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May 7, 1996

HAND DELIVERY

IN REPLY REFER TO:

Tallahassee

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

Re: Prudency Review to Determine Regulatory Treatment of Tampa Electric Company's Polk Unit; FPSC Docket No. 960409-EI

Dear Ms. Bayo:

Enclosed for filing in the above docket are the original and fifteen (15) copies of each of the following:

1. Prepared Direct Testimony of Girard F. Anderson. 05109-96
2. Prepared Direct Testimony of Thomas F. Bechtel. 05110-96
3. Prepared Direct Testimony and Exhibit of Charles R. Black. 05111-96
4. Prepared Direct Testimony and Exhibit of Thomas L. Hernandez. 05112-96
5. Prepared Direct Testimony and Exhibit of John R. Rowe, Jr. 05113-96
6. Prepared Direct Testimony and Exhibit of Hugh W. Smith. 05114-96
7. Prepared Direct Testimony and Exhibit of Elizabeth A. Townes. 05115-96

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

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Ms. Blanca S. Bayo
May 7, 1996
Page Two

Thank you for your assistance in connection with this matter.

Sincerely,

Lee L. Willis

LLW/pp
Enclosures

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

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TAMPA ELECTRIC COMPANY

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 960409-EI

TESTIMONY AND EXHIBIT OF

HUGH W. SMITH

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TAMPA ELECTRIC COMPANY

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 960409-EI

TESTIMONY

AND EXHIBIT OF

HUGH W. SMITH

BEFORE THE PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

HUGH W. SMITH

Q. Please state your name, address and occupation.

A. My name is Hugh W. Smith. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am Director Environmental and Fuels of Tampa Electric Company.

Q. Can you please furnish a brief outline of your educational background and business experience?

A. I graduated from the University of Florida in December 1978 with a Bachelor of Science degree. I began my career with Tampa Electric in 1979 as a chemist in the Production Department. Between 1979 and the present I have held various positions in the Production, Environmental Planning and Fuels Departments. I also worked in TECO Power Services as a project manager. In March of 1990 I became head of the Fuels Department and in March, 1995, I became Director Environmental and Fuels Department for the company.

Q. Have you previously testified before the Commission?

A. Yes I have. My prior participation in proceedings before this Commission includes testifying in the Polk Unit One Need Determination docket, Docket No. 910883-EI.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe three aspects of Polk Power Station. First, I address the fuel supply alternatives for Polk Unit One including details regarding the transportation of fuel for this unit and the appropriate quantities of inventories. Second, I discuss the reasonableness and prudence of our fuel price forecasting. The third aspect of my testimony addresses the environmental land requirements for this project.

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

A. Yes. My Exhibit No. __ (HWS-1), consisting of one document has been prepared under my direction and supervision.

<u>Polk Unit One Fuel Supply</u>

Q. Please describe the type of fuel that Tampa Electric will use in operating Polk Unit One during the demonstration period.

A. The primary fuel for the Polk Unit One combustion turbine will be syngas. Syngas is a synthetic fuel which is produced by feeding fuel into a pressurized and heated vessel to produce a combustable synthetic gas. Polk Unit One is designed with the flexibility of using several different fuel types as feedstock. In fact, one of the DOE objectives of the project is to demonstrate the flexibility of this technology utilizing several different types of coal during the first two years of commercial operation.

Q. How will this flexibility be demonstrated?

A. The first two years of commercial operation have been designated as a demonstration period for different coal types to be tested. We will test at least four different types of coal over that period of time, all of which will originate from the eastern United States.

Q. Why is this testing being performed?

A. It is a requirement of the cooperative agreement between Tampa Electric and the U.S. Department of Energy (DOE) in which over $142 million in DOE funding is being provided to offset the cost for construction and operation of the plant. DOE's goal has been to develop technologies which are not only commercially viable, but which also lead toward a national energy policy that takes advantage of our most abundant domestic energy source, coal. America's coal reserves represent one of the world's most plentiful energy supplies. Domestic coal is the fuel source responsible for over half of the production of electricity in the United States. It is vital that we continue to find ways to utilize this natural resource in an economical and environmentally responsible manner.

Q. After the demonstration period is over, what types of fuel will be used in Polk Unit One?

A. After the demonstration period, we will evaluate the data gathered during that period and then determine which fuel feedstock provides the lowest overall cost. We will also evaluate western and international sources of coal which may provide better economic alternatives. Additional evaluations will be made to determine the most cost-effective blend of petroleum coke with various coals. At this point in time, the most cost-effective fuel type is projected to be a blend predominately of petroleum coke with a lesser amount of a domestic coal. The ability to gasify a wide variety of fuels directly translates into economic benefits and cost savings and we will continue to evaluate the cost-effectiveness of all alternative feedstocks.

Q. What is petroleum coke?

A. In the 1930s, a refining process was commercially developed to break down residual oils into a commercially marketable product to be used as a solid fuel, known as petroleum coke. Petroleum coke is a petroleum-derived form of carbon used as a low-ash, high-heat value fuel. Petroleum coke is produced as a by-product in oil refineries with coking capabilities or "cokers." As refineries remove lighter products (such as gasoline and diesel fuel) from a barrel of crude oil, the remaining residual fuel becomes thicker and heavier. This residual fuel is processed by a severe form of thermal cracking or coking, producing petroleum coke. Petroleum coke has chemical, physical and handling properties similar to those of coal which will be used in Polk Unit One.

Petroleum coke is used by cement kilns, paper mills, and electric generating units as a fuel source. Petroleum coke, in modified forms, is utilized in making foundry coke, blast furnace coke or calcined for making anodes in aluminum smelting.

Q. Is petroleum coke readily available?

A. Yes. Petroleum coke is being produced at numerous refineries along the Gulf Coast, Mississippi River and throughout the Caribbean and South America. In fact, large price spreads between light and heavy crude and light and heavy products in the early 1990s enticed several refiners to invest in cokers. The capital cost and increased operational expenses of cokers are justified because cokers offer two benefits to refiners. Refiners can reduce crude oil cost by running a heavier crude feedstock. Second, refiners can take advantage of the spread between heavy and light product prices by producing more light products. Refiners earn significant returns on their coker investments when the price spread between heavy and light crude and heavy and light products outweighs the low value of petroleum coke. In the mid 1990s, the heavy and light price spread declined. Nevertheless, refiners generally have continued to operate cokers at capacity.

Around 1990, there were approximately 100 refineries with coking units of various sizes. Since 1992, five additional cokers have come on line and three more are scheduled for late 1996. The cokers coming on line in the 1995-96 time frame will substantially increase daily petroleum coke production.

