BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Application of Cargill Fertilizer, Inc. to engage in self-service wheeling of waste heat cogenerated power to, from and between points within Tampa Electric Company's service area.

Docket No. 020898-EQ

Filed: September 3, 2003

/

DIRECT TESTIMONY AND EXHIBITS

OF

ROGER F. FERNANDEZ

ON BEHALF OF

CARGILL FERTILIZER, INC.

(PUBLIC VERSION)

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DOCKET NO. 020898-EQ

(CONFIDENTIAL VERSION)

INTRODUCTION

Q Please state your name and address.

A. My name is Roger Fernandez. My address is 8813 US Highway 41 South, Riverview, Florida 33569.

Q. What is your educational background?

A I graduated in 1965 from the University of Florida as a Chemical Engineer I also have a Master of Business Administration from the University of South Florida obtained in 1981

Q Who employs you and what is your position?

A I am the Utilities Superintendent for Cargill Fertilizer, Inc.

SUMMARY OF TESTIMONY

Q. Please summarize your testimony.

A. 1 **The Petition.** Cargill petitions the Commission to find from the evidence in this case that Cargill's self service wheeling (SSW) does not materially increase rates for customers and that it is in the public interest for Cargill to be allowed to transmit the electricity it produces from waste heat between two of its local fertilizer plants. TECo has a tariff that enables Cargill to send electricity

over TECo lines to Cargill plants in other states, but ironically we can't transmit the electricity we produce forty miles between Tampa and Bartow without your favorable finding Our electricity is made in Florida and we would like to use it in Florida to keep our plants operating when our power is needed for our internal use

2. **Cargill's Investment.** Cargill has invested in environmentally beneficial technology at each site that produces electricity without consuming fossil fuels. Both Cargill facilities are QFs (Qualifying Facilities) This means they are more efficient than the conventional fossil fuel burning generators TECo uses. TECo promotes this type of investment by its customers. The small portion of the electricity used in the SSW pilot study avoided the need to burn 75,698 TONS of coal. Cargill's investment in cogeneration technology not only conserved fossil fuel, it also avoided the adverse environmental impacts of burning that fuel. Our economic evaluation of the SSW pilot study in this case shows that the Cargill investment reduced consumers' bills by a modest amount during the study period The greatest benefit comes from the additional matters that the Commission is to consider in its findings -- fuel conservation and environmental benefits Using the TECo calculation method for determining environmental benefit, you will find that the value of Cargill cogeneration is $74 4 million a year The portion of the sum attributable to SSW in $1,081,000. This fact isn't mentioned anywhere in the TECo pilot study

3. **The Need For Back up Protection.** Cargill normally produces enough electricity at each site to be an exporter, but like utilities, we must maintain our

equipment There is also a distinct possibility of unplanned outages, because both our generators and sulfuric acid plants must be running to make electricity Without SSW, we must rely solely on stand by interruptible service from TECo when our own generation is not available at one of the two sites There were months during the two-year pilot study when TECo was unable to provide back up power from its generation for portions of 25 out of 30 days Cargill has invested large amounts of capital to make electricity from waste heat in Florida. We would like the opportunity to use the returns from that investment to maximize efficiency and to protect ourselves when we need stand by power.

4. **A Reasonable Charge for SSW.** During the pilot study period, Cargill paid the standard TECo transmission charges for SSW. We believe this continues to be the appropriate charge for SSW We have no objection to paying a fair, cost-based rate for transmission and interruptible back up service from TECo Even with SSW, Cargill continues to pay TECo $1 million each year in demand charges, including a bundled charge for transmission service, plus multiple customer charges, all in addition to the charges for transmission service

5. **SSW Implements Important Government and Utility Policies.** Approving Cargill's SSW application will give official acknowledgement to two important functions, in addition to saving costs for TECo ratepayers· ENERGY CONSERVATION AND ENVRONMENTAL PROTECTION. These functions are deemed critical by federal and state legislative policies, Commission policy, and public utilities' policies regarding cogeneration, energy conservation, and environmental protection. The Commission, in its *An Assessment of Renewable*

Electric Generating Technologies for Florida, has cited Cargill-type cogeneration. Energy conservation and environmental polices should not be ignored in the consideration of SSW Cargill's expert witness, Gerard Kordecki, has extensive experience in the development and analyses of conservation programs. He will eleborate further on the state and federal polices that govern this case.

Q Does this conclude your summary?

A. Yes.

Q. How long have you been at the Riverview plant?

A. I have been employed at the Riverview fertilizer plant since my graduation from college 38 years ago. I have worked in various engineering and production supervision positions, primarily in areas related to our sulfuric acid production, and lately the waste heat power generation activities at our facilities.

THE OPERATION AND INVESTMENT

Q. Where are the electric generators we are talking about in this case located?

A I have attached a map as Exhibit No ___ (RFF-1). This shows the location of the fertilizer plants that use SSW. Cargill has two generators in Riverview, Florida Cargill's Riverview plant is located on Tampa Bay between TECo's Big Bend Station and downtown Tampa. We have two more generators on the outskirts of Bartow, Florida, northeast of TECo's Polk County power plant and TECo Power Services Hardee power plant

Q. Describe your operation and briefly explain how the waste heat cogeneration process works.

A. Cargill mines phosphate rock in Polk County. The sulfuric acid is applied to the phosphate rock at the processing plants in Hillsborough and Polk counties The sulfuric acid is needed to convert the plant food ingredient (phosphate) from an insoluble form –not available to plants- to a soluble form easily available to crops

Cargill buys elemental sulfur that is extracted from natural gas when the gas is being cleaned for consumption. We combine this elemental sulfur with air and water to turn it into sulfuric acid The conversion process releases large amounts of waste process heat. This process heat is recovered in the form of steam and superheated steam. Cargill has invested significant capital in its sulfuric acid plants to recover the heat in a useful form.

Cargill supplemented its heat capturing investment with an investment in turbine generators. The steam and superheated steam is used in steam turbine driven generators. These steam turbines are "single or double extraction/condensing turbines." They not only produce electricity using the waste heat, but are also used to extract steam at lower pressures for process uses in the rest of the fertilizer complex. This is a "combined heat and power," or CHP process

Cargill's cogeneration was listed in the January 2003 joint Florida Department of Environmental Protection – Florida Public Service Commission publication entitled "*An Assessment of Renewable Electric Generating Technologies for Florida*" (Exhibit No _____, RFF-2)

Sulfuric acid can be produced without making electricity, or it can be produced recovering waste heat and making electricity. The process emissions

are the same in each case, the only additional input required is capital---Cargill capital.

Q In general terms, why does Cargill want to engage in SSW?

A. Cargill wants to get the greatest efficiency from our overall operations, including electrical generation Frequently our waste heat can produce more electricity at one location than we need at that location while at the same time there is a need at the other location.

Q What happens when you produce surplus electricity at one of the locations?

A The surplus electricity automatically flows onto the TECo transmission lines. This power is accounted for on the meters TECo has at each of our units. TECo has a tariff that lets us sell the surplus electricity to it or to other utilities or transport it to our plants in other states, but without SSW we can't transport it to our own plant that is 40 miles away. We would prefer to use SSW. With SSW, we can put electricity on the transmission system at one point where it is surplus and take a similar amount off at the other location where we need it

RATES AND CHARGES

Q At the end of the first year of the pilot study, TECo Prepared a "Mid-Point Summary." What did that summary show the impact to be on customers?

A It said, "Although there have been positive results for other ratepayers in certain months, the net impact over the period is a cost of $23,103." However, the Mid-Point Summary further pointed out two very important factors. In a footnote, it acknowledged that "This impact is comprised of immediate (fuel and other recovery clauses) and deferred (base rate) impacts of [redacted] and ([redacted]),

respectively." This means that the impact was positive for other customers during the first year of the study because TECo would have kept the other [redacted]

R. Did TECo say that it deemed the cost impact to be material on other customers?

A No, it said, "Both the customer and company agree that during the first year the dollar impact to other ratepayers has been small and not significant." (Emphasis added).

Q What result did the TECo pilot study show for the full two years?

A Based on a study that TECo revised on August 8, 2003, changing the approach and some numbers, TECo showed the impact on other customers to be a cost of [redacted] for two years; the immediate benefit to other customers was for the two-year period was [redacted].

Q Do you and TECo think the two-year number is material?

A. TECo hasn't shared its view with me, but it would still appear to be an insignificant number Clearly, it isn't material.

Q If you were charged to cover this adverse impact, how would it be different from the sum you now pay?

A Under the current pricing program, when Cargill flows electricity onto the TECo transmission system, TECo or other utilities buy it for the wholesale price or TECo pays its as-available price that is based on its fuel cost only We have one fixed contract with Progress Energy Florida to sell it 15 MWs of power. For the remaining surplus power, we must find a buyer, designate the MWs and Mwhs that will be available each day and schedule the delivery by sending a fax to

TECo. We do this 365 days a year After internal use and the sales to Progress Energy are deducted, about 1 to 2% of our total electrical production automatically flows onto the TECo transmission system as surplus electricity from Cargill

TECo charges Cargill a transmission charge to deliver the surplus electricity. If we need electricity at our other location, we must buy "interruptible back up power" from TECo and pay the retail price. The TECo retail charge is a bundled charge for standing by to serve (if it has capacity to serve), for electric production, transmission and general electric services. Currently, we pay two transmission charges, in addition to payment for electricity produced by others. We don't object to paying for the transmission service we use, even though TECo recently increased this charge by over 100%. We don't object to paying TECo about $1 million a year for a ratcheted demand charge to reserve interruptible back up service. We have no objection to paying for TECo back up power when it is needed. We are not objecting to an additional $50,000 a year in various customer charges we pay nor did we object to the interconnection charge that we paid We don't object to the high GSI charge we pay when we are unable to deliver scheduled surplus power. But for the safety of our operations and production output, we need to add our own back up protection to TECo's spotty interruptible back up service. We object to any pricing plan that requires Cargill to pay for power it doesn't take

If the price for SSW is based on the cost impact TECo shows in its pilot study, it would mean that a customer that conserves energy should pay TECo for

the energy not consumed because sometime in the future TECo might have a general rate case and insignificant lost sales might cause higher prices to other customers.

As an incidental matter, when TECo buys power in the wholesale market to serve its customers, Cargill would like to avoid paying the retail price for that power when we can provide it ourselves, at cost.

NEED FOR ADDITIONAL BACK UP

Q What happens when TECo doesn't have the capacity to serve Cargill?

A. If TECo doesn't have the power to serve Cargill, our plant will be shut down or TECo becomes our exclusive power merchant buying power for us on the spot wholesale market and selling it to us. The price for spot power is normally much higher than the charge for TECo produced power. When TECo is interrupting customers, Cargill is interrupted and our surplus power is confiscated. The price paid for confiscated power doesn't cover our losses from interruption We would prefer to continue operating and to avoid uncompensated consequential damages from interruption.

Q What impact did the Cargill acquisition have on operations at Riverview and Bartow?

A When I first started working at the Riverview (Tampa) plant in 1965, we had about 11 Mwhs of generating capacity and double that amount of demand/use. We were a firm customer of TECo. Twenty years later, around 1985, we were still generating about 11 Mwhs, were still a firm customer of TECo, had over $12

million per year in power bills, and we were in bankruptcy proceedings. We couldn't pay the power bill.

Cargill bought us out of bankruptcy which was very important for me and my family since it meant I still had a job Under Cargill's management, within 3 years we had built the first addition to our waste heat generating capacity since 1961 (34 years) We were a QF and became a STAND BY interruptible customer of TECo Cargill added another waste heat generator at the Riverview site about 3 years ago, and now when things are running normally, we export power, rather than buy.

