

ORIGINAL

DOCKET NO. 971007-EG  
TAMPA ELECTRIC COMPANY  
SUBMITTED FOR FILING 02/01/99

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

HOWARD T. BRYANT

Q. Please state your name, address and occupation.

A. My name is Howard T. Bryant. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am the Manager of Energy Management and Forecasting for Tampa Electric Company.

Q. Please describe your educational background and business experience.

A. I graduated from the University of Florida in June 1973 with a Bachelor of Science degree in Business Administration. I have been employed by Tampa Electric Company since August 1981. My work has included various positions in Customer Relations, Energy Conservation Services, Demand Side Management (DSM) Planning, and Energy Management and Forecasting. In my current position, I am responsible for the company's conservation and load management activities and load forecasting. Specific to DSM, this responsibility includes ECCR expenditures and

DOCUMENT NUMBER DATE  
01275 FEB-1 99

1 cost recovery, goals setting, program design initiatives  
2 and program monitoring and evaluation.  
3  
4 **Q.** Mr. Bryant, have you previously testified before this  
5 Commission?  
6  
7 **A.** Yes. I have testified before this Commission on  
8 conservation activities, the previous DSM goals setting  
9 hearing and various ECCR dockets.  
10  
11 **Q.** What is the purpose of your testimony?  
12  
13 **A.** My testimony addresses the process Tampa Electric Company  
14 utilized to propose reasonably achievable, cost-effective,  
15 numerical DSM goals for the 2000 - 2009 period and  
16 identifies those proposed demand and energy goals by  
17 residential and commercial/industrial segments.  
18  
19 **Q.** Have you prepared an exhibit in support of your testimony?  
20  
21 **A.** Yes, under my direction and supervision I have prepared an  
22 exhibit entitled, "Exhibit of Howard T. Bryant." It  
23 consists of four documents and has been identified as  
24 Exhibit No. \_\_\_\_\_ (HTB-1).  
25

1 Q. Mr. Bryant, please describe the process Tampa Electric  
2 Company used to develop its proposed DSM goals.

3

4 A. Tampa Electric Company was an active participant in the  
5 October 8, 1997 and January 7, 1998 Commission workshops  
6 designed to initiate discussions and identify measures  
7 appropriate for evaluation in the upcoming DSM goals  
8 setting process as set forth in Rule 25-17.0021. To that  
9 end, the Commission Staff brought before the January 7,  
10 1998 workshop participants a proposed list of DSM measures  
11 for evaluation by the investor-owned utilities in their  
12 respective goals dockets. These measures were from the  
13 Synergic Resources Corporation (SRC) report, "Electricity  
14 Conservation and Energy Efficiency in Florida: Technical,  
15 Economic and Achievable Results, Final Report."  
16 Furthermore, these measures had been identified by the  
17 Commission in Order No. PSC-93-1679-PCO-EG issued November  
18 19, 1993 as appropriate measures to be considered for  
19 potential utility programs (UP). These measures became the  
20 foundation for Tampa Electric's evaluation process.

21

22 Q. Why are the SRC measures an appropriate starting point for  
23 Tampa Electric Company's evaluation process?

24

25 A. The SRC measures and methodology for identifying their

1 evaluation characteristics are established and well known  
2 to the Commission and other parties. Furthermore, SRC  
3 developed data specific to Tampa Electric Company's service  
4 area. Finally, Rule 25-17.001(3) requires a.) the utility  
5 to project goals in both the residential and  
6 commercial/industrial market segments; b.) that  
7 consideration shall be given to measures applicable for new  
8 and existing construction in both market segments; c.) that  
9 major end-use categories listed in the rule be assessed;  
10 and d.) that the utility should address such things as  
11 overlapping measures, appliance efficiency standards,  
12 interactions with building codes, rebound effects, free  
13 riders and the utility's latest monitoring and evaluation  
14 data. The SRC measures meet these requirements.

15  
16 Q. Mr. Bryant, did Tampa Electric Company limit its list of  
17 measures for inclusion in the goals setting process to just  
18 those SRC measures proposed by the Commission Staff?

