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August 5, 1996

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

RE: Docket No. 960409-EI

Dear Ms. Bayo:

Enclosed please find the original and fifteen (15) copies of the Brief of the Citizens of the State of Florida on Issues 1, 2, 3, 6, 7, & 8, and Citizens' Post-Hearing Statement of Issues and Positions for filing in the above-referenced docket. A diskette in WordPerfect 5.1 is also submitted herewith.

Please indicate receipt of filing by date-stamping the attached copy of this letter and returning it to this office. Thank you for your assistance in this matter.

Sincerely,

John Roger Howe
Deputy Public Counsel

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

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In re: Prudence Review to
Determine Regulatory Treatment
of Tampa Electric Company's
Polk Unit.)
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Docket No. 960409-EI
Filed: August 5, 1996

BRIEF OF THE CITIZENS OF THE STATE OF FLORIDA
ON ISSUES 1,2,3,6,7, & 8

Respectfully submitted,

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PLANNING ISSUES

ISSUE 1: Was the continued construction of the Polk IGCC unit by Tampa Electric Company reasonable and prudent?

POSITION: No. Tampa Electric should have realized shortly after the need determination order issued in 1992 that falling gas prices and improved efficiencies made a natural gas-fired combined cycle unit the more economical alternative, even after consideration of Department of Energy funding support for the IGCC.

ISSUE 2: Were Tampa Electric Company's assumptions regarding sunk costs in each of its annual cost-benefit analyses reasonable?

POSITION: No. The decision whether to continue with the IGCC or to, instead, build a natural gas-fired combined cycle unit should have been based on the incremental cost of completion of each of these alternatives. Sunk costs are irrelevant to such a system planning decision and should have been ignored.

ISSUE 3: Were Tampa Electric Company's assumptions regarding variable operations and maintenance expense in each of its annual cost-benefit analyses reasonable?

POSITION: No. EPRI Technical Assessment Guide (TAG) estimates should not have been used. Tampa Electric should have used data obtained directly from equipment vendors such as were apparently used in the IGCC analyses for a stand-alone combined cycle instead of using the power block from the IGCC.

FUEL ISSUES

ISSUE 6: Has Tampa Electric Company demonstrated that its 1992, 1993, 1994, and 1995 fuel price forecasts were reasonable and prudent?

POSITION: No. Fuel price forecasts may be within a range of reasonableness as defined by other forecasts made in the same time frames. However, Tampa Electric did not demonstrate it was reasonable to assume the risk of an incorrect forecast by committing to the IGCC project based on those forecasts in 1993.

ISSUE 7: Has Tampa Electric Company demonstrated that petcoke is a reliable and viable fuel for the Polk IGCC unit?

POSITION: No. Whether petcoke may work is not the issue. Petcoke has never been used in an IGCC similar to the Polk Unit. Tampa Electric cannot demonstrate petcoke is a viable fuel until it's tested after the demonstration period. Petcoke entered the picture in 1993 solely to justify continuation of the IGCC.

ISSUE 8: Were Tampa Electric Company's assumptions regarding the combined use of as-available natural gas and light oil as the primary fuels for a combined cycle alternative in its 1994, 1995 and 1996 Polk IGCC cost-benefit analyses reasonable?

POSITION: No. The assumption of a low capacity factor for the combined cycle alternative and the resultant assumption of fuel sources are unsupported in the record. Tampa Electric's decision should be measured against FPC's and FPL's conclusions that firm natural gas-fired combined cycles were more economical than an IGCC.

DISCUSSION

BACKGROUND

Before Tampa Electric filed for its Polk IGCC need determination in 1991, it planned the phased construction of a natural gas- and distillate-fired combined cycle. A 75 MW combustion turbine (CT) was to be built in 1995, another 75 MW CT was to be added in 1996, and the 70 MW heat recovery steam generator (HRSG) to complete the 220 MW combined cycle unit was to enter service in 1997. This was the plan in April, 1991. [T.120-21]

Tampa Electric never filed for a need determination for this unit because a couple of months later, in the summer of 1991, it decided to build an IGCC. [T.121] Stepping into the shoes of its

affiliate, TECO Power Services, Tampa Electric undertook the construction of an IGCC with \$120 million of Department of Energy (DOE) funding support under Round III of DOE's Clean Coal Technology Program. [T.427-31] Tampa Electric would still build a combined cycle, except that, instead of two 75 MW General Electric 7EA CT's, it would use a single, larger 150 MW GE 7F CT which would use gasified coal (syn gas) as its primary fuel. [T.132; Ex.25, p.16]

THE NEED DETERMINATION ORDER

Tampa Electric filed its need determination petition for the Polk IGCC in September, 1991. [T.75] The Commission's order granting the petition, Order No. PSC-92-0002-FOF-EI, was issued on March 2, 1992. If that order is to be taken at face value, the Commission must have thought, among other things, based on the company's representations, that: (1) Tampa Electric could receive the \$120 million of DOE funding if it spent the projected amount of \$389 million on the project; (2) the 150 MW CT would come on line in 1995 to help meet the needs of Peninsular Florida for additional reliability and that the DOE grant was tied to a phased construction plan; and (3) the CT could be dispatched on any one of three different fuels (natural gas, distillate oil, and syn gas).

