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 employed by Tampa Electric Company ("Tampa Electric" or "the company") as Manager, Rates in the Regulatory Affairs Department.

Q. Please provide a brief outline of 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 since August 1981. My work has included various positions in Customer Service, Energy Conservation Services, Demand Side Management ("DSM") Planning, Energy Management and Forecasting, and Regulatory Affairs. In my current position, I am responsible for the company's Energy Conservation Cost Recovery ("ECCR") Clause, the

Environmental Cost Recovery Clause ("ECRC"), and retail rate design.

Q. Have you previously testified before the Florida Public Service Commission ("Commission")?

A. Yes. I have testified before this Commission on conservation and load management activities, DSM goals setting dockets, DSM plan approval dockets, and other ECCR dockets since 1993, and various ECRC activities since 2001.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present, for Commission review and approval, Tampa Electric's proposed numerical DSM goals for 2005 - 2014. The goals are separated into summer demand, winter demand and annual energy components for both residential and commercial/industrial sectors. In support of the proposed DSM goals, my testimony describes the process Tampa Electric utilized to establish reasonably achievable, cost-effective goals.

Q. Have you prepared an exhibit in support of your testimony?

A. Yes, under my direction and supervision, I have prepared an exhibit entitled, "Exhibit of Howard T. Bryant." It consists of four documents and has been identified as Exhibit No. _____ (HTB-1).

Q. Please describe the overall process Tampa Electric used to develop its proposed DSM goals.

A. The overall process for Tampa Electric began with the identification of a comprehensive list of end-use measures that met the requirements of Rule 25-17.0021. In Docket No. 930551-EG, the Commission provided the Fourth Order Establishing Procedure during the first DSM goals setting process which established a comprehensive baseline of measures to be evaluated for the development of DSM goals. These measures were from the Synergic Resources Corporation ("SRC") report, "Electricity Conservation and Energy Efficiency in Florida: Technical, Economic and Achievable Results, Final Report." Subsequently, in Docket No. 971007-EG, the Commission Staff proposed that this previously adopted baseline of measures become the foundation for evaluations during the second DSM goals setting process and it was utilized as such. Due to its comprehensive nature and ability to meet the intent of the Rule, Tampa Electric deemed it

appropriate for this list of DSM measures to again form the basis for evaluations necessary to establish the company's DSM goals for the next ten-year planning period.

The next step was to include any measures from the company's existing DSM programs and other research and development ("R&D") activity that were not on the SRC list. Finally, the cost-effectiveness evaluation of each measure was performed, and after minimal screening using empirical judgment, the proposed DSM goals were established for the residential and commercial/industrial sectors.

Q. Please provide additional detail as to why the SRC measures are an appropriate starting point for Tampa Electric's evaluation process?

A. The SRC measures and methodology for identifying their evaluation characteristics are established and well known to the Commission from previous proceedings. Furthermore, SRC developed data for the DSM measures specific to Tampa Electric's service area. Therefore, all that was needed was updating the previous data set to reflect inflation and measure costs. Finally, Rule 25-

17.0021(3) requires that the utility a.) propose goals reasonably achievable in both the residential and commercial/industrial market sectors; b.) consider measures applicable for new and existing construction in both market sectors; c.) assess major end-use categories listed in the rule; and d.) address such issues as overlapping measures, appliance efficiency standards, interactions with building codes, rebound effects and the utility's latest monitoring and evaluation data. The SRC measures meet the preponderance of these requirements.

Q. Please describe the additional DSM measures Tampa Electric considered and included in the goals setting process.

A. The additional DSM measures Tampa Electric included in the goals setting process included those measures currently promoted through the company's existing programs but not a part of the original SRC list. The measures added included a heat pump replacing strip heat, residential load management, commercial load management, standby generator and direct expansion air-conditioning replacement. The company also included the measures previously identified by the Commission as Code/Utility Evaluation ("CUE") measures. However, the CUE measures

were first screened for those that now exist in the Florida Energy Efficiency Code for Building Construction. Tampa Electric also considered measures that had been historically promoted through the company's custom incentive program and that had developed a consistent demand and energy savings profile across one or more commercial/industrial segments. Finally, R&D measures that were demonstrated to be viable for the company's climate zone and potentially cost-effective were considered. The comprehensive list of measures evaluated by Tampa Electric is shown in Document 1 of my Exhibit No. ____ (HTB-1).

Q. Once Tampa Electric compiled its list of measures for evaluation, did any screening occur based on a measure's cost-effectiveness results from any previous goals setting proceeding?

