BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 150009-EI

THE CITY OF MIAMI

JUNE 22, 2015

IN RE: NUCLEAR POWER PLANT COST RECOVERY

FOR THE YEAR ENDING

DECEMBER 2016

TESTIMONY & EXHIBITS OF:

EUGENE T. MEEHAN

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

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DIRECT TESTIMONY OF EUGENE T. MEEHAN

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1. Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Eugene T. Meehan. I am an independent energy and utility consultant. My address is 7042 Powderhorn Ct., Park City, Utah, 84098. I have prepared pre-filed testimony on behalf of the City of Miami ("the City").

2. Q. PLEASE SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS.

A. I have over thirty five years of experience consulting with electric and gas utilities. That work has involved examination and advice on many issues related to power markets, power contract design, long term generation expansion planning, competitive bidding and contract evaluation. For the past fifteen years, I have been extensively involved in advising clients on restructuring-related issues, including risk analysis, risk management, power plant and power contract

valuation, and post-transition regulatory issues. In recent years, I also have advised several utilities with respect to the acquisition of power from third parties. These assignments have involved the review of power contract offers made by competitive power marketers and owners of generation assets. I have testified several times with respect to the prudence of utility planning and power procurement and the economic implications of specific generation investment decisions, primarily in regard to investment in nuclear facilities**.** I have performed these assignments as a Senior Vice President with NERA Economic Consulting ("NERA") (a position I retired from in November 2014), as a Principal at Deloitte Consulting, and a Vice President at Energy Management Associates ("EMA"). Exhibit ETM - 1 contains a more detailed statement of my qualifications.

3. Q. PLEASE BRIEFLY SUMMARIZE YOUR EXPERIENCE AS A CONSULTANT PROVIDING ADVICE AND TESTIMONY RELATED TO THE ECONOMIC ANALYSES OF NUCLEAR INVESTMENTS.

A. In the early 1980s, I advised the owners of the Nine Mile Point 2 on the economics of continuing with construction of the Nine Mile Point 2 nuclear unit. This analysis examined the costs and benefits of continuing with construction of the unit versus abandoning the unit and recovering the investment to date. I

testified on the topic before the New York Public Service Commission. In the same general time frame, I worked on similar analyses for the owners of the Allen's Creek and Black Fox nuclear plants. In the mid and late 1980s, I analyzed and testified as to the prudence of the Nine Mile Point 2 nuclear unit and to the prudence of the decision to complete unit 2 at the South Texas Project nuclear plant. In the 1990s, I directed projects for the Public Service Company of Colorado examining the retirement of the Fort St. Vrain nuclear unit, for Central Maine Power Company examining the potential retirement of the Maine Yankee nuclear plant and for Niagara Mohawk Power Company examining the potential retirement of unit 1 at the Nine Mile Point nuclear facility. In 2012, I testified before a Nuclear Regulatory Commission ("NRC") atomic safety and licensing board with respect to the implications of the NRC taking no action regarding the extension of the operating license for the Indian Point nuclear facility. I am currently retained by the Ontario Independent Electricity System Operator to provide a Fairness Opinion with respect to a long term (through the early 2060s) contract for securing the refurbishment and operation of the 6300 MW Bruce nuclear facility.

4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. Yes. In 1987, I testified before the Commission on behalf of the investor-owned and larger non investor-owned electric utilities in peninsular Florida on the subject of electric system generation planning and the appropriateness of the model used by those entities in the context of calculating avoided costs.

5. Q. PLEASE PROVIDE AN OVERVIEW OF YOUR TESTIMONY.

A. I have been asked by the City to examine the evidence provided by Florida Power & Light Company ("FP&L"), and the consequences for ratepayers, concerning the continued development of Turkey Point units 6 and 7. The purpose of my testimony is to present to the Commission the results of that examination.

6. Q. PLEASE EXPLAIN THE FEASIBILITY ANALYSIS CONDUCTED BY FP&L WITH RESPECT TO CONTINUING LICENSING AND CONSTRUCTION OF UNITS 6 AND 7 AT TURKEY POINT.

A. FP&L has presented the Commission with a lifetime Net Present Value ("NPV") analyses of the economic implications for ratepayers of continuing to develop Turkey Point units 6 and 7. The need for the first of those units has been delayed

until 2027. The analyses presented by FP&L to the Commission in support of the economic case for continued development of the units are based on 40 and 60 year operating lives for the units and show the break even capital cost in 2015 dollars. If a unit is completed below the break even capital cost, customers benefit on an NPV basis from completion. If a unit is completed at a cost above the break even capital cost, customers will pay more on an NPV basis from completion. In addition to examining 40 and 60 year operating periods, FP&L's analyses also examine several cases with alternate assumptions for items such as natural gas prices and alternate environmental cost assumptions. FP&L's interpretation of its analyses alleges that completing Turkey Point units 6 and 7 is the clear economic choice for customers because in 8 of the 14 scenarios examined the break even costs are above the range of the non-binding construction cost estimate. Similarly, FP&L alleges that in 6 of the 14 scenarios examined, the break even cost is within the range of non-binding construction costs estimates. For those 6 cases, FP&L's position is that the units may be economic. As expected, the results for Turkey Point units 6 and 7 are more favorable when a 60 year operating life is assumed. FP&L's analyses only consider going forward capital costs for the units since the sunk, or already

invested, costs will be recovered from customers whether or not construction is completed.

7. Q. WHY IS IT PARTICULARLY IMPORTANT TO REVIEW CAREFULLY FP&L'S FEASIBILITY ANALYSIS THIS YEAR?

A. The economic analysis of continued construction is very important. While it is true that FP&L has spent approximately $250 million on Turkey Point units 6 and 7 to date and will not be spending very large sums in 2016 given that the date of initial operation has been deferred to 2027, the framework for analyzing the economics of Turkey Point units 6 and 7 ignores sunk costs and considers only costs not yet spent or pledged. This is the correct way to analyze the economics of the investment, but requires that at some points a very hard look be taken at the outlook for the feasibility of the investment. By feasibility I mean the prospect that the investment will be beneficial for ratepayers. There is a danger that an investment such as Turkey Point units 6 and 7 is initially approved, that gradual investments are made over time, that despite changing circumstances continued creeping investments are made without a fundamental re-examination, that sunk costs build up, and that ultimately the plant is justifiably completed based on going forward cost analysis but results in much higher costs for customers than

the alternative because sunk costs that are ignored in the economic analysis are reflected in the rate base. The only protection against this situation is periodic, in-depth analyses of completion before significant additional costs are expended or pledged and become sunk costs.

8. Q. ARE YOU AWARE OF ANY CURRENT SITUATIONS WHERE SUNK COSTS HAVE GROWN TO A VERY HIGH LEVEL AND THE CIRCUMSTANCES JUSTIFYING THE INVESTMENT HAVE CHANGED?

