C.M. CRANE
Direct Testimony
DC P.S.C. - - June 18, 2014

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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF CHRISTOPHER M. CRANE
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is Christopher M. Crane. My business address is 10 Dearborn Street, Chicago, Illinois 60603.

2. Q. By whom are you employed and in what capacity?

A. I am the President and Chief Executive Officer of Exelon Corporation ("Exelon"). I became the Chief Executive Officer of Exelon in March 2012 upon the retirement of John W. Rowe.

3. Q. Please describe your professional and educational background.

A. I began my career in 1979 in the Engineering Department at the Comanche Peak Nuclear Station. From October 1981 to October 1988, I worked at the Palo Verde Nuclear Generating Station in a number of positions. From October 1988 to 1998, I worked for the Tennessee Valley Authority in progressively more responsible positions, including site vice president of the Brown's Ferry Nuclear Plant.

In 1998, I moved to Commonwealth Edison Company ("ComEd") to help improve the performance of that company's fleet of nuclear generating plants. From September 1998 to July 1999, I served as Vice President for Boiling Water Reactor Operations and played a major role in the ComEd nuclear program recovery. In July 1999, I was promoted to Senior Vice President of Nuclear

Operations. My responsibilities in that role expanded to include the daily operation and the regulatory and technical performance of all five ComEd nuclear plants.

In 2000, Unicom Corporation ("Unicom") and PECO Energy Company ("PECO") merged to form Exelon. In June 2003, I was promoted to Chief Operating Officer of Exelon Nuclear. My responsibilities in that role focused on the daily operations of Exelon's nuclear generating facilities. I was also president and Chief Executive Officer of AmerGen, the joint venture between Exelon and British Energy ("BE") that owned and operated three nuclear plants. I remained in that position until BE sold its interest to Exelon. In January 2004, I was promoted to President and Chief Nuclear Officer of Exelon and, in that capacity, oversaw strategy development as well as the daily operations of all of Exelon's nuclear generating facilities.

In 2007, I was promoted to Chief Operating Officer of Exelon Generation, which owns all of Exelon's generation resources. In 2008, I was promoted to President and Chief Operating Officer of Exelon. In that capacity, I directed a broad range of business initiatives, including acquisitions, and was responsible for transmission strategy, cost management, major capital programs, Exelon's nuclear up-rating program, generation asset optimization and the development of renewable energy projects.

As I previously explained, I became the President and Chief Executive Officer of Exelon in 2012 upon the retirement of Mr. Rowe.

I have held a senior reactor operator certification, studied electricity at New Hampshire Technical College, and attended Harvard Business School's Advanced Management Program. I am a member of the board, a member of the Executive Committee and one of the Vice Chairs of the Edison Electric Institute. I am Vice Chairman of the Institute of Nuclear Power Operations and Chairman of the Nuclear Energy Institute. I also serve on the Board of Governors of the World Association of Nuclear Operators ("WANO") and on the Board of Governors of WANO's Atlanta Center.

4. Q. Please identify your other community leadership roles.

A. I am a member of the Civic Committee of The Commercial Club of Chicago and a member of the Board of Trustees of the Rush University Medical Center. I am a director of the Museum of Science & Industry Chicago and of Get IN Chicago, an innovative public/private partnership with the mission of eliminating juvenile violence.

5. Q. Have you previously testified before a utility regulatory agency?

A. Yes. I submitted rebuttal testimony before the New Jersey Board of Public Utilities at BPU Docket No. EM05020106, which was the proceeding for approval of the proposed merger of Exelon and Public Service Enterprise Group, Inc. That merger was not consummated. More recently, I submitted direct and rebuttal testimony before the Public Service Commission of Maryland on behalf of the applicants in Case No. 9271, which was the proceeding for approval of the merger of Exelon and Constellation Energy Group, Inc. ("Constellation").

6. Q. What is the purpose of your direct testimony?

A. In Section II, I provide an overview of the proposed merger of Exelon and Pepco Holdings, Inc. ("PHI") ("Merger"), and explain how it will strengthen the combined company's utilities to better serve our customers. I also want to introduce Exelon, and the best way to do that is to describe its vision and core values, as I do in Section III of my testimony. As part of this discussion, I explain how our vision and core values align with those of PHI and why that alignment will facilitate the integration of our companies. In Section IV of my testimony, I explain why Exelon decided to merge with PHI and, in particular, why the Merger will help meet the challenges facing distribution utilities. In Section V, I provide an overview of the benefits the Merger will produce and explain why it is in the best interest of PHI's utilities, their customers and the communities they serve. As part of this discussion, I will explain Exelon's approach to achieving top-tier performance at reasonable cost through the rigorous application of best practices and a management philosophy that continuously challenges us to improve productivity and efficiency. In Section VI, I introduce other witnesses submitting direct testimony in support of the Merger.

II. OVERVIEW OF THE MERGER

7. Q. Please provide an overview of the Merger.

A. On April 29, 2014, Exelon and PHI entered into an Agreement and Plan of Merger ("Merger Agreement") with the approval of their respective Boards of Directors. When the Merger is consummated, PHI will become an indirect subsidiary of Exelon, and PHI's common stockholders will be entitled to receive

$27.25 per share in exchange for the PHI stock they hold. The terms of the Merger are discussed in greater detail in the direct testimony of Carim V. Khouzami.

8. Q. Will the Merger strengthen the PHI and Exelon utilities?

A. Yes, it will. I am confident that the Merger will create the premier Mid-Atlantic energy distribution utility system. Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva Power") and Atlantic City Electric Company ("ACE") (collectively, the "PHI Utilities") will join an organization that includes three outstanding utilities – Baltimore Gas and Electric Company ("BGE"), ComEd and PECO– with proven track records of furnishing safe, reliable and efficient energy delivery service. Significantly, the PHI Utilities share Exelon's commitment to safety, operational excellence, customer service, environmental stewardship, and community service. These shared commitments establish a solid foundation for building strong, high-performing, post-Merger utilities. To cite one important example of how this will occur, the Merger will leverage the combined expertise of the PHI and Exelon utilities to enhance reliability at a reasonable cost. As Mark F. Alden explains in his direct testimony, the recent merger of Exelon and Constellation, which led to significant improvements in BGE's reliability metrics without increasing its capital or operating and maintenance ("O&M") budgets, demonstrates the many benefits that accrue from successfully integrating two outstanding organizations and the resultant sharing of best practices. Additionally, the PHI Utilities will join a larger enterprise and, in that way, gain access to a number of additional resources, including the financial strength of Exelon. They will also benefit from greater bargaining power throughout the supply chain and realize economies of scale at many levels within the post-Merger organization. As I will explain in more detail later in my testimony, the Merger will expand emergency response capabilities, drive operational excellence, and facilitate the use of innovative technology to deliver high quality customer service and reduce customers' energy use and carbon footprint.

III. VISION AND CORE VALUES

9. Q. Please state the overarching vision that expresses what Exelon stands for as an organization.

A. At Exelon, we believe that reliable, clean and affordable energy is essential to a brighter, more sustainable future. That is why we are committed to providing innovative, best-in-class performance and thought leadership to help drive progress for customers, communities and our nation. Exelon believes in performance that drives progress.

10. Q. What are the core strengths of Exelon as an organization that support its vision?

A. Exelon has established five "pillars" that reflect its core strengths, support its vision, and are designed to translate that vision into a clear path for action:

1. **Performance Excellence**. We are committed to excellence and continuous improvement. We strive to be the best in everything we do.

2. **A Balanced Perspective**. Because we have a presence in each stage of the energy business, we have unique insights into the energy challenges we face today and will face in the future.

3. **Effective Collaboration**. We build strong working partnerships. We know that it is only through teamwork that we can develop and deliver smarter, cleaner, more efficient energy solutions.

4. **Driving Competition And Choice**. We believe that competition drives choice, innovation and savings and, in that way, empowers our customers and moves our nation forward.

5. **Advancing Clean Energy**. We are committed to connecting customers to cleaner, more cost-effective energy resources and to taking a leadership role in the process of shaping the future of clean energy.

11. Q. Please describe the core values that guide Exelon's decision making and behavior.

A. Exelon has five core values that cut across its organization and inform every aspect of its decision-making and behavior:

1. **We are dedicated to safety**. We are committed to maintaining the highest standards of safety and reliability for our people, our customers and the communities in which we work. As a fundamental part of our culture and operations, every member of the Exelon team is dedicated to putting safety first.

2. **We actively pursue excellence**. We are driven to excel. Recognizing the value of constant improvement, we strive to advance our processes and develop more efficient ways to meet our customers' energy needs. In all we do, we strive to surpass the standards of our industry and the standards we set for ourselves in order to create value for customers, communities and our shareholders.

3. **We innovate to better serve our customers**. We see every challenge as an opportunity to exercise our ingenuity and our competitive spirit. We encourage curiosity and exploration to develop better ways of delivering clean energy. We focus on innovation with the goal of creating energy solutions that have a meaningful, positive impact on our customers.

4. **We act with integrity and are accountable to our communities and the environment**. We are committed to doing what is right. We have a deep connection to the communities we serve, which compels us to take responsibility for our work. We actively look for ways to engage and give back. We value the environment and work to reduce our impact with future generations in mind.

> 5. **We succeed as an inclusive and diverse team.** We foster an inclusive culture of trust, collaboration and performance. We welcome and respect people with different perspectives, backgrounds, and traits because we know that diverse teams drive powerful outcomes.

12. Q. Mr. Crane, please explain how Exelon's core values relate to the commitments being made in connection with the Merger.

A. As I explained above, Exelon is dedicated to acting with integrity and accountability. That means we keep our promises and honor our commitments. Exelon has made regulatory commitments in connection with the mergers of Unicom and PECO that created Exelon in 2000 and Exelon and Constellation in 2012. Exelon has kept all the regulatory commitments that it made in connection with those transactions.

13. Q. Have you reviewed the statement of PHI's vision and core values set forth in Mr. Rigby's direct testimony?

A. Yes, I have. I concur with Mr. Rigby that, while Exelon and PHI each express their vision and values in their own, somewhat different words, the important substantive elements of our vision and core values are closely aligned.

14. Q. Why is it important to Exelon that it and PHI have substantially the same vision and core values?

A. The alignment of vision and core values is important on two levels. Following the effective date of the Merger, both Exelon and PHI will be working to integrate the Merger partners' operations and business processes. Functional integration will be facilitated if their operations and business processes are compatible. A common vision and shared values are strong evidence that our two companies' operations are generally consistent, which is an important reason that Exelon and PHI are excellent merger partners. A shared vision and common core values are also important because they express a common corporate culture. The cultural aspect of a business combination is one of the intangible factors that directly affects the successful longer-term operation of the enterprise. While there are many similarities in the corporate cultures of Exelon and PHI, I believe the common trait most important for forging a strong, post-Merger organization is the shared belief that we should never be content with "business as usual" in any aspect of our company and, therefore, we must continuously challenge ourselves to be better at everything we do, including, of course, managing and containing costs for the benefit of our customers, while providing safe, reliable service.

IV. REASONS FOR THE MERGER AND STRATEGIC FIT

15. Q. Mr. Crane, why did Exelon decide to merge with PHI?

A. Exelon has embarked on the Merger to create the premier Mid-Atlantic energy distribution utility and, as part of achieving that goal, to improve the overall customer experience in a meaningful way. The Merger furthers Exelon's strategic goals of increasing its focus on its core competency of operating best-in-class distribution utilities and diversifying its business. With the Merger, 60% to 65% of Exelon's pro forma earnings projected for 2015 and 2016 will be derived from its regulated distribution business.

16. Q. How will the Merger facilitate Exelon's goal of becoming the premier Mid-Atlantic energy distribution utility?

A. The Merger will join two companies that have an excellent strategic fit given their geographic location and other operational similarities. Together, they will form a post-Merger utility platform that possesses the scope, financial strength and operational expertise needed to adapt to the evolving role of distribution utilities. The wide-spread use of new and existing technology; the development, operation and management of an interactive grid; and the need to match load with a pool of widely distributed, customer-based resources demands the kind of large, geographically contiguous, interconnected system that the Merger will help to produce.

