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J.R. Kelly
Public Counsel

July 8, 2010

Ann Cole
Commission Clerk and
Administrative Services
Room 100, Easley Building
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

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COMMISSION
CLERK

Re: Docket No. 100009-EI

Dear Ms. Cole:

Enclosed for filing, on behalf of the Citizens of the State of Florida, are the original and 15 copies of the public version of the Direct Testimony of William R. Jacobs, Jr., Ph.D.

Please indicate the time and date of receipt on the enclosed duplicate of this letter and return it to our office.

Yours truly,

Joseph A. McGlothlin
Joseph A. McGlothlin
Associate Public Counsel

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FPSC-COMMISSION CLERK

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Nuclear Cost Recovery Clause.

DOCKETNO. 100009-EI

Filed: July 8, 2010

DIRECT TESTIMONY

AND

EXHIBIT OF

WILLIAM R. JACOBS, JR., Ph.D.

On Behalf of the Citizens of the State of Florida

PUBLIC VERSION

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Attorney for the Citizens
Of the State of Florida

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RESUME OF WILLIAM R. JACOBS, JR.....	WRJ(FPL)-1
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1 DIRECT TESTIMONY

2 OF

3 William R. Jacobs, Jr. Ph.D.

4 On Behalf of the Office of Public Counsel

5 Before the

6 Florida Public Service Commission

7 Docket No. 100009-EI

8
9 **I. Introduction**

10 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

11 A. My name is William R. Jacobs, Jr., Ph.D. I am a Vice President of GDS
12 Associates, Inc. My business address is 1850 Parkway Place, Suite 800,
13 Marietta, Georgia, 30067.

14
15 **Q. DR. JACOBS, PLEASE SUMMARIZE YOUR EDUCATIONAL
16 BACKGROUND AND EXPERIENCE.**

17 A. I received a Bachelor of Mechanical Engineering in 1968, a Master of Science
18 in Nuclear Engineering in 1969 and a Ph.D. in Nuclear Engineering in 1971,
19 all from the Georgia Institute of Technology. I am a registered professional
20 engineer and a member of the American Nuclear Society. I have more than
21 thirty years of experience in the electric power industry including more than
22 twelve years of power plant construction and start-up experience. I have
23 participated in the construction and start-up of seven power plants in this

1 country and overseas in management positions including start-up manager and
2 site manager. As a loaned employee at the Institute of Nuclear Power
3 Operations (“INPO”), I participated in the Construction Project Evaluation
4 Program, performed operating plant evaluations and assisted in development
5 of the Outage Management Evaluation Program. Since joining GDS
6 Associates, Inc. in 1986, I have participated in rate case and litigation support
7 activities related to power plant construction, operation and decommissioning.
8 I have evaluated nuclear power plant outages at numerous nuclear plants
9 throughout the United States. I am currently on the management committee
10 of Plum Point Unit 1, a 650 MWe coal fired power plant under construction
11 near Osceola, Arkansas. As a member of the management committee, I assist
12 in providing oversight of the EPC contractor for this project. My resume is
13 included as Exhibit WRJ-1.

14

15 **Q. WHAT IS THE NATURE OF YOUR BUSINESS?**

16 A. GDS Associates, Inc. (“GDS”) is an engineering and consulting firm with
17 offices in Marietta, Georgia; Austin, Texas; Corpus Christi, Texas;
18 Manchester, New Hampshire; Madison, Wisconsin, Manchester, Maine; and
19 Auburn, Alabama. GDS provides a variety of services to the electric utility
20 industry including power supply planning, generation support services, rates
21 and regulatory consulting, financial analysis, load forecasting and statistical
22 services. Generation support services provided by GDS include fossil and
23 nuclear plant monitoring, plant ownership feasibility studies, plant

1 management audits, production cost modeling and expert testimony on
2 matters relating to plant management, construction, licensing and performance
3 issues in technical litigation and regulatory proceedings.
4