A. No. All measures on the list were evaluated regardless of their cost-effectiveness results from previous goals setting proceedings. This was done even though the avoided cost for combustion turbine generation has dropped significantly since the last proceeding.

Q. What impact did Tampa Electric's ongoing monitoring and

evaluating efforts have on the process?

A. Tampa Electric's monitoring and evaluating efforts enabled the company to update certain demand and energy savings, company costs and customer equipment costs for measures that are integral to the company's current DSM programs.

Additionally, the company was able to identify the shrinking market potential, residentially and commercially, for measures that have had successful penetration rates from the early 1980s forward.

Q. Please describe the cost-effectiveness analysis Tampa Electric performed on the comprehensive list of measures.

A. Consistent with previous goals setting proceedings, all measures were evaluated using the Commission prescribed cost-effectiveness methodology defined in Rule 25-17.008. The SRC and/or company specific data for each measure was input into the cost-effectiveness model (DSM_FIRE) previously developed to meet the requirements of the Rule. Cost-effective results were identified as those measures that passed the Rate Impact Measure ("RIM") Test, the Total Resource Cost ("TRC") Test, and the

Participants' Test with a benefit-to-cost ratio ("BCR") of 1.0 or greater.

Q. For those measures with a BCR of 1.0 or greater, please describe any additional analysis or screening that occurred.

A. At this juncture, participation rates for the measures exhibiting a BCR of 1.0 or greater were analyzed. In some cases, the rate was projected at a fairly aggressive level due to the relative newness and moderate adoption rate of the measure thus far in the marketplace. The duct repair measure for existing residential air distribution systems is an excellent example. Conversely, some measures have been cost-effectively penetrating the marketplace since the early 1980s and their participation rates were projected at a more modest level. Heat pump replacing strip heat and ceiling insulation measures in the residential sector are examples of these types of measures. Simply stated, it is becoming increasingly more difficult to secure the next incremental participant for these maturing measures. However, both of these residential measures, along with other mature residential and commercial/industrial measures, are still cost-effective and their respective

contributions will continue to be counted toward the company's DSM goals.

Measures that had a BCR of 1.0 or greater were also screened for permanency, customer behavioral characteristics, a measure's viability for inclusion in a utility DSM program, marketplace availability and free ridership.

Q. Did all of the measures in Tampa Electric's current DSM programs maintain their cost-effectiveness?

A. Although there was a continuing overall decline in BCRs due to decreasing costs for avoided combustion turbine generation, with the exception of Tampa Electric's residential load management measure, all measures from the company's current DSM programs maintained their cost-effectiveness. For residential load management, a significant effort was made to determine modifications that could be made in order to preserve the measure. All cost components were analyzed for potential reductions. A seasonal approach in lieu of a year round offering and a minimum requirement of two appliances for new participants were evaluated; however, no combination of these alternatives provided a cost-effective solution.

Q. What is Tampa Electric's plan for residential load management?

A. Tampa Electric recognizes the value of its existing residential load management resource and the potential for incremental load that still exists in the marketplace. However, the company believes that a new approach must be taken in order to secure any portion of that existing potential. Therefore, Tampa Electric is evaluating a type of load management that the utility industry generically terms price responsive load management ("PRLM").

PRLM has been demonstrated to be a viable and customer accepted alternative offered by utilities in the United States to their commercial/industrial sector of customers. It is now emerging as an option for the residential sector as well. The success of PRLM is based upon the premise that if a utility provides customers with high enough real-time pricing signals during periods when traditional load management would be exercised, PRLM customers will react to such higher priced signals and alter their energy consumption patterns, thereby providing demand reductions during a utility's peak

demand periods. In Florida, PRLM is being successfully demonstrated by Gulf Power Corporation.

Tampa Electric has examined available data for a potential PRLM program in its service area. The initial evaluation is quite promising; however, company specific data is necessary for an informed decision to be made. Therefore, Tampa Electric anticipates filing a request with the Commission in August 2004 for a residential PRLM pilot project of up to two years in duration to begin field installation and data collection during the first quarter of 2005. In the interim and until the completion of the PRLM pilot, Tampa Electric will request that the current residential load management program remain open for new customer participation and that the company will be able to count any modest incremental savings achieved toward its goals for the current period. At the end of the PRLM pilot, Tampa Electric will evaluate the long-term viability of PRLM, the cost-effectiveness of its current load management program, and from those analyses, determine the appropriate plans for capturing the residential load management potential that exists at that time. The decision process and any necessary filings will be brought before the Commission.