Tampa Electric is currently purchasing petroleum coke for use in Big Bend 4 and is performing tests in 1996 to burn petroleum coke in Big Bend 3 and Gannon 4.

Q. How has the price of petroleum coke compared to the price of coal in the past and what trends do you see ahead?

A. Historically, the price of petroleum coke has been below the price of coal. Due to changes in the supply/demand balance over the last several years, petroleum coke cost has varied from 0.55 to 1.20 $/MMBTU while coal would typically range from 1.20 to 2.00 $/MMBTU in the U.S. Gulf Coast.

Looking forward, refiners are installing cokers at a rapid pace which is expected to greatly increase the supply of petroleum coke. Based on this information, we expect the price to remain favorable in comparison to the price of coal for the foreseeable future.

Q. Will Polk Unit One have the ability to use a secondary fuel in the event that syngas is unavailable?

A. Yes. Having a secondary fuel source increases the reliability and availability of the unit. Therefore, Polk Unit One was designed to include General Electric's model 7F combustion turbine. This state-of-the-art machine has the demonstrated capability of burning both a primary and a secondary fuel type. The primary design fuel for the Polk Unit One is syngas, a gas that can be produced from a wide variety of coals and petroleum coke as described earlier. The secondary design fuel selected is No. 2 oil.

Q. How was the secondary fuel type selected?

A. The choice involved considerations of cost and reliability. Besides No. 2 oil, natural gas was considered. Natural gas is commercially available but is subject to cost and reliability tradeoffs which favor the use of No. 2 oil. In order to use natural gas as a back up fuel, Tampa Electric would either have to purchase firm transportation service from a natural gas pipeline company at a cost not justified by the relatively small amount of natural gas anticipated to be needed, or purchase non-firm transportation from the pipeline at a justifiable cost, but without the assurance of reliability. In contrast, No. 2 oil is transported by tanker truck, and truck transportation has historically been reliable for spot orders without prohibitive capacity or reservation charges. In addition, the IGCC will require No. 2 oil for start up. A two million gallon tank on site at Polk will provide the capability for storing an adequate supply of No. 2 oil which will be readily available for start up and back up purposes.

Q. How does Tampa Electric plan to transport fuel to the Polk Power Plant site?

A. Coal for the Polk Unit One will be transported by truck from our Big Bend Station. Big Bend Station has adequate ground storage and unloading equipment to accommodate the additional requirements of the Polk Unit's inventory. This will allow Polk to have access to water deliveries of coal, which over time have proven to be Tampa Electric's most economic coal transportation alternative. Water delivery has also provided for a less expensive design of Polk Unit One by eliminating the requirement for unit train unloading equipment and large coal storage piles.

The trucking will be supplied on a competitively bid basis. Tampa Electric issued a Request for Proposal ("RFP") to 22 bidders in December 1994 for a transportation contract to deliver coal to the Polk Power Station site from Big Bend Station. Bid proposals were due in February 1995 and 11 companies responded. The proposals were evaluated and on August 24, 1995 a contract was awarded to CTL Distribution, Inc.

Our answer to Interrogatory No. 17 from Staff's Second Set of interrogatories to TECO in Docket No. 950379-EI (included in my Exhibit) also addresses the evaluation in more detail.

Petroleum coke, whether domestic or imported, will be delivered to Electro-Coal by waterborne transportation. The delivery from Electro-Coal to the Polk site will be consistent with that of coal.

No. 2 oil will be delivered by truck to the Polk Power Station from wholesale distributors in the Tampa Bay area.

Q. What alternatives did Tampa Electric consider other than bringing coal to the Big Bend Station by water, then trucking it to the Polk Power Plant Station?

A. An evaluation was conducted on the alternatives available for delivery of coal to the Polk Power Station. This evaluation addressed strategic considerations, economic factors, and equipment alternatives. Three options were evaluated. First, unit train delivery of coal from the mine to the Polk site. Second, water delivery of coal by barge to Big Bend Station with subsequent loading of coal to rail cars for movement to the Polk site. Third, bringing coal to Big Bend Station by water, then trucking it to Polk site. Implementation of either the second or third option of delivering coal to Big Bend Station by water required a modification to the Big Bend site. Of the three options evaluated, we concluded to bring fuel to the Big Bend Station by water, then trucking it to the Polk Power Plant site provided Tampa Electric the best overall alternative taking all factors into consideration.

Our answer to Interrogatory No. 17 from Staff's Second Set of interrogatories to TECO in Docket No. 950379-EI (included in my Exhibit) also addresses the evaluation in more detail.

Fuel Inventory

Q. Please describe the transportation path of coal bound for Polk Unit One.

A. Coal will be purchased either in barges or railcars bound for barges on the Ohio or Mississippi rivers. The coal will then be transported to the Electro-Coal Transfer Terminal facility in Davant, Louisiana where it will be transloaded onto ocean-going barges. The coal will be delivered to Tampa Electric's Big Bend Station and stored on the coal yard. Trucks will be used to haul coal from Big Bend to Polk Unit One's storage silos.

Q. When will Tampa Electric take title to the coal, thereby incorporating it into its inventory?

A. In general, coal will be purchased at the mine facilities or at the dock facilities when it is loaded into the railcars or barges. The coal then remains in our inventory until it is consumed.

Q. How many days of fuel will be required in Polk Unit One's inventory?

A. To provide the unit with the necessary reliability of supply, we will need to maintain approximately 75 days of coal use and 5 days of oil use in our total inventory during the first year of operation.

Q. What are some of the considerations that go into determining the quantity of fuel that must be maintained in inventory to provide a reliable fuel supply?

A. Several factors go into the determination of an adequate fuel inventory. Some of these factors included the delivery time from the mine; potential delays in scheduled loadings due to mine or production problems such as strikes; weather conditions; equipment breakdowns, etc; abnormal river conditions which can cause delays such as flooding; droughts; ice formation; lock maintenance, affecting river traffic; etc.; and trucking delays which could be caused by road maintenance, equipment outages and strikes. These factors, combined with operating considerations and transportation constraints, lead us to the inventory projections I have stated.

__Fuel Forecasting__

Q. Please describe the methodology Tampa Electric uses to forecast the prices of its various fuels.

A. Tampa Electric monitors the prices of all fuels on a regular basis. The prices of oil, coal, petroleum coke and natural gas are tracked through numerous periodicals, actual buying experience, and through market information obtained from supply representatives. A forecast of expected fuel prices is developed annually to support the company's planning process. The development of the forecast includes a review of historical fuel prices (actual and previous projections) compared with new projections.

