

**STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

I/M/O the Verified Petition of Jersey Central Power & Light Company (“JCP&L”) and Mid-Atlantic Interstate Transmission, LLC (“MAIT”) for: (1) Approval of the Transfer of JCP&L’s Transmission Assets to MAIT Pursuant to N.J.S.A. 48:3-7; (2) Approval of a Lease of JCP&L’s Real Property and Real Property Rights Associated with its Transmission Assets to MAIT Pursuant to N.J.S.A. 48:3-7; (3) Approval of a Mutual Assistance Agreement Pursuant to N.J.S.A. 48:3-7.1; and (4) a Declaration that MAIT Will be Deemed a Public Utility for, inter alia, the Purposes of Sitting Authority under N.J.S.A. 40:55D-19 and Eminent Domain Authority Pursuant to N.J.S.A. 48:3-17.6 et seq.,  
and  
In the Matter of the Verified Petition of Jersey Central Power & Light Company for Authorization Pursuant to N.J.S.A. 48:3-7.2 for Approval to Participate in the FirstEnergy Corp. Intrasystem Money Pool – Amendment No. 8

BPU Docket Nos. EM15060733  
and EF02030185

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**DIRECT TESTIMONY OF GREGORY L. BOOTH  
BEING FILED ON BEHALF OF THE  
DIVISION OF RATE COUNSEL**

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**DIRECT TESTIMONY OF GREGORY L. BOOTH, PE**

1

2 **I. INTRODUCTION**

3 **Q. Please state your name and the business address of your employer.**

4 **A.** My name is Gregory L. Booth. I am the President of and employed by PowerServices,  
5 Inc. ("PowerServices"), located at 1616 E. Millbrook Road, Suite 210, Raleigh, North  
6 Carolina 27609.

7 **Q. What does your position with PowerServices, Inc., entail?**

8 **A.** As President of PowerServices, Inc., an engineering and management services firm, I am  
9 responsible for the direction, supervision, and preparation of engineering projects and  
10 management services for our clients, including the corporate involvement in engineering,  
11 planning, design, construction management, and testimony.

12 **Q. Would you please outline your educational background?**

13 **A.** I graduated from North Carolina State University in Raleigh, North Carolina in 1969 with  
14 a Bachelor of Science Degree in Electrical Engineering. I am a registered professional  
15 engineer in twenty-three (23) states, including New Jersey, as well as the District of  
16 Columbia. I am also a registered land surveyor in North Carolina. I am additionally  
17 registered under the National Council of Examiners for Engineering and Surveying.

18 **Q. Are you a member of any professional societies?**

19 **A.** I am an active member of the National Society of Professional Engineers ("NSPE"), the  
20 Professional Engineers of North Carolina ("PENC"), The Institute of Electrical and  
21 Electronics Engineers ("IEEE"), American Public Power Association ("APPA"),

1 American Standards and Testing Materials Association (“ASTM”), the National Fire  
2 Protection Association (“NFPA”), and Professional Engineers in Private Practice  
3 (“PEPP”). I have also served as a member of the IEEE Distribution Subcommittee on  
4 Reliability and as an advisory member of the National Rural Electric Cooperative  
5 Association (“NRECA”)-Cooperative Research Network.

6 **Q. Have you published any treatises, manuals, or courses, or taught seminars?**

7 **A.** Since 1972, I have authored manuals and taught numerous seminars each year on  
8 engineering matters, including reliability, rates and regulations, design and construction  
9 and construction management and services matters. I have also prepared engineering  
10 manuals and text for instruction, seminars and courses. My manuals and texts have  
11 included subjects such as the National Electrical Safety Code (“NESC”), Power Loss  
12 Management, Power System Protective Coordination, Long-Range Planning, Asset  
13 Management Strategic Planning, Electric Utility Best Practices, Power Factor  
14 Optimization, Power Quality, Underground Design Standards, Hazard Assessment and  
15 Arc Flash Mitigation, the National Electrical Code (“NEC”), North American Electric  
16 Reliability Corporation (“NERC”) Compliance, and many others. My seminars,  
17 instructions, courses and speaking have been before state and national electric utility  
18 organizations across the United States. I have been nationally published on some of these  
19 subjects as well.

20 **Q. Have you attached to your testimony a copy of your curriculum vitae?**

21 **A.** Yes. My curriculum vitae is attached as Appendix-1, and includes an overview of my  
22 experience since beginning my work in 1963.

23 **Q. Please briefly describe your experience with electric utilities and companies.**

1 A. I have worked in the area of electric utility and telecommunication engineering and  
2 management services since 1963. I have been actively involved in all aspects of electric  
3 utility planning, design and construction, for generation, transmission, substation and  
4 distribution systems, including outage restoration and storm response. Since graduating  
5 from North Carolina State University in 1969 and becoming a registered professional  
6 engineer in 1973, I have been actively involved in all aspects of electric utilities for over  
7 300 clients and regulatory bodies. I have served as a principal, including as President, for  
8 two consulting engineering firms, which also incorporated utility construction staff  
9 affiliates. My involvement included electric utility systems in rural and urban areas as  
10 well as coastal, plain and mountain areas predominantly throughout the eastern United  
11 States and as far west as Arizona, Washington State, and Alaska, along with design and  
12 construction in light, medium and heavy loading districts as defined in the NESC,  
13 averaging approximately \$100 million per year in construction projects. My work has  
14 included services to numerous electric systems in the northeast, including Delaware, the  
15 District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey,  
16 Pennsylvania, Rhode Island, and Virginia. I have been involved in power supply contract  
17 bids, negotiations, economic analyses and implementation, including evaluating the  
18 transmission system network capabilities. I have also been involved in projects to relieve  
19 or mitigate transmission congestion in the PJM area.

20 **Q. Do you have other involvement and experience that provides you with additional**  
21 **expertise in electric service reliability?**

22 A. Yes. My electric utility reliability assessment experience includes consulting for the  
23 Rhode Island Division of Public Utilities and Carriers (“RIDPUC”) and the New Jersey

1 Board of Public Utilities (“BPU”), consulting as the expert for the RIDPUC in analyzing,  
2 negotiating and testifying on the National Grid Annual Integrated Safety and Reliability  
3 Plan, consulting on acquisitions, reliability and pole attachments for the Virginia,  
4 Maryland & Delaware Association of Electric Cooperatives filed before the Virginia  
5 State Corporation Commission (“VSCC”), and storm assessment consulting on major  
6 storm cost recovery cases before the Department of Public Utilities in Massachusetts  
7 (“MDPU”) for the Office of the Attorney General over the last 18 years. I have  
8 additionally testified on behalf of electric utilities in rate cases and reliability matters  
9 before the Federal Energy Regulatory Commission (“FERC”), the Delaware Public  
10 Service Commission (“DPSC”), and the North Carolina Utilities Commission (“NCUC”),  
11 and have presented testimony before the Pennsylvania Public Utility Commission  
12 (“PPUC”). My expert witness consulting work has included the development of  
13 reliability assessments and standards recommendations to several regulatory agencies. It  
14 has also involved in depth assessment and working with northeastern electric utilities on  
15 reliability enhancement and the costs associated with such enhancement through  
16 regulatory proceedings on Integrated Safety and Reliability Plans. Additionally, my  
17 involvement with IEEE and the distribution subcommittee chairperson during the  
18 development and progress of the IEEE 1366-2003 standard on reliability provides  
19 additional insight into a variety of reliability issues. The process implemented in New  
20 Jersey and Rhode Island resulted in certain reliability-related expenditures that were  
21 approved in rates.

22 **Q. Have you been involved in electric utility acquisitions?**

1 A. Yes. Most recently both in Florida and Virginia, including three Virginia transactions in  
2 which I was accepted as the utilities' expert before the Virginia State Corporation  
3 Commission.

4 **Q. Have you previously testified as an expert before state utility commissions, other  
5 regulatory agencies and/or courts?**

6 A. Yes. I have testified on several occasions before the FERC, including pre-filed testimony  
7 in both wholesale rate matters as well as in electric utility reliability matters. I also have  
8 testified before 10 state utility commissions and regulatory agencies, including the BPU,  
9 the DPSC, Minnesota Department of Public Service Environmental Quality Board,  
10 VSCC, the PPUC, the Rhode Island Public Utilities Commission ("RIPUC"), the MDPU  
11 and the NCUC, including on multiple occasions before most of these regulatory bodies.

12 **Q. Have you previously testified before any commission or other regulatory agency  
13 regarding service reliability and infrastructure construction?**

14 A. Yes. I have testified before the NCUC, the RIPUC, the MDPU, and the DPSC. I also  
15 submitted pre-filed testimony in a complaint proceeding before FERC in Docket No.  
16 EL90-26-000 and before the PPUC in Docket No. I-00040102 and the BPU in Docket  
17 No. EX02120950.

18 **Q. Have you been accepted as an expert before state or federal courts?**

19 A. Yes. I have been accepted as an expert in the area of electrical engineering and electric  
20 utility engineering, construction and reliability matters and the NESC, NEC, OSHA  
21 EMF, and forensic engineering, including standard and customary utility operation  
22 practices in the electric utility industry and the electric industry before 17 state and  
23 federal courts.

1 **Q. Please provide a representative list of the types of clients for whom you provide**  
2 **consulting engineering and management services.**

3 **A.** The clients for whom I have been and am directly involved in engineering and  
4 management services include rural electric cooperatives, electric municipalities, investor-  
5 owned utilities, utility commissions, military bases, universities, state governments, and  
6 industrial customers. This includes several of the largest investor owned utilities in the  
7 United States.