Q. Based on Tampa Electric's evaluation process, what are the DSM goals the company is proposing for 2005 - 2014?

A. For 2005 - 2014, Tampa Electric's cumulative proposed residential goals are a 15.2 MW reduction in summer demand, a 20.1 MW reduction in winter demand and a 43.5 GWH reduction in annual energy. The cumulative proposed commercial goals are a 15.3 MW reduction in summer demand, an 8.2 MW reduction in winter demand and a 41.5 GWH reduction in annual energy. Document 2 of my Exhibit No. ____ (HTB-1) provides the cumulative proposed residential goals for the period and Document 3 of my Exhibit No. ____ (HTB-1) provides the cumulative proposed commercial goals for the period.

Q. Please comment on Tampa Electric's resource planning practices utilized in this current goals setting process?

A. Tampa Electric's resource planning process for this current goals setting process is consistent with the integrated approach approved by the Commission in the two previous goals setting proceedings - Docket No. 930551-EG and Docket No. 971007-EG. The process is also delineated in the company's annual Ten-Year Site Plan filing.

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

A. The avoided cost assumptions used for measure analysis are contained in Document 4 of Exhibit No. ____ (HTB-1). The data is consistent with information filed in the company's most recent Ten-Year Site Plan.

Q. Please summarize your testimony.

A. Tampa Electric initiated its current DSM goals setting process by utilizing a comprehensive list of measures derived from previous goals setting proceedings. Additional measures from company programs were added for evaluation. Based upon ongoing monitoring and evaluating conducted by the company, modifications to measure characteristics where made where appropriate. All measures were evaluated for cost-effectiveness. After appropriate screening, measures that passed the Commission prescribed cost-effectiveness tests with a BCR of 1.0 or greater established the goals for 2005 - 2014. The cumulative residential sector goals are 15.2 MW of summer demand, 20.1 MW of winter demand and 43.5 GWH of annual energy. The cumulative commercial/industrial

sector goals are 15.3 MW of summer demand, 8.2 MW of winter demand and 41.5 GWH of annual energy.

Q. Does this conclude your testimony?

A. Yes.

Tampa Electric Company
Docket No. 040033-EG
Witness: Bryant
Exhibit No. ____ (HTB-1)

Tampa Electric Company

Exhibit of

Howard T. Bryant

Tampa Electric Company

Index

Residential Existing Construction Measures Evaluated

Appliance Efficiencies

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)
LT-4	4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)
PP-1	HIGH EFFICIENCY POOL PUMP
RF-1	BEST CURRENT REFRIGERATOR (FROST-FREE)
RF-2	BEST CURRENT REFRIGERATOR (MANUAL)
RF-3	REMOVE SECOND REFRIGERATOR

Building-Envelope Efficiencies

RSC-10A	CEILING INSULATION (RO-R19)
RSC-10B	CEILING INSULATION (RO-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-19A	REFLECTIVE ROOF COATINGS
RSC-19B	REFLECTIVE ROOF COATINGS
TECO-R1	TECO CEILING INSULATION

HVAC Systems

RSC-01	HIGH EFFICIENCY AIR SOURCE HEAT PUMP
RSC-02	GROUND SOURCE HEAT PUMP
RSC-03	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-21A	HIGH EFFICIENCY CENTRAL AC
RSC-22A	TWO SPEED CENTRAL AC
RSC-23A	WHOLE HOUSE FANS
RSC-23B	WHOLE HOUSE FANS
RSC-24A	HIGH EFFICIENCY ROOM AC
RSC-25A	AIR CONDITIONING/HEAT PUMP MAINTENANCE
RSC-25B	AIR CONDITIONING/HEAT PUMP MAINTENANCE
RSC-29	RESIDENTIAL HIGH EFFICIENCY HEAT PUMP
TECO-R2	TECO HEATING AND COOLING SEER 12
TECO-R3	TECO DUCT REPAIR

Water Heating Systems

WH-1	HIGH EFFICIENCY ELECTRIC RESISTANCE WATER HEATER
WH-2	INTEGRAL HEAT PUMP 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

Peak Load Shaving

PP-3	DLC OF POOL PUMPS
RSC-8A	LOAD CONTROL FOR RESIDENTIAL HEAT
RSC-8B	LOAD CONTROL FOR RESIDENTIAL HEAT
RSC-26A	DLC OF CENTRAL AC
RSC-26B	DLC OF CENTRAL AC
WH-10	DLC OF ELECTRIC WATER HEATER
TECO-R4	TECO LOAD MANAGEMENT

