

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for Determination)
of Need of Hines Unit 2 Power)
Plant)
_____)
_____)

DOCKET NO. 001064-EI

Submitted for filing: August 7, 2000

ORIGINAL

TESTIMONY
OF ALAN S. TAYLOR

ON BEHALF OF
FLORIDA POWER CORPORATION

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1 INTRODUCTION AND QUALIFICATIONS

2

3 **Q. Please state your name and business address.**

4 A. My name is Alan S. Taylor. My business address is PHB Hagler Bailly, Inc. (PHB
5 Hagler Bailly), 1881 Ninth Street, Suite 302, Boulder, Colorado 80302. PHB Hagler
6 Bailly has recently signed a definitive agreement to merge with PA Consulting,
7 another global consulting company. The resulting company will be called PA
8 Consulting.

9

10 **Q. On whose behalf are you testifying?**

11 A. I am testifying on behalf of Florida Power Corporation (FPC).

12

13 **Q. Who is your employer and what position do you hold?**

14 A. I am employed by PHB Hagler Bailly as a vice president in our Global Energy
15 Business Sector.

16

17 **Q. Are you sponsoring any exhibits?**

18 A. Yes. My resume is included as Exhibit AST-1.

19

20 **Q. Please summarize your background and experience.**

21 A. I received a Bachelor of Science Degree in Energy Engineering from the
22 Massachusetts Institute of Technology. I received a Masters in Business

1 Administration from the Haas School of Business at the University of California,
2 Berkeley, where I specialized in Finance and graduated Valedictorian.

3
4 I began my career at Baltimore Gas & Electric Company, where I performed
5 efficiency and environmental compliance testing on the utility system's power
6 plants. I subsequently worked for five years as a senior consultant at Energy
7 Management Associates (EMA, now New Energy Associates), training and assisting
8 over two dozen utilities in their use of EMA's operational and strategic planning
9 models, PROMOD III and PROSCREEN II. After that, I worked at Pacific Gas &
10 Electric Company, where I analyzed the utility's proposed demand-side
11 management incentive ratemaking mechanism.

12
13 Since joining PHB Hagler Bailly, I have spent the last eight years specializing in
14 integrated resource planning, competitive bidding analysis, utility industry
15 restructuring, market price forecasting, and asset valuation. I have testified before
16 state commissions in proceedings involving resource solicitations, environmental
17 surcharges, and fuel adjustment clauses.

18
19 My detailed resume is included as Exhibit AST-1.

20

21 **Q. Please comment on any specific experience relating to review of utility power**
22 **solicitations and evaluation of proposals.**

1 A. I have helped develop utility resource requests for proposals (RFPs) in several
2 solicitations over the last six years. In performing these projects, I reviewed dozens
3 of other utility RFPs to understand the industry's standards and best practices in
4 resource acquisition. I have evaluated proposals in numerous solicitations for
5 projects in California, Texas, Florida, Colorado, Minnesota, and Iowa. In several of
6 these solicitations, I assisted in or monitored negotiations with shortlisted bidders.
7

8 **PURPOSE, SUMMARY, AND BACKGROUND OF TESTIMONY**
9

10 **Q. What is the purpose of your direct testimony in this proceeding?**

11 A. FPC proposes to construct a new combined-cycle natural gas power plant (Hines 2)
12 at the Hines Energy Complex in Polk County, adjacent to its existing Hines 1 unit.
13 FPC arrived at this decision after a rigorous process in which FPC issued an RFP
14 and evaluated in considerable detail the economic and other impacts of the proposed
15 alternatives. PHB Hagler Bailly was retained at the start by FPC to provide outside
16 guidance in developing the RFP and overseeing the evaluation of proposals and to
17 provide an independent review of the process for its thoroughness, fairness and
18 openness.
19

20 This testimony presents details of the process by which I (and others at PHB Hagler
21 Bailly under my direct supervision) reviewed FPC's solicitation and evaluation
22 process and FPC's decision to proceed with the development of Hines 2. The

1 testimony also provides the basis for my support of FPC's efforts and ultimate
2 conclusions.

3

4 **Q. Please briefly summarize your testimony.**

5 A. My review concludes that FPC conducted a solicitation process that encouraged
6 prospective bidders to offer proposals and that offered adequate opportunity to
7 compete against the Hines 2 self-build option on both economic and non-price
8 terms. FPC's proposal evaluation process was thorough and utilized appropriate
9 modeling and analytical methods. The decision to formally pursue the Hines 2
10 option is firmly grounded in the economic evaluation of the alternatives as well as
11 their non-price attributes.

