

State of Florida



Public Service Commission

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TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: NOVEMBER 19, 1998

TO: DIRECTOR, DIVISION OF RECORDS AND REPORTING (BAYO) *ALM*

FROM: DIVISION OF ELECTRIC AND GAS (TEW, BREMAN, BASS, BOHRMANN, FUTRELL, WHEELER) *WJ*
DIVISION OF AUDITING AND FINANCIAL ANALYSIS (CAUSSEAU, DICKENS, D. DRAPER, P. FLEE, MAUREY, NORIEGA, SLEMKOWICZ) *CFK*
DIVISION OF LEGAL SERVICES (JAYE) *DM*

RE: DOCKET NO. 980693-EI - PETITION BY TAMPA ELECTRIC COMPANY FOR APPROVAL OF COST RECOVERY FOR A NEW ENVIRONMENTAL PROGRAM, THE BIG BEND UNITS 1 & 2 FLUE GAS DESULFURIZATION SYSTEM.

AGENDA: 12/01/98 - REGULAR AGENDA - POST HEARING DECISION - PARTICIPATION IS LIMITED TO COMMISSIONERS AND STAFF

CRITICAL DATES: NONE

SPECIAL INSTRUCTIONS: NONE

FILE NAME AND LOCATION: S:\PSC\EAG\WP\980693EI.RCM

CASE BACKGROUND

On May 15, 1998, Tampa Electric Company (TECO) filed a Petition for Approval of Cost Recovery for a New Environmental Program, the Big Bend Units 1 & 2 Flue Gas Desulfurization System. On June 2, 1998, Florida Industrial Power Users Group (FIPUG) petitioned to intervene and filed its response to TECO's petition for approval of cost recovery. On June 10, 1998, the Commission granted FIPUG's petition to intervene in Order No. PSC-98-0806-PCO-EI. On July 23, 1998, FIPUG filed its motion to dismiss. On July 29, 1998, the Office of Public Counsel (OPC) filed both its notice of intervention and suggestion that the Commission dismiss TECO's petition. The Commission acknowledged OPC's intervention on August 3, 1998, in Order No. PSC-98-1047-PCO-EI. On August 14, 1998, the

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TECO-RECORDS/REPORTING

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Legal Environmental Assistance Foundation (LEAF) petitioned to intervene and filed its motion to dismiss. A prehearing in this docket was held on August 21, 1998. The Commission granted LEAF's petition to intervene on August 28, 1998, in Order No. PSC-98-1168-PCO-EI. The hearing in this matter was held September 2, 1998. All intervening parties' motions and the suggestion to dismiss were denied in Order No. PSC-98-1260-PCO-EI, issued September 22, 1998.

DISCUSSION OF ISSUES

ISSUE 1A: Should FIPUG's Motion to Reopen the Record be granted?

RECOMMENDATION: No. The Florida Industrial Power Users Group's Motion to Reopen the Record appears to be predicated upon the theory that Section 366.825, Florida Statutes, controls this case. This theory was specifically rejected in Order No. PSC-98-1260-PCO-EI, issued September 22, 1998. In addition, FIPUG, as a party to this proceeding, had a reasonable opportunity to offer evidence on the issue of NO_x compliance. Further, the issue of NO_x compliance, if it is relevant, was adequately addressed on the record of this proceeding. [JAYE]

STAFF ANALYSIS: Citing to Rule 25-22.037, Florida Administrative Code, on October 12, 1998, the Florida Industrial Power Users Group (FIPUG) filed a Motion to Reopen the Record. On October 19, 1998, Tampa Electric Company (TECO) filed its Memorandum in Opposition to FIPUG's Motion to Reopen the Record.

I. **POSITIONS OF THE PARTIES:**

A. **FIPUG**

In its motion, FIPUG contends that TECO presented two witnesses in Docket No. 980007-EI, Karen Zwolak and Gregory Nelson, who gave testimony concerning TECO's NO_x and SO₂ compliance. FIPUG asserts that these witnesses testified as to the appropriateness of granting TECO "some \$1.6 million to defray a small part of the costs for CAAA compliance, including SO₂ and NO_x removal." (Motion, 1) FIPUG further states in its Motion that:

This [the Zwolak and Nelson testimony] demonstrates that there is a significant investment in NO_x removal already in place and from this testimony the Commission may be able to ascertain the full impact of CAAA compliance. TECO does have a plan in place and under construction to comply with CAAA. TECO has simply failed to divulge this comprehensive plan to the Commission and to the parties in this case. The Commission should consider this in making its decision in this case. (Motion to Reopen the Record, 1, 2)

B. TECO

TECO's Memorandum in Opposition to FIPUG's Motion to Reopen the Record states that:

FIPUG's Motion to Reopen the Record appears to be premised on the same erroneous point FIPUG raised in its failed Motion to Dismiss Tampa Electric's Petition in this proceeding -- that a utility must present an overall environmental compliance plan as a prerequisite to seeking approval of cost recovery for a particular environmental compliance activity under Section 366.8255, Fla. Stat. That argument was specifically rejected by this Commission in its Order Denying Motions to Dismiss in this proceeding. (Memorandum, 1)

TECO asserts that even if a plan including NO_x emission control were required under Section 366.8255, Florida Statutes, which TECO claims is not required, TECO maintains that it provided ample evidence of its NO_x compliance activities on the record in this docket. In responding to questions posed by FIPUG's Mr. McWhirter, TECO asserts that its Witness Black amply described the company's proposed NO_x compliance activities such as combustion modifications and classification equipment replacement, including costs of such activities. TECO asserts that Mr. Black's descriptions and estimates of these activities are located in the transcript at pages 62-64 and 67.

II. Discussion and Analysis

A. Requirement that TECO File a Comprehensive CAAA plan

FIPUG's contentions in its motion appear to be based upon the belief, stated in FIPUG's Motion to Dismiss, filed July 23, 1998, that a proceeding under Section 366.8255, Florida Statutes, requires TECO to file a comprehensive CAAA compliance plan outlining all proposed CAAA compliance projects for which TECO would seek cost recovery under the Environmental Cost Recovery Clause. Specifically, in the Motion to Dismiss, FIPUG argued:

Rather than providing the Commission with its Compliance Plan well ahead of the necessary implementation date in compliance with §366.825 so that appropriate analysis and study could be done, TECO has essentially come in at the "11th hour" seeking cost recovery of a compliance plan that has not been reviewed, much less approved, pursuant to §366.825 and for which no rate impact information has

been provided. Having failed to timely file under §366.825, TECO may not seek recovery for Clean Air Act compliance costs under §366.8255. (Motion to Dismiss, 4-5)

From the similarity of the arguments presented in FIPUG's Motion to Dismiss and its subsequent Motion to Reopen the Record, staff believes that FIPUG is attempting to "back into" the same arguments it made in its Motion to Dismiss.

FIPUG's Motion to Dismiss, the Office of Public Counsel's (OPC) Suggestion that the Florida Public Service Commission, On Its Own Motion, Dismiss Tampa Electric Company's Petition Without Prejudice (filed July 29, 1998), and Legal Environmental Assistance Foundation's Motion to Dismiss (filed August 14, 1998), were all denied by the Commission at the September 1, 1998, Agenda Conference. The Commission issued an Order Denying Motions to Dismiss, Order No. PSC-98-1260-PCO-EI, on September 22, 1998. The Order held, among other things, that Section 366.8255, Florida Statutes, authorizes a utility to submit:

a petition to the Commission describing proposed environmental compliance activities and projected environmental costs which may be [in] addition to (or supplemental to) any Clean Air Act compliance plan which the utility may have filed under Section 366.825, Florida Statutes. The language is inclusive of, rather than exclusive of Clean Air Act compliance activities. (Order, 7)

In this docket, TECO appropriately filed for prudence determination and eligibility for future cost recovery of its proposed Flue Gas Desulfurization (FGD) system under Section 366.8255, Florida Statutes. Therefore, a "comprehensive plan" as intimated in FIPUG's Motion to Reopen the Record is not required or contemplated under Section 366.8255, Florida Statutes. This issue has already been rejected by the Commission and need not be revisited here.