The Bartow facility also has 2 generators. When all generators are running, Bartow is also normally an exporter of power. Therefore, at both sites we ourselves, with our own capital and waste heat generators, are our own supplier of electricity. TECo is utilized to "stand by," not as the first and most reliable source of supply.

Q If Cargill is normally an exporter of power, as you described above, why do you want to engage in self-service wheeling?

A. The answer is that we have downtime, planned and unplanned, just like TECo's plants do We have three sulfuric plants at Bartow and three in Tampa. When one of the sulfuric acid plants at either site goes down, we normally go from export power to stand by power purchases If TECo happens to have sufficient capacity and is not threatening interruptions, or still has generation available, SSW may be used, but it is not critical that we do so However, if TECo is down and out, and

we are left to fend for ourselves, then SSW is very important. We need to be able to exchange power that we generate between our sites.

Q You say TECo's capacity is constrained, but in a recent Commission workshop TECo reported to the Commission that it had a 20% reserve margin Doesn't that allay your concern?

A The reserve margin is not composed of machines standing by to serve It is composed of customers standing by to be interrupted TECo filed an exhibit in support of its Ten Year Site Plan that shows the 20% reserve margin. The ability to interrupt service to customers accounts for 13% or 620 MW of the reserve margin. This is called demand side management (DSM). Exhibit No. _____ (RFF-3) is an extract from the TECo reserve margin exhibit. Cogenerators, such as Cargill, account for 36.8% of TECo's DSM. Interruptible customers account for another 29.2%. Without cogeneration and interruptible customers, TECo's reserve margin is less than 12%. If it loses one unit of the Big Bend plant, the capacity margin is virtually wiped out placing customers in jeopardy. During the pilot study period, in April 2002 and October 2002, TECo had no power for interruptible customers, such as Cargill, at least a portion of 50 days out of the 61-day period. (Exhibit No ___, RFF-4). In response to discovery requests, TECo acknowledged that during the pilot study period, it lacked capacity to serve its customers 1689 hours. One could logically assume that this lack of capacity came about during the on-peak period. If this is the case, it means that TECo lacked capacity to meet its customers' needs 36% of the on-peak period. Based on these facts, I stand by my contention that TECo is power constrained. SSW sustained

Cargill during many of these days We had less fear of interruption or the cost of premium power purchased on the wholesale spot market.

FACTORS OTHER THAN RATE IMPACTS AND POWER SHORTAGES

Q Is the general body of customers hurt if TECo wheels your power to your other location?

A That of course is the question the Commission is asked to decide. We believe other customers benefit from Cargill SSW. TECo prepared studies that say otherwise As a result, Cargill employed an experienced consultant to review the TECo pilot study. We asked him to take the TECo numbers and use the Commission method for calculating the impact on the general body of consumers. He is hampered in the task because TECo is the only entity that knows its present costs and can project its future costs. It says the key elements of this information are confidential trade secrets and won't produce some of them. It will be difficult for our expert to prepare a report using the part of the confidential trade secrets that will be released and dealing with allegedly non existent information, but he is trying.

Q What are the key benefits Cargill's generation provides to the general public?

A 1 Cargill's electric generators **conserve large amounts of fossil fuel** because they make electricity from the waste heat. TECo would burn this fuel to serve Cargill if Cargill cogeneration didn't exist

2 Cargill's electric generators add no additional pollutants to the air and water. They **eliminate the air and water pollution** that would come from TECo power plants if they burned fossil fuels to make electricity to serve Cargill.

3. Cargill's electric generators **use energy more efficiently than a stand alone electric generator.** This is because the same energy created from the catalytic conversion of elemental sulfur is used not only to make electricity, but also to run mechanical devices and to provide heat where our process needs it. This is cogeneration, and combined heat and power technology (CHP) Both facilities are QFs under FERC rules. This is one of the reasons that our application under the SSW rules is a very unique and positive application.

Q. Have you attempted to quantify the benefits Cargill provides?

A I understand that the Cost Effectiveness Manual lets the Commission look beyond the two tests it contains I will do that using numbers from TECo publications or other information in the public domain. All of the calculations in this answer are based upon the assumption that Cargill used SSW for 10,814 Mwhs during the pilot study and that Cargill self-generation produces 744,000,000 kwhs of electricity each year.

a. From a conservation perspective, Cargill waste heat generation avoids burning **5.2 million tons of coal each year**. During the test period, 75,698 tons of this amount was attributable to energy under the SSW program.

b. To calculate the economic impact of this savings from an environmental perspective, I used TECo's "Powerful Business," issue # 4, attached as Exhibit No. ___ (RFF-5) This brochure tells how TECo calculates the cost of providing energy from renewable resources. Using the TECo methodology, I have calculated the value of the savings attributable to

SSW during the test period to be $1,0814,000 From an environmental perspective, Cargills total waste heat cogeneration savings would be valued at $74.4 million per year.

There is a more conservative way to calculate environmental savings. It is generally understood that TECo's Bayside Plant is being constructed to resolve law suits filed on behalf of the United States Environmental Protection Agency and the Florida Department of Environmental Protection (See Exhibit No. ___, RFF-6) To protect the environment, TECo switches to a fuel that costs more in order to avoid burning coal. The price differential is passed to customers. This price is $35.00 per Mwh according to a fuel filing made by TECo this August. (Exhibit No ___, RFF-7). Using this analysis, Cargill SSW provided an environmental benefit of $378,490 Total Cargill waste heat self generation provided an environmental benefit of $26 million.

Q Please sum up your thoughts on the subject.

A At each location, Cargill generates power from the waste heat available in the sulfuric acid process. Sulfuric acid can be produced without making electricity or it can be produced recovering waste heat and making electricity. Any process emissions are the same in each case, the only additional input required is Cargill capital No conservation incentives are proffered by public utilities to encourage cogeneration, other than the inducement that large electric bills provide

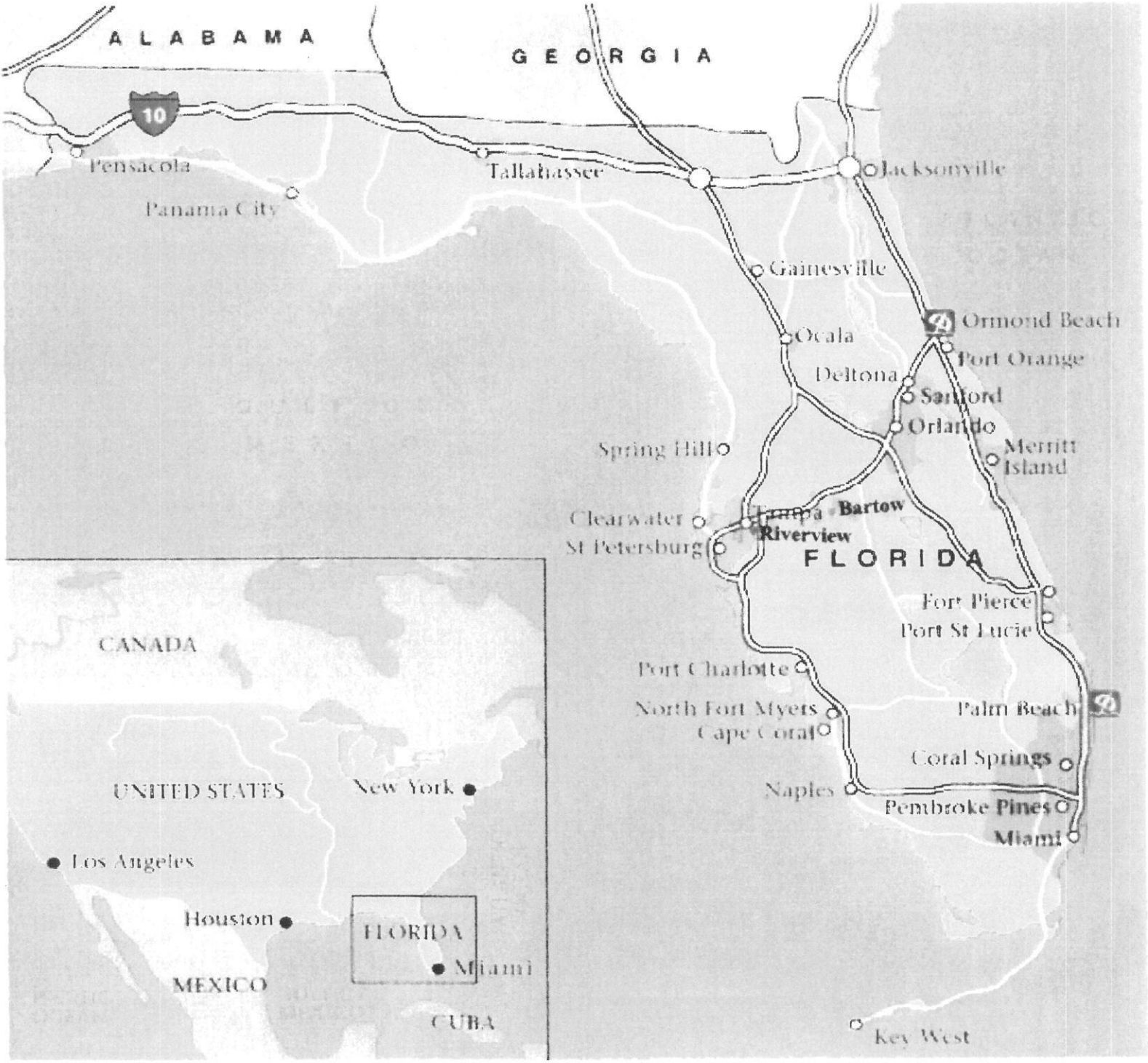
The obvious environmental benefits of generating power without burning fossil fuel have not been given due recognition by TECo during these

proceedings. TECo touts its own "cogeneration efforts" in an advertisement in the July 2003 issue of Power Engineering Magazine at page 23 (Exhibit No. ___, RFF-8) Yet, when repeatedly asked by Cargill to help quantify the value of our activities on its system, no answer was forthcoming. We have been puzzled, and continue to be puzzled, as to why our cogeneration efforts, financed with our own capital, receive no support from TECo We are hopeful the Commission will recognize the disparity and correct it

If the Commission in its findings gives consideration to the quantifiable and overwhelming annual conservation and environmental benefits Cargill cogeneration provides by helping TECo avoid burning coal or other fossil fuel to serve Cargill's electrical needs, it becomes obvious that the SSW application should be approved.

Q Does this conclude your direct testimony?

A. Yes



Maps of Florida

Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-1)

An Assessment of Renewable Electric Generating Technologies for Florida

PREPARED BY THE

Florida Public Service Commission and the
Department of Environmental Protection

Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-2)
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JANUARY 2003

Executive Summary and Key Results

- The 2002 Florida Legislature directed the Florida Public Service Commission, in consultation with the Florida Department of Environmental Protection, to do an assessment of renewable energy in Florida and its potential for electric generation. The statutory language defined renewable energy as *electricity generated from any method or process that uses one or more of the following sources of energy, but not limited to: biomass; municipal solid waste; geothermal energy; solar energy; wind energy; wood waste; ocean thermal gradient power; hydroelectric power; landfill gas; and agricultural products and by-products.* Using only the specific enumerated categories of renewables, Florida has approximately 680 megawatts of renewable capacity.[1] However, under the "not limited to" rubric, Florida has an additional 340 megawatts of generation capacity from phosphate manufacturers who use waste heat to produce electricity. This results in a total net summer generating capacity of 1028 MWs. Discussions with the phosphate industry indicate an additional 90 MWs of capacity are off-line or being redeveloped. The vast majority of this waste heat is used to serve internal electric loads for this industry. The combined capacity of these resources (exclusive of capacity used to serve internal loads) provides about 2.4 percent of the 2002 summer generating capacity of the State.

- There is no nationally accepted definition of renewable resources. While almost all states treat solar and wind as renewables, some states exclude municipal solid waste facilities and some types of hydroelectric. It is the purview of each state legislature to determine what resources constitute "renewables" within that state.

