida Total Personal Income - deflated by the PCE Implicit Price Deflator - 2 month average in millions of 1996 dollars
DSSR	=	Intercept shift variable to account for UPC impact due to Seasonal Service Rate
A02	=	Intercept shift variable to account for unknown influence on usage in April 2002
AR(1)	=	1st order autoregressive error term
SAR(1)	=	1st order seasonal autoregressive error term

RESIDENTIAL CLASS CUSTOMERS

RCUSTG = F (CON, POPG, MortRate)

where:

RCUSTG	=	Average annual change in residential billed customers
CON	=	Intercept term
POPG	=	Service territory population growth (Univ. of Florida Forecast)
MortRate	=	Average Annual Conventional Mortgage Rate

COMMERCIAL CLASS SALES

CUPC = F (CON, ABDAYS, HDD, CCDD, LnECOM2, RCP, O03)

where:

CUPC	=	Commercial kWh use per customer adjusted for historical DSM program impacts
CON	=	Intercept term
ABDAYS	=	Average number of billing days in sales month
HDD	=	Heating degree days - system-weighted using St. Pete, Orlando, and Tallahassee weather stations
CCDD	=	Commercial cooling degree days - system-weighted using St. Pete, Orlando, and Tallahassee weather stations
LnECOM2	=	Log of Florida commercial sector employment - 2 month average in thousands
RCP	=	Real price of electricity to commercial sector
O02	=	Intercept shift variable to account for unknown influence on usage in October 2003
AR(1)	=	1st order autoregressive error term

COMMERCIAL CLASS CUSTOMERS

CCUST = F (CON, ResCUST)

where:

CCUST	=	Average annual commercial billed customers
CON	=	Intercept term
ResCUST	=	Average annual residential billed customers

INDUSTRIAL CLASS SALES
NONPHOSPHATE SUBSECTOR

IWO = F(CON, ABDAYS, HDDS, CCDDS, RIP, LnFLIP2)

where:

IWO	=	Industrial MWh sales (excluding industrial phosphate sector energy sales) adjusted for historical DSM program impacts
CON	=	Intercept term
ABDAYS	=	**Average number of billing** days in sales month
HDD	=	**Heating degree days - syste**m-weighted using St. Pete, Orlando, and Tallahassee weather stations
CDD	=	**Commercial cooling degree** days - system-weighted using St. Pete, Orlando, and Tallahassee weather stations
RIP	=	Real industrial electric price
LnFLIP2	=	**Log of Florida Industrial Pro**duction Index - 2 month moving average
O02	=	**Intercept shift variable to ac**count for unknown influence on sales in October 2003

INDUSTRIAL CLASS SALES
PHOSPHATE SUBSECTOR

FPC Industrial representatives survey several large energy users to determine their planned operating schedules as well as their expected power consumption. All Phosphate mining customers electric consumption are projected individually. They are:

* White Springs AGR Chem Inc.
* IMC Agrico Company
* Cargill Fertilizer Inc.
* C.F. Industries Inc.
* U.S. Agri Chemicals

STREET & HIGHWAY LIGHTING CLASS SALES

SHL = F(CON, ResCust, BMLHrs)

where:

SHL	=	Street Lighting MWh energy sales
CON	=	Intercept term
ResCUST	=	Average annual residential billed customers
BMLHrs		Billing Month Lighting Hours
SAR(1)	=	1st order seasonal autoregressive error term

PUBLIC AUTHORITY CLASS SALES

SUPC = F(CON, ABDAYS, LnEGOV2, RSPL2, HDD, CCDD, SCH_VAC)

where:

SUPC	=	Public Authority average KWh use per customer
CON	=	Intercept term
ABDAYS	=	Average number of billing days in sales month
LnEGOV2	=	**Log of Florida governmental employment in thou**sands - 2 month moving average
RSPL2	=	**Real price of electricity to Public Authority class** in cents per KWh - 2 month lag
HDD	=	**Heating degree days - system-weighted using** St. Pete, Orlando, and Tallahassee weather stations
CCDD	=	**Commercial cooling degree days - system-weigh**ted using St. Pete, Orlando, and Tallahassee weather stations
SCH_VAC	=	**Intercept shift variable to account for seasonal s**hutdown of school facilities
AR(1)	=	1st order autoregressive error term
AR(2)	=	2nd order autoregressive error term

