ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for an Electrical Power Plant in Polk County by Calpine Construction Finance Company, L.P.	)	DOCKET NO. 000442-EI

DIRECT TESTIMONY AND EXHIBIT

OF

RICHARD A. ZWOLAK, AICP

ON BEHALF OF

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.

DOCUMENT NUMBER-DATE
10173 AUG 18 00
FPSC-RECORDS/REPORTING

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: PETITION FOR DETERMINATION OF NEED FOR AN ELECTRICAL POWER PLANT IN POLK COUNTY BY CALPINE CONSTRUCTION FINANCE COMPANY, L.P.
FPSC DOCKET NO. 000442-EI

DIRECT TESTIMONY OF RICHARD A. ZWOLAK, AICP

Q. Please state your name and business address.

A: My name is Richard A. Zwolak, and my business address is 5405 West Cypress Street, Suite 215, Tampa, Florida 33607.

Q: By whom are you employed and in what position?

A: I am employed by Golder Associates, Inc. ("Golder") as Director of Environmental Planning.

Q: Please describe Golder Associates Inc., and its business.

A: Golder is an international environmental and engineering firm providing services to many public agencies and private businesses, including the electric power industry.

Q: Please describe your duties with Golder.

A: I am responsible for managing projects, providing environmental planning services, and ensuring that Golder has the appropriate technical expertise to assist electric power companies to develop, construct, and operate power plants.

DIRECT TESTIMONY OF RICHARD A. ZWOLAK, AICP

QUALIFICATIONS AND EXPERIENCE

Q: Please summarize your educational background and experience.

A: I received my Bachelor of Arts degree in 1976 and a Master of Arts degree in 1979, both in Geography from the University of South Florida. From 1978 to 1979, I was a Planning Research Assistant for Hillsborough County and from 1979 to 1985 I was a Senior Associate Scientist with Environmental Science and Engineering, Inc., a subsidiary of Reynolds, Smith and Hills. Also at Reynolds, Smith and Hills, I was the Environmental Planning Department Head from 1985 to 1988 and the Planning Director for 1988 and 1989. I joined KBN Engineering and Applied Sciences in 1989 and served as the Principal Environmental Planner until 1996. KBN became part of Golder Associates, Inc., in 1996 and I have been in my current position since then. During the last 20 years, I have worked on a wide variety of environmental projects and studies across the United States and in several foreign countries. I have conducted more than 200 environmental studies. I have been responsible for the regulatory work associated with siting twenty electric power plants (9 of them in Florida) and obtaining numerous air, land and water resource permits and approvals. The clients I have worked with include governmental agencies, industrial companies, and power companies, some of which are investor-owned utilities in Florida.

Q: What is your experience in power plant siting and licensing?

A: As I just mentioned, my experience in this area is extensive. I have worked on power plant siting, licensing, and permitting projects for much of my career, and have worked on projects located in many states within the United States and a number of foreign countries. For example, I was the Land Use Discipline Manager for Seminole Electric's 660 MW combined-cycle unit and an expansion to add a third unit. I had land use discipline responsibilities for Florida Power & Light Company's Lauderdale Repowering Project, for Florida Crushed Stone Company's coal-fired project, for Mid-South Utilities' Grand Bahamas Island Power Plant, for Potomac Electric Power Company's Dickerson Plant, for Atlantic City Electric Company's 290 MW coal-fired generating station, and for Soyland Power Cooperative's Compressed Air Energy Storage System.

I also have been the Land Use Planner responsible for socioeconomic and impact analyses for two Site Certification Applications filed by Florida Power Corporation. I had similar responsibilities for Tampa Electric Company's site selection study for 3200 MW of capacity in west-central Florida. Finally, I have been the Task or Project Manager for seven other generating projects as more fully described in my resume', which is attached to my testimony and identified as Exhibit RAZ-1.

In addition to these generating projects, I have been Task Manager or Project Manager for thirteen transmission projects, including TECO Power Services and Seminole Electric Cooperative's Hardee Power Station Site Certification, two 230kV transmission line projects for Florida Power Corporation, Transmission Line Post-Certification activities for Florida Power & Light, a Liquid Fuel Pipeline Corridor for TECO Power Services, and the Florida-Georgia 500kV Transmission Line Siting Study for Florida Power Corporation.

In the projects conducted in the past few years, I have been responsible for socioeconomic, land use, environmental, water resource, ecological, archaeological, threatened and endangered species, and land use compatibility studies and surveys.

I have performed similar functions on highway projects and airport projects.

Further, I have provided similar expertise to governmental agencies in various projects, including benefit-cost analyses for the Green Swamp for the Southwest Florida Water Management District ("SWFWMD"), the Myakka Wild and Scenic River Management Plan for the Florida Division of Natural Resources, Hazardous Waste Management Plans for the Tampa Bay Regional Planning Council, the Hazardous Waste Transfer Facility Site Selection for the West Florida Regional Planning Council, the Dredged Material Disposal

Siting Study for the Jacksonville Port Authority, the Halifax Harbor Marina ADA/DRI for the City of Daytona Beach, Florida, and numerous Post Office Site Selection and Environmental Assessment reports for the U.S. Postal Service.

Finally, I have provided land and environmental planning, feasibility studies, and permitting for several private land development projects.

Q: Have you previously testified before regulatory authorities or courts?

A: Yes, I have. I have provided expert testimony in one proceeding before the Florida Public Service Commission, several proceedings under the Power Plant Siting Act, a proceeding under the Transmission Line Siting Act, and general and individual permit administrative hearings. I have also provided expert testimony in Circuit Court.

Q: What are your responsibilities with respect to the electrical power plant project that is the subject of this proceeding?

A: I am Golder's project manager, responsible to Calpine for all aspects of the licensing efforts for the Osprey Energy Center Project ("Osprey Project" or the "Project") that have been assigned to Golder, including the entire Site Certification Application. My duties include:

- Day-to-day management of technical, budgetary, and

scheduling aspects of the Project.

- Providing overall technical leadership.
- Coordination of Golder's work activities and the preparation of all work products.

