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**Florida Power**  
CORPORATION

**JAMES A. MCGEE**  
SENIOR COUNSEL

January 29, 1999

Ms. Blanca S. Bayó, Director  
Division of Records and Reporting  
Florida Public Service Commission  
2540 Shumard Oak Blvd.  
Tallahassee, Florida 32399-0850

RE: Docket No. 971005-EG  
Conservation Goals

Dear Ms. Bayó:

Enclosed for filing in the subject docket are an original and fifteen copies of the Direct Testimony and Exhibits of Michael F. Jacob on behalf of Florida Power Corporation.

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

Very truly yours,

James A. McGee

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Enclosure

cc: Parties of Record

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CERTIFICATE OF SERVICE  
Docket No. 971005-EG Conservation Goals

I HEREBY CERTIFY that a true and correct copy of Florida Power Corporation's Direct Testimony and Exhibits of Michael F. Jacob has been mailed by U.S. Mail this 1<sup>st</sup> day of ~~January~~, 1999 to the following:

Jon Wallach  
Resource Insight  
347 Broadway  
Cambridge, MA 02139-1715

Leslie Paugh, Esq.  
Division of Legal Services  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, FL 32399-0850

McWhirter Law Firm  
Vicki Kaufman, Esq.  
117 South Gadsden Street  
Tallahassee, FL 32301

McWhirter Law Firm  
John McWhirter, Esq.  
P. O. Box 3350  
Tampa, FL 33601-3350

Lee L. Willis, Esq.  
James D. Beasley, Esq.  
Ausley & McMullen  
227 South Calhoun Street  
Tallahassee, FL 32301

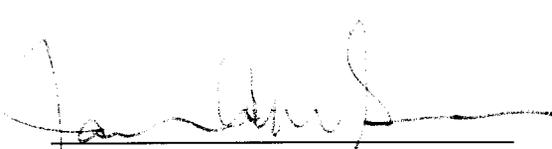
Jack Shreve, Esq.  
Office of Public Counsel  
111 West Madison Street  
Tallahassee, FL 32399

Kenneth Hoffman, Esq.  
Rutledge, Ecenia, Underwood  
Purnell & Hoffman  
215 South Monroe, Suite 420  
Tallahassee, FL 32301

LEAF  
Gail Kumaras  
1114 Thomasville Road, Suite E  
Tallahassee, FL 32301

Jeffrey A. Stone, Esq.  
Beggs & Lane  
P. O. Box 12950  
Pensacola, FL 32576-2950

Charles A. Guyton, Esq.  
Steel, Hector & Davis  
215 South Monroe Street  
Suite 601  
Tallahassee, FL 32301

  
\_\_\_\_\_  
Attorney

FLORIDA POWER CORPORATION  
DOCKET No. 971005-EG

DIRECT TESTIMONY OF  
MICHAEL F. JACOB

1 Q. State your name and business address.

2 A. My name is Michael F. Jacob. My business address is Florida Power  
3 Corporation, 17757 U.S. Highway 19 North, Suite 660, Clearwater, Florida,  
4 33764.

5

6 Q. By whom are you employed and in what capacity?

7 A. I am employed by Florida Power Corporation (FPC) as Manager of  
8 Regulatory Evaluation and Planning.

9

10 Q. Please describe your duties and responsibilities as the Manager of  
11 Regulatory Evaluation and Planning.

12 A. My responsibilities include evaluating the cost-effectiveness and impacts of  
13 FPC's demand-side management (DSM) programs, and projecting DSM  
14 program impacts into the future.