5 **Q. WHOM ARE YOU REPRESENTING IN THIS PROCEEDING?**

6 A. I am representing the Florida Office of Public Counsel.
7

8 **Q. WHAT WAS YOUR ASSIGNMENT IN THIS PROCEEDING?**

9 A. I was asked to assist the Florida Office of Public Counsel to conduct a review
10 and evaluation of requests by Florida Power and Light (FPL) for authority to
11 collect historical and projected costs associated with extended power uprate
12 (“EPU”) projects being pursued at Turkey Point Units 3 and 4 and St. Lucie
13 Units 1 and 2 and historical and projected costs associated with FPL’s Turkey
14 Point Units 6 and 7 through the capacity cost recovery clause.
15

16 **Q. WERE YOU ASSISTED BY OTHER GDS PERSONNEL IN THIS**
17 **EFFORT?**

18 A. Yes, I was. The GDS team involved in the review and evaluation of the
19 requests for authorization to recover costs consisted of me, Mr. James P.
20 McGaughy, Jr., a former nuclear utility executive with over 37 years of
21 experience, and Mr. Cary Cook, a Certified Public Account with extensive
22 experience in utility regulation. The resumes of Mr. McGaughy and Mr.

1 Cook are attached to my testimony related to Progress Energy Florida filed in
2 this docket.

3

4 **II. Summary of Requests for Authorization to Collect Costs**

5 **Q. PLEASE SUMMARIZE FPL'S REQUEST FOR COST RECOVERY IN**
6 **THIS DOCKET UNDER THE NUCLEAR COST RECOVERY**
7 **CLAUSE.**

8 A. FPL is requesting to recover a net amount of \$28,754,660 in 2011.

9

10 **III. Methodology**

11 **Q. PLEASE DESCRIBE THE METHODOLOGY THAT YOU USED TO**
12 **REVIEW AND EVALUATE THE REQUESTS FOR**
13 **AUTHORIZATION TO COLLECT COSTS SUBMITTED BY FPL**
14 **UNDER THE NUCLEAR COST RECOVERY CLAUSE.**

15 A. I first reviewed the Company's filings in this docket and issued numerous
16 interrogatories and requests for production of documents. To evaluate the
17 issues related to project schedule, cost and risk management, I reviewed many
18 internal documents, status reports and correspondence with regulatory
19 authorities.

20

21 **IV. Issues and Concerns**

22 **Q. HAVE YOU IDENTIFIED CONCERNS WITH FPL'S FILING?**

1 A. Yes. I have identified one concern with FPL's filing. This concern deals with
2 the large increase in estimated cost for the extended power uprate (EPU)
3 projects for the Turkey Point and St. Lucie plants.

4

5 **Q. PLEASE BRIEFLY DESCRIBE FPL'S EXTENDED POWER UPRATE**
6 **(EPU) PROJECT.**

7 A. The NRC website defines three types of uprate projects

8 1. Measurement Uncertainty (MU)-This generally involves improved
9 instrumentation to reduce uncertainty and typically amounts to about a 1%
10 power increase without any mechanical plant changes.

11 2. Stretch (S)-This type of uprate keeps existing plant equipment, but
12 reevaluates its capabilities to "stretch" the output using built in margins to
13 improve the results of the previous safety analysis. Stretch uprates
14 typically provide a power increase of about 5%. St. Lucie 1&2 completed
15 stretch uprates in 1981 and 1985, and Turkey Point 3&4 completed stretch
16 uprates in 1996.

17 3. Extended power uprates (EPU) have gone as high as increases of 20% in
18 boiling water reactors (BWR), and are typically around 10% in
19 pressurized water reactors (PWR) as in the FPL units. An extended uprate
20 typically will require changing out pumps, motors, piping, turbines and
21 generators in the secondary steam side of the plant, and perhaps changes
22 to the reactor and reactor safety systems, also.

1 All of these uprates require the preparation of a License Amendment Request
2 (LAR) for submittal to the NRC. Review by the NRC can take a year or
3 more, depending on the complexity of the uprate.

4 FPL is planning an EPU for its four nuclear units, and hopes to increase
5 output anywhere from 399 MWe to 463 MWe (13% to 15%).

6

7 **Q. WHAT IS THE CURRENT ESTIMATED COST OF THIS PROJECT?**

8 A. FPL does not have a detailed cost estimate for its EPU projects. FPL witness
9 Jones states on page 6 of his May 3, 2010, testimony that "...FPL has updated
10 its nonbinding cost estimate to a forecast range of approximately \$2,050
11 million to \$2,300 million..."