- For the year 2000, the renewable resources as defined in the statute provided approximately 3 percent of Florida's net electric generation, with a minimal contribution from hydro-electric sources. By comparison, on a national level, the vast majority of renewable energy is provided by hydro-electric sources. Excluding hydro-electric energy, approximately 2 percent of national energy production is attributed to the remaining types of renewable generation resources.[2] Florida's renewable electric production is largely derived from municipal solid waste (MSW), biomass materials such as agricultural waste products and wood residues which are used as fuel in boilers, and waste heat recovered from industrial manufacturing processes. Florida has some 50 MWs of hydro-electric generation in the Panhandle of the state. There are a number of photovoltaic installations but their total generating capacity is insignificant since most of these are only a few kilowatts in size.

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[1] A megawatt (MW = 1000 kilowatts) is a measure of real power at any instant in time or, in other words, a measure of demand on the grid at any moment in time. Megawatt hours (MWhs) are a measure of the MWs demanded aggregated over some time interval and thus represents the amount of electric energy consumed. A typical Florida house will consume about one MWh per month, but the house demand for electricity at any given moment would average about .0014 MW (1.4 kW).

[2] US DOE/EIA *Renewable Energy Annual 2001*. Table C13, p.58. By 2001, Florida's renewable contribution had declined to approximately 2% of net generation.

- Renewables vary in cost and technical readiness. Florida has a number of feasible renewable resources where feasible is defined as technologies that are deployable in the near future (through 2008) and commercially mature technologies. These include, in no particular order, biomass derived fuels, MSW, landfill and digester gas, hydro-electric, solar photovoltaic, and certain industrial plants that involve the use of waste heat to cogenerate electricity. Phosphate production is the notable example of the latter.

- The following table provides a summary of some of the estimates of potential and commercially feasible, near term, and new renewable capacity that could be developed in Florida. These estimates were derived from information provided by stakeholders and industry representatives, preliminary discussions by developers with permitting agencies, and some technical assessments. With respect to wood/bark fuel, it is assumed that up to 4 percent co-firing of biomass with traditional fossil fuels is possible. In total, these resources amount to an additional 651 MW of generating capacity, bringing Florida's renewable total to approximately 1679 MWs.

TABLE 1

Feasibility of Renewable Technologies

Type of Renewable Energy	Potential Incremental Capacity (MW)
Municipal Solid Waste/Refuse Derived Fuel	60*
Wood/Bark	225**
Landfill Gas	32
Bagasse	150
Hydro-electric	43
Solar Photovoltaic	1 (assumed)
Waste Heat	140 to 440***

* Information provided by the Integrated Waste Services Association indicates that within a ten year period some 250-300 MWs of new capacity is potentially available from expanded facilities.

** Information provided by Gus Cepero of Florida Crystals suggested that an additional 75 MWs of urban wood waste facilities are possible and a 15,000 acre dedicated eucalyptus crop could support a 50 MW facility.

*** This estimate was provided by the Florida Industrial Cogeneration Association. The 140 MW potential exists from retrofitting existing plants with the latest heat recovery technology. An additional 300 MWs of potential exists from replacement plants as the industry migrates from current locations to other areas of phosphate rock deposits.

- Table 1 indicates that municipal solid waste and biomass derived fuels offer the most feasible near term options for expanding the deployment of renewables in Florida.

- With respect to future technologies, in the long term opportunities may exist for ocean conversion systems using current flows and tidal flow, gasification of certain hydrogen rich feedstocks, and perhaps some meteorologically unique off-shore wind locations. Estimates of potential capacity and costs are not available for these less developed technologies. Florida does not have geothermal resources or identified wind resources.

FLORIDA RENEWABLE GENERATION

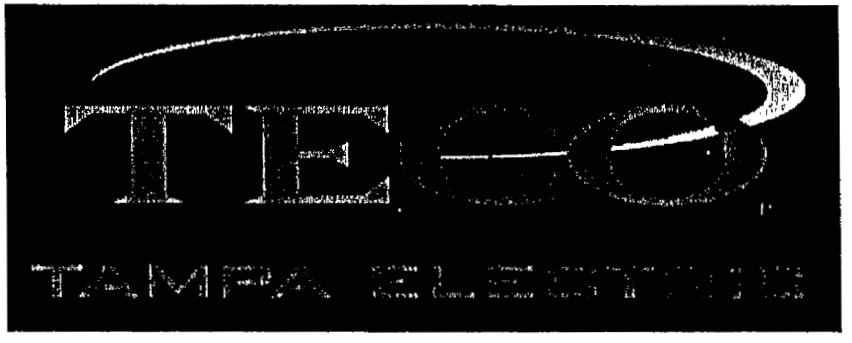
AS OF JANUARY 1, 2002

UTILITY /FACILITY	FIRM * CAPACITY SUM (MW)	NET * CAPABILITY SUM (MW)	FUEL TYPE
SOUTHEASTERN POWER ADMIN.	39.0	39.0	Hydroelectric
TAMPA ELECTRIC COMPANY			
City of Tampa - Refuse	18.0	18.0	Municipal Solid Waste
City of Tampa - Sewage	0.0	1.4	Other Biomass Liquids
Hillsborough CTY - Refuse	23.0	23.0	Municipal Solid Waste
Cargill Millpoint	0.0	41.0	Waste Heat - Exothermic
Cargill Ridgewood	0.0	57.1	Waste Heat - Exothermic
CF Industries	0.0	27.4	Waste Heat - Exothermic
Farmland Hydro	0.0	25.1	Waste Heat - Exothermic
IMC New Wales	0.0	50.8	Waste Heat - Exothermic
IMC South Pierce	0.0	28.5	Waste Heat - Exothermic
Mulberry Phosphates	0.0	0.0	Waste Heat - Exothermic
TOTAL	**512.2**	**1,028.1**	

* *Firm Capacity refers to amount of output committed for delivery under firm contract to purchasing utilities. Net Capability refers to the output potential of the generator.*