I work closely with the project engineering team from Calpine in identifying and addressing environmental issues associated with the Project.

Q: Do you hold any professional certification or registration?

A: Yes, I am a certified planner with the American Institute of Certified Planners, the only recognized professional certification available to planning professionals.

Q: Are you sponsoring any exhibits to your testimony?

A: Yes. I am sponsoring Composite Exhibit _____ (RAZ-1), my resume'.

Q: Are you sponsoring any of the Exhibits to the Petition for Determination of Need filed in this case?

A: Yes. In the Exhibits package to Calpine's Petition for Determination of Need for the Osprey Project, I am sponsoring Figures 2-5, 7-9, 16, and 17, and Tables 2, 3, and 17, as well as the text that accompanies those figures and tables.

THE OSPREY ENERGY CENTER - SITE EVALUATION

Q: Have you prepared an analysis of the proposed site for the Osprey Project?

A: Yes, I have prepared an analysis of the proposed Project site that is reflected in the Site Certification Application that was filed on March 16, 2000. Golder Associates, including me as Project Manager and several other professional planners, environmental scientists, and engineers, is responsible for the entire Site Certification Application. The Site Certification Application is considerably more detailed than any analysis needed for this need determination proceeding. I have not attached the Site Certification Application as an exhibit because it is quite voluminous, it is already publicly available, and it has been filed with the FPSC in accordance with the Power Plant Siting Act.

Q: Please describe the scope of Golder's site and environmental analyses.

A: As part of the licensing proceeding, Golder had to characterize the site and surrounding area; characterize the Project's conceptual features, especially discharges and emissions. We have also analyzed the Project's anticipated environmental impacts and assessed the viability of the site selected for the proposed Project.

Q: What sources of information did you consult in gathering information for Golder's analysis?

A: My project team and I have consulted a variety of publicly available data and information concerning the site and its surroundings, including air quality monitoring data, information on site geology and hydrogeology, and information on land use, to cite a few examples. In addition, the Golder project team has completed several field studies of its own, including a thorough characterization of the site's ecological resources and a monitoring program to determine existing noise levels.

Q: What are the main components of the analyses contained in the Site Certification Application?

A: The key features of the Site Certification Application are analyses of the site and surrounding areas, the Project's air emissions, the water supply sources and the water discharges, the impacts of groundwater withdrawals, stormwater management, traffic, public services, zoning and comprehensive land use plan designations, land use compatibility, noise, economic benefits, and environmental benefits.

Q: What did Golder find generally about the suitability of this

site for the Osprey Energy Center?

A: Golder has found that the proposed site is well-suited for its proposed use as the Osprey Energy Center. Through the use of modern, state-of-the-art generation technology and clean natural gas fuel, air quality impacts will be minimal, and no sensitive environmental resources will be noticeably affected.

Q: Describe the site and surrounding area.

A: The Osprey Energy Center will be built on 19.5 acres of vacant land that were used in the past as an orange grove, but now are neglected and overgrown. The site does not contain any water bodies, wetlands, significant wildlife habitat, threatened or endangered species, or known historic or archaeological resources. The site is not within a 100-year floodplain. The construction and operation of the Osprey Project will not adversely affect any natural or biological resources on the site. The site is located in an area that has been developed over the years by predominantly industrial and commercial activities. The site is bordered on the east by the Auburndale Power Plant (a 150 MW cogeneration facility) and Tampa Electric Company's Recker Substation. Citrus processing plants and other industrial facilities are east of the Auburndale Power Plant. The site is bordered on the south by Recker Highway and on the north

by West Derby Avenue. There are several commercial businesses and a few houses along these two roadways in the vicinity of the site. A cemetery is located along the western border of the site.

Q: What are the major findings of your analysis?

A: The major findings of Golder's analysis of the site address air resources, water resources, ecology, and land use and socioeconomic aspects of the site and Project.

Air Emissions

The Osprey Energy Center will use the Best Available Control Technology to minimize the facility's airborne emissions. Emissions of nitrogen oxides ("NO_x") will be reduced to very low levels (3.5 ppmvd) through the use of modern dry low-NO_x combustion technology and a selective catalytic reduction ("SCR") system. Emissions of other pollutants also will be reduced to very low levels by using clean-burning natural gas and advanced combustion turbines.

The Project's impacts on ambient air quality will be minimal. The Project will not cause or contribute to any violations of state or national ambient air quality standards ("AAQS"), or any Class I or II increments for the prevention of significant deterioration ("PSD") of air quality.

Water Resources and Discharges

The current proposed water use plan anticipates use of

treated domestic wastewater to be pumped from the City's Allred Wastewater Treatment Plant and potentially from the City's Westside Regional Wastewater Treatment Plant to the Osprey Energy Center for reuse. The Project will use all the reclaimed water that these treatment plants can provide. The supply of reclaimed water is estimated to be approximately 800,000 gallons per day ("gpd") from each treatment plant (1,600,000 gpd total) when the Project commences operation and is anticipated to grow in the future. The use of reclaimed water will minimize use of groundwater and will reduce disposal by the City of reclaimed water in Lake Lena Run, a nearby surface water. The Project will implement water conservation measures and will recycle water to the greatest extent possible, but the Project will still need approximately 3.82 mgd on an annual average basis. The additional water needs will be met from three new on-site wells (2 active; 1 standby). The peak daily water consumption is projected to be 4.80 mgd.

Based on the current plan to use 1.6 mgd of reclaimed water, the project will withdraw approximately 2.2 mgd (annual average) of ground water initially, but will decrease that withdrawal rate as the supply of reclaimed water increases. Assuming 1.6 mgd of reclaimed water will be available, the peak withdrawal will be approximately 2.93 mgd. If the Project only obtains 800,000 gpd of reclaimed

water, then the Project will withdraw approximately 2.75 mgd (annual average) and 3.99 mgd (peak) of ground water.

There will not be any on-site discharges of industrial or domestic wastewater to any surface or ground water. All the wastewater from the plant will be sent by pipeline to the City of Auburndale's wastewater treatment facilities for disposal.

