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February 21, 1995

HAND DELIVERED

IN REPLY REFER TO

Tallahassee

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
101 East Gaines Street
Tallahassee, Florida 32399-0850

Re: Conservation Cost Recovery Clause
FPSC Docket No. 950002-EG

Dear Ms. Bayo:

Enclosed for filing in the above docket, on behalf of Tampa Electric Company, are the original and fifteen (15) copies of each of the following:

02053-95 1. Prepared Rebuttal Testimony of John E. Currier.

02054-95 2. Prepared Rebuttal Testimony of Raymond E. Patenaude.

02055-95 3. Prepared Rebuttal Testimony of John T. Putnam.

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning same to this writer.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Enclosures

cc: All Parties of Record (w/enc.)

4+org

RECEIVED & FILED

FPSC-BUREAU OF RECORDS

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing Testimony, filed on behalf of Tampa Electric Company, has been furnished by U. S. Mail or hand delivery (*) on this 21st day of February, 1995 to the following:

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ATTORNEY

DOCKET NO. 950002-EG
TAMPA ELECTRIC COMPANY
SUBMITTED FOR FILING 2/20/95

BEFORE THE PUBLIC SERVICE COMMISSION

PREPARED REBUTTAL TESTIMONY

OF

JOHN T. PUTNAM

Q. Please state your name and business address.

A. My names is John T. Putnam. My business address is 702 North Franklin Street, Tampa, Florida 33602

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

A. I am employed by Tampa Electric Company as a Consulting Engineer.

Q. Please summarize your educational background and business experience.

A. I received a Bachelor of Science degree in Mechanical Engineering from the University of South Florida in 1988. I have attended numerous continuing education seminars in air conditioning applications, refrigeration applications and energy conservation. I am a registered Professional Engineer in the State of Florida.

Q. What are your principal duties as a consulting engineer with Tampa Electric Company?

A. My primary responsibilities are providing energy consulting for our commercial, industrial and residential customers. Additionally, I provide support to the development of our demand side management programs.

Q. Have you now had an opportunity to review the Supplemental Direct\Intervenor Testimony of Maury J. Blalock?

A. Yes I have.

Q. Mr. Blalock has commented on approximately 20 different areas of Tampa Electric's relative efficiency analysis. Would you please respond to those items addressing matters within your area of responsibility?

A. Yes I will. Beginning on page 10, item number 20, Mr. Blalock questions Tampa Electric's production energy unit cost of $0.00943/KWh. This figure represents our average system production energy cost and not a "marginal fuel expense" and was determined by our Regulatory Affairs Department using standard rate methodologies.

Q. What is the next item you wish to respond to?

A. On page 11, in item 1, Mr. Blalock refers to the gas engine chiller example used in the electric technologies brochure. He questions the heat rate of 8.6 KBtu/ton used for the engine driven system. This heat rate is reflective of current market applications. The efficiency ratings of 1.7 to 2.0 COP that Mr. Blalock references do not reflect American Refrigeration Institute (ARI) rating values and are not practical for this region.

Q. What is the next item you wish to respond to?

A. On page 11, in item 2, Mr. Blalock states that Tampa Electric Company used "Part-Load Curves" that were not representative of the latest high efficiency gas equipment. The Part-Load Curves used for that analysis are appropriate for the temperatures and ambient conditions of Tampa Electric's service territory. In fact, they represent actual operating conditions for customers within our region.

Additionally, many of the part-load efficiencies values published by gas equipment manufacturers do not take into consideration the extremely humid conditions of Central

the analysis for the Tampa region. Those numbers were established directly from the operating conditions of the University of South Florida's central plant. Part of the reason behind that is they base load their high efficiency electric chillers to try to optimize their overall operating efficiency and cost. The absorption technology they have installed in the plant has a lower relative efficiency, so when they can displace that load, they do.

Q. What is the next item you wish to respond to?

A. On page 12, in item 5, Mr. Blalock states that the cost comparison for the large electric and gas chiller equipment was not reflective of the EPRI data within the exhibits. We rely heavily on EPRI data whenever possible and normally we find it to be accurate. However, gas technologies are new in the marketplace and the cost varies significantly throughout the nation. The cost figures used are reflective of actual construction bids related to these types of projects. These costs are substantially higher than the EPRI data and more appropriately reflect averages within Tampa Electric's service area.

Q. What is the next item you wish to respond to?

Q. On page 13, in item 6, Mr. Blalock challenges the operating savings at the University of South Florida derived by replacing gas chiller equipment with electric equipment. Mr. Blalock overstates the claimed savings and erroneously references a 1990 replacement date. In a previous exhibit of Tampa Electric, we included a summary table from which we derived these numbers based on the May 1991 installation date.

Q. What is the next item you wish to respond to?

A. On page 13, in item 7, Mr. Blalock refers to the emission comparisons between various electric power generating equipment types and various electric and gas end use equipment types.

Tampa Electric utilized the emissions rates of one of our newer and larger units since many of our analyses are directed at new applications serving the growth needs of our customers. The power plants serving the growth needs of our customers will be higher efficiency and more environmentally compatible generating units.

Q. What is the next item you wish to respond to?

A. On page 14, in item 8, Mr. Blalock questions Tampa Electric's installed cost differential between gas and electric equipment. My response is similar to what I stated in response to item 5 on page 12 of his testimony. In the commercial HVAC equipment example for Cypress Gardens, the installed cost is not reflective of the EPRI average national cost data. Again, the numbers we used here varied from the EPRI value because we had specific customer bids for this application and other customer applications that were very similar.

Q. What is the next item you wish to respond to?

A. On page 14, in item 9, Mr. Blalock states that the monthly and annual energy use profiles were not reflective of our region and because of that they created a bias in favor of the electric technology. In fact, the monthly and annual energy profiles used were based on the characteristics of the University of South Florida Central Plant and other institutional applications that would typically involve large chillers. It is important to note here that the high load factor profiles used actually benefit the higher first cost options, which in this case would be the gas options. This is a very conservative approach.

Q. Does that conclude your testimony?

A. Yes, it does.