A. Yes. A recent press report describes claims by a group that allege that that the expansion of Plant Vogtle, which is currently underway in Georgia, has become unnecessary and notes that over $ 6 billion has been spent. This is an example of a case where plant economics appear to have radically changed since the initial approval to proceed was granted and where there may be a possibility that billions of dollars of investment will be required to be paid for by ratepayers for an investment that could be abandoned or is only viable on a going forward basis because sunk costs are not relevant to decisions concerning future investment. This is a position that the Commission would not want to be in. A very hard look now, before the sunk costs of Turkey Point units 6 and 7 related costs grow to

very high levels, could avoid this situation. While it is true that sunk costs are not relevant to going forward economic decisions, it is hard to be objective when sunk costs are significant and it could be difficult to abandon an investment with billions of dollars in sunk costs despite the prospect that returns on future investment would be negative. I do not have any view as to whether the investment in the units in Georgia remains economic, but do believe it is correct that sunk costs have reached high levels and that assumptions have changed with respect to the cost of alternatives.

9. Q. IN YOUR OPINION IS THE FEASIBILITY ANALYSIS SUBMITTED BY FP&L A REASONABLE BASIS FOR CONCLUDING THAT TURKEY POINT UNITS 6 AND 7 REMAIN COST-EFFECTIVE FOR RATEPAYERS?

A. No. While I recognize that the analysis continues a process of presenting the feasibility of Turkey Point units 6 and 7 by comparing NPV break even costs to the non-binding construction costs range, I do not believe it is reasonable at this time. The Turkey Point units 6 and 7 project is at a critical point in its life cycle. First, there have been major changes in the long term outlook for the primary alternative, which is natural gas. Second, the need for Turkey Point units 6 and 7

has been delayed to the latter half of the next decade and environmental regulations on alternatives that are still speculative may be known with more certainty in a short time. Third, new nuclear units that have progressed more rapidly than Turkey Point have been experiencing construction delays and costs increases. Fourth, new nuclear units that were not supported by ratepayer backing that were planned around the same time as Turkey Point have been essentially abandoned. Finally, the economic justification for Turkey Point units 6 and 7 is increasingly dependent upon a 60 year life assumption, with that 60 year life starting twelve years from now. In FP&L's analysis in 5 of the 7 cases assuming a 40 year life, Turkey Point falls in the category that FP&L categorizes as "may" be economic. That is a weak endorsement of an investment that according to FP&L witness Steven Scroggs will range from $13.7 to $20 billion. All signs clearly point to the need for a thorough, in-depth evaluation of the Turkey Point units 6 and 7 investment at this time, when it is clear that the circumstances under which the investment was approved have changed radically. Additionally, the time is opportune. Sunk costs are still relatively low and the need for the capacity is well into the future. At this juncture, the impact on customers of terminating the project and having the sunk costs reflected in rates would be manageable. A thorough investigation at this time could avoid two potentially bad outcomes.

The first would be an outcome where several years down the road such an examination reveals the plant is not viable and sunk costs have grown to the point where they are a much larger burden on ratepayers. The second is an outcome where several years down the road such an examination reveals the plant is viable on a going forward basis but will be more costly on a total costs basis than the alternative. The point is that the circumstances at the current time both require and facilitate a more in depth examination of the Turkey Point units 6 and 7 investment than FP&L has conducted. Projects can take on a life of their own and the simple facts that, first, the natural gas price outlook has changed radically from when Turkey Point units 6 and 7 were initially approved and, second, the need for capacity has moved far enough into the future to raises concerns over how the project can maintain economic feasibility.

10. Q. ARE THERE SPECIFIC FACTORS THAT SHOULD BE CONSIDERED BUT THAT ARE NOT CONSIDERED IN FP&L'S FEASIBILITY ANALYSIS?

A. Yes. The FP&L feasibility analysis in this case does not sufficiently consider or explain the following factors:

- The consequences of assuming that natural gas-fired alternatives will add $ 1.7 billion in the NPV of revenue requirements.
- The consequences of the assumptions with respect to carbon ("CO^2") costs.
- The time pattern of rate impacts and the risks associated with benefits that take so long to materialize.
- The uncertainty of the construction schedule and costs assumptions.

At a minimum, these issues need to be fully explored.

11. Q. WHAT FLAWS DO YOU SEE WITH THE ASSUMPTIONS MADE FOR THE TRANSMISSION COSTS AND THE CARBON ("CO^2") COST BENEFITS OF TURKEY POINT UNITS 6 AND 7?

A. The units only appear economic because of these two assumptions. Absent these projected savings in transmission and CO^2 costs, the breakeven cost would be at least 20% below the bottom end of the non-binding cost range in all seven scenarios that FP&L examined assuming a forty year life of the reactors. Assuming a 60 year life, the breakeven cost would be below the bottom end of the non-binding cost range in five of the seven scenarios that FP&L examined and would be below the midpoint of the non-binding cost range in two of the seven

scenarios that FP&L examined. In no scenario would the breakeven cost exceed the midpoint of the non-binding cost range. I believe it is fair to say that given these economics, the project could not be viewed as viable. Hence, it is also fair to say that the feasibility of the project depends upon the assumptions made with respect to the transmission costs associated with the gas-fired alternative to Turkey Point units 6 and 7 and with respect to the carbon cost assumptions.

12. Q. WHAT CONCERNS DO YOU HAVE WITH RESPECT TO THE ASSUMPTION MADE IN FP&L'S SUBMISSION CONCERNING THE TRANSMISSION COMPONENT OF THE ALTERNATIVE TO THE PROJECT?

A. It is my understanding that FP&L's analysis assumed that if gas-fired combined cycle units ("CCs") are constructed as an alternative to Turkey Point units 6 and 7, they will not be able to be constructed in southeast Florida. Hence, an alternative will require a transmission investment with a NPV of revenue requirements of $ 1.7 billion in excess of that transmission investment associated with Turkey Point units 6 and 7 to import the power from the north. This one assumption increases the breakeven cost by over $ 800 per KW. Prior to the Commission accepting, as reasonable, FP&L's feasibility analysis, which would

result in substantial commitments and investment costs, it should require FP&L to fully examine and support this assumption. To do otherwise would be imprudent.

13. Q. WHAT CONCERNS DO YOU HAVE WITH RESPECT TO THE CARBON ("CO^2") COST ASSUMPTION IN FP&L'S FEASIBILITY ANALYSIS?

A. This assumption is even more critical. I estimate that carbon costs, depending upon the environmental case, add from just over $ 1400 per KW to over $ 2600 per KW to the breakeven cost. I do not think it is unreasonable to attach a monetary value to carbon as over the 2027 to 2088 period during which Turkey Point units 6 and 7 would operate, some type of carbon limit and associated costs would appear more likely than not. At a minimum, however, the Commission should be fully informed of the importance of this assumption and the very large contribution of this factor to the economic feasibility of Turkey Point units 6 and 7. With carbon costs adding between $ 1400 per KW and $ 2600 per KW to breakeven costs, it is reasonable to say that the economic feasibility of Turkey Point units 6 and 7 hinges on the avoided carbon costs. However, the carbon price assumptions made by FP&L do not pass a common sense test. The carbon price assumed in 2026 rises over a 43 year period by a factor of over 20 times reaching up to eight times that which would result from inflation alone. In