The Project's use of groundwater will not adversely affect wetlands, surface waters, or existing legal uses of water. A numerical computer model, Visual MODFLOW, was used to evaluate several different operating scenarios. That analysis demonstrates that the Project's groundwater withdrawals will cause a drawdown at the site boundary of only 0.36 feet in the surficial aquifer and only 2.8 feet in the Upper Floridan aquifer. The impacts are well within the range allowed by the SWFWMD.

The stormwater management plan for the Osprey Energy Center has been designed to comply with all of the applicable requirements of the SWFWMD, the Florida Department of Environmental Protection ("FDEP"), and the City of Auburndale. That plan calls for stormwater to be collected, routed to and treated in detention basins prior to discharge into drainage swales along West Derby Avenue and Recker Highway. These stormwater drainage and discharge patterns will mimic current conditions.

Ecology

The ecology of the Project site is characterized by vegetative communities consisting of a non-producing citrus grove and undeveloped urban land. The grove is comprised of orange trees which are overgrown with weedy species. No aquatic resources exist on-site. Disturbed areas found on-site include roadways, electrical transmission lines, and an open area. The previously mentioned Auburndale Wastewater Treatment Plant ("AWWTP") is within one mile of the Project site.

Flora and fauna found on-site are typical of central Florida community types. No federally-listed (as threatened or endangered) plant species were found during field surveys. No wildlife species listed as threatened or endangered by the Florida Game and Fresh Water Fish Commission ("FGFWFC") or the United States Fish and Wildlife Service ("USFWS") were found on-site, although it is possible some species may forage on or traverse portions of the site. No areas characterized as ecologically unique or sensitive are found on-site. In summary, the Project will not have significant ecological effects on the site or the region.

Land Use and Socioeconomics

The proposed site is located in an incorporated portion of Polk County. The only local government comprehensive plan applicable to the Osprey Energy Center is the City of

Auburndale Comprehensive Plan, as adopted on March 18, 1991 and last amended on December 6, 1999. A Future Land Use Map amendment for the City of Auburndale Comprehensive Plan has been sent to the Department of Community Affairs ("DCA") to request that the proposed site be designated as Future Land Use category Business Park. On February 21, 2000, the Auburndale Planning Commission and the City Commission found the Osprey Project to be consistent and in compliance with the City of Auburndale Comprehensive Plan and land use designation of Business Park.

Surrounding and nearby land uses are the adjacent Auburndale Power Plant, the AWWTP, a Cutrale citrus processing plant, a Florida Distillers distillery, and another citrus processing plant owned by SFE Citrus Processors, Ltd. Additionally, the Tampa Electric Company Recker Substation is adjacent to the proposed Osprey Energy Center.

The proposed zoning district for the site is LI-Light Industrial as defined in Chapter 5, Section 5.6.14, Auburndale Land Development Regulations ("LDR"), adopted November 4, 1991. The adjacent gas-fired combined-cycle Auburndale Power Plant has a future land use plan classification of Business Park Center and is zoned Light Industrial by Polk County. The Light Industrial zoning district from the City of Auburndale is consistent with the

Light Industrial zoning district used by Polk County for the adjacent power plant. The designation of the Project site as a Light Industrial zoning district is consistent with the existing zoning patterns, and existing and future land use patterns, of the adjacent properties and is suitable for the proposed Project.

The site does not contain any parks, recreation areas, or natural resource areas. The State Division of Historical Resources has concluded that the Project will have no effect on known or potential historical or archaeological resources.

The Project will have a positive effect on local economies. The construction workforce needed for the Project (up to 162 people during the construction period) will mean more employment opportunities and more direct and indirect economic expenditures. Upon completion, the Project will provide an economic and reliable source of clean energy for Florida and provide the city and county with tax revenues. No significant impacts to existing infrastructure or essential services are anticipated due to the relatively small permanent workforce (approximately 25 full-time employees) required for plant operation.

While there may be a temporary increase in traffic on local roads during construction of the Osprey Project, the roads will continue to operate at acceptable levels. The Project will not cause significant impacts on traffic or

public services.

The Project will include sophisticated noise suppression techniques and an enclosed building to reduce impacts on adjacent land use. The Project will comply with a variance from the City's current noise standards, which are presently being revised.

In summary, the Project will represent a clean and consistent land use compatible with the site vicinity and provide social and economic benefits with minimal impact to the residents of Polk County.

Q: What are the direct economic benefits of the Project?

A: The Project's direct economic benefits include between $0.8 and $1.16 million annually in additional ad valorem tax revenue to Polk County, between $0.9 and $1.3 million annually in additional ad valorem tax revenue to the Polk County School district, and approximately $500,000 per year to the City of Auburndale in ad valorem taxes and municipal service fees. The Project will support approximately 25 new permanent jobs with an average salary of $40,000, plus benefits, with a total payroll of approximately $1,000,000 annually and approximately 162 construction jobs and construction wages of approximately $13 million over two years.

Q: What are the environmental benefits of the Project?

A: The environmental benefits to the citizens of Auburndale, Polk County and the State of Florida include funding improvements to the City of Auburndale's wastewater treatment facilities that result in decreased discharges to surface water, increasing available reclaimed water, and enhancing disinfection, and providing a new, clean, cost-effective and energy efficient source of electricity to meet the growing demands for power in Florida. Additionally, the Osprey Project will use less fuel than existing power plants in Florida when producing an equivalent amount of electricity, thereby saving 6.85 billion cubic feet of natural gas and 1.1 million barrels of oil each year (based on my staff's assumptions regarding the current fuel mix). Finally, the Osprey Energy Center will produce less air pollution than existing power plants in Florida when producing the same amount of electricity. By reducing the use of older, less efficient power plants in Florida, the Project will reduce the amount of air pollution associated with power generation in Florida. The Project will likely reduce total combined sulfur dioxide and NO_x emissions by about 20,000 tons per years ("TPY"), including 10,600 TPY of NO_x (assuming displacement of the current mix of oil and gas fired plants, which is about 41 percent and 59 percent, respectively).