19  
20 A. No. First, Tampa Electric included those measures  
21 currently promoted through our existing programs but not a  
22 part of the original SRC list. These measures included:  
23 heat pump replacing strip heat, commercial/industrial load  
24 management and standby generator for emergency use.  
25 Second, Tampa Electric included the twenty-eight (28)

1 measures identified by the Commission as CUE (Code/Utility  
2 Evaluation) in Order No. PSC-93-1679-PCO-EG. These were  
3 measures applied to new construction which had potential  
4 for implementation into the Florida Energy Efficiency Code  
5 for Building Construction or the potential to be part of a  
6 utility program. Finally, measures suggested by interested  
7 parties at the workshops where Florida specific data could  
8 be attained for their evaluation were included.  
9 Interestingly, several of those measures were already a  
10 part of the comprehensive SRC list provided by the  
11 Commission Staff. The ultimate list of measures evaluated  
12 by Tampa Electric is found in Document 1 of my Exhibit No.  
13 \_\_\_\_\_ (HTB-1).

14  
15 Q. Once Tampa Electric Company compiled its list of measures  
16 for evaluation, did any screening occur prior to the  
17 evaluation?

18  
19 A. No. All measures on the list were evaluated regardless of  
20 their cost-effectiveness results from the previous goals  
21 setting proceeding.

22  
23 Q. Mr. Bryant, what impact resulted from Tampa Electric's  
24 ongoing monitoring and evaluating efforts?

25

1 A. The monitoring and evaluating efforts enabled the company  
2 to update certain demand and energy savings, utility costs  
3 and customer equipment costs for measures that are integral  
4 to the current DSM programs.  
5  
6 Additionally, we were able to identify the shrinking market  
7 potential, particularly in the residential segment, for  
8 measures that have had successful penetration rates from  
9 the early 1980s forward.  
10  
11 Q. Please describe the cost-effectiveness analysis Tampa  
12 Electric Company performed on the comprehensive list of  
13 measures.  
14  
15 A. Consistent with the last goals setting process, all  
16 measures were evaluated using the Commission prescribed  
17 cost-effectiveness methodology defined in Rule 25-17.008.  
18 The SRC and/or company specific data for each measure was  
19 input into the cost-effectiveness model (DSM\_FIRE). Cost-  
20 effective measures were identified as those measures that  
21 passed the Rate Impact Measure (RIM) Test, the Total  
22 Resource Cost (TRC) Test, and the Participants' Test.  
23  
24 Participation rates for the passing measures were  
25 evaluated. In some cases, the rate was established at an

1 aggressive level due to the relative newness and moderate  
2 adoption rate of the measure thus far in the marketplace.  
3 The duct repair measure for existing residential air  
4 distribution systems is an excellent example of such a  
5 measure. Conversely, some measures have been cost-  
6 effectively penetrating the marketplace since the early  
7 1980s. Heat pump replacing strip heat and load control  
8 measures in the residential segment are examples of these  
9 types of measures. Simply stated, it is increasingly  
10 difficult to secure the next incremental participant for  
11 these measures. However, both of these mature measures are  
12 still cost-effective and will continue their respective  
13 contributions toward the DSM goals.

14  
15 **Q.** Mr. Bryant, based on your evaluation process, what are you  
16 proposing for Tampa Electric Company's DSM goals for the  
17 ten year period 2000 through 2009?

18  
19 **A.** For the ten year period beginning in 2000 and ending in  
20 2009, Tampa Electric Company's cumulative proposed  
21 residential goals are a 38.8 mW reduction in the summer, a  
22 107.2 mW reduction in the winter and a 75.3 gWh reduction  
23 in annual energy. The cumulative proposed commercial goals  
24 are a 30.8 mW reduction in the summer, a 13.4 mW reduction  
25 in the winter and a 114.3 gWh reduction in annual energy.

1 Document 2 of my Exhibit No. \_\_\_\_ (HTB-1) indicates the  
2 cumulative proposed residential goals for the period and  
3 Document 3 of my Exhibit No. \_\_\_\_ (HTB-1) indicates the  
4 cumulative proposed commercial goals for the period. All  
5 proposed reductions are from what the levels in demand and  
6 energy are projected to be in the absence of the proposed  
7 measures.