From the record compiled at hearings in this docket, however, it is not at all clear that Tampa Electric would have been eligible under the DOE's funding formula to receive the full \$120 million if it had only spent \$389 million on the project. [T.444] It is clear, though, that Tampa Electric unilaterally decided not to

bring the CT on line in 1995. [T.51, 393-94, 694] It is equally clear that the GE 7F CT cannot be configured so that a utility can switch between three different fuels. [T.284-87]

There are, of course, other significant discrepancies between the need order and what actually occurred. These three examples are highlighted to bring to the Commission's attention the fact that the company did not, and, as a result, the Commission could not, contemplate what was actually going to happen as a result of the Commission's order.

The Commission's need determination orders, generally, have not been strictly construed. For example, in Florida Power Corporation's (FPC's) 1983 rate case, Docket No. 830470-EI, a significant issue was the regulatory treatment to be afforded the company's new coal-fired generating unit, Crystal River 5. The final order, Order No. 13771, noted, at page 6, that "CR5 received a 'need' determination under the then applicable power plant siting statutes in August, 1978." The need determination was not conclusively presumptive, however. Changed circumstances, particularly load growth which was less than originally anticipated, called into question whether FPC was prudent in seeing CR5 through to completion. The prehearing order in the FPC case, Order No. 13402, at page 9, identified Issue 8a: "Did FPC act reasonably in scheduling the completion of CR5's construction.?" CR5 was allowed to be included in rate base because "each of FPC's decision points, in the chronology of events leading to the

construction of CR5 with a December, 1984, in-service date, were prudent at the time made." Order No. 13771, at 7.

FPC recently provided another example of how need determination orders have been interpreted. On September 13, 1984, FPC had received approval for its petition to construct a 500 KV transmission line from Lake Tarpon to Kathleen. Order No.13676, Docket No. 840044-EI. In spite of the mandatory-sounding language in the order, the transmission line was never built. Delays caused by protracted litigation had, in FPC's estimation, made the cost prohibitive. On October 3, 1995, the Commission, as it is currently constituted, approved FPC's plan to defer funds expended on the canceled project and to amortize the deferrals over several years. Order No. PSC--95-1230-FOF-EI, Docket No. 950270-EI.

Tampa Electric has also treated its need determination order as advisory -- to the extent such an interpretation suited its purposes. Tampa Electric recognized flexibility in order to: 1) delay the CT until 1996; 2) configure the CT to burn only two types of fuel; 3) burn petroleum coke instead of coal; 4) deliver the fuel by truck instead of rail; 5) reduce the size of the hot-gas-clean-up (HGCU) system from 50% to only 10%, and 6) build a sulfuric acid plant instead of one which produces elemental sulfur. [T. 51, 54, 57-59, 111-12, 400, 693-95; Ex. 1, 20] These changes show that Tampa Electric's repeated claims that actual costs only exceed the need determination proceeding's projected costs by 4.3% result from a comparison of two fundamentally different projects. [T.107, 336, 406-09]

Tampa Electric also saw the latitude to enter negotiations to make unit power sales out of Polk, to sell off various increments of capacity, to swap capacity increments for equal amounts of peaking capacity from other utilities, and to sell the power block or the gasification assets to others. [T. 53-57, 695-96; Ex. 22, Bates No. 45] Obviously, Tampa Electric did not construe Order No. 92-0002 as a directive to build the assets described in the order and to dedicate them to its customers' service.

It is a reasonable inference from the record in this docket that Tampa Electric views Order No. 92-0002 as mandatory at this time only because its sales efforts have, until now, been unsuccessful. It is also a reasonable inference from the absence of a consummated transaction that Tampa Electric could not sell Polk because it was too expensive from the prospective buyers' viewpoint. Since Tampa Electric has not been able to market the Polk unit, it wants the unit in rate base. There, the Polk IGCC will reduce earnings and mitigate the likelihood of refunds under the stipulation. In 1999, after the stipulation expires, the Polk Unit may form the basis for a petition to increase rates.

The retail jurisdiction is being used by Tampa Electric as a safe haven to park its investment while it continues to test the market. The need determination order is being interpreted as mandatory because such an interpretation may insulate Tampa Electric from the consequences of its own mistakes.

TAMPA ELECTRIC DID NOT RESPOND ADEQUATELY TO CHANGED CIRCUMSTANCES
AFTER THE NEED DETERMINATION ORDER.