Q: Are the savings in fuel and the reductions in emissions that you just quantified consistent with the testimony of Mr. Slater in this case?

A: They are essentially consistent. Any differences are the result of the use of different assumptions.

Q: Do you still agree with the contents of the Site Certification Application?

A: Yes, I do.

Q: What is the licensing schedule for the Osprey Project?

A: The Site Certification Application ("SCA") was filed with the Department of Environmental Protection on March 16, 2000. Project construction is anticipated to begin in 2001, with commercial operation scheduled for the second quarter of 2003.

Q: Do you have a conclusion with respect to the ability of the Osprey Project to obtain all necessary licenses within the time frames described in the licensing schedule?

A: Yes, I do.

Q: What is your conclusion?

A: Based on our analyses, Golder and I have concluded that the site is appropriate for the Osprey Project, that the site can support the Project as proposed, and that the Project as proposed can obtain all necessary licenses and approvals within the times allotted in the licensing schedule.

Q: Does this conclude your direct testimony?

A: Yes, it does.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for an Electrical Power Plant in Polk County by Calpine Construction Finance Company, L.P.	)	DOCKET NO. 000442-EI

EXHIBIT

OF

RICHARD A. ZWOLAK, AICP

ON BEHALF OF

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for Determination of Need for an Electrical Power Plant in Polk County by Calpine Construction Finance Company, L.P.	)	DOCKET NO. 000442-EI

EXHIBIT

OF

RICHARD A. ZWOLAK, AICP

ON BEHALF OF

CALPINE CONSTRUCTION FINANCE COMPANY, L.P.

RICHARD A. ZWOLAK, AICP

EDUCATION

M.A.	1979	Geography	University of South Florida
B.A.	1976	Geography	University of South Florida

ACCREDITATION

American Institute of Certified Planners, 1986

ASSOCIATIONS

American Planning Association, National, Florida and Suncoast Chapters
American Planning Association, Environment, Natural Resources, and Energy Division

PROFESSIONAL HISTORY

Director of Environmental Planning, Power Market Sector Leader, Golder Associates, Inc., 1996 to present.

Principal Environmental Planner, KBN Engineering and Applied Sciences, Inc., 1989 to 1996.

Planning Director, Reynolds, Smith and Hills, Architects-Engineers-Planners, Inc., 1988 to 1989.

Environmental Planning Department Head, Reynolds, Smith and Hills, Architects-Engineers-Planners, Inc., 1985 to 1988.

Senior Associate Scientist, Environmental Science and Engineering, Inc. (subsidiary of Reynolds, Smith and Hills), 1979 to 1985.

Planning Research Assistant, Hillsborough County City-County Planning Commission, 1978 to 1979.

EXPERIENCE SUMMARY

Richard A. Zwolak, M.A., AICP, has conducted more than 200 environmental studies for both public and private sector electric utility clients and he has been responsible for siting electric power plants and obtaining many air, land and water resource permits and approvals for project development. He has more than 19 years of environmental planning experience in Florida and has participated in projects in 22 other states in the United States and Albania, the Commonwealth of the Bahamas, the Dominican Republic, Estonia, Guatemala, Turkey, Yemen and. Mr. Zwolak received both a bachelor of arts and master of arts degree in geography from the University of South Florida and is certified by the American Institute of Certified Planners.

Mr. Zwolak's technical experience includes land use compatibility analyses and overall project management for residential, commercial, industrial, utility, and mixed-use development sites/projects. He has served as project manager or principal author for National Environmental Policy Act (NEPA) environmental assessments (EAs) and environmental impact statements (EISs) under various federal programs, including the Environmental Protection Agency (EPA), U.S. Postal Service (USPS),

Federal Highway Administration (FHWA), Federal Aviation Administration (FAA), Federal Housing Administration (FHA), Rural Utility Services (formerly Rural Electrification Administration), Department of Energy (DOE), and Department of Defense (U.S. Navy, Air Force, and Army). He has also served as project manager or principal author for Development of Regional Impact (DRI) projects and utility licensing under the Florida Transmission Line Siting Act and the Florida Electrical Power Plant Siting Act.

With respect to international environmental law, Mr. Zwolak has been retained repeatedly by The World Bank to oversee the environmental aspects of thermal power and hydroelectric plants, transmission lines and substations. He has conducted workshops and training classes in the integration of environmental criteria with economic and engineering considerations for power plant siting and permitting. On many of the international projects for The World Bank, he has evaluated the environmental capability of existing utility staff and made for staffing, organization, and facility support recommendations to enhance environmental capability of the electric utility.

His participation has included presentations at public hearings, meetings, and workshops and general public and agency scoping meetings. He has also presented projects to local government political bodies including county commissions and city councils, regional planning councils, and various boards (variance reviews, resource management, development reviews) and technical advisory committees. Mr. Zwolak has presented expert testimony on land use compatibility issues at administrative hearings and developed several land use plans/regulatory programs for local, regional, and state government bodies.

PROJECT EXPERIENCE-POWER PLANT SITING AND PERMITTING

Environmental Permitting for a Simple-Cycle Power Plant for Constellation Development, Inc. Project Manager for obtaining all land use approvals and environmental permits associated with a 850 MW simple cycle power plant in unincorporated Brevard County, Florida near Cocoa. The proposed plant would use natural gas as a primary fuel and low sulfur fuel oil as a back up source. Responsibilities include identification of all permits required to construct and operate the facility, preparation of permit applications, respond to agency questions, and negotiate permit conditions. Responsibilities also included conduct of site planning activities, civil design, water/wastewater alternatives analysis, and implementation of public involvement activities.

Siting Study for a Combined-Cycle Power Plant for Seminole Electric Cooperative Incorporated ▶ Land Use Discipline Manager for project siting a 660-MW combined-cycle power plant in a 47-county study area. Responsibilities included the identification, evaluation, and rating of socioeconomic and land use compatibility factors, including land utilization, ownership and productivity, regional and local economics, community impact, prime and unique farmlands, and archaeological and historical resources.