8

9 Q. Mr. Bryant, can you comment on Tampa Electric's resource  
10 planning practices utilized in this goals setting process?

11

12 A. Yes. Tampa Electric Company's resource planning process  
13 for this current goals process is consistent with the  
14 integrated approach identified in the previous goals  
15 hearing (Docket No. 930551-EG). The process is also  
16 delineated in the company's annual Ten Year Site Plan  
17 filing.

18

19 Q. Please identify the avoided cost assumptions used for  
20 measure analysis.

21

22 A. The avoided cost assumptions used for measure analysis are  
23 contained in Document 4 of my Exhibit No. \_\_\_\_ (HTB-1).  
24 Generation, transmission and distribution costs, fixed and  
25 variable O&M costs, fuel costs as well as respective



1 escalation rates are provided.

2

3 Q. Please summarize your testimony.

4

5 A. Tampa Electric Company initiated its current goals process  
6 by utilizing the SRC list of UP measures proposed by the  
7 Commission Staff. Additional measures from company  
8 programs were added for analysis as well as modifications  
9 to measure characteristics where monitoring and evaluating  
10 results indicated a change was appropriate. All measures  
11 were evaluated for cost-effectiveness. For those measures  
12 that passed the Commission prescribed cost-effectiveness  
13 tests, participation rates were identified resulting in the  
14 proposed residential and commercial/industrial ten year  
15 goals for the 2000 through 2009 period.

16

17 Q. Does this conclude your testimony?

18

19 A. Yes.

20

21

22

23

24

25

Tampa Electric Company

Exhibit of

Howard T. Bryant

**Tampa Electric Company**

**Index**

<b>Document No.</b>	<b>Title</b>	<b>Page</b>
<b>1</b>	<b>DSM Measure Evaluation List</b>	<b>12</b>
<b>2</b>	<b>Proposed Residential Goals</b>	<b>18</b>
<b>3</b>	<b>Proposed Commercial Goals</b>	<b>19</b>
<b>4</b>	<b>Avoided Cost Assumptions</b>	<b>20</b>

# DSM MEASURE EVALUATION LIST

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_\_ (HTB - 1)  
Document No. 1  
Page 1 of 6

## RESIDENTIAL NEW CONSTRUCTION

FROM COMMISSION WORKSHOP - JANUARY 7, 1998

CW-1	HIGH EFFICIENCY CLOTHES WASHER
FR-1	BEST CURRENT FREEZER (FROST-FREE)
FR-2	BEST CURRENT FREEZER (MANUAL)
LT-1	COMPACT FLUORESCENT
LT-2	EFFICIENT INCANDESCENT
LT-3	HIGH PRESSURE SODIUM (OUTDOOR)
PP-3	DLC OF POOL PUMPS
RF-1	BEST CURRENT REFRIGERATOR (FROST-FREE)
RF-2	BEST CURRENT REFRIGERATOR (MANUAL)
RSC-1	HIGH EFFICIENCY AIR SOURCE HEAT PUMP
RSC-2	GROUND SOURCE HEAT PUMP
RSC-3	TWO SPEED HEAT PUMP
RSC-7A	SETBACK/PROGRAMMABLE THERMOSTAT
RSC-7B	SETBACK/PROGRAMMABLE THERMOSTAT
RSC-8A	LOAD CONTROL FOR RESIDENTIAL ELECTRIC HEAT
RSC-8B	LOAD CONTROL FOR RESIDENTIAL ELECTRIC HEAT
RSC-21A	HIGH EFFICIENCY CENTRAL AC
RSC-22A	TWO SPEED CENTRAL AC
RSC-24A	HIGH EFFICIENCY ROOM AC
RSC-26A	DLC OF CENTRAL AC
RSC-26B	DLC OF CENTRAL AC
WH-1	HIGH EFFICIENCY ELECTRIC RESISTANCE WATER HEATER
WH-2	INTEGRAL HEAT PUMP WATER HEATER
WH-3	SOLAR WATER HEATER
WH-4	HEAT RECOVERY WATER HEATER (DESUPERHEATER)
WH-5	ADD-ON HEAT PUMP WATER HEATER
WH-6	DHW HEATER TANK INSULATION
WH-10	DLC OF ELECTRIC WATER HEATER