Although Tampa Electric's witnesses often retreated to the need determination order as mandating their actions, at other times they congratulated themselves for deviating from its terms. Mr. Anderson explained why the decision was made to defer the in-service date of the CT. He agreed it was a response to changed circumstances. [T.51] Mr. Black said the decision to defer the CT was consistent with the "flexibility" Tampa Electric was given in the order to adapt to new conditions. [T.392-93] Mr. Smith said the company was unaware at the time of the need hearings that a GE 7F could not be configured to dispatch on three different fuels. [T.284] No one, however, explained how, under the DOE's spend-five-dollars-to-get-one-dollar formula, Tampa Electric could have obtained the full \$120 million on which the need order was predicated without spending the \$600+ million it did, in fact, expend. [T.398-99, 441-444]

The one changed circumstance Tampa Electric did not respond to was the falling price (and falling projected future price) of natural gas. In April 1991, the company planned to build a natural gas-fired combined cycle. [T. 120-21] The DOE funding, however, in Tampa Electric's estimation, made the IGCC more economical and, therefore, the technology of choice in its September 1991 petition. The two generation alternatives must have been within \$120 million of each other on a cumulative-present-worth-revenue-requirements (CPWRR) basis for the DOE grant to have tipped the scales in favor of the IGCC between April and the summer of 1991. If the combined

cycle was more economical by more than \$120 million, the DOE grant wouldn't have made up the difference. If the IGCC had always been more economical, Tampa Electric would have planned on an IGCC all along; the DOE funding would then have just made a good deal even better. Tampa Electric was certainly aware of the IGCC alternative before the summer of 1991. FPC had evaluated and rejected an IGCC in its need determination which was filed before Tampa Electric's Florida Power & Light's (FPL's) avoided unit for 1997, as noted in Order No. 92-0002, was an IGCC.

Lower gas prices should have triggered an inquiry into whether the scales had tipped back the other way. All of Tampa Electric's cost effectiveness analyses found the capital and O&M associated with the IGCC to be more costly than a natural gas-fired alternative. [T.125] Fuel savings from coal (or petroleum coke) made all the difference. [T.125] At some point, however, lower gas prices would wipe out the advantage of the DOE funding. Had that point been reached? Tampa Electric has, apparently, never done such an analysis.

As Mr. Waters of FPL explained in his deposition (discussed in detail below), the analysis should have been done on a purely incremental basis. What would the incremental cost be on a system CPWRR basis to complete the IGCC versus the incremental cost to complete the combined cycle portion of the IGCC but set up to run on natural gas? Sunk costs are just that, sunk. Mr. Waters said sunk costs should have no bearing on the system planning decision. (This is similar to Tampa Electric's dispatch decisions which are

based on the next increment of fuel to be purchased for a unit while ignoring the cost of fuel in the coal pile. [T.124])

In this regard, the system planning decision differs from the hoped-for regulatory treatment. A utility company which changes horses in midstream is free to demonstrate that expenses associated with the first horse, up to the time of the switch, were also prudently incurred for regulatory purposes. Tampa Electric, however, apparently allowed the risk of regulatory disallowance to color its system planning decisions. Mr. Hernandez testified several times that sunk costs were included in his cost-effectiveness analyses because Tampa Electric would seek to "recover" those costs through rates. [T.192, 209, 230]

The record of this proceeding does not contain a meaningful cost effectiveness analysis comparing the incremental cost of completing the IGCC versus a stand-alone natural gas-fired combined cycle unit. Tampa Electric apparently chose not to do one. [T.130, 138, 227]

CONSTRUCTION OF THE IGCC SHOULD HAVE BEEN HALTED IN 1993

If there was a point in time after Order No. 92-0002 when a reasonable, prudent utility would have decided to abandon the IGCC in favor of a natural gas-fired combined cycle, then Tampa Electric's decision to complete the IGCC cannot be found to be prudent. From an evidentiary and burden-of-proof perspective, the issue is whether Tampa Electric has failed to demonstrate, by a preponderance of the evidence, that any one of its cost effectiveness evaluations was reasonable.

Each of the company's analyses suffer from characteristic deficiencies, but the Citizens would suggest that the pivotal year was 1993. Tampa Electric failed to prove that it was reasonable and prudent, in 1993, for the company to conclude the IGCC was the more cost effective generation alternative based upon the substitution of a speculative fuel, a petroleum coke/coal blend, in place of the IGCC's design fuel, coal.

WHAT WERE OTHER FLORIDA UTILITIES DOING IN 1993?

FLORIDA POWER & LIGHT CO.:

In 1993, FPL was going forward with construction of its Martin Units 3 and 4 as natural gas-fired combined cycle units to enter service in 1994 pursuant to a need determination order issued in June, 1990. Order No. 23080. The Martin Units use GE 7F CT's with a heat rate of 7200 Btu/kWh. [Ex.43, pp.25, 50, 53] (Even though Tampa Electric's IGCC would not enter service until more than two years later, Mr. Black testified that the Tampa Electric CT was an earlier version of the GE 7F. [T.450]) Mr. Waters explained in his deposition how FPL's plans evolved from consideration of a pulverized coal unit as its next generation addition to a decision to build natural gas-fired combined cycle units:

The answer really began to change in 1985. And I think the principal driver of that was probably technology changes, the availability of new advanced turbine technology with higher firing temperatures and higher efficiencies than had been available to that point. At that point gas prices were still projected to be very high, certainly much higher than we predict today. But the gas prices in relation to coal prices, and the fact that the technology was available to burn that gas very efficiently, gave us an answer for the first time showing that combined cycles were most cost-effective. [Ex. 43, pp. 8-9] [Emphasis added.]