8 **Q. Would you summarize for us a few of the state regulatory agencies before which you**  
9 **have provided expert opinions on reliability matters?**

10 **A.** I prepared testimony and exhibits, and just recently testified at a hearing in Docket No.  
11 13-135 before the MDPUC in 2014 regarding the acceptability of storm restoration costs  
12 incurred by the Western Massachusetts Electric Company, and I have identified several  
13 deficiencies in their accounting for these restoration costs along with imprudent  
14 reliability practices. I have served as an expert in other storm restoration hearings  
15 involving National Grid, NStar Utilities and a prior Western Massachusetts Electric  
16 Company in the years 2010, 2011, and 2012. I am currently preparing testimony and  
17 exhibits for the RIDPUC concerning the National Grid Electric Infrastructure, Safety, and  
18 Reliability Plan for FY 2017. I review this annual plan and have participated in several  
19 filings submitted to the RIDPUC to determine compliance with accepted industry good  
20 practices, incorporation of updated practices for safety and reliability, adherence to  
21 recommendations provided for prior plans, and financial feasibility for upcoming  
22 projects, including the more recent in Docket Nos. 3564 (National Grid FY 2016 Electric  
23 Infrastructure, Safety and Reliability Plan), 4473 (National Grid FY 2015 Electric



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1 Infrastructure, Safety and Reliability Plan), 4382 (National Grid FY 2014 Electric  
2 Infrastructure, Safety and Reliability Plan), 4360 (Interstate Reliability Assessment),  
3 4237 (Contact Voltage Detection and Repair Program Applicable to National Grid), and  
4 2560 (National Grid Storm Contingency Fund Pertaining to Tropical Storm Irene). I  
5 have also provided a comprehensive assessment for the RIDPUC on reliability issues  
6 concerning the Narragansett Electric Company between 2000 and 2005. My services  
7 resulted in an action plan and reliability enhancement process including periodic  
8 assessment of progress by the RIDPUC and the RIPUC. In March 2006, I completed a  
9 Final Reliability Assessment for the RIDPUC.

10 While employed by Booth & Associates, I completed a Focused Audit for Planning,  
11 Operations and Maintenance Practices, Policies and Procedures of Jersey Central Power  
12 & Light Company, a FirstEnergy (“FE”) operating company, in Docket No. EX02120950  
13 (Focused Audit) for the New Jersey BPU, specifically dealing with JCP&L and its parent  
14 company, FirstEnergy. The audit report contained specific recommendations as part of a  
15 comprehensive assessment of the JCP&L system and processes including an accelerated  
16 reliability improvement plan. The report was filed and presented to the BPU on June 9,  
17 2004, and adopted with minor modifications.

18 In 2004, I presented testimony in the PPUC’s investigation into Metropolitan Edison  
19 Company’s (“Met-Ed”) and Pennsylvania Electric Company’s (“Penelec”) reliability in  
20 Docket No. I-00040102, and in 2006 I presented testimony regarding Penelec and  
21 Met-Ed in the PPUC’s review of rate filings and potential changes to their electric  
22 restructuring plans under the Electric Competition and Customer Choice Act in Docket  
23 Nos. R-00061366, R-00061367, etc.

1 **Q. How long have you been providing engineering services to the utilities and**  
2 **cooperatives in Pennsylvania and New Jersey?**

3 **A.** I have been providing engineering services in Pennsylvania and New Jersey, including  
4 design, construction management, study and field inspection, and testing services, since  
5 1973.  
6

1 **II. BACKGROUND**

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

3 **A.** I am testifying on behalf of the New Jersey Division of Rate Counsel.

4 **Q. Have you reviewed the Jersey Central Power & Light Company (“JCP&L”) and**  
5 **Mid-Atlantic Interstate Transmission LLC (“MAIT”) Petition in this matter?**

6 **A.** Yes, I have reviewed all of the documents as filed to date in Docket Nos. EM15060733  
7 and EF02030185.

8 **Q. Have you reviewed the Jersey Central Power & Light Company (“JCP&L”) and**  
9 **Mid-Atlantic Interstate Transmission LLC (“MAIT”) Supplemental Petition in this**  
10 **matter?**

11 **A.** Yes.

12 **Q. Have you reviewed all data requests and responses in this matter?**

13 **A.** Yes, I have reviewed hundreds of pages of discovery responses and testimony filings in  
14 these Docket Nos. EM15060733 and EF02030185. This pre-filed testimony is based on  
15 those responses which were filed prior to preparation of my testimony.

16 **Q. Are you relying on anything beyond the filings and data request responses?**

17 **A.** I am relying on my experience in other regulatory matters associated with FE, certain FE  
18 regulated filings before the BPU and the PPUC, my involvement in matters associated  
19 with FE and Ohio utilities, and my continuous firsthand knowledge of the FE systems in  
20 Pennsylvania and New Jersey dating back to the early 1970s.

21

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1 **III. PURPOSE AND OVERVIEW OF TESTIMONY**

2 **Q. What is the purpose of your testimony?**

3 **A.** My testimony is focused on three aspects of the potential Transaction. These aspects are:

- 4 1. My evaluation of the Navigant Report and its FERC Seven-Factor Test results,
- 5 2. My assessment of reliability and efficiency concerns associated with the initial  
6 petition; and,
- 7 3. My assessment of distribution system reliability and safety as impacted by the  
8 proposals in the Supplemental Petition filed in this matter, including the transfer of  
9 certain retail customers to MAIT.

10 JCP&L service reliability has historically been very poor compared to utility industry  
11 peers. The transfer of assets will insert another entity and level of control between the  
12 JCP&L facilities, the retail customers, and the BPU. The purpose of my reliability  
13 assessment is to highlight how reliability may be further eroded, and what implication  
14 this has on the service quality and the ability to provide safe, adequate and proper utility  
15 service.

16 **Q. Would you briefly outline the process which leads to your findings?**

17 **A.** Using the filing documentation, the FE responses to discovery requests, and my over  
18 forty-five (45) years of firsthand knowledge of the FE transmission, 34.5 kV facilities,  
19 distribution facilities, and operations in New Jersey and other FE jurisdictions, I have  
20 evaluated the Navigant Report and its results. For the reliability portion of my  
21 assessment, I gathered information concerning the service reliability indices in New  
22 Jersey and Pennsylvania. I correlated the data gathered with my prior knowledge and  
23 experience with FE service reliability deficiencies, including informal proceedings. I

1 have also utilized the IEEE 1366 benchmark data as a measure of reliability compared to  
2 the rest of the industry. I also evaluated the impact of MAIT being inserted in between  
3 certain retail customers, JCP&L, and FirstEnergy Services Company. I have outlined my  
4 findings, highlighted certain issues which need to be addressed, and made  
5 recommendations which would mitigate the concerns identified in the event the  
6 Transaction is culminated.

7 **Q. Have you evaluated the potential impact on efficiency by the transfer of assets from**  
8 **JCP&L to MAIT?**

9 **A.** Yes, as it relates to planning, design, construction, operation and maintenance, safety and  
10 reliability, and customer communications.

11 **Q. Why have you performed an assessment of service reliability and safety?**

12 **A.** For many years, FE's SAIDI, SAIFI, and CAIDI indices are below what I believe are  
13 acceptable levels in New Jersey and Pennsylvania. The trends and apparent inability of  
14 JCP&L to make significant or even meaningful improvements in service reliability are  
15 disturbing. It is my belief that, in New Jersey in particular, further reliability erosion will  
16 occur with most of the 34.5 kV potentially being transferred to MAIT. Furthermore, this  
17 transfer of transmission assets and control to MAIT will further weaken the BPU's ability  
18 to direct improvements in the 34.5 kV system, and the outcome will be worsening  
19 reliability without meaningful oversight ability by the BPU. The transfer of retail  
20 customers can only further deteriorate the safety and reliability.

21 **Q. Would you provide a very brief overview of the remainder of your testimony?**

22 **A.** Yes. My testimony focuses on the following specific areas:

- 1           1. In Section IV, I address my evaluation of the Navigant report and the results of its  
2           opinions using the FERC Seven-Factor Test, including:
  - 3           a. Regarding some inconsistencies in the results.
  - 4           b. The implications that may arise from the assignment of assets to transmission or  
5           distribution.
  - 6           c. The implications of 34.5 kV in New Jersey transitioning to its primary function  
7           being distribution with no re-evaluation process.
- 8           2. In Section V, I address my evaluation of reliability, including:
  - 9           a. How a Transaction as proposed by JCP&L would damage already poor overall  
10           system reliability.
  - 11           b. What, if any, remedies or adjustments in the Transaction and regulatory oversight  
12           might mitigate reliability concerns.
  - 13           c. How JCP&L reliability ranks below the industry median and industry averages  
14           for its national peer groups.
  - 15           d. How the BPU standards are more relaxed compared to the first two quartiles of  
16           the IEEE benchmarks, and how JCP&L is generally above (worse than) these  
17           customarily referenced benchmarks and standards.
- 18           3. In Section VI, I address my evaluation of retail customer transfer and distribution  
19           safety and reliability, together with other operational concerns, including:
  - 20           a. How a Transaction as proposed by JCP&L would damage already poor reliability.
  - 21           b. How safety aspects may deteriorate.
  - 22           c. How customer communications, load, and new customer expansion planning and  
23           construction will be impacted.

1           d. How the transaction impacts distribution service cost.

2           4. In Section VII, I address the premise of efficiency.

3

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1 **IV. FERC SEVEN-FACTOR TEST ASSESSMENT**

2 **Q. Have you evaluated how FirstEnergy identified the transmission assets to be**  
3 **transferred under the Transaction?**

4 **A.** Yes. I have evaluated testimony of Jeffrey J. Mackauer and the Seven-Factor Analysis  
5 attached as his Exhibit JJM-1 which was prepared by Navigant Consulting, Inc.

6 **Q. Is the Seven-Factor Analysis the appropriate manner to distinguish between**  
7 **transmission facilities and local distribution facilities?**

8 **A.** Yes it is. The Federal Energy Regulatory Commission (“FERC”), as part of Order 888,  
9 established the “Seven-Factor Analysis” known as the “seven factor test” for identifying  
10 the primary function of a facility for inclusion in the FERC jurisdiction or exclusively in  
11 a state jurisdiction.