12

13 **Q. Please describe any materials you reviewed in preparation for this testimony.**

14 A. I reviewed and helped develop the RFP document. I reviewed the two proposals
15 submitted to FPC. I and/or my staff also carefully reviewed the output from FPC's
16 modeling runs as well as the proforma spreadsheets that utilized the modeling results
17 and other FPC system cost information to derive annual cost projections for each
18 alternative. In addition, I reviewed FPC's findings regarding benefits and
19 disadvantages of non-price factors for each proposed resource. For the purpose of
20 gaining additional background on FPC's planning process, I also reviewed the most
21 recent Ten-Year Site Plan, published in April 2000. For the purpose of
22 understanding Florida's resource selection process requirements, I reviewed the
23 Commission's need determination and bidding rules (25-22.081 and 25-22.082) and

1 the August 18, 1998 transcript of the Commission proceedings concerning a petition
2 by Gulf Power Company for waiver of portions of those rules.

3
4 **Q. Please describe any other steps taken to prepare for this testimony and/or**
5 **FPC's solicitation.**

6 A. Prior to bid opening, the PHB Hagler Bailly project team developed a "response
7 surface" model that mimicked FPC's modeling analysis, thereby allowing for a
8 comparison of the results and verification of the major cost trends found by FPC. A
9 response surface model is a spreadsheet model that approximates the results that are
10 likely to be yielded by a more detailed model. Our response surface model was
11 developed from numerous runs of New Energy Associates'
12 PROSCREEN/PROVIEW model, a utility system simulation model used by FPC in
13 its planning processes. PROVIEW is an optimization module within the
14 PROSCREEN tool set and is commonly used in the industry for generation planning
15 and resource acquisition analysis. The response surface model allowed PHB Hagler
16 Bailly to perform a separate, simplified, parallel analysis and to corroborate the pre-
17 and post-bid-opening modeling results.

18
19 As a further check of FPC's analysis, we reviewed FPC's modeling results to verify
20 that the bidders' proposals had been modeled appropriately and we confirmed the
21 validity of the methodology used to compare bids against one another and against
22 the Hines 2 alternative.

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Attachments to the RFP include (A) Notice of Intent to Bid Form, (B) Proposal Summary Form, (C) Instructions for proposal format, including blank data tables, (D) Data for the Planned Unit at the Hines Energy Complex, and (E) FPC Generation Interconnection Study Data Request Form.

Q. Did the RFP meet the regulatory and planning objectives described above, and did it fulfill the objectives of the Florida Public Service Commission policies?

A. Yes, I believe that the RFP met these objectives. It served to attract competitive bids that offered FPC options with respect to bottom-line cost, pricing structure, capacity, contract duration, resource type, and other factors. I believe that the RFP fulfilled the objectives of the Florida Public Service Commission (FPSC) policies. It clearly included information on FPC’s planned resource addition so that bidders knew the approximate economics of the resource against which they would have to compete.

Q. Was the RFP document suitable for encouraging competitive bids and facilitating submission of the bids in a complete and timely manner?

A. Yes. The RFP was well crafted and was suitable for encouraging and facilitating submission of competitive bids. The RFP was clear in its purpose and specific in its requirements. In addition, it provided prospective bidders with key financial and operating data for FPC’s next planned unit.

1 **Q. Was the solicitation process itself conducted in a manner that encouraged and**
2 **facilitated submission of competitive proposals?**

3 A. Yes. The RFP was issued to approximately 50 potential bidders and was posted on
4 FPC's web site on January 26, 2000. In addition, FPC issued a press release and
5 there were stories on the solicitation in major industry trade publications such as
6 Financial Times Energy's Megawatt Daily (on January 26, 2000) and McGraw-Hill
7 Company's Global Power Report (on February 4, 2000). Prospective bidders were
8 asked — but not required — to submit a Notice of Intent to Bid by February 10,
9 using the form provided in Attachment A of the RFP; thirteen respondents submitted
10 Notices. Bidders were also encouraged to attend the optional pre-bid meeting held
11 February 18 in Tampa. At the meeting, which was attended by several FPC staff, a
12 member of the PSC, and 12 prospective bidders, FPC staff reviewed the purpose and
13 requirements of the RFP and answered questions.