Falling natural gas prices in the 1990's confirmed the wisdom of FPL's decision. Mr. Waters responded to a question asking whether FPL conducted further cost effectiveness evaluations after the need determination with these words:

No. There was no event which would initiate such a review, and I don't want to make it sound like we didn't look at the units to see if that needed to be done.~The units, of course, were projected to burn gas and run on gas. Given that our fuel forecasts during the entire construction period were lower, one year after the next, we saw a continued dropping in [the] fuel price forecast. We saw a continued dropping in the total cost of the unit. Given those circumstances, there was no need to go back and review the cost-effectiveness. That only made a good decision better. [Ex. 43, pp. 19-20] [Emphasis added.]

Given the gas prices FPL was forecasting, there was never any indication that coal gasification would be cost effective at the Martin units (which were constructed to be capable of converting to coal gasification) because, "as the units became cheaper and fuel was projected to become cheaper, the spread between the technologies became greater." [Ex.43, p.21-22]

Mr. Waters explained why FPL had no plans to convert the Martin units to burn coal gas:

As far as converting those units to gasification, no, because the fuel price forecast doesn't justify it. And we have not seen, at this point, a similar decline in the cost of IGCC units, as we have seen in the combined cycle. As far as beyond that capability, since those units have been put in service, we have evaluated IGCC technology. What we have seen, probably primarily due to the competitive marketplace, is that pulverized coal units seem to be coming down in price quite a bit from what we had originally estimated. So our next addition might possibly be a pulverized coal unit. . . . Right now our next additions, though, are gas fired. [Ex.43, pp. 26-27.]

* * *

With gas prices dropping, if it's not economical to do coal gasification at the price we originally assumed, as gas prices get lower, it obviously wouldn't be any more cost effective. [Ex.43, p.51]

Mr. Waters noted that not many pulverized coal units are being built because of "the improvement in efficiency of gas-fired units and the lowering of the gas price forecast. There's, I think, an increased comfort level with natural gas as a fuel which didn't exist in a large part of the eighties because of the volatility of the fuel price market. But now the gas prices have dropped. There's increasing confidence that they will stay low, and I think a lot of people are looking at that, at least in the near term, to construct units." [Ex.43, p.40] Mr. Waters also agreed that, in spite of recent volatility in the gas market, looking over the long-term on an annual basis, coal and natural gas prices have maintained a fairly constant differential. [Ex.43, p.49]

FPL is no stranger to IGCC technology. FPL had been the first to consider building an IGCC under Round II of DOE's Clean Coal Technology Program, but would have required \$400 million in funding support to take on such a project. FPL's proposal was, in all likelihood, rejected because it would have exhausted the DOE's program funds on just one project. [T.524-25; Ex.43, pp.58-59, 84-85] After Martin Units 3 and 4, FPL had proposed in its 1989 need filing to build an IGCC. In fact, review of the RFP responses which led to acquisition of Scherer Unit 4 were based on a comparison with an IGCC. [Ex.43, pp.28, 55] Tampa Electric's need determination order noted that FPL had an IGCC as its avoided unit for 1997.

Mr. Waters went into some detail about how an IGCC is evaluated versus a combined cycle on FPL's system. He noted that the IGCC technology was considered riskier. [Ex.43, p.59]

Generally, as a rule of thumb, we look at the economics and hope to achieve net benefits on a present value basis within the first ten years. When you're looking at a 30 to 40-year option, for example, the fact that the unit provides benefits in the last two years of a 40-year study, we would not choose that option. Ten years, in general, has been used as a rough guideline for these 30-year units. . . .

The one advantage -- this is one of those strategic advantages that IGCC has in the way we look at our plan. If we saw that the economics of the unit were unfavorable during the early years, but appeared to turn around in the late years, the one thing you can do with an IGCC that you can't do with a pulverized coal unit is begin operation on natural gas and convert it later to coal gas. So you can actually get the best of both worlds. You can take advantage of the natural gas economics in the short term, and then if the fuel spread widens, you can convert to coal gasification at a later date and make up for this widening spread. [Ex.43, pp.62-63]

Mr. Waters also described how a utility could protect itself from changing fuel forecasts if it first started down the IGCC path:

Well, I guess during the construction period you would simply reevaluate progressing with the unit, as planned, versus switching to another alternative. And the answer to that analysis might dictate what you would do. But again, with IGCC, since it does contain combustion turbine, combined cycle components, the possibility exists that you can sort or abort the gasification phase, if economics say that's the right thing to do. But you can kind of switch gears in the middle. Now there is a point beyond which you can't do that anymore; you will have committed to a certain number of dollars and a certain level of construction. You wouldn't be able to switch back economically. . . .

I can't give you an absolute dollar number, but what it would be is a comparison of the incremental cost to complete the unit as planned versus the incremental cost to complete an alternative unit, in this case probably a

combined cycle. At the point where the incremental cost to complete the IGCC is greater than the incremental cost to complete a combined cycle and run that, you would stop and switch, if that were ever to occur. . . .