12

13 **Q. WHAT WAS THE ESTIMATED COST OF THE PROJECT IN THE**
14 **2009 NCRC PROCEEDING?**

15 A. On schedule TOR-7 of the May 1, 2009, filing, the estimated cost is listed as
16 \$1.798 billion.

17

18 **Q. SO THE ESTIMATED COST OF THE EPU PROJECTS HAS**
19 **INCREASED APPROXIMATELY \$500 MILLION SINCE LAST**
20 **YEAR, BASED ON THE TOP OF THE ESTIMATED RANGE?**

21 A. Yes. The estimated top of the range has increased \$502 million since last
22 year's estimate.

1 **Q. HOW DOES THIS COST COMPARE TO THE COST FOR**
2 **PROGRESS ENERGY'S EPU PROJECT ON CRYSTAL RIVER UNIT**
3 **3?**

4 A. Based on the current cost estimate of \$2.3 billion (high end of estimate) for
5 399 MWe (low range of estimate), the cost of FPL's EPU project is \$5,764
6 per Kw. This is very expensive capacity. By comparison, PEF's CR3 EPU
7 project is estimated to cost only\$2,663 per Kw.

8

9 **Q. IS FPL CONFIDENT IN THE CURRENT COST ESTIMATE?**

10 A. No, FPL is not. FPL has hired High Bridge Associates to provide an
11 independent estimate of the cost of the Turkey Point 3 EPU project.

12

13 **Q. WHO IS HIGH BRIDGE ASSOCIATES?**

14 A. High Bridge Associates is a small project management consulting and service
15 company located in Norcross, Georgia.

16

17 **Q. WHY DID FPL FEEL IT WAS NECESSARY TO HIRE HIGH BRIDGE**
18 **TO PROVIDE AN INDEPENDENT ESTIMATE OF THE TURKEY**
19 **POINT 3 EPU?**

20 A. According to FPL witness Jones, FPL determined that such a bottoms up
21 estimate would serve as a check and negotiating tool in the negotiations with
22 Bechtel, their contractor performing the work. Jones stated that the High
23 Bridge work should also help FPL refine its own estimates.

1 Q. WHAT IS THE RESULT OF HIGH BRIDGE'S INDEPENDENT
2 ESTIMATE?

3 A. The High Bridge estimate is only for Turkey Point Unit 3. It is about

4 ***BEGIN CONFIDENTIAL SECTION*** [REDACTED] ***END

5 CONFIDENTIAL SECTION*** FPL's estimate. The estimate applies to

6 ***BEGIN CONFIDENTIAL SECTION*** [REDACTED]

7 [REDACTED]

8 [REDACTED] ***END CONFIDENTIAL

9 SECTION***

10

11 Q. IF YOU APPLIED THIS ***BEGIN CONFIDENTIAL SECTION***

12 [REDACTED] ***END CONFIDENTIAL

13 SECTION*** TO THE ENTIRE EPU PROJECT, WHAT WOULD BE

14 THE ESTIMATED COST FOR THE ENTIRE PROJECT?

15 A. Mr. Jones has stated that the High Bridge estimate is about a ***BEGIN

16 CONFIDENTIAL SECTION*** [REDACTED] ***END

17 CONFIDENTIAL SECTION*** FPL's estimate for the Turkey Point 3 EPU

18 project. ***BEGIN CONFIDENTIAL SECTION*** [REDACTED]

19 ***END CONFIDENTIAL SECTION*** FPL's \$2.3 billion top of the range

20 estimate for the EPU projects on all four units would ***BEGIN

21 CONFIDENTIAL SECTION*** [REDACTED]

22 [REDACTED] ***END CONFIDENTIAL SECTION***

23

1 **Q. IS FPL's CURRENT METHODOLOGY FOR DETERMINING THE**
2 **ECONOMIC FEASIBILITY OF A PROJECT IN WHICH THE SUNK**
3 **COSTS ARE IGNORED APPROPRIATE FOR A PROJECT WITH**
4 **INCREASING COSTS?**