The source of actual and forecast data for the purpose of monitoring pricing is obtained by carefully reviewing price forecasts obtained by various consultants and agencies including Energy Information Administration, American Gas Association, Cambridge Energy Research Associates, Resource Data International, and Groppe, Long and Littel. Coal, oil, and natural gas pricing publications and periodicals include: *Coal Outlook*, *Inside FERC*, *Natural Gas Week*, *Platt's Oilgram*, and *Oil and Gas Journal*.

Q. Has this methodology produced reasonable forecasts over the last several years?

A. Yes. Our forecasts have been reasonable. We have continually studied the natural gas, oil, petroleum coke and coal markets thoroughly to best predict the trends that the prices and availabilities of those individual markets would follow. We have retained consultants who forecast these trends and used their information to develop our own forecasts. We have regularly compared the reasonableness of our forecasts with those of others. Typically, our forecasts are bounded on both the high and low side by forecasts of consultants.

Q. Did the Commission review Tampa Electric's selection of syngas as the primary fuel source for Polk Unit One?

A. Yes. The initial decision to use syngas instead of natural gas for Polk Unit One was thoroughly reviewed by this Commission and approved in the certification proceeding. Moreover, DOE committed and has invested over $142 million based on Tampa Electric's commitment to construct and operate test a gasification facility at the Polk Power Station. The Commission's need determination order for Polk Unit One included a condition that Tampa Electric receive the DOE funding for installing the gasification technology.

Q. Does the Fuels Department of Tampa Electric provide the price and availability assumptions for natural gas used in Tampa Electric's planning process?

A. Yes. We monitor the trends and prices in the natural gas industry on an ongoing basis. Changes in that industry, both transportation and markets, are incorporated into the forecast assumptions which are supplied to the Resource Planning Department on a regular basis. In addition to providing forecasts of price, we also provide forecasts of gas availability, particularly of the interruptible supply of gas. This aspect of the forecast is a key factor to the planning effort due to price differentials between coal and natural gas.

Q. Are there any costs that are considered to be unique to the purchase of natural gas, in contrast to other fuels?

A. Yes. Unlike other conventional fuels, natural gas has a unique cost element that has to be reckoned with when determining primary fuel type for new generation. That unique element is the transportation capacity charge for firm service. Unlike other fuels, for which transportation has historically been available on a spot or long term basis without a capacity charge, natural gas to be transported on a firm basis, requires payments of a capacity charge. The pipeline must be paid regardless of demand fluctuations. Accordingly pipeline companies, unlike other transportation companies, impose a take or pay demand charge to cover their fixed costs.

This means that natural gas, to maximize competitiveness as a generating fuel, must be used continuously for high load factor generation. The competitiveness of gas is increased further if, in addition to base load units, the utility's system has additional gas-fired capacity which can absorb gas supplies which are made available when the base load units can not use the fuel.

Q. Does Tampa Electric's fuel mix present any special economic obstacles to adding natural gas-fired capacity?

A. Yes. Unlike other electric utilities in Florida, Tampa Electric does not represent a good prospect for new natural gas-fired combined cycle capacity. First, unlike other electric utilities, Tampa Electric has no oil-fired generation that is used as base load capacity. Instead, all of Tampa Electric's base load capacity is fired by lower priced coal. Under fuel prices currently projected, other utilities can install natural gas as new base load capacity, because a new gas-fired plant dispatches earlier than existing oil-fired capacity. That would not occur on Tampa Electric's system, which has no oil-fired capacity operating in a base load mode. Instead, for the foreseeable future any new gas-fired generation would dispatch as a peaking or intermediate-load unit on Tampa

Electric's system. In addition, Tampa Electric does not have an outlet to absorb excess firm natural gas when that gas could not be used in its intended units. Accordingly, Tampa Electric is not a prime candidate for new natural gas-fired combined cycle capacity under current pipeline transportation costs and our system design based on the uneconomic take or pay nature of firm natural gas transportation.

Q. How reliable is natural gas as a fuel when purchased on an interruptible basis?

A. The answer to this question varies and is mainly tied to the availability of transportation or pipeline capacity. When firm transportation customers are not using their capacity, this capacity becomes available on an interruptible basis. When transportation capacity is plentiful compared to demand, interruptions are fewer. When demand is high relative to transportation capacity, interruptions are more likely to occur. Of particular concern is the fact that Florida's natural gas use, to a significant degree, consists of electrical generation. This fact makes interruptible transportation least available at the very times we would require it most due to the coincidental nature of utility peaks.

In 1991, when we were planning for Polk Unit One, the gas transportation business was very different from what it is today. Florida Gas Transmission (FGT) provided most of the gas supply services on a bundled basis (as the effects of FERC Order 636 had yet to be implemented) and interruptible gas was often not available except during off-peak periods. Additionally, neither the modifications to the St. Petersburg lateral, which serves the West Coast of Florida, nor the FGT Phase III expansion was complete. This created a long history of difficulties in delivering significant quantities of gas to West Florida.

Q. How has the natural gas business varied over time?

A. Today, the picture has changed with the advent of alternative delivery point transportation (capacity exchanges) as well as the significant upgrades to the pipe line system in West Florida. However, it remains difficult to purchase natural gas transportation for electrical generation during peak periods on an interruptible basis (without a firm gas transportation contract).

In addition, the winter of 1995-1996 has thrown the natural gas supply/demand picture out of balance causing wide variations of price over the last several months. Prices quoted for gas inputs into FGT - Zone 3 increased from $1.51/MMBTU in February of 1995 to $2.34/MMBTU in February, 1996, an increase of 55% over just one year. Although this drastic increase is not necessarily an indicator of future prices, it illustrates how volatile the natural gas market can be and has been over time.

Environmental Land Requirements

Q. What is the size of the Polk Power Station site?

A. The Polk Power Station site consists of approximately 4,348 acres.

Q. Will the Polk Power Station site have any environmental mitigation requirement?

A. Yes. The Polk Power Station environmental mitigation requirements are associated with both upland and wetland areas. The Department of Environmental Protection, Bureau of Mine Reclamation requirements associated with the site and the construction of the cooling reservoir called for the reclamation of nearly 800 acres of wetlands. In addition to the wetland acres, the Bureau of Mine Reclamation standards call for two acres of supporting upland drainage area for each acre of wetland created to ensure the viability of the wetlands. This one factor alone accounts for over 2300 acres of the Polk Power Station site.

Q. What other factors were considered when developing the Polk Power Station site requirements?

A. In addition to the mitigation requirements listed above, a section of this land is required for Polk Unit One for its power block, gasification plant, fuel handling and storage facilities, transmission and switching station facilities and other related plant facilities. A significant portion of the land is required for the cooling reservoir and buffer areas. The plant site is also planned to be used to support the development of future units in Tampa Electric's generation expansion plan.