Solar Energy and Renewable Energy Sources

WH-3	SOLAR WATER HEATER

Residential New Construction Measures Evaluated

Appliance Efficiencies

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)
LT-4	4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)
RF-1	BEST CURRENT REFRIGERATOR (FROST-FREE)
RF-2	BEST CURRENT REFRIGERATOR (MANUAL)

Building-Envelope Efficiencies

RSC-19A	REFLECTIVE ROOF COATINGS
RSC-19B	REFLECTIVE ROOF COATINGS

HVAC Systems

RSC-01	HIGH EFFICIENCY AIR SOURCE HEAT PUMP
RSC-02	GROUND SOURCE HEAT PUMP
RSC-03	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-21A	HIGH EFFICIENCY CENTRAL AC
RSC-22A	TWO SPEED CENTRAL AC
RSC-24A	HIGH EFFICIENCY ROOM AC
RSC-29	RESIDENTIAL HIGH EFFICIENCY HEAT PUMP

Water Heating Systems

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-8	DHW HEAT TRAP
WH-9	LOW FLOW SHOWERHEAD

Peak Load Shaving

PP-3	DLC OF POOL PUMPS
RSC-8A	LOAD CONTROL FOR RESIDENTIAL HEAT
RSC-8B	LOAD CONTROL FOR RESIDENTIAL HEAT
RSC-26A	DLC OF CENTRAL AC
RSC-26B	DLC OF CENTRAL AC
WH-10	DLC OF ELECTRIC WATER HEATER
TECO-R4	TECO LOAD MANAGEMENT

Residential CUE Measures Evaluated

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 Existing Construction Measures Evaluated

Appliance Efficiencies

CD-18	CONVECTION OVENS
CD-19	ENERGY EFFICIENT ELECTRIC FRYERS

Lighting Efficiencies

LD-01	4'-34W FLOUR LAMPS/HYBRID BALLASTS (#1)
LD-02	4'-34W FLOUR LAMPS/HYBRID BALLASTS (#2)
LD-03	4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)
LD-04	4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)
LD-05	8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)
LD-06	8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#2)
LD-07	T8 LAMPS/ELECTRONIC BALLASTS (#1)
LD-08	T8 LAMPS/ELECTRONIC BALLASTS (#2)
LD-09	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)
LD-27	ENERGY MANAGEMENT SYSTEM FOR LIGHTING
LD-28	OCCUPANCY SENSORS
TECO-C1	TECO INDOOR LIGHTING

Refrigeration Equipment

RD-01	MULTIPLEX AIR-COOLED/NO SUBCOOLING
RD-02	MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING
RD-03	MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING
RD-04	MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL
RD-05	MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX
RD-06	OPEN DRIVE REFRIGERATION SYSTEM (ASD)
RD-07	ANTI-CONDENSATE HEATER CONTROLS
RD-08	HIGH R-VALUE GLASS DOORS
RD-09	REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)
RD-10	DUAL PATH AIR CONDITIONING

HVAC Systems

SCD-01	HIGH EFFICIENCY CHILLER
SCD-02	HIGH EFFICIENCY CHILLER W/ASD
SCD-03	HIGH EFFICIENCY DX AC
SCD-04	HIGH EFFICIENCY ROOM AC UNITS
SCD-05	COOL STORAGE
SCD-06	HEAT PIPE ENHANCED DX AC
SCD-08	HOTEL OCCUPANCY SENSORS
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-16	TEMPERATURE SETUP/SETBACK-CHILLER
SCD-17	TEMPERATURE SETUP/SETBACK-DX AC
VD-01	LEAK FREE DUCTS DX AC
VD-03	VAV SYSTEMS W/INLET VANES-DX AC
VD-04	ASD VENTILATION CONTROL W/VAV-DX AC
VD-05	ASD VENTILATION CONTROL W/VAV-CHILLERS
VD-06	TIME/PROGRAM VENTILATION CONTROL-CHILLERS
VD-07	TIME/PROGRAM VENTILATION CONTROL-DX AC
VD-10	SEPARATE MAKEUP AIR/EXHAUST HOODS-CHILLERS
VD-11	SEPARATE MAKEUP AIR/EXHAUST HOODS-DX AC
TECO-C2	TECO DX AC REPLACEMENT