17. Q. Earlier you noted that Exelon and PHI are "an excellent strategic fit." Please explain why that is so.

A. The first significant factor is geography. Attached as JOINT APPLICANTS (A)-1 is a map showing the location of the PHI Utilities' service territories relative to those of BGE and PECO. Following the Merger, the Exelon family of utilities in the Mid-Atlantic region will have contiguous service territories stretching across southeastern Pennsylvania, southern New Jersey, Delaware, Maryland and the District of Columbia. Geographic proximity provides substantial opportunities to capture economies of scale and share best practices. Additionally, and perhaps most importantly, the geographic proximity of utilities within a single corporate family will give the post-Merger enterprise much more robust mutual support capabilities and substantially greater combined resources to respond promptly and effectively to major storms and other emergencies.

Additionally, in several important areas, the PHI and Exelon utilities have adopted similar programs, including advanced metering infrastructure ("AMI"), energy efficiency and demand response, and vendor/supplier diversity. Having these initiatives in common across the post-Merger enterprise will enable the sharing of knowledge and best practices, capture economies of scale and create opportunities to improve service and reduce costs. Moreover, these programs reflect a shared vision of the future in which the post-Merger Exelon utilities will continue to embrace innovative technology including through the use of the grid as an evolving platform for energy services for our customers, will partner with our customers to prudently manage energy use, and will strengthen their organization and the communities they serve by fostering a culture of diversity and inclusiveness.

V. BENEFITS THE MERGER WILL PRODUCE

18. Q. Please provide an overview of the benefits that the Merger will produce.

A. The Merger will create benefits for Pepco and the other PHI Utilities, their customers and the communities and states which they serve. First, it will create a strong foundation for meeting the challenges created by the evolving role of distribution utilities as the developers, operators and managers of an interactive grid that works as a platform to integrate renewable and distributed energy resources and accommodates customers' dual function as end users and producers of electricity. Second, the Merger will generate distribution-related synergies at

PHI that Exelon is proposing to reflect as an immediate – and longer term – direct and traceable financial benefit to Pepco's District of Columbia customers. Third, the Merger will leverage Exelon's resources and expertise to sustain and enhance reliability for Pepco and the other PHI Utilities within Pepco's and PHI's reliability related capital and O&M budgets. Fourth, PHI's charitable contributions and community support will be embodied in a firm commitment to maintain spending for ten years following the Merger in each of the PHI Utilities' service areas, including the District of Columbia, that, on average, exceeds 2013 levels.

Additionally, Exelon is proposing to take several important steps to protect customers and employees and to maintain the local presence of Pepco in the District of Columbia as well as the other PHI Utilities in their respective jurisdictions. I will discuss this issue later in my testimony.

19. Q. Please explain how customers of the PHI Utilities, including District of Columbia customers, will benefit from the distribution system synergies the Merger is expected to produce.

A. Distribution customers of all classes will realize an immediate direct and traceable financial benefit from the savings the Merger is expected to produce for Pepco and the other PHI Utilities by the creation of a $100 million Customer Investment Fund, of which $14 million will be allocated to Pepco operations in the District of Columbia. Exelon will fund this benefit, and the PHI Utilities will not seek to recover in rates any part of that fund. The Customer Investment Fund represents a direct and traceable benefit of more than $50 per District of

Columbia distribution customer. The disposition of each jurisdiction's share of that fund will be determined by the applicable regulatory authority in each jurisdiction following the consummation of the Merger. A regulatory authority could decide to use its share of the Customer Investment Fund to provide a bill credit to customers, to support low-income customer assistance programs or to strengthen energy-efficiency measures, although these are just examples and a regulatory authority could combine these and other or additional customer-benefit uses as it sees fit. Additionally, Exelon is making commitments to maintain and promote the PHI Utilities' low-income customer assistance, energy-efficiency and demand response programs, and those commitments are separate and apart from the commitment to create and fund the Customer Investment Fund.

20. Q. Is the Customer Investment Fund the only way in which Pepco customers will realize benefits from distribution-related Merger synergies?

A. No, it is not. District of Columbia customers will realize additional direct and traceable financial benefits as transmission-related and distribution-related Merger synergies are fully recognized in future rate proceedings in the form of costs that are lower than they would have been absent the Merger. The Merger integration process and the distribution-related savings it is expected to produce are addressed in greater detail by Mr. Khouzami.

21. Q. Please explain how the reliability-related benefits of the Merger will be produced.

A. As I previously noted, the Merger will leverage Exelon's resources and expertise to enhance reliability for Pepco and the other PHI Utilities without increasing Pepco's reliability-related capital and O&M budgets. It is important to acknowledge the significant improvement in reliability that the PHI Utilities, including Pepco, have accomplished, which Exelon plans to build upon. Similarly, Exelon acknowledges the regulatory performance requirements that are already in place for Pepco and the other PHI Utilities. Exelon intends not only to achieve compliance with the current regulatory performance requirements, but also to make further improvements in reliability metrics. Exelon is also proposing to back-up its commitment with a performance guaranty that will trigger a financial penalty if our performance-improvement goal is not achieved. Exelon's performance guaranty, its reliability-related capabilities, and the track record of top-tier operational performance by its utilities are discussed in more detail in Mr. Alden's direct testimony. The details of the proposed financial penalty are discussed in Mr. Khouzami's direct testimony.

22. Q. How will Exelon ensure that its efforts to enhance reliability will be cost-effective?

A. Exelon understands that expenditures for reliability can reach a point of diminishing returns at which the level of investment, or increase in maintenance expense, may not be justified by the incremental improvements in reliability they produce. Exelon has no intention of trying to achieve improvements in reliability simply by spending more. We don't do business that way. As I explained before, an integral part of our management model is to continuously challenge ourselves to be more efficient and more productive – to always strive to do things better and at a lower cost. We have demonstrated that this approach works in improving system reliability. The most recent example is the performance of BGE following Constellation's merger with Exelon. At BGE, we made significant improvements in reliability metrics without increasing BGE's reliability-related capital or O&M budgets, as Mr. Alden discusses in his direct testimony. We plan to do the same for the PHI Utilities. The reliability performance improvements we propose for Pepco and the other PHI Utilities will be accomplished without increasing Pepco's or the other PHI Utilities's reliability-related capital or O&M budgets in their existing long-range plans.

Exelon's hard work to control costs does not mean it intends to scrimp on needed capital improvements. In fact, BGE, ComEd and PECO have approved plans to spend $15 billion in aggregate over five years for capital improvements to their systems. To state it simply, if capital investment is needed, the necessary resources will be provided.

23. Q. The District of Columbia and the other service areas of the PHI Utilities, like those of PECO and BGE, have experienced several severe weather events over the past several years. Please describe Exelon's emergency response performance and explain how the Merger will enhance emergency response capability of Pepco and the other PHI Utilities.

A. PECO and, following the Constellation merger, BGE, have performed well in responding to major storm events, as Mr. Alden explains. In large part, this performance was made possible by the ability of the utilities in the Exelon system to marshal their forces from across the enterprise to provide prompt and effective storm restoration. Those benefits will be extended to Pepco in order to support and enhance its emergency response efforts in the District of Columbia following the Merger. Additionally, as I previously explained, the geographic proximity of the PHI Utilities to BGE and PECO will enhance mutual support capabilities for all of Exelon's Mid-Atlantic utility systems and create a much larger pool of combined resources to respond quickly and effectively to major storm events or other emergencies.

24. Q. Is there anything else you would like to add on the issue of reliability?

A. Yes, I want to make it clear that Exelon takes reliability very seriously. We understand the importance of keeping the lights on throughout the areas we serve. We also acknowledge the special responsibility – and the corresponding honor and privilege – of serving as the electricity supplier for our nation's capital. We understand that Washington, D.C. is the image we project to the world and the showcase for our country's energy policy. We will work tirelessly to make sure that Pepco continues to provide Washington, D.C. the world class electric service that it expects and deserves from its electric utility.

25. Q. Please explain how the Merger will strengthen PHI's charitable contributions and community support.

A. The Merger will strengthen PHI's charitable and community involvement by converting what are now voluntary contributions into a binding commitment. As explained in the direct testimony of Calvin G. Butler, Jr., Exelon is committing to provide for ten years following the Merger an annual average in charitable contributions and traditional local community support that exceeds the 2013 levels of the PHI Utilities. Additionally, as part of Exelon, the PHI Utilities will continue to play an important role in supporting the communities in their service areas and will remain a significant employer and responsible corporate citizen, as evidenced by the commitments to community service made by the Exelon companies and their employees and the civic and charitable activities of BGE following the Constellation merger, as Mr. Butler also describes.

26. Q. Mr. Crane, did Exelon and PHI consider how the District of Columbia and the states in which the PHI Utilities operate will be affected by the Merger?

A. Yes. Exelon and PHI retained Susan F. Tierney, Ph.D., to study the economic effects of the Merger upon the District of Columbia and the three states in which the PHI Utilities furnish service. Dr. Tierney conducted a detailed study using well-recognized and widely-accepted analytic techniques to quantify the effects of the Merger in those locations, including the effects of an increase in reliability at each of the PHI Utilities from their current three-year average performance levels to the reliability levels described by Mr. Alden. The value of the benefits accruing to Pepco's residential and commercial customers and to the District of Columbia from reduced outages with shorter duration, together with the portion of the Customer Investment Fund to be distributed to Pepco customers, is expected to be within a range of $95.4 million to $133.6 million over the period 2015 to 2020 on a net present value basis. In addition – depending upon how the District of Columbia Public Service Commission (the "Commission") decides to allocate the Customer Investment Fund – the expected benefits from the Merger will include the creation of between 907 and 1,281 jobs in the District of Columbia.

I know the Commission recognizes the value of reliability. In my view, the Merger is a crucial step to ensure that District of Columbia and the customers of Pepco can realize the significant benefits described by Dr. Tierney. Upon completion, the Merger will create a real partnership to achieve a level of utility service reliability that not only meets the future requirements that the PHI Utilities have today but exceeds those requirements. This partnership will be backed by Exelon's commitment to share best practices with the PHI Utilities to increase reliability within the reliability-related capital and O&M budgets that the PHI Utilities have already planned, and financial penalties if we fail to achieve what we are promising to do.

27. Q. Earlier, you indicated that Exelon proposes to take additional steps to protect customers. Please discuss those measures.

A. While PHI has non-regulated businesses that are operated as part of Pepco Energy Services, it is predominantly a "pipes and wires" distribution utility company. With the Merger PHI will be joining a company that has a generation component, including substantial nuclear generation, which some may contend could expose Pepco and the other PHI Utilities to a qualitatively different array of business risks. I believe that perception is not warranted. Exelon is a leader in nuclear safety and has been recognized for the world-class performance of its nuclear generating facilities. Moreover, Exelon has the expertise, experience and broadly diversified exposure to multiple energy markets to effectively mitigate market risks in its generation business. Nonetheless, in order to put this issue to rest, Exelon proposes to implement ring-fencing measures designed to isolate

Pepco and the other PHI Utilities from the potential financial and credit consequences of unrelated business risks, including financial risks that could arise from Exelon's nuclear operations. The specific ring-fencing measures that will be implemented and their effectiveness in insulating Pepco and the other PHI Utilities are discussed in greater detail in Mr. Khouzami's direct testimony.

28. Q. Please describe the protections Exelon is offering for Pepco employees and the employees of the other PHI Utilities.

A. I fully concur with Mr. Rigby's statement that the strength of any business lies in its people. That is why Exelon prides itself on treating its employees fairly. The Merger will result in some reductions in force. For example, certain positions in the managerial and administrative ranks will no longer be necessary as duplicative positions are consolidated. However, Exelon has committed that for a period of two years after consummation of the Merger, there will be no net reductions due to involuntary attrition as a result of the Merger integration process in the employment levels of the PHI Utilities. In that regard, Exelon has clearly stated it will honor all existing collective bargaining agreements. Moreover, as Mr. Rigby explains in his direct testimony, Locals 210, 1238, 1307 and 1900 of the International Brotherhood of Electrical Workers, which comprise all of the collective bargaining units that represent employees of PHI Utilities, agree the Merger is in the best interest of Pepco and its employees and have recently agreed to contract extensions for an additional three years. Also consistent with the Merger Agreement, Exelon has agreed that for at least two years after closing the Merger, Exelon will provide current and former PHI Utilities' employees compensation and benefits that are at least as favorable in the aggregate than the compensation and benefits provided to those employees immediately before the Merger. These commitments are discussed by Denis P. O'Brien in his direct testimony.