Q. Please summarize your testimony.

A. My testimony provides details regarding the purchase and delivery of fuel supplies that will be used to operate Polk Unit One. This includes the various analyses that were performed in order to select the appropriate fuel types as well as the logistics of getting the fuel to the plant and storing it there. We believe that our fuel supply choices have been reasonable and will provide a stable supply of reasonably priced fuel with which to operate our new unit. My testimony also addressed environmental land requirements for Polk Power Station.

Q. Does this conclude your testimony?

A. Yes it does.

EXHIBIT NO. ___ (HWS-1)

OF

HUGH W. SMITH

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10. Tampa Electric's justification for the need for the Polk IGCC Unit in Docket 910883-EI relied upon a fuel forecast that projected a significantly widening fuel cost differential between coal and natural gas. In its final order (Order No. PSC-92-0002-FOF-EI) the Commission cautioned Tampa Electric about the use of this forecast:

> "In the future, Tampa Electric should pay close attention to this differential, and must be ready to substantiate continued reliance upon fuel price forecasts that have not accurately predicted the relationship between the price of coal and the price of natural gas and oil."

a. Please provide a detailed description of the steps taken by Tampa Electric to monitor the differential between coal and natural gas prices.

b. Please identify the source of any actual or forecast data used to monitor the price differential between coal and natural gas.

c. Please provide a detailed description of any adjustments to Tampa Electric's fuel forecasts made as a result of the monitoring of fuel price differentials.

A. a. Tampa Electric Company monitors the prices of all production fuels on a regular basis. The prices of oil, coal, and natural gas are tracked through numerous periodicals, actual buying experiences, and through market information obtained from supply representatives. A forecast of expected coal, natural gas prices, and oil prices is developed annually to support the company's planning process. The development of the forecast includes a review of historical fuel prices (actual and previous projections) compared with new projections.

b. The source of actual and forecast data for the purpose of monitoring of pricing is done by careful reviews of price forecasts obtained by various consultants and agencies including Energy Information Administration, American Gas Association, Cambridge Energy Research Associates, Resource Data International, and Groppe, Long and Littel. Coal, oil, and natural gas pricing publications and periodicals include: *Coal Outlook, Inside FERC, Natural Gas Week, Platt's Oilgram*, and *Oil and Gas Journal.*

c. Forecasts for fuels such as oil, gas, and coal are dependent upon many variables such as supply, demand, alternative energy sources, and technological developments. To the extent that the various fuels have the ability to be interchanged, price differentials between the fuels can influence the alternative energy source forecast. This factor, along with the more critical factors associated with typical forecasts are considered as we forecast prices for the various fuel types.

Following the Determination of Need process, Tampa Electric performed an evaluation of the forecast methodology being used at that time and made changes to the process to project oil and natural gas pricing. The change in methodology incorporated the expanded use of inputs from a broader group of forecast experts. This process modification contributed to a lower forecast for both oil and natural gas than previous forecasts. The detail of the changes can be seen by examination of the individual forecasts.

11. Please provide a detailed description of any analysis performed by Tampa Electric following the certification of the Polk IGCC Unit to explore the cost and feasibility of delivering natural gas to the Polk site for use as primary or secondary fuel. Please include:

a. The date, scope, and details of any meetings or discussions with Florida Gas Transmission Company (FGT) regarding pipeline expansion, transportation services, or supply.

b. The date, scope, and details of any meetings or discussions with gas suppliers, marketers, or brokers regarding the price and availability of natural gas.

c. The date, scope, and details of any meetings or discussions with Florida Power Corporation regarding possible coordinated or leveraged negotiations with FGT or other gas suppliers to serve generation in Polk County and the surrounding area.

A. As part of the normal process, availability, pipeline construction cost, and cost of supply for natural gas were considered and incorporated into the natural gas forecasts used in determination of the fuel for the Polk IGCC unit. Subsequent reviews of forecasts support the prudency of that determination.

The Polk IGCC was designed with General Electric's model 7F combustion turbine. This state-of-the-art machine has the capability of burning both a primary and a secondary fuel. The number of viable fuel types is an integral part of the design of the fuel introduction system. Tampa Electric assessed the issue of fuel types with General Electric during the design phase of the project and verified GE's limitation of using a maximum of two fuel types. Obviously, the primary design fuel for Polk IGCC is coal gas.

The secondary design fuel selected is #2 oil. The selection process for the secondary fuel type considered the use of both natural gas and #2 oil. The secondary fuel type serves two main functions at Polk. The first is start-up of the IGCC unit. The second is to provide a back-up fuel supply. After reviewing the benefits and risks associated with each type of fuel, the requirement for reliable, on-site availability was the determining factor in selecting #2 oil. A two million gallon tank on site at Polk will provide the capability for storing adequate back-up fuel which will be readily available.

Natural gas is generally purchased on a firm basis or on an interruptible basis. In considering the alternatives for Polk, and considering the fact that coal gas was being used as a primary design fuel, purchasing natural gas on a firm basis would have made the cost of using gas as a back-up fuel prohibitive. This phenomena is caused by the low usage factor combined with the large capacity charges associated with a firm natural gas contract. Therefore, the only reasonably priced natural gas alternative would have been the use of interruptible supply. The critical need to have back-up fuel available for unit start-ups or during coal gas production outages prevented the consideration of an interruptible fuel supply to serve that requirement.

The above criteria (availability, storage capacity, and reliability) were the major factors in the decision to select #2 oil as the secondary fuel type and eliminate natural gas.

The secondary fuel type for the Polk IGCC has not been revisited because the FGT natural gas pipeline as a fuel source has not changed relative to the requirement to provide reliable, on-site availability.

a. Tampa Electric Company receives copies of all Florida Gas Transmission Company (FGT) FERC Gas Tariff filings and notices regarding pipeline and transmission services. They are reviewed to keep abreast of changes. A review of Tampa Electric's files provided no notes or memoranda of meetings with Florida Gas Transmission. Typically, no notes are prepared as a result of such meetings. Available records show that Tampa Electric has met with FGT on a periodic basis to stay aware of pricing, availability and expansion activities on their system. These types of meetings occurred on 11/2/92, 9/27/93, and 5/16/95.

A meeting was held with FGT on 3/7/95 to resolve an old billing dispute related to the Sebring units. Gas prices and gas transmission issues within the state were also discussed.

A meeting with FGT was held on 6/23/95 to discuss potential natural gas use at another Tampa Electric power plant site.

Meetings were held with Coastal Corporation on 3/27/91 and 1/17/92.

A meeting was held with ANR Pipeline on 7/11/91.

Meetings were held with United Pipeline on 8/28/91, 9/1/91, 10/17/91 and 1/17/92.

