STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF ATLANTIC CITY ELECTRIC COMPANY FOR APPROVAL OF CERTAIN ENERGY INFRASTRUCTURE INVESTMENTS AND APPROVAL OF COST RECOVERY FOR SUCH PROJECTS AND RELATED TARIFF MODIFICATIONS ASSOCIATED THEREWITH PURSUANT TO N.J.S.A 48:2-21 AND N.J.S.A. 48:2-21.1	)	**BPU DOCKET No. EO11100650**

DIRECT TESTIMONY OF CHARLES P. SALAMONE P.E. ON BEHALF OF THE DIVISION OF RATE COUNSEL

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I. STATEMENT OF QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Charles P. Salamone. I am Owner of Cape Power Systems Consulting, LLC a power systems consulting Company with an address of 23 Westerly Drive, Bourne, Massachusetts and I am subcontracting with Synapse Energy Economics, Inc. with an address of 485 Massachusetts Avenue, Cambridge, Massachusetts.

Q. On whose behalf are you submitting testimony in this proceeding?

A. I am submitting testimony on behalf of the Division of Rate Counsel.

Q. Please describe your education and professional background.

A. I hold a Bachelor of Science Degree in Electrical Engineering from Gannon University. I joined the Engineering Department of Commonwealth Electric Company in 1973. At that time, I became a Junior Planning Engineer where my primary responsibilities were to assist in the planning, analysis and design of the transmission and distribution systems of Commonwealth Electric Company, later known as NSTAR. I generally followed the normal progression of positions with increasing levels of responsibility within the planning area until taking the position of Director of System Planning at NSTAR in 2000. I held that position until starting Cape Power Systems Consulting, LLC in 2005. During my career with NSTAR in addition to the responsibilities associated with overseeing System Planning I had served as Chair of the New England Power Pool (NEPOOL)

Planning Policy Subcommittee (1997-1998), Chair of the NEPOOL Regional Transmission Planning Committee (1998-1999) and Vice Chair of the NEPOOL Reliability Committee (1999-2000). As a consultant I have been providing consulting services to a number of power system industry clients since 2005. I am a Registered Professional Engineer with the Commonwealth of Massachusetts. I am also a member of the Power Engineering Society of the Institute of Electrical and Electronic Engineers. A copy of my resume is attached hereto as Attachment CPS-A.

Q. Have you previously testified before utility regulatory agencies?

A. Yes. I have previously testified before the New Jersey Board of Public Utilities, the Federal Energy Regulatory Commission, the Massachusetts Department of Telecommunications and Energy and the Massachusetts Energy Facilities Siting Board on a number of technical matters relating to ratemaking and system planning.

II. PURPOSE OF TESTIMONY

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

The purpose of my testimony is to review the Company's petition seeking to implement an Infrastructure Investment Program (IIP) and to point out the inconsistencies between Atlantic's initial IIP (the "IIP-1") and this proposed

"extension" of the IIP-1, the IIP-2. The Company has failed to provide evidence that the projects submitted as part of its IIP-2 filing are qualifying projects consistent with the criteria established under the IIP-1 program. The Company maintains that the projects included in its filing are incremental in nature based on historical spending and my testimony will explain that the higher spending amount is a result of past inadequacies with respect to funding of reliability based work. In addition, these proposed projects cannot be considered as "accelerated," a second requirement for qualifying project status under the IIP-1. I will also review the purported job creation estimates for the proposed work and provide an estimate that suggests that the economic benefits associated with the $63.1 million expenditure for year 1 may be far less helpful to the New Jersey economy than estimated by the Company.