12 **Q. Did you find that FirstEnergy and the Navigant Report followed the seven-factor**  
13 **test guidelines?**

14 **A.** I find the Navigant Report spells out in detail how it attempted to follow the FERC  
15 “seven-factor test” methodology. It must be recognized that this is not a precisely  
16 quantifiable methodology, but rather relies on judgment and engineering analysis giving  
17 weight to each factor to make an informed decision. That is to say, lines of similar  
18 characteristics and voltage may be classified differently and such classification is driven  
19 in part by how the party performing the analysis determines the appropriateness of each  
20 of the seven factors in the final determination of “primary function of the facility”.

21 **Q. Are you saying that two different firms or engineers could potentially classify**  
22 **facilities differently?**



1 A. That is precisely the case, and is directly addressed in the Navigant Report. FirstEnergy  
2 had six Met-Ed 34.5 kV delta facilities classified as transmission and Navigant proposed  
3 the reclassification of these facilities to distribution. Obviously, the current consulting  
4 engineer and FirstEnergy have a different view of those facilities than their predecessor.

5 **Q. Do you have any concerns with the Navigant report and the FirstEnergy**  
6 **classification of facilities as transmission or distribution?**

7 A. Yes. As it relates to the 34.5 kV facilities classified as transmission by FirstEnergy, I am  
8 concerned they all either appear now to be predominately distribution in nature, or will  
9 become distribution in nature, and yet will never be re-evaluated and assessed by  
10 FirstEnergy or the BPU when they are more clearly distribution in nature. Had Navigant  
11 not performed its Report, it is very likely the six 34.5 kV Met-Ed facilities would have  
12 remained transmission. I accept the recommendation that the Met-Ed 34.5 kV facilities be  
13 reclassified to distribution.

14 **Q. Does this mean you would change the classification of the 34.5 kV JCP&L facilities**  
15 **to distribution now?**

16 A. No. I concur with the Navigant report recommendations. However, in my opinion based  
17 on all industry trends with utilities operating 34.5 kV, what was once considered  
18 transmission often becomes distribution in functionality and primary use. This has been  
19 true for companies like Penelec, Dominion Power and others. If these lines are  
20 transferred to MAIT, issues and disputes would be left to reside at FERC. There must be  
21 a mechanism to allow the BPU to maintain its power over the JCP&L 34.5 kV facilities  
22 to address associated reliability issues on the 34.5 kV lines if they become distribution in  
23 functionality and primary use.

1 **Q. Do you have any recommendations?**

2 **A.** Yes. FirstEnergy should be required to present a “Seven-Factor Analysis” to the BPU  
3 every five years for consideration and potential facility classification change. Without the  
4 BPU having some re-evaluation process, I believe reliability on the JCP&L 34.5 kV can  
5 only decline to the detriment of the retail customers. The BPU needs some mechanism  
6 outside of a FERC complaint hearing to force JCP&L, if the 34.5 kV is transferred to  
7 MAIT, to maintain and strengthen the reliability of the 34.5 kV system. Otherwise, the  
8 34.5 kV could be transitioned to distribution use with more outage exposure while  
9 remaining classified as transmission. Considering the condition and reliability statistics of  
10 JCP&L, BPU should not allow its ability to regulate these lower voltage and generally  
11 weaker performing facilities to dissolve, so BPU retains the power to continue to guide  
12 the enhancement of reliability to the retail customers.

13 **Q. Is there a downside to classifying the 34.5 kV facilities of JCP&L as distribution**  
14 **now?**

15 **A.** Yes, there are several. First, I do believe the “seven-factor test” supports the current  
16 classification proposed in the Navigant report, and it would be inappropriate to deviate  
17 from the established FERC standard. Second, although I have not performed a cost of  
18 service analysis, it is my opinion that the rates to the retail customers would likely be  
19 marginally higher if these facilities were classified as distribution, since, as distribution,  
20 100% of the cost goes to JCP&L, while as transmission, the cost is also shared across a  
21 broader group.

22

1 **V. RELIABILITY ASSESSMENT**

2 **Q. Would you summarize the reliability standards you will be discussing?**

3 **A.** I will be discussing two sets of standards throughout my testimony. The first are the BPU  
4 retail reliability standards CAIDI and SAIFI. I will also discuss SAIDI, even though the  
5 JCP&L Annual System Performance Report only provides statistical data for CAIDI and  
6 SAIFI. The second is IEEE Standard 1366, which establishes national utility reliability  
7 performance comparisons and ranks them by quartile, providing a peer group assessment  
8 of reliability performance.

9 **Q. Would you please define SAIDI, CAIDI, SAIFI?**

10 **A.** The BPU benchmark and minimum reliability level contain these reliability performance  
11 metrics that have been adopted by the IEEE. These are:

12 1. CAIDI (Customer Average Interruption Duration Index): Measures average power  
13 restoration time (by minutes) for every customer who lost power during a reporting  
14 period.

15 2. SAIDI (System Average Interruption Duration Index): Measures average outage  
16 duration time (by minutes) for every customer served during a reporting period. This  
17 is used by IEEE but not by the BPU in its level comparison.

18 3. SAIFI (System Average Interruption Frequency Index): Measures average frequency  
19 of power interruptions for every customer served during a reporting period.

20 **Q. Do transmission outages influence these indices?**

21 **A.** Yes. Poor transmission performance will, in fact, significantly degrade overall reliability  
22 performance.

1 **Q. Can you explain the significance of these indices in measuring electric service**  
2 **reliability?**

3 **A.** All of the above indices provide a significant measuring tool for the performance and  
4 robust nature of an electric utility system. The actual performance indices compared to  
5 the IEEE standard 1366 benchmark data provide a mechanism for comparing system  
6 availability and reliability performance to the rest of the industry. Furthermore, each of  
7 the indices can be evaluated with and without major storms, providing an additional  
8 measure of the integrity and robustness of the system and the right-of-way. The  
9 customer's perception is the ultimate measure of reliability satisfaction, which is  
10 generally anecdotal, while the indices provide factual statistical data upon which to  
11 compare to standards and evaluate the level of performance and trends, whether  
12 improving or getting worse.

13 **Q. What analyses have you performed and data have you evaluated?**

14 **A.** I have used the latest JCP&L Annual System Performance Report, which includes actual  
15 performance for the past 10 years up to 2014, my personal knowledge of its electric  
16 utility lines in New Jersey, my previous exhaustive system reliability and condition  
17 assessment performed while President of Booth & Associates, Inc., IEEE Standard 1366  
18 benchmark data, and performance knowledge of other utilities, including Penelec, to  
19 analyze the JCP&L reliability performance.

20 **Q. Do you believe JCP&L is providing safe, reliable, and adequate service?**

21 **A.** No. Based on my review, the JCP&L Northern Area generally is among the worst  
22 performing utilities. In its report, JCP&L in most years falls in the third or fourth Quartile  
23 of IEEE Std. 1366 indices of other utilities, making it among the worst performers. The

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1 Central Area, which is much more urban, is generally at the upper limit of the second  
2 quartile or in the third quartile which for such an area should be considered unacceptable.  
3 It should also be noted that the FirstEnergy Penelec jurisdiction in Pennsylvania is an  
4 extremely poor performer as well. This indicates that two major areas of the FirstEnergy  
5 system fall well below its utility peer group. Since the Pennsylvania area, much like New  
6 Jersey, has a significant amount of 34.5 kV infrastructure, with most classified as  
7 distribution, providing service to substations and large loads and the retail load areas, it  
8 raises the obvious question as to whether the 34.5 kV classification as transmission in  
9 New Jersey will impact reliability and, if so, also how to influence improved reliability if  
10 the Transaction proceeds forward.

11 **Q. Would you provide an overview of your concerns?**

12 **A.** The BPU Benchmark and Minimum Levels were established based on 2002 to 2006  
13 performance, which was among the worst in the industry compared to IEEE Std. 1366  
14 statistics. For that reason, I believe the discussion and analysis of reliability associated  
15 with how it may improve or worsen based on this Transaction being approved should be  
16 measured against the industry and not poor performing years of the JCP&L system. The  
17 Transaction inserts another party, MAIT, in the transmission (34.5 kV system in New  
18 Jersey) and may erode BPU influence and potential controls, while failing to provide a  
19 clear path as to how the Transaction will improve reliability and capacity for the service  
20 of New Jersey retail customers. In fact, there is no reliability benchmark improvement  
21 level discussed in the Petitions assuming the Transaction proceeds. Although the BPU  
22 has authority and significant influence over JCP&L, it appears MAIT could ignore the

1 BPU as it relates to transmission facilities and performance. With few retail customers,  
2 there may be insufficient leverage over MAIT.

3 **Q. Beyond the obvious cost implications, what other measure of success would there be**  
4 **other than significant and measurable reliability improvement?**

5 **A.** Since the Transaction makes no quantification or assurances of reliability improvement, it  
6 must be assumed there are none. The entire transmission planning process is removed  
7 from JCP&L and New Jersey by another level with the ownership by MAIT, and it  
8 having the relationship on the PJM transmission planning committee and not JCP&L.  
9 This also means any influence the BPU has with JCP&L to encourage enhancements in  
10 the 34.5 kV system are now at the MAIT and PJM level and not from JCP&L to the PJM  
11 level. The transmission owner is the party represented in the PJM processes, such as  
12 project planning and implementation.

13 **Q. How do the FirstEnergy SAIFI and CAIDI indices reported to the Pennsylvania**  
14 **Public Utilities Commission and the New Jersey Board of Public Utilities compare to**  
15 **the IEEE Standards nationally?**

16 **A.** Based on the 2013 IEEE survey, JCP&L, Penelec and West Penn are generally in the  
17 third or fourth quartile, which is poor reliability performance as compared to other  
18 utilities in the United States. Although I will focus primarily on New Jersey and JCP&L,  
19 I find it important to provide an understanding of just how poorly FirstEnergy reliability  
20 performance is in a neighboring jurisdiction with similar characteristics and 34.5 kV  
21 facilities.