B. NO_x Compliance

Staff believes that NO_x compliance is not an issue in this filing for a prudence determination of a specific environmental compliance activity to reduce SO₂ emissions under Section 366.8255, Florida Statutes. Even if it were an issue, as FIPUG's Motion to Reopen the Record asserts, this question has been addressed in the record. TECO witness Black stated at the hearing:

The technologies that we utilize for NO_x control are totally separate from those that we are employing for SO₂ control. And because of the fact that no single technology that we're aware of can deal with both of those issues, we're treating them as totally unrelated. And the approach that we're taking on our NO_x compliance has no effect on the options that we would select with respect to our SO₂ compliance. And even if you look at the cost of the SCR case and compare that to other options for dealing with NO_x and SO₂ in a combined nature, that still is by far the most cost-effective solution. (TR. 64, lines 8-20)

Witness Black again addressed NO_x in his testimony before the Commission in answering a question posed by FIPUG:

Q: Would you give a description of the proposed action and alternative actions considered by Tampa Electric to comply with the nitrogen oxide emission rates required by the Clean Air Act?

A: Yes, sir. We currently are in negotiations with the Environmental Protection Agency with respect to the nitrous oxide emission limits for the Tampa Electric boilers The emission limits that were set, we are moving towards those limits by making combustion modification to the units which involve the replacement of the classification equipment, which allows us to better balance the fuel flow to the boilers, which allows us to reduce the amount of excess oxygen that is required for the combustion process and that reduction of the excess oxygen provides a benefit in reducing the NO_x work To the extent that we are not successful with our combustion modifications, the next level of NO_x compliance would be the installation of a selective catalytic reduction clean-up technology on the tail end of one of our large boilers So, we're taking a staged approach for our NO_x compliance. We are looking at least cost alternative first, and we want to verify that that either is or is not totally acceptable. If it's not, then we move to the next control technology to achieve the limits The current estimate for the combustion modification cost is in the order of \$8- to \$10 million of capital cost. If we have to move beyond that, the installation, the capital cost associated with a SCR on one of our large boilers we estimate to be in the order of \$20 million. (TR. 62-64)

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Witness Black went on to give TECO's current NO_x emissions (TR. 64-6) and the amount of reduction necessary to bring TECO into compliance and the cost of such reduction (Tr., 66-67). Thus there is no need to include additional testimony as to NO_x compliance, because the record appears to already be sufficient and the parties have had a reasonable opportunity to develop the record.

C. Opportunity to Present Evidence

FIPUG was granted party status June 10, 1998, by Order No. 98-0806-PCO-EI. FIPUG filed direct testimony on July 27, 1998. FIPUG participated in and propounded discovery. FIPUG had an opportunity to cross-examine witnesses at the hearing held September 2, 1998. Staff believes that, given these opportunities to participate in the hearing process and to develop the record through discovery and cross-examination, FIPUG has been given a full and fair opportunity to present any evidence it might have deemed relevant to the cause. Staff believes that it is now too late for FIPUG to attempt to revisit the record with additional testimony the subject matter of which could have been addressed at any time during the discovery and hearing process.

Conclusion

Staff therefore recommends that the Commission deny FIPUG's Motion to Reopen the Record because: 1) the issue of whether a comprehensive plan is required under Section 366.8255, Florida Statutes and whether Section 366.8255, Florida Statutes is controlled by Section 366.825, Florida Statutes was already resolved in the negative by the Commission in this docket in Order No. PSC-98-1260-PCO-EI, issued on September 22, 1998; 2) the issue of NO_x compliance, if it is relevant, was adequately addressed on the record of this proceeding; and, 3) FIPUG has had a reasonable opportunity to present evidence on this issue.

ISSUE 1: Has Tampa Electric Company (TECO) adequately explored alternatives to the construction of a Flue Gas Desulfurization (FGD) system on Big Bend Units 1 and 2?

RECOMMENDATION: Yes, Tampa Electric Company has adequately explored alternatives to the construction of a Flue Gas Desulfurization (FGD) system on Big Bend Units 1 and 2. The in-service date of the FGD system and its effect on both fuel and allowance savings should be monitored in the ongoing fuel adjustment and environmental cost recovery clauses. [TEW, BREMAN, BOHRMANN]

POSITION OF THE PARTIES

TECO: Yes. Tampa Electric has carefully and prudently explored all reasonable alternatives to the construction of its proposed FGD system for Big Bend Units 1 and 2. The alternatives included build and non-build options. The proposed FGD system was clearly the most viable and cost-effective alternative.

PUBLIC COUNSEL: No. Alternatives have been explored, but Tampa Electric's conclusion is largely unexplained on the record. No other coal-fired utility has chosen the scrubber option. Fuel savings are not adequately quantified. Information the Commission must consider under Section 366.825, Florida Statutes (1997), has not been provided.

FIPUG: No. TECO's filing came after construction of the project began. The filing omits information required by law and gives insufficient time for the Commission to give meaningful consideration to any alternatives other than those TECO promoted.

LEAF: No. TECO has not fairly explored appropriate alternatives, including constructing a new gas-fired combined cycle facility, to reduce its SO₂ emissions. TECO's consideration of a staff-proposed hypothetical was skewed in favor of coal.

STAFF ANALYSIS: The resolution of this issue centers on whether or not TECO was prudent in its planning process. If there is evidence that TECO ignored relevant facts, ignored reasonable options, or made unreasonable assumptions in its planning process, then TECO did not adequately explore all reasonable alternatives for compliance with the Clean Air Act Amendments of 1990 (CAAA).

TECO's lengthy decision-making process may cause TECO to incur slightly higher costs for fuel and SO₂ allowances during the first

part of the year 2000. (TR 90-92) However, staff concludes that these increased costs are not sufficient to change the ultimate cost-effectiveness of the scrubber option for TECO. Therefore, staff believes the record supports the conclusion that TECO has been reasonable in its evaluations of alternatives to comply with CAAA requirements.

In order to clearly demonstrate TECO's CAAA planning process, staff's analysis first presents a timeline of TECO's CAAA compliance reviews. The timeline tracks decision dates and references all documents of record which memorialize what TECO evaluated, the major assumptions, and the strategic concerns. Staff's analysis then addresses the positions of OPC, FIPUG and LEAF.

TECO's Timeline of CAAA Reviews

The CAAA, as passed in late 1990, requires specific reductions in SO₂ and NO_x air emissions at fossil fuel-fired power plants. All compliance alternatives available to TECO are composed of one or more of the following five basic options: purchased power, fuel switching, environmental dispatch, retrofit existing power plants with pollution control equipment, and displacement of coal-fired generation with new natural gas-fired generation. These five basic options in many various combinations were considered and evaluated by TECO since passage of the CAAA. TECO's evaluation of the options included consideration of fuel prices, fuel quality, the specific design of the generating unit, operational and efficiency characteristics, as well as potential infrastructure additions such as natural gas laterals and coal yard improvements. (TR 47, 141; EXH 12, pp. 7-8, 23-27; EXH 6) However, different evaluations were made at various stages of the decision process.