14
15 **Q. Please describe the proposals that were ultimately submitted in response to the**
16 **RFP.**

17 A. The details of the proposals that were submitted are described in my confidential
18 supplemental testimony that is being filed under seal in this proceeding.

19
20 **Q. What steps were taken subsequent to receipt of the proposals to ensure fair**
21 **consideration of the bids?**

22 A. Once FPC had reviewed the bids, FPC contacted each bidder with written requests
23 for clarifications. Also, FPC staff held one-on-one meetings with the bidders in

1 order to fully understand the proposals and to offer the bidders opportunities to
2 clarify and/or revise the proposals and certain important particulars to better address
3 FPC's needs and the requirements of the RFP.

4 5 **PROPOSAL EVALUATION PROCESS**

6
7 **Q. Please describe the methodology by which FPC evaluated the submitted**
8 **proposals.**

9 A. FPC conducted a resource optimization analysis using PROVIEW. This analysis
10 allowed FPC to determine the system costs for various resources or combination of
11 resources over the study period, which extended from 2003 through 2028. Through
12 this optimization process, FPC was able to determine the long-range plan for
13 additional generic resources that would yield the lowest system costs for each
14 proposed resource (and each variant of the proposed resources) offered in the current
15 solicitation.

16
17 The proposed Hines 2 unit was revealed to be the least cost alternative from the
18 PROVIEW analysis. However, instead of ending its analysis, FPC utilized the
19 PROVIEW results only to narrow the field of contending proposals or variants of
20 proposals. In order to provide added validity to the analysis, a more detailed utility-
21 system simulation model, known as PROSYM, was then utilized to evaluate the
22 remaining proposal variants. The PROSYM runs determined total system costs
23 under four unique scenarios.

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In all four scenarios, each proposal or proposal variant was evaluated in the best light in that the optimal long-term generation expansion plan that was developed in the PROVIEW evaluation of that proposal was incorporated into the PROSYM run.

Q. Please describe the PROSYM modeling process and how it was used to evaluate the proposals.

A. Unlike PROVIEW (which uses approximation techniques to simulate monthly utility dispatch results), PROSYM is an hourly production cost model. PROSYM utilizes detailed data on operating characteristics and costs for all power plants in a utility system. Subject to unit operating constraints, it dispatches these units on an hour-by-hour basis, beginning with those resources having the lowest variable costs, until the system demand is met for that hour. Through this simulation, PROSYM is able to determine at what capacity a unit is utilized, for what period of time, and at what cost (i.e., how it would likely be dispatched along with other system resources).

In FPC’s analysis, separate model runs were conducted for the years 2000 through 2010 utilizing each of the four resource options carried into the PROSYM phase. The output of these runs were four 11-year series of unique system-cost figures, which correspond to the mutually exclusive deployment of the four resource options and which represent FPC’s annual variable costs of generating the required amount of electricity.

1 These results were then incorporated into a proforma spreadsheet analysis that
2 determined the anticipated total costs for each resource scenario for each year
3 through 2028.

4
5 **Q. Please describe the proforma analysis and how it was utilized.**

6 A. The variable system costs generated by PROSYM are only a part of the total cost
7 picture. In FPC's proforma analysis, the utility incorporated the PROSYM variable
8 costs into a framework for evaluating the total revenue requirements of each
9 scenario. In the proforma spreadsheets, FPC took the annual system cost data for
10 each resource scenario and added to it the following items:

- 11 (1) Power purchase agreement capacity payments made by FPC to the bidder;
- 12 (2) Non-fuel revenue requirements, including capital expenditures, fixed
13 operating costs, maintenance expenditures, etc. for the Hines 2 unit (applies
14 to the Hines 2 scenario only); plus additional non-fuel revenue requirements
15 for future resources needed to maintain adequate supply for the system
16 (applies to all scenarios);
- 17 (3) Added revenue requirements attributable to the increase in FPC's future cost
18 of capital that results from the imputed debt FPC assumes by entering into a
19 long-term purchase power agreement;
- 20 (4) Capacity credit for the market value of any capacity in excess of FPC's 20%
21 reserve margin criterion.