Power Plant SCA for Seminole Electric Cooperative Incorporated ▶ Land Use/Socioeconomic Discipline Manager responsible for management and preparation of socioeconomic baseline and impact sections of SCA document for a 600-MW coal-fired power plant in a rural, coastal portion of Taylor County, Florida. Major work efforts included population and housing, land use, community facilities, transportation, economic, aesthetic, and cultural resource analyses. Analysis of a rail spur to the plant site was also conducted.

Coal-Fired Power Plant SCA for Florida Crushed Stone Company ▶ Land Use Discipline Manager for project consisting of the relocation of a 125-MW coal-fired power plant to a limestone mine in central Hernando County, Florida. Services involved providing expert

testimony on land use compatibility and comprehensive plan and zoning conformance during the certification hearing required under the Florida Electrical Power Plant Siting Act.

Grand Bahamas Island Power Plant Licensing Fatal Flaw Analysis for Mid-South Utilities (MSU) System Services, Inc. ▶ Land Use Discipline Manager for proposed construction of two 800-MW coal-fired power plants on one of three sites in the vicinity of Freeport Harbor, Grand Bahamas Island. A fatal flaw analysis was conducted to determine whether the proposed project would be licensable under Commonwealth Regulations and United States NEPA standards. Major socioeconomic/land use topics included land use compatibility with adjacent development, the potential conflicts with the air space of Freeport International Airport, and the ability of the island's utilities and public services to accommodate construction and operation work forces.

Combined-Cycle Power Plant Site Selection Study for Tampa Electric Company ▶ Land Use Discipline Manager for a site selection study performed over a six-county study area to locate 440 MW (two 220-MW units) of combined-cycle capacity. The process consisted of three phases to select recommended sites. Land use factors evaluated included population densities, land use patterns, visibility, special resource (or regulated) areas, and archaeological/historical resources.

Lauderdale Repowering Project for Florida Power & Light Company ▶ Land Use Discipline Manager for project consisting of replacing existing steam generators with combustion turbines (CTs) and heat recovery steam generators (HRSGs). Responsibilities included preparing baseline, construction, and operation impact sections concerning governmental jurisdiction, land use and zoning, transportation, population, landmarks, and archaeological and historic sites. Responsibilities also included determining the direct and indirect economic affects of construction and operation on Broward County and the region.

Alternative Site Evaluation for Potomac Electric Power Company ▶ Land Use Discipline Manager for project evaluating four sites for construction of a midsize coal-fired power plant. Responsibilities included preparation of land use, air transportation, aesthetics, archaeological/historical baseline and impact analyses sections, and comparative analyses to assist in site selection.

Site EA for Atlantic City Electric Company ▶ Land Use Discipline Manager responsible for baseline development and impact analysis of land use and zoning, regional and local community facilities and services, visual quality, recreation, and archaeological/historical resources for construction and operation of a 290-MW coal-fired generating station. Special emphasis was placed on aesthetic impacts by using visual resource management methodologies and key view simulation techniques. A door-to-door survey was used to identify significance of visual impact of a 290-MW plant in southern New Jersey. Responsibilities also included obtaining and supervising a cultural resource subcontractor. The resultant site survey provided background data for the power plant site EA.

Site Certification Applications for Florida Power Corporation ▶ Land Use Planner responsible for preparing socioeconomic inventory and impact analysis for power plant SCAs in Gulf and Osceola Counties, Florida. Assessment included impacts on land use and zoning, transportation, housing, labor/employment, recreation, and public services and finances. For the Gulf County site, special emphasis was placed on the ranking of more than 280 miles of 230-kV transmission corridor alternatives in 10 panhandle counties. For the Osceola County site,

special emphasis was placed on the recreational demand on Lake Kissimmee. To identify existing and projected recreational use of the lake, a systematic survey was undertaken of public and private marinas, camps, and Kissimmee State Park. User origin, seasonal frequency, and facilities used were identified. Statistical analysis was performed to determine lake-wide use as a recreational resource in comparison to other lakes.

Compressed Air Energy Storage System Environmental Analysis for Soyland Power Cooperative, Inc. ▶ Land Use Discipline Manager of an environmental analysis conducted for a compressed air energy storage peak generating system in western Illinois. Analysis included baseline descriptions and impact assessments on socioeconomic variables, including land use and zoning, demographics and housing, community services and facilities, transportation, local and regional economies, and archaeological and historical resources. Special emphasis was placed on two issues: agriculture as it relates to prime and unique farmland; and water transport activity on the Illinois and Mississippi Rivers.

Coal-Fired Power Plant (3,200 MW) Site Selection Study in West-Central Florida for Tampa Electric Company ▶ Land Use Planner responsible for identification, evaluation, and rating of socioeconomic and land use compatibility factors, including land utilization, zoning compatibility, ownership, agricultural productivity, regional and local economics, community facility impact, prime and unique farmlands, and archaeological/historical resources.

Combined -Cycle Power Plant Permit Feasibility Strategy for Southern Energy Task Manager responsible for identifying environmental permits and land use approvals for a 100+ MW natural gas-fired cogeneration plant to be constructed at an existing pulp and paper mill.

Environmental Permitting Strategy for a 225 MW Combined Cycle Facility for AES, Inc. Project Manager responsible for determining permitting requirements, schedule, and cost for "behind the fence" combined cycle power plant to be colocated with a large regional phosphate mine, beneficiation, and chemical plant in west-central Florida.

Environmental Certification for Simple Cycle Power Plant in Santo Domingo, Dominican Republic for AES, Inc. Project Manager responsible for obtaining third party certification of environmental aspects of operating power plant. Certification was used to finance acquisition of facility.

Site Selection and Permitting Feasibility Investigations for the Southeast US for Progress Energy, Inc. Project Manager responsible for identifying sites for potential simple and/or combined cycle power plant throughout the southeast US. Specific multiple site evaluations were conducted in Texas, Mississippi, Tennessee, Alabama, Georgia, Florida, and North Carolina.