In August of 1992, TECO concluded that blending coals was the most cost-effective option for the Phase I requirements which the CAAA placed specifically on Big Bend Units 1, 2, and 3. (EXH 12, p. 75) Staff believes that this was a reasonable choice because there simply was no evidence that any other alternative would have been more cost-effective. Too many unknowns existed in 1992 with respect to the CAAA. (EXH 12, pp. 47-51, 65)

A milestone study with long-term implications was TECO's 1994 CAAA compliance plan evaluation. (TR 36, 295; EXH 12 Document 1; EXH 14, p. 47) This study concentrated on SO₂ requirements principally because SO₂ emission limits for Big Bend Units 1, 2, and 3 were listed in the CAAA and were to be met by 1995. (TR 33-34; EXH 2 Document 1; EXH 12, pp. 4, 7) However, the 1994 study

also addressed flexibility to respond to future developments in the CAAA. Although the Environmental Protection Agency (EPA) had set SO₂ limits for the first phase of the CAAA for Big Bend Units 1-3, it had not set applicable NO_x limits for those units at the time of the study. (EXH 12, pp. 4, 8) Instead, EPA was to study what was reasonable and economical for utility boilers with the design characteristics of Big Bend Units 1-3 and to promulgate NO_x limits for them by January 1997, limits that would not take effect until the beginning of Phase II. (EXH 12, p. 8) Therefore, TECO continued to separately study options for compliance with CAAA Phase II limits for both NO_x and SO₂. (EXH 12, pp. 46, 65; TR 64)

The conclusion drawn by TECO from the 1994 review was that the deferral of investment in a scrubber retrofit project was cost-effective as long as allowances could be purchased at a reasonable price and were competitive with the price spread between lower and higher sulfur coals. However, uncertainty existed which required TECO to continue to monitor the newly formed SO₂ Allowance Market, EPA's drafting of the NO_x rules, pending air toxic studies, and the potential for CO₂ legislation. (EXH 12, pp. 47-65)

In 1995, TECO determined that it was economic to use its Big Bend Unit 4 scrubber to also scrub the Big Bend Unit 3 flue gas. (EXH 12 Document 2, p. 4; TR 84) This finding was largely based on ongoing research and development (R&D) efforts at TECO's Big Bend Unit 4 scrubber. (EXH 5, pp. 47-48; EXH 5 Late-Filed Deposition Exhibit 3) The project became known as the "Big Bend Unit 3 Flue Gas Desulfurization Integration" project. In May 1996, TECO petitioned for cost recovery for this CAAA compliance activity which the Commission granted in Order PSC-96-1048-FOF-EI, issued August 14, 1996.

In late 1996, another screening analysis of SO₂ compliance options began. (EXH 8) This analysis is the basis for various exhibits in Mr. Hernandez' prefiled testimony. During deposition, Mr. Hernandez clarified that the 1996 cost figures in his prefiled direct testimony exhibits were in 1996 dollars because that is when the evaluations were done. (EXH 14, pp. 37-38, 76-78; EXH 8) The 1996 evaluation built on the 1994 review and lessons learned with the R&D project on the Big Bend Unit 4 scrubber. (TR 295; EXH 5 Late-Filed Deposition Exhibit 3) A review of the tables and figures within Mr. Hernandez' prefiled testimony reveals four different scrubber options. (EXH 12 Document 2) The first page of Exhibit 8 shows that only scrubber projects were under investigation as of January 1997. By this time, TECO had made a determination on the means of compliance with SO₂ requirements of the CAAA. The basis on which cost-effectiveness of the FGD option

was determined was their current compliance actions: fuel switching and allowance purchases. Staff believes this approach provides a reasonable measure of the expected change in costs for compliance alternatives from the current alternative. The alternative of fuel switching (also called fuel blending) was labeled the base case throughout the remaining planning process.

A 1997 snapshot of TECO's dialogue with EPA regarding NO_x limits and retrofit costs on various units is contained in Exhibit 10. The potential cost impact for NO_x compliance shown within these pages exceeds an estimated \$100,000,000 in capital costs if selective catalytic reduction (SCR) technology is required on six TECO units. (EXH 10; EXH 5 Deposition Transcript, p. 36) However, TECO has undertaken efforts before EPA for different and less restrictive NO_x limits. If successful, TECO maintains that it will have reduced the NO_x compliance cost to be between \$8 and \$30 million. (EXH 5 Deposition Transcript, pp. 33-36, 76-77; TR 62-63, 67, 142-143, 149) However, staff notes Mr. Black's uncertainty that TECO's current NO_x compliance approach will meet the existing limits under the CAAA. (TR 63)

In late 1997, TECO obtained several estimates for the Big Bend Units 1 & 2 scrubber from Sargent & Lundy. A September estimate for a similar FGD quoted an amount of \$80 million. TECO then requested a detailed estimate of the major portions of the project. The detailed estimate was transmitted on October 3, 1997 and formed the basis of the cost estimates in TECO's final review, the presentation to management, and the cost estimates presented in Mr. Black's prefiled testimony. (EXH 5 Deposition Transcript, pp. 9, 19; EXH 5 Deposition Late-Filed Exhibit 2; EXH 7)

The May 1998 review contained in Mr. Hernandez' prefiled testimony is a composite summary of various efforts over time. Currently there are only two viable alternatives under consideration by TECO, the FGD stand-alone system for Big Bend Units 1 & 2 and fuel blending. (EXH 14 Deposition Transcript, p. 78) The proposed FGD is expected to be less expensive than the use of lower sulfur coals paired with participation in the SO₂ allowance market because the difference between high and low sulfur coal prices is expected to increase. As indicated in Issue 2, the forecasted coal prices are reasonable expectations, and none of the parties disputed the trends in coal prices.

OPC

OPC's concerns, as stated in its post-hearing position, appear to be directed by a sense of insufficiency in TECO's testimony.

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Two concerns are brought forward by OPC with respect to planning, evaluations, and alternatives. One concern is that TECO could have scheduled the scrubber to come on line earlier. (TR 92; OPC Brief, pp. 2-3) The other concern is that a ten-year fuel price forecast is not sufficient to make a decision, and fuel price forecasts specific to each generating unit have not been provided. (OPC Brief, p. 3)

OPC properly points out that TECO's own evaluation process and assumptions indicate that an earlier in-service date would create more fuel savings and allowance savings. (OPC Brief, p. 2-3; TR 90-93) This should be monitored in the ongoing fuel and environmental cost recovery clauses. However, it does not suggest that TECO was not prudent in selecting the FGD project; it only suggests that TECO was slow in putting the FGD into service. Also, staff observes that OPC does not dispute that fuel savings are likely to result within the ten-year study period. Clearly, if an FGD is cost-effective in the first ten years due to fuel savings, there is every expectation that the FGD alternative will also be cost-effective in year eleven and beyond barring some unforeseen event. Staff believes that TECO's internal analyses are typified by the documents contained in Exhibit 8, "An Internal Review of the CAAA SO₂ Compliance Strategies Dated January 14, 1997." This document represents the type of information TECO used, how TECO used the information, and what TECO believed at the time decisions were made. This exhibit addresses all the key cost elements required by OPC except the detailed year-by-year breakdown of the cash flows over the life of the scrubber. However, the trends are established and noted. The record reflects that the necessary detail to make informed decisions has been addressed by TECO and included in its evaluations.

FIPUG

Similar to OPC, FIPUG states in its post-hearing position that it does not believe TECO provided sufficient information. FIPUG believes that TECO's filing falls short of the information required by law and that insufficient time has been given for consideration of the facts.

Staff believes that all facts showing what TECO knew or could have reasonably known at the time are contained in the record. Therefore, there is nothing missing that is necessary to make a decision on the prudence of TECO's selection of the proposed FGD. Even if TECO's petition had been submitted under a different Florida Statute, historical company records, work papers, reviews, and other such materials which document the basis for TECO's

decision would be no different. Therefore, a finding of prudent planning would have to be made based on the same evidence.

The effect of doing what FIPUG recommends is that the Commission would defer rendering a decision in this case until some time after the FGD is in service. However, this will in no way facilitate a prudence review of TECO's decision to install a scrubber on Big Bend Units 1 & 2. The actual installed costs and all other incidental costs for compliance with the CAAA at that time are not relevant in the review of TECO's 1996/1997 decision to install an FGD system on Big Bend Units 1 & 2. Whether or not TECO has been prudent in its selection of a compliance option can be determined from the record in this case.

LEAF

As reflected in its post-hearing position, LEAF's primary concern is that TECO prematurely eliminated all natural gas options for purposes of compliance with CAAA requirements. Staff shared this concern. One alternative to CAAA compliance which TECO's 1996-1998 reviews did not address was building a new natural gas-fired combined cycle facility. Such a facility would reduce TECO's system NO_x and SO₂ emissions if it could economically displace TECO's coal-fired generation. This compliance alternative did not appear in any review or study after it was determined to not be cost-effective in the 1994 study.

To address this concern, staff attempted to assess whether or not such an alternative would be viable today. An exhibit was developed and provided by TECO Witness Hernandez that demonstrates the degree to which a new natural gas facility would or would not be cost-effective for TECO in place of the coal-fired FGD alternative. (EXH 14 Late-Filed Deposition Exhibit 1) Based on the evidence in the record, staff is persuaded that a new natural gas-fired unit is not cost-effective and not competitive with the FGD alternative for purposes of CAAA SO₂ compliance.