III. INFRASTRUCTURE IMPROVEMENT STIMULUS PROGRAM

Q. Can you describe the intent of the New Jersey Infrastructure Improvement Program?

On October 16, 2008, then Governor Jon Corzine addressed the New Jersey State Legislature calling for the Board of Public Utilities ("BPU" or the "Board") to "facilitate job growth and assist in New Jersey's economic stimulus program."[1]

[1] I/M/O the Proceeding for Infrastructure Investment and a Cost Recovery Mechanism for All Gas and Electric Utilities, BPU Docket No. EO09010049and I/M/O the Petition of Atlantic City Electric Company for Approval of Certain Energy Infrastructure Investments and approval of Cost Recovery for Such Projects and Related Tariff Modifications Associated Therewith Pursuant to NJSA 48:2-21 and NJSA 48:2-

The BPU proceeded to implement a program that would ultimately result in acceleration of more than $956 million in capital project work for New Jersey electric and gas utilities estimated to create over 1,300 new hires. The objective and intent of the infrastructure investment program (IIP) was based on two fundamental criteria aimed at creating job growth for the New Jersey economy. For a project to be considered a qualifying project under the IIP-1, the project must have been incremental in nature, an acceleration of work that went beyond that which was required to meet current reliability concerns and the project must have provided system reliability benefits for the future.

The BPU order approving the stipulation for the proposed expenditures submitted by the Company under IIP-1 captured these requirements and recognized the need for special rate treatment under special circumstances. The Order states: "…the acceleration of utility infrastructure projects and the treatment of capital expenses on an expedited schedule outside the purview of a rate case is not part of the normal course of utility regulation."[2]

Atlantic's IIP-1 program approved by the BPU included 16 projects that were clearly incremental to the Company's then current budget expenditures for the 2009-2010 planned budget period. These reliability based projects entailed

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21.1, BPU Docket No. EO09010054, Decision and Order Approving Stipulation, April 28, 2009, Page 7 (hereinafter the "IIP Order")
[2]Id.

additional expenditures of $27.6 million above and beyond the 2009 budget of $61.1[3] million for reliability based projects to be completed in the budget period. The $27.6 million was defensively an amount that was incremental to the routinely budgeted reliability based expenditures.

Not only were the IIP-1 project expenditures incremental, the projects were accelerated, that is the IIP-1 qualifying projects were projects that were originally scheduled to be completed in the 2011-2013 timeframe but were accelerated to be completed during the 2009-2010 construction period. In its decision and order approving the stipulation, the Board describes the Company's infrastructure improvement program as one that was an acceleration of reliability based work.

> The Company states that as part of its ordinary capital spending planning cycle, ACE continuously plans for the replacement, reinforcement and expansion of its infrastructure, including its property, plant, facilities and equipment, to maintain the reliability of its distribution system and to ensure the continuation of safe, adequate, proper service and the conservation and preservation of the environment. ACE has agreed to accelerate certain of its planned infrastructure capital spending from 2011 through 2013 to 2009 and 2010.[4]

Moreover, the Company in its own description of the IIP-1 program clearly characterizes the program as accelerating capital improvement projects. A summary provided by the Company on its website describes the IIP-1 program.

[3] Verified Petition of Atlantic City Electric Company, Dated August 14, 2009, Gausman Testimony, Page 13, Table 6.
[4] IIP Order, page 2.

> The company recently completed its 2009 BPU-approved IIP. Under this program, the company committed to accelerate spending on capital improvement projects to help stimulate the State's economy and create jobs. In 2009 and 2010, the company accelerated capital improvement spending originally scheduled for 2011 through 2013. The program was comprised of 16 infrastructure projects with an estimated capital cost of $27.6 million that enhanced the safety and reliability of the company's electric distribution system and ultimately resulted in 59 new construction-related jobs.[5]

It is without doubt that the BPU's expectation, former Governor Corzine's intention and the Company's understanding of the Infrastructure Investment Program was to provide a financial incentive for utilities to accelerate originally scheduled or contemplated work to stimulate job growth in the state. In this IIP-2 filing the Company is not proposing to accelerate future projects but rather the Company seeks an alternative funding mechanism for projects and work that are necessary to maintaining acceptable levels of system reliability.