Additionally, Exelon will ensure that, after the Merger, PHI and the PHI Utilities, including Pepco, will continue their commitments to workforce diversity. Exelon believes it is critical that its workforce reflect the diversity of the communities it serves because diverse teams drive powerful and successful outcomes. For that reason, diversity and inclusiveness are key elements of Exelon's core values, as I explained in Section III of my testimony. Moreover, Exelon has received national and local recognition for its dedication to diversity and inclusiveness.

29. Q. How will the Merger affect the local presence and local control of PHI and Pepco?

A. Currently, PHI is a publicly traded holding company that owns the stock of the PHI Utilities. Following the Merger, PHI will no longer have a publicly traded common stock and, as a consequence, a number of corporate functions associated with public common-stock ownership will no longer be performed at the PHI level. However, based on the explanation of the PHI operating structure provided by Mr. Rigby, it is anticipated that PHI will continue to play much the same role in the day-to-day operations of the Pepco and the other PHI Utilities that it does today, and the existing operational structure of PHI will remain substantially the same. PHI and Pepco will continue to maintain their headquarters in Washington, D.C. Additional details about the post-Merger operational and management structure and the importance of maintaining local control and local presence are provided in the direct testimony of Mr. O'Brien. Mr. Butler's direct testimony details the BGE experience where Exelon has maintained local control and a local presence after its merger with Constellation.

30. Q. How will the Merger affect the access and accountability of management?

A. The Merger will not affect access to and the accountability of management. Regulators, government officials, community leaders and customers will know the people working at the utility level. Moreover, both Mr. O'Brien, who leads Exelon Utilities, and I are committing to being accessible and accountable to regulators, state and local governments, and all of the utilities' other constituencies. In that regard, as Mr. O'Brien explains in his direct testimony, Exelon has a straightforward utility management model with clear, direct lines of authority and reporting. Thus, Exelon's utility management model allows the operating utilities, which, post-Merger, will include PHI as the operating arm of the PHI Utilities, to access the resources, expertise and financial strength of a large organization while maintaining the ability to respond to local conditions and priorities. Simply stated, the Merger will not create multiple tiers of management that have to be penetrated to access the decision-makers in the organization.

31. Q. Mr. Crane, in light of the importance Exelon places on reducing carbon emissions through renewable technology and other means, please explain

Exelon's experience in carbon reduction and expansion of renewable energy sources.

A. Under Exelon's 2020 Plan, each Exelon utility took a variety of additional actions to reduce its own carbon footprint, such as minimizing internal building electricity use through aggressive building modernization, using clean technologies and alternative fuels in fleet vehicles and delivering customer energy efficiency savings through PECO's and ComEd's award winning "Smart Ideas" programs. Through these combined efforts, Exelon met – indeed, surpassed – the ambitious target of reducing its carbon footprint by 17.5 million metric tons of greenhouse gas emissions and did so in 2013 – thus achieving the goal and completing the mission of Exelon 2020 seven years ahead of its planned completion date.

Exelon is an industry leader in adopting renewable energy technology, as evidenced by the nearly 1,300 megawatts ("MW") of wind generation and approximately 240 MW of utility-scale and distributed solar generation owned and operated by its generation companies. Similarly Exelon's retail companies have installed more than 173 MW in distributed generation for customers and supplied renewable electricity to more than 82,300 customers. The post-Merger organization will consolidate the intellectual capital, technical expertise and experience of a deeper and more diverse workforce that has developed skill sets vital to implementing renewable energy solutions and energy savings programs.

32. Q. Have the Exelon utilities received special recognition for their environmental stewardship?

A. Yes, they have. Each of the Exelon utilities was recognized in 2012 and 2013 as a United States Environmental Protection Agency Energy Star award winner for Sustained Excellence for continued leadership in protecting the environment through its energy efficiency efforts. Additionally, on June 11, 2014, Exelon was recognized for its corporate sustainability and environmental performance by ranking second among utilities in the 2014 *Newsweek* Green Rankings.

33. Q. Mr. Crane, will the public interest be served by completing the Merger?

A. Yes. The Merger definitely will benefit the public, rather than merely leave it unharmed, for all of the reasons that I set forth above, which are explained in more detail in the Joint Application and the direct testimony of other witnesses supporting the Merger.

34. Q. In your discussion of the benefits the Merger will produce, you referred to commitments that Exelon and the PHI Utilities are making in connection with the Merger. Is Exelon providing a complete list of those commitments?

A. Yes, all of the commitments being proposed by Exelon and the PHI Utilities are set forth in Exhibit 5 to the Joint Application.

VI. INTRODUCTION OF OTHER WITNESSES

35. Q. Please identify the other witnesses that have submitted direct testimony in support of the Merger.

A. The witnesses that submitted direct testimony with the Joint Application are listed below along with a general description of the subject matter of their direct testimony:

Joseph M. Rigby is the Chairman of the Board, President and Chief Executive Officer of PHI. Mr. Rigby provides PHI's perspective on the Merger, describes the vision and values of PHI and explains why the Merger is in the best interests of the PHI Utilities, their customers and the communities they serve. (JOINT APPLICANTS (B))

Denis P. O'Brien is Senior Executive Vice President of Exelon and Chief Executive Officer of Exelon Utilities. Mr. O'Brien describes how the PHI Utilities will be managed following the Merger, including how the operational structure, governance principles and delegation of authority will maintain substantial local control. Mr. O'Brien also discusses the experience of integrating utility operations following the merger of PECO and Unicom and the merger of Exelon and Constellation, which brought BGE into the Exelon family of utility companies. Finally, Mr. O'Brien describes Exelon's commitments regarding employment levels and employee compensation. (JOINT APPLICANTS (C))

Mark F. Alden is the Vice President of Utility Oversight and Integration for Exelon. Mr. Alden explains Exelon's commitments to enhance reliability across the PHI Utilities' service area and discusses Exelon's track record of reliability and high-quality service. He also identifies some of the more significant technological solutions that can be employed to cost-effectively strengthen reliability across the PHI Utilities' service area following the Merger. (JOINT APPLICANTS (D))

William M. Gausman is Senior Vice President, Strategic Initiatives, of PHI. Mr. Gausman describes the regulatory requirements for reliability that currently apply to Pepco and the commitments that it has made with regard to achieving specified reliability performance goals. (JOINT APPLICANTS (E))

Carim V. Khouzami, a Senior Vice President of BGE, is Exelon's Chief Integration Officer. Until recently assuming the position of Chief Integration Officer, he served as BGE's Chief Financial Officer and Treasurer. Mr. Khouzami provides an overview of the planned integration of Exelon and PHI, explains the process for identifying merger savings and costs to achieve those savings, and discusses the cost-reducing synergies that were achieved through the successful integration of BGE following the Exelon-Constellation merger. Additionally, Mr. Khouzami discusses the financial impacts of the Merger, merger accounting principles, the measures Exelon will implement to ring-fence the PHI Utilities and the financial penalty Exelon is proposing in the event that Pepco fails to meet Exelon's reliability commitment. (JOINT APPLICANTS (F))

Susan F. Tierney, Ph.D. is a Senior Advisor with the Analysis Group. Dr. Tierney discusses the quantitative and qualitative economic benefits that the proposed Merger brings to the District of Columbia and to the customers of Pepco in that jurisdiction. (JOINT APPLICANTS (G))

Calvin G. Butler, Jr. is BGE's Chief Executive Officer. Mr. Butler describes Exelon's approaches to electric system reliability, charitable giving, community involvement, and supplier diversity. He also provides relevant background information about Exelon's existing programs in each of these areas. (JOINT APPLICANTS (H))

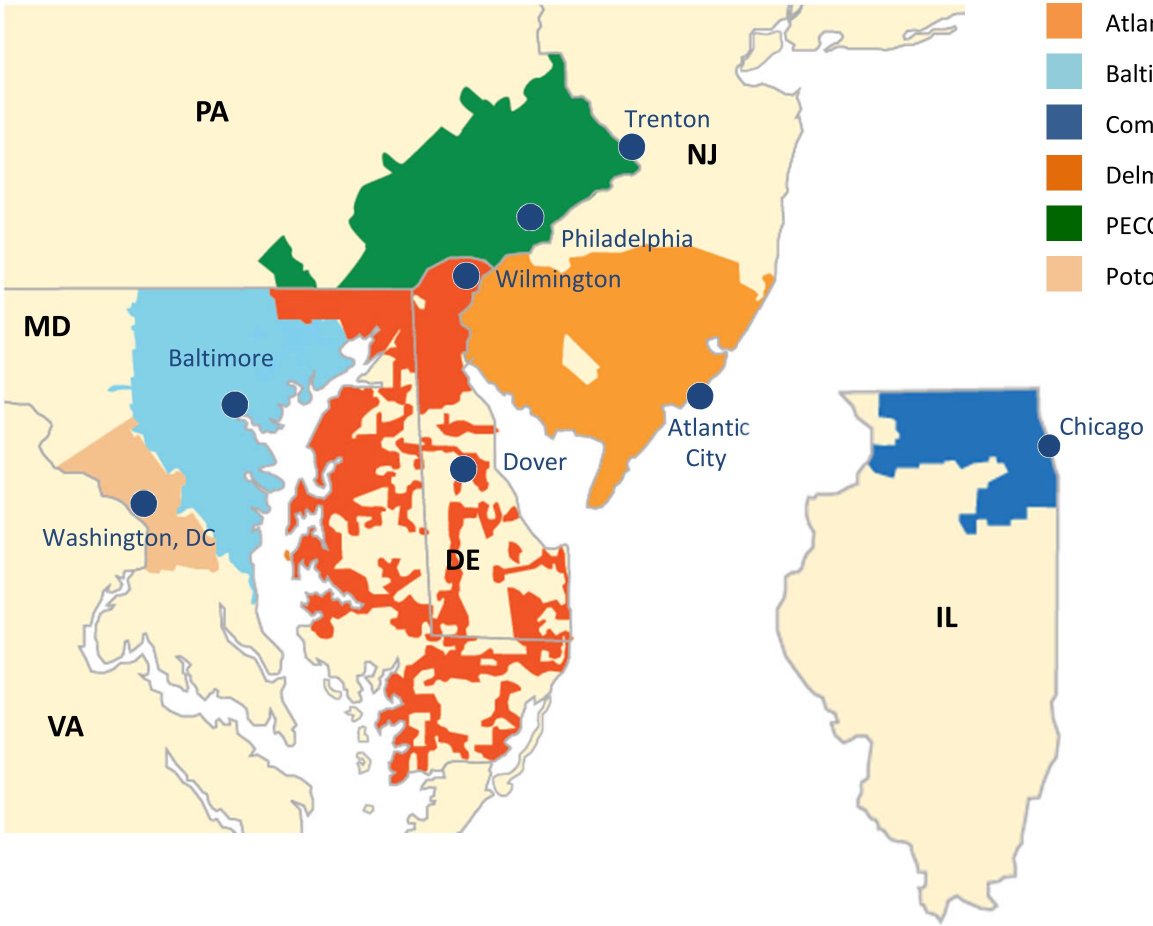
VII. CONCLUSION

36. Q. Does this conclude your direct testimony at this time?

A. Yes, it does.

C.M. Crane Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _____ (A)-1



- Atlantic City Electric Co. Service Territory
- Baltimore Gas and Electric Co. Service Territory
- ComEd Service Territory
- Delmarva Power & Light Service Territory
- PECO Energy Service Territory
- Potomac Electric Power Service Territory

J.M. RIGBY Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as
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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF JOSEPH M. RIGBY

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is Joseph M. Rigby. My business address is 701 9th Street, NW, Washington, DC 20068.