PEF HISTORICAL FORECAST ACCURACY

TOTAL RETAIL GWH

VARIANCE FROM FORECAST PERFORMED IN PRIOR YEAR

Year	Actual	Prior Yr. Forecast	Actual % Variance	Absolute Variance
1990	24,878	25,087	-0.83%	0.83%
1991	25,179	25,893	-2.76%	2.76%
1992	25,414	26,230	-3.11%	3.11%
1993	26,528	26,606	-0.29%	0.29%
1994	27,675	27,861	-0.67%	0.67%
1995	29,499	28,802	2.42%	2.42%
1996	30,785	30,056	2.42%	2.42%
1997	30,850	31,462	-1.94%	1.94%
1998	33,387	32,088	4.05%	4.05%
1999	33,441	33,018	1.28%	1.28%
2000	34,832	35,465	-1.78%	1.78%
2001[1]	35,263	36,502	-3.39%	3.39%
2002	36,859	36,617	0.66%	0.66%
2003	37,957	37,863	0.25%	0.25%
2004[2]	38,193	39,054	-2.20%	2.20%
1990-2004	3.11%	3.21%	-0.39%	1.87%

[1] Large variance driven by Sept 11th-driven recession.

[2] Adjustment for lost energy sales due to hurricanes (358 GWh) reduces % variance to -1.3%.

PEF HISTORICAL FORECAST ACCURACY

TOTAL RETAIL CUSTOMERS

VARIANCE FROM FORECAST PERFORMED IN PRIOR YEAR

Year	Actual Customers	Prior Yr. Forecast	% Variance	Absolute % Chg.
1990	1,135,481	1,137,162	-0.15%	0.15%
1991	1,159,221	1,171,531	-1.05%	1.05%
1992	1,182,154	1,184,898	-0.23%	0.23%
1993	1,214,637	1,209,638	0.41%	0.41%
1994	1,243,876	1,256,976	-1.04%	1.04%
1995	1,271,768	1,276,187	-0.35%	0.35%
1996	1,292,057	1,295,339	-0.25%	0.25%
1997	1,314,492	1,318,550	-0.31%	0.31%
1998	1,340,835	1,335,837	0.37%	0.37%
1999	1,376,579	1,369,519	0.52%	0.52%
2000	1,400,281	1,396,312	0.28%	0.28%
2001	1,444,938	1,427,074	1.25%	1.25%
2002	1,475,760	1,467,982	0.53%	0.53%
2003	1,510,494	1,500,458	0.67%	0.67%
2004	1,548,603	1,540,079	0.55%	0.55%
1990-2004	2.24%	2.19%	0.08%	0.53%

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U.S & Florida Economic Assumptions - 2002 - 2006
(Source - Economy.Com)

Variable	2002	2003	2004	2005	2006
U.S. Economy:					
U.S. Real GDP (Bill $)	10,083	10,397	10,867	11,219	11,624
Annual % Change	2.2%	3.1%	4.5%	3.2%	3.6%
U.S Nonagricultural Employment (000)	130,343	129,937	130,927	133,113	135,402
Annual % Change	-1.1%	-0.3%	0.8%	1.7%	1.7%
U.S. Industrial Production - Manufacturing	111.9	112.3	117.3	121.2	125.1
Annual % Change	-0.7%	0.4%	4.4%	3.4%	3.2%
U.S. Residential Building Permits (000)	1,747.7	1,929.3	1,848.6	1,639.3	1,652.8
Annual % Change	6.8%	10.4%	-4.2%	-11.3%	0.8%
Florida Economy:	2002	2003	2004	2005	2006
FL Nonagricultural Employment (000)	7,179.7	7,285.5	7,444.0	7,642.5	7,853.0
Annual % Change	0.1%	1.5%	2.2%	2.7%	2.8%
FL Commercial Employment (000)	5,300.0	5,388.0	5,515.9	5,713.1	5,913.4
Annual % Change	0.3%	1.7%	2.4%	3.6%	3.5%
FL Governmental Employment (000)	1,039.2	1,055.5	1,079.5	1,087.2	1,097.7
Annual % Change	1.5%	1.6%	2.3%	0.7%	1.0%
FL Manufacturing Employment (000)	405.6	388.8	384.9	385.8	385.4
Annual % Change	-6.2%	-4.1%	-1.0%	0.2%	-0.1%
FL Personal Income (2000$ in Mill.)	477,503	488,706	505,941	520,941	537,669
Annual % Change	2.4%	2.3%	3.5%	3.0%	3.2%
FL Industrial Production Index (1997=100)	115.9	117.0	123.4	128.3	132.0
Annual % Change	-0.4%	0.9%	5.4%	4.0%	2.9%
FL Residential Building Permits (000)	185,431	215,781	186,322	166,147	168,392
Annual % Change	11.0%	16.4%	-13.7%	-10.8%	1.4%