Comparative Evaluation of Two Power Plant Sites for Obtaining Air Resource Permits in Georgia for Progress Energy, Inc. Project Manager responsible for directing an evaluation of the ability to obtain Prevention of Significant Deterioration Permits for a Simple Cycle natural gas-fired power plant in central Georgia. Sites were located outside of and either east or west of the Atlanta regional nonattainment zone.

Environmental Permit Inventory and Alternative Site Evaluations in Alabama for Kenetech Project Manager responsible for developing a list of environmental permits and land use approvals to construct and operate a combined cycle power plant in east-central Alabama. Alternative sites were reviewed in order to determine suitability of the sites for permitting.

Environmental Permitting Feasibility for Cogeneration Plant Development for Air Products, Inc. Project Manager responsible for evaluating permit feasibility associated with three levels of thermal power plant development, 250, 400 and 500 MW of generating capacity. Primary issues included make-up water supply alternatives and industrial wastewater disposal.

PROJECT EXPERIENCE-TRANSMISSION LINES

Hardee Power Station Site Certification, TECO Power Services and Seminole Electric Cooperative ▶ Task manager responsible for conducting third party review of all socioeconomic and land use sections of the Hardee Power Station (HPS) application, including the proposed power plant site and three 230-kV transmission line corridors traversing approximately 102 miles.

Project responsibilities also included research on portions of the transmission line corridor routes that received scrutiny from public and parties intervening in the certification hearing. Research was conducted on the following segments:

HPS to Pebbledale Substation- Polk County,
HPS to Vandola Substation- Hardee County, and
HPS to Lee Substation- Lee County.

Research was used for expert testimony presentation and post-certification project activity.

Transmission Line Environmental Review, Florida Power Corporation ▶ Florida Project Manager/Expert Witness for an environmental review of a proposed 230-kV transmission line to be collocated with existing transmission in the City of Oldsmar, Pinellas County, Florida. The evaluation focused on land use compatibility issues and collocation aspects of transmission line siting. Results of the study included the reasonableness of the proposed project's location given social, water resource, and ecological siting opportunities and constraints. Findings were presented during expert witness testimony in circuit court.

Transmission Line Post-Certification Compliance for Florida Power and Light (FPL) ▶ Project Manager responsible for the coordination and conduct of a systematic archaeological survey of portions of the proposed right-of-way from Duval Substation in Duval County to Poinsett Substation in Orange County. During the site selection study, the Florida Department of State, Division of Historical Resources identified archaeologically sensitive areas requiring a pedestrian survey with subsurface testing. The surveys were conducted after a specific right-of-way was selected by FPL. A number of sites were discovered, documented, and reported to the state, which concurred with the findings of the study.

Transmission Line Siting and EA for Turkish Electric Authority (TEK) ▶ Project Manager of proposed 380-kV transmission line from Ataturk Dam in eastern Turkey to Istanbul, a distance of 1,300 kilometers (km) (approximately 800 miles). Responsibilities included reviewing the alignment of the eastern two-thirds of the project to determine sensitive environmental areas and to provide guidance in determining the scope for an EA per World Bank guidelines entitled Operation Directive 4.00, Annex A: Environmental Assessment. The western one-third of the route was reviewed to determine sensitive areas and to guide TEK in developing an environmentally sensitive site selection methodology. Seminars and training sessions were conducted to develop TEK capabilities for siting major transmission lines and preparing EAs. A follow-up field trip was conducted to review the draft EA and assist in the development of mitigation and monitoring programs for the proposed project.

Transmission System Expansion Environmental Review, Cukurova Electric, Adana, Turkey ▶ Project Manager for an evaluation of transmission system improvements proposed by Cukurova to meet year 2000 system needs in their service area. The transmission system expansion consists of constructing over 700 km of 154-kV transmission lines, five new substations, and expansion of eight existing substations. A dispatch center was proposed to replace an existing facility which is at capacity and antiquated. Project efforts consisted of reviewing the proposed system expansion plan and preparing a scope of work to conduct a comprehensive environmental assessment consistent with World Bank Environmental Assessment Guidelines.

Liquid Fuel Pipeline Corridor for Tampa Electric Company (TECO) Power Services ▶ Project Manager of study involving the siting and licensing of a liquid-fuel pipeline corridor from Port Manatee (Manatee County) to the TECO Power Services Hardee Power Station, a distance of approximately 43 miles. A three-stage methodology was developed and implemented to define a preferred and alternative corridor for the 8-inch liquid-fuel pipeline. Natural resource and socioeconomic/land use criteria were developed to enable the multidisciplinary siting team to avoid sensitive resources. Once the two corridors were identified, the lineal facilities section of the Florida Electrical Power Plant Siting Act Site Certification Application (SCA) was prepared. Land use factors evaluated include the proposed project's compatibility with existing land use, its consistency with local zoning ordinances, and its compliance with applicable land use plans. In addition to the liquid-fuel- pipeline corridor project, a review of the land use and economic section of the SCA was conducted for the 295-megawatt (MW) combined-cycle power plant, a 49-mile natural gas pipeline, and three 230-kilovolt (kV) transmission lines (16, 8, and 78 miles).

230-kV Transmission Line Siting and Certification for Florida Power Corporation ▶ Land use task manager/Assistant project manager for the siting and environmental certification of a 230-kV transmission line to be constructed from the FPC's DeBary power plant to the Winter Springs substation. The project was colocated with existing linear facilities to the maximum extent practical and traversed urban and suburban portions of Volusia and Seminole County, five incorporated municipalities and the St. Johns River. A public participation plan was instituted to obtain local input and disseminate information. Expert witness testimony was provided in the areas of land use compatibility, consistency and compliance with comprehensive plans and land development regulations, and impacts to recreation and cultural resources.

Transmission System Expansion Environmental Review, Mid-80's Project, Florida Power Corporation (FPC) ▶ Task manager responsible for conducting land use inventory and compatibility analysis for transmission system improvements to an existing transmission line network in northwest Florida. Existing 69-kV to 230-kV transmission lines which extended approximately 142 miles and located through several counties were evaluated to determine feasibility of upgrading/double-circuiting to 230-kV. Numerous federal and state lands were factored into the evaluation.