22 **Q. What are the JCP&L indices compared to the IEEE standards?**

1 A. A summary of the comparison is shown in the table below, which is extracted from the  
 2 JCP&L report page 12 with the IEEE Std. 1366 2013 survey data added.  
 3

Year	JCP&L Northern		JCP&L Central	
	Actual CAIDI (Minutes)	Actual SAIFI (Outages)	Actual CAIDI (Minutes)	Actual SAIFI (Outages)
2014	101	1.00	107	1.08
2013	142	1.16	94	1.15
2012	130	1.20	100	1.04
2011	132	1.30	100	0.77
2010	133	1.25	107	1.00
2009	133	1.04	81	0.97
2008	104	1.12	86	0.99
2007	119	1.37	72	1.14
2006	127	1.53	112	1.31
2005	154	1.44	114	1.24
<b>IEEE Std. 1366*</b>				
1 <sup>st</sup> Quartile	0-91	0-.86	0-91	0-.86
2 <sup>nd</sup> Quartile	91-104	.86-1.07	91-104	.86-1.07
3 <sup>rd</sup> Quartile	104-127	1.07-1.33	104-127	1.07-1.33
4 <sup>th</sup> Quartile	127-∞	1.33-∞	127-∞	1.33-∞

4 \*2015 Benchmark, 2014 Survey Statistics

5 *Note: JCP&L data from Jersey Central Power & Light Annual System Performance*  
 6 *Report, 2014.*  
 7

8 **Q. You have indicated that the reliability in Pennsylvania and for Penelec is**  
 9 **statistically inferior as well. How did you reach that conclusion?**

10 **A.** I reached that conclusion based on my many years of evaluating FirstEnergy reliability in  
 11 Pennsylvania, including prepared filed testimony and evaluating FirstEnergy reliability  
 12 for other clients served by FirstEnergy. Additionally, there is significant public  
 13 information filed in Pennsylvania showing the FirstEnergy reliability statistics. I have

1 included a summary of the FirstEnergy Pennsylvania indices compared to IEEE Std.  
2 1366 2013 Survey benchmark statistics as Appendix-2 to this testimony.

3 **Q. Does your comparison of FE reliability with the IEEE statistics have any**  
4 **implications in this Docket beyond your FERC Seven-Factor Test analysis?**

5 **A.** Yes. I contend FE reliability is poor when compared to the IEEE statistics, and that  
6 JCP&L is, at best, a median performing utility under the IEEE Standards, and is generally  
7 among the worst performing utilities particularly in the Northern Area of New Jersey and  
8 most of Pennsylvania, a neighboring state.

9 **Q. Please discuss FE's deficiencies in processes and procedures.**

10 **A.** My evaluation indicates that the excessive duration of outages is a major concern.  
11 Outage durations are driven by a number of factors, including 1) the number of personnel  
12 available to respond to an outage and their travel time to the outage; 2) the condition of  
13 the system and how much of the system is affected during an event; 3) the condition of  
14 system sectionalizing; 4) how effective the communication processes are to establish the  
15 location of the outage; and 5) adequacy of the line personnel and necessary equipment  
16 directed by dispatch for outage restoration efforts. I believe that JCP&L has deficiencies  
17 in all five areas. JCP&L has downsized staff and closed and consolidated operating  
18 centers in hopes that technology can overcome some of these deficiencies. What must  
19 continue is that system infrastructure must be upgraded to be more robust and resilient.  
20 Technology alone will not solve the reliability deficiencies. There must be greater focus  
21 and effort toward remedying the deficiencies on the worst performing circuits. This has  
22 recently been recognized through the requirement to double the number of worst  
23 performing circuits being addressed for outage mitigation.



1 **Q. Should the Companies’ advance the “Energizing the Future” initiative in New**  
2 **Jersey now?**

3 **A.** Mr. Mackauer’s discussion of the FirstEnergy “Energizing the Future” initiative is  
4 completely separate and outside of the scope of this Transaction, and he provided no  
5 quantifiable value it affords the customers or how it would improve safety and reliability.  
6 Furthermore, there is no correlation between “Energizing the Future” and MAIT,  
7 therefore it must be recognized the transferred retail customers will likely be ignored in a  
8 MAIT ownership scenario.  
9

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1 **VI. RETAIL CUSTOMER RELIABILITY IMPACT**

2 **Q. Have you analyzed the impact on retail customer reliability and safety for those**  
3 **distribution customers that will be transferred from JCP&L to MAIT in order that it**  
4 **may be a retail regulated utility in New Jersey?**

5 **A.** Yes.

6 **Q. What is your overall impression of this portion of the transaction?**

7 **A.** Overall, the transaction serves no business purpose nor does it provide any economic benefit,  
8 which is the classic definition of a “sham transaction”. Furthermore, reliability and safety can  
9 only worsen, while it will cost more to provide the distribution service.

10 The responses by the Company to data requests RCR-V-83 through RCR-V-110 make it clear  
11 that MAIT will have **no** personnel in New Jersey. In addition, all engineering, studies,  
12 customer services, call center functions, Distribution Control Center (“DCC”), outage  
13 response personnel, and system line workers will be performed by someone other than MAIT.  
14 It is abundantly clear MAIT is simply hopeful its Mutual Assistance Agreement and Service  
15 Agreement will provide for the entire operation the distribution system it will own. MAIT has  
16 no plans to even have its own operations and procedures manuals per RCR-V-107. In my  
17 over 50 years in the utility business, I have never seen a retail customer supplier and  
18 distribution system owner subrogate all of its duties through Agreements to other parties. If  
19 there was economic benefit combined with improved safety and reliability, you would expect  
20 this kind of transaction to be occurring many other places.

21 **Q. Would you first provide a very brief overview of your analyses?**

22 **A.** My analyses rely on more than 20 years of experience associated with FirstEnergy, its  
23 predecessor, and its various operating policies and procedures as it relates to outage restoration

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1 during both blue sky and storm events combined with its customer information systems. This  
2 experience includes an extensive overall analyses of FirstEnergy and JCP&L processes and  
3 procedures, and system reliability and condition in the early 2000 time frame. Furthermore, I  
4 have been involved in such analyses in numerous areas of FirstEnergy companies in  
5 Pennsylvania and recently in Ohio. I provided data requests to the Rate Counsel which were  
6 served on FirstEnergy and I have evaluated the FirstEnergy responses. Utilizing my  
7 experience, knowledge and the current FirstEnergy responses relative to the structure of a  
8 newly formed MAIT distribution organization and its relationship to JCP&L and FirstEnergy,  
9 my evaluation spans the overall policy, procedures and functionality ranging from the  
10 FirstEnergy call center and the flow of information to the JCP&L DCC and the JCP&L  
11 responders to the large array of outage occurrences, including blue sky outages, storm outages,  
12 major storm events and hazardous situations such as downed powerlines.

13 **Q. Would you summarize your overall assessment first, and following that address specific**  
14 **detailed questions?**

15 **A.** My analyses and overall assessment have determined that overall reliability in the retail  
16 service area that would be taken over by MAIT can only deteriorate. FirstEnergy, in other  
17 matters in which I have been involved, lacks knowledge transfer between the call center and  
18 dispatch facilities, or DCC, in the various companies. Stated another way, there is essentially  
19 a wall where the call center doesn't see over that wall to know what transpired with any  
20 outage call made to the distribution control or dispatch center, or how emergencies such as  
21 downed lines, particularly during a storm event, are prioritized and handled, or how 911 calls  
22 are ultimately handled. By inserting another company into the structure it will further dilute a  
23 system of communications from call center to dispatch, and to engineers, line workers, and

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1 management personnel. This adds another layer of company name, ownership, and  
2 complexity into the communication process. MAIT will have no policies and procedures of its  
3 own, but is counting on multiple agreements with others to completely operate its retail  
4 distribution system. There can be no reliability or safety enhancement associated with MAIT  
5 taking over a certain portion of JCP&L's retail customers. Absent any opportunity for  
6 improving reliability and safety, and only the high probability that reliability will decline and  
7 with no definitive economic benefit to the retail customers, I see no reason to approve such a  
8 transaction. The transaction itself can only have adverse and negative impact on the retail  
9 customers of JCP&L that are transferred to MAIT. Furthermore, MAIT has been structured  
10 and is intended as a transmission organization, and is not structured or intended to be a  
11 distribution system organization. There is a very distinct difference in management, mindset,  
12 structure and effective operation processes and procedures between a transmission  
13 organization and a distribution system organization.