5 A. No, it is not. Since sunk costs are ignored, the cost to complete a project
6 could remain constant if the estimated cost of the project is increasing at the
7 same rate that funds are expended on the project. Since the estimated cost to
8 complete remains constant, the test would indicate continuing feasibility of
9 the project, even though the estimated total cost is increasing dramatically. In
10 this situation, the Company would be chasing higher and higher project costs,
11 with no determination of the ultimate feasibility or benefit to the ratepayer.
12 Let me provide an example. Assume the estimated total cost of a project is
13 \$2,000 million at the start of a project and, therefore, the cost to complete the
14 project is \$2,000 million. Assume that in the first year the estimated total cost
15 of the project increases to \$2,200 million, and that \$200 million is spent in the
16 first year. The cost to complete at the end of the first year remains \$2,000
17 million. The new total cost estimate is \$2,200 million; however, \$200 million
18 is now sunk costs and is ignored. Assume that this situation continues for four
19 years. The cost to complete would remain \$2,000 million. The total cost
20 estimate would have increased to \$2,800, but \$800 million would be sunk
21 costs and the cost to complete would remain \$2,000 million. However, at a
22 total cost of \$2,800 million, the project may not be economically feasible.
23 This is admittedly an extreme example, but it demonstrates that by ignoring

1 sunk costs when the cost of a project is increasing can lead to continuation of
2 a project that is ultimately not feasible.

3

4 **V. Recommendations**

5 **Q. WHAT IS YOUR RECOMMENDATION?**

6 A. I recommend that in the next NCRC case, the Commission require FPL to
7 provide a final estimated total cost for the EPU project and demonstrate its
8 feasibility given the uncertainty and rapidly increasing costs for the project.
9 One approach would be a breakeven capital cost approach similar to that
10 which the Company uses in the Turkey Point 6 and 7 feasibility analysis. I
11 further recommend that the Commission require the Office of Public Counsel,
12 the Commission Staff, other interested parties and FPL to work together to
13 develop a risk sharing mechanism that allocates risk and cost between the
14 Company and ratepayers in the event the final cost of the EPU project is
15 greater than the final estimate provided by the Company. A risk sharing
16 mechanism would result in the Company having some “skin in the game” and
17 provide motivation to control costs that is now lacking.

18

19 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

20 A. Yes, it does.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and foregoing Direct Testimony and Exhibit of William R. Jacobs, Jr., Ph.D. (Public Version) has been furnished by electronic mail and U.S. Mail on this 8th day of July, 2010, to the following:

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Joseph A. McGlothlin

William R. Jacobs, Jr.
Vice President - Generation Support Services

GDS Associates, Inc.
Page 1 of 7

EDUCATION: Ph.D., Nuclear Engineering, Georgia Tech 1971
MS, Nuclear Engineering, Georgia Tech 1969
BS, Mechanical Engineering, Georgia Tech 1968

ENGINEERING REGISTRATION: Registered Professional Engineer

PROFESSIONAL MEMBERSHIP: American Nuclear Society

EXPERIENCE:

Dr. Jacobs has over thirty-five years of experience in a wide range of activities in the electric power generation industry. He has extensive experience in the construction, startup and operation of nuclear power plants. While at the Institute of Nuclear Power Operation (INPO), Dr. Jacobs assisted in development of INPO's outage management evaluation group. He has provided expert testimony related to nuclear plant operation and outages in Texas, Louisiana, South Carolina, Florida, Wisconsin, Indiana, Georgia and Arizona. He currently provides nuclear plant operational monitoring services for GDS clients. Dr. Jacobs was a witness in nuclear plant certification hearings in Georgia for the Plant Vogtle 3 and 4 project on behalf of the Georgia Public Service Commission and in South Carolina for the V.C. Summer 2 and 3 projects on behalf of the South Carolina Office of Regulatory Staff. His areas of expertise include evaluation of reactor technology, EPC contracting, risk management and mitigation, project cost and schedule. He is assisting the Florida Office of Public Counsel in monitoring the development of four new nuclear units in the State of Florida, Levy County Units 1 and 2 and Turkey Point Units 6 and 7. He has been selected by the Georgia Public Service Commission as the Independent Construction Monitor for Georgia Power Company's new AP1000 nuclear power plants, Plant Vogtle Units 3 and 4. He has assisted the Georgia Public Service Commission staff in development of energy policy issues related to supply-side resources and in evaluation of applications for certification of power generation projects and assists the staff in monitoring the construction of these projects. He has also assisted in providing regulatory oversight related to an electric utility's evaluation of responses to an RFP for a supply-side resource and subsequent negotiations with short-listed bidders. He has provided technical litigation support and expert testimony support in several complex law suits involving power generation facilities. He monitors power plant operations for GDS clients and has provided testimony on power plant operations and decommissioning in several jurisdictions. Dr. Jacobs represents a GDS client on the management committee of a large coal-fired power plant currently under construction. Dr. Jacobs has provided testimony before the Georgia Public Service Commission, the Public Utility Commission of Texas, the North Carolina Utilities Commission, the South Carolina Public Service Commission, the Iowa State Utilities Board, the