2. Q. By whom are you employed and in what capacity?

A. I am the Chairman of the Board of Directors, President and Chief Executive Officer of Pepco Holdings, Inc. ("PHI"). PHI is the parent of Potomac Electric Power Company ("Pepco"), which provides electric delivery service in Washington, D.C., and Montgomery and Prince George's Counties in Maryland. PHI is also the parent of Delmarva Power & Light Company ("Delmarva Power"), an electric and gas utility serving Delaware and portions of the Delmarva Peninsula, and Atlantic City Electric Company ("ACE"), an electric utility serving southern New Jersey. I will refer to Pepco, Delmarva Power and ACE collectively as the "PHI Utilities."

3. Q. Please describe your professional and educational background.

A. I joined ACE in 1979 and advanced through a number of management positions. My responsibilities have included accounting, financial services, treasury operations, business transformation, human resources, and the ACE/Delmarva Power merger transition. Upon the merger of ACE and Delmarva Power that formed Conectiv, I became Vice President/General Manager of Gas

Delivery, then Vice President/General Manager of Electric Delivery for those utilities. I was elevated to President of Conectiv Power Delivery in 2002. From May 2004 to September 2007, I served as Senior Vice President and Chief Financial Officer of PHI and was responsible for all financial activity and investor relations.

From September 2007 to March 2008, I served as Executive Vice President and Chief Operating Officer of PHI. In that capacity, I was responsible for the day-to-day operations of Pepco, Delmarva Power and ACE and was also responsible for those companies' information technology and corporate communication functions. In March 2008, I was elected President and Chief Operating Officer of PHI.

I was elected President and Chief Executive Officer of PHI effective March 1, 2009, and was elected Chairman of the Board on May 15, 2009.

I earned a bachelor's degree in accounting from Rutgers University and an MBA from Monmouth University. I am a licensed Certified Public Accountant ("CPA") in the state of New Jersey.

4. Q. Please identify relevant business or professional associations.

A. I am the immediate past chair of the United Way of the National Capital Area. I am currently a member of the senior council of the Greater Washington Board of Trade and previously served as the chairman of that organization. I also serve on the boards of the U.S. Chamber of Commerce, the Edison Electric Institute, the Federal City Council, the Greater Washington Initiative, and the Economic Club of Washington. I am a member of the Rutgers-Camden School of

Business Executive Advisory Board, the New Jersey Society of CPAs and the American Institute of CPAs.

5. Q. What is the purpose of your direct testimony?

A. I will provide PHI's perspective on the proposed merger ("Merger") of PHI and Exelon Corporation ("Exelon"), which was announced on April 30, 2014. In particular I will discuss the values and vision that PHI and Exelon share, describe the current PHI management structure and explain why I believe that the Merger is in the best interest of the PHI Utilities, their customers and the communities they serve and, therefore, is in the public interest.

II. VALUES, VISION AND MANAGEMENT STRUCTURE

6. Q. Please describe the core values of PHI.

A. PHI organizes all aspects of its business around the following five core values:

1. **Safety –** We make safety the most important part of everything we do.
2. **Accountability –** We accept responsibility for our actions and behavior.
3. **Integrity –** We do the right thing.
4. **Diversity –** We treat everyone with dignity and respect.
5. **Excellence –** We strive to be the best.

7. Q. Please describe PHI's overarching vision for its utility operations.

A. PHI's vision is expressed in the following comprehensive statement:

> We aspire to become the best in class in safety, reliability, customer service and innovation by engaging our talented workforce, leveraging operational excellence and applying advanced technology. We seek to empower our customers through a smarter grid, create energy solutions for our

> business partners, protect our environment and deliver value to our shareholders.

Let me expand briefly on the principal elements of that statement. By "best in class," we mean outperforming our peers while meeting the needs of customers. "Innovation" refers to our focus on leveraging expertise in order to optimize energy resources and energy use by our customers and business partners. We strive to achieve the goal of "engaging our talented workforce" by building high-performing teams through leadership, teamwork, enterprise focus, accountability and communication. The second sentence of our aspiration statement expresses our emphasis on operational excellence and the need to face the challenges of the future by working to achieve creative energy solutions that continue to reliably deliver a vital service to our customers while reducing energy costs and protecting the environment.

8. Q. How do PHI's vision and core values compare with those of Exelon, which are summarized in Mr. Crane's direct testimony?

A. While each company expresses concepts in its own words, the substance of the visions and core values of PHI and Exelon are closely aligned.

9. Q. Why is it significant to the success of the Merger that PHI and Exelon share a common vision and core values?

A. Having a common vision and sharing core values will facilitate the alignment of various business processes and the integration of the operations of the PHI and Exelon utilities following the Merger. This is an important reason why PHI and Exelon are excellent merger partners. Proper alignment of business processes will simplify and expedite the integration process and, in that way, help the post-Merger enterprise achieve fully and in a shorter time the performance improvements and cost savings expected from the Merger.

10. Q. Please describe the priorities of PHI for 2014 with respect to providing utility service.

A. Consistent with the vision and values I discussed previously, PHI has established the following priorities for power delivery operation:

1. **Safety –** Everyone goes home safely every day.
2. **Reliability –** We seek to improve our customers' experience by reducing power outages and improving communications during restorations.
3. **Customer Satisfaction –** We seek to improve the customer experience through a comprehensive process management and technology approach, and we work together to make PHI a better, more challenging and rewarding place to work.
4. **Regulatory Compliance –** We meet our regulatory and compliance commitments.
5. **Financial Results –** We meet our financial commitments.

Joining Exelon's top-performing family of utilities will provide additional resources to allow PHI's operating subsidiaries, including Pepco, to enhance their ability to achieve the priorities listed above and likely accelerate the achievement of those priorities in an efficient and cost-effective manner.

11. Q. Please describe the PHI management structure.

A. Pepco, along with its affiliates ACE and Delmarva Power, are separate corporations, although their financial results are reported as a single business segment of PHI for Securities and Exchange Commission reporting purposes. The three PHI Utilities provide service in four jurisdictions because Pepco furnishes service in the District of Columbia and Maryland, Delmarva Power furnishes service in Delaware and Maryland and ACE furnishes service in New Jersey. The utilities are operated under the supervision of the Executive Vice President, Power Delivery of PHI. Each utility has a complement of its own employees that provides certain engineering and customer service functions, operational support, and maintenance of the transmission and distribution system for that utility. In addition, personnel employed by the PHI Service Company, such as substation engineers and designers, perform utility-specific work for one or more of the utilities. Corporate and administrative support functions, such as accounting, legal and regulatory, generally are performed by employees of the PHI Service Company because those employees typically provide similar services to more than one utility company.

Each utility also has a Regional President that reports to the Senior Vice President, Government Affairs and Public Policy of PHI. The individual Regional Presidents work closely with the operational side of the business, provide a strong local connection in each jurisdiction and maintain relationships with government and regulatory officials and other stakeholders in the communities we serve.

Our management structure enables cost efficiencies across the jurisdictions by sharing services where appropriate while also maintaining a local presence in each of our jurisdictions. As explained in Mr. O'Brien's direct testimony this general management structure, including a focus on Pepco's local presence and control, will be maintained following the Merger.

III. THE MERGER IS IN THE BEST INTEREST OF THE PHI UTILITIES, THEIR CUSTOMERS AND THE COMMUNITIES THEY SERVE

12. Q. Please provide an overall assessment of the Merger from your perspective.

A. I am convinced that the Merger will create a strong, well-managed, financially stable family of transmission and distribution utilities that are committed to providing high-quality service at reasonable cost. During my tenure as CEO, the PHI Utilities have been placed on a path of continuous improvement in reliability and customer satisfaction. As Mr. Gausman describes in his direct testimony, Pepco has an extensive set of multi-year programs designed to meet its reliability commitments and, as a result, has made significant progress in its reliability performance Pepco is currently exceeding the District of Columbia's reliability requirements.

Pepco strives to continue the progress it has made in these areas and, in so doing, to fully meet and, indeed, exceed, our customers' expectations. There is no question in my mind that joining Exelon's outstanding distribution utilities will help us to do that by providing significant additional resources to sustain and improve current levels of performance and customer satisfaction. My assessment of the Merger's benefits is backed by the package of explicit and substantial commitments that Exelon is offering in connection with the Merger. It is also backed by the well-established track record of reliable service, sensitivity to local priorities and concerns, cost-consciousness, environmental stewardship and outstanding corporate citizenship that Exelon has established.

On a personal level, throughout the Merger process I have spent a good deal of time with, and come to know, the senior management at Exelon and Exelon Utilities. As a result, I have had an excellent opportunity to learn and understand their approach to Merger integration and, more importantly, their approach to the on-going management and operation of distribution utilities within their corporate family. I am confident that the post-Merger organization will continue to be managed by a team of skilled professionals who are customer-focused and committed to the sustainable, long-term performance of Pepco at the highest levels. I am certain that, upon my retirement, which I have now deferred until the Merger is consummated, I will be leaving the Pepco in good hands. I firmly believe that Exelon will maintain high-quality service, meet customers' needs reliably and efficiently, respect all of the constituencies we serve and actively engage in the civic and charitable life of our service areas.

13. Q. Why are PHI and Exelon well suited as merger partners?

A. There are three principal reasons why PHI and Exelon are well suited as merger partners. First, as I explained earlier, they share a common vision and core values. The two organizations' visions of the future and their approach to delivering safe, reliable and efficient service are closely aligned. I believe these factors will promote a smooth transition throughout the Merger integration process and, as a result, allow the companies to achieve a higher level of sustainable merger savings.

Second, the PHI and Exelon utilities share a number of factors that are critical to their structural and operational integration. These factors are described in Section IV of Mr. Crane's direct testimony, and I will not repeat them here. However, I want to emphasize the importance of geographic proximity. The service territory map that Mr. Crane is providing as JOINT APPLICANTS (A)-1 tells this story graphically. Geographic proximity will facilitate coordinated management across the combined utility service territories in the Mid-Atlantic Region and will maximize the opportunities to capture economies of scale. However, in my view, the principal benefit from the close geographic fit of the PHI Utilities', BGE and PECO service areas is the strong mutual support structure it will create. This mutual support structure will enhance performance and lower costs. The most significant beneficial impact of enhanced mutual support will be derived from the ability to marshal the greater combined resources of contiguous utilities within the same corporate organization to respond to major storms or other emergency situations and reduce recovery time.

Third, the PHI operational goals that I identified in Section II closely align with initiatives that have been adopted and are being implemented among the Exelon utilities. Thus, the combined enterprise will be on the same page in terms of deploying resources and management attention to drive the performance of their utilities. To cite just one important example, the Exelon utilities, like Pepco, are implementing Smart Grid and advanced metering infrastructure ("AMI") solutions and planning to use that technology to reduce costs, improve service, expedite emergency response, and provide customers more options for managing their energy needs.

14. Q. Is the proposed Merger in the best interest of Pepco and its customers?

A. Yes, it is, for the reasons I discussed in some detail above. In summary, the Merger will enable the PHI and Exelon utilities to leverage each other's expertise through effective sharing of best practices. The Merger will also strengthen the Pepco's emergency response capabilities by providing access to greater resources available from a larger enterprise and provide financial resources that assure sustainable, long-term operational excellence. All of these factors generate significant benefits for District of Columbia customers. Moreover, Exelon is proposing firm reliability guarantees, which would trigger financial penalties if performance-improvement goals are not achieved. Significantly, as Mr. Crane explains, Exelon anticipates that Pepco will meet its heightened performance goals without increasing existing reliability-related capital and operating and maintenance budgets. Exelon also is committed to the District of Columbia undergrounding project, which will provide significant benefits to District of Columbia customers.

Additionally, Pepco customers in the District of Columbia will realize an immediate tangible benefit of more than $50 per distribution customer from the Exelon-funded Customer Investment Fund that will be established to allow customers to realize Merger-related savings. At the same time, Exelon is committing to flow-through all actual test-year distribution-related Merger savings, net of costs to achieve, in future rate cases. Exelon is also making an explicit commitment to maintain the PHI Utilities' low-income customer assistance, energy efficiency and demand response programs.