comparison, over a 43 year period from 1972 to the present, the cost of tuition at Harvard rose by three times that which would result from inflation alone. I use this example because the cost of college tuition is a primary example of a cost that is out of control and rising rapidly in real terms. A price forecast that predicts a price will be 8 times the increase resulting from inflation is not consistent with common sense. I would also note that FP&L forecasts sulfur dioxide allowance prices to be zero. This is in line with consensus. But it does raise a concern that if over time market prices for sulfur dioxide allowances, which reached as high as $ 800 a ton, have fallen to zero in just over 20 years, does it make any sense that CO^2 prices in 54 years from the present will be at level 8 times that which would result from just inflation? Because the assumption is so critical to the feasibility of the plant, it would be imprudent to not thoroughly examine this assumption before making a commitment of investment that ratepayers will bear whether or not the plant is completed. The current forecast used by FP&L was developed by one outside consultant and is not supported by testimony in this proceeding, but is critical to the conclusion that the Turkey Point units 6 and 7 project is reasonable and viable. I calculated carbon impacts by ratably spreading the 290 million tons of carbon that is claimed to be avoided by the addition of Turkey Point units 6 and 7 (see page 26, line 14 of testimony of Richard O. Brown) over the units'

operating life and then valuing each year's ratable reduction by the annual carbon price assumption for the relevant environmental scenario. Carbon reductions should be more or less ratable as Turkey Point is replaced with very efficient capacity in the alternate scenario. In any case given the pattern of carbon price escalation variations in annual carbon reductions from a ratable pattern would not have a material impact on results. I discounted the aggregate carbon values to the beginning of 2015, while FP&L discounts these values to year end 2015, thereby conservatively underestimating somewhat the impact of FP&L's extreme carbon assumption. Additionally, I calibrated the reasonableness of the estimates I made of the carbon costs impact assumption on breakeven costs by comparing the breakeven cost differences between FP&L's Environmental 1 and Environmental 2 cases. The primary difference between those two cases is the cost of carbon.

14. Q. ASSUME HYPOTHETICALLY THAT FP&L'S CARBON ("CO^2") COST FORECAST WAS REASONABLE. WOULD THE FP&L FEASIBILITY ANALYSIS THEN BE A REASONABLE BASIS FOR CONCLUDING THAT TURKEY POINT UNITS 6 AND 7 WAS COST-EFFECTIVE FOR RATEPAYERS?

A. No, the FP&L analyses would still be seriously deficient. In any planning analysis, simplifications are required to perform reasonable analysis without examining every possible option. These simplifications must be examined to understand what assumptions have been made and their effects on the resulting analysis. One simplification that FP&L has made is to not look at timing options. By this I mean that FP&L has not looked at deferring new nuclear in service dates until, for example, 2047 and meeting interim needs with gas plants. FP&L has not looked at other non-carbon emitting technologies that are, in the long run, potentially more economic than new nuclear plants. The extremely high emission costs assumed by FP&L could result in radical changes to the level and to the seasonal and hourly pattern of demand and there is no indication that FP&L has examined these potential changes. Normally, judgments must be made to keep the analysis tractable. Even given the scope of investment, $ 13 to $ 20 billion, such judgments that limit scope can be reasonable. However, FP&L's judgments

fail to be reasonable because the future assumed is radically different from the present. FP&L assumes that carbon prices will rise by eight times inflation. A scenario where the cost of carbon rises by eight times inflation qualifies as radically different. In such a case, an experienced planner would recognize that the typical analyses and typical simplifications are not reasonable in the context of a radically different carbon cost scenario. Hence, even if FP&L's carbon assumptions, as posited in the hypothetical, were reasonable, FP&L's analysis cannot be relied on by an experienced planner to produce a reasonable result with respect to the costs effectiveness of Turkey Point units 6 and 7.

15. Q. CAN YOU PROVIDE AN ADDITIONAL EXAMPLE OF WHY YOU CONSIDER FP&L'S CARBON COST ASSUMPTIONS EXTREME?

A. Yes. In reviewing data that FP&L provided in a request for a production of documents, I observed that in the high fuel cost scenario for Environmental Case 3 without Turkey Point units 6 and 7, total system fuel costs in 2067 are $ 28 billion while total system emission costs are $ 57 billion. Nitric oxide costs are included in emission costs but are constant in real terms and it is carbon costs that drive this result. In my opinion an analysis that shows total system emission costs being double total system fuel costs (and remember this is the high fuel cost

scenario), is extreme and cannot be relied upon to support a finding of feasibility without extensive probing of the reasonableness of the assumption leading to such a result.

16. Q. HAVE YOU PREPARED EXHIBITS THAT WOULD SHOW THE IMPACT ON BREAKEVEN COST OF ALTERNATE ASSUMPTIONS WITH RESPECT TO THE TRANSMISSION ADVANTAGE AND CARBON COST ADVANTAGE?

A. Yes. Exhibits ETM-2 and ETM-3 show the impact of alternate assumptions for several different scenarios with respect to the transmission and carbon cost advantages of Turkey Point units 6 and 7. I have used FP&L's assumptions for all other factors and FP&L's methodology. In the vast majority of scenarios assuming a forty year life, breakeven costs are below the bottom end of the non-binding cost range. In the vast majority of scenarios assuming a sixty year life, breakeven costs are within the non-binding cost range – the zone that FP&L characterizes as "may" be economic. These exhibits clearly illustrate that economic feasibility comes from a single source: the extreme assumptions made with respect to carbon value.

17. Q. WHAT CONCERNS DO YOU HAVE WITH THE NUMBER OF YEARS REQUIRED FOR THE INVESTMENT TO PRODUCE A NET PRESENT VALUE ("NPV") BENEFIT?

A. The difference between the 40 year and the 60 year projections raise significant concerns in this regard. The time pattern of costs and benefits is difficult to visualize as the cases with Turkey Point and without Turkey Point have radically different rate impacts over time. Even assuming that costs and schedule are as planned, FP&L customers will pay over $2 billion toward Turkey Point units 6 and 7 before a single KWH is produced. With the gas alternative, the amounts paid before the plant produces would be an order of magnitude lower as the plants are much less capital intensive and have a much shorter construction period. I do not question the likelihood that Turkey Point, if built would operate for 60 years. However, the economic feasibility seems to rely on the 60 year case and in my opinion, the fact the plant will likely operate for 60 years is not the largest issue. The largest issue is: if an investment is not feasible over 40 years and requires 60 years to attain feasibility on a present value basis, does the investment present an acceptable risk profile? In this case, we have an investment that will not produce power until 2027, will require ratepayer funding of at least $ 2 billion through 2027 and will only begin to breakeven on a present value basis 40 years after it

enters service, in the late 2060s or 50 years from today. Only a minority of ratepayers who pay the $ 2 billion in pre operation funding will ever receive a present value payback and even they will have to wait over 50 years from today to break even. That is a very long term view. A legitimate question for the Commission to address is whether the time pattern of costs and benefits is reasonable even if it finds that over a 60 year life or over 70 years from today the investment is likely to eventually result in a present value benefit. A very different set of ratepayers will pay than the set that will benefit.

18. Q. WHAT CONCERNS DO YOU HAVE WITH THE COST AND SCHEDULE ASSUMPTIONS?

A. Cost and schedule are always a concern with a major construction project. It is likely that if the Commission were to require a thorough examination of the transmission and carbon advantage of Turkey Point 6 and 7, that achieving ultimate construction on schedule and near the low end of the non-binding cost range will be critical to feasibility. FP&L's economic feasibility analyses make it appear that the project is robust to the final cost. I do not believe this is correct. If a thorough examination were to confirm feasibility through breakeven costs in the range of the non-binding costs estimate, the finding of feasibility would be

contingent on the plant coming in on schedule and on budget. Hence, in my opinion a more complete review of construction costs and schedule is needed.