14 **Q. Provide a summary of outsourced services.**

15 **A.** MAIT will not have any employees per its response to RCR-V-110. Therefore, all services  
16 are performed by others. These include, but are not limited to:

<u>Service</u>	<u>Refer to Response</u>
• Call Center Service	RCR-V-85
• Dispatch Facility, Distribution Control Center	RCR-V-85
• Outage Call Handling	RCR-V-86
• Personnel in New Jersey	RCR-V-90
• Line Personnel	RCR-V-91

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1	• Major Storm Outage Services	RCR-V-92 and 97
2	<u>Service</u>	<u>Refer to Response</u>
3	• Outage Management	RCR-V-93
4	• Damage Assessment	RCR-V-93
5	• Restoration Activities	RCR-V-93
6	• Tree Damage Management	RCR-V-93
7	• Crew Mobilization	RCR-V-93
8	• Mutual Assistance Staging	RCR-V-98
9	• Storm Response Plan	RCR-V-99
10	• All Service Restoration Service	RCR-V-101
11	• All Engineering Studies	RCR-V-105
12	• CIS, OMS, SCADA, GIS and Other Systems	RCR-V-106
13	• Operations and Procedure Manuals	RCR-V-107
14	• All Management and Operations	RCR-V-110

15 **Q. Further explain why you believe there will be a decline in reliability, safety and**  
16 **communications driven, in part, by communication deficiencies between the FirstEnergy**  
17 **Services call center and a MAIT dispatch center.**

18 **A.** First, the call center is currently structured based on incoming calls to direct outage responses  
19 to the JCP&L DCC or any other individual company dispatch organization, whether it be  
20 Cleveland Electric, Ohio Edison, PENELEC, or others. The company is now going to insert  
21 MAIT into the JCP&L area and customers. This will inherently create a factor of confusion,  
22 particularly initially, with the call center and a disruption in the flow of communications at a

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1 minimum on the short term. MAIT will be infinitesimal in size compared to all of the other  
2 FirstEnergy companies, dispatch facilities, and resources, and there will be a very sharp and  
3 stiff learning curve between the call center and dispatch facility communications.  
4 Additionally, JCP&L personnel will need to learn the protocols, processes and procedures of  
5 FirstEnergy, and what all of the various outage priorities and coding are intended to represent  
6 for a MAIT customer. This is not a simple issue of assigning a MAIT service company  
7 identifier to a customer identification. With a lack of two way communication and knowledge  
8 at the call center regarding what goes on in the dispatch facilities, there is simply a greater  
9 opportunity for a deficiency in outage communication and response. It is my opinion that  
10 confusion and inadequate response is exactly what will occur, and this will result in  
11 significantly poorer outage performance and a definite decline in electric system safety. Items  
12 such as downed energized powerlines and the opportunity for them to remain down and  
13 energized and exposed to the public will increase and certainly not decrease from the current  
14 system, which in my opinion is already deficient. Additionally, there will be little or no  
15 opportunity for lessons learned to be passed between call center, dispatch facility, and line  
16 workers and management for mistakes made during outage restoration, storms and major  
17 storms. This means there will not be a continued enhancement and growth in improved  
18 performance associated with MAIT, particularly with MAIT having no personnel. If there is  
19 no one in charge with MAIT, it is only logical that many issues will be unresolved due to lack  
20 of leadership.

21 **Q. What other difficulties do you foresee?**

22 **A.** MAIT will be the owning company and will have management responsibility and  
23 responsibility for developing processes, procedures, hiring and managing personnel, and

1 achieving quality assurance. This is all going to be extremely difficult to accomplish through  
2 an organization with no personnel or leadership. All the functions described in response  
3 RCR-V-83 through response RCR-V-110 will be left to the effectiveness of Mutual Aid and  
4 Service Agreements. My experience in electric distribution system operations, including  
5 acquisitions where smaller companies have actually acquired the distribution system of larger  
6 companies, indicates there is a distinct and quantifiable benefit associated with local direct  
7 control and the company being primarily focused on customer service. I have seen  
8 acquisitions by smaller electric distribution system owners and operators which in their  
9 organization has a singular focus on the distribution system and as such reliability was  
10 substantially enhanced from the reliability that existed with a previous large investor owned  
11 utility that sold a component of the system. MAIT is not an existing distribution system  
12 owner and operating entity, and will **actually** have no personnel. Thus, in this case, JCP&L  
13 has direct operating processes and procedures and has been an owner/operator of this system  
14 for decades and will be turning over a portion of the system to a newly formed transmission  
15 organization which has a singular focus on transmission function. Intuitively, this can only  
16 result in a deterioration in reliability and safety due to a non-distribution owner/operator  
17 getting into the distribution business when its focus is actually in a completely different  
18 business sector.

19 **Q. Are there other concerns associated with management and resources?**

20 **A.** Yes. If MAIT's focus is multi-state transmission, then it is only logical that MAIT will have  
21 no real and meaningful involvement in distribution or with a few retail customers. This means  
22 that this very small distribution system segment to be owned by MAIT will take part in long-  
23 range planning, grid modernization, and many other initiatives to improve the quality of

1 service. The response to RCR-V-105 makes this abundantly clear to me. All studies would  
2 have to be requested by MAIT and provided by others. A transmission organization would  
3 not even know what to request, much less be expected to for a few retail customers. These  
4 MAIT retail customers will forever be left out of the utility modernization process and its  
5 integration.

6 **Q. Are there other missing components to the transaction which impact retail customer**  
7 **reliability and safety?**

8 **A.** Yes, there are numerous other components, not the least of which is storm outage restoration  
9 agreements with other contractors. Typically, utilities will have an array of agreements with  
10 outside contractors which place that utility as their first priority for storm outage response.  
11 This is not only a function of bringing in resources, but it is essential for the company to have  
12 its own resources to adequately manage and direct large quantities of outside resources to the  
13 appropriate locations and in the proper manner to be effective during outage restoration. It is  
14 currently inconceivable how MAIT will have these type of resources in place for this segment  
15 of the current JCP&L distribution system. I doubt a few retail customers would receive any  
16 priority from outside contractors, unless through JCP&L subsidizing the activity. Again, this  
17 can only result in a deterioration of reliability and safety associated with the electric  
18 distribution system during major storm events. Joint Petitioners have not presented a defined  
19 benefit to the retail customer associated with MAIT taking over the ownership, operation,  
20 maintenance and construction practices for a segment of the current JCP&L system.

21 **Q. Do you have any other comments relative to reliability and safety to be shared with the**  
22 **Board of Public Utilities?**



1 **A.** Yes. In all my years of involvement in acquisitions of electric utility systems or portions of  
2 systems, and my testimony with regard to these acquisitions, I have always seen that the  
3 primary focus of the acquisition and of the Commission is enhanced reliability and safety to  
4 the consumer with the opportunity for equal or lower rates. I do not see a reasonable  
5 opportunity for any of these three elements to be achieved through the transfer of the  
6 ownership of a portion of the JCP&L electric distribution system and retail customers to  
7 MAIT.

8 **Q. What other possible deficiencies do you believe could arise from a transfer of the**  
9 **JCP&L distribution system to MAIT?**

10 **A.** There is a variety of other opportunities that will be lost, including substantial grid  
11 modernization opportunities, energy efficiency opportunities, and renewable energy  
12 opportunities. There are dozens of grid modernization opportunities for an electric distribution  
13 system. These range from initial economically justifiable projects, such as volt/var  
14 optimization or conservation voltage reduction, to the implementation of self-healing circuits  
15 and smart relays. All of these have economic benefits and safety and reliability benefits. It  
16 takes a robust electric utility focused on distribution system operations with a comprehensive  
17 engineering, management, and construction staff to evaluate and optimally implement all the  
18 opportunities afforded to the distribution system. To the extent that MAIT makes a  
19 commitment to grid modernization, renewable energy interconnection opportunities and  
20 system analyses on an ongoing basis, it is difficult to envision how MAIT, or JCP&L on  
21 behalf of MAIT, will implement the studies or any projects for a few MAIT customers, unless  
22 subsidized by JCP&L. Each time you add another level of management, engineering, and  
23 operating personnel to existing structures and organizations, the cost is obviously going to

1 trickle down to the end user. In this case, this means an absence of management and  
2 commitment as well.

3 **Q. Have you identified any benefit that will accrue to the JCP&L retail customers if a**  
4 **portion of the JCP&L distribution system and the associated retail customers are**  
5 **transferred to MAIT?**

6 **A.** I find no area of benefit associated with such a transfer. It is obvious that this transfer is being  
7 structured purely to hopefully satisfy the BPU that MAIT will be regulated as a utility in New  
8 Jersey so MAIT can achieve approval for the transfer of FirstEnergy transmission assets to  
9 MAIT. There has been no benefit defined or shown by FirstEnergy that will accrue to the  
10 distribution system and retail customers that MAIT would take over from JCP&L. On the  
11 other hand, I have outlined numerous areas of adverse impact on reliability, safety and  
12 economics.

13

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1 **VII. EFFICIENCY POTENTIAL**

2 **Q. In your review of the Petition and Supplemental Petition, did you identify any**  
3 **specific efficiencies that MAIT will create in transmission or distribution**  
4 **engineering, operation, or maintenance?**

5 **A.** No. There are no specific efficiencies in these areas identified in the Petitions.  
6 Furthermore, it is my professional opinion that, other than a change in name and  
7 management, all of the same functions, staff, coordination including through PJM, and  
8 other engineering, operation, maintenance, and construction activities and cost for the  
9 transmission system will continue to be performed by the same personnel at FirstEnergy  
10 now doing that work. There is no identifiable specific efficiency to be created. For the  
11 distribution system, as I have previously testified, there can only be a loss of efficiency  
12 and added cost.

13 **Q. How are you defining efficiency?**

14 **A.** I am defining efficiency at multiple levels. First, the simple Merriam-Webster definitions  
15 are “the ability to do something or produce something without wasting materials, time or  
16 energy: the quality or degree of being efficient.” This is where efficient is “capable of  
17 producing desired results without wasting materials, time or energy, productive without  
18 waste.”

19 Second, efficiency in utility engineering, operation, maintenance and construction would  
20 be producing the desired capacity, safety, and reliability at cost effective rates. I find no  
21 opportunity and, certainly, nothing specific in the Petitions which would point to  
22 accomplishing more efficiency through the proposed transfer of assets and certain  
23 transmission and distribution responsibilities to MAIT.

1 **Q. What limits MAIT from creating more transmission efficiency in these areas?**

2 **A.** MAIT will be relying on all the functional areas of FE while having increased  
3 management and coordination activities between the two organizations. This means more  
4 levels of management and staff, adding to time, materials, office space, energy, even  
5 simple issues like new logo replication, and obviously expensive added legal agreements  
6 and services. Although this is simple common sense when adding another organization  
7 on top of an existing set of functions, it is also supported by the fact that existing  
8 functions will not be eliminated or streamlined.