First, TECO's coal-fired and petroleum coke-fired generation units should account for over 85 percent of its load requirements through 2007. To maintain system reliability, a natural gas alternative would need to replace the approximately 850 MW capacity from Big Bend Units 1 & 2 combined. (EXH 12, pp. 159, 182) Second, under most circumstances, TECO would still have coal-fired units that would economically dispatch earlier than a natural gas-fired unit. (EXH 14 Deposition Transcript, p. 10) The natural gas unit's position in TECO's dispatch queue would negatively impact its cost-effectiveness. Third, a natural gas unit of sufficient size would

require a large capital investment by TECO. Witness Hernandez estimated that TECO would incur a capital cost of \$500/KW to install a natural gas unit on TECO's system. (EXH 14 Late-Filed Deposition Exhibit 1) Hence, a 850 MW natural gas unit would require approximately \$425 million in capital costs.

Staff had concerns with several assumptions in Witness Hernandez' Late-Filed Deposition Exhibit 1. (EXH 14) For example, staff was concerned with the \$500/KW estimated capital cost to install a natural gas unit. In addition, staff believes the ten-year depreciation assumption is inappropriate. (TR 267) After performing a sensitivity analysis in which the appropriate changes were made to several of TECO's assumptions, staff believes that the FGD system on Big Bend Units 1 & 2 is a more cost-effective alternative than a new natural gas-fired facility.

Conclusion

Based on the foregoing analysis, staff believes that the record shows that TECO adequately explored alternatives to the construction of a Flue Gas Desulfurization system on Big Bend Units 1 & 2.

ISSUE 2: Is the fuel price forecast used by TECO in its selection of a CAAA Phase II Compliance plan reasonable?

RECOMMENDATION: Yes, the fuel price forecast used by TECO in its selection of a CAAA Phase II SO₂ Compliance plan appears to be reasonable for determining whether an FGD system is cost-effective. The record contains no evidence as to why the difference between coal and natural gas prices diverge. [BOHRMANN, BREMAN, TEW]

POSITION OF THE PARTIES

TECO: Yes. The company's fuel price forecast is based on a thorough and continuing analysis of numerous fuel price information resources, input from various consultants, actual buying experience and continuous monitoring of all fuel prices on a regular basis.

PUBLIC COUNSEL: No. Cost-effectiveness of the scrubber depends on fuel savings from burning high-sulfur coal and petroleum coke. Fuel savings, in turn, depend on the reasonableness of the fuel price forecast. There is, however, no detailed fuel price forecast suitable to evaluate the company's SO₂ compliance plan in the record.

FIPUG: No. The cost savings between the high sulphur fuel TECO will burn and alternative fuels must be large enough to offset operating inefficiency and capital costs. TECO supplied no independent fuel forecasts, omitted the cost of other environmental standards and failed to disclose the operating experience of Big Bend Units 3 and 4's FGD.

LEAF: No. TECO's fuel forecast unreasonably under-prices coal and over-prices natural gas, thereby allowing it to reach a coal-based choice.

STAFF ANALYSIS: TECO annually develops a fuel price forecast to support its planning process. Witness Black stated that TECO used the same forecast in its evaluation of the cost-effectiveness of the FGD system that it used in its 1998 Ten-Year Site Plan (TYSP). (TR 48) When developing its fuel price forecast, TECO compared historical fuel prices with future fuel prices as projected by several consultants and government agencies such as U.S. Energy Information Administration, American Gas Association, Cambridge Energy Research Associates, Resource Data International, and Energy Ventures Analysis. Furthermore, TECO also reviewed several industry publications to monitor historical price trends. (TR 38-39, 48) Staff notes that none of the parties questioned the

validity or reliability of the sources used by TECO in its analysis of fuel prices. (TR 48-69, 73-111, 186-252) In fact, these sources are the same ones used for TECO's fuel price forecasts for its prior TYSP filings with the Commission. The Commission has consistently determined these filings to be reasonable for planning purposes. Staff believes TECO has taken reasonable steps to monitor current trends and future expectations of fuel prices.

As discussed in detail in Issue 5, the cost-effectiveness of the FGD system is highly dependent on the forecasted price differential between low-sulfur and high-sulfur coal. TECO compared its forecast of low-sulfur and high-sulfur coal prices at the mine to similar forecasts by Resource Data International (RDI) and Energy Ventures Analysis (EVA) and found that its forecasted price differential was less than either RDI or EVA. Also, TECO's coal price forecasts escalated at a slower rate than the two independent forecasts. Based upon these two characteristics, TECO considered its forecasts to be a conservative projection of future coal prices. (TR 39; EXH 12, pp. 137-139) Staff agrees.

As shown in the chart below, the difference between coal and natural gas prices, when converted to dollars per equivalent barrel of one percent sulfur #6 residual oil, diverges over the forecasted period. The record contains no further explanation to support this divergence. Therefore, staff neither supports nor contests this result. However, staff believes that for the purpose of determining whether an FGD system is the most cost-effective alternative for CAAA Phase II SO₂ Compliance, the fuel price forecast used by TECO appears to be reasonable.

**Comparison of TECO's Natural Gas and Coal Price Forecasts
 (\$/Equivalent Barrel of 1% Sulfur #6 Residual Oil)**

Year	Natural Gas		Coal		Difference	
	\$/MMBtu	\$/BBL	\$/MMBtu	\$/BBL	\$/MMBtu	\$/BBL
2000	\$3.4505	\$21.74	\$1.5432	\$9.72	\$1.9073	\$12.02
2001	\$3.5187	\$22.17	\$1.5792	\$9.95	\$1.9395	\$12.22
2002	\$3.6054	\$22.71	\$1.6167	\$10.19	\$1.9887	\$12.53
2003	\$3.6948	\$23.28	\$1.6550	\$10.43	\$2.0398	\$12.85
2004	\$3.8006	\$23.94	\$1.6944	\$10.67	\$2.1062	\$13.27
2005	\$3.9102	\$24.63	\$1.7347	\$10.93	\$2.1755	\$13.71
2006	\$4.0237	\$25.35	\$1.7759	\$11.19	\$2.2478	\$14.16
2007	\$4.1566	\$26.19	\$1.8182	\$11.45	\$2.3384	\$14.73
2008	\$4.2949	\$27.06	\$1.8616	\$11.73	\$2.4333	\$15.33
2009	\$4.4388	\$27.96	\$1.9059	\$12.01	\$2.5329	\$15.96
2010	\$4.5885	\$28.91	\$1.9514	\$12.29	\$2.6371	\$16.61
2011	\$4.7625	\$30.00	\$1.9980	\$12.59	\$2.7645	\$17.42
2012	\$4.9445	\$31.15	\$2.0457	\$12.89	\$2.8988	\$18.26
2013	\$5.1347	\$32.35	\$2.0946	\$13.20	\$3.0401	\$19.15
2014	\$5.3336	\$33.60	\$2.1447	\$13.51	\$3.1889	\$20.09
2015	\$5.5415	\$34.91	\$2.1961	\$13.84	\$3.3454	\$21.08
2016	\$5.7589	\$36.28	\$2.2487	\$14.17	\$3.5102	\$22.11
2017	\$5.9863	\$37.71	\$2.3026	\$14.51	\$3.6837	\$23.21
2018	\$6.2239	\$39.21	\$2.3578	\$14.85	\$3.8661	\$24.36
2019	\$6.4724	\$40.78	\$2.4143	\$15.21	\$4.0581	\$25.57
2020	\$6.7322	\$42.41	\$2.4731	\$15.58	\$4.2591	\$26.83
2021	\$7.0039	\$44.12	\$2.5333	\$15.96	\$4.4706	\$28.16
2022	\$7.2879	\$45.91	\$2.5950	\$16.35	\$4.6929	\$29.57
2023	\$7.5848	\$47.78	\$2.6582	\$16.75	\$4.9266	\$31.04
2024	\$7.8953	\$49.74	\$2.7229	\$17.15	\$5.1724	\$32.59
2025	\$8.2198	\$51.78	\$2.7893	\$17.57	\$5.4305	\$34.21

Source: EXH 14 Late-Filed Deposition Exhibit 1
 Note: \$/Equivalent Barrel = \$/MMBtu x 6.3 MMBtu/Barrel

OPC

As stated in its post-hearing position, OPC is concerned that TECO has not filed sufficient testimony with respect to detailed fuel price forecast information. In the prefiled testimony of both Witness Black and Witness Hernandez, forecasted prices for low-sulfur coal from Eastern Kentucky and high-sulfur coal from Western

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Kentucky are depicted in a graph. (EXH 2, p. 2; EXH 12, p. 138) These forecasts from TECO, as well as forecasts from two independent sources, RDI and EVA, represent mine prices only, not delivered prices. (TR 38-39) However, given that the two coal sources are located in fairly close proximity, it is reasonable to assume that transportation costs to TECO would be similar from either delivery origin.