19. Q. DO YOU BELIEVE IT IS LIKELY THAT THE VALUE OF FUEL DIVERSITY PROVIDED BY TURKEY POINT UNITS 6 AND 7 COULD OUTWEIGH POTENTIAL SHORTCOMINGS IN THE ANALYSIS WITH RESPECT TO CARBON COST ASSUMPTIONS?

A. In my opinion, that would be unlikely. If feasibility is to be justified based on fuel diversity, the value of that diversity should be quantified. FP&L has not quantified the value to ratepayers of increased fuel diversity.

20. Q. PLEASE SUMMARIZE YOUR FINDINGS.

A. The investment in Turkey Point units 6 and 7 was approved at a time when the natural gas supply and price outlook was much less optimistic than it is today. Since the time that the investment in Turkey Point units 6 and 7 was approved, the need for capacity from the units has slipped to 2027. FP&L's analyses in this proceeding show that there is an alternative plan that would and could be implemented if Turkey Point units 6 and 7 were cancelled. FP&L's analyses also provide data that clearly demonstrates that Turkey Point units 6 and 7 are only

economically feasible at the current time because of FP&L's assumptions with respect to the incremental transmission costs associated with the alternative and the carbon costs savings alleged by FP&L from Turkey Point units 6 and 7. Believing those assumptions requires believing that, in 2067, FP&L's total system emission costs will be twice FP&L's total system fuel costs in a high fuel cost scenario. Nuclear plants that were planned on a merchant basis around the time that Turkey Point units 6 and 7 were approved are not moving forward. The Plant Vogtle expansion in Georgia that was also approved in a similar time frame is well behind schedule and is being challenged after having expended over $ 2 billion. Even assuming that FP&L's assumptions and analyses were all perfect, present value benefits in many cases are not achieved until 50 years from now, while customers pay $ 2 billion toward construction financing over the next 12 years. This constitutes a very long payback period and many current customers will never be paid back. Currently, only $ 250 million has been invested in Turkey Point units 6 and 7. Prior to approving any significant additional expenditures or commitments it would be prudent for the Commission to require an in-depth investigation that, at a minimum, examines the reasonableness of the transmission costs advantage attributed to Turkey Point units 6 and 7, the reasonableness of the magnitude of the carbon cost advantage attributed to Turkey

Point units 6 and 7, the degree of confidence in the non-binding construction cost range and the construction schedule and the reasonableness of proceeding with an investment that may only achieve a present value breakeven over 50 years from today. The time is opportune for such an investigation because the level of sunk investment that would need to be recovered is manageable. While the record and schedule in this proceeding does not allow for such in depth examinations, FP&L is not intending to make significant additional investments or commitments over the next year. The Commission would be prudent to require a more in depth examination of Turkey Point units 6 and 7 before any such investments or commitments are made.

21. Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

EUGENE T. MEEHAN
INDEPENDENT CONSULTANT

Mr. Meehan is an Independent Consultant specializing in regulatory economics and electricity markets, power procurement, electric planning and asset and corporate transaction involving electric marketing, production, transmission and distribution. He has over thirty-five years of experience consulting with electric and gas utilities, regulators and governments and has testified as an expert witness before numerous state and federal regulatory agencies, as well as appeared in federal court and arbitration proceedings.

Mr. Meehan's practice concentrates on serving energy industry clients, with a focus on helping clients manage the transition from regulatory to more competitive environments. He has performed consulting assignments for over fifty large electric, gas, and combination utilities in the areas of retail access, regulatory strategy, strategic planning, financial and economic analysis, merger and acquisition advisory services, power contract analysis, market power and market definition, stranded cost analysis, power pooling, power markets and risk management, ISO and PX development, and costing and pricing. In addition, he has advised numerous utilities on power procurement issues and administered power procurements on behalf of utilities and regulators.

Mr. Meehan has experience leading advisory work on several major restructuring and unbundling assignments. These assignments were multi-year projects that involved integration of regulatory and business strategy, as well as development of regulatory filings associated with the recovery of stranded cost and rate unbundling.

Education

Boston College, BA, Economics, *cum laude*
New York University (NYU), Graduate School of Business, completed core courses for the doctoral program.

Professional Experience

2015 - **Independent Consultant**

NERA Economic Consulting

1999-2014 Senior Vice President

1996-1999 Vice President

1973-1980 Senior Economic Analyst; Research Assistant

Deloitte & Touche Consulting Group

1994-1996 Principal

Energy Management Associates, Inc.

1980-1994 Vice President

Areas of Expertise

Restructuring/Stranded Cost Recovery

Mr. Meehan has directed several multi-year projects associated with restructuring and stranded cost recovery. These projects involved facilitating the development of an integrated regulatory and business strategy and formulating regulatory filings to accomplish strategy. As part of these assignments, Mr. Meehan facilitated sessions with senior management to set and track filing strategy. Clients include Public Service Gas & Electric and Baltimore Gas and Electric.

Unbundling/Generation Pricing

Mr. Meehan has formulated unbundling strategies, with a specialization in generation pricing. He has advised several utilities in standard offer pricing and has testified on shopping credits on behalf of First Energy and Baltimore Gas and Electric.

Power Procurement

Mr. Meehan has been involved in power procurement activities for a variety of utilities and regulatory agencies. He has advised utilities in developing and implementing evaluation processes for new generation, with the objective of achieving the best portfolio evaluation. He has helped regulators in Ireland and Canada design and implement portfolio evaluation processes. He has testified before FERC and state regulatory agencies on competitive power procurement. In addition, Mr. Meehan helped to design and implement the New Jersey BGS auction process.

Power Contracts

Mr. Meehan has extensive experience with power contracts and power contract issues. He has reviewed and testified on the three principal types of power contracts: integrated utility to integrated utility contracts, IPP to utility contract, and integrated or wholesale utility to distribution utility contracts. He has testified in power contracts disputes on behalf of Carolina Power and Light, Duke Power Company, Southern Company, Orange and Rockland Utilities, and Tucson Electric Power. He has also advised Oglethorpe Power Corporation in the reform of its wholesale contracts with its distributor cooperative members.

Retail and Wholesale Settlements

In addition to his expertise on power pooling issues, Mr. Meehan has significant experience with assignments related to the settlement process. He has focused on the issues of credit management as new entrants appear in retail and wholesale markets and has designed efficient specifications for retail settlement systems, including the use of load profiling, and examined the risk and cost allocation issues of alternative settlement systems.

Risk Management

Mr. Meehan has advised several large utilities on price risk management. These assignments have included evaluation of price management service offers solicited from power marketers in association with management of assets and entitlements, as well as provision of price managed service for various terms.

Marginal Costs

Mr. Meehan has provided comprehensive marginal cost analyses for over 25 North American Utilities. These assignments required detailed knowledge of utility operations and planning.

Power Supply and Transmission Planning

Mr. Meehan has advised electric utilities on economic evaluations of generation and transmission expansion. He has testified on the economics of particular investments, the prudence of planning processes, and the prudence of particular investment decisions. He has reviewed the economic and rate implications of several large nuclear plants and has testified before state and federal regulators with respect to nuclear economics and the prudence of nuclear investments.