15. Q. Are there any other factors that are important to you?

A. Yes. I believe that the strength of any business lies in its people. Consequently, we cannot think about delivering safe, reliable and efficient utility service without considering our employees. Exelon shares my view. In that regard, Exelon has clearly stated it will honor all existing collective bargaining agreements, and I am pleased to report that all of the collective bargaining units that represent our employees, namely, Locals 210, 1238, 1307 and 1900 of the International Brotherhood of Electrical Workers, agree the Merger is in the best interest of Pepco and its employees and have recently agreed to contract extensions for an additional three years. Additionally, Exelon is making specific commitments that for two years following the Merger there will be no net reduction due to involuntary attrition as a result of the Merger integration process in the employment level at Pepco and that there will be provided to current and former employees of Pepco compensation and benefits that are at least as favorable, in the aggregate, as the compensation and benefits provided to those employees immediately before the Merger. These commitments are explained in the direct testimony of Denis P. O'Brien.

16. Q. Why is the Merger in the best interest of the District of Columbia?

A. The Merger will maintain the local presence of Pepco, as evidenced by specific commitments in this regard made by Exelon and discussed by Mr.

O'Brien. Additionally, as Mr. O'Brien explains, Pepco and the other PHI Utilities will continue to be operated in largely the same manner as they are today. Regulators, government officials, community leaders and customers will continue to know the people who are working at the utility level to keep their lights on. Clear lines of communication will continue to be in place. As Mr. Crane emphasizes in his direct testimony, Exelon is just as committed as Pepco and PHI are to being accessible to regulators, state and local governments, businesses, and civic and charitable organizations.

The District of Columbia will also benefit from Exelon's express commitment to provide, for ten years following the Merger, an annual average in charitable contributions and traditional local community support that exceed 2013 levels.

Finally, the District of Columbia will realize substantial tangible benefits from the Merger, which have been identified and quantified by Susan F. Tierney, Ph.D. in her direct testimony and accompanying analysis.

17. Q. Is the Merger in the public interest?

A. Yes, it is, for the reasons I discussed previously. In summary, PHI and its utility subsidiaries will be better positioned to meet the challenges of furnishing safe, reliable and efficient service currently and in the future with the added resources they will gain from joining the Exelon family of utilities. The Merger, along with the Merger-related commitments being made by Exelon, will provide immediate and long-term tangible benefits to customers, the communities the PHI Utilities serve and the District of Columbia. I have no reservations in recommending that the Merger be approved. Indeed, the sooner the Merger can be consummated the sooner District of Columbia customers and the District of Columbia itself will begin to realize the substantial benefits that the Merger will produce.

IV. CONCLUSION

18. Q. Does this conclude your direct testimony at this time?

A. Yes, it does.

D.P. O'BRIEN Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ___________(C)

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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF DENIS P. O'BRIEN
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is Denis P. O'Brien. My business address is 2301 Market Street, Philadelphia, Pennsylvania 19103.

2. Q. By whom are you employed and in what capacity?

A. I am Senior Executive Vice President of Exelon Corporation ("Exelon") and Chief Executive Officer of Exelon Utilities ("EU"). In that capacity, I am responsible for the activities of Exelon's regulated transmission and distribution businesses, which serve approximately 7.8 million customers. EU is an unincorporated division of Exelon, which I will describe below.

3. Q. Please describe your educational and professional background.

A. I have a Bachelor's Degree in Industrial Engineering from Rutgers University and a Master's Degree in Business from Drexel University. I have over 30 years of utility experience in engineering and operations, strategic planning, and executive management.

I began my career in 1982 as an engineer in PECO Energy Company's ("PECO") Transmission and Distribution Department performing a variety of engineering, project management, and supervisory duties. In 1987, I was promoted to Division Engineer of the Philadelphia Division. From 1989 to 1991, I was assigned to the PECO Corporate Planning Department where I supported

PECO's implementation of Total Quality Management. From 1991 to 2000, I progressed through various supervisory and managerial positions in PECO's Operations Department.

In 2000, I was promoted to Vice President of Operations for PECO. In that capacity, I was responsible for the operation and maintenance of PECO's electric and gas transmission and distribution systems and the construction of additions and replacements to those systems. In 2002, I was appointed Executive Vice President and, in that capacity, was responsible for all of PECO's day-to-day operations. In 2003, I was promoted to President of PECO, and, in 2007, was named its CEO.

In March 2012, upon completion of the merger of Exelon and Constellation Energy Group, Inc. ("Constellation"), I assumed my current position with Exelon.

4. Q. Please identify your other business, professional and civic affiliations.

A. I am chairman of the board of directors of the Electric Power Research Institute ("EPRI") and serve on the board of directors of Independence Blue Cross. I am also chair-elect of the Greater Philadelphia Chamber of Commerce and a member of the boards of trustees of the Pennsylvania Business Council, the CEO Council for Growth, the Franklin Institute, and Drexel University. I previously served on the boards of the American Gas Association, the Energy Association of Pennsylvania, the Pennsylvania Economy League, the YMCA of Greater Philadelphia and WHYY, Inc.

5. Q. Have you previously testified before a utility regulatory agency?

A. Yes. I submitted direct, supplemental direct and rebuttal testimony before the Pennsylvania Public Utility Commission at Docket No. A-110550F0160, which was the proceeding for approval of the proposed merger of Exelon and Public Service Enterprise Group, Inc. ("PSEG"). I also submitted rebuttal testimony before the New Jersey Board of Public Utilities ("BPU") at BPU Docket No. EM05020106, which was the proceeding for BPU approval of the same transaction. The proposed merger of Exelon and PSEG was not consummated. In addition, I submitted rebuttal testimony before the Public Service Commission of Maryland on behalf of the applicants in Case No. 9271, which was the proceeding for approval of the merger of Exelon and Constellation.

6. Q. What is the purpose of your direct testimony?

A. My testimony supports the proposed merger ("Merger") of Exelon and Pepco Holdings, Inc. ("PHI"). As CEO of EU, upon consummation of the Merger, I will have a direct role in the management of Potomac Electric Power Company ("Pepco"), Atlantic City Electric Company ("ACE") and Delmarva Power & Light Company ("Delmarva Power") (collectively, the "PHI Utilities"). I will describe Exelon's approach to managing its electric and natural gas delivery utilities, including the role of EU and my role within EU. As part of that discussion, I will explain the role that PHI will play within the Exelon corporate and management structure after the Merger is consummated. I will also describe Exelon's commitment to maintaining substantial local control of utility operations, summarize the institutional measures that Exelon has in place for its existing utilities to define and preserve local control, and explain how those measures will be extended to PHI after the Merger is completed. Additionally, because sharing of best practices is critical to realizing the benefits expected from the Merger, I discuss my experience in the successful processes of sharing best practices following the merger of PECO and Unicom Corporation ("Unicom") to form Exelon and the merger of Exelon and Constellation, which added Baltimore Gas and Electric Company ("BGE") to the Exelon family of electric and gas distribution and transmission utilities. I will also describe the commitments Exelon and PHI are making with regard to post-Merger employment and compensation at ACE, Delmarva Power and Pepco. Finally, I will explain that the Merger will not affect standard offer/default service or local electricity competition in the District of Columbia nor will it affect wholesale competition or raise any market power concerns.

II. THE EXELON UTILITY MANAGEMENT STRUCTURE

7. Q. Please describe where PHI and the PHI Utilities will be located in the Exelon corporate structure post-Merger.

A. The pre-Merger and post-Merger corporate structures of PHI and Exelon are depicted in the organization charts provided as Exhibit 4 to the Joint Application. Consequently, I will provide only a brief overview of the relevant elements of the before and after corporate structures.

Exelon. All three of Exelon's utilities – BGE, Commonwealth Edison Company ("ComEd") and PECO – are subsidiaries of Exelon Energy Delivery Company, LLC ("EEDC"), which is a direct subsidiary of Exelon. EEDC is a holding company and has no employees. ComEd and PECO are direct subsidiaries of EEDC, while BGE is a subsidiary of RF Holdco, LLC ("RF Holdco"), which is, in turn, a subsidiary of EEDC. RF Holdco is a special purpose entity ("SPE") created to implement "ring-fencing" measures designed to insulate BGE from the risks the Commission perceived with Constellation's competitive businesses. There will be no change in the positions of Exelon's utilities, RF Holdco or EEDC within the Exelon corporate structure as a result of the Merger.

PHI. Currently, Pepco is a direct subsidiary of PHI. Post-Merger, PHI will become a subsidiary of EEDC. However, another special purpose entity will be placed between PHI and EEDC in order to implement the ring-fencing measures that Exelon is proposing, which are described in greater detail in the direct testimony of Carim V. Khouzami. Specifically, a new SPE will be created with provisions in its organizational documents designed to insulate PHI and Pepco from potential credit, default and bankruptcy risks of unrelated businesses in the Exelon holding company system, as Mr. Khouzami explains. Pepco, along with the other PHI Utilities, will continue to be subsidiaries of PHI.

8. Q. Does the post-Merger corporate structure mean that there will be multiple layers of management between Exelon and Pepco corresponding to each corporate tier that you described above?

A. No, it does not. Simply because multiple tiers exist within the Exelon corporate structure does not mean that there are ascending layers of corporate management at each tier. To the contrary, Exelon employs a straightforward management structure, which maintains clear, direct lines of reporting and responsibility that do not necessarily track the various intermediary legal entities within Exelon’s corporate structure. In that regard, both RF Holdco and the SPE to be created between EEDC and PHI exist only to ring-fence BGE and the PHI Utilities, respectively, and will have no operational role or management responsibility.

9. Q. Explain the role PHI will have in the operation of Pepco following consummation of the Merger.

A. As Mr. Rigby explains in his direct testimony, PHI currently plays an important role in the overall management of Pepco. Based on Mr. Rigby’s description of the PHI management structure, PHI’s role in the operation of Pepco will align with the management of BGE, ComEd and PECO. As a consequence, when I or other witnesses providing direct testimony refer to “local management” in the context of PHI and Pepco, that term refers generally to PHI and not necessarily the Boards of Directors and officers of Pepco. Mr. Rigby also describes the role of the Regional Presidents for Pepco and each of the PHI Utilities. Exelon plans to retain the Regional President positions with their current duties and responsibilities. As Mr. Rigby explains, the Regional Presidents work closely with the operational side of the business, provide a strong local connection in each jurisdiction and maintain relationships with state and local governments, regulatory officials and other stakeholders in the communities they serve. We envision Pepco’s Regional President playing the same role after the Merger.

On or shortly after the effective date of the Merger, PHI will be converted from a corporation to a limited liability company or “LLC.” As an LLC, PHI will have a Board of Directors that will function in a fashion similar to that of the Board of Directors of a corporation. Currently, Exelon anticipates a seven-member board with three outside members from the Pepco, ACE and Delmarva Power service areas and four members who will consist of some combination of officers or directors of Exelon and officers of one or more of PHI or the PHI Utilities. The PHI Board of Directors will select the Board of Directors of Pepco, and the Pepco board will choose Pepco's officers.

PHI's common stock will cease to be publicly traded on and after the effective date of the Merger. Therefore, a number of corporate functions associated with having publicly traded common stock, such as investor relations, will no longer need to be performed at the PHI level because Exelon already has those capabilities. The elimination of these functions at the PHI level is one important source of synergies the Merger is expected to produce. PHI will, however, have a President/Chief Executive Officer, Chief Financial Officer, Treasurer and a limited number of other officers, but likely fewer than currently exist.

The authority of the PHI Board of Directors and officers to act on behalf of Pepco and the other PHI Utilities will be delineated in a Delegation of Authority, which I describe in more detail later in my testimony.

10. Q. Please describe the role of the operating utilities' management in Exelon's existing utility management model.

A. The senior management of each Exelon utility is given the authority and responsibility for developing its respective utility business plan and operating and maintenance ("O&M") and capital budgets. While those business plans and budgets are reviewed by me, Exelon's CEO and the Executive Committee of Exelon, they have to be approved by the Boards of Directors of the respective utilities. As I previously explained, following the Merger, PHI's management will align at the same level as the senior management of Exelon's existing utilities and, therefore, business plans and budgets for Pepco would have to be approved by the PHI Board of Directors that I described previously.