9 **Q. What creates increased inefficiency associated with MAIT owning and operating a**  
10 **portion of the JCP&L retail distribution system?**

11 **A.** Each of the deficiencies I have previously outlined in my testimony add a level of time,  
12 including legal, material, office space, and energy to the existing activities of JCP&L.  
13 The greatest inefficiency, however, will be a dedicated transmission owner and  
14 organization owning and operating a small portion of a distribution system which will be  
15 insignificant in comparison to the massive interstate transmission network.

16

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1 **VIII. CONCLUSION AND RECOMMENDATIONS**

2 **Q. Please summarize your conclusions concerning the FERC Seven-Factor Analysis**  
3 **and primary function of the facilities, most particularly the 34.5 kV facilities.**

4 **A.** I have concluded that the FirstEnergy and Navigant classification of the 34.5 kV facilities  
5 in New Jersey as transmission, versus classifying most 34.5 kV facilities in Pennsylvania  
6 as distribution, is based in large part on engineering judgment and the function of these  
7 lines which at this voltage level commonly changes. Should the Transaction transpire, I  
8 would strongly recommend that, at a minimum, the BPU have the authority to require a  
9 periodic FERC Seven-Factor Analysis be performed to re-evaluate the 34.5 kV facilities  
10 in New Jersey to determine if the primary functionality is significantly more distribution  
11 in nature, as with most of the other FirstEnergy 34.5 kV facilities. If the BPU approves  
12 the Transaction, a condition of the approval should consist of MAIT agreeing to accept  
13 and file with FERC any future “Seven-Factor Analysis” completed by or approved by the  
14 BPU, as the BPU deems appropriate. If the transmission becomes reclassified as  
15 distribution, it will revert back to JCP&L as the distribution company.

16 **Q. Please summarize your conclusion as it relates to the ability of JCP&L to provide**  
17 **safe and adequate service quality.**

18 **A.** I find no evidence that the Transaction proposed in the initial Petition will result in  
19 increased reliability to the JCP&L customers. Furthermore, the Supplemental Petition  
20 proposes distribution system and retail customer transfer. These Transactions  
21 dramatically increase the separation between the utility and the retail customer. They  
22 additionally erode any influence the BPU may have over very critical system operations,  
23 most particularly the 34.5 kV system in New Jersey. There has been very marginal

1 improvement in reliability over the more than 10 years since I completed my last detailed  
2 reliability and condition assessment with specific recommendations for improvement, I  
3 find no evidence that the Transaction can yield reliability improvement for the customers  
4 of JCP&L, thus, unless there is a demonstrative financial benefit there is no rationale for  
5 the Transaction. Additionally, the small portion of distribution system transfer to MAIT  
6 will unequivocally insert complications which will deteriorate safety and reliability.

7 **Q. What other concerns do you have associated with the potential transmission**  
8 **Transaction?**

9 **A.** I am very concerned that the 34.5 kV system classified as transmission and transferred to  
10 MAIT will no longer have any functional reliability oversight or enforcement standards.  
11 It is my understanding from the Conclusion of the Navigant Report, Navigant and  
12 FirstEnergy believe these facilities will be under FERC's jurisdiction, meaning the BPU  
13 has limited control regardless of how poor the reliability becomes, or even if the 34.5 kV  
14 takes on the primary functionality of distribution facilities. The FERC reliability issues  
15 are handled through North American Reliability Corporation ("NERC") and Regional  
16 Transmission Organizations ("RTO"). NERC is concerned with the Bulk Electric System  
17 and I do not see the 34.5 kV being a part of the Bulk Electric System under the NERC  
18 guideline. This means, from a functional reliability and oversight standpoint, with the  
19 34.5 kV in New Jersey owned by MAIT it receives no NERC or RTO reliability  
20 enforcement and limited New Jersey enforcement. Thus, MAIT is in complete control  
21 with no jurisdictional reliability standards or oversight, and with no firm commitment to  
22 meet acceptable reliability targets. In the event of eroding reliability or gross negligence  
23 in system operations, New Jersey is left with only the option of a FERC complaint filing

1 to seek remedy which is expensive, cumbersome and time consuming in a difficult venue.  
2 The obvious tendency will be for the money and effort to go toward the high voltage  
3 transmission, 115 kV and above. Absent state level regulatory intervention in  
4 Pennsylvania, the very poor 34.5 kV system reliability would certainly be even worse.  
5 The decline in 34.5 kV transmission reliability in New Jersey, and subsequent decline it  
6 creates at the retail customer level, is the most obvious outcome of the Transaction.

7 **Q. Summarize the issues you identified concerning MAIT acting as a distribution**  
8 **system retail customer provider.**

9 **A.** MAIT, in the proposed Transaction, is structured as an interstate transmission  
10 organization. The formation of MAIT initially was not to act as a distribution service  
11 provider. The Supplemental Petition appears on the surface and functionally to only be a  
12 mechanism to satisfy a need to allow the BPU to maintain a marginal level of authority  
13 after the Transaction. My previous testimony details the deterioration which will occur in  
14 the distribution system and retail customer service, reliability, and safety. It is my  
15 professional opinion that MAIT, as a transmission organization owning and managing a  
16 small component of the current JCP&L distribution system, will only interject confusion,  
17 management overhead, cumbersome operating agreements, and an additional level of  
18 organization with no defined or intended commitment to distribution operations, retail  
19 customer satisfaction, or ongoing service improvement.

20 **Q. How would you describe the distribution system transfer portion of this**  
21 **Transaction?**

22 **A.** I would describe it as an unprecedented and unique transaction which fails to compare  
23 with an acquisition or merger of distribution systems. It has the elements of a “sham”

1 transaction with no positive attributes and only real and potential negative consequences  
2 on retail customers and distribution safety and reliability. MAIT is clearly structured as a  
3 Transmission Organization with none of the elements or characteristics of a Distribution  
4 System Provider. JCP&L reliability is already poor and generally ranks in the third  
5 quartile of IEEE 1366 Benchmark statistics. I contend this proposed Transaction would  
6 only make the reliability decline and MAIT's distribution system would be among the  
7 worst of the industry performers.

8 **Q. What are you recommending and why?**

9 **A.** I recommend the BPU reject the proposed transaction because of the irrefutable harm to  
10 safety and reliability it will impose on the retail customers, without any quantifiable or  
11 qualitative offsetting benefit. MAIT only proposes a Mutual Assistance Agreement  
12 utilizing JCP&L and FirstEnergy Service Company to act on its behalf as the distribution  
13 system operator. There are no specific details provided by MAIT, and absolutely no  
14 mitigating actions proposed to overcome the added bureaucracy and operational structure  
15 deficiencies.

16 **Q. Does this conclude your testimony?**

17 **A.** Yes.



## APPENDIX-1

**GREGORY L. BOOTH, PE, PLS**  
**President**  
**PowerServices, Inc.**  
**Gregory L. Booth, PLLC**

**RESUME**

Gregory L. Booth is a registered professional engineer with engineering, financial, and management services experience in the areas of utilities, industry private businesses and forensic investigation. He has been representing over 300 clients in some 40 states for more than 40 years.

Mr. Booth has been accepted as an expert before state and federal regulatory agencies, including the Federal Energy Regulatory Commission, the Delaware Public Service Commission, the Florida Public Service Commission, the Minnesota Department of Public Service Environmental Quality Board, the Massachusetts Attorney General Department of the Advocacy, the New Jersey Board of Public Utilities, the North Carolina Utilities Commission, the Pennsylvania Public Utility Commission, the Rhode Island Public Utilities Commission, and the Virginia State Corporation Commission. He has been accepted as an expert in both state and federal courts, including Colorado, Delaware, Florida, District of Columbia, Missouri, New York, North Carolina, Oklahoma, Pennsylvania, South Carolina, Virginia, West Virginia, Wisconsin and numerous Federal Court jurisdictions. Mr. Booth has provided expert witness services on over 500 tort case matters, and over 50 regulatory matters. Investigation and testimony experience includes areas of wholesale and retail rates, utility acquisition, territorial disputes, electric service reliability, right-of-way acquisition and impact of electromagnetic fields and evaluation of transmission line options for utility commissions. Additionally, Mr. Booth has extensive experience serving as an expert witness before state and federal courts on matters including property damage, forensic evaluation, fire investigations, fatality, and areas of electric facility disputes and Occupational, Safety and Health Administration violations and investigations together with National Electric Code and National Electrical Safety Code and Industry Standard compliance.

The following pages provided are the education and experience from 1963 through the present, along with courses taught and publications.

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# Resume

## GREGORY L. BOOTH, PE, PLS

Mr. Booth is a Registered Professional Engineer with engineering, financial, and management experience assisting local, state, and federal governmental units; rural electric and telephone cooperatives; investor owned utilities, industrial customers and privately owned businesses. He has extensive experience representing clients as an expert witness in regulatory proceedings, private negotiations, and litigation.

### PROFESSIONAL EDUCATION:

NORTH CAROLINA STATE UNIVERSITY; Raleigh NC,  
Bachelor of Science, Electrical Engineering, 1969

### REGISTRATIONS:

Registered as Professional Engineer in Alabama, Arizona, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Kansas, Maryland, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Texas, Commonwealth of Virginia, West Virginia, and Wisconsin

Professional Land Surveyor in North Carolina

Council Record with National Council of Examiners for Engineering and Surveying

### EXPERIENCE:

1963-1967  
Technician  
Booth & Associates

Transmission surveying and design assistance, substation design assistance; distribution staking; construction work plan, long-range plan, and sectionalizing study preparation assistance for many utilities, including Cape Hatteras EMC, Halifax EMC, Delaware Electric Cooperative, Prince George Electric Cooperative, A&N Electric Cooperative; assistance generation plant design, start-up, and evaluations.

1967-1973  
Project Engineer  
Booth & Associates

Transmission line and substation design; distribution line design long-range and construction work plans; rate studies in testimony before State and Federal commissions; power supply negotiations; all other facets of electrical engineering for utility systems and over 30 utilities in 10 states.