IV. MAINTAINING SYSTEM RELIABILITY

Q. Are all utilities required to maintain acceptable reliability performance of their electric distribution systems?

Electric utilities serving customers in New Jersey are subject to rules established by the BPU concerning their reliability of service. Under N.J.A.C § 14:5-

[5] Extract of statements on Company web site located at:
http://www.atlanticcityelectric.com/welcome/news/releases/archives/2011/article.aspx?cid=1883

8.3 Service Reliability, electric distribution companies ("EDC") have the following obligations:

(a) Each EDC shall have reasonable programs and procedures necessary to maintain the minimum reliability levels for its respective operating areas.

(b) The programs shall be designed to sustain reliability and, where appropriate, improve reliability. Each EDC shall utilize appropriate and qualified resources to maintain at a minimum, the minimum reliability levels for its respective operating areas.

These obligations set reliability performance as a high priority for utilities and serve to establish minimum performance standards that could lead to monetary penalties for failure to comply with the statutes.

Q. Has the Company maintained acceptable levels of reliability performance?

A management audit of the Company was ordered by the BPU which was initiated in June of 2008. The audit was performed by Overland Consulting and included an extensive review of the Company's management performance which included a review of the Company's reliability performance. The audit included a review of the Company's practices and funding for maintaining distribution system reliability.

The management audit performed by Overland Consulting noted that the Company recognized that its reliability metrics were "mediocre" when compared

to other electric utilities and that its performance was "in-adequate and not improving"[6]. The Overland report went on to report that the results of the Company's internal review indentified the following issues:[7]

- Current vegetation management funding was not sufficient to produce significant reliability improvements.
- Funding for outage response activities was not perceived to be an overwhelming problem. Instead the issue was ineffective utilization of existing resources.
- Constantly changing financial pressures and a focus on cost controls had overwhelmed past efforts to improve reliability.
- PHI did not have processes to ensure budgeted dollars were actually spent in accordance with its plans or spent on the most effective activities.

These issues are indicative of a failure to properly fund reliability based projects in a timely manner. As a consequence of these deficiencies the Company is now faced with regaining lost ground and must, in an effort to catch up, include work that it failed to include under prior budget periods.

Q. Was the Company's reliability performance also addressed in the Company's prior base rate case?

[6] Overland Consulting Management Audit Report Page 1-18.
[7] Overland Consulting Management Audit Report Page 15-18.

Yes. The Company's relatively poor reliability performance was also subject of the Company's recently completed base rate case proceeding. The subject of reliability performance was of such significance that it was dealt with separately through a phase II review of the rate case proceeding. Under this review and in response to its own recognition of inadequate reliability performance, the Company developed a comprehensive Reliability Improvement Plan (RIP) to satisfy the expectations that the BPU set for the Company for improving its reliability performance. [8] Based on the Company's response to RCR-ER-IIP-2-4, the RIP program included increasing the projected reliability based spending by $30.7 million over a five year period (2011-2015).

Q. Can you describe how the RIP relates to the IIP-2 filing?

Many of the projects that are included in the Company's IIP-2 filing are projects that were developed as a result of the Company's RIP. These projects should not be considered as part of the proposed IIP-2 program since the RIP projects already have been scheduled or budgeted by the Company.

[8] I/M/O the Petition of Atlantic City Electric Company for Approval of Amendments to Its Tariff to Provide for an Increase in Rates and Charges for Electric Service Pursuant to NJSA 48:2-21 and NJSA 48:2-21.1 and for Other Appropriate Relief, BPU Docket No. ER09080664, Order Approving Stipulation, May 16, 2011.

The projects that have been submitted by the Company for recovery under the IIP-2 program fall into a set of 12 categories as defined by the Company (RCR-A-IIP2-17). These categories include:

1) Feeder Reliability Improvements,
2) Planned URD Cable Replacements,
3) Install Capacitors and Regulators,
4) Distribution Automation,
5) Replace Deteriorated Distribution Breakers,
6) Substation Improvements to Enhance Reliability,
7) Conversion/Replacement Of Infrastructure,
8) Infrastructure Upgrades for Reliability,
9) Reliability-Replacement of Infrastructure,
10) System Spare Infrastructure for Reliability,
11) Cyber/NERC Security, and
12) SPCC Plans: Distribution Oil Circuit Breaker Replacement.