## ADDITIONAL RESIDENTIAL NEW CONSTRUCTION

LT-4	MOTION DETECTORS FOR OUTDOOR LIGHTING
RSC-05A	REDUCED DUCT LEAKAGE
RSC-05B	REDUCED DUCT LEAKAGE
RSC-19A	REFLECTIVE ROOF COATINGS
RSC-19B	REFLECTIVE ROOF COATINGS
RSC-29	RESIDENTIAL HIGH EFFICIENCY HEAT PUMP
WH-8	DHW HEAT TRAP
WH-9	LOW FLOW SHOWERHEAD
TECO	LOAD MANAGEMENT

## COMMERCIAL NEW CONSTRUCTION

FROM COMMISSION WORKSHOP - JANUARY 7, 1998

CD-18	CONVECTION OVENS
CD-19	ENERGY EFFICIENT ELECTRIC FRYERS
LD-25	COMPACT FLOURESCENT LAMPS (15/18/27W)
LD-26	TWO LAMP COMPACT FLOURESCENT (18W)
SCD-1	HIGH EFFICIENCY CHILLER
SCD-2	HIGH EFFICIENCY CHILLER W/ASD
SCD-3	HIGH EFFICIENCY DX AC
SCD-4	HIGH EFFICIENCY ROOM AC UNITS

**COMMERCIAL NEW CONSTRUCTION**

FROM COMMISSION WORKSHOP - JANUARY 7, 1998 (CONT.)

SCD-5 COOL STORAGE  
VD-8 HIGH EFFICIENCY MOTORS-CHILLERS  
VD-9 HIGH EFFICIENCY MOTORS-DX AC  
WD-11 HEAT PUMP WATER HEATER  
WD-12 SOLAR WATER HEATER  
WD-13 HEAT RECOVERY WATER HEATER

ADDITIONAL COMMERCIAL NEW CONSTRUCTION

LD-5 8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)  
LD-8 T8 LAMPS/ELECTRONIC BALLASTS (#2)  
LD-11 REFL/DELAMP INSTALL 8'-75W FLOUR LAMPS/EE BALLAST  
LD-12 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/EE BALLAST  
LD-17 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/ELEC BALL  
LD-18 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/ELEC BALL  
LD-21 HIGH PRESSURE SODIUM (70/100/150/250W)  
LD-22 HIGH PRESSURE SODIUM (70/100/150/250W -W/ES BALLAST)  
LD-23 HIGH PRESSURE SODIUM (35W)  
LD-27 ENERGY MANAGEMENT SYSTEM FOR LIGHTING  
LD-28 OCCUPANCY SENSORS  
LD-29 DAYLIGHTING DESIGN  
RD-1 MULTIPLEX AIR-COOLED/NO SUBCOOLING  
RD-2 MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING  
RD-3 MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING  
RD-4 MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL  
RD-5 MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX  
RD-6 OPEN DRIVE REFRIGERATION SYSTEM (ASD)  
RD-7 ANTI-CONDENSATE HEATER CONTROLS  
RD-8 HIGH R-VALUE GLASS DOORS  
RD-9 REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)  
RD-10 DUAL PATH AIR CONDITIONING  
SCD-8 2-SPEED MOTOR FOR COOLING TOWER  
SCD-9 SPEED CONTROL FOR COOLING TOWERS  
SCD-12 HVAC AIR DUCT/WATER PIPE INSULATION-CHILLER  
SCD-13 HVAC AIR DUCT/WATER PIPE INSULATION-DX AC  
SCD-16 TEMPERATURE SETUP/SETBACK-CHILLER  
SCD-17 TEMPERATURE SETUP/SETBACK-DX AC  
SCD-18 ROOF INSULATION-CHILLER  
SCD-19 ROOF INSULATION-DX AC  
SCD-26 LIGHT COLORED ROOFS-CHILLER  
SCD-27 LIGHT COLORED ROOFS-DX AC  
VD-1 LEAK FREE DUCTS DX AC  
VD-4 ASD VENTILATION CONTROL W/WAV-DX AC  
VD-5 ASD VENTILATION CONTROL W/WAV-CHILLERS  
VD-6 TIME/PROGRAM VENTILATION CONTROL-CHILLERS  
VD-7 TIME/PROGRAM VENTILATION CONTROL-DX AC  
VD-10 SEPARATE MAKEUP AIR/EXHAUST HOODS-CHILLERS  
VD-11 SEPARATE MAKEUP AIR/EXHAUST HOODS-DX AC  
WD-14 DHW HEATER INSULATION  
TECO COMMERCIAL /INDUSTRIAL LOAD MANAGEMENT  
TECO DX AC REPLACEMENT  
TECO STANDBY GENERATOR