Also, OPC infers in its briefs that there is no forecast within the record that projects fuel prices beyond ten years into the future. (OPC Brief, p. 5) Staff disagrees. TECO provided coal and natural gas price forecasts, either explicitly or implicitly, in several documents submitted by Witness Hernandez as late-filed deposition exhibits. In Late-Filed Deposition Exhibit 1, Witness Hernandez explicitly provided 27-year coal and natural gas price forecasts to compare the cost effectiveness of the FGD system to a natural gas-fired combined cycle unit. In Late-Filed Deposition Exhibit 6, Witness Hernandez implicitly provided 27-year coal price forecasts. In Late-Filed Deposition Exhibit 8, Witness Hernandez implicitly provided 27-year price forecasts for several fuels to calculate annual system fuel costs. (EXH 14 Late-Filed Deposition Exhibits 1, 6, and 8)

FIPUG

In its post-hearing position, FIPUG stated a concern that no independent fuel forecasts were supplied by TECO. As previously explained, TECO's coal price forecast compared favorably to two independent coal price forecasts.

Both OPC and FIPUG state in their briefs that TECO has not indicated its present and potential future sources of fuel as required by Section 366.825, Florida Statutes. (OPC Brief, pp. 3-4; FIPUG Brief, p.9) However, as stated in Order No. PSC-98-1260-PCO-EI, TECO has brought this petition before the Commission under Section 366.8255, Florida Statutes. Under this statute, TECO is not required to identify its present and potential future sources of fuel. However, in response to Staff's Request for Production of Documents, TECO provided its fuel source assumptions for Big Bend Units 1-4 and Gannon Units 1-6 under each of four different Phase II SO₂ compliance scenarios. (EXH 8, p. 04766)

LEAF

In its brief, LEAF states that TECO's fuel forecast over-priced natural gas and under-priced coal to make a natural gas alternative appear less cost-effective than the FGD system. (LEAF

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Brief, pp. 3-4) As previously discussed, staff finds TECO's fuel price forecast to be reasonable for planning purposes regardless of the compliance alternative ultimately selected.

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ISSUE 3: Are the economic and financial assumptions used by TECO in its selection of a CAAA Phase II Compliance plan reasonable?

RECOMMENDATION: Yes, the economic and financial assumptions used by TECO in its selection of a CAAA Phase II Compliance plan are reasonable and sufficient for planning purposes. [NORIEGA, CAUSSEAU, MAUREY]

POSITION OF THE PARTIES

TECO: Yes. The economic and financial assumptions Tampa Electric used are both viable and reasonable and are consistent with other business planning activities, including the development of the company's 10-Year Site Plan. The company adopted conservative assumptions and tested the sensitivity of key assumptions.

PUBLIC COUNSEL: The assumptions, other than AFUDC, used in making the SO₂ compliance comparisons do not appear to be unreasonable. Tampa Electric, however, has apparently not adopted a comprehensive compliance plan at this time. The AFUDC assumption is unreasonable. See OPC's position on Issue 6.

FIPUG: No. The financial assumptions TECO used for the FGD are higher than prudence would allow. The comparative cost for the natural gas alternative was even higher. The information supplied on the fuel switching alternative previously chosen and used by other utilities was inadequate.

LEAF: No. TECO's assumptions may result in a more expensive alternative than is reasonable.

TAFF ANALYSIS: The economic and financial assumptions used by TECO in its selection of the FGD system for its CAAA Phase II Compliance plan are reasonable. Staff reviewed all of the base case and FGD case assumptions underpinning the company's selection process. These include the discount rate, capitalization ratios, inflationary rates, and income tax rate assumptions.

TECO used a 9.55 percent discount rate in arriving at the purported savings resulting from the choice of the FGD compliance option based on a cumulative present worth revenue requirements (CPWRR) analysis. (TR 171) This rate represents TECO's estimate of its after-tax weighted average cost of capital, determined annually by evaluating financial market trends. (EXH 14 Late-Filed Deposition Exhibit 9) Based on the evidence presented in this case, staff believes that TECO's after-tax weighted average cost of

capital is a reasonable discount rate, which can be used to evaluate the financial viability of capital projects such as this FGD proposal. Thus, 9.55 percent is a reasonable rate to assess the cost-effectiveness of the various compliance options.

A detailed review of TECO's capitalization ratios, including the debt, preferred, and common equity ratios, as well as TECO's cost rates for each of these components, is outside the scope of this proceeding. Although staff believes that the discount rate obtained from these inputs is reasonable for this limited compliance purpose, staff does not believe that the cost of capital assumed here is necessarily appropriate for other rate-making or regulatory purposes.

TECO's inflationary assumptions, 2.8 percent for production and 3.0 percent for non-production scenarios, are consistent with long-term projections found in national publications such as Blue Chip Economic Indicators and Data Resources, Inc. (DRI). Staff believes that these are reliable sources. In addition, the state, federal, and effective income tax rates are consistent with available data for these inputs and are adequate assumptions.

Based on all of this information, staff believes the record shows that TECO evaluated the various compliance options and selected the FGD option with a set of assumptions that are reasonable and sufficient for planning purposes.

OPC, FIPUG, & LEAF

OPC, FIPUG and LEAF neither supported alternative assumptions for any of these components nor sponsored witnesses that addressed these issues. OPC's and FIPUG's dissent of the AFUDC assumption is discussed in Issue 6.

ISSUE 4: Did TECO reasonably consider the environmental compliance costs for all regulated air, water and land pollutants in its selection of the proposed FGD system on Big Bend Units 1 and 2 for sulfur dioxide (SO₂) compliance purposes?

RECOMMENDATION: Yes, TECO appears to have reasonably considered the environmental compliance costs for all regulated air, water and land pollutants in its selection of the proposed FGD system on Big Bend Units 1 and 2 for SO₂ compliance purposes. TECO should continue to evaluate the environmental compliance costs for all other regulated pollutants and should also continue to evaluate other methods for achieving compliance in a cost-effective manner. [TEW, BREMAN]

POSITION OF THE PARTIES

TECO: Yes. The record reflects the company's careful determination to comply with all environmental limitations in the most cost-effective way possible.

PUBLIC COUNSEL: No.

FIPUG: No. TECO omitted a detailed NO_x removal plan and other major environmental costs from its filing.

LEAF: No. TECO failed to reasonably consider the full range of Clean Air Act compliance costs to which it is likely to be subject, thereby limiting its choices to pursuing a coal-based option on units that will be operated well beyond their originally intended life.