Of these categories, 1) Feeder Reliability Improvements, 4) Distribution Automation, and 6) Substation Improvements to Enhance Reliability all encompass work that was expressly included in the RIP program. The remaining category of projects are either not accelerated projects or are projects that offer little to no opportunity to create jobs for the New Jersey economy. For example, category 10) System Spare Infrastructure For Reliability involves little more than ordering equipment from equipment suppliers. Given that the equipment described was primarily large power transformers (RCR-A-IIP2-17), there is

little likelihood that any of this equipment would be provided by New Jersey manufacturers. Additionally, work such as that contemplated under 3) Install Capacitors and Regulators, 11) Cyber/NERC Security, and 12) SPCC Plans: Distribution Oil Circuit Breaker Replacements is work that is required based on local or national standards and regulations. These projects would also fail to qualify as accelerated or incremental work. Finally, based on a review of the work details provided for the categories of 2) Planned URD Cable Replacements, 5) Replace Deteriorated Distribution Breakers, 7) Conversion/Replacement of Infrastructure, 8) Infrastructure Upgrades for Reliability, and 9) Reliability-Replacement of Infrastructure it can be concluded that the work was either associated with other projects such as substation expansion projects, work that had been previously planned for in a prior budget period but deferred, work that was originally planned for in the current budget period or work that did not have any supporting information indicating that it was accelerated in nature.

Q. Based on the above, what is your conclusion regarding the IIP-2 projects?

In my opinion, the projects submitted by the Company can not legitimately be considered as qualifying projects consistent with the criteria established under the IIP-1 program.

The Company's response to data inquiry RCR-ER-IIP-2-1 states that the projects included in IIP-2 are incremental based solely on the fact that the historical average annual spending for reliability based projects was lower. It is precisely this fact that led to the need for the RIP and it is clearly evident that the higher spending rate has nothing to do with accelerating work previously scheduled at a future date but is rather a result of past failures to adequately fund reliability work.

Additionally, in response to data inquiry RCR-ER-IIP-2-6 the Company stated that "[t]he IIP-2 petition references additional funding of reliability capital plans that were added in the 2012 construction budgeting process. These increases are focused on increasing the reliability work scopes of the core reliability programs, feeder upgrade and reconstruction, substation component upgrades and replacements, and distribution automation and load-related reliability to assure required voltage performance." There is no mention of any acceleration of projects in the Company's response. It can only be concluded that the projects that were identified under its RIP program in conjunction with the routine required reliability based spending must be considered as work that was planned for, committed to and necessary to maintain system reliability and are in no manner accelerated in nature.

V. STIMULUS PROGRAM JOB CREATION OBJECTIVES

Q. What were the job estimates from IIP-1?

A key goal of the infrastructure investment program was to create jobs in New Jersey. As stated by the BPU in its April 28, 2009 Order:

> Public utility involvement, along with competition in the renewable energy, conservation and energy efficiency industries are essential to meeting the goals of the EMP. The Governor, together with Board President Jeanne M. Fox, encouraged New Jersey's electric and gas utilities to formulate plans for enhanced investments in infrastructure improvements during 2009. Implementation of such plans would accelerate the current schedule of the electric and gas utilities for planned capital improvements and investments, thereby creating jobs and stimulating the State's economy.[9]

In response, the Company proposed and the Board approved 16 infrastructure projects with a total two year budget of $27.6 million that the Company projected would create 92 new jobs. The 16 Qualifying Projects were "expected to generate 92 direct jobs over the next two years, primarily in the construction industry."[10] In actuality over the two year life of the program, the Company's $26.2 million in actual net spending resulted in 59 jobs (RCR-ER-IIP-2-13, Attachment 1) or 64% of the jobs projected by the Company in the April 28, 2009 Stipulation. This roughly translates to a spending of approximately $445,000 per job.