TAMPA ELECTRIC COMPANY

2003 TEN YEAR SITE PLAN

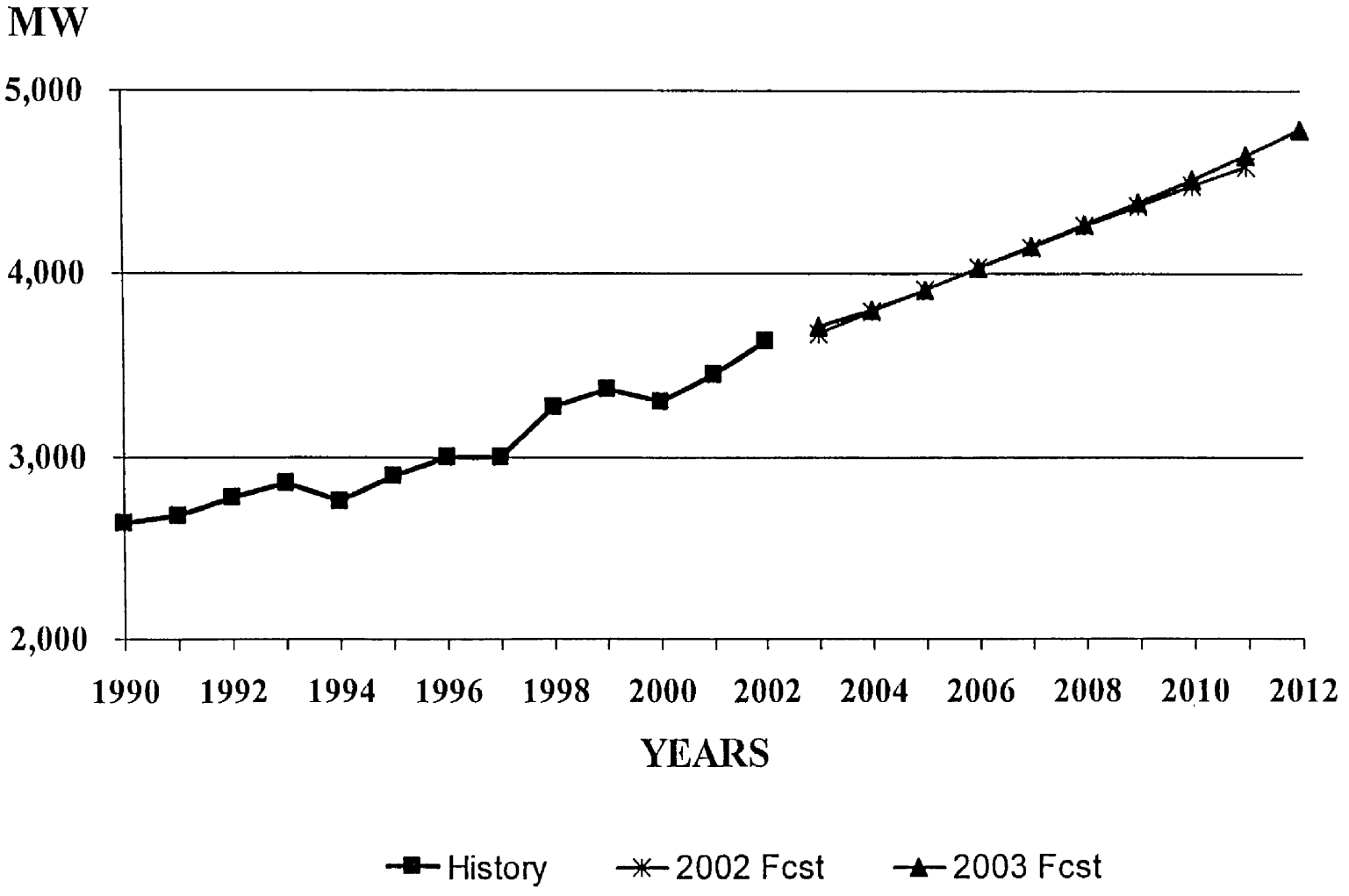


Presented at the

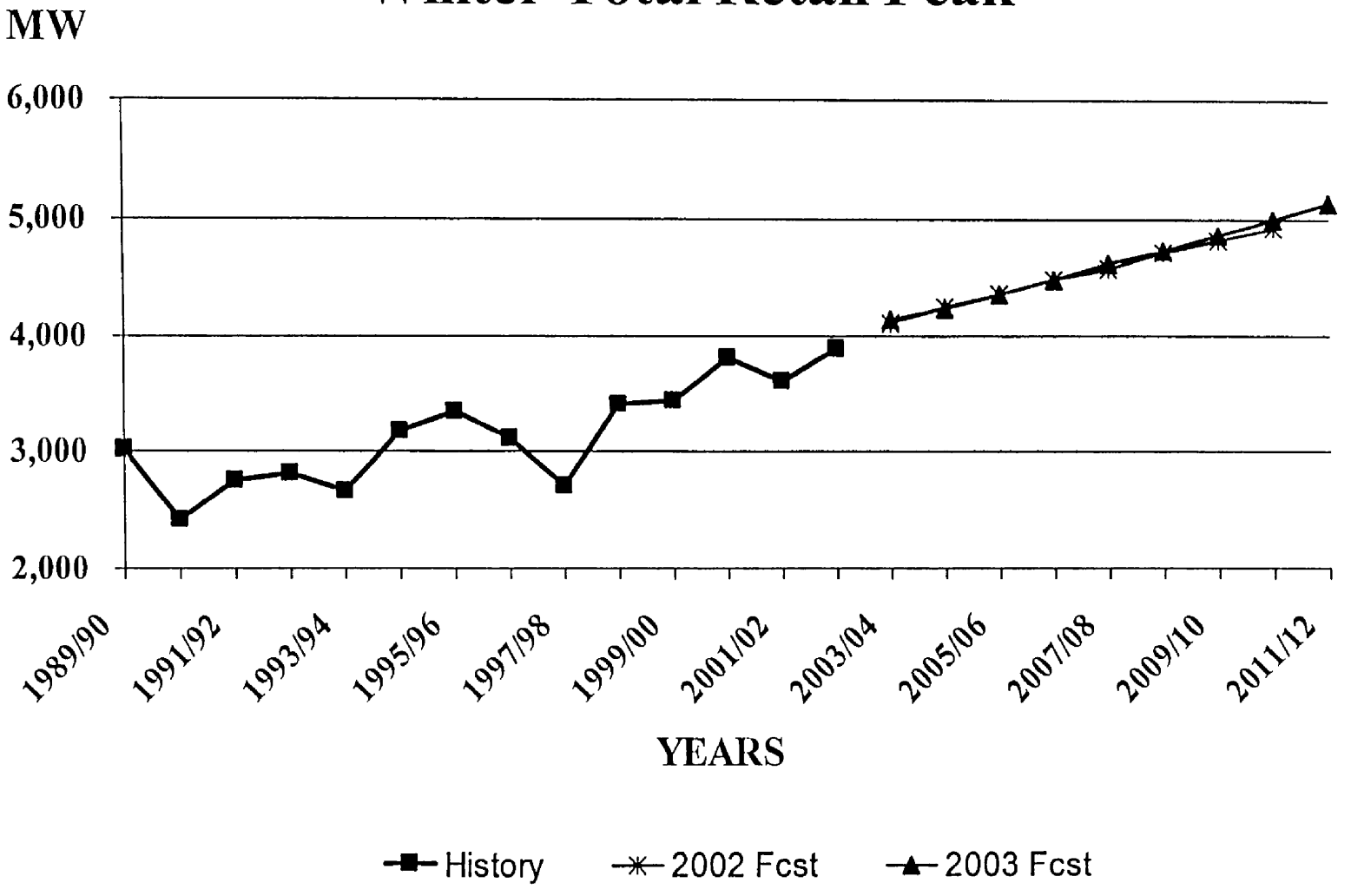
Ten-Year Site Plan Review Workshop

August 6, 2003

Summer Total Retail Peak



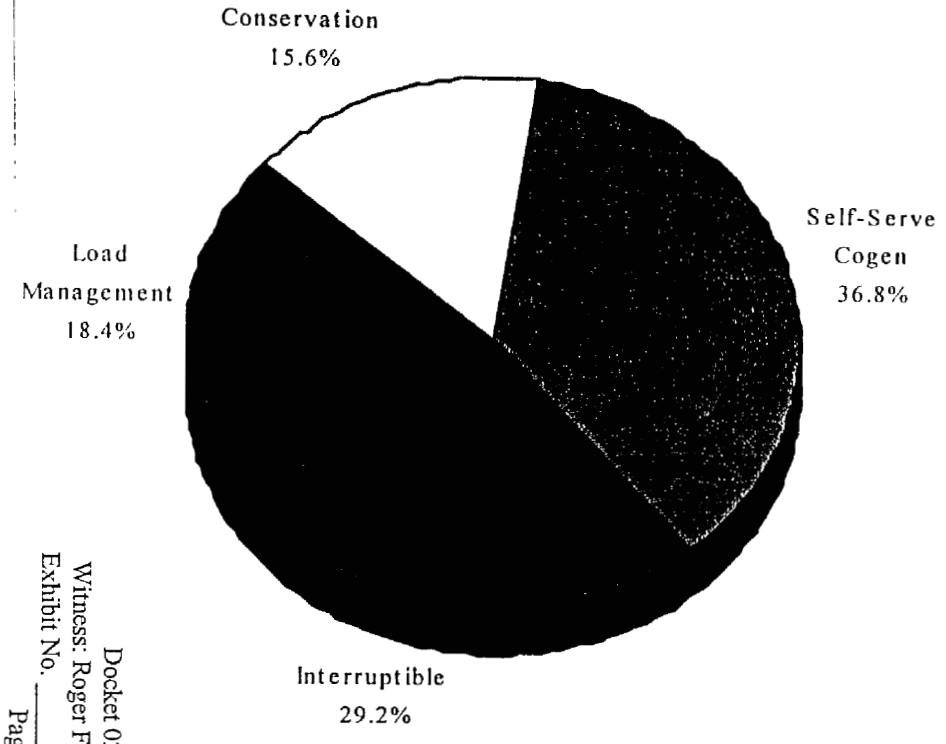
Winter Total Retail Peak



DEMAND SIDE RESOURCES

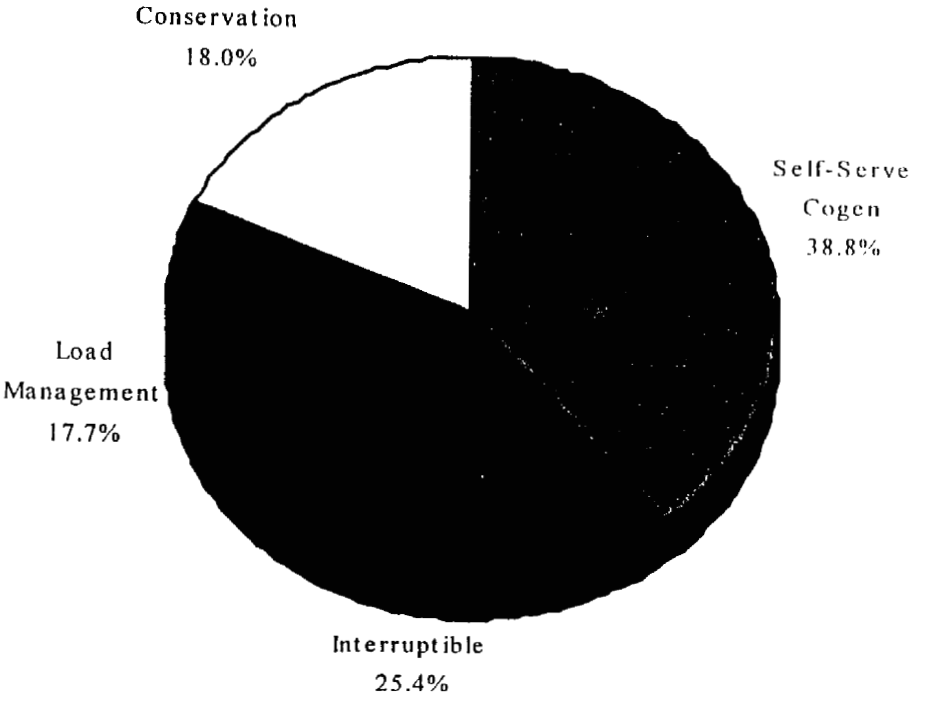
2003

Summer - 620 MW



2012

Summer - 689 MW



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Witness: Roger Fernandez
Exhibit No. _____ (RFF-3)
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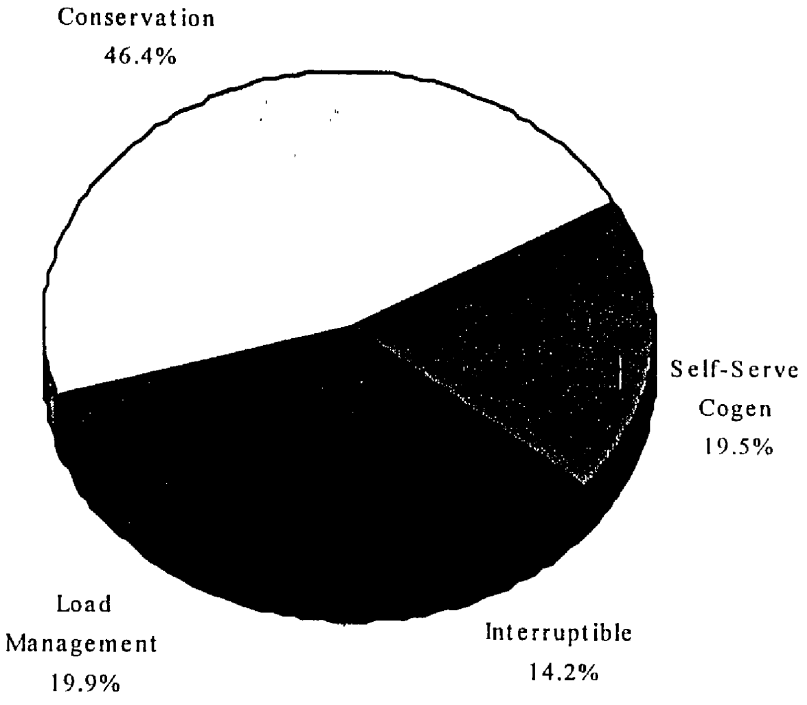
DEMAND SIDE RESOURCES

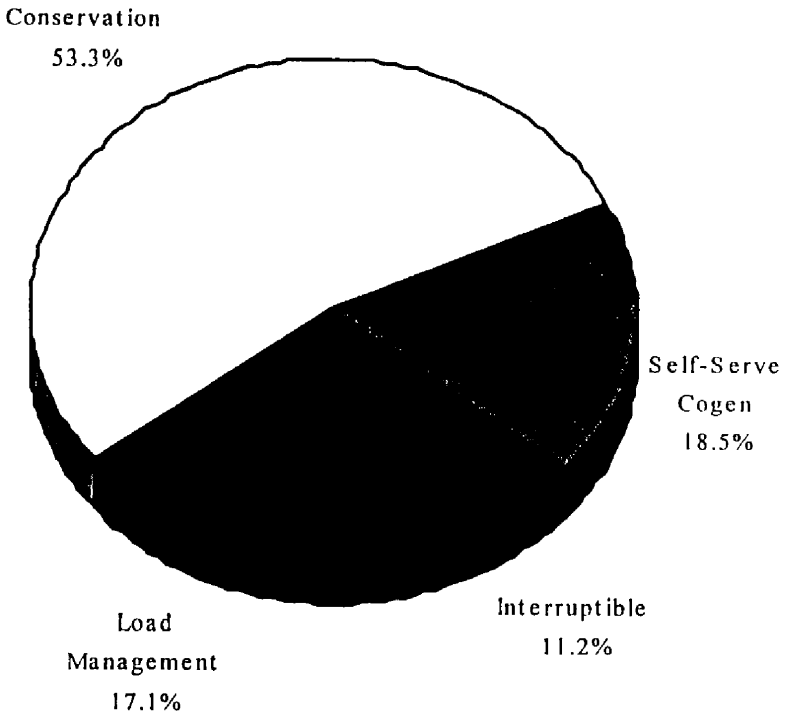
2003

Winter - 1,170 MW



2012

Winter - 1,446 MW



SYSTEM RELIABILITY

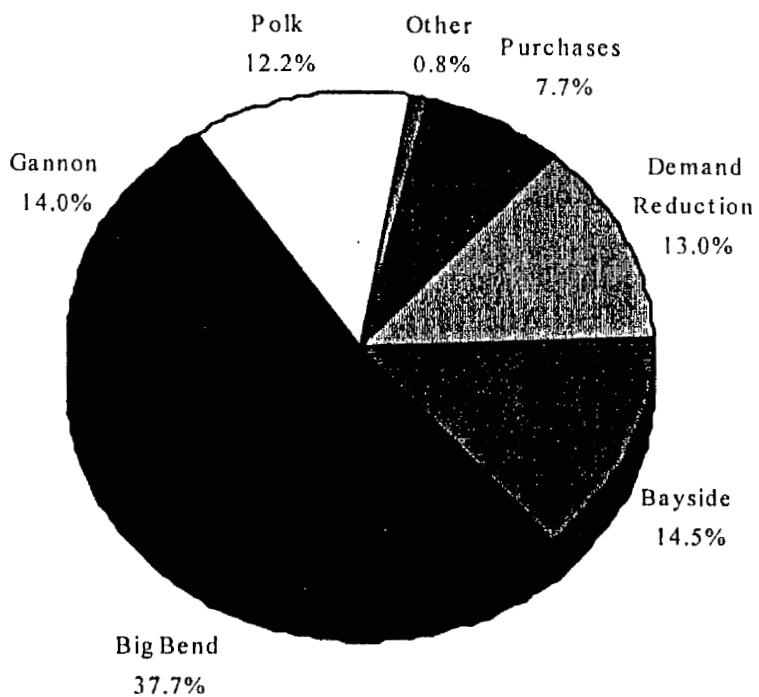
Year	2002 TYSP Summer		2003 TYSP Summer	
	Unit Additions	Reserve Margin W / LM & INT.	Unit Additions	Reserve Margin W / LM & INT.
2003	Bay 1	26%	Bay 1	17%
2004	Bay 2	37%	Bay 2	20%
2005	CT	23%	CT	21%
2006	-	20%	CT	21%
2007	CT	20%	CT	22%
2008	CT	21%	CT	22%
2009	CT	21%	CT	22%
2010	CT	21%	CT	22%
2011	CT	20%	-	20%
2012	-	-	CT	20%

CT - Combustion Turbine (180 MW Winter Ratings, 160 MW Summer Ratings).