PEF HISTORIC & PROJECTED GROWTH RATES

Percent Change from Prior Year

Weather Normalized Billed Sales Growth

YEAR	RESID	COML	IND	STREET & HWAY	PUBLIC AUTH'Y	TOTAL RETAIL	TOTAL WHOLESALE	TOTAL SYSTEM
History:								
1996	1.8%	3.6%	9.3%	-3.4%	7.8%	3.7%	13.1%	4.3%
1997	4.2%	4.2%	-0.9%	2.3%	4.1%	3.5%	-15.8%	2.2%
1998	3.5%	6.2%	4.5%	0.0%	5.2%	4.5%	33.1%	6.0%
1999	3.9%	5.6%	-1.0%	-0.8%	4.3%	3.8%	39.6%	6.2%
2000	3.5%	5.0%	-2.0%	4.7%	4.9%	3.4%	14.2%	4.3%
2001	2.7%	2.8%	-8.9%	0.8%	3.3%	1.4%	2.9%	1.5%
2002	3.2%	1.3%	-1.0%	0.6%	2.6%	2.1%	-17.4%	0.2%
2003	3.9%	1.9%	4.3%	1.2%	4.9%	3.4%	5.9%	3.6%
2004	2.6%	2.6%	2.5%	-1.7%	3.7%	2.7%	28.0%	4.7%
Forecast:								
2005	1.6%	4.9%	7.4%	-0.3%	6.3%	3.6%	-1.2%	3.1%
2006	2.6%	3.8%	1.9%	0.0%	3.7%	3.0%	-12.3%	1.5%
2002-2003	7.3%	3.3%	3.3%	1.7%	7.7%	5.6%	-12.5%	3.9%
2005-2006	4.3%	8.9%	9.3%	-0.3%	10.2%	6.7%	-13.4%	4.7%

Customer Bills Growth

YEAR	RESID	COML	IND	STREET & HWAY	PUBLIC AUTH'Y	TOTAL RETAIL	TOTAL WHOLESALE	TOTAL SYSTEM
History:								
1996	1.5%	2.5%	-6.9%	-4.6%	2.4%	1.6%	0.0%	1.6%
1997	1.7%	2.4%	-3.3%	-4.5%	4.1%	1.8%	0.0%	1.8%
1998	1.8%	2.8%	-4.5%	-4.1%	3.3%	1.9%	6.3%	1.9%
1999	2.2%	3.0%	-3.0%	-2.2%	3.5%	2.3%	0.0%	2.3%
2000	2.6%	2.7%	-2.9%	-0.4%	3.1%	2.6%	7.4%	2.6%
2001	2.6%	1.8%	0.2%	-2.7%	3.9%	2.6%	8.2%	2.6%
2002	2.2%	2.5%	-0.7%	-2.5%	2.5%	2.2%	11.8%	2.2%
2003	2.4%	2.6%	4.5%	-2.4%	3.0%	2.4%	-1.1%	2.4%
2004	2.4%	2.8%	3.3%	-3.2%	4.1%	2.5%	13.4%	2.5%
Forecast:								
2005	1.7%	1.5%	3.0%	-0.3%	2.4%	1.7%	-32.4%	-20.4%
2006	1.8%	2.0%	0.0%	0.0%	2.8%	1.9%	0.0%	6.7%
2002-2003	4.7%	5.2%	3.7%	-4.9%	5.5%	4.7%	10.5%	4.7%
2005-2006	3.6%	3.5%	3.0%	-0.3%	5.3%	3.6%	-19.2%	3.6%