[9] IIP Order, page 2.
[10] Id. page 8.

Q. Are the proposed job estimates of the proposed investments consistent with job creation from IIP-1?

In the Company's October 18, 2011 Petition, the Company is seeking to expand the IIP-1 program, 16 infrastructure projects, to IIP-2, which encompasses 135 projects (Revised WMG-1) in 12 categories.

The Company anticipates that the $63.1 million in spending for the IIP-2 program in 2012 will create up to "approximately 100 construction related jobs," (Petition, Page 8, RCR-ER-IIP-2-9) as compared to the 92 jobs the Company expected to create through spending of $27.6 million in the IIP-1 program. The proposed IIP-2 program would result in the Company spending approximately $631,000 per job created for year 1. While the estimate of 100 jobs appears to be more in line with the actual job creation number of 59 under IIP-1, the basis for the job creation estimate is suspect. For example, included in the $2.8 million expenditure for the purchase of spare transformers, the Company estimates that they will expend over $532,000 in labor expenses which, based on the calculations provided in RCR-ER-IIP-2-8, would translate to creation of 3 new jobs. While there is some labor expense associated with the transport of this equipment, the job creation estimates associated with these projects are hard to find credible.

Q. How does the Company arrive at its estimate for the number of jobs created by the proposed program?

The Company provides the calculation formula used to estimate the number of anticipated jobs in RCR-ER-IIP-2-8. The Company did not base its job estimate calculations on job creation data from specific projects (RCR-ER-IIP-2-10). As noted above, this does offer some concern as the labor associated with some projects may either be associated with work outside of New Jersey or work estimates that reflect generalized assumptions.

Table CPS-1 shows the calculation of the Company's estimated job creation for the $63.1 million to be spent in 2012.

Table CPS-1: Illustration of RCR-ER-IIP-2-8

ACE estimate of IIP-2	(a)	$63.1 million
Fraction of labor costs	(b)	70%
Calculated labor costs	C=a x b	$44.2 million
Hourly labor rate	(d)	$100/hr
Calculated labor hours	(e)= c / d	442,000 hours
Estimate of job-hours	(f)	1,825 hours
Calculation of job-years	(g)= e / f	242 job-years
Allocation of internal to contract labor	(h)	50%
Contractor allocation	(i) = g x h	121 job-year
Company reduction factor	(j)	21
Company job estimate	(k)= i– j	**100**
Notes: Based on RCR-ER-IIP-2-8		

The Company's calculations result in a job creation estimate of 100 jobs associated with the proposed IIP-2 program for 2012. The main drivers for this estimate are detailed below.

In RCR-ER-IIP-2-8, the Company uses a combined labor cost fraction of 70%. In RCR-ER-IIP-2-29, the Company provides estimates of labor and material costs for the proposed IIP-2 program for 2012. Based on the Company's response, we calculate a labor cost fraction of 64% for the proposed IIP-2 program.

Another driver of the estimate is the Company's application of a 50% split between Company labor and contract labor that appears in its estimate of labor costs for the IIP-2 program. (RCR-ER-IIP-2-29) Contract labor jobs are further

adjusted downward from 121 calculated jobs to 100 jobs based on a "conservatism" factor applied by the Company. (RCR-ER-IIP-2-8)

Q. Is there a potential for a lower job creation estimate?

Yes, changing the assumption concerning the labor cost fraction results in a lower job estimate. As noted above, the job estimates calculation is sensitive to assumptions of the labor cost fraction as well as other factors. The Company acknowledges that it does not have a specific target for job creation. (RCR-ER-IIP-2-14) Changing the labor cost fraction based on Company provided values could result in a lower estimate of job creation numbers if the allocation between Company labor and external labor is higher than suggested in RCR-ER-IIP-2-29 and more in line with the calculation included in response to RCR-ER-IIP-2-8. Based on RCR-ER-IIP-2-13 and RCR-ER-IIP-2-29, Table CPS-2 provides a comparison of estimated jobs created in 2012 following the methodology used by the Company in RCR-ER-IIP-2-8 using alternative factors based on the response to data inquiries.