Generation Strategy

Mr. Meehan has led NERA efforts on a client task force charged with developing an integrated generation asset/power marketing strategy.

Power Pooling

Mr. Meehan has in-depth working knowledge of the operating, accounting, and settlement processes of all United States power pools and representative international power pools. He has provided consulting services for New York Power Pool members on a continuous basis since 1980, advising the Pool and its members on production cost modeling, transmission expansion, competitive bidding and reliability, and marginal generating capacity cost quantification. In NEPOOL, he has quantified the benefits of continued utility membership in the Pool and the impact of the Pool settlement process on marginal cost. He has worked with a major PJM utility to explore the impact of PJM restructuring proposals upon generating asset valuation and examine the implications of alternative restructuring proposals. He has consulted for Central and Southwest Corporation, Entergy, and Southern Company on issues that involved the internal pooling arrangements of the utility operating companies of those holding companies, as well as for various utilities on the impact of pooling arrangements on strategic alternatives.

Representative Assignments

Worked with Public Service Electric & Gas Company (PSE&G) to direct a three year NERA advisory effort on restructuring. Facilitated a two-day senior management meeting to set regulatory strategy in 1997. Throughout 1997 and 1998, worked over half time at PSE&G to help implement that strategy and advised on testimony preparation, cross-examination, and briefing. Also advised PSE&G on business issues related to securitization, energy settlement and credit requirements for third party suppliers. During 1999, advised PSE&G during settlement negotiations and litigation of the settlement. PSE&G achieved a restructuring outcome that involved continued ownership of generation by an affiliate and the securitization of $2.5 billion in stranded costs.

Worked on separate assignments for a large utility in the Northeast and a large utility in the Southeast, advising on the evaluation of risk management offers from power marketers. The assignments included reviewing proposals, attending interviews with marketers and providing advice on these, and the developing analytical software to evaluate offers.

Worked with government of Ontario beginning in 2004 to help design the RFP and economic evaluation process for the solicitation of 2500 Mw of new generating capacity. Supervising NERA's portfolio-based economic evaluation on behalf of the Ontario Ministry of Energy.

Testified on behalf of Pacific Gas & Electric Company before the FERC in a case benchmarking the PSA between the distribution utility and a soon-to-be-created generating company. This effort involved developing detailed expertise in applying the Edgar standard and a detailed review of DWR procurement during the western power crisis. In addition, this effort involved the review of more than 100 power contracts in the WECC.

Directed NERA's efforts, on behalf of the electricity regulator in Ireland, to design an RFP and implementation process for the purchase of 500 Mw of new generating capacity in 2003. NERA advised on the RFP, the portfolio evaluation method, and the power contract and also conducted the economic evaluation.

Reviewed the economic evaluation conducted by Southern Company Service for affiliated operating companies in connection with an RFP for over 2000 Mw of new generating capacity. Submitted testimony before FERC on behalf of Southern Company Service.

Worked with Baltimore Gas and Electric (BG&E) to conduct a one and one-half year consulting assignment that involved providing restructuring advice. The project began in March/April 1998 with senior management discussions and workshops on plan development and filing strategy. Advised BG&E in the development of testimony, rebuttal testimony, and public information dissemination. Worked to review and coordinate testimony from all witnesses and offered testimony on shopping credits and in defense of the case settlement. BG&E achieved a restructuring outcome enabling it to retain generation ownership. As part of this assignment, advised BG&E on generation valuation and unregulated generation business strategy.

Directed the efforts of a large Southeastern utility to develop a short-term power contract portfolio and to evaluate the relative value of power options, forwards, and unit contracts to determine the optimal mix of instruments to manage price risk.

Testified for XCEL Energy on the use of competitive bids for new generation needs. Examined whether XCEL was prudent not to explore a self-build plan and the reasonableness of relying on ten-year or shorter contracts as opposed to life-of-facility contracts, in order to meet needs and facilitate a possible future transition to competition. This project addressed the comparability of fixed bids to rate base plant additions.

Advised and testified on behalf of First Energy in the Ohio restructuring proceeding on the issues of generation unbundling and stranded cost. Defended the First Energy shopping credit proposal.

Advised Consolidated Edison and Northeast Utilities on merger issues and testified in Connecticut and New Hampshire merger proceedings. Testimony focused on retail competition in gas and electric commodity markets.

Directed NERA's effort to train selected representatives of a major European power company in American power marketing and risk management practices. The project involved numerous meetings and interviews with power marketing firms.

Led NERA's effort to advise the New England ISO on the development of an RTO filing. Examined performance-based ratemaking for transmission and market operator functions.

Examined ERCOT power market conditions during the period of time from 1997 to 1999 and testified on behalf of Texas New Mexico Power Company for the prudence of its power purchase activity.

Advised a Midwestern utility on restructuring of a wholesale contract with an affiliate. Involved forecasting of the unbundled wholesale cost-of-service and market prices, as well as development of a regulatory strategy for gaining approval of contract restructuring and the transfer of generation from regulated to EWG states.

Performed market price forecasts for numerous utility clients. These forecasts have employed both traditional modeling and newly developed statistical approaches.

Examined the credit issues associated with the entry of new entities into retail and wholesale settlement market. These assignments involved a review of current Pool credit procedures, examination of commodity and security trading credit requirements, coordination with financial institutions, and recommendations concerning credit exposure monitoring, credit evaluation processes, and credit requirements.

Oversight of EMA's consulting and software team in designing and implementing the LOLP capacity payment, a portion of the UK wholesale settlement system.

Advised Oglethorpe Power Corporation in the reform of its contracts with its distribution cooperative members and the evolution of full requirement power wholesale power contracts into contracts that preserve Oglethorpe's financial integrity and are suitable for a competitive environment.

Developed long run marginal and avoided costs of natural gas service, as well as avoided cost methods and procedures. These costs have been used primarily for the analysis of gas DSM opportunities. Clients include Consolidated Edison Company, Southern California Edison Company, Niagara Mohawk Power Corporation, and Elizabethtown Gas Company.

Review of power contracts and testimony in numerous power contract disputes

Development of long run avoided costs of electricity service and avoided cost methods and procedures. These costs have been used to assess DSM and cogeneration, as well as to develop integrated resource plans. Clients include Public Service Company of Oklahoma, Central Maine Power Company, Duquesne Light Company, and the New York investor-owned utilities.

Advised Central Maine Power Company (CMP) on the development of a competitive bidding framework. This framework was implemented in 1984 and was the first of its kind in the nation. CMP adopted the framework outlined in EMA's report and won prompt regulatory approval.

Advised a utility in the development of an incentive ratemaking plan for a new nuclear facility. This assignment involved strategic analysis of alternate proposals and quantification of the financial impact of various ratemaking alternatives. Presented strategic and financial results in order to convince senior management to initiate negotiations for the incentive plan.

Advised and testified on behalf of the New York Power Pool utilities on the methodology for measuring pool marginal capacity costs. This work included development of the methodology and implementation of the system for quantifying LOLP-based marginal capacity costs.

Provided testimony on behalf of the investor-owned electric utilities in New York State, concerning the proper methodology to use when analyzing the cost-effectiveness of conservation programs. This methodology was adopted by the Commission and used as the basis for DSM evaluation in New York from 1982 through 1988.