A meeting was held with Sunshine Pipeline on 2/26/92.

b. Tampa Electric meets with natural gas suppliers, marketers, and brokers from time to time to stay aware of pricing trends, contractual terms and conditions, market dynamics, and availability in the natural gas business. Available records show meetings of this type were held with Citrus on 8/19/92 and Enron on 4/13/93.

c. Tampa Electric met with representatives of Florida Power Corporation on 6/20/91 and 8/23/91, during the time in which they were considering participation in a natural gas pipeline into Florida. The discussions centered around equity participation in the pipeline and/or becoming a customer of the Sunshine Pipeline. We did not discuss joint efforts with Florida Power Corporation to obtain any leverage with FGT to serve generation in Polk County.

17. At the 1/30/96 plant site tour, it was stated that the coal transportation was competitively bid and that a local transportation company was contracted to transport coal from the Big Bend station to the Polk site. Are the trucks or trailers owned by TECO, an affiliate of TECO, or a subsidiary of TECO? Please identify, on a $/ton basis, the estimated transportation costs and how TECO will seek recovery of the coal transportation costs. Also, please provide a comparison of the cost, in $/ton, of transporting coal to the Polk site by rail vs. truck from Big Bend Station, and by rail vs. water and truck from a mine site to the Polk site. Please state all assumptions.

A. Tampa Electric issued a Request for Proposals (RFP) to 22 bidders in December 1994 for a transportation contract to deliver coal to the Polk site from Big Bend Station. Bid proposals were due in February 1995 and 11 companies responded. The proposals were evaluated, and on August 24, 1995, a contract was awarded to CTL Distribution, Inc. Tampa Electric does not own any trucks or trailers associated with this contract and the same is true for Tampa Electric's affiliates and subsidiaries.

The transportation cost for 1996 is * consisting of a fixed component of * and a variable component of *. For transportation services rendered during contract year 1997 and each contract year thereafter, the variable component of the transportation cost will be adjusted quarterly based on the change in the Platt's Oilgram average for the preceding quarter. Tampa Electric will seek recovery of the transportation costs for the fuel delivered to the Polk site through the Fuel Adjustment Clause in a method consistent with fuel delivery costs recovery practices for other fuels.

The capital costs for constructing additional fuel handling equipment and fuel transportation costs for delivering coal to the Polk site are provided in Tables 17-1 and 17-2 for the following three options: (1) direct rail from mine to Polk, (2) water to Big Bend, rail to Polk, and (3) water to Big Bend, truck to Polk. A detailed description of the assumptions used for each option precedes Tables 17-1 and 17-2. The effective transportation rate for each option includes the levelized capital revenue requirements for each option to construct and/or modify the necessary equipment to deliver the fuel to the Polk site. Based on an analysis of both transportation expense and capital required to support the different options, Tampa Electric decided to provide coal to the Polk site via water to Big Bend and truck to Polk.

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* The omitted value has been submitted to the Division of Records and Reporting under a separate Motion for Protective Order pursuant to Rule 25-22.006(5), F.A.C. The value in question is confidential proprietary business information entitled to protection against public disclosure pursuant to Section 366.093, Florida Statutes.

Option 1: Unit train delivery of coal from the mine to the Polk site.
The sizing of the coal yard at the Polk site is a function of the amount and frequency of coal deliveries and the level of local inventory which must be kept on hand to minimize the risk of fuel supply shortages. A unit train contains approximately 10,000 tons of coal. The coal yard was sized for 45-day coal storage or about 90,000 tons. In addition to coal yard size, the equipment required to support unit train deliveries and the equipment designed for 3,000 tons per hour coal unloading (to support a 4-hour unit train turn-around) are a function of unit train delivery. Rail unloading facilities must be constructed below grade. The total installed cost of the coal receiving and reclaim equipment, track, and mobile equipment to support unit train deliveries was estimated at $14,323,000, in 1996 dollars.

There are multiple limitations for implementation of this option. The coals to be burned for the life of the plant would have to be eastern domestic coals, deliverable by rail. This eliminates many potential fuels, including petroleum coke, due to additional transportation costs of using additional transportation carriers to get to an existing rail line. In addition, the reliance on a single delivery alternative controlled by a single source seriously limits the ability of Tampa Electric to negotiate competitive rates.

Option 2: Water Delivery of Coal by Barge to Big Bend Station with Subsequent Loading of Coal to Rail Cars for Movement to the Polk Site.
Equipment requirements for this option at the Polk site would be less than unit train requirements due to the ability to reduce the on-site storage capacity. Utilizing three sets of trains with 20 cars each would allow for 1,500 tons per hour coal unloading (to support a 24-hour short haul train turn-around). The short haul coal unloading equipment, track, and mobile equipment requirements reduced the capital cost estimate to $10,867,000, in 1996 dollars.

In order to support the loading of rail cars at Big Bend Station, it would be necessary to install rail loading equipment and track at Big Bend Station. This was estimated at $6,478,000, in 1996 dollars. The total capital investment for this option was estimated at $17,345,000, in 1996 dollars.

The assumptions required for this option included the approval of the permit to bring additional coal through Big Bend Station. (Approval has been received. This is the same for Option 3.) For the best possible rates, a back haul of phosphate is assumed to be available.

The limitations are less than for Option 1. The fuel markets would be expanded and petroleum coke would be a more viable fuel for delivery to the Polk site.

Option 3: Water Delivery of Coal by Barge to Big Bend Station with Subsequent Loading of Coal to Specially Designed Coal Trucks for Movement to the Polk Site.
Equipment requirements for this option at the Polk site would further reduce the unit train costs and provide additional cost reductions from the short haul rail. The unloading facility would be constructed above grade, the coal yard would maintain a 5-day storage with local inventory held at Big Bend Station, and all track could be eliminated associated with coal delivery. The estimated cost of the coal yard requirements to receive truck deliveries was $5,602,000, in 1996 dollars.

Equipment requirements for truck loading at Big Bend Station are less than rail loading equipment and track is not required. The cost estimate for truck loading at Big Bend Station was estimated at $3,040,000 in 1996 dollars. The total cost of this option in 1996 dollars was estimated to be $8,642,000.

The assumptions made to support this option are similar to Option 2. Receiving approval of the permit modification to bring additional fuel through Big Bend. As previously noted, this has been received. The fuel markets would be expanded and petroleum coke would also be a potential product for delivery to the Polk site.

The limitations are minimal. Trucks are flexible and can move independently without concern for external controls.