STAFF ANALYSIS: There are several places in the record which show that TECO considered the environmental compliance costs for other regulated pollutants besides SO₂ in its selection of the proposed FGD system. (EXH 8, p. 04771; EXH 12, pp. 49-52, 108; EXH 9, p. 02593) The cost impact for both NO_x and SO₃ compliance were specifically quantified for a ten-year period in TECO's January 1997 review of SO₂ compliance strategies. (EXH 8, p. 04771) In TECO's May 1998 CAAA Phase II compliance evaluation, NO_x related costs were explained to have no effect on the selection of the FGD alternative as the most cost-effective. (EXH 12, p. 108) In responding to a staff hypothetical question, Mr. Black reinforced that opinion. He suggested that it is appropriate to evaluate individual projects that reduce one type of emission as long as the other emissions would be addressed the same regardless of the project chosen to address the one type of emission. He also

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suggested that solutions that address all emissions at one time are rare. (EXH 5 Deposition Transcript, pp. 30-32)

Costs were not quantified, however, with respect to each pollutant. As is evident in the record, the regulations with respect to many pollutants are not finalized at this time. (TR 68-69, 128-131) For instance, although the rules limiting particulate matter to less than 2.5 microns in size were passed in 1997, Mr. Black projects that it will be around 2005 before specific actions would be required to bring areas determined to be in non-attainment into compliance. TECO does not even expect a decision about which geographic areas are in noncompliance for this rule until sometime between 2002 and 2005. (TR 68)

The potential for CO₂ regulations was noted as a strategic consideration in TECO's January 1998 review. (EXH 9, p.02593) In fact, four years prior, in TECO's 1994 milestone study, the negative implications of potential Congressional legislation setting CO₂ limits were discussed as well as the increase in CO₂ emissions resulting from installation of a FGD system. (EXH 12, pp. 49-50) Mr. Black held that increased CO₂ emissions are still expected to result from the addition of the FGD system but that the increase would be somewhat offset by a small reduction in CO₂ emissions at the Gannon station. (EXH 5 Deposition Transcript, p. 28) However, specific CO₂ emissions limits currently do not exist.

OPC

In its post-hearing position, OPC states its position as "no" without further discussion. In addition, OPC did not sponsor a witness to offer evidence supporting this position. OPC did not address this issue in its briefs.

FIPUG

In its post-hearing position on this issue, FIPUG reargues the same concerns already addressed in Issue 1. Those arguments focus on the sufficiency of TECO's filings and planning process. Staff agrees with FIPUG that a detailed NO_x removal plan was not included in TECO's filing; however, staff does not believe that a detailed NO_x removal plan is necessary to determine whether TECO's proposed Phase II SO₂ compliance alternative is cost-effective. According to TECO's May 1998 CAAA Phase II Compliance Plan, the costs of TECO's chosen NO_x compliance strategy do not impact the selection of its SO₂ compliance alternative. (EXH 12, p. 108)

LEAF

LEAF states in its post-hearing position that TECO is likely to be subject to numerous environmental compliance costs and that TECO did not reasonably consider all of them in its analysis. With the exception of the new natural gas-fired combined cycle option discussed in Issue 1, no party was able to show that TECO did not adequately review CAAA compliance alternatives. There is no evidence or testimony which shows TECO failed to take into account some environmental requirement which would have resulted in a lower cost compliance alternative than the proposed FGD system.

Conclusion

The purpose of this issue was to determine whether or not TECO's cost estimates for the FGD project included costs for compliance with all applicable environmental regulations. Staff notes that no party identified any additional cost items. In fact, the AFUDC amount was the only line item in the project cost estimate that was protested. (TR 155, 156, 196, 197, 199)

In addition, the cost estimates are supported by an independent source. As shown in Mr. Black's Late-Filed Deposition Exhibit 2, TECO's in-service estimates are greater than those of Sargent & Lundy by \$9,730,280 excluding AFUDC. (EXH 5) Therefore, staff believes it is not likely that TECO ignored or failed to show any significant costs which could have resulted in the proposed project becoming uneconomic.

Nevertheless, environmental requirements seem to be constantly changing and resulting in increased costs. (EXH 5 Deposition Transcript, p. 28) TECO should, therefore, continue to evaluate the environmental compliance costs for all other regulated pollutants and should also continue to evaluate other methods for achieving compliance in a cost-effective manner.

ISSUE 5: Has TECO demonstrated that its proposed FGD system on Big Bend Units 1 and 2 for SO₂ compliance purposes is the most cost-effective alternative available?

RECOMMENDATION: Yes, TECO has demonstrated that its proposed FGD system on Big Bend Units 1 and 2, for SO₂ compliance purposes, is the most cost-effective alternative available. [TEW, BREMAN, FUTRELL, NORIEGA]

POSITION OF THE PARTIES

TECO: Yes. Tampa Electric has demonstrated that its proposed FGD system will provide the greatest savings to ratepayers of all available alternatives, on a cumulative present worth revenue requirement basis, and will provide nearly twice the expected savings of the next most economical option.

PUBLIC COUNSEL: No. Tampa Electric has not explained why its result differs from other coal-fired utilities which have apparently opted for fuel switching with allowance purchases. Fuel savings are not adequately quantified. Section 366.825, Florida Statutes (1997), precludes piecemeal consideration of Clean Air Act compliance plans for purposes of prior approval.

FIPUG: No. FGD construction is currently in progress. Other expensive environmental issues are not addressed as required by §366.825, Florida Statutes. It is too late for the Commission to second guess the utility's decision on even this single compliance issue in time to meet the compliance deadline.

LEAF: No. TECO has not adequately considered all the costs of this project in the context of other actions it will likely have to take for environmental compliance purposes.

STAFF ANALYSIS: Many factors must be considered to conclude that the FGD system is the most cost-effective alternative. One thing that must be established is whether TECO began its analysis by exploring all alternatives available for compliance with the SO₂ requirements of Phase II of the CAAA. As discussed in Issue 1, staff believes that the record shows that TECO has adequately explored compliance alternatives. By eliminating alternatives that were either not viable or uneconomic, TECO narrowed down the options for further screening to arrive at the most cost-effective alternative.

In order to determine which compliance option was the most cost-effective, TECO performed a cumulative present worth revenue requirement (CPWRR) analysis. (EXH 12, pp. 113, 122) The outcome of this analysis is, of course, dependent on the reasonableness of the assumptions within. Therefore, staff reviewed TECO's fuel price forecasts, its economic and financial assumptions, its planning assumptions, and its demand and energy forecasts. Although some of TECO's assumptions and forecasts have been addressed in prior issues, staff will revisit them briefly in the following discussion of TECO's key assumptions and forecasts used in its decision-making process which led to selection of the proposed FGD system on Big Bend Units 1 & 2.

FUEL FORECAST

As discussed in Issue 2, staff believes the fuel price forecast used by TECO in its selection of a CAAA Phase II compliance plan is reasonable.

ECONOMIC AND FINANCIAL ASSUMPTIONS

In Issue 3, staff concluded that the record shows that the economic and financial assumptions used by TECO in its selection of a CAAA Phase II compliance plan are reasonable and sufficient for planning purposes.

PLANNING ASSUMPTIONS

In addition to the assumptions and forecasts addressed in previous issues, staff reviewed several key planning assumptions used by TECO in its analysis of the cost-effectiveness of its Phase II compliance plan. Forecasts of net and purchased cogeneration, and wholesale interchange used in the cost-effectiveness analysis were taken from TECO's 1998 Ten-Year Site Plan. (TR 173-4) The forecast of demand side management used in the cost-effectiveness analysis were taken from TECO's 1998 Ten-Year Site Plan. (TR 176-7) TECO's use of data from its Ten-Year Site Plan is reasonable for use in analyzing the cost-effectiveness of its Phase II compliance options.

Staff also examined the methodology and assumptions of the demand and energy forecasts used by TECO for its selection of a CAAA Phase II compliance plan and found these to be reasonable for planning purposes.

These forecasts are also based upon the Company's 1998 Ten-Year Site Plan (TYSP), filed on April 1, 1998. (TR 174-5) However,

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TECO submitted a Revised TYSP in August, 1998, and staff evaluated the new demand and energy forecasts in order to test how they might affect the overall viability of the FGD compliance plan.