Building-Envelope Efficiencies

SCD-18	ROOF INSULATION-CHILLER
SCD-19	ROOF INSULATION-DX AC
SCD-22	WINDOW FILM-CHILLER
SCD-23	WINDOW FILM-DX AC
SCD-26	LIGHT COLORED ROOFS-CHILLER
SCD-27	LIGHT COLORED ROOFS-DX AC

Power Equipment/Motor Efficiencies

SCD-09	2-SPEED MOTOR FOR COOLING TOWER
VD-08	HIGH EFFICIENCY MOTORS-CHILLERS
VD-09	HIGH EFFICIENCY MOTORS-DX AC

Water Heating

WD-11	HEAT PUMP 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

Solar Energy and Renewable Energy Sources

WD-12	SOLAR WATER HEATER

Peak Load Shaving

TECO-C3	TECO COMMERCIAL LOAD MANAGEMENT
TECO-C4	TECO STANDBY GENERATOR

Commercial New Construction Measures Evaluated

Appliance Efficiencies

CD-18	CONVECTION OVENS
CD-19	ENERGY EFFICIENT ELECTRIC FRYERS

Lighting Efficiencies

LD-05	8'-60W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)
LD-08	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-25	COMPACT FLOURESCENT LAMPS (15/18/27W)
LD-26	TWO LAMP COMPACT FLOURESCENT (18W)
LD-27	ENERGY MANAGEMENT SYSTEM FOR LIGHTING
LD-28	OCCUPANCY SENSORS
LD-29	DAYLIGHTING DESIGN

Refrigeration Equipment

RD-01	MULTIPLEX AIR-COOLED/NO SUBCOOLING
RD-02	MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING
RD-03	MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING
RD-04	MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL
RD-05	MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX
RD-06	OPEN DRIVE REFRIGERATION SYSTEM (ASD)
RD-07	ANTI-CONDENSATE HEATER CONTROLS
RD-08	HIGH R-VALUE GLASS DOORS
RD-09	REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)
RD-10	DUAL PATH AIR CONDITIONING

HVAC Systems

SCD-01	HIGH EFFICIENCY CHILLER
SCD-02	HIGH EFFICIENCY CHILLER W/ASD
SCD-03	HIGH EFFICIENCY DX AC
SCD-04	HIGH EFFICIENCY ROOM AC UNITS
SCD-05	COOL STORAGE
SCD-09	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
VD-01	LEAK FREE DUCTS DX AC
VD-04	ASD VENTILATION CONTROL W/VAV-DX AC
VD-05	ASD VENTILATION CONTROL W/VAV-CHILLERS
VD-06	TIME/PROGRAM VENTILATION CONTROL-CHILLERS
VD-07	TIME/PROGRAM VENTILATION CONTROL-DX AC
VD-10	SEPARATE MAKEUP AIR/EXHAUST HOODS-CHILLERS
VD-11	SEPARATE MAKEUP AIR/EXHAUST HOODS-DX AC
TECO-C2	TECO DX AC REPLACEMENT

Building-Envelope Efficiencies

SCD-18	ROOF INSULATION-CHILLER
SCD-19	ROOF INSULATION-DX AC
SCD-26	LIGHT COLORED ROOFS-CHILLER
SCD-27	LIGHT COLORED ROOFS-DX AC