INTEGRATED RESOURCES

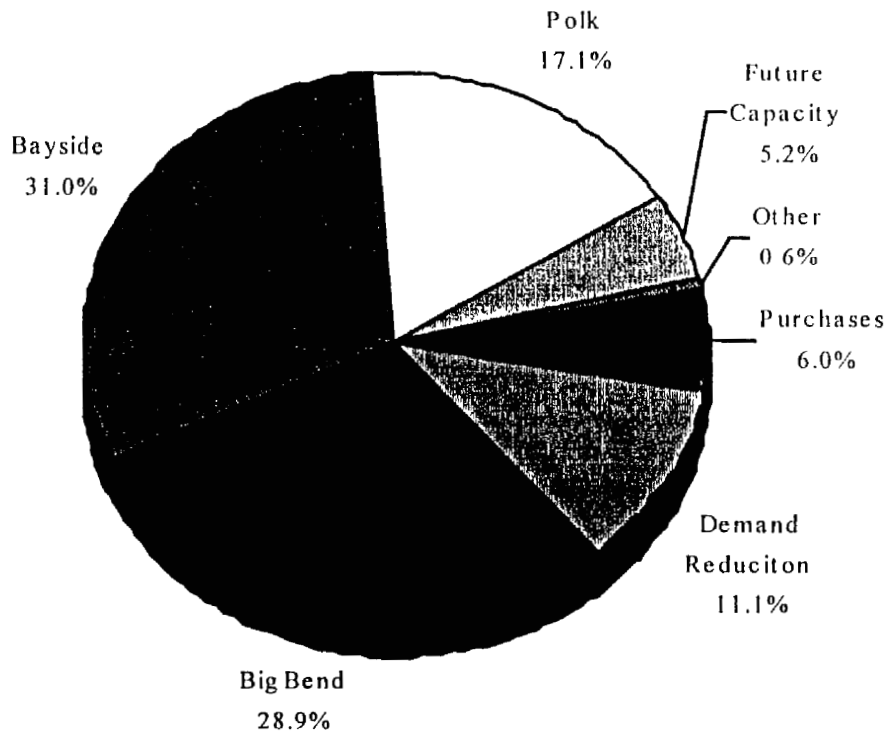
2003

Summer - 4,751 MW



2012

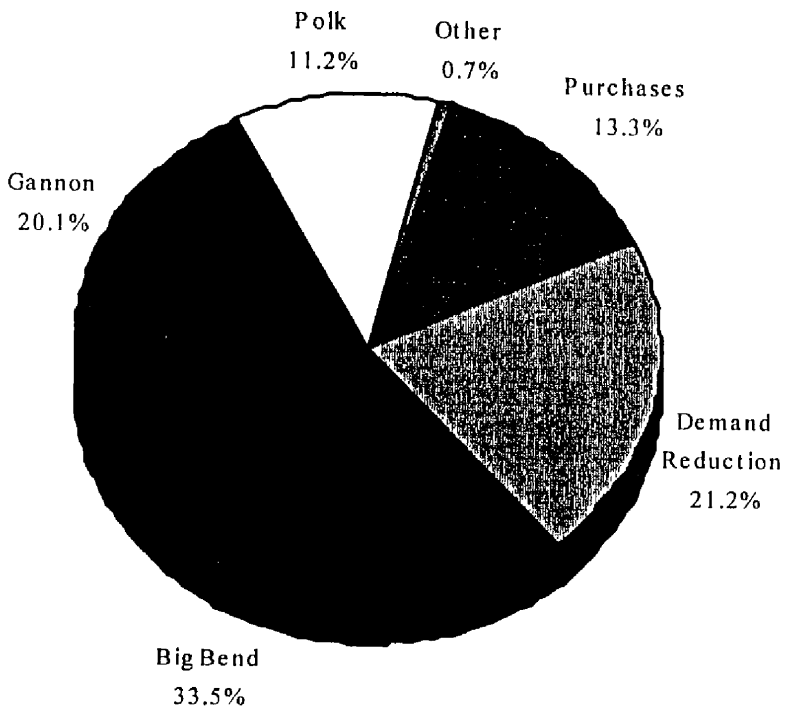
Summer - 6,181 MW



INTEGRATED RESOURCES

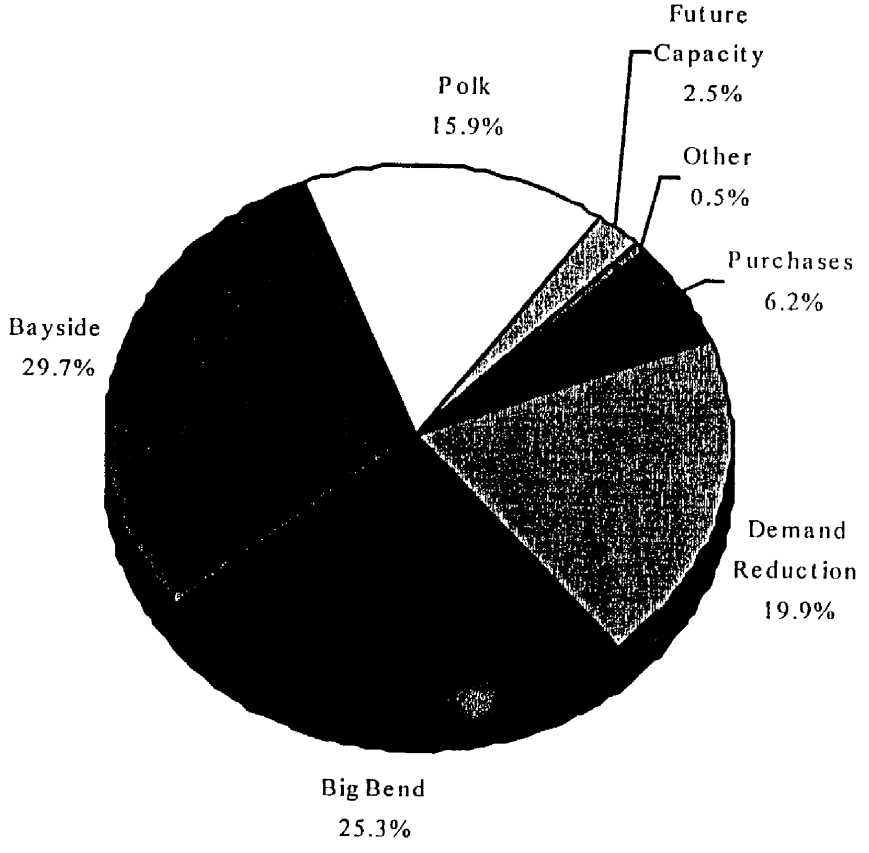
2002/03

Winter - 5,512 MW



2011/12

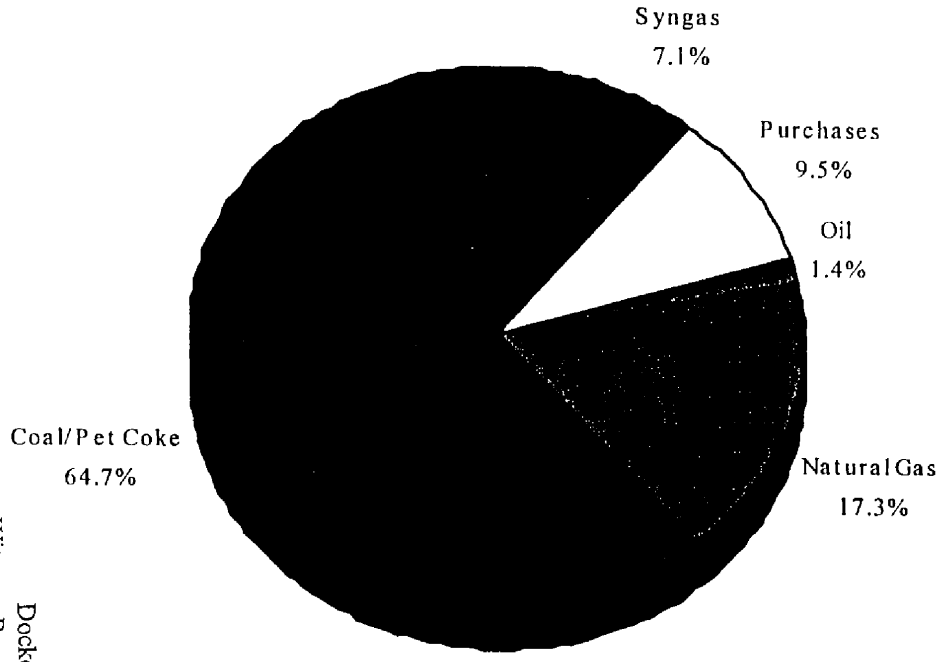
Winter - 7,282 MW



GENERATION - BY FUEL TYPE

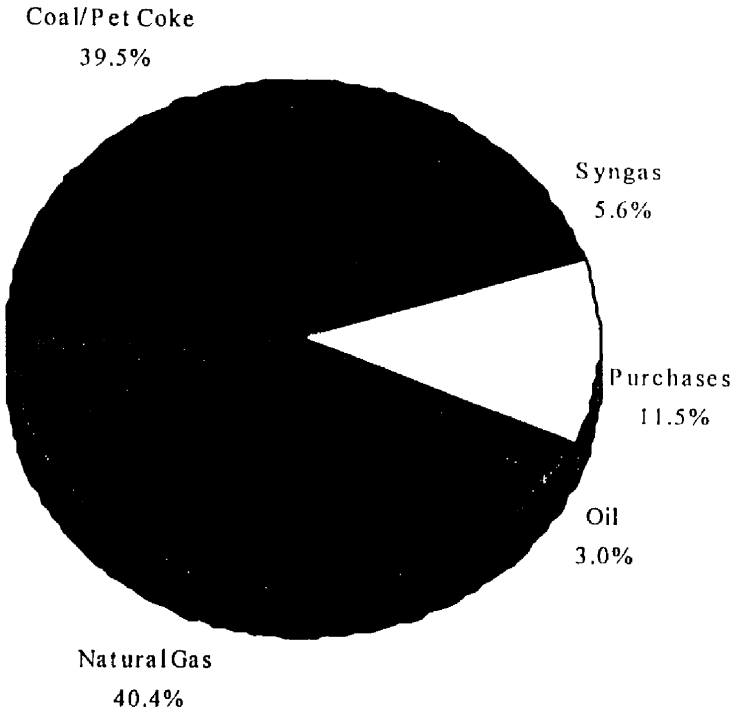
2003

18,753 GWH



2012

24,903 GWH



2005 REQUEST FOR PROPOSAL

To determine how Tampa Electric will best satisfy its 2005 projected capacity requirements, the company has taken the following proactive steps:

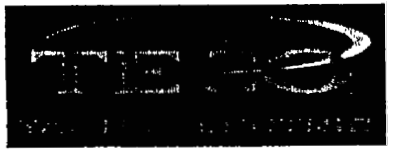
- Issued a Request for Proposals for firm peaking power starting May 1, 2005.
- The RFP was mailed to 23 potential bidders and advertised in Megawatt Daily.
- Responses are due by August 21, 2003.
- For the self-built alternative, environmental permitting and construction cost estimates for Bayside 3A have begun.