Florida-Georgia 500-kV Transmission Line Siting Study, Florida Power Corporation (FPC) ▶ Provided land use/public workshop technical support for the siting of a 500-kV transmission line from the Florida-Georgia state border south to central Florida. The study area consisted of 9,000 square miles over 19 counties. A multiple phase siting study was undertaken to identify preferred and alternate corridors. Public involvement was obtained by conducting twenty "open houses" during the site selection process.

San Pedro de Macoris- Hainamosa Transmission Line Environmental Impact Assessment, The World Bank Project Manager responsible for preparing a World Bank Environmental Impact Assessment for a 78 km 138 kV transmission line and substation site. The proposed project and alternatives were evaluated for impacts to the physical, biological and social environmental

components. Major issues included the transmission line's proximity to sensitive coastal/marine wetlands and the need to conduct micro-routing of the transmission line alignment to avoid residential resettlement.

Griffin Road Transmission line and Substation Wetlands and Threatened and Endangered Species Surveys, Florida Power Corporation Project Manager responsible for determining federal and state wetland jurisdiction for a substation site and an approximate four mile long segment of an existing transmission line that was proposed for upgrading. A threatened and endangered species survey was also conducted for flora and fauna within and adjacent to the project site.

Carrabelle Transmission Line and Indian Pass Substation Wetlands and Threatened and Endangered Species Surveys, Florida Power Corporation Project Manager responsible for determining federal and state wetland jurisdiction for a substation site at Indian Pass and an approximate 13 mile long segment of new transmission line right-of-way. A threatened and endangered species survey was also conducted for flora and fauna within and adjacent to the project site.

Private Electrical Power Transmission Line Permit Plan, Confidential Client Project Manager responsible for determining environmental and land use permits and approvals for a private power transmission line originating at a proposed substation and ending at an existing industrial complex in west-central Florida.

PROJECT EXPERIENCE- HIGHWAYS

Environmental Assessments for Highway Improvements, Florida Department of Transportation ▶ Land Use Discipline Manager for determining land use and socioeconomic impacts of several highway widening or relocation projects in Florida. These projects included:

- State Road (SR) 50 in Hernando County,
- SR 54 in Pasco County,
- Interstate 275 in Pinellas County,
- Cortez Road in Manatee County,
- Roosevelt Bridge in Martin County, and
- U.S. Highway 1 in Broward and Dade Counties.

Areas of technical evaluation and analysis included community services, community cohesion, consistency with applicable sections of the Civil Rights Act, land use, utilities and railroads, relocation, cultural and historical resources, Section 4(f) lands, pedestrian and vehicle facilities, visual impacts, contamination impacts, wild and scenic rivers, farmlands, and energy.

I-95 Interchange EIS for the Florida Department of Transportation (FDOT) ▶ Land Use Discipline Manager of EIS prepared for three Interstate I-95 interchanges in Broward County as part of the overall I-95 widening project. Project responsibilities included preparing land use and socioeconomic sections of the EIS for the Hollywood Boulevard, Pembroke Road, and Hallandale Beach Boulevard interchanges. Land acquisition and relocation of residential land use and commercial businesses were addressed for each interchange.

U.S. Highway 1 EA for FDOT ▶ Land Use Discipline Manager for an EA prepared for US 1 (Federal Highway from Hallandale Beach Boulevard in Broward County to Miami Gardens Drive in Dade County). Land use socioeconomic sections of the EA were prepared to address impacts to utilities and relocation of businesses and dwellings as a result of the highway widening project.

PROJECT EXPERIENCE- AIRPORTS

Airport Land Use Plans for FAA ► Land Use Discipline Manager for general aviation airports in Florida (Winter Haven, Vero Beach, Venice, and Lake City) and the Tooele Valley Airport in Utah. Plan development goals consisted of maximizing the potential revenues from on-airport land development, buffering on-airport activities from off-airport land uses, and evaluating both on-airport and off-airport land uses with federal airport noise control/land use compatibility (ANCLUC) guidelines.

Airport Noise/Land Use Compatibility Planning for FAA ► Assistant Manager of FAA Part 150 studies conducted for four New England airports (Portland Jetport, Burlington International, Westfield-Barnes, and Martha's Vineyard), as well as Salt Lake City International Airport in Utah and Bishop International Airport in Flint, Michigan. For each project, noise monitoring and modeling tasks resulted in the establishment of noise contours. A detailed land use inventory was undertaken to quantify land use impacts by noise contour and political jurisdiction. Land use trends were determined and compatibility analyses conducted according to the FAA's land use compatibility guidelines. After noise abatement alternatives were determined, land use impacts were recalculated and land use strategies developed. Recommendations were presented to technical advisory committees, airport authorities, and affected city councils for review and approval.

Environmental Assessment for Airport Improvements, Chattanooga Airport Authority ► Land Use Discipline Manager for determining environmental impacts associated with airport improvements at Chattanooga Airport. Proposed improvements included runway expansion, passenger terminal relocation, and other airport support facilities. Residential and commercial relocations would be required to accommodate the improvements, and approach and departure noise impacts were evaluated to determine land use impacts to surrounding neighborhoods.

Fort Lauderdale-Hollywood International Airport ADA/DRI for the Broward County Aviation Authority ► Land Use Planner responsible for preparation of major sections of the application, including energy analysis, all public facility impacts (water, wastewater, solid waste, police, fire, recreation, and health care), and ANCLUC guidelines.

Spacecraft Integration and Test Facility ADA/DRI for Hughes Aircraft ► Land Use Discipline Manager responsible for assisting an architecture and engineering firm with limited site planning for a tract of land in Brevard County and the preparation of ADA responses to land use, public facilities (water, wastewater, solid waste, police, fire, health, and recreation), archaeological/historical sites, and economy sections.