Additionally, the authority and responsibility delegated to local management is clearly delineated in two formal, written documents, namely, a statement of Corporate Governance Principles and a Delegation of Authority. The Delegation of Authority includes, among other things, levels of expenditures and defined categories of decisions that can be authorized solely by the utility's CEO or by the utility CEO with utility board approval.

Consistent with the clearly established direction, goals and priorities provided by the utility's business plan and budgets, each utility CEO is held accountable for assuring that safe, reliable and efficient service is furnished to customers and that appropriate fiscal discipline is maintained, consistent with the utility's service obligations, to remain on-budget. For PHI, its CEO will have this authority and responsibility on behalf of Pepco. As part of this process, Exelon will provide the resources that BGE, ComEd, PECO and PHI, together with its subsidiary utilities, will need to execute their business plans and fulfill their service obligations.

11. Q. What is EU and what is its role in the Exelon utility management model?

A. EU was formed in 2012 upon the completion of the Exelon-Constellation merger. With that merger, BGE joined ComEd and PECO in Exelon's family of utilities. As a result, the utility segment increased to more than 50% of Exelon's earnings before income taxes, depreciation and amortization. Given the greater size of its post-merger utility operations, Exelon determined that it should create a structural vehicle to coordinate the development and oversight of its regulated business. Exelon also concluded that the new management structure should be assigned responsibility for realizing the value inherent in the larger scale of post-merger operations by unlocking the knowledge, expertise and practical experience that otherwise could be isolated within each utility company or within "silos" inside each of those companies. Simply stated, given the breadth and depth of Exelon's utility operations, there was likely to be a precedent or best practice within one or more of its utility operating companies for many aspects of utility operations, and the new management structure was tasked with working with the individual utilities to identify those precedents and best practices and deploy them across the entire enterprise. I describe various examples of the successful cross-pollination and sharing of best practices from the PECO-Unicom and Exelon-Constellation mergers in Section III of my testimony. In short, EU was the solution Exelon developed to facilitate the horizontal distribution of knowledge and expertise and sharing of best practices across all of Exelon's utilities.

As I previously noted, EU is not a legal entity but, rather, is an unincorporated divisional structure that maintains direct lines of reporting between Exelon’s utilities and Exelon’s senior management. As part of this process, EU helps local utility management develop business plans and budgets and also helps identify and marshal skills, knowledge and resources within Exelon that local utilities may need to successfully implement those plans. EU is also the organizational tool embedded in the management structure for the express purpose of focusing management attention on cooperation and collaboration across the utility business. While there are many ways in which EU pursues that part of its mission, some of the more important ways include driving the processes for identifying and sharing best practices, leveraging economies of scale, and creating efficiencies by standardizing business and operating processes as appropriate and consistent with each company’s service obligations. To that end, EU works with each utility’s management: (i) to develop its business strategy and establish appropriate performance goals in areas such as safety, reliability and customer satisfaction; (ii) to ensure that the utility remains on track to implement its business plan and achieve its performance goals; (iii) to maintain clear lines of reporting to Exelon management on the performance of EU and each utility; and (iv) to formalize the process for sharing knowledge and best practices among utilities by creating cross-company “communities of practice” organized around common functions, objectives and operational challenges. Additionally, EU has primary responsibility for overseeing and monitoring each utility’s compliance with regulatory requirements and adherence to applicable Exelon policies and standards.

12. Q. What is your role in EU?

A. As I previously indicated, I am CEO of EU, a position I assumed when EU was created. While I continue to live in the Philadelphia area, I maintain offices in Philadelphia, Baltimore and Chicago. Following the completion of the Merger, I will have an office in the District of Columbia. As CEO of EU, I have general oversight responsibility for BGE, ComEd and PECO. I am also responsible for EU fulfilling its mission of assisting Exelon's utilities to work collaboratively to achieve superior operational performance and to provide their customers safe, reliable and efficient service at just and reasonable rates.

13. Q. Earlier, you mentioned that Exelon's management structure maintains straightforward, direct lines of reporting. Please describe those lines of reporting.

A. The CEOs of individual utilities report to me as Senior Executive Vice President with overall responsibility for Exelon's regulated utility business. I report directly to Exelon's CEO, Christopher M. Crane.

The CEOs of the regulated utilities are members of the Exelon Management Executive Committee, which also includes members from other areas of Exelon's business that are selected by Exelon's CEO. The Management Executive Committee exists to assist Mr. Crane in leading Exelon. The Management Executive Committee is the body where important policy and operating decisions for Exelon, including Exelon's utilities, are discussed, analyzed and decided. As members of the Management Executive Committee, the utility CEOs – which will include the CEO of PHI post-Merger – meet with Mr.

Crane at least monthly. Consequently, the CEOs of the operating utilities have direct and frequent access to Mr. Crane and other members of Exelon's senior management team.

14. Q. Will EU and the Exelon management model continue to function in the way you described after the Merger is consummated and the PHI Utilities join Exelon?

A. Yes, they will. Following the Merger, regulated utility operations are projected to contribute 60% and 65% of Exelon's pro forma 2015 and 2016 earnings, respectively. Consequently, the original rationale for creating EU and employing the Exelon utility management model will continue and, in fact, be reinforced by the Merger. Based on the success EU and the Exelon management model achieved with the integration and subsequent operation of BGE, I am confident that PHI and Pepco will also be successfully integrated and operated following the Merger.

15. Q. Does Exelon expect that the local management of Pepco will remain in place following the Merger?

A. Yes, Exelon expects that managers who are "on the ground" in District of Columbia and whom the Commission, stakeholders and customers have come to know and trust will still be on the job after the Merger is completed.

16. Q. Will PHI and Pepco continue to have a strong local presence in the District of Columbia?

A. Yes, they will. In fact, Exelon intends to maintain the headquarters of PHI and Pepco in the District of Columbia. Additionally, Exelon is making specific commitments with respect to charitable giving and community initiatives, which are discussed in the direct testimony of Calvin G. Butler, Jr.

III. SHARING OF BEST PRACTICES FOLLOWING THE PECO-UNICOM AND EXELON-CONSTELLATION MERGERS

17. Q. Briefly describe your experience and involvement in the successful sharing of best practices that followed the PECO-Unicom and Exelon-Constellation mergers.

A. I was directly involved in the integration and sharing of best practices following the PECO-Unicom and Exelon-Constellation mergers. When the PECO-Unicom merger was consummated, I was Vice-President of PECO and, in that capacity, had overall responsibility for the operation and maintenance of PECO's electric and gas transmission and distribution systems. Following the Exelon-Constellation merger, I assumed my current position where I have general oversight responsibility for BGE, ComEd and PECO. After both mergers, the utilities of the merged company became stronger organizations, improved their reliability metrics and had enhanced ability to provide our customers high-quality service. Large numbers of individual best practices were shared across the enterprise following each merger. Some of the most notable examples of best practice sharing following the PECO-Unicom merger involved PECO's adoption of ComEd's seasonal readiness program and detailed capacity planning process and ComEd's adoption of PECO's Preventive Maintenance Program and rigorous safety programs.

Following the Exelon-Constellation merger, best practices identified from among BGE, ComEd and PECO were deployed across all three companies. Some of the more significant examples include the following:

- Extending Exelon's "lock out" and "tag out" ("LOTO") procedures throughout all of Exelon's utilities: LOTO consists of safety procedures used in the electric power industry to ensure that power lines are properly de-energized and not re-energized again before maintenance or servicing work has been completed. Exelon's carefully developed and well-tested LOTO procedures have now been standardized across ComEd, PECO and BGE. In addition to helping our employees stay safe and improving productivity, standardizing "best practice" LOTO procedures enables crews from any one of Exelon's utilities to seamlessly work on the facilities of any other Exelon utility. As a consequence, the performance of inter-company mutual assistance is enhanced and restoration times following system emergencies are reduced. In addition, standardized procedures for working on de-energized equipment were adopted, which improved productivity and reduced outage durations.
- Adoption of criteria developed by ComEd and PECO for prioritizing corrective maintenance work that is identified by circuit patrols: Circuit patrols conduct inspections of distribution circuits. These inspections are designed to do several things, including helping to identify maintenance needs. Implementing an appropriate system for prioritizing corrective

maintenance based on carefully designed criteria has reduced the number of outages caused by equipment failures.

- Optimizing the use and placement of "reclosers": Based on their shared experience, Exelon's utilities have been able to optimize the criteria for, and the use and placement of, "reclosers." Reclosers are circuit breakers designed to automatically open or close, as applicable, when a problem is detected on a line, such as when a tree makes contact with a conductor. Optimal use and placement of reclosers reduce the number of sustained customer outages by isolating the segment of a line where a problem is detected while maintaining service on parts of the line that are not adversely affected.
- BGE's adoption of procedures for rejuvenating the insulation of insulated cable: The extension of this ComEd/PECO best practice to BGE has improved reliability, avoided the need to replace insulated cable prior to the end of its service life, and reduced projected equipment replacement costs.
- BGE's adoption of standards employed by ComEd and PECO to protect its facilities from harmful wildlife interactions: Animals may use man-made structures for dens or nesting sites, foraging sites, or as travel routes, and these activities can cause damage to structures and the equipment they contain. For example, wildlife intrusions into electric power substations and the resulting damage they cause to the electrical equipment can trigger outages of all of the circuits served from those substations. Adopting the

Exelon approach to controlling wildlife interaction with electrical facilities has contributed to a reduction in outages experienced at BGE while also protecting wildlife and the environment.

- BGE's avian management program, analysis of accelerated gas asset replacement programs, use of social media to improve customer satisfaction and lessons learned for supporting fleet warranty claims were identified as best practices and used to align common practices across all of Exelon's utilities.

The process of sharing best practices was an important factor driving BGE's improved reliability metrics. As Mr. Alden explains in his direct testimony, as a result of sharing best practices, the reliability improvements at BGE were achieved without increasing BGE's planned expenditure levels. In addition, as noted in some of the examples cited above, sharing best practices can enhance employee safety and reduce costs.

IV. EXELON'S EMPLOYMENT RELATED COMMITMENTS

18. Q. Please describe Exelon's commitment with regard to post-Merger employment at Pepco.

A. Exelon is committing that, upon approval of the Merger and for two years following consummation of the transaction, it will not permit a net reduction in the employment levels at Pepco due to involuntary attrition resulting from the Merger integration process.

19. Q. Please describe Exelon's commitment with regard to post-Merger compensation.

A. Exelon and PHI are committing to honor the PHI Utilities' existing collective bargaining agreements. It is significant that, as Mr. Rigby explains, Locals 210, 1238, 1307 and 1900 of the International Brotherhood of Electrical Workers, which comprise all of the collective bargaining units that represent employees of PHI, agree the Merger is in the best interest of Pepco and its employees. These four Locals have also recently agreed to contract extensions for an additional three years. Exelon is also committing that for two years following consummation of the transaction, it will provide current and former employees at Pepco compensation and benefits that, in the aggregate, are at least as favorable as the compensation and benefits provided to those employees immediately before the Merger.

V. STANDARD OFFER/DEFAULT SERVICE; LOCAL ELECTRIC COMPETITION; AND WHOLESALE COMPETITION/MARKETPOWER

20. Q. Will the Merger affect the ability or willingness of Pepco to provide standard offer or default service to customers in the District of Columbia?

A. No. Pepco will continue to provide Standard Offer Service ("SOS") to its customers in the District consistent with the District of Columbia Code and Affiliate Code of Conduct. Exelon Generation is currently an active participant in the Power Supply Procurement Process for SOS and, following the closing of the Merger, intends to continue to participate in that process.

21. Q. Will the Merger impact local electricity competition in the District of Columbia?

A. No. The Merger will not have any adverse competitive effects on the District of Columbia's retail energy markets. Each of the PHI Utilities, including Pepco, has divested all of its generation facilities and purchases power only pursuant to requirements contracts to serve its default service load and must-take contracts with Qualifying Facilities entered into under the Public Utility Regulatory Policies Act of 1978 or pursuant to Commission-approved programs such as net energy metering in the District of Columbia. Exelon, under the name Constellation, provides competitive retail service in Washington, D.C., and it plans to continue to do so post-Merger. Exelon will be bound by District of Columbia's Affiliate Code of Conduct and will have in place standards and procedures to prevent preferences and the improper flow of information between Pepco and Exelon's subsidiaries. As a consequence, the Merger will not have any impact on retail competition.