Table CPS-2: Calculation of Job Creation Estimates

		Calculation from RCR-ER-IIP-2-8	Calculation Using RCR-ER-IIP-2-29 Data with RCR-ER-IIP-2-8 Contract Labor Fraction
ACE estimate of IIP-2	(a)	$63.1 million	$62.9 million
Fraction of labor costs	(b)	70%	64.4%
Calculated labor costs	C=a x b	$44.2 million	$40.5 million
Hourly labor rate	(d)	$100/hr	$100/hr
Calculated labor hours	(e)= c / d	442,000 hours	405,298 hours
Estimate of job-hours	(f)	1,825 hours	1,825 hours
Calculation of job-years	(g)= e / f	242 job-years	222 job-years
Allocation of internal to contract labor	(h)	50%	50%
Contractor allocation	(i) = g x h	121 job-years	111 job-years
Company reduction factor	(j)	21	21
Calculated job estimate	(k)= i– j	**100**	**90**
Notes: RCR-ER-IIP-2-8 RCR-ER-IIP-2-29, Attachment 1			

As shown in the exhibit, the job creation estimate may be as low as 90 using the Company's methodology. The values shown can be considered optimistic estimates and based on the experience of IIP-1 the job creation numbers could be on the order of 36% lower than anticipated. While the Company attempted to offer a conservative approach to its estimation process by lowering the calculated values by approximately 17% a more conservative estimate could suggest values

as low as 71 jobs if both a lower labor fraction and a higher error margin are assumed.

VIII SUMMARY

Q. Please summarize your conclusions and recommendations regarding ACE's IIP-2 filing?

The conclusions that can be drawn are straightforward in this proceeding. The projects submitted by the Company for inclusion in a Phase 2 implementation of the IIP, as conceived by former Governor Corzine and the BPU, fail to meet the criteria and expectations of the program. As is undeniably the case, these projects would not have been considered as "qualifying projects" under the IIP-1 program implementation. The Company has made no showing that the work is accelerated in nature based on advancing planned future work in order to promote job growth in New Jersey. The projects quite simply involve the work necessary to support and improve the reliability performance of the Company's distribution system as a result of past inadequacies with respect to reliability project funding. The fact that the Company is now faced with shoring up its reliability based spending should not be confused with the IIP program objectives and it is without doubt that the projects submitted for inclusion in the Company's IIP-2 program are

projects that would and should be implemented as a matter of good utility practice.

Furthermore, these projects are potentially far less effective with respect to job creation than originally envisioned under the IIP-1 program and may not provide the anticipated economic benefits.

Based on these observations and conclusions it is recommended that the Board reject the entire set of proposed projects.

Q. Does this conclude your testimony?

A. Yes. However, I reserve the right to supplement my testimony based on further updates to discovery and ACE's rebuttal testimony.

ATTACHMENT CPS-A

Charles P. Salamone PE

Charles P. Salamone, P.E.

Profession: Power systems analysis and assessment, with a special emphasis on transmission planning, performance and design

Nationality: U.S. Citizen

Years of Experience: 37 years

Education B.S.E.E, Power System Engineering, 1973
Gannon University, Erie, PA

Position: Owner/Manager, Cape Power Systems Consulting

Web/Email: www.CapePowerSystems.com csalamone@capepowersystems.com

Contact Number: 774-271-0383

Summary: Mr. Salamone provides professional services based on his 37 years of experience in the areas of Transmission Planning, Substation Planning, Distribution Planning ISO-New England Procedures, New England Power Pool Procedures, Congestion Management, Generator Interconnections, Meter Engineering, Planning Budget Management, and State (Mass DPU and New Jersey Rate Council) and Federal (FERC) Regulatory Agency Filing Development and Expert Witness Testimony

Experience:

2005- Pres. Cape Power Systems Consulting

Established a power system design, analysis, planning and assessment consulting company to work directly with diverse power system stakeholders.