TABLE 17-1

Facility Capital Requirements
(in 1996 construction $ x 1,000)

Capital Requirements	**Option 1** Direct Rail Mine to Polk	**Option 2** Water to BB Rail to Polk	**Option 3** Water to BB Truck to Polk
at Big Bend	N/A	$6,478	$3,040
at Polk site	$14,323	$10,867	$5,602
Total	$14,323	$17,345	$8,642
Levelized Revenue Requirements	$2,358	$2,855	$1,422
Annual Tonnage x 000	744	744	744
$/Ton	$3.17	$3.84	$1.91

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TABLE 17-2

1996 TRANSPORTATION RATES
($/Ton)

	Option 1 Direct Rail, Mine to Polk	**Option 2** Water to BB Rail to Polk	**Option 3** Water to BB Truck to Polk
Direct Rail	*	N/A	N/A
Water to Big Bend	N/A	*	*
Truck to Polk	N/A	N/A	*
Rail to Polk	N/A	*	N/A
Sub-Total	*	*	*
Capital Levelized Revenue Requirements	3.17	3.84	1.91
TOTAL ($/Ton)	*	*	*

* The omitted value for this block has been submitted to the Division of Records and Reporting under a separate Motion for Protective Order pursuant to Rule 25-22.006(5), F.A.C. The value in question is either (a) confidential proprietary business information entitled to protection against public disclosure pursuant to Section 366.093, Florida Statutes, or (b) a column subtotal or total the disclosure of which would reveal confidential proprietary business information to the detriment of Tampa Electric.

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18. At the 1/30/96 plant site tour, it was stated that the Polk Unit would require approximately 80 truck loads of coal per day to operate. Please provide a detailed discussion of TECO's added responsibilities for road improvements or maintenance. Please identify how TECO will seek recovery of the costs associated with any road improvements or maintenance.

A. Tampa Electric Company will incur no incremental road improvement or road maintenance costs at the Polk Station as a result of the decision to deliver coal by truck. All road improvements, both at the plant entrances and within the plant, were designed to accommodate construction material delivery and heavy vehicles, as well as the vehicles associated with a peak of approximately 1,400 construction workers at the site. This design also accommodated the approximately 80 coal delivery trucks per day that are expected to travel to the site during plant operation.

Tampa Electric will incur no more road-related financial obligations to either Polk County or the Florida Department of Transportation than it ordinarily would through state and local taxes. No maintenance costs for roads outside the plant will be incurred, while the cost of maintaining the roads inside the plant property will be an operating cost. Tampa Electric will include the costs for the road improvements in its rate base for surveillance reporting. Recovery will be sought through base rates as Tampa Electric's need for revenue requirements dictates.

20. Please provide an analysis of the land and development costs, including environmental mitigation costs, which compares the Polk site to the plant site known as Cockroach Bay.

A. The goal of the Siting Task Force effort was to find the most suitable site for Tampa Electric Company's next power plant facility. As a part of this process, the Task Force conducted both environmental and engineering/economic analyses to determine the most suitable site. The environmental analysis considered areas such as water resources impacts, air quality impacts, ecological systems impacts, and land use/socioeconomic/community impacts. The engineering/economic analysis examined some of the key engineering and construction cost differentials between the various sites under consideration. Costs considered included road and rail access, transmission lines and substations, cooling systems, natural gas and fuel oil pipelines, coal delivery and handling, and additional foundation costs. The results of the economic analysis, attached, show that the present worth cost estimates (1990 Dollars) for the Polk Power Station site (PLK-A) were approximately $41.0 million to $51.7 million more than for the Port Manatee (HIL-7) site. Based on these analyses, the Siting Task Force determined that environmental and community concerns outweighed cost concerns, and therefore, the planned generating units should be built in Polk County instead of at the Port Manatee (Cockroach Bay) site.

The analyses conducted by the Task Force excluded a comparative review of environmental mitigation costs due to the level of uncertainty associated with such an analysis without the benefit of site-specific permit requirements for each site considered. Now that details of the Polk Power Station are finalized (permit requirements, construction costs, etc.), we know the total costs for the project. This same level of detail for the Port Manatee site is not available. Final land costs may be relatively easy to assume, but environmental mitigation costs could not accurately be determined without having the final, site-specific permit in hand.

6.7.5 SUMMARY OF ENVIRONMENTAL ADVANTAGES/DISADVANTAGES

Tables 6.7-4 through 6.7-9 provide summaries of the environmental advantages and disadvantages associated with power plant development on the six Prime Siting Areas. The detailed analyses of the issues and these summaries provided the key information used by the Siting Task Force to determine the Preferred Sites for further evaluation.

6.8 ENGINEERING/ECONOMIC EVALUATION OF PRIME SITING AREAS

Engineering/economic evaluations were conducted for the six Prime Siting Areas. These evaluations used the present worth costing factors similar to those used for the evaluations in Phase II (Section 5.4) and earlier in Phase III (Section 6.3). However, several of the resulting cost estimates were revised based on the conceptual facility layouts for the siting areas. With these layouts, more detailed estimates were developed particularly regarding the piping distances for recirculating, makeup, and discharge waters for the cooling systems. Also, based on the facility layout, additional present worth costs were developed for site preparation activities such as the construction of cooling pond dikes and filling and piling for foundations. For the HIL-7 siting area, the coal delivery cost estimates were revised to reflect the specific length of conveyors needed to transport coal from the port to the BL plant site.

Table 6.8-1 presents the results of the present worth cost evaluations for developing the CC and BL plants at the Prime Siting Areas under the assumption that cooling towers would be used at all the sites. Table 6.8-2 presents the present worth cost estimates for the siting areas under the assumption that cooling ponds would be used, to the extent possible, at the siting area. As shown in these tables, the HIL-7 siting area was estimated to be the most cost effective area, followed by the PLK-2 and PLK-A areas depending on the cooling system assumptions.

6.9 FUTURE SCENARIO ANALYSES

A power plant site selection study is based on available physical, ecological, sociological, and economic information; is reviewed within the

Table 6.8-1. Present Worth Cost Estimates for Prime Siting Areas Using Cooling Towers (in millions of 1990 Dollars)

Prime Siting Area	Road Access	Rail Access	TX Lines/ Subs.	Cooling System*	Natural Gas Pipeline	Fuel Oil Pipeline	Coal Handling Facilities	Coal Delivery	Additional Foundation Costs	Total
HIL-7	0.853	0.932	6.246	85.594	16.705	0.161	71.416	12.569	4.715	199.191
PLK-2	0.683	0.861	3.004	69.152	13.231	6.987	108.616	44.500	2.860	249.894
PLK-A	0.587	1.114	1.485	71.744	12.579	6.379	108.616	44.500	3.897	250.901
PLK-7	0.766	1.363	5.882	72.038	11.743	7.138	108.616	44.500	2.860	254.906
PLK-1	0.107	0.943	8.279	71.870	13.231	8.354	108.616	44.500	4.164	260.064
PLK-4	0.107	0.331	9.801	70.366	13.066	9.113	108.616	44.500	9.937	265.837

* Cooling System Assumptions: PLK-1 - FW Towers
PLK-2 - FW Towers
PLK-A - FW Towers
PLK-4 - FW Towers
PLK-7 - FW Towers
HIL-7 - SW Towers

Source: ECT, 1990.