Developed the functional design of a retail access settlement system and business processes for a major PJM combination utility. This design is being used to construct a software system and develop business procedures that will be used for retail settlements beginning January 1999.

Reviewed the power pool operating and interchange accounting procedure of the New York Power Pool, the Pennsylvania, New Jersey, Maryland Interconnection, Allegheny Power System, Southern Company, and the New England Power Pool as part of various consulting assignments and in connection with the development of production simulation software.

Summarized and analyzed the operational NEPOOL to examine the feasibility of incorporating NEPOOL interchange impacts with Central Maine and accounting procedure of the New England Power Pool Power Company's buy-back tariffs.

Developed and presented a two-day seminar delivered to electric industry participants in the UK (prior to privatization), outlining the structure and operation of power pools and bulk power market transactions in North America.

Benchmark analysis and FERC testimony of PGE's proposed twelve-year contract between PG&E and Electric Gen LLC (contract value in excess of $15 billion).

Responsible for NERA's overall efforts in advising New Jersey's Electric Distribution Companies on the structuring and conduct of the Basic Generation Service auctions (the 2002 auction involved $3.5 billion, and the 2003 and 2004 auctions involved over $4.0 billion).

Publications, Speeches, Presentations, and Reports

Capacity Adequacy in New Zealand's Electricity Market, published in *Asian Power*, September 18, 2003

Central Resource Adequacy Markets For PJM, NY-ISO AND NE-ISO, a report written February 2004

Ex Ante or *Ex Post*? Risk, Hedging and Prudence in the Restructured Power Business, The Electricity Journal, April 2006

Distributed Resources: Incentives, a white paper prepared for Edison Electric Institute, May 2006

Restructuring Expectations and Outcomes, a presentation presented at the Saul Ewing Annual Utility Conference: The Post Rate Cap and 2007 State Regulatory Environment, Philadelphia, PA, May 21, 2007

Making a Business of Energy Efficiency: Sustainable Business Models for Utilities, prepared for Edison Electric Institute, August 2007

Perspectives on Ownership Issues for Traditional Generating & Alternative Resources: Should we allow utilities back in the market or limit ownership to merchants? A presentation presented at the Energy in the Northeast Conference sponsored by Law Seminars Intl., October 18, 2007

Restructuring at a Crossroads, presented at Empowering Consumers Through Competitive Markets: The Choice Is Yours, Sponsored by COMPETE and the Electric Power Supply Association, Washington, DC, November 5, 2007

*Competitive Electricity Markets: The Benefits for Customers and the Environmen*t, a white paper prepared for COMPETE Collation, February 2008

The Continuing Rationale for Full and Timely Recovery of Fuel Price Levels in Fuel Adjustment Clauses, The Electricity Journal, July 2008

Impact of EU Electricity Competition Directives on Nuclear Financing presented to: SMI – Financing Nuclear Power Conference, London, UK, May 20, 2009

Using History As A Guide, a presentation presented at the Electric Power Research Institute (EPRI) Conference: Electricity Pricing Structures for the 21st Century, July 14 – 15, 2011, Nashville, TN

Testimony

Forums

Arkansas Public Service Commission

Federal Energy Regulatory Commission

Florida Public Service Commission

Maine Public Utilities Commission

Minnesota Public Service Commission

Nevada Public Service Commission

New York Public Service Commission

Nuclear Regulatory Commission – Atomic Safety and Licensing Board

Oklahoma Public Service Commission

Public Service Commission of Indiana

Public Utilities Commission of Ohio

Public Utilities Commission of Nevada

Public Utilities Commission of Texas

Public Utilities Commission of New Hampshire

United States District Court

United States Senate Committee on Energy and Natural Resources

Various arbitration proceedings

Clients

American Electric Power Company

Arkansas Power & Light Company

Baltimore Gas & Electric

Carolina Power & Light Company

Central Maine Power

Consolidated Edison Company of New York, Inc.

Dayton Power and Light Company

Florida Coordinating Group

Houston Lighting & Power Company

Minnesota Power and Light Company

Nevada Power Company

Niagara Mohawk Power Corporation

Northern Indiana Public Service Company

Oglethorpe Power Corporation

Pacific Gas and Electric Company

Power Authority of the State of New York

Public Service and Electric Company

Public Service Company of Oklahoma

Sierra Pacific Power Company

Southern Company Services, Inc.

Tucson Electric Power Company

Texas-New Mexico Power Company

Recent Expert Testimony and Expert Reports

Supplemental Testimony on behalf of Texas-New Mexico Power Company, Docket No. 15660, September 5, 1996.

Direct Testimony on behalf of Long Island Lighting Company before the Federal Energy Regulatory Commission, September 29, 1997.

Rebuttal Testimony on behalf of Texas-New Mexico Power Company, SOAH Docket No. 473-97-1561, PUC Docket No. 17751, March 2, 1998.

Prepared Testimony and deposition testimony on behalf of Central Maine Power Company, United Stated District Court Southern District of New York, 98-civ-8162 (JSM), March 5, 1999.

Prepared Direct Testimony Before the Public Service Commission of Maryland on behalf of Baltimore Gas & Electric Company, PSC Case Nos. 8794/8804, June 1999.

Rebuttal Testimony Before the Maryland Public Service Commission, on behalf of Baltimore Gas & Electric Company, PSC Case Nos. 8794/8804, March 22, 1999.

NORCON Power Partners LP v. Niagara Mohawk Energy Marketing, before the United States District Court, Southern District of New York, June 1999.

Prepared Supplemental Testimony Before the Maryland Public Service Commission, on behalf of Baltimore Gas & Electric Company, PSC Case Nos. 8794/8804, July 23, 1999.

Prepared Supplemental Reply Testimony Before the Maryland Public Service Commission, on behalf of Baltimore Gas & Electric Company, PSC Case Nos. 8794/8804, August 3, 1999.

Direct Testimony on behalf of Niagara Mohawk, Before the New York State Public Service Commission, PSC Case No. 99-E-0681, September 3, 1999.

Rebuttal Testimony on behalf of Niagara Mohawk, PSC Case No. 99-E-0681 Before the New York State Public Service Commission, November 10, 1999.

Arbitration deposition on behalf of Oglethorpe Power Corporation, last quarter of 1999.

Direct Testimony Before the Public Utilities Commission of Ohio on behalf of FirstEnergy Corporation, Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company, Case No. 99-1212-EL-ETP re: Shopping Credits.

Direct Testimony on behalf of Niagara Mohawk, Before the New York State Public Service Commission, PSC Case No. 99-E-0990, February 25, 2000.

Testimony on behalf of Consolidated Edison Company of New York, Inc., State of Connecticut, Department of Public Utility Control, Docket No.: 00-01-11, April 28, 2000 and June 30, 2000.

Testimony on behalf of Texas-New Mexico Power Company, Fuel Reconciliation Proceeding before the Texas PUC, June 30, 2000.

Testimony on behalf of Consolidated Edison Company of New York, Inc., Before the New Hampshire Public Service Commission, Docket No.: DE 00-009, June 30, 2000.

Rebuttal Testimony Before the Public Utilities Commission of the State of Colorado, Docket No. 99A-549E, November 22, 2000.