1 For each resource scenario, these costs and credits were added to the variable system
2 costs from PROSYM to yield total annual revenue requirements for each year
3 through 2028. For purposes of comparison, the present value of these streams of
4 revenue requirements was calculated using a discount rate of 8.62%, equal to FPC's
5 after-tax weighted average costs of capital.
6

7 **Q. Were there any other significant factors that entered into the analysis?**

8 A. Yes. In order to test for the impact of plausible changes in the price and availability
9 of natural gas, FPC conducted three sensitivity analyses on each of the four resource
10 scenarios previously described. These sensitivities included a high-fuel case, a low-
11 fuel case, and a case referred to as "Gulfstream" that represented a scenario in which
12 the proposed Gulfstream gas pipeline is developed.
13

14 **Q. What were the results of the modeling and proforma analysis?**

15 A. The analysis showed that under the base case Hines 2 was the lowest-cost alternative
16 from 2003, the first year the units would come on line, continuously through to the
17 end of the planning period in 2028. Relative to Hines 2, the other proposals were
18 more expensive by at least \$66 million in present value terms over the study period.
19

20 Results from the sensitivity analyses were similar, with Hines 2 clearly the least-cost
21 option. The difference in the present value of total costs between the other proposals
22 and Hines 2 was at least \$69 million in present value terms.
23

1 **Q. Was the modeling and proforma analysis conducted appropriately and in a**
2 **manner that legitimately determined the least-cost resource option?**

3 A. Yes, it was. The methodology employed by FPC to quantify the financial impact of
4 the various resource alternatives captured and correctly modeled the essential factors
5 needed to determine the system-wide cost under each scenario. Further, PHB Hagler
6 Bailly has verified that FPC accurately incorporated into its models the key cost and
7 operating characteristics from the proposals and that the characteristics for Hines 2
8 were both reasonable and consistent with what was contained in Appendix D of the
9 RFP. PHB Hagler Bailly also verified that the proforma accurately and appropriately
10 utilized cost information from the PROSYM model output.

11

12 **Q. Were non-price factors considered in FPC's evaluation of the resource**
13 **alternatives?**

14 A. Yes. In addition to the economic analysis, FPC also conducted a parallel evaluation
15 of non-price attributes of the proposals, including air quality, system resource
16 diversification, start date and duration, and regulatory issues. The findings from this
17 analysis illuminated various benefits and disadvantages of both bidders' proposals
18 relative to Hines 2. These non-price attributes were viewed in conjunction with the
19 quantitative assessment in making a final determination of the preferred resource
20 option. I believe that the weight of these non-price factors further tilted the balance
21 against the proposals, and thus supported development of Hines 2.

22

1 **DECISION/CONCLUSIONS**

2

3 **Q. What decision did FPC make as a result of this analysis?**

4 A. FPC has decided to proceed with its plan to construct the Hines 2 unit.

5

6 **Q. In your view, is this decision supported by the modeling and proforma
7 analysis?**

8 A. Yes, it is.

9

10 **Q. In your view, do FPC's efforts in the solicitation and subsequent modeling and
11 analysis form an adequate basis upon which to make a decision on the next
12 supply-side resource for the FPC system?**

13 A. Yes, they do. FPC made all reasonable efforts to work with the bidders to modify,
14 where necessary, the proposals to better meet FPC's needs. In order to give bidders
15 every benefit, several proposal variations for each bidder were then included in the
16 initial screening, and at least one variation for each bidder was carried into the final
17 detailed analysis. Further, the sensitivity cases that were evaluated appropriately
18 capture the range of gas prices and supply contingencies that FPC could reasonably
19 expect to experience.

20

21 FPC's method of comparing the proposals is sound and appropriately captures the
22 present value of the future cost streams resulting from adoption of the competing
23 proposals.

1

2 **Q. What do you see as some of the benefits of the Hines 2 project?**

3 A. By proceeding with development of Hines 2, FPC will be able to take advantage of
4 an option to purchase the needed turbines at a price negotiated several years ago that
5 is significantly less than what it would cost FPC in today's market. In part, as a
6 result of this option, the costs associated with Hines 2 are less than those that other
7 bidders are able to offer.

8

9 Hines 2 would also be located at an existing power production site — on the same
10 site as the currently operating Hines 1 unit. Therefore, no rezoning or conversion of
11 open space would be needed and the impact of construction and traffic would be
12 relatively minor. Additionally, as opposed to one of the proposals, Hines 2 would be
13 available in time for the 2003/2004 winter peak period, which is when FPC currently
14 forecasts the need for additional capacity. Also, since much of FPC's existing
15 resources are coal or coal-based purchase power contracts, the natural gas-fired
16 Hines 2 unit would represent a diversification of the system-wide resource mix.