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Table 6.8-2. Present Worth Cost Estimates for Prime Siting Areas Using Cooling Ponds Where Possible (in millions of 1990 Dollars)

Prime Siting Area	Road Access	Rail Access	TX Lines/ Subs.	Cooling System*	Natural Gas Pipeline	Fuel Oil Pipeline	Coal Handling Facilities	Coal Delivery	Additional Foundation Costs	Total
HIL-7	0.853	0.932	6.246	85.594	16.705	0.161	71.416	12.569	4.715	199.191
PLK-A	0.587	1.114	1.485	60.978	12.579	6.379	108.616	44.500	3.897	240.135
PLK-2	0.683	0.861	3.004	80.042	13.231	6.987	108.616	44.500	2.860	260.784
PLK-4	0.107	0.331	9.801	70.366	13.066	9.113	108.616	44.500	9.937	265.837
PLK-7	0.766	1.363	5.882	84.160	11.743	7.138	108.616	44.500	2.860	267.028
PLK-1	0.107	0.943	8.279	115.503	13.231	8.354	108.616	44.500	4.164	303.697

* Cooling System Assumptions: All sites cooling ponds, except PLK-A - Ponds and 220-MW CC FW Towers
PLK-4 - FW Towers
HIL-7 - SW Towers

Source: ECT, 1990.

22. When did the Site Selection Committee select the Polk Site?

A. The Siting Task Force selected three sites in the phosphate mining district in southwestern Polk County at their final formal meeting on September 25, 1990. Their decision was made public at that time through the news media. The Task Force left the selection of which of the three sites to use as the final site for the Polk Power Station up to Tampa Electric Company. Tampa Electric Company selected the Polk Power Station site just prior to the end of 1990.

29. Please provide a detailed explanation of how the inclusion of the Polk Unit will affect TECO's ability or strategy to comply with the requirements of the Clean Air Act Amendments of 1990.

A. The Polk Unit will not significantly affect Tampa Electric's ability or strategy to comply with the requirements of the Clean Air Act Amendments of 1990 (CAAA). Currently Tampa Electric (TEC) is complying with Phase I of the CAAA through the integrated scrubbing of Big Bend Unit No. 3 in the Big Bend Unit No. 4 scrubber. In addition, TEC is purchasing quantities of low sulfur coal and allowances to achieve the required amount of sulfur dioxide (SO_2) allowances to comply with the applicable restrictions.

Current compliance with the CAAA only applies to Phase I affected units which include Big Bend Station Units 1-4. In the year 2000, Phase II of the CAAA will apply to the remaining TEC boilers, including the Polk Unit. The Polk unit will emit SO_2 at the rate of less than 0.17 lb SO_2/MMBtu. By comparison, a high sulfur coal burning unit would emit approximately 4.5 lb SO_2/MMBtu while the same unit burning compliance coal (low sulfur) would emit approximately 1.2 lb SO_2/MMBtu. The Polk IGCC unit is expected to dispatch first which will displace some higher emission generation and due to a lower emission rate, will provide a net CAAA compliance benefit. Based on the downward price trend in the SO_2 allowance market, as well as the fact that coal markets have not recognized any significant differential in the cost of high sulfur versus low sulfur coals, Tampa Electric expects the benefit provided by the Polk unit to CAAA compliance to be small.

2. In response to Staff's Interrogatory No. 3 in Docket No. 950379-EI, starting with the 1994 study, TECO assumed "as-available natural gas" for the spring and fall months and distillate oil for summer and winter months as the fuel for the CC unit. What is meant by the term "as-available natural gas"?

A. The term "as available natural gas" as used in our response to Staff's Interrogatory No. 3 in Docket No. 950379-EI means natural gas delivered on an interruptible transportation basis. Transportation of natural gas can be acquired on both an interruptible and firm basis. Interruptible transportation purchases provide an advantage to the buyer in that the amount of transportation actually required can be very close to the transportation paid. The disadvantage for the buyer is the lack of assurances that the transportation required will be available.

3. Please identify all documents considered by TECO in reaching the conclusion that the combined cycle alternative described in its response to Staff's Interrogatory No. 3 in Docket No. 950379-EI, would burn "as-available natural gas" in the spring and fall months and distillate oil in the summer and winter months.

A. The assumption that the combined cycle alternative described in Staff's Interrogatory #3 in Docket No. 950379-EI would burn "as-available natural gas" in the spring and fall months and distillate oil in the summer and winter months is based upon several factors. First, Tampa Electric was informed by FGT that summer and winter interruptible or "as-available" transportation capacity would not be available. These statements were supported by the fact that FGT's pipeline capacity was 100% subscribed for firm service in these months. Second, actual experience and knowledge gained while obtaining natural gas for Hardee Power Station convinced Tampa Electric Company that interruptible or "as-available" natural gas was extremely difficult to obtain in the summer and winter months.

Additionally, FGT experienced gas transmission bottleneck problems with the Sarasota lateral in the vicinity of the Polk site which created pipeline delivery problems on that line. Since FGT has maintained that it will not expand or increase the capacity of its pipeline for interruptible quantities of gas and will make investments only when long term firm transportation agreements are executed, it would have been unlikely that the required quantities of interruptible gas would be available at anytime of the year without the required pipeline upgrades.

Tampa Electric Company does not have any documents considered in reaching the conclusion mentioned above.

13. Please explain in detail all changes in the light oil market which are captured in the base case fall 1995 light oil forecast but not captured in the 1992 price change forecast.

A. The changes in the light oil market which are captured in the base case 1995 light oil forecast but not captured in the 1992 price change forecast are driven by world crude oil market factors that occurred between the times the 1992 forecast and the 1995 forecast were prepared. In each case, the impact was related to production of oil increasing over projected quantities. The effect of these impacts bolstered the oil supply or reduced demand therefore lowering price.

The philosophy that the United States will import less oil in the late 1990s is gaining the support of oil experts and consultants as the number of discovered and producing fields grow due to increased technological advances in 3D seismic imaging. Additionally, in 1991 the oil market experienced several turbulent events including the Gulf War, the dissolution of the USSR, the emergence of its independent republics and risks with Libya. This turbulence created uncertainty in the future of the oil market in 1992. New discoveries and production from the Flexure Trend[1] fields and the intense and rapid development of known fields in the North Sea have contributed to higher production, notably by non-OPEC suppliers. The forecasting premise in 1992 was that Saudi Arabia would restrain production but their actual production was higher than projected. A succession of mild winters with the 1994/95 winter being the 3rd mildest in the past 100 years nationally decreased demand.