22. Q. Will District of Columbia customers be affected by the Merger of the Joint Applicants' transmission facilities operated by the PJM Interconnection LLC ("PJM")?

A. No. The Merger will not have any impact on wholesale competition and does not raise any market power concerns because all of the PHI Utilities' transmission assets are under the operational control of PJM, which furnishes transmission service pursuant to its FERC-approved Open Access Transmission Tariff.

VI. CONCLUSION

23. Q. Does this conclude your direct testimony at this time?

A. Yes, it does.

M.F. ALDEN Direct Testimony
DC P.S.C. - - June 18, 2014

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Joint Applicants _______(D)

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BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF MARK F. ALDEN
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is Mark F. Alden. My business address is 110 West Fayette Street, Baltimore, Maryland 21201.

2. Q. By whom are you employed and in what capacity?

A. I am employed by Exelon Corporation ("Exelon") as Vice President, Utility Oversight and Integration. I am responsible for overseeing and ensuring consistency and best practice application across the operations of the three Exelon utilities – Baltimore Gas and Electric Company ("BGE"), Commonwealth Edison Company ("ComEd"), and PECO Energy Company ("PECO"). I report directly to Denis P. O'Brien, Chief Executive Officer of Exelon Utilities.

3. Q. Please describe your professional and educational background.

A. I received a bachelor's degree in civil engineering from Pennsylvania State University and a master's degree in business administration from Saint Joseph's University. I have worked for PECO or its corporate affiliates for the past thirty-two years, starting out as a project manager in PECO's nuclear group and, prior to my current position, serving as Vice President, Customer Operations, for PECO. I have also served as Vice President, Engineering and Services, for PECO and ComEd and my responsibilities in that position included development of investment strategies for overall system reliability improvements at those utilities.

4. Q. Have you previously testified before a utility regulatory agency?

A. Yes. I submitted direct and rebuttal testimony before the Pennsylvania Public Utility Commission ("PA PUC") on behalf of PECO with respect to its 2008 gas base rate filing at PA PUC Docket No. R-2008-2028394.

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

A. The purpose of my direct testimony is as follows: (1) to provide an overview of Exelon's approach to utility service reliability and the levels of reliability at Exelon utilities, including improved reliability at BGE after its acquisition by Exelon; and (2) to describe the enhanced reliability metrics which Exelon is committed to achieving at Potomac Electric Power Company ("Pepco") upon approval of Exelon's proposed merger with Pepco Holdings, Inc. ("PHI").

II. EXELON'S APPROACH TO RELIABILITY

6. Q. What is Exelon's approach to utility service reliability?

A. Exelon is committed to continuously improving the reliability of its service in each of its utility service territories. This commitment incorporates numerous programs to maintain, protect and improve the electric distribution system at each utility, including proactive inspection, electric infrastructure replacement (such as new substations), and general reliability construction programs (e.g., cable replacement).

7. Q. How does Exelon effectuate this commitment?

A. In order to implement this reliability commitment, Exelon has developed the Exelon Management Model (the "Management Model"), a management system designed to identify and generate best practices for operational excellence at each of its utilities and to share and implement those practices system-wide. The Management Model includes forty-four system-wide core functional area teams (such as Operate and Restore, Preventative and Corrective Maintenance, and System Performance) which are directed by senior leaders and staffed by managers who lead the corresponding functional area at each utility. This structure helps ensure alignment, sharing, and implementation of best practices and initiatives across all utilities and drives improved performance and increased customer satisfaction.

8. Q. How does Exelon measure reliability at its utilities?

A. Our primary measure of reliability is a set of standard metrics established by the Institute for Electrical and Electronics Engineers ("IEEE") which are used in some form by public utility commissions across the country. We are particularly focused on the following two key metrics:

- **System Average Interruption Frequency Index ("SAIFI")**: The average number of sustained interruptions per customer during a year.
- **Customer Average Interruption Duration Index ("CAIDI")**: The average duration of interruptions that a customer experiences during a year.

SAIFI is useful as it indicates the average number of times that a customer may be interrupted over the course of a year, while CAIDI provides the average length of time of those interruptions. I understand from Mr. Gausman's direct testimony that in February 2012 the District of Columbia Public Service

Commission (the "Commission") implemented the Electricity Quality of Service Standards ("EQSS") in the District and that these standards are applicable to SAIFI as well as System Average Interruption Duration Index ("SAIDI") levels for the years 2013 through 2020. SAIDI is another measure of the length of time that customers are without service and is based on the system-wide average duration of outages. As a result, for the District of Columbia, we will also regularly calculate SAIDI, in addition to SAIFI and CAIDI.[1]

We also utilize a variety of other metrics to measure reliability. For example, we track a Customer Satisfaction Index for each Exelon utility, which measures customer satisfaction with a variety of service components, including the ability to restore electric service after an outage.

In addition to calculating and analyzing each utility's performance on these important metrics, we compare Exelon utility performance to the performance of other similar utilities utilizing industry peer groups and best-practice sessions to drive continuous improvement.

9. Q. How have Exelon utilities performed on the key reliability metrics you have described?

A. The effectiveness of Exelon's approach to reliability is reflected in the fact that, in 2013, each Exelon utility maintained its continuing trend of improvement and exceeded its 2012 performance in the key metrics of SAIFI, SAIDI, and CAIDI.

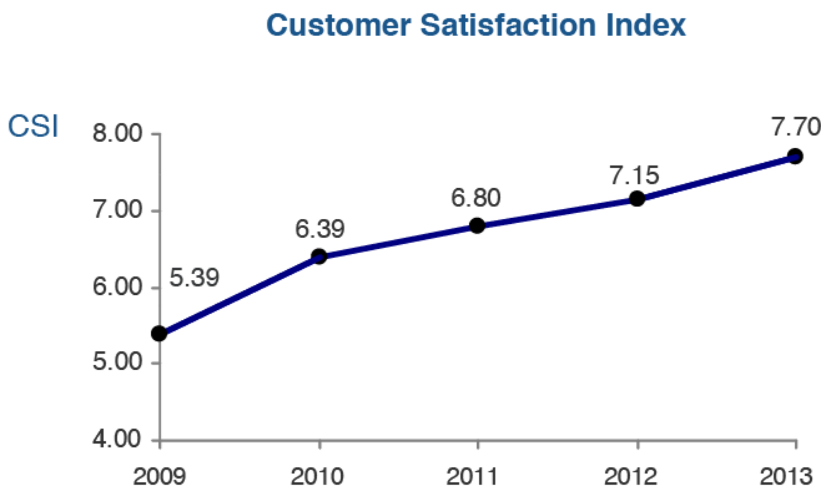
[1] CAIDI=SAIDI÷SAIFI.

I have included a set of graphs in JOINT APPLICANTS (D)-1 to my testimony, which depicts 2013 performance levels on these metrics as well as the trend of improvement over the last four years for the Exelon utilities. In each graph, the declining index reflects improved reliability for customers: a lower SAIFI corresponds to a reduced number of interruptions and a lower SAIDI and CAIDI (which are shown in minutes over time) correspond to shorter outage duration.[2] We also compare the performance of Exelon utilities to other utilities, and the SAIFI, SAIDI and CAIDI results place both ComEd and PECO in the top quartile of similar utilities in the U.S.

10. Q. Mr. Alden, how would you characterize the change in reliability metrics at BGE since its acquisition by Exelon?

A. BGE's reliability metrics have improved significantly since BGE became part of the Exelon family of utilities in 2012. For example, as shown in the JOINT APPLICANTS (D)-1, the average time to restore service to BGE customers who experienced a sustained interruption declined by almost 32%. That enhanced reliability is also reflected in other metrics that we measure, such as the Customer Satisfaction Index, which also improved following Exelon's acquisition of BGE, as shown below:

[2] The calculations reflected in the following graphs are based on the IEEE 2.5 Beta methodology, which is a common standard developed by IEEE to address the inclusion and exclusion of major event days in the calculation of IEEE reliability metrics.



11. Q. Mr. Alden, did Exelon increase capital spending or operations and maintenance expenditures at BGE after the merger in order to obtain these reliability improvements?

A. No, it did not. ComEd and PECO worked closely with their colleagues at BGE to share best practices, as described by Mr. O'Brien. As a result, we were able to achieve the improved reliability and customer satisfaction metrics at BGE without increasing planned expenditure levels.

12. Q. What types of assistance do Exelon utilities provide to each other in the event of major storms?

A. The Exelon utilities are integrated with each other in a variety of ways that enhance reliability. Perhaps most importantly for many customers, BGE is now fully integrated with ComEd and PECO in its response to major storms. This integration facilitates the deployment of Exelon utility crews quickly and safely between utility service territories and permits teams from all three companies to begin work almost immediately upon arrival in another Exelon utility service territory through the use of such practices as the standardized “Lock Out” and “Tag Out” (“LOTO”) program described by Mr. O’Brien.

13. Q. Is the ability to dispatch utility crews from other Exelon utilities any different than the resources that are available under mutual assistance agreements between unaffiliated utilities?

A. Yes. Under utility mutual assistance agreements, there is no guarantee that other utilities will provide resources during or after a storm event, particularly when those other utilities may also be facing a large number of actual or potential outages from a large regional storm. By contrast, Exelon utilities are committed to making their storm restoration resources available to their affiliates on a priority basis, and the use of LOTO and other best practices enables those resources to be more efficient and productive than those that may be obtained from an unaffiliated utility. We are also able to pre-position Exelon-affiliated crews before actual storm events to ensure that those crews will be ready to go to work as soon as an actual storm subsides.

As an example, in response to the 2012 Derecho storm that resulted in more than 748,000 outages in BGE’s service territory, PECO utility crews were able to provide over 25,000 full-time equivalent hours of assistance to BGE. The work of these crews reduced the duration of storm restoration efforts by approximately 24 hours.

Further, because Exelon utilities serve several major cities including Chicago, Philadelphia, and Baltimore, we are very familiar with and experienced in the special issues that arise in serving a large metropolitan service territory such as Washington, D.C.

III. ENHANCED RELIABILITY COMMITMENTS FOR PEPCO

14. Q. In his testimony, Mr. Gausman explained that Pepco must meet certain reliability requirements under District of Columbia EQSS standards. Will Exelon achieve those requirements?

A. Yes, all EQSS requirements will be achieved by Exelon and Pepco following the merger. Furthermore, as Mr. Crane has explained, we are confident that the Exelon/PHI combination will allow Pepco to do better than merely meet the minimum requirements. Following the merger, the combined companies expect that Pepco we will be able to exceed the EQSS requirements and improve Pepco's reliability through the integration of Pepco with the other Exelon utilities consistent with the Exelon approach to reliability I have described.

Exelon will therefore commit to Pepco achieving the following SAIFI and SAIDI average calculated for the three-year 2018-2020 period:

SAIFI: 0.54

SAIDI: 107

Compliance with the above commitments will be measured following the end of 2020 using the Commission's current methodology for calculating SAIFI and SAIDI, and exclusion of major event days. Pepco will report its performance against these commitments to the Commission no later than April 1, 2021. Pepco's failure to achieve these commitments will result in financial penalties, as described by Mr. Khouzami in his testimony.

Exelon's proposed levels of SAIFI and SAIDI, on average, for the 2018-2020 period, backed by financial penalties, reflect our substantial commitment to Pepco's customers that reliability will continue to improve and, in fact, will exceed the EQSS reliability requirements described in Mr. Gausman's direct testimony. Furthermore, the reliability improvements I have described will be achieved without increasing reliability-related capital and operations and maintenance expenditures above the levels in Pepco's existing long-range plans absent changes in law, regulations, or extreme weather events such as the Derecho storm, requiring increases in reliability-related spending to restore service and facilities.

15. Q. Is Exelon committed to support the Pepco DC undergrounding project described by Mr. Gausman in his direct testimony?