Testimony Before the Public Utilities Commission of the State of Colorado, Docket No. 99A-549E, January 19, 2001.

DETM Management, Inc. Duke Energy Services Canada Ltd., And DTMSI Management Ltd., Claimants vs. Mobil Natural Gas Inc., And Mobil Canada Products, Ltd., Respondents. American Arbitration Association Cause No. 50 T 198 00485 00, August 27, 2001.

State of New Jersey Board of Public Utilities, In the Matter of the Provision of Basic Generation Service Pursuant to the Electric Discount and Energy Competition Act of 1999, Before President Connie O. Hughes, Commissioner Carol Murphy on Behalf of the Electric Distribution

Companies (Public Service Electric and Gas Company, GPU Energy, Consolidate Edison Company and Conectiv) Docket No.: EX01050303, October 4, 2001.

Direct Testimony Before the Federal Energy Regulatory Commission on behalf of Pacific Gas and Electric Company, Docket No.: ER02-456-000, November 30, 2001.

Fourth Branch Associates/Mechanicville vs. Niagara Mohawk Power Corporation, January 2002 (Expert Report).

Arbitration Deposition on behalf of Oglethorpe Power Corporation, March 2002.

Direct Testimony and Deposition Testimony Before the Federal Energy Regulatory Commission on behalf of Electric Generation LLC in Response to June 12 Commission Order, Docket No.: ER02-456-000, July 16, 2002.

Rebuttal Testimony Before the Federal Energy Regulatory Commission on behalf of Electric Generation LLC in Response to June 12 Commission Order, Docket No.: ER02-456-000, August 13, 2002.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company, in the matter of the Application of Nevada Power Company to Reduce Fuel and Purchased Power Rates, PUCN Docket No. 02-11021, November 8, 2002 and subsequent Deposition Testimony.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Deferred Energy Case, Docket No. 03-1014, January 10, 2003.

Direct Testimony Before the Public Utility Commission Of Texas on behalf of Texas-New Mexico Power Company, Application Of Texas-New Mexico Power Company For Reconciliation Of Fuel Costs, April 1, 2003.

Rebuttal Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company, PUCN Docket No. 02-11021, April 1, 2003.

Rebuttal Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company, Docket No. 03-1014, May 5, 2003.

Testimony Before the Public Service Commission of New York on behalf of Consolidated Edison Company of New York, Inc., Case No.: 00-E-0612, September 19, 2003.

State of New Jersey Board of Public Utilities, In the Matter of the Provision of Basic Generation Service Pursuant to the Electric Discount and Energy Competition Act of 1999, Before President Connie O. Hughes, Commissioner Carol Murphy on Behalf of the Electric Distribution Companies (Public Service Electric and Gas Company, GPU Energy, Consolidate Edison Company and Conectiv), September 2003.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's Deferred Energy Case, November 12, 2003.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Deferred Energy Case, January 12, 2004.

Rebuttal Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Deferred Energy Case, May 28, 2004.

Direct Testimony on behalf of Texas-New Mexico Power Company, First Choice Power Inc. and Texas Generating Company LP to Finalize Stranded Cost under PURA § 39.262, January 22, 2004.

Rebuttal Testimony on behalf of Texas-New Mexico Power Company, First Choice Power Inc. and Texas Generating Company LP to Finalize Stranded Cost under PURA § 39.262, April, 2004.

State of New Jersey Board of Public Utilities, In the Matter of the Provision of Basic Generation Service Pursuant to the Electric Discount and Energy Competition Act of 1999, Before President Connie O. Hughes, Commissioner Carol Murphy on Behalf of the Electric Distribution Companies (Public Service Electric and Gas Company, GPU Energy, Consolidate Edison Company and Conectiv), September 2004.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's Deferred Energy Case, November 9, 2004.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Deferred Energy Case, January 7, 2005.

Expert Report on behalf of Oglethorpe Power Corporation, March 23, 2005.

Arbitration deposition on behalf of Oglethorpe Power Corporation, April 1, 2005.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's December 2005 Deferred Energy Case.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2006 Deferred Energy Case, January 13, 2006.

Remand Rebuttal for Public Service Company of Oklahoma before the Corporation Commission of the State of Oklahoma, Cause No. PUD 200200038, **Confidential**, March 17, 2006

Answer Testimony on behalf of the Colorado Independent energy Association, AES Corporation and LS Power Associates, LP, Docket No. 05A-543E, April 18, 2006.

Cross-Answer Testimony on behalf of the Colorado Independent energy Association, AES Corporation and LS Power Associates, LP, Docket No. 05A-543E, May 22, 2006.

Rebuttal Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2006 Deferred Energy Case, Docket No. 06-01016, June 2006.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Deferred Energy Case, December 2006.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Application for Recovery of Costs of Achieving Final Resolution of Claims Associated with Contracts Executed During the Western Energy Crisis, December 2006.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's Application for Recovery of Costs of Achieving Final Resolution of Claims Associated with Contracts Executed During the Western Energy Crisis, December 2006.

Direct Testimony Before the Public Utilities Commission of the State of Hawaii, on behalf of Hawaiian Electric Company, Inc., Docket No. 2006-0386, December 22, 2006.

Direct Testimony Before the Public Utilities Commission of the State of Hawaii, on behalf of Hawaiian Electric Company, Inc., Docket No. 05-0315, December 29, 2006.

Rebuttal Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2007 Deferred Energy Case, January 2007.

Declaration Before the State of New York Public Service Commission, on behalf of Consolidated Edison Company of New York, Inc.'s Long Island City Electric Network, Case 06-E-0894 – Proceeding on Motion of the Commission to Investigate the Electric Power Outage and Case 06-E-1158 – In the Matter of Staff's Investigation of Consolidated Edison Company of New York, Inc.'s Performance During and Following the July and September Electric Utility Outages. July 24, 2007.

Direct Testimony Before The Public Utilities Commission of Colorado, In The Matter of the Application of Public Service Company of Colorado for Approval of its 2007 Colorado Resource Plan, April 2008.

Answer Testimony Before the Public Utilities Commission of the State of Colorado on behalf of Trans-Elect Development Company, LLC, and The Wyoming Infrastructure Authority, Docket No. 07A-447E, April 28, 2008.

Rebuttal Testimony Before the Public Utilities Commission of Nevada, Application of Sierra Pacific Power Company d/b/a/ NV Energy Seeking Acceptance of its Eight Amendment to its 2008-2007 Integrated Resource Plan, Docket No. 10-02023.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's 2008 Deferred Energy Case, February 2009.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2008 Deferred Energy Case, February 2009.

Direct Testimony Before the Public Utilities Commission of Texas, on behalf of Entergy Texas, Inc. Docket No. 33687, April 29, 2009.

Direct Testimony Before The Public Utilities Commission Of Nevada On Behalf of Nevada Power Company D/B/A Nevada Energy, 2010 – 2029 Integrated Resource Plan, June 26, 2009.

Before the Public Service Commission of New York, Case 09-E-0428 Consolidated Edison Company of New York, Inc. Rate Case, Rebuttal Testimony, September 2009.

Direct Testimony Before the Public Utilities Commission of Nevada on Behalf of Sierra Pacific Power Company's 2009 Deferred Energy Case, February 2010.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2009 Deferred Energy Case, February 2010.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Nevada Power Company's 2010 – 2029 Integrated Resource Plan, Docket No. 09-07003, July 2010.