15

16 Q. Please summarize your educational background and professional  
17 experience.

18 A. I have a Bachelor of Science Degree in Business Administration with a  
19 major in Economics, and a Master of Arts Degree in Economics from the

1 University of Florida. Prior to joining Florida Power Corporation I worked in  
2 the area of public utility forecasting and economics at Georgia Power  
3 Company and the Public Utility Research Center at the University of  
4 Florida. I have been employed by Florida Power Corporation since 1981 in  
5 the areas of Load Forecasting and DSM Evaluation and Planning.  
6

7 **Q. What is the purpose of your testimony?**

8 A. The purpose of my testimony is to propose and support new conservation  
9 goals for FPC. These proposed numeric goals are based upon FPC's most  
10 recent planning process of the total cost-effective kilowatt and kilowatt-hour  
11 conservation savings reasonably achievable in FPC's service area over the  
12 ten-year period from 2000 to 2009.  
13

14 **Q. Do you have any Exhibits to your testimony?**

15 A. Yes, I am sponsoring the following exhibits:  
16 • Exhibit No. \_\_\_\_ (MFJ-1), FPC's Proposed Numeric Conservation Goals.  
17 • Exhibit No. \_\_\_\_ (MFJ-2), FPC's Ten Year Projections of DSM Savings.  
18 • Exhibit No. \_\_\_\_ (MFJ-3), Details of Conservation Measures Selected.  
19

20 **Q. At what level should the Commission establish FPC's DSM goals?**

21 A. My Exhibit No. \_\_\_\_ (MFJ-1) shows FPC's proposed goals by year, and for  
22 each market segment, on both an annual and cumulative basis. Below is a  
23 summary of FPC's proposed conservation goals over the ten-year planning  
24 period from 2000 to 2009:  
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Residential Market Segment

- 389 MW's of winter peak demand reduction,
- 125 MW's of summer peak demand reduction, and
- 185 GWh of energy reduction.

Commercial/Industrial Market Segment

- 37 MW's of winter peak demand reduction,
- 38 MW's of summer peak demand reduction, and
- 19 GWh of energy reduction.

**Q. Would you briefly describe the process used to determine FPC's proposed DSM goals?**

A. Yes. The development of FPC's proposed DSM Goals began by reviewing the same comprehensive list of conservation measures that was used during the last DSM Goals docket in 1993/94 (Docket No. 930549-EG). Measure definitions, savings estimates, and participation projections were updated as necessary to reflect current information. FPC's Resource Planning Department then developed a base supply-side plan that identified the supply-side-only resources required to meet customers' future load growth, assuming no new conservation, at the lowest cost.

Next, all applicable conservation measures were evaluated against the base supply-side plan to determine the cost-effectiveness of each measure. FPC performed the cost-effectiveness evaluated using each of the

1 Commission's three prescribed tests. The seasonal MW demand and  
2 annual GWH energy savings associated with all cost-effective conservation  
3 measures were then summed by market segment to determine FPC's  
4 proposed DSM goals.

5  
6 **Q. Did you produce ten-year projections of DSM savings as a result of**  
7 **this process?**

8 A. Yes. Ten-year projections of the total amount of cost-effective savings  
9 reasonably achievable through DSM for the FPC system are shown in my  
10 Exhibit No. \_\_\_ (MFJ-2). These projections are identical to the sum of the  
11 residential and commercial/industrial (C/I) market segment DSM goals  
12 being proposed by FPC.

13  
14 **Q. What conservation measures were analyzed by FPC?**

15 A. All of the measures classified as a "Potential Utility Program (UP)" or a  
16 "Code/Utility Evaluation (CUE)" in the Fourth Order Establishing Procedure  
17 (Order No. PSC-93-1679-PCO-EG) in the last DSM goals docket were  
18 included in FPC's analysis of market penetration and cost-effectiveness. In  
19 addition, several new lighting measures were identified by FPC and added  
20 to the list of measures to be evaluated. During the selection and analysis of  
21 the conservation measures, FPC gave consideration to the issues and end-  
22 use categories specified in Commission Rule 25-17.0021(3), F.A.C. The  
23 conservation measures were evaluated separately for each market segment  
24 (i.e., residential and commercial/industrial), and vintage (i.e., existing  
25 construction and new construction). The residential space conditioning

1 measures were also evaluated for each of the two major baseline technologies  
2 (i.e., strip-heat and heat pumps).