PROJECT EXPERIENCE-GOVERNMENT

Benefit Cost Analysis for Green Swamp for SWFWMD ▶ Land Use Discipline Manager responsible for mapping existing land use in Green Swamp and the downstream reaches of the Hillsborough and Withlacoochee Rivers (portions of Hillsborough, Pasco, Hernando, Sumter, Lake, and Polk Counties) as part of a cost-benefit study for flood prevention alternatives. Historical development and ownership patterns were determined to project future development scenarios in the project area for a 50-year period. Flood damages were subsequently identified for six flood events and five flood-prevention alternatives.

Myakka Wild and Scenic River Management Plan for FDNR ▶ Project Manager of a resource management plan for a 43-mile segment of the Myakka River designated as a Florida Wild and Scenic River. The plan was developed with the assistance of the Myakka River Management Coordinating Council, a 29-member advisory board comprised of state, regional, and local governmental officials and staff, landowners, and environmental group representatives. The plan presented principles, objectives, and actions to guide in the management of the river and watershed's aquatic, terrestrial, geologic, economic, scenic, recreational, and cultural resources.

Hazardous Waste Management Plans for the Tampa Bay Regional Planning Council (TBRPC) ▶ Task Manager for project preparing hazardous waste management plans for the Tampa bay region and Hillsborough, Manatee, Pasco, and Pinellas Counties. Individual tasks included preparing and conducting a survey of potential small-quantity hazardous waste generators in the region (14,000 surveys were distributed); analyzing the results to determine generation characteristics, on-site storage conditions, and disposal practices; inventorying unlicensed, abandoned, closed, and active landfills; and selecting multiple sites in each county for a short-term hazardous waste storage/transfer facility. Criteria used to evaluate the sites included existing and future land use compatibility and conformance to local government comprehensive plans. The highest-ranked sites were presented to each county's board of county commissioners for review and approval.

Hazardous Waste Transfer Facility Site Selection Studies for the West Florida Regional Planning Council ▶ Task Manager of site selection studies for locating hazardous waste transfer facilities in seven northwest Florida counties (Escambia, Santa Rosa, Okaloosa, Walton, Bay, Holmes, and Washington). The siting study consisted of a three-stage, multidisciplinary examination and evaluation of up to 45 areas within each county. Project activities also consisted of obtaining approval from each county's board of county commissioners and reviewing transfer facility sites selected by each county commission to designate one or more sites for a regional (multicounty) facility.

Dredged Material Disposal Siting Study for the Jacksonville Port Authority ▶ Land Use Discipline Manager for the socioeconomic/land use section of a dredged materials upland disposal site study for a study area of 1-mile radius from the St. Johns River ship channel midline. Displacement of land uses and public utilities, land use compatibility, development trends, and conformance with city/county comprehensive plans were analyzed to exclude areas not compatible with disposal of dredged materials.

Halifax Harbor Marina ADA/DRI for the City of Daytona Beach, Florida ▶ Subproject Manager responsible for preparation of major sections of the application, including land use

compatibility, energy, public facilities, housing, floodplain issues, archaeological/historical resources, and marina-oriented ADA input.

Oakland Park Post Office Site Planning Report EA for the U.S. Postal Service Field Real Estate and Buildings Office ▶ Project Manager responsible for preparing an EA of a proposed postal facility in the City of Oakland Park, Broward County, Florida. The project's impacts on natural and socioeconomic resources were determined to assist in site planning and design activities. Major issues that were addressed include noise impacts from truck traffic on nearby residential areas, land use compatibility, traffic ingress and egress to the site, and vehicular and pedestrian safety associated with a nearby railroad crossing.

PROJECT EXPERIENCE- LAND DEVELOPMENT PERMITTING

Land Development and Environmental Planning Feasibility and Permitting for Paragon Group ▶ Project Manager of preliminary analysis of 14 sites throughout Tampa Bay, Fort Myers, Fort Lauderdale, and Orlando. Technical assistance provided included wetland delineation and agency jurisdiction determination; land use and zoning requirements; conceptual site planning; permit feasibility determination; dredge and fill permitting; wetlands mitigation; and submerged lands leasing. Approvals for most of the multifamily residential, office, or retail commercial projects required presentations to county commissions, city councils, or other boards/committees.

World Mart Center-Gateway Tampa, Application for Development Approval/DRI (ADA/DRI) for Gateway Tampa Development Corporation ▶ Project Manager responsible for the preparation of all environmental documentation for a proposed 3,000,000-square-foot (ft^2), high-rise, mixed-use development on 11.0 acres adjacent to the Hillsborough River in downtown Tampa. Major issues consisted of development intensity, setbacks from the river, view preservation, street traffic congestion, mass transit provisions, water and air quality, historical and archaeological resources, and endangered marine faunal species. The DRI application was submitted to regulatory agencies within 90 days of project initiation. The project was approved by the City of Tampa under a new zoning district (Tampa Quality Development) specifically created to accommodate the project's development program.

Southland Executive Park ADA/DRI for Southland Associates ▶ Land Use Discipline Manager responsible for land use, floodplain, archaeological/historical resources, economy, public facilities, and office parks sections of ADA for a mixed-use development proposed for 92 acres in Orange County, Florida. The analysis of fiscal impacts was determined by utilizing the University of Florida's Fiscal Impact Model.

Land Use Plan Amendment ▶ Tampa Technology Park for Trout Creek Associates ▶ Land Use Discipline Manager of a land use plan amendment application prepared for Tampa Technology Park, a proposed mixed-use development consisting of 13.8 million ft^2 of offices, warehouse, and retail commercial space; and 3,900 dwelling units on 3,830 acres in Hillsborough County. Primary areas of investigation include the determination of land use compatibility with adjacent existing and proposed uses and justifying market demand for the development components.

SELECTED PUBLICATIONS

Public Involvement: A Critical Component for Gaining Power Project Approvals (with Kenda Polio-Hein), Power Gen 96 International Conference and Exhibition, December, 1996

Local Government Role in Power Plant Permitting, Power Gen International Conference and Exhibition, December, 1995

Utilization of Environmental Data in Phosphate Mine Planning and Environmental Impact Assessment, International Fertilizer Development Center International Training Workshop, October, 1993