Sunk costs. I guess in the traditional financial approach, you ignore sunk costs. In other words, whatever's been spent has been spent. It's not relevant to the future decision. In comparing combined cycle to an IGCC, that's a little bit of a difficult comparison because you have some costs that are sunk that might apply to both units. And that would depend on the design. But you have, for instance if you buy a gas turbine for the IGCC, okay, now it's bought. The fact that it's been paid for doesn't matter to your future decision. But that same combustion turbine might be bought and applicable to the combined cycle technology. So you have to take it out of there too and then look at the incremental cost from that point forward to finish each of the technologies and the operating costs, once they're in service, to make your decision. . . .

Your ability to convert back to natural gas would be somewhat dependent on what design you were using. And there may be a cost associated with switching back to natural gas. It maybe [sic] that the unit was designed to be very heavily integrated with the gasifier. . . . It all depends on where you are in the overall construction process. . . .

The costs spent on the gasifier are basically irrelevant, and the only thing you would look at is the incremental cost, on the IGCC side to finish the gasifier. The costs spent on the combined cycle also need to be thrown out of the analysis, but now the question is how much of that needs to also be thrown out of just finishing as a combined cycle. . . .

You can, at that point then, look at the cost to finish the IGCC in its planned configuration, whatever that cost is, and the cost to finish the combined cycle in a natural gas-fired combined cycle mode. But its incremental cost versus incremental cost. [Ex.43, pp.64-68]

This concept, the ability to convert to coal gasification, known as "fuel - capital cost flexibility," was sanctioned by the Commission in Order No. PSC-92-1355-FOF-EQ:

If gas or oil prices become prohibited, a coal gasification unit can be added and the combined cycle can burn coal gas. Thus, a combined cycle plant, capable of adding coal gasification at a future date, offers a strategic cost-effective advantage over a capital-intensive pulverized coal plant. [T. 736]

Mr. Waters said that, in a comparative incremental analysis, using EPRI TAG estimates for the combined cycle but not for the IGCC would be "mixing apples and oranges." [Ex.43, p.79] He also said that, even though sunk costs are ignored for planning purposes, "that doesn't mean you simply disregard them when it comes to regulatory purposes." [Ex.43, p.84] FPL does not have any plans to construct or convert any of its units to an IGCC configuration. [Ex.43, p.75]

FPL brought its combined cycles on line at Martin in 1994, two years before the expected in-service date of Tampa Electric's Polk Unit 1. Another Florida utility, FPC, plans to bring its own natural gas-fired combined cycle on line in 1998. Thus, Tampa Electric is bracketed both before and after the in-service date of its IGCC with generating units from other Florida utilities which have explicitly evaluated IGCC's and found them not cost effective when compared to a natural gas-fired combined cycle.

FLORIDA POWER CORPORATION:

In 1993, FPC was proceeding with plans to build the natural gas-fired combined cycle units, also in Polk County, for which it had received a need determination just five days before Tampa Electric in 1992. FPC had considered and rejected an IGCC in its August, 1991, study based on both a present-worth-revenue-requirements and a risk analysis basis. [Ex.44, pp.10, 21] Combined

cycles were also seen as the most likely technology to be selected by independent power producers or other competitors. [Ex.44, p.33]

Mr. Niekum testified (in a panel deposition with Mr. Major) that "the advantage of a gas-fired combined cycle unit is it has a very good heatrate, which gives it an advantage even though the price of gas may be high, it still has an efficiency advantage." [Ex.44, p.43] Additionally, FPC had seen falling gas prices since its need determination. [Ex.44, p.32, 34] But, if the price of gas became extremely high, there was always the option of building a gasification facility. [Ex.44, p.44] The price of gas, however, would have to exceed FPC's high fuel price forecast which was given "an extremely low probability." [Ex.44, p.45]

Mr. Niekum testified that FPC has been able to obtain firm gas supplies on the secondary market. Capacity release agreements have been entered into with five municipal agencies "that had the capacity that they were willing to release permanently . . . [A]nd we've signed service agreements with FGT to take that capacity." [Ex.44, p.176] The capacity was obtained under both FTS-1 and FTS-2 tariffs. (Tampa Electric's witness, Mr. Thumb, testified that "unless you were lucky to sign up way back in the '50s and '60s, you can't get FS-1." [T.873]) Mr. Niekum believes "there is more out there. . . . I'm confident that there are ways of getting capacity either permanently or through short-term deals over a period of time until either another expansion occurs or there's a competing pipeline or some other alternative." [Ex.44, pp.180-81]

Mr. Niekum spoke of FPC's view of the natural gas market and possible responses to unexpected changes in these terms:

[O]ur estimate of fuels is that they are going to be a commodity market where most fuels will compete closely with each other and that certain fuels like coal will remain relatively stable and the price will remain relatively flat, but fuels like gas and oil are likely to have wider price swings but nevertheless will never get too far out of line because of the nature of the supply. . . . [I]mprovements in exploration and the size of the wells being explored will lend a reasonable supply of natural gas over time, and while you may see individual price spikes or periods of high prices or low prices, generally the price of gas will be relatively stable, and that there should be a closing of the gap between fuel prices. Fuel prices will remain competitive. You won't see one getting wildly out of line with another. [Ex.44, pp.94-95]

* * *

[O]ne of the purposes of having the Polk site was to have a site capable of coal technology, and the site has been licensed to allow for the introduction of coal gasification. So as an ultimate backstop to high gas prices or if gas simply became unavailable, then the facility is there to either convert the existing units to coal gasification or construct a coal gasification plant there. [Ex.44, p.97]

Mr. Niekum also spoke of the expected performance of FPC's Polk County combined cycle:

We expect it to run at a very high capacity factor. With the current forecast of natural gas and the high efficiency of the unit, it's extremely competitive to all the units on our system except nuclear. . . .

It will rank very close to our Crystal River 4 and 5 coal plants. . . .

[I]t will operate as a base load plant. . . .

Based on current prices, it runs at close to a 90 percent capacity factor. But it is highly sensitive to the differential of coal at Crystal River, and its extremely competitive. So I've seen numbers from 75 to 90, and it only matters a few pennies one way or the other of where it fits. [Ex.44, pp.110-11]

The fact that FPC will dispatch its unit in competition with coal-fired units calls into question Tampa Electric's assumption that a combined cycle, on its system, would be an intermediate load unit.

Tampa Electric argued in this proceeding that it should not be compared to other Florida utilities because different system characteristics made such comparisons meaningless. However, Tampa Electric did not distinguish FPC's claimed ability to dispatch its combined cycle in competition with its coal units on that basis. To the contrary, Mr. Smith disputed FPC's evaluation of its own system, stating that he did not believe FPC's claims were accurate. [T. 909-10]

TAMPA ELECTRIC COMPANY IN 1993

Keep in mind that Tampa Electric's need determination order issued in early 1992. The IGCC had supplanted the phased combined cycle just before the company's petition was filed in September, 1991. An analysis in 1992, but after the need order, would be expected to evaluate the reasonableness of returning to the combined cycle which preceded the IGCC. (The addition of 75 MW of capacity in 1995, 75 MW in 1996, and 70 MW in 1997 closely matched the load growth on Tampa Electric's system.) Such an analysis was, apparently, never done.

Mr. Hernandez explained that his 1992 cost effectiveness evaluation compared the full cost of the IGCC (constructed in phases in the years 1995 and 1996) against a combined cycle alternative made up of a GE 7F combustion turbine in 1995 and an HRSG in 1998 (with another CT of indeterminate size in 1997).

[T.129] The GE 7F is, of course, the 150 MW combustion turbine chosen as part of the IGCC; it was not the choice for the 75 MW CT's previously identified to enter service in 1995 and 1996. So the 1992 analysis does not, by any means, constitute an evaluation, at that time, whether Tampa Electric should return to its previous plan in light of falling gas prices. Even though the GE 7F was not ordered until early 1993 [T.460], and would not ultimately arrive on the Polk site until 1995 [T.460], Tampa Electric was committed to that technology from the time of the need determination order onward.

There are other problems with the 1992 cost effectiveness study. These include the addition of gasifier-related sunk costs to the combined cycle alternative, the use of EPRI TAG estimates for O&M, and the assumed heat rate of 7996 Btu/kWh. But even if, for the sake of argument, Tampa Electric's analysis for 1992 is conceded to be valid, the company's 1993 analysis is clearly in error.

In 1993, Tampa Electric was still in the planning stages for Polk. Field construction started in May 1994. The ground breaking ceremony would not occur at the site until November 1994. [T.198] The decision was made in August 1993, to defer the GE 7F CT from 1995 to 1996. [T.97, 448; Ex. 18, Bates No. 2199] The CT would not arrive on site until 1995. [T.460] The first HRSG modules were not expected on site until December 1994. [Ex.17, Bates No. 2268] There is no evidence in the record that Tampa Electric could not, in 1993, have changed the configuration of the GE 7F so that its

primary fuel would have been firm natural gas and still receive delivery of the CT by 1995.

Mr. Black, Tampa Electric's Vice-President of Project Management, authored a report in 1993 entitled: "A Utility's Perspective of the Market for IGCC." [T.462; Ex.21] It was "submitted to the DOE as part of a conference they were sponsoring," i.e., "Proceedings of the Coal-Fired Power Systems, 1993, Advances in IGCC and PFBC [Pressurized Fluidized Bed Combustion] Review Meeting." [T.462] Mr. Black's report is at odds with many of the company's positions in this docket. For example, from his report, it is clear that Tampa Electric perceived the competition between natural gas and coal as fuels of choice. It is clear that, in 1993, Tampa Electric believed that natural gas prices had to rise in relation to coal prices in order for IGCC's to compete with combined cycle technology. Presumably, a constant differential, Staff's "acid test," favored a natural gas-fired combined cycle.