3  
4 **Q. Would you please describe the market penetration analysis?**

5 A. Yes. The market penetration analysis used to estimate the participation  
6 projections for each conservation measure involved a mix of approaches.  
7 Actual historical data and expert judgement from years of implementing  
8 successful DSM programs provided the basis for projecting participation in  
9 many of the conservation measures included in FPC's programs. For other  
10 measures where FPC has little or no actual experience, participation was  
11 projected using a market acceptance model that is based on the same Synergic  
12 Resources Corporation (SRC) methodology used in their foundational 1993  
13 study "Electricity Conservation and Energy Efficiency in Florida." This  
14 methodology was also used by FPC in the last DSM goals docket.

15  
16 The market acceptance model represents an economic payback acceptance  
17 approach to forecasting participation. Estimates of customer payback  
18 estimates (in years) were first developed for each measure, market segment  
19 and vintage. The payback estimates were then applied to a set of payback  
20 acceptance curves to estimate the long-run market share of each measure.  
21 The payback acceptance curves exhibit an inverse relationship between the  
22 length of the payback and long-run market share, such that those measures  
23 that provide customers with a relatively quick payback yield high long-run  
24 market shares while measures with long payback periods yield low long-run

1 market shares. Measures with a long-run market share of zero were essentially  
2 screened out of the DSM goals process at this point.

3  
4 For all remaining measures, long-run participation projections due solely to  
5 economics (i.e. payback periods) were developed by applying the long-run  
6 market share to a projection of the technical market potential (regardless of cost  
7 or timing) within the FPC service area. Diffusion curves were then applied to  
8 determine annual participation, and an "unwillingness percentage" was applied  
9 to account for the fact that some amount of customers are simply unwilling to  
10 participate regardless of the economics.

11  
12 **Q. Would you please describe the process used to evaluate the conservation**  
13 **measures for cost-effectiveness?**

14 A. Yes. FPC used the DSView model, owned and licensed by New Energy  
15 Associates, to perform the conservation measure cost-effectiveness  
16 evaluations. Using DSView, each conservation measure was evaluated  
17 against a set of potentially avoidable supply-side capacity options.

18  
19 The conservation measures were defined in the model in terms of their cost  
20 and energy and demand impacts. Thus, the primary data inputs for the  
21 conservation measures include the incremental equipment and installation cost  
22 of the measure, any incremental recurring O&M costs, kW and kWh savings,  
23 utility administration costs, utility incentives to customers, and the participation  
24 projections.

25

1 The supply-side resources are primarily defined by the cost, type, and timing of  
2 planned future supply-side resources in the absence of any new DSM. A base  
3 supply-side plan was developed by the Resource Planning Department using  
4 FPC's most recent demand and energy forecast without including the impacts  
5 of any incremental new DSM. The base supply-side plan represents the most  
6 cost-effective approach to meet future load growth with only supply-side  
7 resources, and properly defines the set of potentially avoidable supply-side  
8 resources that DSView evaluates the conservation measures against.

9  
10 The primary outputs produced by the DSView model for each conservation  
11 measure are the benefit/cost results for the three Commission approved tests of  
12 DSM cost-effectiveness: the Participant test, Rate Impact Measure (RIM) test,  
13 and Total Resource Cost (TRC) test. My Exhibit No. \_\_\_\_ (MFJ-3) shows the  
14 results of these three tests for all measures with a benefit/cost ratio greater than  
15 1.0 on each test, as well as the major input data associated with each  
16 conservation measure. The exhibit also contains two sheets of data supporting  
17 the savings included in FPC's proposed goals from its statutorily mandated  
18 residential audit program, the Home Energy Check Program.

19  
20 **Q. How does FPC define cost-effective conservation?**

21 A. In developing its DSM goals, FPC adheres to past Commission precedent in  
22 considering a conservation measure to be cost-effective only if it satisfies the  
23 Commission's Participant and RIM cost-effectiveness tests. In other words, a  
24 measure that passes the Participant and TRC tests, but fails the RIM test, is not  
25 considered cost-effective for purposes of determining cost-effective DSM goals.

1 This standard is based on the Commission's finding in the last DSM goals  
2 docket after extensive consideration of the "RIM vs. TRC" issue.

3  
4 **Q. How do FPC's proposed residential DSM goals compare with the existing  
5 residential DSM goals currently in place?**

6 A. The following table compares FPC's proposed residential ten-year cumulative  
7 DSM goals with FPC's currently existing residential ten-year DSM goals.