Tampa Electric will assess the results of the RFP process in determining how to best meet its 2005 capacity requirements. The determination will be completed by the end of the year.

TAMPA ELECTRIC COMPANY

Summary

- Tampa Electric's 2003 - 2012 Ten Year Site Plan provides adequate system reliability and fuel diversity for its customers.



Cargill Hourly Self-Service Wheeling Summary (Includes All Plant-to-Plant Transactions)

April 2002
Hour Ending

DATE	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	Sum
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	15	15	9	0	0	0	0	0	0	0	0	0	0	0	0	39
4	0	0	0	0	0	0	0	0	0	0	0	0	3	3	2	1	1	2	4	8	3	0	0	0	27
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	11	12	1	0	1	0	0	0	49
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	13	0	0	0	41
16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	8	9	6	8	6	5	6	0	0	52
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	6	0	0	0	17
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	7	8	8	7	8	8	0	0	0	54
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	7
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	1	1	1	0	0	0	0	9

Total MWH = 296

19.3% Off-Peak Wheeling **80.7% On-Peak Wheeling**

Hours of Self-Service Wheeling | Hours of Optional Provision Purchases | Overlap of SSW and OP Purchase | Actual Peak Hour of Day | Tariff-Defined Peak Hours

Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-4)

Cargill Hourly Self-Service Wheeling Summary (Includes All Plant-to-Plant Transactions)

October 2002
Hour Ending

DATE	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	Sum
1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	5	4	4	28
2	3	4	4	0	1	5	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
3	0	0	0	0	0	0	0	0	1	5	5	10	6	0	0	0	0	0	2	7	5	3	0	0	44
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	3	3	2	4	18
8	4	5	5	5	5	5	4	4	3	1	3	5	5	2	0	0	0	0	1	5	4	5	5	5	81
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	0	0	0	0	0	8
11	0	0	0	0	0	0	0	0	2	2	1	0	0	2	2	0	7	10	0	0	0	0	0	0	26
12	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	4	5	5	5	5	0	0	0	0	54
13	0	0	0	0	0	0	0	0	5	5	5	5	5	5	4	5	5	5	5	5	0	0	0	0	59
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	0	74
16	0	0	0	0	0	0	0	0	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	0	73
17	0	0	0	0	0	0	0	0	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	0	74
18	0	0	0	0	0	0	0	5	5	5	5	4	5	4	5	5	5	5	5	5	5	5	5	0	73
19	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	75
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21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	10	0	0	0	18
23	0	0	0	0	0	0	0	10	10	8	9	9	9	5	5	5	5	5	5	0	0	0	0	0	85
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

46.4% Off-Peak Wheeling **53.6% On-Peak Wheeling** **Total MWH = 821**

Hours of Self-Service Wheeling | Hours of Optional Provision Purchases | Overlap of SSW and OP Purchase | Actual Peak Hour of Day | Tariff-Defined Peak Hours

Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-4)
Page 2 of 2

Feds call TECO deal inadequate

The Justice Department says it will continue its suit against the utility because the state settlement doesn't go far enough.

By CRAIG PITTMAN

The U.S. Justice Department on Wednesday blasted Tampa Electric Co.'s newly crafted deal with state regulators to reduce air pollution at its coal-fired plants, calling the agreement "clearly inadequate" and warning that it doesn't protect public health.

Just a day after the deal was announced, the Justice Department said the agreement between TECO and the state Department of Environmental Protection "does not appear to safeguard public health and the environment in the manner required by the Clean Air Act."

Officials from the Justice Department and the U.S. Environmental Protection Agency vowed to continue battling TECO in federal court to seek greater concessions from the utility.

Last month the two federal agencies took TECO and six of the nation's other utilities to court over what they said were longstanding Clean Air Act violations that harmed the health of children, the elderly and anyone with a respiratory disease. Their lawsuits demanded the companies either clean up their act or shut their plants down.

State DEP officials were not a part of that lawsuit. For two years while government experts investigated potential air pollution violations at TECO's Big Bend and Gannon power plants, the DEP -- then led by an appointee of Democratic Gov. Lawton

Chiles -- chose not to get involved, according to Hillsborough officials.

But after the federal agencies filed their suit, DEP Secretary David Struhs -- who works for Republican Gov. Jeb Bush -- met with TECO officials to work out a settlement without consulting either Hillsborough County or the federal regulators.

Tuesday, TECO and Struhs announced that the utility would spend $1-billion over the next decade to reduce air pollution. The agreement calls for three of the company's six coal-powered generators at the Gannon plant to be scrapped, and the other three converted to natural gas.

Federal officials are furious at the state for hijacking their case. Hillsborough officials are none too pleased either.

In a letter to TECO Wednesday, Benjamin Fisherow, a top environmental lawyer with the Justice Department, wrote that the federal government is "surprised and disappointed" with the settlement with the state.

"These secret negotiations for the past month where they undercut the EPA, that's certainly not a good way to do business," added Jerry Campbell, director of the air management division of the Hillsborough Environmental Protection Commission. "It leaves a bad taste in everybody's mouth."

It also may set a dangerous precedent, environmental advocates said. Spokesmen for the groups Clean Air Trust and the Natural Resources Defense Council fretted that other states may follow Florida's lead in cutting side deals with the other utilities sued by EPA and the Justice Department.

TECO spokesman Mitch Lubitz said other utilities have asked TECO for details about the landmark settlement with the state --

a settlement that company officials strongly defended.

"We did what we felt was in the best interests of the people of Florida, and the people closest to the situation in Florida agreed with us, and that includes Secretary Struhs and Gov. Bush," TECO president John Hamil said in a prepared statement Wednesday.

By burning cheap and abundant coal in its Gannon and Big Bend power plants, TECO has been able to keep utility rates comparatively low while serving more and more customers. But environmental advocates have consistently labeled it one of the dirtiest polluters in the state.

In 1997, stationary sources of air pollution, primarily TECO's power plants, put 78,500 tons of nitrogen oxide into the air over Tampa Bay. On sunny days, nitrogen oxide combines with hydrocarbons to form ozone. Ozone irritates the eyes, nose, mouth and lungs, and causes sore throats, chest pains, coughing and headaches. Studies have shown that ozone can travel up to 500 miles from its source.

EPA and Justice Department officials said the deal that Struhs worked out with TECO fails to cut enough of the utility's nitrogen oxide and sulfur dioxide emissions.

"Had the state worked with us on this we could've gotten additional reductions," said Sylvia Lowrance of the EPA.

EPA officials were especially upset about the part of the deal that allows TECO, as a result of the cleanup, to sell or trade "pollution credits" to other utilities that are still polluting the air. The EPA would have insisted that TECO not sell or give away credits.

"If your pollution just goes to another company, that doesn't get

your pollution cleaned up," she said.

And the state's deal with TECO fails to impose any fines on the company for its longstanding violations, she said.

"If there's no penalty," she said, "then that doesn't deter anybody from violating other environmental laws."

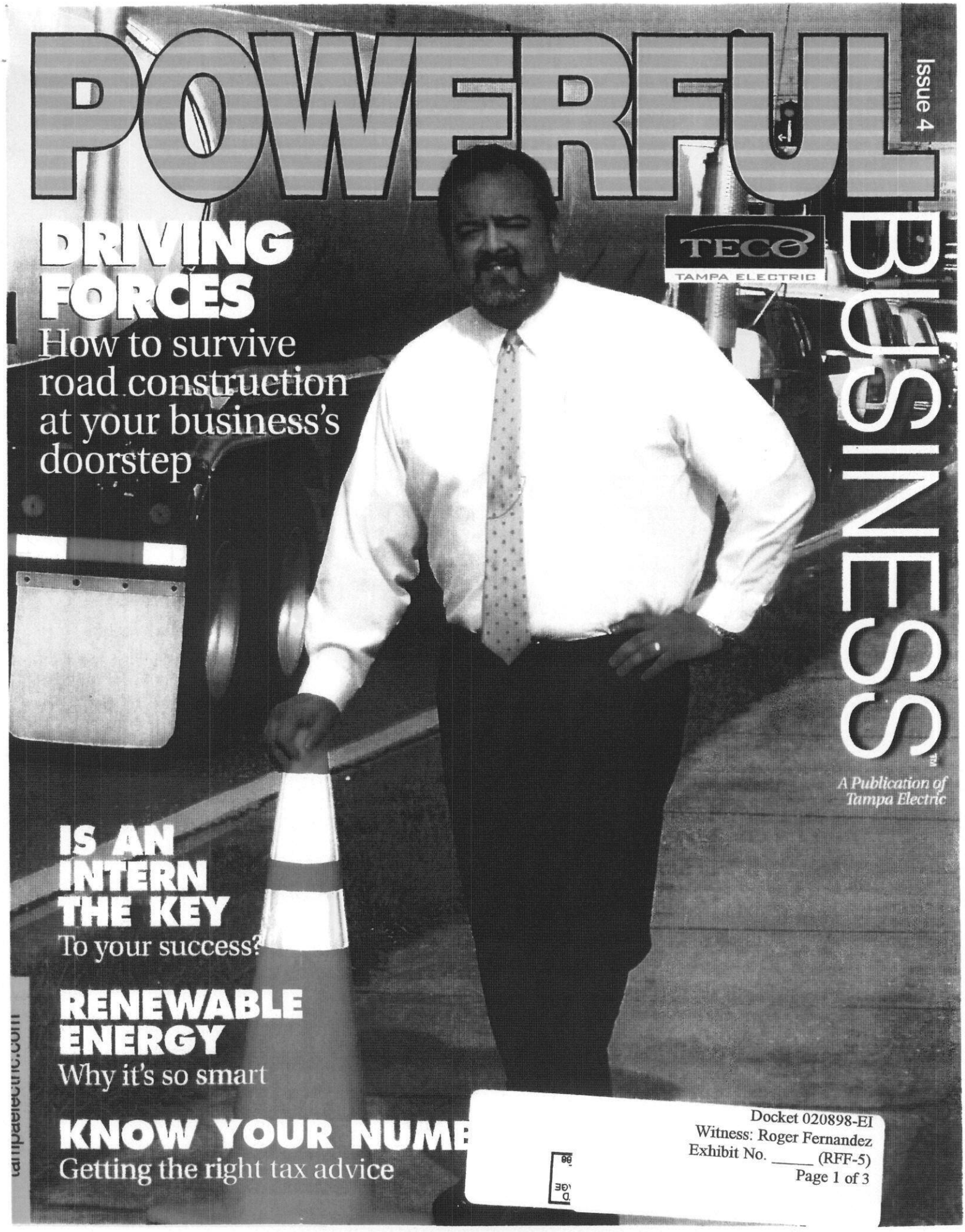
The agreement between TECO and the state also says everything depends on "receiving "acceptable regulatory treatment' from the state, including the ability to recover your compliance costs, apparently from rate payers," Fisherow of the Justice Department wrote. "As a result we question whether you will undertake even its modest commitments."

Lubitz said TECO will be spending $1-billion to clean up its plant's emissions. That, he said, is hardly a modest commitment.

TECO's deal with the state is its second attempt to get around the federal government's lawsuit. Last month, its lobbyist in Washington circulated proposed legislation in Congress that would prevent the government from fining TECO and other utilities involved in the suit. The legislation went nowhere.