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Louisiana Public Service Commission, the Florida Public Service Commission, the Indiana Regulatory Commission, the Wisconsin Public Service Commission, the Arizona Corporation Commission and the FERC.

A list of Dr. Jacobs' testimony is available upon request.

1986-Present GDS Associates, Inc.

As Vice-President, Dr. Jacobs directs GDS' nuclear plant monitoring activities and has assisted clients in evaluation of management and technical issues related to power plant construction, operation and design. He has evaluated and testified on combustion turbine projects in certification hearings and has assisted the Georgia PSC in monitoring the construction of the combustion turbine projects. Dr. Jacobs has evaluated nuclear plant operations and provided testimony in the areas of nuclear plant operation, construction prudence and decommissioning in nine states. He has provided litigation support in complex law suits concerning the construction of nuclear power facilities.

1985-1986 Institute of Nuclear Power Operations (INPO)

Dr. Jacobs performed evaluations of operating nuclear power plants and nuclear power plant construction projects. He developed INPO Performance Objectives and Criteria for the INPO Outage Management Department. Dr. Jacobs performed Outage Management Evaluations at the following nuclear power plants:

- Connecticut Yankee - Connecticut Yankee Atomic Power Co.
- Callaway Unit I - Union Electric Co.
- Surry Unit I - Virginia Power Co.
- Ft. Calhoun - Omaha Public Power District
- Beaver Valley Unit 1 - Duquesne Light Co.

During these outage evaluations, he provided recommendations to senior utility management on techniques to improve outage performance and outage management effectiveness.

1979-1985 Westinghouse Electric Corporation

As site manager at Philippine Nuclear Power Plant Unit No. 1, a 655 MWe PWR located in Bataan, Philippines, Dr. Jacobs was responsible for all site activities

William R. Jacobs, Jr.
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during completion phase of the project. He had overall management responsibility for startup, site engineering, and plant completion departments. He managed workforce of approximately 50 expatriates and 1700 subcontractor personnel. Dr. Jacobs provided day-to-day direction of all site activities to ensure establishment of correct work priorities, prompt resolution of technical problems and on schedule plant completion.

Prior to being site manager, Dr. Jacobs was startup manager responsible for all startup activities including test procedure preparation, test performance and review and acceptance of test results. He established the system turnover program, resulting in a timely turnover of systems for startup testing.

As startup manager at the KRSKO Nuclear Power Plant, a 632 MWE PWR near Krsko, Yugoslavia, Dr. Jacobs' duties included development and review of startup test procedures, planning and coordination of all startup test activities, evaluation of test results and customer assistance with regulatory questions. He had overall responsibility for all startup testing from Hot Functional Testing through full power operation.

1973 - 1979 NUS Corporation

As Startup and Operations and Maintenance Advisor to Korea Electric Company during startup and commercial operation of Ko-Ri Unit 1, a 595 MWE PWR near Pusan, South Korea, Dr. Jacobs advised KEPCO on all phases of startup testing and plant operations and maintenance through the first year of commercial operation. He assisted in establishment of administrative procedures for plant operation.

As Shift Test Director at Crystal River Unit 3, an 825 MWE PWR, Dr. Jacobs directed and performed many systems and integrated plant tests during startup of Crystal River Unit 3. He acted as data analysis engineer and shift test director during core loading, low power physics testing and power escalation program.