8  
9 **Residential Ten-year Cumulative DSM Savings Goals**

10 **Peak MW Demand**

	<b>Winter</b>	<b>Summer</b>	<b>GWH Energy</b>
11 Proposed Goals	389	125	185
12 Existing Goals	483	209	184
13 Difference	-94	-84	1

14  
15

16 As can be seen, FPC's proposed ten-year goal for residential GWH savings is  
17 virtually the same as the existing ten-year GWH goal. The proposed ten-year  
18 goals for winter and summer peak demand savings are both lower than the  
19 existing ten-year goals, by 94 MW and 84 MW, respectively.

20  
21 **Q. Why is there a reduction in the two peak MW demand goals but virtually  
22 no change in the GWH energy goal?**

23 A. FPC's existing goals for seasonal peak MW demand reductions were largely  
24 driven by the inclusion of several direct load control (DLC) measures. For  
25 example, direct load control of heating, air conditioning, water heating and pool

1 pumps accounted for 74% and 63% of the existing residential ten-year  
2 cumulative winter and summer peak demand goals, respectively. These DLC  
3 measures, however, made no significant contribution to the existing GWH  
4 energy goal.

5  
6 FPC's recent analysis now shows that those same DLC measures are no  
7 longer cost-effective at current credit levels and, therefore, their savings are not  
8 included in FPC's proposed DSM goals for the 2000-2009 period. This change  
9 alone causes a reduction in the seasonal peak MW demand goals, while  
10 having no effect on the GWH energy goal.

11  
12 **Q. Are there any residential direct load control measures that were cost-**  
13 **effective?**

14 A. Yes, FPC identified a combination of two DLC measures that was found to be  
15 cost-effective. This new bundled measure consists of heating and water  
16 heating DLC during the winter months only. It contributes about 132 MW to  
17 FPC's proposed winter peak MW demand goal over the ten-year period.

18  
19 **Q. What do these cost-effectiveness results for the direct load control**  
20 **measures mean to FPC's Residential Energy Management Program?**

21 A. These results indicate that it may not be cost-effective to continue adding new  
22 participants to the current Residential Energy Management Program. If these  
23 results are accepted by the Commission at the conclusion of this DSM Goals  
24 proceeding, FPC will develop an action plan to address this concern in its  
25 subsequent DSM Program Plan filing. Such an action plan may include the

1 possibility of closing the Residential Energy Management Program to new  
2 participants only. In the interim, FPC has discontinued active marketing of the  
3 program.

4  
5 **Q. How do FPC's proposed Commercial/Industrial DSM goals compare with  
6 the existing C/I DSM goals currently in place?**

7 A. The proposed C/I goals are lower than FPC's existing goals in all three  
8 categories. The following table compares FPC's proposed ten-year cumulative  
9 C/I DSM goals with FPC's existing ten-year C/I DSM goals.

10  
11 **Commercial/Industrial Ten-year Cumulative DSM Savings Goals**

	Peak MW Demand		GWH Energy
	Winter	Summer	
12 Proposed Goals	37	38	19
13 Existing Goals	64	84	336
14 Difference	-27	-46	-317

15  
16  
17  
18 **Q. Why are FPC's proposed C/I goals lower than the existing goals?**

19 A. FPC's proposed C/I goals are lower primarily because there are substantially  
20 fewer conservation measures that are cost-effective. For example, in the last  
21 DSM goals docket FPC identified thirty-one cost-effective C/I conservation  
22 measures. However, only nine C/I measures were found to be cost-effective in  
23 FPC's current planning process.

24  
25 **Q. Is there a primary end-use measure driving these results?**

1 A. Yes, nineteen C/I lighting measures accounted for 97% of the existing winter  
2 peak MW goal, 75% of the summer peak MW goal, and 80% of the GWH  
3 energy goal. No C/I lighting measures were found to be cost-effective in the  
4 current set of results.