Mr. Black also saw that IGCC technology was really the technology of choice only if the utility was first committed to coal-fired generation. There is no mention in his report of any plans to burn petroleum coke in the Polk IGCC. In his report, at pages 8-9 (Exhibit 21 begins with page 8), he notes that Tampa Electric's affiliate, TECO Power Services (TPS), "is responsible for the overall project management for the DOE portion of the IGCC project. TPS will also concentrate on commercialization of the IGCC technology as part of the Cooperative Agreement with the U.S.

Department of Energy. . . . [Tampa Electric's] objective is to build a coal-based generating unit providing reliable, low cost electric power."

In a section of the report entitled, "Business Issues Economic Justification," Mr. Black said:

The first business issue any utility has to deal with in implementing a new generation addition is the issue of economic justification. The three basic driving forces in the economic justification of any technology are its fuel cost relative to other technologies, its capital cost, and its efficiency.

I believe, in the short-term U.S. market, that IGCC's primary competition is natural gas-fired combined cycle technology. I believe that in order for IGCC to compete on a commercial basis, that natural gas prices have to rise relative to coal prices, and that the capital cost of the technology must come down. While this statement may seem to be somewhat obvious, it raises two interesting points.

The first is that while the relative pricing of natural gas and coal is not generally within the technology supplier's control, the capital cost is. The reduction of capital cost represents a major challenge for the technology suppliers in order for this technology to become commercialized.

The second point is that the improvements being achieved with IGCC efficiencies probably won't help it outperform the effects of natural gas pricing. This is due to the fact that the combined cycle portion of the IGCC technology is experiencing the most significant improvements in efficiency. While certain improvements in coal gasification and integration are being made, they potentially will be overshadowed by improvements in combustion turbine/combined cycle technology. Combustion Turbine/Combined Cycle improvements will apply to natural gas-fired units as well as IGCC units. Therefore, I believe the relative efficiencies of these technologies will continue to closely track.

I do see, however, a significant advantage for IGCC technology compared to conventional pulverized coal-fired units. As IGCC efficiencies continue to improve, combined with their environmentally superior performance, I

believe that IGCC will be the 'technology of choice' for utilities that install new coal-fired generation.

We have achieved economic justification of our project by virtue of the DOE's funding of \$120 million awarded in Round III of their Clean Coal Technology Program. This program provides the bridge between current economics and those of the future. And Tampa Electric is pleased to be taking a leadership position in furthering the IGCC knowledge base. [Emphasis added.]

The last paragraph quoted above is telling. (It was also quoted by Mr. Black under redirect examination at T.494-95.) Tampa Electric, apparently, has not represented to anyone other than this Commission that the IGCC may be cost effective in the absence of DOE funding. Claims in this docket that the IGCC could be expected to achieve savings well in excess of \$120 million (making the IGCC cost effective without DOE funding support) are not entitled to any weight given the manner in which the IGCC supplanted the phased combined cycle the company planned to build before its September 1991 need determination filing. Even though Tampa Electric had additional combined cycle units planned for later years (i.e., after the IGCC in 1996) in its 1992 and 1993 resource plans [Ex.3, Bates Nos. 74, 77], it did not have a second IGCC in those, or any other year's, resource plan. [T.950]

Thus, in 1993, we have the price of natural gas falling and coal prices relatively stable [Ex.3, Bates Nos. 89, 91, 95]; we have Tampa Electric recognizing that the IGCC is only economical (in the absence of DOE support) if natural gas prices rise in relation to coal; we have a GE 7F CT which is not due for delivery until 1995; and we have the obvious question whether projected gas prices have fallen enough to offset the benefits of \$120 million

from DOE, making it prudent for Tampa Electric, on the basis of an incremental CPWRR analysis, to abandon the IGCC and build a natural gas-fired combined cycle. What we don't have is meaningful evidence from Tampa Electric to answer the question in the company's favor.

In its 1993 cost effectiveness analysis, Tampa Electric switched from the natural gas-fired combined cycle alternative used in its 1992 study and, instead, used the power block from the IGCC. [T.129-30, 137] This power block would be configured to operate on syn gas. [T.131] Essentially, Tampa Electric, in 1993, abandoned any ability to build a stand-alone natural gas-fired unit to come on-line three years later, without any evidentiary support for the decision. [T.131-32, 137-40] The initial order for the GE 7F, however, was only placed in "early 1993." [T.460] On this point, it is noteworthy that the GE 7F was, originally, expected to be up and running in July, 1995. Tampa Electric was able to significantly alter another major component of the project, the hot-gas-clean-up (HGCU) system, from 50% to 10% in 1993 or after. [Ex.21, p. 10] There is no evidence in the record that Tampa Electric could not have changed its CT order in 1993 so that, in 1996, it would bring on line a natural gas-fired combined cycle unit.