As Startup engineer at Kewaunee Nuclear Power Plant and Beaver Valley, Unit 1, Dr. Jacobs developed and performed preoperational tests and surveillance test procedures.

1971 - 1973 Southern Nuclear Engineering, Inc.

Dr. Jacobs performed engineering studies including analysis of the emergency core cooling system for an early PWR, analysis of pressure drop through a

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redesigned reactor core support structure and developed a computer model to determine tritium build up throughout the operating life of a large PWR.

SIGNIFICANT CONSULTING ASSIGNMENTS:

Georgia Public Service Commission – Selected as the Independent Construction Monitor to assist the GPSC staff in monitoring all aspects of the design, licensing and construction of Plant Vogtle Units 3 and 4, two AP1000 nuclear power plants.

Georgia Public Service Commission – Assisted the Georgia Public Service Commission Staff and provided testimony related to the evaluation of Georgia Power Company's request for certification to construct two AP1000 nuclear power plants at the Plant Vogtle site.

South Carolina Office of Regulatory Staff – Assisted the South Carolina Office of Regulatory Staff in evaluation of South Carolina Electric and Gas' request for certification of two AP1000 nuclear power plants at the V.C. Summer site.

Florida Office of Public Counsel – Assists the Florida Office of Public Counsel in monitoring the development of four new nuclear power plants in Florida including providing testimony on the prudence of expenditures.

East Texas Electric Cooperative – Represents ETEC on the management committee of the Plum Point Unit 1 a 650 Mw coal-fired plant under construction in Osceola, Arkansas and represents ETEC on the management committee of the Harrison County Power Project, a 525 Mw combined cycle power plant located near Marshall, Texas.

Arizona Corporation Commission – Evaluated operation of the Palo Verde Nuclear Generating Station during the year 2005. Included evaluation of 11 outages and providing written and oral testimony before the Arizona Corporation Commission.

Citizens Utility Board of Wisconsin – Evaluated Spring 2005 outage at the Kewaunee Nuclear Power Plant and provided direct and surrebuttal testimony before the Wisconsin Public Service Commission.

Georgia Public Service Commission - Assisted the Georgia PSC staff in evaluation of Integrated Resource Plans presented by two investor owned utilities. Review included analysis of purchase power agreements, analysis of supply-side resource mix and review of a proposed green power program.

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State of Hawaii, Department of Business, Economic Development and Tourism – Assisted the State of Hawaii in development and analysis of a Renewable Portfolio Standard to increase the amount of renewable energy resources developed to meet growing electricity demand. Presented the results of this work in testimony before the State of Hawaii, House of Representatives.

Georgia Public Service Commission - Assisted the Georgia PSC staff in providing oversight to the bid evaluation process concerning an electric utility's evaluation of responses to a Request for Proposals for supply-side resources. Projects evaluated include simple cycle combustion turbine projects, combined cycle combustion turbine projects and co-generation projects.

Millstone 3 Nuclear Plant Non-operating Owners – Evaluated the lengthy outage at Millstone 3 and provided analysis of outage schedule and cost on behalf of the non-operating owners of Millstone 3. Direct testimony provided an analysis of additional post-outage O&M costs that would result due to the outage. Rebuttal testimony dealt with analysis of the outage schedule.

H.C. Price Company – Evaluated project management of the Healy Clean Coal Project on behalf of the General Contractor, H.C. Price Company. The Healy Clean Coal Project is a 50 megawatt coal burning power plant funded in part by the DOE to demonstrate advanced clean coal technologies. This project involved analysis of the project schedule and evaluation of the impact of the owner's project management performance on costs incurred by our client.

Steel Dynamics, Inc. – Evaluated a lengthy outage at the D.C. Cook nuclear plant and presented testimony to the Indiana Utility Regulatory Commission in a fuel factor adjustment case Docket No. 38702-FAC40-S1.

Florida Office of Public Counsel - Evaluated lengthy outage at Crystal River Unit 3 Nuclear Plant. Submitted expert testimony to the Florida Public Service Commission in Docket No. 970261-EI.