17

18 **Q. What are your overall conclusions regarding FPC's solicitation process and**
19 **evaluation of proposals?**

20 A. I believe that FPC conducted a fair solicitation that was clear in its objectives and
21 that encouraged proposals from prospective bidders. FPC also conducted a valid
22 analysis of the submitted bids at an appropriate level of detail, both quantitatively
23 and qualitatively. I concur with FPC's conclusion that development of Hines 2

1 would yield the lowest cost among the available alternatives and that it would best
2 serve the interests of FPC's ratepayers and the public.

3

4 **Q. Does this complete your direct testimony?**

5 A. Yes, it does.

EXHIBIT AST-1: RESUME OF ALAN S. TAYLOR

AREAS OF QUALIFICATION

Competitive bidding resource selection, integrated resource planning, utility restructuring, risk assessment, market analysis and strategic planning

EMPLOYMENT HISTORY

- ◆ Vice President, Global Energy Business Sector, PHB Hagler Bailly, Inc., Boulder, CO, 2000-present
- ◆ Principal, Economics & Analytics Group, PHB Hagler Bailly, Inc., Boulder, CO, 1997-1999
- ◆ Senior Consultant, Law & Economics Group, Hagler Bailly Consulting, Inc., Boulder, CO, 1995-1997
- ◆ Senior Associate, Utility Services Group, RCG/Hagler Bailly, Inc., Boulder, CO, 1991-1995
- ◆ Summer Intern, Pacific Gas and Electric Company, San Francisco, CA, 1990
- ◆ Graduate Student Research Associate (part-time), Lawrence Berkeley Laboratory, Berkeley, CA, 1989-1991
- ◆ Senior Consultant, Energy Management Associates, Atlanta, GA, 1983-1988
- ◆ Undergraduate Research Associate, MIT Resource Extraction Laboratory, Cambridge, MA, 1982
- ◆ Summer Intern, Baltimore Gas and Electric Company, Baltimore, MD, 1980

EDUCATION

- ◆ Walter A. Haas School of Business, University of California at Berkeley, MBA, Valedictorian, Corporate Finance, 1991
- ◆ Massachusetts Institute of Technology, BS, Energy Engineering, 1983

PROFESSIONAL EXPERIENCE

- ◆ Managed the development of market price forecasts under electric utility industry deregulation.
- ◆ Conducted competitive bidding project evaluations for conventional generating resources, renewable facilities, and off-system power purchases.
- ◆ Assisted in contract negotiations with shortlisted bidders in utility resource solicitations.
- ◆ Managed the technical and economic appraisal of cogeneration facilities.
- ◆ Performed financial modeling of electric utility bankruptcy workout plans.
- ◆ Trained and assisted many of the nation's largest electric and gas utilities in their use of operational and strategic planning computer models.

SELECTED PROJECTS

1999- Supply-side Resource Solicitation

pres. Client: Public Service Company of Colorado

Assisted in the development of PSCo's resource solicitation for new supply-side resources for 2002-2017 and managed the evaluation of proposals. Mr. Taylor and the evaluation team reviewed and modeled over four dozen proposals for supplies from existing and new generation resources in the Rocky Mountain region. The evaluation incorporated not only the contracted costs associated with each proposed resource but also the likely transmission infrastructure investments that specific portfolios of resources might require. The evaluation team supplemented a detailed PROVIEW-based resource optimization analysis with a sophisticated post-processing methodology to incorporate this and other additional factors.

1999- Solicitation for New Resources

2000 Client: MidAmerican Energy

Reviewed MidAmerican's solicitation for new power supplies for the 2000-2005 resource-planning period. Mr. Taylor managed a team of individuals who performed a parallel evaluation of MidAmerican's analysis of responses to the utility's request for proposals (RFP). Mr. Taylor studied the challenges that MidAmerican encountered during negotiations and rendered an opinion on the fairness and appropriateness of MidAmerican's actions. He filed testimony before the utility regulatory commissions in Iowa, Illinois, and South Dakota.

1999- Evaluation of New Resources

pres. Client: Florida Power Corporation

Helped prepare the FPC's RFP for long-term supply-side resources and assisted in the evaluation of responses. Mr. Taylor oversaw the review of FPC's computer simulations (in PROVIEW and PROSYM) of the proposals that were received. The PHB Hagler Bailly team also evaluated the proposals by using a response surface model to approximate the results that might be produced in the more detailed simulations.