The company has long been politically active. Since January 1998, TECO has donated $210,000 to the state Republican Party and about $70,000 to the state Democratic Party, records show.

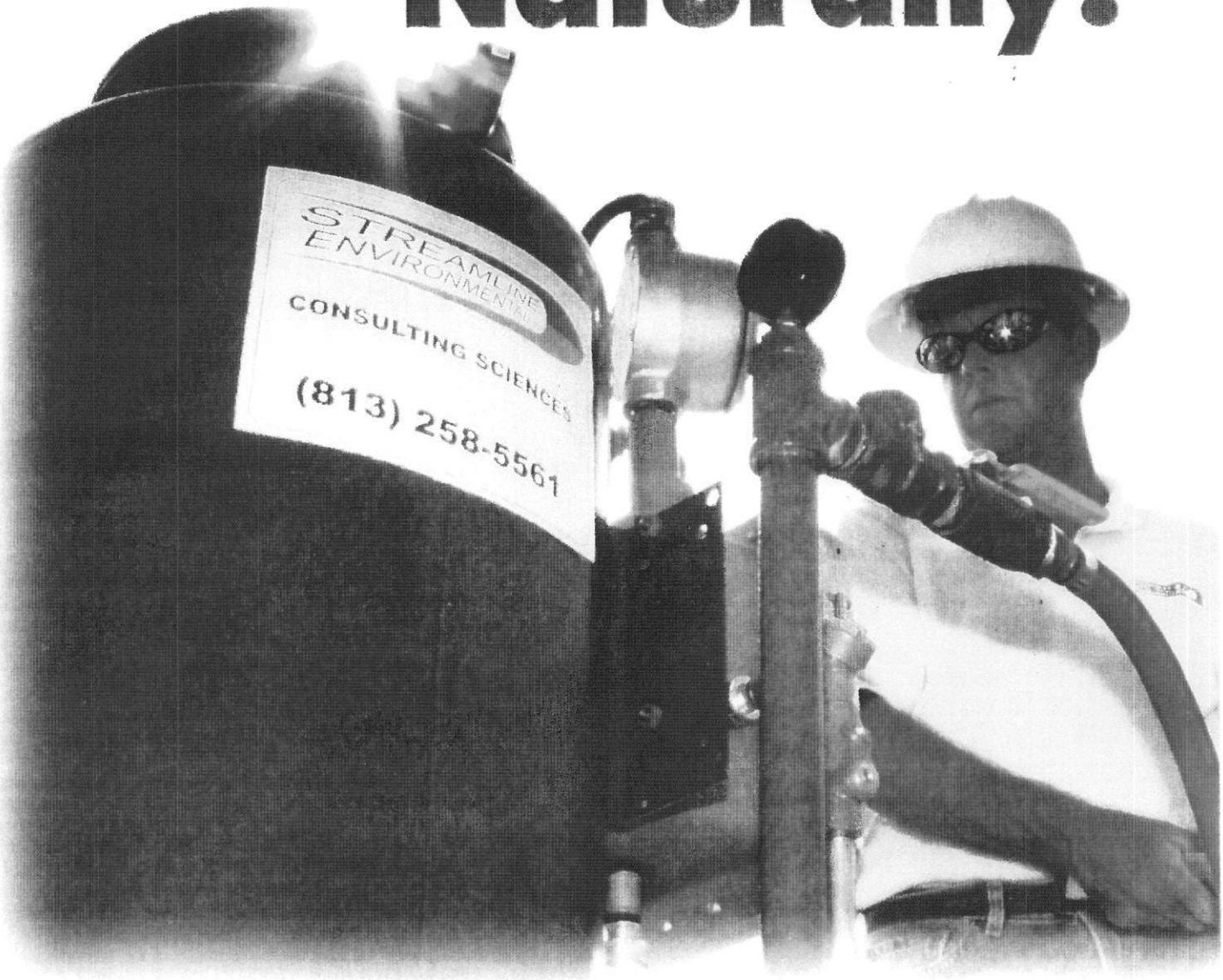
Struhs, who once worked as a consultant for utility companies, said Tuesday that the agreement "reflects the state's commitment to dramatically reduce harmful pollutants. . . . This is a great day for Florida."



Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-5)
Page 1 of 3

Environmental firm says YES to Smart Source Renewable Energy℠

Naturally!



As a geologist, it is Craig Smith's job to get the dirt on Florida's environment, from ground water to land formations.

With an eye on the earth's resources, he knows the importance of renewable energy.

> Streamline Environmental subscribes to three blocks a month, which replaces more than one ton of coal per year.

As principal scientist of Streamline Environmental in Tampa, Smith and his team of geologists, hydrologists, environmental scientists and biologists work closely with the phosphate mining and agrichemical industries.

Their consulting services include an environmental "how to" list, including permitting and compliance to hazardous waste cleanup. The Streamline Environmental team works on projects that follow phosphate and fertilizer production from the mine to transportation, whether it's by way of the port for shipping, by rail or pipeline, to delivery.

Among their diverse assignments, Smith says the firm is collaborating on a solar home design with an Internet based company.

So participation in Tampa Electric's Smart Source Renewable Energy℠ program was a natural.

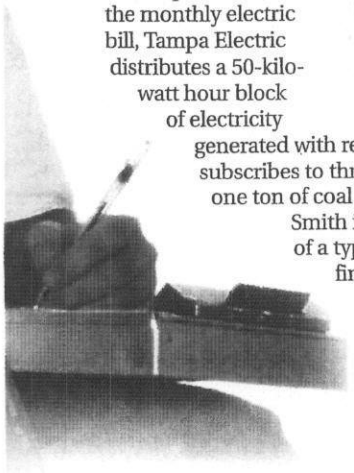
Smart Source Renewable Energy℠ is available to residential, governmental and business customers, who want to choose cleaner fuel sources to support a portion of their electricity needs. This easy program helps preserve the environment by using sunlight and organic plant materials to generate power. Tampa Electric also is pioneering a new form of renewable energy by turning a portion of the methane gas collected at two landfills into electricity.

The process uses a MicroTurbine generator, which can produce enough electrical energy to power 13 homes.

"I'm proud of Tampa Electric for offering alternative energy sources to its customers, and then providing education on the topic," said Smith.

> "I'm proud of Tampa Electric for offering alternative energy sources to its customers, and providing education on the topic."

For each $5 subscription added to the monthly electric bill, Tampa Electric distributes a 50-kilowatt hour block of electricity generated with renewable resources. Streamline Environmental subscribes to three blocks a month, which replaces more than one ton of coal per year.



Smith is also president of the firm and juggles the jobs of a typical small business owner, including personnel, finances, scheduling and project management.

"A small business owner can't afford to waste time or money," explained Joe Cascio, Renewable Energy project manager-Tampa Electric. "Smart Source Renewable Energy℠ presents an ideal situation. From enrollment to participation, this convenient program offers a way to make a difference in the environment."

– Erica Mandelbaum

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 030001-EI

IN RE: FUEL & PURCHASED POWER COST RECOVERY

AND

CAPACITY COST RECOVERY

ACTUAL/ESTIMATED TRUE-UP

JANUARY 2003 THROUGH DECEMBER 2003

TESTIMONY AND EXHIBITS

OF

J. DENISE JORDAN

GENERATING SYSTEM COMPARATIVE DATA BY FUEL TYPE
TAMPA ELECTRIC COMPANY
ESTIMATED FOR THE PERIOD: JULY 2003 THROUGH DECEMBER 2003

	ESTIMATED						
	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	TOTAL
FUEL COST OF SYSTEM NET GENERATION ($)							
1. HEAVY OIL	609,828	525,299	457,042	285,562	98,970	35,961	4,611,336
2 LIGHT OIL	609,162	644,064	613,431	703,056	733,893	756,324	9,476,420
3. COAL	23,838,752	26,651,053	25,317,602	17,272,989	16,203,823	18,013,772	278,443,720
4 NATURAL GAS	24,282,037	24,458,290	23,506,385	22,584,826	35,264,759	33,925,001	230,292,424
5. NUCLEAR	0	0	0	0	0	0	0
6. OTHER	0	0	0	0	0	0	0
7. TOTAL ($)	49,339,779	52,278,706	49,894,460	40,846,433	52,301,445	52,731,058	522,823,900
SYSTEM NET GENERATION (MWH)							
8. HEAVY OIL	11,578	10,001	8,733	5,460	1,864	681	82,506
9. LIGHT OIL	10,314	10,924	10,485	11,984	12,300	12,608	148,215
10. COAL	1,063,120	1,185,660	1,133,840	831,784	751,435	822,093	12,684,642
11. NATURAL GAS	429,148	436,684	413,853	422,633	561,113	657,839	4,042,359
12. NUCLEAR	0	0	0	0	0	0	0
13. OTHER	0	0	0	0	0	0	0
14. TOTAL (MWH)	1,514,160	1,643,269	1,566,911	1,271,861	1,326,712	1,493,221	16,957,722
UNITS OF FUEL BURNED							
15. HEAVY OIL (BBL)	18,002	15,541	13,569	8,484	2,879	1,054	127,968
16. LIGHT OIL (BBL)	16,224	17,056	16,157	18,431	19,108	19,611	246,917
17. COAL (TON)	487,875	546,296	519,730	371,523	332,273	365,748	5,824,388
18. NATURAL GAS (MCF)	3,697,795	3,723,184	3,555,094	3,401,172	5,188,360	4,829,137	32,923,637
19. NUCLEAR (MMBTU)	0	0	0	0	0	0	0
20. OTHER	0	0	0	0	0	0	0
BTUS BURNED (MMBTU)							
21. HEAVY OIL	113,030	97,578	85,203	53,269	18,078	6,613	803,125
22. LIGHT OIL	146,478	143,731	138,719	135,345	137,071	149,674	1,641,306
23. COAL	11,897,960	13,298,380	12,651,150	9,196,970	8,137,410	8,921,530	140,487,037
24. NATURAL GAS	3,801,245	3,827,394	3,654,617	3,496,431	5,333,678	4,964,425	34,118,124
25. NUCLEAR	0	0	0	0	0	0	0
26. OTHER	0	0	0	0	0	0	0
27. TOTAL (MMBTU)	15,958,713	17,367,083	16,529,689	12,882,015	13,626,237	14,042,242	177,049,592
GENERATION MIX (% MWH)							
28. HEAVY OIL	0.76	0.61	0 56	0 43	0.14	0 05	0.49
29. LIGHT OIL	0.68	0.66	0.67	0.94	0.93	0.84	0.87
30. COAL	70.22	72.16	72 36	65.40	56.64	55 05	74.80
31. NATURAL GAS	28 34	26.57	26 41	33.23	42.29	44.06	23.84
32. NUCLEAR	0 00	0.00	0.00	0.00	0.00	0.00	0.00
33. OTHER	0 00	0.00	0 00	0 00	0 00	0 00	0 00
34. TOTAL (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00
FUEL COST PER UNIT							
35 HEAVY OIL ($/BBL)	33.88	33.80	33 68	33.66	34.38	34.12	36 04
36. LIGHT OIL ($/BBL)	37.55	37.76	37.97	38.15	38.41	38.57	38 38
37. COAL ($/TON)	48.86	48.79	48.71	46.49	48.77	49.25	47 81
38. NATURAL GAS ($/MCF)	6.57	6.57	6.61	6 64	6.80	7.03	6.99
39. NUCLEAR ($/MMBTU)	0.00	0.00	0 00	0.00	0.00	0.00	0.00
40. OTHER	0.00	0 00	0 00	0.00	0.00	0.00	0.00
FUEL COST PER MMBTU ($/MMBTU)							
41. HEAVY OIL	5.40	5.38	5 36	5.36	5.47	5 44	5 74
42 LIGHT OIL	4.16	4.48	4.42	5.19	5.35	5 05	5.77
43. COAL	2.00	2.00	2.00	1.88	1.99	2.02	1.98
44. NATURAL GAS	6 39	6.39	6 43	6 46	6.61	6.83	6 75
45. NUCLEAR	0.00	0.00	0 00	0.00	0 00	0.00	0 00
46. OTHER	0.00	0 00	0 00	0.00	0.00	0 00	0.00
47. TOTAL ($/MMBTU)	3.09	3.01	3.02	3.17	3.84	3.76	2.95
BTU BURNED PER KWH (BTU/KWH)							
48. HEAVY OIL	9,762	9,757	9,756	9,756	9,698	9,711	9,734
49. LIGHT OIL	14,202	13,157	13,230	11,294	11,144	11,871	11,074
50. COAL	11,192	11,216	11,158	11,057	10,829	10,852	11,075
51. NATURAL GAS	8,858	8,765	8,831	8,273	9,506	7,547	8,440
52. NUCLEAR	0	0	0	0	0	0	0
53. OTHER	0	0	0	0	0	0	0
54. TOTAL (BTU/KWH)	10,540	10,569	10,549	10,128	10,271	9,404	10,441
GENERATED FUEL COST PER KWH (CENTS/KWH)							
55 HEAVY OIL	5.27	5.25	5.23	5.23	5.31	5 28	5 59
56. LIGHT OIL	5.91	5.90	5.85	5.87	5.97	6.00	6.39
57. COAL	2.24	2.25	2.23	2.08	2.16	2.19	2.20
58. NATURAL GAS	5.66	5.60	5.68	5.34	6.28	5.16	5 70
59. NUCLEAR	0.00	0 00	0.00	0.00	0.00	0.00	0 00
60. OTHER	0 00	0.00	0.00	0 00	0.00	0.00	0.00
61. TOTAL (CENTS/KWH)	3.26	3.18	3.18	3.21	3.94	3.53	3.08