When asked forecasting questions based upon the original TYSP filing, specifically about a comparison between the historical data and the base case forecast of TECO's summer net firm demand, TECO Witness Hernandez stated that residential utilization, measured as load per customer or KW per customer, is slightly increasing despite TECO's best conservation efforts. In addition to this, an increasing customer base has yielded higher summer peak projections. (EXH 14 Deposition Transcript, p. 240; EXH 12, p. 170) Subsequent to this deposition, TECO filed the Revised TYSP, and staff reviewed the revised summer net firm demand data. The base case forecast showed more of an increase in summer net firm demand, thus making the FGD compliance option an even more appealing alternative. (TR 279)

Staff notes that TECO's 1998 winter net firm demand base case forecast is consistent with forecasts filed for purposes of the Commission's reviews of electric utility TYSPs. TECO's latest winter peak demand base case projection shows that historical growth rates continue to exceed the projected growth rates by approximately one percent per year. (EXH 12, p. 173)

The Company's projection for net energy for load (NEL) is also consistent with previous forecasts. TECO's NEL is based upon firm energy commitments. At one point in time, the forecast was growing at a slower rate than recent historical trends. However, the gap has since narrowed, and the forecasts are closer to resembling historical trends. (EXH 12, p. 176)

At hearing, staff questioned Witness Hernandez about the Revised TYSP NEL forecast, specifically about whether it included sufficient energy to operate the proposed FGD system. Mr. Hernandez compared the Revised TYSP to the original TYSP and stated that "in all years except for perhaps the first year, 1998, that the combined net energy for load is, in fact, higher than the net energy for load that was the basis for the final cost effectiveness study. . . . there's sufficient energy projected in terms of system requirements, and, therefore, the FGD option is, in fact, just a little bit more cost effective." (TR 278-9; EXH 15, p. II-11)

Mr. Hernandez also states that given TECO's current projected energy requirements, there is about a 2.2 to 2.5 percent retail energy growth on the system, and there must be SO₂ compliance by the year 2000. (TR 217) At deposition, FIPUG asked Witness

Hernandez how construction for the purposes of compliance would affect demand. Mr. Hernandez replied that, "relative to compliance, most of the compliance issues are associated with energy, not peak demand or capacity. . . . But specifically for environmental compliance, the energy forecast is probably the more relevant piece of the forecast." (EXH 14 Deposition Transcript, pp. 181-2) Staff agrees with TECO that for the purposes of this review, the energy forecast is the critical component that leads to the determination of the most viable compliance alternative.

Based on all of this information, staff believes that TECO's demand and energy forecasts are reasonable for the selection of a compliance option.

ENVIRONMENTAL COMPLIANCE COSTS FOR OTHER POLLUTANTS

Another important aspect to consider in determining cost-effectiveness is whether TECO reasonably considered the environmental compliance costs for all regulated pollutants in its analysis. In Issue 4, staff determined that TECO had considered compliance costs for other regulated pollutants in its selection of the FGD system as the most cost-effective alternative.

CONCLUSION

Staff's analysis of Issues 1, 2, 3, and 4, as well as its analysis of TECO's planning assumptions and energy and demand forecasts within this issue, proposes no errors of fact nor any necessary adjustments to TECO's forecasts. After applying all of these assumptions and forecasts to the analysis, the CPWRR was calculated by summing the incremental system fuel and purchased power expense, the incremental capital and O&M expense, and the other incremental costs of the compliance options. (EXH 12, pp. 113-114) Then the alternative with the lowest incremental cost, or in this case, the highest incremental savings, over the fuel blending base case scenario, was chosen from the compliance alternatives. (EXH 12, pp. 122, 125)

Due in large part to the forecasted price differential between low-sulfur and high-sulfur coal, the FGD system was selected as the most cost-effective alternative for compliance with the SO₂ requirements of Phase II of the CAAA. (TR 176) As the differential between low-sulfur and high-sulfur coal becomes larger, the FGD system generally becomes more cost-effective. In Issue 2, staff agreed that TECO used a conservative projection of future coal prices. If TECO's conservative expectations of coal prices are accurate, then the fuel savings are expected to exceed the FGD

system's capital costs. In fact, TECO maintains that the fuel savings realized by the FGD system during the first five years of operation almost offset the entire capital costs of the FGD system. (TR 184, 186-189) However, if the future proves that coal prices are more closely reflected by RDI's and EVA's forecasts, then TECO's ratepayers may realize greater savings than anticipated by TECO.

Based on the previous discussion, staff believes that TECO has adequately demonstrated that its proposed FGD system on Big Bend Units 1 & 2 is the most cost-effective alternative available for SO₂ compliance purposes.

OPC, FIPUG, & LEAF

In their briefs, both OPC and FIPUG state that TECO has not provided sufficient evidence that the forecasted price differential between low-sulfur coal and high-sulfur coal is large enough to overcome the high capital requirements of the FGD system. (OPC Brief, p. 5; FIPUG Brief, p. 10) However, staff disagrees because the FGD system's cost-effectiveness is due to projected fuel savings that will more than offset the capital and O&M on a CPWRR basis. (TR 43, 176)

FIPUG also suggests that TECO's decision was made long ago and that it is simply too late for the Commission to make a finding regarding prudent utility planning in this case. (FIPUG Brief, p. 7) Staff agrees that TECO's decision was made long ago but disagrees that it is too late to make a finding on prudent utility planning. The Commission is required under Section 366.8255, Florida Statutes, to only allow recovery of prudently incurred costs for environmental compliance. Part of the determination that costs are prudently incurred is a finding that the project is the most reasonable and cost-effective alternative before recovery ever begins.

LEAF's position is very similar to its position in Issue 4 which has already been addressed.

ISSUE 6: Should the Commission approve TECO's request to accrue allowance for funds used during construction (AFUDC) for the proposed FGD system on Big Bend Units 1 and 2?

RECOMMENDATION: No. AFUDC should be accrued only to the extent that it complies with the criteria set forth in Rule 25-6.0141, Florida Administrative Code, especially Section (1)(b)1. concerning the level of CWIP included in rate base in the last rate case. [SLEMKEWICZ]

POSITION OF THE PARTIES

TECO: Yes. The Commission should authorize Tampa Electric to accrue AFUDC, for eventual recovery through the ECRC for the entire FGD Project because this decision will further the environmental policies of this state, best match customer savings with cost and prevent under recovery of expenditures required by law for a project clearly demonstrated to be the least cost option.

PUBLIC COUNSEL: Tampa Electric has not made a formal request to accrue AFUDC. Tampa Electric should accrue AFUDC only to the extent that its CWIP balance for this project on a thirteen-month average basis exceeds the amount of CWIP allowed in rate base in the company's last rate case.

FIPUG: No. Rule 25-6.0141 doesn't allow it. Further, prudence dictates review of the possibility of low cost bond financing, use of overearnings collected from customers, or CWIP allowed in the last rate case in lieu of AFUDC. The AFUDC determination should be considered in the deferred portion of this docket.

LEAF: No position.

STAFF ANALYSIS: In its petition filed May 15, 1998, TECO requested that it be allowed to recover the investment and costs associated with the construction of Flue Gas Desulfurization (FGD) equipment to be installed to meet environmental compliance requirements. TECO mentioned that the approximate \$90 million cost of the FGD included the accrual of AFUDC. The petition, however, does not contain any request for the waiver or modification of Rule 25-6.0141, Florida Administrative Code, entitled "Allowance For Funds Used During Construction." Although TECO Witness Hernandez' prefiled testimony contained a request for confirmation that the FGD project qualified for AFUDC accrual under the definition of eligible projects in the AFUDC rule, there was no mention of other

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rule provisions that might have to be waived or modified if the total project was to be eligible for AFUDC.

In order to be eligible for the accrual of AFUDC under Section (1)(a) of Rule 25-6.0141, Florida Administrative Code, a project must exceed a dollar limitation and a one-year construction period. The FGD project meets both of these criteria. However, a further provision of the rule, Section (1)(b), states that projects, or portions thereof, are ineligible for AFUDC unless the projects exceed the level of CWIP allowed in rate base in the utility's last rate case. Based on this criterion, a portion of the FGD project would not be eligible for AFUDC. During cross-examination, Witness Hernandez stated that he had not read the entire rule and had focused on Section (1)(a) regarding eligible projects. (T.231)

In TECO's last rate case in Docket No. 920324-EI, \$36,171,000 of construction work in progress (CWIP) eligible for AFUDC was included in rate base. As stated in Order No. PSC-93-0664-FOF-EI, issued April 28, 1993:

From January 1, 1994 until ordered to modify or cease, the \$36,171,000, which is earning a return from this proceeding, shall offset CWIP balances that accrue AFUDC.
(p.2)

Per Exhibit 13, TECO's 1998 Forecasted Earnings Surveillance Report, the projected average total balance of CWIP is \$21,255,000. This total CWIP is not segregated between the short-term amount, included in rate base because it is not eligible for AFUDC, and the long-term amount included that would otherwise be eligible for AFUDC. In the last rate case, those amounts were \$18,793,000 and \$36,171,000, respectively.