1998- Evaluation of New Resources

pres. Client: Public Service Company of Colorado

Assisted the evaluation of proposals for PSCo's near-term 1999 resource additions and managed the complete third party evaluation of proposals for resources in the 2000-2007 time frame. Such resources included third-party facilities and power purchases, as well as company-sponsored interruptible tariffs. Mr. Taylor assisted with the development of the request for proposals and

oversaw the evaluation of all responses. He and his team monitored subsequent negotiations with shortlisted bidders. Mr. Taylor testified before the Colorado Public Utilities Commission on the fairness of the solicitation and the results of the evaluation.

1997- Evaluation/Negotiation of Transmission Interconnection Solicitation

1999 Client: New Century Energies

Managed a solicitation for participation in a major transmission project interconnecting Southwestern Public Service (a Texas member of the Southwest Power Pool) and Public Service of Colorado (a member of the Western Systems Coordinating Council). As the first major inter-reliability-council transmission project in the era of open access, FERC required that SPS and PSCo solicit third-party interest in participation. This project required the development of an RFP and evaluation of responses for both equity participation and long-term transmission service for over 21 alternative high-voltage AC/DC/AC transmission projects. The evaluation has focused on the costs and intangible risks of different transmission alternatives relative to the benefits and savings associated with increased economy interchange, avoided future generating capacity, and reductions in single-system spinning reserve and reliability requirements.

1996- Evaluation/Negotiation of All-Source Solicitation

1997 Client: Southwestern Public Service

Managed the evaluation of a broad array of responses to an all-source solicitation that was issued by Southwestern Public Service (SPS). Resources in the areas of conventional supply-side generation, renewable resources, off-system transactions, DSM, and interruptible loads were proposed. The evaluation entailed scoring the proposals for a variety of price and nonprice attributes. Hagler Bailly was retained to assist Southwestern in its negotiations with the bidders and to perform the detailed evaluation of the best and final offers.

1996- Risk Assessment for 1,000-MW Solicitation

1997 Client: Seminole Electric Cooperative

Managed the review and assessment of risks associated with responses to a 1,000-MW solicitation that was issued by Seminole Electric Cooperative. The evaluation entailed reviewing selected proposals' financial feasibility, performance guarantees, fuel supply plans, O&M plans, project siting, dispatching flexibility, and bidder qualifications.

1997 Analysis/Testimony Concerning Louisville Gas & Electric's Fuel Adjustment Clause

Client: Kentucky Industrial Utility Customers

Performed a detailed examination of Louisville Gas & Electric's (LG&E) fuel adjustment clause and identified misallocated costs in the areas of transmission line losses and purchased power fuel costs. Mr. Taylor also critiqued LG&E's rate adjustment methodology and recommended closer scrutiny of costs associated with jurisdictional and non-jurisdictional sales. Mr. Taylor

testified before the Kentucky Public Service Commission and presented the findings of his analysis.

1997 **Analysis/Testimony Concerning Kentucky Utilities' Fuel Adjustment Clause**
Client: Kentucky Industrial Utility Customers

Performed a detailed examination of Kentucky Utilities' fuel adjustment clause and recommended more appropriate allocations of costs among jurisdictional and non-jurisdictional customers. Particular emphasis was placed on inter-system sales (and the line losses associated with such sales), purchase power fuel costs, the correct determination of jurisdictional sales. Mr. Taylor testified before the Kentucky Public Service Commission and presented the findings of his analysis.

1995 **Development of All-Source Solicitation RFPs**
Client: Southwestern Public Service

Managed the development of five RFPs that solicited resources in the areas of conventional supply-side generation, renewable resources, off-system transactions, DSM, and interruptible loads. The RFPs were issued by SPS as part of an all-source solicitation to identify resources that may be competitive with two generation facilities that SPS intended to develop.

1995 **Environmental Compliance Analysis**
Client: Western utility

Performed a confidential detailed environmental analysis that involved executing hundreds of production simulations of the client utility's system (using PROSCREEN II) to analyze SO₂, NO_x, and particulate reductions associated with different fuel-switching, capital investment, and retirement scenarios.