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_\_ (HTB - 1)  
Document No. 1  
Page 2 of 6

**RESIDENTIAL EXISTING CONSTRUCTION**

FROM COMMISSION WORKSHOP - JANUARY 7, 1998

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_\_ (HTB - 1)  
Document No. 1  
Page 3 of 6

- CW-1 HIGH EFFICIENCY CLOTHES WASHER
- FR-1 BEST CURRENT FREEZER (FROST-FREE)
- FR-2 BEST CURRENT FREEZER (MANUAL)
- FR-3 REMOVE SECOND FREEZER
- LT-1 COMPACT FLUORESCENT
- LT-2 EFFICIENT INCANDESCENT
- LT-3 HIGH PRESSURE SODIUM (OUTDOOR)
- PP-1 HIGH EFFICIENCY POOL PUMP
- PP-3 DLC OF POOL PUMPS
- RF-1 BEST CURRENT REFRIGERATOR (FROST-FREE)
- RF-2 BEST CURRENT REFRIGERATOR (MANUAL)
- RF-3 REMOVE SECOND REFRIGERATOR
- RSC-1 HIGH EFFICIENCY AIR SOURCE HEAT PUMP
- RSC-2 GROUND SOURCE HEAT PUMP
- RSC-3 TWO SPEED HEAT PUMP
- RSC-05A REDUCED DUCT LEAKAGE
- RSC-05B REDUCED DUCT LEAKAGE
- RSC-07A SETBACK/PROGRAMMABLE THERMOSTAT
- RSC-07B SETBACK/PROGRAMMABLE THERMOSTAT
- RSC-8A LOAD CONTROL FOR RESIDENTIAL ELECTRIC HEAT
- RSC-8B LOAD CONTROL FOR RESIDENTIAL ELECTRIC HEAT
- RSC-10A CEILING INSULATION (R0-R19)
- RSC-10B CEILING INSULATION (R0-R19)
- RSC-11A CEILING INSULATION (R11-R30)
- RSC-11B CEILING INSULATION (R11-R30)
- RSC-12A CEILING INSULATION (R19-R30)
- RSC-12B CEILING INSULATION (R19-R30)
- RSC-13A CEILING INSULATION (R30-R38)
- RSC-13B CEILING INSULATION (R30-R38)
- RSC-15A WEATHERSTRIP/CAULK W/BLOWER DOOR
- RSC-15B WEATHERSTRIP/CAULK W/BLOWER DOOR
- RSC-16A WINDOW FILM/REFLECTIVE GLASS
- RSC-16B WINDOW FILM/REFLECTIVE GLASS
- RSC-17A LOW EMISSIVTY GLASS
- RSC-17B LOW EMISSIVTY GLASS
- RSC-18A SHADE SCREENS
- RSC-18B SHADE SCREENS
- RSC-21A HIGH EFFICIENCY CENTRAL AC
- RSC-22A TWO SPEED CENTRAL AC
- RSC-24A HIGH EFFICIENCY ROOM AC
- RSC-25A AIR CONDITIONING/HEAT PUMP MAINTENANCE
- RSC-25B AIR CONDITIONING/HEAT PUMP MAINTENANCE
- RSC-26A DLC OF CENTRAL AC
- RSC-26B DLC OF CENTRAL AC
- WH-1 HIGH EFFICIENCY ELECTRIC RESISTANCE WATER HEATER
- WH-2 INTEGRAL HEAT PUMP WATER HEATER
- WH-3 SOLAR WATER HEATER
- WH-4 HEAT RECOVERY WATER HEATER (DESUPERHEATER)
- WH-5 ADD-ON HEAT PUMP WATER HEATER
- WH-6 DHW HEATER TANK INSULATION
- WH-7 DHW PIPE INSULATION
- WH-8 DHW HEAT TRAP
- WH-9 LOW FLOW SHOWERHEAD
- WH-10 DLC OF ELECTRIC WATER HEATER