- Worked with a number of clients concerning development of analysis, reports and presentations in support of regulatory and technical review/approval process for transmission and distribution projects.
- Provided technical assistance for transmission planning activities for an Independent System Operator including support for major transmission system expansion programs and development of a 10 year transmission plan

- Worked with state regulatory agencies in support of electric utility rate case proceedings including expert witness testimony and assessment of electric utility performance.
- Worked with multiple state regulatory agencies in support of review of electric utility smart grid initiatives including review of the technical performance and viability of proposed electric utility programs.
- Developed and conducted a comprehensive training program for implementation of EMS based transmission system security assessment procedures for a large Massachusetts utility
- Worked with Massachusetts Technology Collaborative providing technical support concerning electric utility design and analysis activities

1979-2005 NSTAR (Previously Boston Edison and Commonwealth Electric)

2000-2005 ***Director System Planning***

NSTAR (Previously Boston Edison and Commonwealth Electric) Boston, MA

- Responsible for long term planning of Company transmission, substation and distribution systems
- Successfully managed the studies, design, internal and external review and regulatory approval for a $250M 345 kV underground transmission expansion project serving the greater Boston area
- Managed numerous generator interconnection studies, design and approvals
- Successfully managed studies, design and approval for congestion mitigation plans and expansion project
- Oversaw transmission and distribution planning efforts to establish a comprehensive 10 year $300 million system expansion plan
- Served as Company representative on NEPOOL Reliability Committee and the New England Transmission Expansion Advisory Committee
- Served as Company expert witness for system planning related regulatory proceedings at both the state and federal levels.
- Supervised a staff of 10 senior engineers

1989-1999 ***Manager, System Planning and Meter Services***

Commonwealth Electric Company, Wareham, MA

- Develop risk based prioritized $10 million construction budget procedures
- Supervise a staff of 6 professional engineers and 4 analysts
- Served as chair of the NEPOOL Regional Transmission Planning Committee (currently the NEPOOL Reliability Committee)
- Process billing determinant and interval data for all major system customers
- Lead implementation of first MV90 meter data processing system
- Develop annual performance analysis reports for all transmission and major distribution systems
- Manage multiple FERC tariff based transmission customer and generation developer system impact studies

- Served as expert Company witness in State and FERC regulatory proceedings
- Implemented a risk index for prioritization of all transmission and major distribution construction projects
- Implemented automated electronic processing of major customer billing data, which significantly reduced time needed to generate bills
- Served as lead member on information technology company merger team
- Implemented process and equipment to perform all tie line, generator and wholesale customer meter testing
- Served as chair of the NEPOOL Planning Process Subcommittee, which established numerous NEPOOL policies for transmission/generator owners
- Served as Vice-Chair of the NEPOOL Reliability Committee

1984-1989 ***Meter Engineer***

Commonwealth Electric Company, Plymouth, MA

- Designed and supervised installation of 15 generator meter data recorders
- Developed customer load plotting and analysis software
- Developed meter equipment order data processing system for four remote offices
- Implemented PC control of meter test boards, which significantly reduced processing and record keeping time
- Managed programming of all electronic meter registers to insure accurate data registration

1979-1984 ***Computer Application Engineer***

Commonwealth Electric Company, Wareham, MA

- Implemented numerous technical and analytical software applications for engineering analysis
- Served as member of decision team for implementation of a new SCADA system

1978-1979 **San Diego Gas & Electric, *Planning Engineer***

San Diego Gas & Electric Company, San Diego, CA

- Performed extensive stability analysis for a new 230 kV transmission interconnection with Mexico
- Performed transmission design and performance analysis for a new 250 mile 500 kV line from San Diego to Arizona

1973-1978 **New England Gas & Electric Association, *Planning Engineer***

New England Gas & Electric Association, Cambridge, MA

- Performed extensive stability analysis for a new 560 MW generating plant on Cape Cod
- Developed transmission plan for a new 345 kV transmission line on Cape Cod
- Developed plans for design and sighting of new 115 / 23 kV substations on Cape Cod