1973-1975  
Professional Engineer  
Associates  
1975-1994  
Executive Vice President

Directed five departments of Booth & Associates, Inc.; provided engineering services to electric cooperatives and other public Booth & power utilities in 23 states; provided expert testimony before state regulatory commissions on rates and reliability issues; in accident investigations and tort proceedings; transmission line routing and

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Booth & Associates	designs; generation plant designs; preparation and presentation of long-range and construction work plans; relay and sectionalizing studies; relay design and field start-up assistance; generation plant designs; rate and cost-of-service studies; reliability studies and analyses; filed testimony, preparation and teaching of seminars; preparation of nationally published manuals; numerous special projects for statewide organizations, including North Carolina EMC. Work was provided to over 130 utility clients in 23 states, PWC of the City of Fayetteville, NC, Cities of Wilson, Rocky Mount and Greenville are among the utilities in which I have provided engineering services in North Carolina during this time frame. Services to industrial customers include Texfi Industries, Bridgestone Firestone, Inc. and many others.
1994-2004 President Booth & Associates	Responsible for the direction of the engineering and operations of Booth & Associates, Inc. for all divisions and departments. The engineering work during this time frame has continued to be the same as during 1974 through 1993 with the addition of greater emphasis on power supply issues, including negotiating power supply contracts for clients; increased involvement in peaking generation projects; development of joint transmission projects, including wheeling agreements, power supply analyses, and power audit analyses. The work during this time frame includes providing services to over 200 utility clients across the United States, including NCEMC and NRECA.
2004-Present President Gregory L. Booth, PLLC	Provide engineering and management services to the electric industry, including planning and design. Providing forensic engineering, product evaluation, fire investigations and accident investigation, serving as an expert witness in state and federal regulatory matters and state and federal court.
2005-Present President PowerServices, Inc.  PowerServices, Inc.	Responsible for the direction of the engineering and operations of PowerServices, Inc. for all divisions and departments. Provide engineering and management services to the electric industry, including planning and design and utility acquisition. Providing forensic engineering, product evaluation, fire investigations and accident investigation, serving as an expert witness in state and federal regulatory matters and state and federal court.

**WORK AND EXPERTISE:**

**ELECTRIC UTILITIES:**  
(more than 300 clients)

Utility acquisition expert, including providing condition assessment, system electrical and financial valuation, electrical engineering assessment, initial Work Plan and integration plans, acquisition loan funds, testimony, assessment and consulting services for numerous electric utility acquisitions. Utility clients for acquisition projects include Winter Park, FL acquisition of Progress Energy, FL, system in the City limits, A & N Electric Cooperative acquisition of the Delmarva Power & Light Virginia

jurisdiction, Shenandoah Valley Electric Cooperative acquisition of Allegheny Energy Virginia jurisdiction, Rappahannock

- Electric Cooperative acquisition of Allegheny Energy Virginia jurisdiction, and numerous other past and currently active electric utility acquisitions.
- System studies, including long-range and short-range planning, sectionalizing studies, transmission load flow studies, system stability studies (including effects of imbalance and neutral-to-earth voltage), environmental analyses and impact studies and statements, construction work plan, power requirements studies, and feasibility studies.
- Fossil and hydro generation plan analysis, design, and construction observation.
- Transmission line design and construction observation through 230 kV overhead and underground.
- Switching station and substation design and construction observation through 230 kV.
- Distribution line design and staking, overhead and underground.
- Design of submarine cable installations.
- Supervisory control and data acquisition system design, installation and operation assistance.
- Load management system design, installation and operation assistance.
- Computer program development.
- Load research and alternative energy source evaluation.
- Field inspection, wiring, and testing of facilities.
- Relay and energy control center design.
- Mapping.
- Specialized grounding for abnormal lightning conditions.
- Ground potential rise protection.
- Protective system/relay coordination.

**GENERATION DESIGN /  
FAILURE ANALYSES:**

- Intermediate and peaking generation (gas and oil fired through 400 MW).
- Peaking generation (diesel and gas through 10,000 kW)
- Wind generation.
- Solar (PV) generation.
- Hydroelectric generation.

**TELECOMMUNICATION:  
UTILITIES:**

- Subscriber and trunk carrier facilities design.
- Stand-by generation and DC power supplies
- DC-AC inverters for interrupted processor supplies.
- Plant design and testing.
- Fiber optics and other transmission media.
- Microwave design.
- Pole attachment designs.
- Pole attachment agreements and rental rates calculations.

**FINANCIAL SERVICES:**

- › Long-term growth analyses and venture analyses.
- › Lease and cost/benefit analyses.
- Capital planning and management.
- Utility rate design and service regulations.
- Cost-of-Service studies.
- Franchise agreements.
- Corporate accounting assistance.
- Utility Commission testimony (State and Federal).

**FORENSIC ENGINEERING:**

- Compliance with NESC, NEC, OSHA, IEEE, ANSI, ASTM and other codes and industry standards.
- Equipment and product failure and analysis and electrical accident investigation (high and low voltage equipment).
- Stray voltage, electrical shocking, and electrocution investigations.
- Building code investigations.
- New product evaluation.
- MCC, MDP failure analysis and arc flash analysis
- Electrical fire analysis

**INDUSTRIAL/ELECTRICAL  
ENGINEERING:**

- Building design (commercial and industrial).
- Building code application and investigation.
- Electric thermal storage designs for heating, cooling, and hot water.
- Standby generation and peaking generation design.
- Electric service design (residential, commercial, and industrial).

**INSTRUCTIONAL  
SEMINARS AND TEXT:**

- Seminars taught on arc flash hazards and safety, including National Electrical Safety Code regulations for utilities.
- Courses taught on Distribution System Power Loss Evaluation and Management.
- Courses taught on Distribution System Protection.
- Text prepared on Distribution System Power Loss Management.
- Text prepared on Distribution System Protection.
- Seminars taught on substation design, NESC capacitor application, current limiting fuses, arresters, and many others electrical engineering subjects.
- Courses taught on accident investigations and safety.
- Courses taught on Asset Management.
- Courses taught on OSHA and Construction Safety.

**TESTIMONY AS AN  
EXPERT:**

- Concerning rate and other regulatory issues before Federal Energy Regulatory Commission and state commissions in Delaware, Florida, Maryland, Massachusetts, Minnesota, New Jersey, North Carolina, Pennsylvania, Rhode Island, and Virginia.
- Concerning property damage or personal injury before courts in Colorado, District of Columbia, Florida, Maryland, Minnesota,

Missouri, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, South Carolina, Texas, Virginia, West Virginia, and Wisconsin.

**FIELD ENGINEERING:**

- Transmission line survey and plan and profile.
- Distribution line staking.
- Property surveying.
- Relay and recloser testing.
- Substation start-up testing.
- Generation acceptance and start-up testing.
- Ground resistivity testing.
- Work order inspections.
- Operation and maintenance surveys.
- Building inspection and service facility inspection.
- Construction Management
  - Generation
  - Transmission
  - Substation
  - Distribution
  - Building Electrical Installations
  - GSA construction projects
  - NASA construction projects
  - University construction projects

**PROFESSIONAL ORGANIZATIONS:**

- a. National Society of Professional Engineers (NSPE)
- b. Professional Engineers in Private Practice (PEPP)
- c. National Council of Examiners for Engineering & Surveying (NCEES)
- d. Professional Engineers of North Carolina (PENC)
- e. National Fire Protection Association (NFPA)
- f. Associate Member of the NRECA
- g. NRECA Cooperative Network Advisory Committee (NRECA-CRN)
- h. The Institute of Electrical and Electronics Engineers (IEEE)  
(Distribution sub-committee members on reliability)
- i. American Standards and Testing Materials Association (ASTM)
- j. Occupational Safety and Health Administration (OSHA) Certification
- k. American Public Power Association (APPA)
- l. American National Standards Institute (ANSI)

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**Commonwealth of Virginia State Corporation Commission**

Rappahannock Electric Cooperative, 247 Industrial Court, Fredericksburg, VA 22408

Case No. PUE-2009-0010 (HE)

2007

Delmarva Power & Light System Acquisition Purchase for A & N Electric Cooperative, Post Office Box 290,  
21275 Cooperative Way, Tasley, VA 23441 and Old Dominion Electric Cooperative, 4201 Dominion Boulevard,  
Glen Allen, VA 23060

Case Nos. PUE-2007-00060, 00061, 00062, 00063, and 00065 (HE)

2009

Potomac Edison/Allegheny Energy System Acquisition Purchase for Shenandoah Valley Electric Cooperative, 147  
Dinkel Ave., Hwy 257, Mt. Crawford, VA 22841

Case No. PUE-2009-00101 (HE)

2011

Virginia, Maryland & Delaware Association of Electric Cooperatives Commonwealth of Virginia at the relation of  
the State Corporation Commission in the Matter of Determining Appropriate Regulation of Pole Attachments and  
Cost Sharing in Virginia

Case No. PUE-2011-00033 (HE)

2013

Northern Virginia Electric Cooperative Pole Attachment Dispute with ComCast

PUE-2013-00055 (HE)

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**Delaware Public Service Commission**

Delaware Electric Cooperative, Inc., Retail Rate Case and Reliability Cases

(HE)

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**Federal Energy Regulatory Commission**

Public Works Commission of the City of Fayetteville, NC v. Carolina Power & Light Company

ER76-, ER77-, ER78, ER81-344, ER84- (HE)

2000

North Carolina Electric Membership Corporation v. Duke Energy Corporation and Duke Electric Transmission

ER01-282-000 and ER01-283-000 (HE)

HE = Hearing  
WT = Written Testimony

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**Federal Energy Regulatory Commission**

2000

North Carolina Electric Membership Corporation v. Virginia Electric Power Company dba North Carolina Power  
EL90-26-00-000 (HE)