ADDITIONAL RESIDENTIAL EXISTING CONSTRUCTION

LT-4 MOTION DETECTORS FOR OUTDOOR LIGHTING  
RSC-19A REFLECTIVE ROOF COATINGS  
RSC-19B REFLECTIVE ROOF COATINGS  
RSC-23A WHOLE HOUSE FANS  
RSC-23B WHOLE HOUSE FANS  
RSC-29 RESIDENTIAL HIGH EFFICIENCY HEAT PUMP  
TECO CEILING INSULATION  
TECO DUCT REPAIR  
TECO HEATING AND COOLING SEER12  
TECO LOAD MANAGEMENT

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_ (HTB - 1)  
Document No. 1  
Page 4 of 6

**COMMERCIAL EXISTING CONSTRUCTION**

FROM COMMISSION WORKSHOP - JANUARY 7, 1998

CD-18 CONVECTION OVENS  
CD-19 ENERGY EFFICIENT ELECTRIC FRYERS  
LD-1 4'-34W FLOUR LAMPS/HYBRID BALLASTS (#1)  
LD-2 4'-34W FLOUR LAMPS/HYBRID BALLASTS (#2)  
LD-3 4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)  
LD-4 4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)  
LD-5 8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)  
LD-6 8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)  
LD-7 T8 LAMPS/ELECTRONIC BALLASTS (#1)  
LD-8 T8 LAMPS/ELECTRONIC BALLASTS (#2)  
LD-9 REFL/DELAMP INSTALL 4'-40W FLOUR LAMPS/EE BALLAST  
LD-10 REFL/DELAMP INSTALL 4'-34&40W FLOUR LAMPS/EE BALLAST  
LD-11 REFL/DELAMP INSTALL 8'-75W FLOUR LAMPS/EE BALLAST  
LD-12 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/EE BALLAST  
LD-13 REFL/DELAMP INSTALL 4'-34&40W FLOUR LAMPS/HYBD BALL  
LD-14 REFL/DELAMP INSTALL 4'-34&40W FLOUR LAMPS/HYBD BALL  
LD-15 REFL/DELAMP INSTALL 4'-34&40W FLOUR LAMPS/ELEC BALL  
LD-16 REFL/DELAMP INSTALL 4'-34&40W FLOUR LAMPS/ELEC BALL  
LD-17 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/ELEC BALL  
LD-18 REFL/DELAMP INSTALL 8'-60W FLOUR LAMPS/ELEC BALL  
LD-19 4'X34W FLOUR LAMPS/DIMMING BALLAST(#1)  
LD-20 4'X34W FLOUR LAMPS/DIMMING BALLAST(#2)  
LD-21 HIGH PRESSURE SODIUM (70/100/150/250W)  
LD-22 HIGH PRESSURE SODIUM (70/100/150/250W -W/ES BALLAST)  
LD-23 HIGH PRESSURE SODIUM (35W)  
LD-24 METAL HALIDE (32W)  
LD-25 COMPACT FLOURESCENT LAMPS (15/18/27W)  
LD-26 TWO LAMP COMPACT FLOURESCENT (18W)  
RD-1 MULTIPLEX AIR-COOLED/NO SUBCOOLING  
RD-2 MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING  
RD-3 MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING  
RD-4 MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL  
RD-5 MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX  
RD-6 OPEN DRIVE REFRIGERATION SYSTEM (ASD)  
RD-7 ANTI-CONDENSATE HEATER CONTROLS  
RD-8 HIGH R-VALUE GLASS DOORS  
RD-9 REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)  
SCD-1 HIGH EFFICIENCY CHILLER  
SCD-2 HIGH EFFICIENCY CHILLER W/ASD  
SCD-3 HIGH EFFICIENCY DX AC  
SCD-4 HIGH EFFICIENCY ROOM AC UNITS  
SCD-5 COOL STORAGE

**COMMERCIAL EXISTING CONSTRUCTION**

FROM COMMISSION WORKSHOP - JANUARY 7, 1998 (CONT.)