United States Trade and Development Agency - Assisted the government of the Republic of Mauritius in development of a Request for Proposal for a 30 MW power plant to be built on a Build, Own, Operate (BOO) basis and assisted in evaluation of Bids.

Louisiana Public Service Commission Staff - Evaluated management and operation of the River Bend Nuclear Plant. Submitted expert testimony before the LPSC in Docket No. U-19904.

U.S. Department of Justice - Provided expert testimony concerning the in-service date of the Harris Nuclear Plant on behalf of the Department of Justice U.S. District Court.

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City of Houston - Conducted evaluation of a lengthy NRC required shutdown of the South Texas Project Nuclear Generating Station.

Georgia Public Service Commission Staff - Evaluated and provided testimony on Georgia Power Company's application for certification of the Intercession City Combustion Turbine Project - Docket No. 4895-U.

Seminole Electric Cooperative, Inc. - Evaluated and provided testimony on nuclear decommissioning and fossil plant dismantlement costs - FERC Docket Nos. ER93-465-000, et al.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the Robins Combustion Turbine Project by Georgia Power Company - Docket No. 4311-U.

North Carolina Electric Membership Corporation - Conducted a detailed evaluation of Duke Power Company's plans and cost estimate for replacement of the Catawba Unit 1 Steam Generators.

Georgia Public Service Commission Staff - Evaluated and prepared testimony on application for certification of the McIntosh Combustion Turbine Project by Georgia Power Company and Savannah Electric Power Company - Docket No. 4133-U and 4136-U.

New Jersey Rate Counsel - Review of Public Service Electric & Gas Company nuclear and fossil capital additions in PSE&G general rate case.

Corn Belt Electric Cooperative/Central Iowa Power Electric Cooperative - Directs an operational monitoring program of the Duane Arnold Energy Center (565 Mwe BWR) on behalf of the non-operating owners.

Cities of Calvert and Kosse - Evaluated and submitted testimony of outages of the River Bend Nuclear Station - PUCT Docket No. 10894.

Iowa Office of Consumer Advocate - Evaluated and submitted testimony on the estimated decommissioning costs for the Cooper Nuclear Station - IUB Docket No. RPU-92-2.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Prepared testimony related to Vogtle and Hatch plant decommissioning costs in 1991 Georgia Power rate case - Docket No. 4007-U.

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City of El Paso - Testified before the Public Utility Commission of Texas regarding Palo Verde Unit 3 construction prudence - Docket No. 9945.

City of Houston - Testified before Texas Public Utility Commission regarding South Texas Project nuclear plant outages - Docket No. 9850.

NUCOR Steel Company - Evaluated and submitted testimony on outages of Carolina Power and Light nuclear power facilities - SCPSC Docket No. 90-4-E.

Georgia Public Service Commission/Hicks, Maloof & Campbell - Assisted Georgia Public Service Commission staff and attorneys in many aspects of Georgia Power Company's 1989 rate case including nuclear operation and maintenance costs, nuclear performance incentive plan for Georgia and provided expert testimony on construction prudence of Vogtle Unit 2 and decommissioning costs of Vogtle and Hatch nuclear units - Docket No. 3840-U.

Swidler & Berlin/Niagara Mohawk - Provided technical litigation support to Swidler & Berlin in law suit concerning construction mismanagement of the Nine Mile 2 Nuclear Plant.

Long Island Lighting Company/Shea & Gould - Assisted in preparation of expert testimony on nuclear plant construction.

North Carolina Electric Membership Corporation - Prepared testimony concerning prudence of construction of Carolina Power & Light Company's Shearon Harris Station - NCUC Docket No. E-2, Sub537.

City of Austin, Texas - Prepared estimates of the final cost and schedule of the South Texas Project in support of litigation.

Tex-La Electric Cooperative/Brazos Electric Cooperative - Participated in performance of a construction and operational monitoring program for minority owners of Comanche Peak Nuclear Station.

Tex-La Electric Cooperative/Brazos Electric Cooperative/Texas Municipal Power Authority (Attorneys - Burchette & Associates, Spiegel & McDiarmid, and Fulbright & Jaworski) - Assisted GDS personnel as consulting experts and litigation managers in all aspects of the lawsuit brought by Texas Utilities against the minority owners of Comanche Peak Nuclear Station.