5  
6 **Q. Are these cost-effectiveness results for C/I lighting consistent with FPC's**  
7 **experience with the C/I interior lighting component of the Better Business**  
8 **DSM Program?**

9 A. Yes. In February of 1998 FPC filed a Petition with the Commission to modify  
10 the Better Business Program by discontinuing the C/I interior lighting  
11 component of the program. This request was the result of a comprehensive  
12 cost-effectiveness evaluation which showed that the lighting component was  
13 responsible for dragging the entire program below cost-effective levels. The  
14 modification was requested to maintain the cost-effectiveness of the Better  
15 Business Program and allow the program to continue to provide other  
16 conservation measures to C/I customers. The Commission agreed and  
17 approved the requested modification in Order No. PSC-98-0746-FOF-EG,  
18 issued May 28, 1998. For the same reason that C/I lighting measures had to  
19 be excluded from FPC's Better Business Program, they have been excluded  
20 from its cost-effective DSM goals proposal.

21  
22 **Q. Does this conclude your direct testimony?**

23 A. Yes.

FLORIDA POWER CORPORATION  
DOCKET NO. 971005-EG  
EXHIBIT NO. \_\_\_\_ (MFJ-1)

EXHIBITS TO THE TESTIMONY OF  
MICHAEL F. JACOB

**PROPOSED NUMERIC CONSERVATION GOALS**

**FPC's Proposed Numeric Conservation Goals**

<b>Residential Market Segment</b>						
<b>Year</b>	<b>Winter Peak MW Demand Savings</b>		<b>Summer Peak MW Demand Savings</b>		<b>GWh Energy Savings</b>	
	<b>Annual</b>	<b>Cumulative</b>	<b>Annual</b>	<b>Cumulative</b>	<b>Annual</b>	<b>Cumulative</b>
2000	30	30	10	10	15	15
2001	34	64	11	20	17	32
2002	37	102	12	32	18	50
2003	40	142	13	45	19	69
2004	43	185	13	58	19	88
2005	44	229	14	72	20	108
2006	43	271	14	85	20	127
2007	41	312	14	99	20	147
2008	39	352	13	112	19	166
2009	37	389	13	125	19	185

<b>Commercial/Industrial Market Segment</b>						
<b>Year</b>	<b>Winter Peak MW Demand Savings</b>		<b>Summer Peak MW Demand Savings</b>		<b>GWh Energy Savings</b>	
	<b>Annual</b>	<b>Cumulative</b>	<b>Annual</b>	<b>Cumulative</b>	<b>Annual</b>	<b>Cumulative</b>
2000	4	4	4	4	2	2
2001	4	7	4	8	2	4
2002	4	11	4	11	2	6
2003	4	15	4	15	2	8
2004	4	18	4	19	2	10
2005	4	22	4	23	2	12
2006	4	26	4	26	2	13
2007	4	30	4	30	2	15
2008	4	33	4	34	2	17
2009	4	37	4	38	2	19

FLORIDA POWER CORPORATION  
DOCKET NO. 971005-EG  
EXHIBIT NO. \_\_\_\_ (MFJ-2)

EXHIBITS TO THE TESTIMONY OF  
MICHAEL F. JACOB

TEN-YEAR PROJECTIONS OF DSM SAVINGS

**FPC's Ten-Year Projections of DSM Savings**

Total FPC System						
Year	Winter Peak MW Demand Savings		Summer Peak MW Demand Savings		GWh Energy Savings	
	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2000	34	34	13	13	18	18
2001	38	72	14	28	19	36
2002	41	113	16	43	20	56
2003	44	157	16	60	21	76
2004	47	204	17	77	21	98
2005	47	251	17	94	22	119
2006	46	297	17	112	22	141
2007	45	342	17	129	21	162
2008	43	385	17	146	21	183
2009	41	426	16	162	21	204

FLORIDA POWER CORPORATION  
DOCKET No. 971005-EG  
EXHIBIT No. \_\_\_\_ (MFJ-3)

EXHIBITS TO THE TESTIMONY OF  
MICHAEL F. JACOB

**DETAILS OF CONSERVATION MEASURES SELECTED**

Unable to include with initial filing  
To be provided by separate submittal