2015

Application for Authorization Pursuant to Section 203(a)(1)(A) and 203(a)(2) of the Federal Power Act and  
Request for Waivers of Certain Filing Requirements

Dkt EC15-\_\_-000

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**Florida Public Service Commission (PSC)**

2007

Municipal Utility Underground Consortium Pre-Filed Testimony for Storm Hardening and Undergrounding  
Assessment

Docket Nos. 07023-EI, 080244-EI, and 080522-EI (HE)

2007

Gulf Power Company's Storm Hardening Plan Pre-filed Testimony on Behalf of City of Panama City Beach, Florida

Florida PSC Docket No. 070299-EI (HE)

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**Massachusetts Department of Public Utilities**

2012

Massachusetts Office of Attorney General Commonwealth of Massachusetts Department of Public Utilities  
Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid Review for Storm Response  
and Recovery of 2008 Storm Costs

DPU 11-56 (WT) (HE)

2012

Massachusetts Office of Attorney General Western Massachusetts Electric Company, Northeast Utilities System,  
Review for Recovery of Storm Costs

DPU 11-102/DPU 11-102A (WT) (HE)

2013

Massachusetts Office of Attorney General Nstar Review for Recovery of Storm Costs

DPU 13-52 (WT) (HE)

HE = Hearing  
WT = Written Testimony

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**Massachusetts Department of Public Utilities**

2014

Massachusetts Office of Attorney General National Grid Solar Generation Phase II Program Assessment

D.P.U. 14-01 (WT)

2014

Massachusetts Office of Attorney General Western Massachusetts Electric Company, Review of Storm Recovery Reserve Cost Adjustment "SRRCA"

D.P.U. 13-135 (WT) (HE)

2016

MA Elec. Co. and Nantucket Elec. Co. d/b/a National Grid, Fitchburg Gas and Electric Light Co. d/a/a Unitil and NSTAR Elec. Co. and Western MA Elec. Co. d/b/a Eversource for Approval by the DPU of their Grid Modernization Plan

DPU 120-123

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**Minnesota Department of Public Service/Environmental Quality Board**

Transmission Line Assessment Minnesota Department of Public Service and Minnesota Environmental Quality Board

(HE)

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**New Hampshire Public Utilities Commission**

2004

City of Bedford v. Public Service of New Hampshire

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**New Jersey Public Service Commission**

Sussex Rural Electric Cooperative Retail Rate Cases

(HE)

2004

New Jersey Board of Public Utilities, Focused audit of the planning, operations and maintenance practices, policies and procedures of Jersey Central Power & Light Company

Docket No. EX02120950 (HE)

2015

Jersey Central Power & Light Company ("JCP&L") and Mid-Atlantic Interstate Transmission, LLC ("MAIT")  
FERC 7 Factor Test Evaluation

BPU Docket No. EM15060733

HE = Hearing  
WT = Written Testimony

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**New Jersey Public Service Commission**

2016

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 JJS 48:2-21.1

DPU Docket No. ER16030252 OAL Docket No. PUC 5556-16

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**North Carolina Utilities Commission**

Larry Eaves, et. al. v. Town of Clayton

(HE)

Poly-Loc v. Town of Tarboro

(HE)

1990

Delora Dennis, et. al. v. Haywood EMC

E-7, Sub 474, EC-10, Sub 37, E013, Sub 151

(HE)

2001

Wake EMC Right of Way Acquisiton

(TE)

2002

Property of Ed Harris v. Progress Energy Carolina  
Siler City Transmission Line Issues

General Court of Justice Superior Court Division, File No. 03 CVS SP 251, 252, 253, 254,  
255

(WT) (HE)

2004

John Wardlaw, et. al. Interveners v. Progress Energy Carolinas

Docket No. E-2, Sub 855

(HE)

2011

Frontier Communications of the Carolinas, Inc.

11-CVS-17175

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HE = Hearing  
WT = Written Testimony

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**Pennsylvania Public Utility Commission**

2004

Investigation regarding the Metropolitan Edison Company Pennsylvania Electric Company and Pennsylvania Power Company Reliability Performance

Docket No. I-00040102 (WT) (HE)

2006

Investigation regarding Pennsylvania Rural Electric Association / Allegheny Electric Cooperative Rates

Docket Nos. R-00061366, R-0061367, et. al. (WT) (HE)

2007

Wellsboro Electric Company participants Included C&T Enterprises, Inc., comprised of Wellsboro Electric Company, Claverack Rural Electric Cooperative, Inc., Tri-County Rural Electric Cooperative, Inc., and Citizens Electric

Docket No. P-2008-2020257 (WT) (HE)

2014

PREA 2014 Intervention Assistance, Analysis of Service Reliability Concerns Regarding West Pennsylvania Power Company, Pennsylvania Electric Company, Metropolitan Edison Company (First Energy Company)

Docket Nos. R-2014-2428742, -2428743, -2428744, -248745 (WT)

2015

MAIT and PENELEC for Authorizing the Transfer of Certain Transmission Assets from MET-Ed & PENELEC to MAIT

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**Rhode Island Public Utilities Commission**

1997

Testimony before the Rhode Island Utilities Commission, on behalf of Rhode Island Division of Public Utilities and Carriers, May 15, 1997

Docket No. 2489 (WT) (HE)

2003

Testimony before the Rhode Island Utilities Commission on behalf of Rhode Island Division of Public Utilities and Carriers, December 2003

Docket No. 2930 (WT) (HE)

HE = Hearing  
WT = Written Testimony

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**Rhode Island Public Utilities Commission**

2004

Issuance of Advisory Opinion to Energy Facility Siting Board Regarding The Narragansett Electric Company's Application to Relocate Transmission Lines Between Providence and East Providence, 2004

Docket No. 3564 (WT) (HE)

2006

Issuance of Advisory Opinion to Energy Facility Siting Board Regarding the Narragansett Electric Company d/b/a National Grid's Application to Construct and Alter Major Energy Facilities, 2006

Docket No. 3732 (WT) (HE)

2007

Issuance of Advisory Opinion to RIDPUC in the Matter of the Joseph Allard Fatality Involving Verizon and National Grid

2008

Issuance of Advisory Opinion to Energy Facility Siting Board Regarding the Narragansett Electric Company d/b/a National Grid's Application to Construct and Alter Major Energy Facilities, 2008

Docket No. 4029 (WT) (HE)

2010

Rhode Island Division of Public Utilities and Carriers Narragansett Tariff Investigation

Docket No. R.I.P.U.C. 4065

2010

National Grid Proposed Electric Infrastructure, Safety and Reliability Plan for FY 2012 Submitted Pursant to R.I.G.L. § 39-1-27.7.1

Docket No. 4218 (WT) (HE)

2012

National Grid Electric FY 2013 Electric Infrastructure, Safety and Reliability Plan

Docket No. 4307 (WT) (HE)

2012

National Grid Hurricane Irene Response Assessment, 2012

Docket No. D-11-94 (WT) (HE)

HE = Hearing  
WT = Written Testimony

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**ACTIVE AND HISTORIC REGULATORY CASES  
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**Rhode Island Public Utilities Commission**

2012

Public Utilities Commission Review of Storm Contingency Funds of Electric Utilities

Docket No. 2509

(WT) (HE)

2012

Commission's Investigation Relating to Stray and Contact Voltage

Docket No. 4237

(WT)

2012

Rhode Island Public Utilities Commission Interstate Reliability Assessment

Docket No. 4360

(WT) (HE)

2012

National Grid Electric Infrastructure, Safety, and Reliability Plan for 2014

Docket No. 4382

(WT) (HE)

2014

National Grid Electric Infrastructure, Safety, and Reliability Plan 2015 Proposal

Docket No. 4473

(WT) (HE)

2014

National Grid's FY 2016 Electric Infrastructure, Safety and Reliability Plan

Docket No. 4539

2015

Division's Investigation into Verizon's Vegetation Management Practices

2015

Wind Energy Development, LLC (WED) and ACP Land, LLC Petition for Dispute Resolution Relating to Interconnection

Docket No. 4483

(WT)

2015

National Grid Electric Infrastructure, Safety, and Reliability Plan FY 2017

Docket No. 4592

HE = Hearing  
WT = Written Testimony

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**Rhode Island Public Utilities Commission**

2016

PUC Advisory Opinion Regarding Need of The Narragansett Electric Co. d/b/a National Grid to Construct and Alter Certain Transmission Components in the Towns of Portsmouth and Middletown (Aquidneck Island Reliability Project)

Docket No. 4614

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HE = Hearing  
WT = Written Testimony

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## APPENDIX-2





**Summary of FirstEnergy Indices vs. IEEE Benchmark Statistics  
 (Pennsylvania)**

Year	Met-Ed		Penelec	
	Actual CAIDI (Minutes)	Actual SAIFI (Outages)	Actual CAIDI (Minutes)	Actual SAIFI (Outages)
2014	128	1.11	118	1.55
2013	105	1.09	117	1.48
2012	120	1.29	138	1.41
2011	117	1.21	167	1.40
2010	120	1.51	124	1.31
2009	111	1.21	117	1.22
2008	104	1.35	142	1.56
2007	112	1.63	110	1.71
2006	121	1.73	108	1.47
2005	122	1.70	161	1.87
<b>IEEE Std. 1366*</b>				
1 <sup>st</sup> Quartile	0-91	0-.86	0-91	0-.86
2 <sup>nd</sup> Quartile	91-104	.86-1.07	91-104	.86-1.07
3 <sup>rd</sup> Quartile	104-127	1.07-1.33	104-127	1.07-1.33
4 <sup>th</sup> Quartile	127-∞	1.33-∞	127-∞	1.33-∞

\*2015 Benchmark, 2014 Survey Statistics

*Note: Met-Ed and Penelec data from Pennsylvania Public Utility Commission Electric Service Reliability in Pennsylvania Report, 2005-2015.*