[1] The Flexure Trend extends from the eastern boundary of the Viosca Knoll area, south of Mobile Bay, Alabama, due west to the southwest of Galveston, Texas before turning abruptly to the south towards Mexico. Overlapping the Flexure Trend is the rapidly expanding subsalt play. As of June, 1994, 45 oil and gas discoveries were made and some now are producing wells. Additionally, plans have been announced for 36 exploratory operations.

15. Please explain in detail why the base case 1995 fall forecast for natural gas indicates approximately the same prices as the low 1994 fall forecast through year 2010.

A. The Tampa Electric Company low 1994 fall forecast is directly related to its base case 1994 fall forecast. The base case 1994 fall forecast and the base case 1995 fall forecast were developed from consultant and gas industry forecasts and actual pricing from the previous years. We re-evaluated their forecasts in 1995 with the benefit of the data of the actual prices of 1994 to reflect a lower forecast through time. This resulted in the low 1994 fall forecast exhibiting approximately the same prices as the base case 1995 fall forecast.

Several specific and ongoing changes in the natural gas market are summarized below. One significant change in the short term natural gas market between 1994 and 1995 is the overhang or the existing high storage levels of natural gas at the end of the 1994 year driving pricing downward. Also, producers have become more flexible in their ability to slow or accelerate the timing of their supply reaching the market. The discovery of additional fields continues to grow due to increased technological advances in 3D seismic imaging. Increased storage capacity has increased the ability to deliver gas on peak days in turn dampening peak prices. These storage and technology changes are reflected in the natural gas market. In addition, the growing philosophy that the discovered and producing natural gas wells in the Flexure Trend[1] will increase production beginning in the late 1990s and boost U.S. natural gas capacity lasting several years. The expansion of the pipeline gas in integration of the U.S. grid with the Canadian grid has increased Canadian gas imports. The winter of 1994/95 was the third warmest winter in the last 100 years on a national basis.

The base case fall 1995 forecast was developed using actual 1994 prices which decreased at year end bringing the beginning 1995 pricing lower than the beginning 1994 pricing. By comparison, this made the base case 1995 fall forecast approximately the same as the low 1994 fall forecast.

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[1] The Flexure Trend extends from the eastern boundary of the Viosca Knoll area, south of Mobile Bay, Alabama, due west to the southwest of Galveston, Texas before turning abruptly to the south towards Mexico. Overlapping the Flexure Trend is the rapidly expanding subsalt area. As of June, 1994, 45 oil and gas discoveries were made and some now are producing wells. Additionally, plans have been announced for 36 exploratory operations.

16. Please explain in detail all changes in the natural gas market which are captured in the base case fall 1995 natural gas forecast but not captured in the base case fall 1994 natural gas forecast.

A. One significant change in the natural gas market between 1994 and 1995 was the overhang or the existing high storage levels of natural gas at the end of the 1994 year driving short term prices downward. Also, producers have become more flexible in their ability to slow or accelerate the timing of their supply reaching the market. The discovery of new fields continues to grow due to increased technological advances in 3D seismic imaging. Increased storage capacity has increased the ability to deliver gas on peak days in turn dampening peak prices. These storage and technology changes are reflected in the natural gas market. In addition, the growing philosophy that the discovered and producing natural gas wells in the Flexure Trend[1] will increase production beginning in the late 1990s and boost U.S. natural gas capacity for several years. The expansion of the pipeline and integration of the U.S. grid with the Canadian grid has increased Canadian gas imports. The winter of 1994/95 was the third warmest winter in the last 100 years on a national basis.

The base case fall 1995 forecast was developed using actual 1994 prices which decreased at year end bringing the beginning 1995 pricing lower than the beginning 1994 pricing. In addition to actual 1994 pricing, we used forecast provided by consultants. The factors mentioned above with the actual 1994 pricing information are changes in the 1995 natural gas forecast that were not captured in the base case fall 1994 forecast.

[1]The Flexure Trend extends from the eastern boundary of the Viosca Knoll area, south of Mobile Bay, Alabama, due west to the southwest of Galveston, Texas before turning abruptly to the south towards Mexico. Overlapping the Flexure Trend is the rapidly expanding subsalt area. As of June, 1994, 45 oil and gas discoveries were made and some now are producing wells. Additionally, plans have been announced for 36 exploratory operations.

17. Please explain in detail all changes in the natural gas market which are captured in the base case fall 1995 natural gas forecast but not captured in the 1992 price change forecast.

A. There have been significant changes in the short term natural gas market between 1992 and 1995. Technological advancements in exploration and development such as 3D seismic imaging and directed horizontal drilling have increased probability of successful exploration. This technological advancement has been key in the Gulf Coast supply and Flexure Trend[1] development. The expansion of the Interstate pipeline grid and integration of the U.S. grid with the Canadian grid has increased Canadian imports. FERC Order 636 has ended pipeline supply contracts with fixed prices and terms driving the market in a more competitive direction. Increased storage capacity (approximately 50 Bcf per year added) has increased the ability to deliver gas on peak days and dampening peak prices.

Weather factors have influenced the natural gas market over the past several years. In 1993 and 1994, the Gulf of Mexico had an absence of hurricane activity providing for higher gas production than anticipated. The winter of 1994/95 was the third warmest in the last 100 years on a national basis. The end of the drought in the western states in early 1995 resulted in higher hydro power requiring less gas fired power production.

[1]The Flexure Trend extends from the eastern boundary of the Viosca Knoll area, south of Mobile Bay, Alabama, due west to the southwest of Galveston, Texas before turning abruptly to the south towards Mexico. Overlapping the Flexure Trend is the rapidly expanding subsalt area. As of June, 1994, 45 oil and gas discoveries were made and some now are producing wells. Additionally, plans have been announced for 36 exploratory operations.

21. When was the 18-inch natural gas lateral adjacent to the Polk site serving Hardee Power Station placed into service?

A. Construction of the 18-inch natural gas lateral, which is owned and operated by Hardee Power Partners, Limited, adjacent to the Polk site serving Hardee Power Station was completed in April, 1992. The 18-inch natural gas lateral was pressurized in June, 1992.

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22. How much excess capacity is available through the Hardee Power Station lateral?

A. The Hardee Power Station lateral does not have any excess capacity available. The pipeline capacity is fully subscribed by Hardee Power Partners and Seminole Electric Company.