In staff's opinion, TECO has not demonstrated any extenuating circumstances for deviating from the provisions of the AFUDC rule. The nature of the project (environmental), and its recovery mechanism (cost recovery clause), has no bearing on the issue at hand. Therefore, staff recommends that AFUDC be accrued in accordance with Rule 25-6.0141, Florida Administrative Code, which allows the accrual of AFUDC only on CWIP that exceeds the amount included in rate base in the TECO's last rate case. Staff will review the calculation of AFUDC when TECO seeks to recover the costs through the ECRC.

ISSUE 7: Should TECO's petition for cost recovery of a FGD system on Big Bend Units 1 and 2 through the Environmental Cost Recovery Clause (ECRC) be granted?

RECOMMENDATION: Yes, the proposed FGD project qualifies for recovery through the ECRC; however, the amount of costs to be recovered will be determined in subsequent rate-setting proceedings. [TEW, BREMAN]

POSITION OF THE PARTIES

TECO: Yes. The proposed project is the most cost-effective alternative for meeting CAAA Phase II limitations and meets the Commission's established three-pronged test for cost recovery. The Commission should approve the reasonableness and prudence of the project and confirm that prudently incurred costs will be eligible for ECRC cost recovery.

PUBLIC COUNSEL: No. It's too late for prior approval and too early for final approval. The Commission cannot evaluate, grant prior approval and authorize future cost recovery for an incomplete plan to achieve partial compliance with Phase II of the CAAA when the requirements of Section 366.825 have not first been satisfied.

FIPUG: No. Base rates are sufficient to cover the carrying cost of TECO's selected compliance plan. The surcharge will not apply to economy wholesale sales and will give TECO an advantage over other Florida utilities in the competitive wholesale market at the expense of TECO's retail customers.

LEAF: No. For the reasons set forth in LEAF's Statement of Position, the Commission should deny TECO's petition.

STAFF ANALYSIS: Upon cross examination at the hearing, Witness Hernandez clearly identified TECO's requests in this docket with the following statement:

We're seeking, really, the three things; that this is the most cost-effective alternative for our ratepayers; that the environmental cost recovery clause is, in fact, the appropriate cost recovery mechanism; and then to get an acknowledgment that we would like to defer the accrual of AFUDC, and that would also be a cost item when we go for cost recovery about this time next year. We are not seeking cost recovery at this time. (TR 220)

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Staff will respond to each of the three things listed in Mr. Hernandez' statement. First, staff recommends that the FGD is the most cost-effective alternative for compliance with the SO₂ requirements of Phase II of the CAAA (see Issue 5). Second, staff believes that the FGD project qualifies for recovery through the ECRC as discussed in more detail below. Staff notes, however, that there are means for cost recovery of the FGD system other than the ECRC. Obviously, base rates is also an appropriate cost recovery mechanism. Third, staff addressed TECO's request to accrue AFUDC in Issue 6, in which staff recommended that AFUDC should be accrued only to the extent that it complies with the criteria set forth in Rule 25-6.0141, Florida Administrative Code, especially Section (1)(b)1., concerning the level of CWIP included in rate base in the last rate case.

In order to conclude that the FGD project qualifies for recovery through the ECRC, each of the following questions must be affirmed:

- 1) Was TECO prudent in its selection of the FGD project?
- 2) Is the FGD necessary to achieve compliance with an existing environmental rule or regulation?
- 3) Will the project costs be incurred subsequent to April 13, 1993?
- 4) Will the costs for the FGD project, if recovered through the ECRC, be incremental to costs recovered elsewhere?

The first three questions are fully addressed within the scope of Issues 1, 2, 3, 4, and 5. Staff believes the record shows that TECO was prudent in its selection of the FGD project. The project is necessary for TECO to achieve compliance with the SO₂ requirements of Phase II of the CAAA. The costs are to be incurred subsequent to April 13, 1993. The remaining question is essentially that of potential double recovery.

FIPUG argued that existing rates are sufficient to address the additional expense of the FGD. (FIPUG Brief, pp. 13, 16-17; TR 214-215) In its view, allowing recovery through the ECRC mechanism would create double recovery. While staff agrees with this analysis to the extent that it correctly applies regulatory theory, Section 366.8255, Florida Statutes, does not appear to allow this degree of discretion by the Commission in this instance. The following excerpt from Order No. PSC-94-0044-FOF-EI addresses sufficiency of earnings to address proposed environmental compliance costs:

Public Counsel argued that if a utility is earning within its allowed return on equity range, it is already being compensated for all environmental expenses, and it should not be allowed to recover any costs through the environmental cost recovery clause. Public Counsel maintains that it does not matter whether the environmental activity was included in the test year of the utility's last rate case. The utility should only be allowed to recover costs through the clause if the utility is under-earning and if the environmental expenses are the cause of the under-earning. OPC argued that to allow any recovery through the clause if the utility is not under-earning would amount to double recovery.

Although regulatory philosophy indicates that OPC is theoretically correct, we must consider the legislation establishing the environmental cost recovery clause. The statute contains a non-exclusive list of the types of expenses which should be recoverable through the clause. (Section 366.8255(1)(d), Florida Statutes). The enumerated expenses are:

1. In-service capital investments, including the utility's last authorized rate of return on equity;
2. Operation and maintenance expenses;
3. Fuel procurement costs;
4. Purchased power costs;
5. Emission allowance costs; and,
6. Direct taxes on environmental equipment.

The statute also states in Section 366.8255(2), Florida Statutes, that

(a)n adjustment for the level of costs currently being recovered through base rates or other rate-adjustment clauses must be included in the filing.

Finally, the statute provides that

(r)ecovery of environmental compliance costs under this section does not preclude inclusion of such costs in base rates in subsequent rate proceedings, if that inclusion is necessary and appropriate; however, any costs recovered

in base rates may not also be recovered in the environmental cost-recovery clause. (Section 366.8255(5), Florida Statutes).

Thus, we find that the legislature clearly intended the recovery of investment carrying costs and O&M expenses through the environmental cost recovery clause. For this reason, Public Counsel's argument must be rejected.

Accordingly, we find that if the utility is currently earning a fair rate of return that it should be able to recover, upon petition, prudently incurred environmental compliance costs through the ECRC if such costs were incurred after the effective date of the environmental compliance cost legislation and if such costs are not being recovered through any other cost recovery mechanism. (Order No. PSC-94-0044-FOF-EI, pp. 3-5)

The proposed FGD is a significant new expense which is subsequent to TECO's last rate case. Therefore, base rates were not set to specifically include the expenses of the proposed FGD system on Big Bend Units 1 & 2.

The Commission is required under Section 366.8255, Florida Statutes, to only allow recovery of prudently incurred costs for environmental compliance which are not being recovered elsewhere. Whether or not base rates are sufficient to address these expenses today, the proposed FGD system clearly qualifies for recovery through the ECRC.

According to Witness Hernandez, TECO plans to file for cost recovery in 1999, most likely in the fall. (EXH 14 Deposition Transcript, pp. 17-18) Therefore, specific cost recovery issues will probably be addressed in the 1999 hearing in the ongoing docket in which the Commission sets ECRC factors. The Commission's decision in the present docket in no way predetermines the amounts to be recovered through the ECRC for the FGD system on Big Bend Units 1 & 2. The prudence of costs will be determined after they become actual costs, and final disposition of the costs incurred will be subject to audit.

DOCKET NO. 980693-EI
DATE: November 19, 1998

ISSUE 8: Should this docket be closed?

RECOMMENDATION: The docket should be closed after the time for filing an appeal has run. [JAYE]

POSITION OF THE PARTIES

TECO: Upon final disposition of the foregoing issues, this docket should be closed.

PUBLIC COUNSEL: Yes.

FIPUG: Yes. TECO's petition should be denied and this docket should be closed.

LEAF:

STAFF ANALYSIS: The docket should be closed 32 days after issuance of the order, to allow the time for filing an appeal to run.