Power Equipment/Motor Efficiencies

SCD-08	2-SPEED MOTOR FOR COOLING TOWER
VD-08	HIGH EFFICIENCY MOTORS-CHILLERS
VD-09	HIGH EFFICIENCY MOTORS-DX AC

Water Heating

WD-11	HEAT PUMP WATER HEATER
WD-13	HEAT RECOVERY WATER HEATER
WD-14	DHW HEATER INSULATION

Solar Energy and Renewable Energy Sources

WD-12	SOLAR WATER HEATER

Peak Load Shaving

TECO-C3	TECO COMMERCIAL LOAD MANAGEMENT
TECO-C4	TECO STANDBY GENERATOR

Commercial CUE Measures Evaluated

LD3	4'-34W FLOUR LAMPS/ELECTRONIC BALLASTS (#1)
RD1	MULTIPLEX AIR-COOLED/NO SUBCOOLING
RD2	MULTIPLEX AIR-COOLED/AMBIENT SUBCOOLING
RD3	MULTIPLEX AIR-COOLED/MECHANICAL SUBCOOLING
RD4	MULTIPLEX AIR-COOLED/AMBIENT & MECHANICAL SUBCOOL
RD5	MULTIPLEX AIR-COOLED/EXTERNAL LIQUID SUCTION HX
RD6	OPEN DRIVE REFRIGERATION SYSTEM (ASD)
RD7	ANTI-CONDENSATE HEATER CONTROLS
RD8	HIGH R-VALUE GLASS DOORS
RD9	REFRIGERATION ENERGY MANAGEMENT SYSTEM (EMS)
SCD08	2-SPEED MOTOR FOR COOLING TOWER
SCD09	SPEED CONTROL FOR COOLING TOWERS
SCD18	ROOF INSULATION-CHILLER
SCD19	ROOF INSULATION-DX AC
SCD20	WALL INSULATION-CHILLER
SCD21	WALL INSULATION-DX AC
SCD22	WINDOW FILM-CHILLER
SCD23	WINDOW FILM-DX AC
SCD24	SPECIALLY SELECTIVE WINDOWS-CHILLERS
SCD25	SPECIALLY SELECTIVE WINDOWS-DX AC

Proposed Residential Goals
2005 - 2014

Year	Summer Goal (MW)	Winter Goal (MW)	Annual Energy Goal (GWH)
2005	2.4	4.0	7.0
2006	4.4	6.7	12.6
2007	6.2	9.1	17.9
2008	7.9	11.4	22.7
2009	9.5	13.4	27.2
2010	10.9	15.2	31.2
2011	12.2	16.7	34.9
2012	13.3	18.1	38.2
2013	14.3	19.2	41.0
2014	15.2	20.1	43.5

Proposed
Commercial/Industrial Goals
2005 - 2014

Year	Summer Goal (MW)	Winter Goal (MW)	Annual Energy Goal (GWH)
2005	2.1	1.0	6.7
2007	6.0	2.9	18.4
2008	7.7	3.8	23.4
2009	9.3	4.7	27.8
2010	10.7	5.5	
		6.2	
2012	13.3	6.9	37.7
2013	14.3	7.6	39.9
2014	15.3	8.2	41.5

Avoided Unit Information
2005 Base Year

(1)	PLANT NAME AND UNIT NUMBER	BAYSIDE UNIT 3A
(2)	CAPACITY	
	A. SUMMER	160
	B. WINTER	180
(3)	TECHNOLOGY TYPE	COMBUSTION TURBINE
(4)	ANTICIPATED CONSTRUCTION TIMING	
	A. FIELD CONSTRUCTION START DATE	JUL 2006
	B. COMMERCIAL IN-SERVICE DATE	JAN 2008
(5)	FUEL	
	A. PRIMARY FUEL	NATURAL GAS
	B. ALTERNATE FUEL	DISTILLATE OIL
(6)	AIR POLLUTION CONTROL STRATEGY	DRY LOW NO_X BURNER
(7)	COOLING METHOD	N/A
(8)	TOTAL SITE AREA [1]	APPROXIMATELY 213 ACRES
(9)	CONSTRUCTION STATUS	PROPOSED
(10)	CERTIFICATION STATUS [3]	N/A
(11)	STATUS WITH FEDERAL AGENCIES	N/A
(12)	PROJECTED UNIT PERFORMANCE DATA	
	PLANNED OUTAGE FACTOR (POF)	1.9
	FORCED OUTAGE RATE (FOR)	4.8
	EQUIVALENT AVAILABILITY FACTOR (EAF)	93
	RESULTING CAPACITY FACTOR (2008)	5.5%
	AVERAGE NET OPERATING HEAT RATE (ANOHR) [2]	10,600 Btu/kWh
(13)	PROJECTED UNIT FINANCIAL DATA	
	BOOK LIFE (YEARS)	26
	TOTAL INSTALLED COST (IN-SERVICE YEAR $/kW)	254.97 [4]
	DIRECT CONSTRUCTION COST ($/kW)	230.18 [5]
	AFUDC AMOUNT ($/kW)	3.28
	ESCALATION ($/kW)	19.48
	FIXED O&M ($/kW – Yr)	2.74
	VARIABLE O&M ($/MWH)	8.76
	K FACTOR	1.6926

1 REPRESENTS TOTAL GANNON OR BAYSIDE SITE.

2 BASED ON IN-SERVICE YEAR.

3 CERTIFICATION NOT REQUIRED.

4 AFUDC COSTS REVISED INCREASING TOTAL COSTS FROM 247.77 TO 254.97.

5 DIRECT CONSTRUCTION COSTS REVISED TO REFLECT BASE YEAR OF 2005 vs. 2004.

Tampa Electric Company Ten-Year Site Plan 2004