SCD-8 2-SPEED MOTOR FOR COOLING TOWER  
SCD-9 SPEED CONTROL FOR COOLING TOWER  
SCD-10 A/C MAINTENANCE-CHILLER  
SCD-11 A/C MAINTENANCE-DX AC  
SCD-12 HVAC AIR DUCT/WATER PIPE INSULATION-CHILLER  
SCD-13 HVAC AIR DUCT/WATER PIPE INSULATION-DX AC  
SCD-18 ROOF INSULATION-CHILLER  
SCD-19 ROOF INSULATION-DX AC  
SCD-22 WINDOW FILM-CHILLER  
SCD-23 WINDOW FILM-DX AC  
VD-1 LEAK FREE DUCTS DX AC  
VD-8 HIGH EFFICIENCY MOTORS-CHILLERS  
VD-9 HIGH EFFICIENCY MOTORS-DX AC  
VD-10 SEPARATE MAKEUP AIR/EXHAUST HOODS-CHILLERS  
VD-11 SEPARATE MAKEUP AIR/EXHAUST HOODS-DX AC  
WD-11 HEAT PUMP WATER HEATER  
WD-12 SOLAR WATER HEATER  
WD-13 HEAT RECOVERY WATER HEATER  
WD-14 DHW HEATER INSULATION  
WD-15 DHW HEAT TRAP  
WD-16 LOW FLOW VARIABLE FLOW SHOWERHEAD  
WD-17 DWH RECIRCULATION PUMPS

ADDITIONAL COMMERCIAL EXISTING CONSTRUCTION

LD-27 ENERGY MANAGEMENT SYSTEM FOR LIGHTING  
LD-28 OCCUPANCY SENSORS  
RD-10 DUAL PATH AIR CONDITIONING  
SCD-6 HEAT PIPE ENHANCED DX AC  
SCD-16 TEMPERATURE SETUP/SETBACK-CHILLER  
SCD-17 TEMPERATURE SETUP/SETBACK-DX AC  
SCD-26 LIGHT COLORED ROOFS-CHILLER  
SCD-27 LIGHT COLORED ROOFS-DX AC  
VD-3 VAV SYSTEMS W/INLET VANES-DX AC  
VD-4 ASD VENTILATION CONTROL W/VAV-DX AC  
VD-5 ASD VENTILATION CONTROL W/VAV-CHILLERS  
VD-6 TIME/PROGRAM VENTILATION CONTROL-CHILLERS  
VD-7 TIME/PROGRAM VENTILATION CONTROL-DX AC  
TECO COMMERCIAL /INDUSTRIAL LOAD MANAGEMENT  
TECO COMMERCIAL /INDUSTRIAL INDOOR LIGHTING  
TECO DX AC REPLACEMENT  
TECO STANDBY GENERATOR

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_\_ (HTB - 1)  
Document No. 1  
Page 5 of 6



## CUE MEASURES EVALUATED

Tampa Electric Company  
Docket No. 971007 - EG  
Witness: Bryant  
Exhibit No. \_\_\_\_\_ (HTB - 1)  
Document No. 1  
Page 6 of 6

### RESIDENTIAL

PP-1 HIGH EFFICIENCY POOL PUMP  
PP-2 DOWN-SIZED POOL PUMPS W/OVERSIZED PLUMBING  
RSC-06A REDUCED DUCT HEAT TRANSFER - NEW CONSTRUCTION  
RSC-06B REDUCED DUCT HEAT TRANSFER - NEW CONSTRUCTION  
RSC-09A CEILING INSULATION - NEW CONSTRUCTION  
RSC-09B CEILING INSULATION - NEW CONSTRUCTION  
RSC-28A CEILING FANS  
RSC-28B CEILING FANS