In its cost effectiveness analysis for 1993, Tampa Electric then burdens the combined cycle "alternative" with \$17.3 million of gasifier-related sunk costs. [T.133-34] This technique, in 1996, would lead to "the plant cost of the combined cycle unit

(\$387,110,000 after adding sunk costs for the gasifier up to that date) exceeding the plant cost of the IGCC (\$384,870,000). The difference is even greater after accounting for the DOE credit (\$290,772,000 versus \$269,475,000)." [T.702; Ex.3, Bates No. 87] O&M is based on EPRI TAG estimates instead of the project management and vendor provided estimates used for the IGCC, an "apples and oranges" comparison in the estimation of FPL's Mr. Waters. The combined cycle fuel is assumed to be as-available natural gas and distillate instead of the firm natural gas FPC is going to use at its units just down the road in Polk County. Firm natural gas would have a lower (more efficient) heat value. [T.478-79] The fuel choices also serve to increase the assumed heat rate because distillate has a higher heat rate than natural gas.

Tampa Electric Company's use of as-available natural gas is based on the assumption that a combined cycle would dispatch as an intermediate load unit on Tampa Electric's system. This assumption is unsubstantiated in the record of this proceeding. [T.757] It makes the combined cycle appear uneconomic in three respects: first, by assuming a low capacity factor, Tampa Electric makes the use of firm natural gas too expensive in relation to as-available gas and distillate oil; [T.265] second, the gas/oil combination adds to a higher heat rate for the combined cycle alternative; [T.737] and last, since electric utilities schedule maintenance of their generating units for the Spring and Fall, the combined cycle is assumed to operate most of the time on distillate. [T.737]

The evidence in the record indicates the power block for the IGCC will not be configured to operate on natural gas. [T. 131, 282] There is no evidence that Tampa Electric assumed the CT had been modified to function with natural gas and included the cost of such modifications in its analysis, or even that such a CT could actually operate on natural gas.

Even so, Tampa Electric's own analysis for 1993 would have favored the combined cycle if the company had assumed the use of the design fuel, coal, for the IGCC. Tampa Electric is only able to identify cost savings from the IGCC in its 1993 analysis by using an 80%/20% petroleum coke/coal blend for all years after the DOE demonstration period ends in 1998. [T. 111]

Even with Tampa Electric's own natural gas forecast, the natural gas-fired combined cycle alternative was approximately \$68 million less expensive than the Polk IGCC Unit fueled by Illinois #6 coal. [T. 738,756] Mr. Ballinger noted that, even though the company was able to identify net savings by departing from the designs fuel, "ratepayers would have to wait 18 years after the unit came on line to realize positive savings. This means that at the time the study was conducted, TECO was willing to wait until the year 2013 for its ratepayers to realize a net benefit from the continued construction of the Polk IGCC Unit." [T. 740]

The company's intention to use a petroleum coke/coal blend was not announced until the Ten Year Site Plan was filed in April 1995. [T.739] In a September 17, 1993, memorandum from D. A. Cowdrick to D. E. Pless, addressing "Up Dated Polk Performance Expectations,"

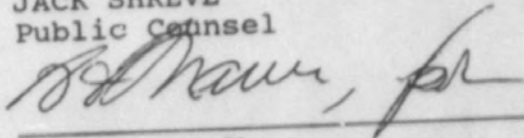
the company's "current 'expected' cases" were outlined in terms of the use of coal and distillate; no mention is made of possible use of a petroleum coke/coal blend. [Ex. 19, Bates Nos. 35-36] It is not until a later memorandum dated May 16, 1994, (which refers to the September 17, 1993, memorandum) that Mr. Cowdrick provides performance parameters for a petroleum coke/coal blend. [Ex. 14, Bates Nos. 219-222] Tampa Electric has never had a long-term contract to supply petroleum coke to any of its units. [T.316] Tampa Electric will not settle on a specific fuel source until evaluations are performed after the two-year DOE demonstration period. [T.252] The project approved by the Commission in 1992 was not cost effective in 1993.

CONCLUSION

Tampa Electric has to demonstrate to this Commission, by a preponderance of the evidence, that, in 1993, it evaluated conditions as they existed and reasonably concluded that continuation of the plan to build an IGCC at Polk was the most cost effective alternative for its ratepayers. Tampa Electric has not shown, on an incremental basis, that it analyzed, in 1993, the cost of finishing the IGCC versus the cost of finishing the combined cycle portion of the IGCC as a natural gas-fired combined cycle unit. Tampa Electric should have realized in 1993, when it had to resort to an alternative fuel to make its cost effectiveness studies work, that the project it proposed to the Commission was no longer cost effective when compared to a natural gas-fired combined cycle unit.

Respectfully submitted,

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CERTIFICATE OF SERVICE
Docket No. 960409-EI

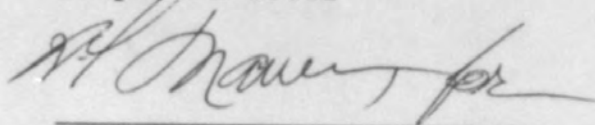
I HEREBY CERTIFY that a true and correct copy of the foregoing BRIEF OF THE CITIZENS OF THE STATE OF FLORIDA has been furnished by U.S. Mail or by hand-delivery (*) to the following parties on this 5th day of August, 1996:

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