Direct Testimony Before the Public Utilities Commission of Nevada on behalf of Sierra Pacific Power Company's Eighth Amendment to its 2008 – 2027 Integrated Resource Plan, Docket No. 10-03023, July 2010.

Rebuttal Testimony Before the Public Utilities Commission of Nevada, Application of Nevada power Company d/b/a NV Energy Seeking Acceptance of its Triennial Integrated Resource Plan covering the period 2010-2029, including authority to proceed with the permitting and construction of the ON Line transmission project, Docket No. 10-02009.

Rebuttal Testimony Before the Public Utilities Commission of Nevada, Petition of Nevada Power Company d/b/a NV Energy requesting a determination under NRS 704.7821 that the terms and conditions of five renewable power purchase agreements are just and reasonable and allowing limited deviation from the requirements of NAC 704.8885, Docket No. 10-03022.

Rebuttal Testimony Before the Public Utilities Commission of Nevada, on behalf of Nevada Power Company d/b/a NV Energy, 2010 Deferred Energy Case, Docket No. 10-03003, filed August 3, 2010

Rebuttal Testimony Before the Public Utilities Commission of Nevada, on behalf of Sierra Pacific Power Company d/b/a NV Energy Electric Department, 2010 Deferred Energy Case, Docket No. 10-03004, filed August 3, 2010

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Sierra Pacific Power Company, d/b/a NV Energy, Docket No. 11-03 __ 2011 Electric Deferred Energy Proceeding, February 2011.

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Nevada Power Company, d/b/a NV Energy, Docket No. 11-03 __ 2011 Electric Deferred Energy Proceeding, February 2011.

Testimony Before the Atomic Safety and Licensing Board, Nuclear Regulatory Commission, In the Matter of Entergy Nuclear Operations, Inc., Dockets Nos. 50-247-LR and 50-286-LR, March 30, 2012.

Rebuttal Testimony Before the Public Utilities Commission of Ohio, In Support of AEP Ohio's Modified Electric Security Plan, Case No. 10-2929, May 11, 2012.

Prefiled Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Sierra Pacific Power Company, d/b/a NV Energy, Docket No. 12-03 __ 2012 Electric Deferred Energy Proceeding, February 2012.

Prefiled Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Nevada Power Company, d/b/a NV Energy, Docket No. 12-03 __ 2012 Electric Deferred Energy Proceeding, February 2012.

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Sierra Pacific Power Company, d/b/a NV Energy, Docket No. 13-03 __ 2013 Electric Deferred Energy Proceeding, February 2013.

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Nevada Power Company, d/b/a NV Energy, Docket No. 13-03 __ 2013 Electric Deferred Energy Proceeding, February 2013.

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Sierra Pacific Power Company, d/b/a NV Energy, Docket No. 14-02 __ 2014 Electric Deferred Energy Proceeding, February 2014.

Direct Testimony Before the Public Utilities Commission of Nevada, on behalf of Nevada Power Company, d/b/a NV Energy, Docket No. 14-02 __ 2014 Electric Deferred Energy Proceeding, February 2014.

January 2015

2015 Feasibility Analyses Results for the Turkey Point 6 & 7 Project:
Case # 1 Analysis - 40-Year Operating Life; Total Costs,
Total Cost Differentials, and Breakeven Costs for All Fuel
and Environmental Compliance Cost Scenarios in 2015$
(millions, CPVRR, 2015 - 2068)

(1)	(2)	(3)	(4)	(5) = (3) - (4)	(6)				
Fuel Cost Forecast	Environmental Compliance Cost Forecast	Total Costs for Plans		Total Cost Difference Plan without TP 6 & 7 minus Plan with TP 6 & 7	Breakeven Nuclear Capital Costs ($/kW in 2015$) Per Exhbit ROB-5	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission Advantage	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission or Carbon Advantage	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission and 50% Carbon Advanatge	Breakeven Nuclear Capital Costs ($/kW in 2015$) 50% Transmission and 50% Carbon Advanatge
		Resource Plan w/ TP 6 & 7	Resource Plan w/o TP 6 & 7						
High Fuel Cost	Env I	140,810	151,571	10,762	5,254	4,424	3,001	3,712	4,127
High Fuel Cost	Env II	148,047	159,595	11,548	5,639	4,809	3,029	3,919	4,334
High Fuel Cost	Env III	155,298	167,645	12,348	6,031	5,201	3,064	4,132	4,548
Medium Fuel Cost	Env I	125,989	135,525	9,536	4,654	3,824	2,402	3,113	3,528
Medium Fuel Cost	Env II	133,186	143,498	10,312	5,034	4,204	2,425	3,314	3,729
Medium Fuel Cost	Env III	140,393	151,496	11,103	5,421	4,591	2,455	3,523	3,938
Low Fuel Cost	Env I	110,950	119,248	8,298	4,049	3,220	1,797	2,508	2,923

Note: The TP 6 & 7 non-binding cost estimate range to which the breakeven cost is compared is $3,844/kW to $5,589/kW in 2015$.

2015 Feasibility Analyses Results for the Turkey Point 6 & 7 Project:
Case # 2 Analysis - 60-Year Operating Life; Total Costs,
Total Cost Differentials, and Breakeven Costs for All Fuel
and Environmental Compliance Cost Scenarios in 2015$
(millions, CPVRR, 2015 - 2088)

(1)	(2)	(3)	(4)	(5) = (3) - (4)	(6)				
Fuel Cost Forecast	Environmental Compliance Cost Forecast	Total Costs for Plans		Total Cost Difference Plan without TP 6 & 7 minus Plan with TP 6 & 7 *	Breakeven Nuclear Capital Costs ($/kW in 2015$) Per Exhibit ROB-6	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission Advantage	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission or Carbon Advantage	Breakeven Nuclear Capital Costs ($/kW in 2015$) No Transmission and 50% Carbon Advanatge	Breakeven Nuclear Capital Costs ($/kW in 2015$) 50% Transmission and 50% Carbon Advanatge
		Resource Plan w/ TP 6 & 7	Resource Plan w/o TP 6 & 7						
High Fuel Cost	Env I	165,666	178,785	13,119	6,408	5,578	3,815	4,696	5,111
High Fuel Cost	Env II	177,061	191,427	14,366	7,018	6,188	3,984	5,086	5,501
High Fuel Cost	Env III	188,470	204,108	15,638	7,640	6,809	4,165	5,487	5,902
Medium Fuel Cost	Env I	149,624	161,367	11,743	5,734	4,904	3,142	4,023	4,438
Medium Fuel Cost	Env II	160,969	173,950	12,982	6,341	5,511	3,307	4,409	4,824
Medium Fuel Cost	Env III	172,319	186,565	14,246	6,959	6,129	3,484	4,806	5,222
Low Fuel Cost	Env I	133,349	143,709	10,360	5,058	4,228	2,466	3,347	3,762

Note: The TP 6 & 7 non-binding cost estimate range to which the breakeven cost is compared is $3,844/kW to $5,589/kW in 2015$.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on the 22nd day of June, 2015, I served the foregoing document on all parties list in the attached Service List by e-mail.

By: *s/ Matthew Haber*
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Assistant City Attorney
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