### COMMERCIAL

LD-3 MOTION DETECTORS FOR OUTDOOR LIGHTING  
RD-1 MULTIPLEX AIR-COOLED/NO SUBCOOLING  
RD-2 MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING  
RD-3 MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING  
RD-4 MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL  
RD-5 MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX  
RD-6 OPEN DRIVE REFRIGERATION SYSTEM (ASD)  
RD-7 ANTI-CONDENSATE HEATER CONTROLS  
RD-8 HIGH R-VALUE GLASS DOORS  
RD-9 REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)  
SCD-18 ROOF INSULATION-CHILLER  
SCD-19 ROOF INSULATION-DX AC  
SCD-20 WALL INSULATION-CHILLER  
SCD-21 WALL INSULATION-DX AC  
SCD-22 WINDOW FILM-CHILLER  
SCD-23 WINDOW FILM-DX AC  
SCD-24 SPECIALLY SELECTIVE WINDOWS-CHILLERS  
SCD-25 SPECIALLY SELECTIVE WINDOWS-DX AC  
SCD-8 2-SPEED MOTOR FOR COOLING TOWER  
SCD-9 SPEED CONTROL FOR COOLING TOWERS

## Proposed Residential Goals 2000 - 2009

Year	Summer Goal (MW)	Winter Goal (MW)	Annual Energy Goal (GWH)
2000	5.8	16.7	10.3
2001	11.1	32.2	20.0
2002	16.1	46.3	29.0
2003	20.7	59.2	37.5
2004	25.0	70.7	45.3
2005	28.8	81.0	52.5
2006	32.2	90.0	59.1
2007	35.3	97.7	65.1
2008	38.0	104.1	70.5
2009	40.3	109.1	75.3

## Proposed Commercial Goals 2000 - 2009

Year	Summer Goal (MW)	Winter Goal (MW)	Annual Energy Goal (GWH)
2000	3.5	1.5	12.9
2001	6.9	3.0	25.7
2002	10.4	4.5	38.6
2003	13.5	5.9	50.3
2004	16.7	7.3	61.9
2005	19.9	8.7	73.6
2006	22.8	10.0	84.1
2007	25.8	11.3	94.5
2008	28.4	12.4	104.9
2009	30.8	13.4	114.1

**Avoided Cost Assumptions**  
2000 Base Year

Avoided Unit Cost	
Generating Unit Cost (\$/KW)	286
Generator Variable O&M Cost (Cents/KWH)	0.257
Generator Fixed O&M Cost (\$/KW/Yr.)	5.10
Generator Unit Fuel Cost (Cents/KWH)	3.906
Generator Cost Escalation Rate	2.4%
Generator Fixed & Variable O&M Escalation Rate	2.7%
Generator Unit Fuel Escalation Rate	3.27%

T&D Costs	
Avoided Transmission Cost (\$/KW)	5.36
Avoided Distribution Cost (\$/KW)	0.00
Transmission Fixed O&M Cost (\$/MWH)	3.47
Distribution Fixed O&M Cost (\$/MWH)	13.02
Transmission Cost Escalation Rate	2.4%
Transmission & Distribution Fixed O&M Rate	2.7%

**System Avoided Fuel Costs**  
(Cents/KWH)

Year	Average	Marginal
2000	2.16	2.97
2001	2.18	2.76
2002	2.25	2.85
2003	2.29	2.94
2004	2.37	3.16
2005	2.31	3.42
2006	2.42	3.85
2007	2.50	3.87
2008	2.57	4.10
2009	2.70	4.38
2010	2.82	4.65
2011	2.94	4.92
2012	3.07	5.22
2013	3.17	5.40
2014	3.33	5.85
2015	3.47	6.21
2016	3.61	6.63
2017	3.80	7.08
2018	3.93	7.01
2019	4.04	7.20
2020	4.15	7.40
2021	4.26	7.59
2022	4.37	7.80
2023	4.49	8.01
2024	4.61	8.23
2025	4.74	8.45
2026	4.87	8.68
2027	5.00	8.91
2028	5.13	9.15