1994- **Implementation of Continuous Emission Monitoring Regulations**
1996 Clients: Various

Assisted over 80 utilities in ensuring their compliance with the CAAA's continuous emission monitoring (CEM) regulations (40 CFR Part 75). Using *75check*, Hagler Bailly's CEM quality assurance software system, the project team analyzed the electronic data reports that utilities must file with the U.S. EPA on a quarterly basis. These reports contain detailed hourly emissions information for every CAAA-affected plant and serve as the foundation for the SO₂ emission allowance market.

1994 **Evaluation of Big Rivers' Clean Air Act Compliance Plan**
Client: Kentucky Industrial Utility Customers

Performed a detailed analysis of Big Rivers Electric Corporation to determine the appropriate SO₂ emission reduction strategy that the utility should undertake to comply with the 1990 Clean Air Act Amendments (CAAA). The utility's historical operations were studied and dozens of hourly production cost simulations of Big Rivers' utility system were performed to assess the operational and economic impacts of different CAAA compliance strategies. Risk/sensitivity analyses were undertaken to determine the affects of varying assumptions of fuel prices, capital costs, and operating and maintenance costs. Mr. Taylor testified before the Kentucky Public Service Commission, endorsing the implementation of a specific incentive ratemaking methodology that would encourage the utility to minimize its compliance costs.

1994 Fuel Procurement Audit of Columbia Gas Company

Client: Public Utilities Commission of Ohio

Assisted in a fuel procurement audit of Columbia Gas Company in Ohio. The utility's gas transportation programs were scrutinized to ensure that full service customers were not subsidizing transportation customers. Cost allocation procedures were studied and marginal costs of service for transportation customers were examined. In addition, the audit included an investigation of how the utility calculated and monitored unaccounted-for-gas.

1994 Development of Competitive Bidding RFP

Client: Empire District Electric Company

Based on knowledge gained from the review of dozens of other utility RFPs, developed a combined-cycle resource RFP for Empire District Electric Company. The project team was responsible for the RFP's entire development, including the development of scoring provisions for price and nonprice project attributes.

1993 Selection of Developer for 25 MW Wind Facility

Client: Northern States Power

Evaluated ten bids that were received by NSP in a solicitation for the development of a 25 MW wind facility in Minnesota. The proposals were scored and ranked through a point-based evaluation system that was developed prior to the solicitation. The scoring involved an assessment of operational and financial feasibility, power purchase pricing terms, construction schedules, and community acceptance issues.

1993 Competitive Bidding Design

Client: Northern States Power

Assisted NSP in the utility's effort to design a generic competitive bidding RFP that could be issued for a variety of generation resources. Two dozen RFPs from other utilities were reviewed to determine the appropriate weights and mechanisms that should be used to score various project attributes.

1993 **Evaluation of 500 MW Supply-Side Solicitation**

Client: San Diego Gas & Electric

Assisted in the evaluation of 15 bids that were received from a 500 MW solicitation for power by SDG&E. The utility wanted to determine whether or not there were less expensive alternatives to the implementation of its plan to repower one of its own units. The 15 projects represented over 4,000 MW. The bids were evaluated using extensive production costing modeling, in which over 1,000 model runs were performed to evaluate each bid under a variety of scenarios.

1992- **Integration of DSM Programs into Utility IRP Filing**

1993 Client: Public Service Company of Colorado

Assisted utility in DSM modeling and IRP optimization using PROSCREEN II/PROVIEW. A data transfer system was designed to translate DSM program information from various utility departments. Simulations were performed to assess the cost-effectiveness of different demand- and supply-side options.

SELECTED PUBLICATIONS AND PRESENTATIONS

“Ancillary Services, A Market unto Itself” Financial Times Energy Conference: Navigating the New Transmission Roadmap Under FERC Order 2000, June 2000.

“Forecasting Ancillary Service Prices,” Infocast Conference: How to Buy, Sell, and Price Ancillary Services in Competitive Markets, October 1999.

“Fundamentals of Electricity Deregulation,” American Association of Petroleum Geologists/Electric Power Research Institute Conference, April 1999.

“The Coal/Natural Gas Balance in a Reconfigured Utility Industry,” American Bar Association Conference on Electricity Law and Regulation, February 1998.

“Asset Divestitures in the Deregulating Power Markets,” Hybrid U.S. Power Market Conference, February 1998.

Modeling Renewable Energy Resources in Integrated Resource Planning, D. Logan, C. Neil, and A. Taylor, National Renewable Energy Laboratory, May 1994.

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