Docket 020898-EI
Witness: Roger Fernandez
Exhibit No. _____ (RFF-7)
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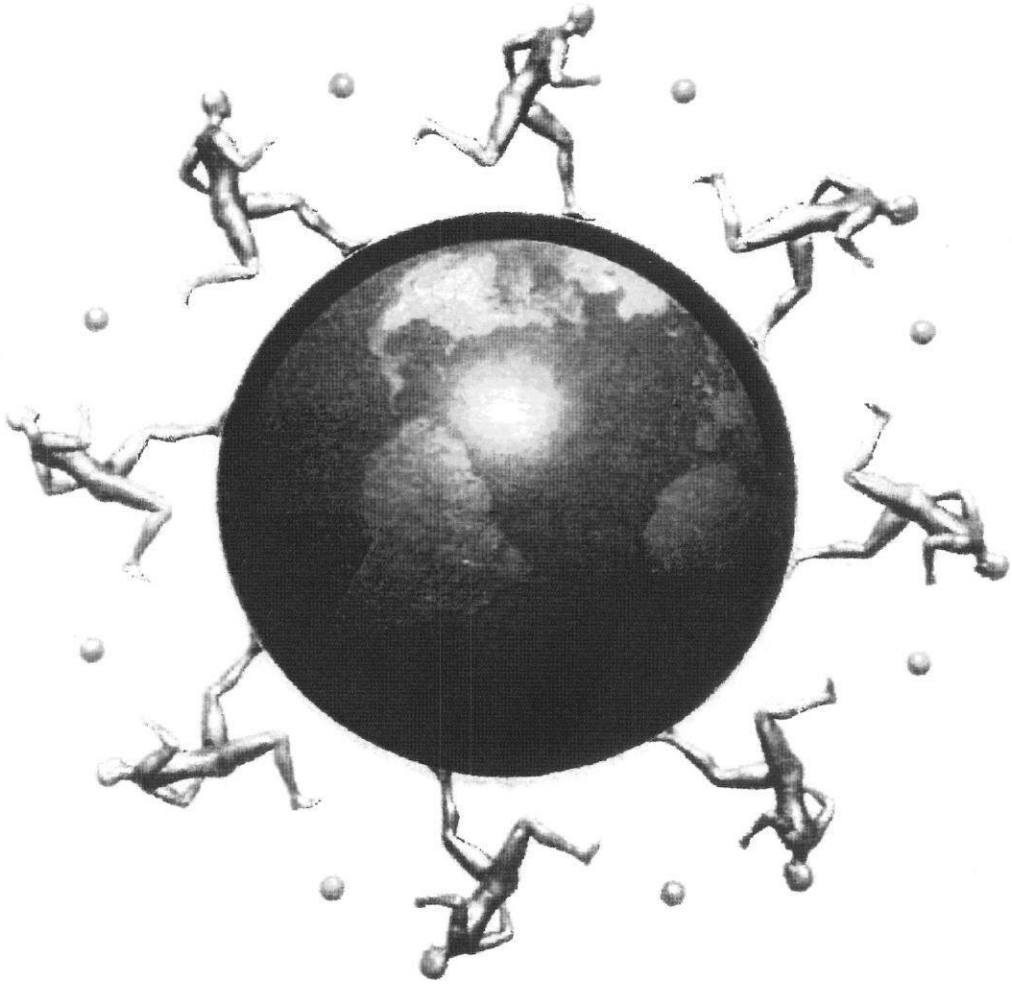
PennWell

POWER Engineering

July 2003

the magazine of power generation



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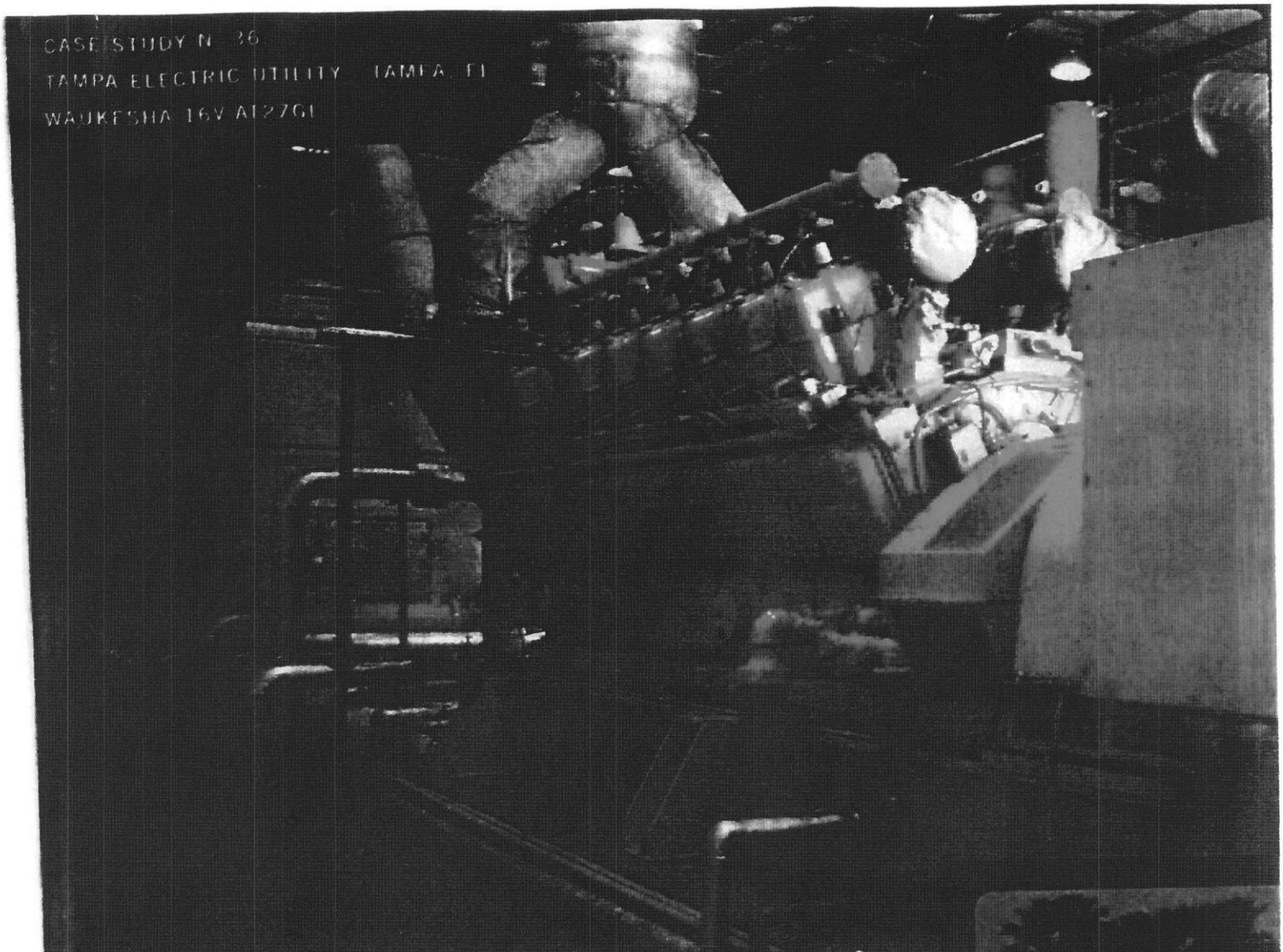
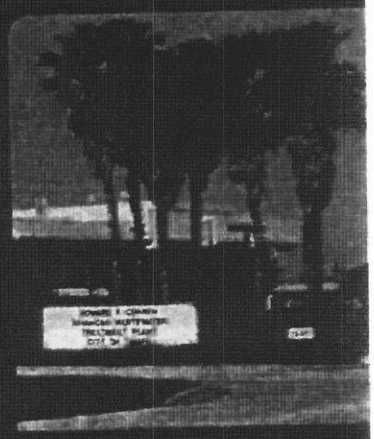
CASE STUDY N 36
TAMPA ELECTRIC UTILITY TAMPA FL
WAUKESHA 16V AT27GL



"With cogeneration, our Waukesha Enginators® are saving money for the utility *and* the city."

– Tony Pasley, Project Manager, Tampa Electric



It isn't often when one solution can meet the needs of two separate entities, but this is exactly what's happening in Florida. Recently Tampa Electric needed to add extra generating power to its grid. At the same time, the city of Tampa needed to increase available emergency backup power at its wastewater treatment plant plus improve efficiency of its gas-fired sludge dryers.

A pair of Waukesha Engine Enginator engine/generator units proved to be the solution to all three needs. The dependable natural gas engine generator sets are producing nearly six megawatts during peak demand periods, while their exhaust heat is used to turn sludge into a marketable palletized fertilizer commodity.

According to Tampa Electric's Tony Pasley, "The project has three key attributes: it's good for the environment, it's good for the citizens of Tampa, and it's good for Tampa Electric ratepayers. The environment benefits because the natural-gas engines make power 'cleaner' than diesel standby units. The ratepayers and the city is benefiting because cogeneration makes the process very efficient. In effect, it's a 'perfect project' for all concerned."

Circle 20 on Reader Request Card

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CERTIFICATE OF SERVICE

I HERBY CERTIFY that a true and correct copy of the foregoing Direct Testimony and Exhibits of Roger F. Fernandez on Behalf of Cargill Fertilizer, Inc has been furnished by (*) hand delivery or U.S. Mail on this 3rd day of September, 2003 to the following:

(*) Rosanne Gervasi
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399

(*) James D Beasley
Ausley & McMullen
227 South Calhoun Street
Post Office Box 391
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Harry W Long, Jr.
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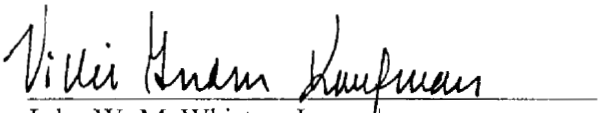

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