A. Yes. I understand from Mr. Gausman that on June 17, 2014, Pepco filed its Application, Testimony and Triennial Plan with the Commission for final approval prior to the start of work. Exelon fully supports this undergrounding work to improve reliability in the District of Colombia. The improved SAIFI and SAIDI commitments above are in addition to those to be achieved by the DC undergrounding project.

16. Q. Have you calculated Pepco's performance using the same methodology for the most recent three years?

A. Yes. Using the same methodology, Pepco's three-year historical averages (2011-13) of SAIFI and SAIDI are as follows:

SAIFI: 1.03

SAIDI: 149

The three-year average reliability commitments proposed by Exelon which I have described above represent an increase of 47.9% and 27.9% above these three-year actual average performance levels.

17. Q. Why are you proposing to calculate whether or not Exelon has met its reliability commitment at Pepco using a three-year average of performance in the 2018-2020 period?

A. We have proposed using a three-year historical average to account for any abnormal weather variability that could distort results if only the year 2020 was selected for measurement of Pepco's performance. If a three-year average is used, no additional weather normalization of Pepco's performance will be required.

18. Q. If Pepco is not measured on its reliability commitments until the conclusion of 2020, will that delay enhancements to Pepco's reliability?

A. No. As Mr. Gausman explains, Pepco already is required to achieve higher reliability metrics. Exelon is committed to ensuring that Pepco achieves those improvements, and therefore Exelon's additional reliability enhancements are best measured at the end of the period in which Pepco is expected to achieve its current reliability goals. Measurement of our success following 2020 will not delay deployment of Exelon best practices at Pepco, or Pepco's achievement of its current reliability obligations.

IV. CONCLUSION

19. Q. Does this conclude your direct testimony?

A. Yes

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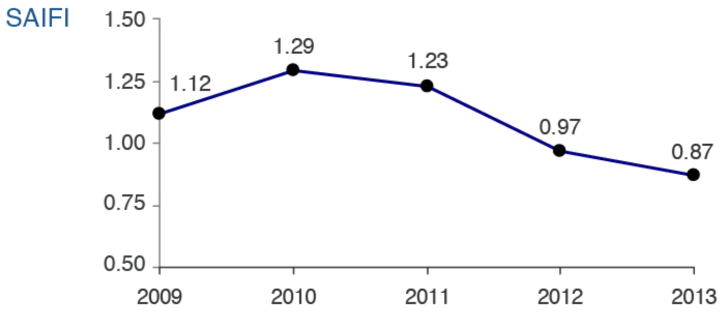
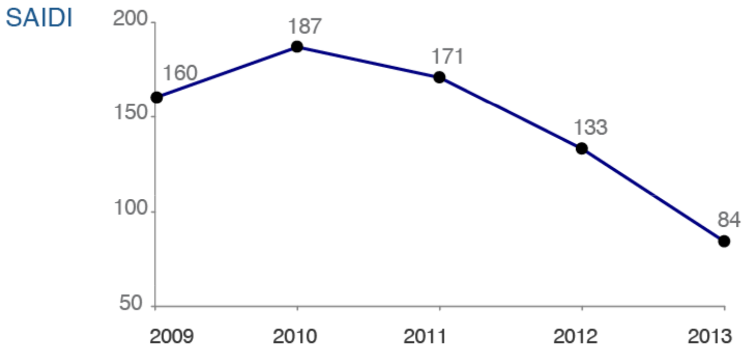
Baltimore Gas & Electric

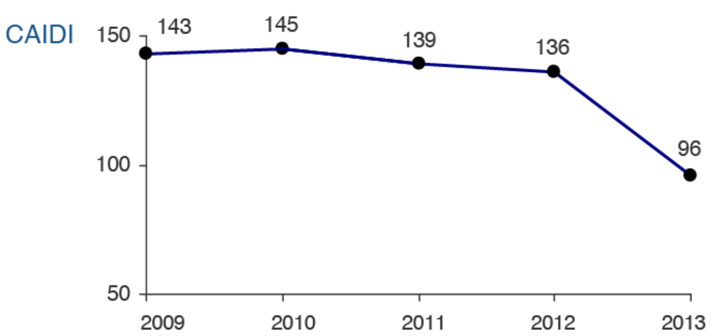
SAIFI



SAIDI

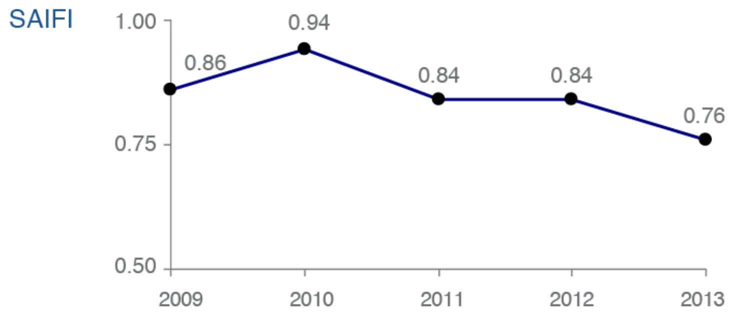


CAIDI

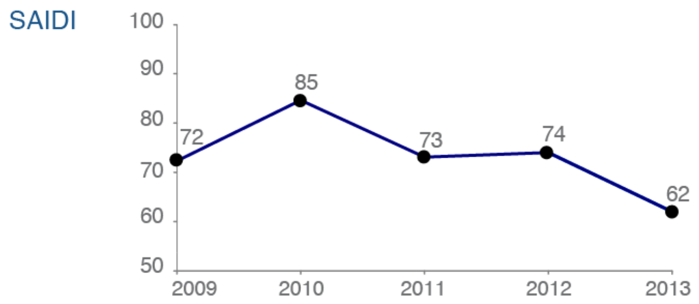


Commonwealth Edison

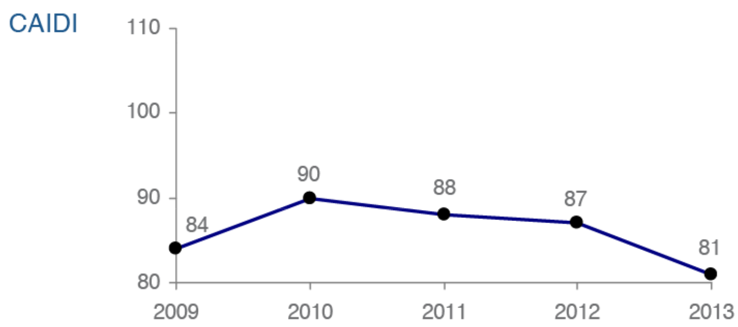
SAIFI



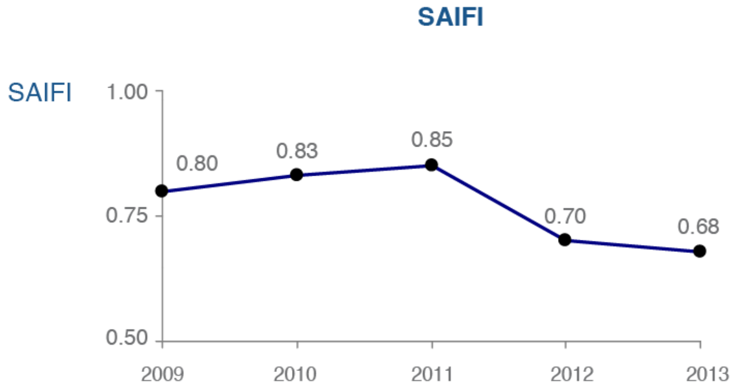
SAIDI



CAIDI



PECO


SAIFI
SAIFI
1.00
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0.80
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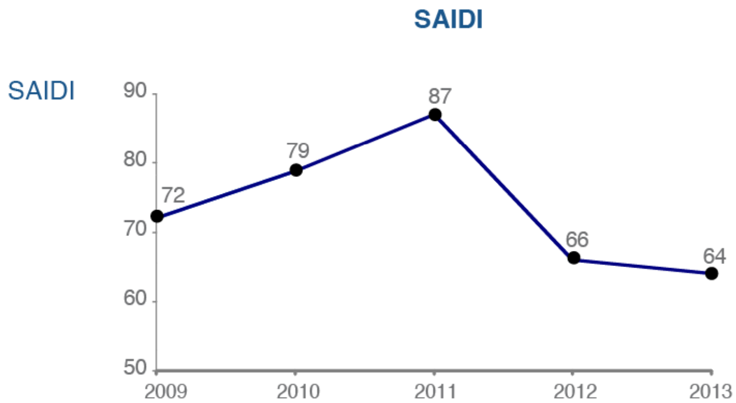
SAIDI
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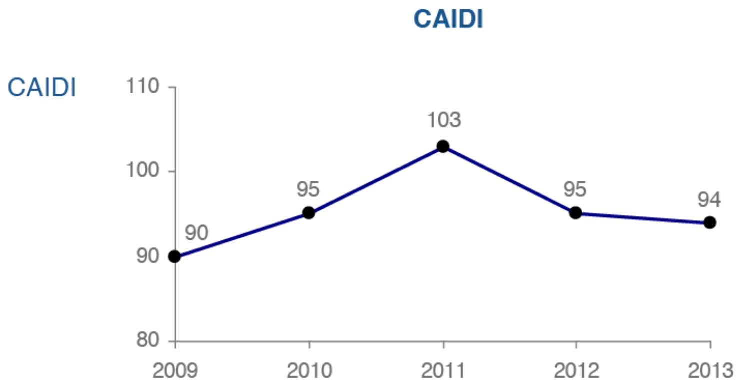
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BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF WILLIAM M. GAUSMAN
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is William M. Gausman. My business address is 701 Ninth Street NW, Washington, DC 20068.

2. Q. By whom are you employed and in what capacity?

A. I am employed by Pepco Holdings, Inc. ("PHI") as Senior Vice President, Strategic Initiatives. I am responsible for the oversight of strategic projects that focus on the long term support of the transmission and distribution systems. This includes the implementation of PHI's Advanced Metering Infrastructure, the procurement of energy (both gas and electric), and compliance with both North American Electric Reliability Corporation and state reliability standards to ensure the safe and reliable operation of the electric system. I have previously been responsible for the engineering of all reliability programs and the design of all assets that support the transmission and distribution of electric service across the service areas of all PHI utilities.

3. Q. Please describe your professional and educational background.

A. I hold a Bachelor of Science degree in Electrical Engineering Technology from Temple University. I joined Potomac Electric Power Company ("Pepco") in 1974 as a Project Engineer overseeing the construction of high voltage transmission facilities. I have served in various management positions within

Pepco and PHI, with increasing responsibility for the operation, maintenance, and construction of both the transmission and distribution systems. From 1977 through 1988, I served as Superintendent of Underground Lines and as Manager of Electric System Operation and Construction. In 1988, I was promoted to General Manager – Power Delivery, and in 2001 I became General Manager – Asset Management. In 2002, I was named Vice President – Asset Management of Pepco. After Pepco's merger with Conectiv, I became Vice President – Asset Management over the combined PHI organization. In 2008, I was promoted to Senior Vice President Asset Management and Planning, and assumed my current position in October 2010.

During my career with PHI, I have also served as an advisor to various industry organizations including the Electric Power Research Institute Distribution Committee, the Southeastern Electric Exchange Executive Committee and the Edison Electric Institute ("EEI") Distribution Committee. I am currently a member of the EEI Transmission Executive Advisory Committee. I am also a member of Leadership Greater Washington.

4. Q. Have you previously testified before a utility regulatory agency?

A. Yes. I have testified before The District of Columbia Public Service Commission (the "Commission") on numerous occasions on reliability, system performance, AMI, and other issues.

5. Q. What is the purpose of your direct testimony?

A. The purpose of my direct testimony is to describe the current reliability commitments of Pepco.

II. DISTRICT OF COLUMBIA RELIABILITY REQUIREMENTS

6. Q. Mr. Gausman, please provide an overview of Pepco's reliability commitments.

A. Certainly. Pepco is committed to delivering safe and reliable service to all of its customers, and Pepco's success in meeting this commitment is measured using a set of standard reliability metrics created by the Institute for Electrical and Electronics Engineers ("IEEE"). The following metrics are used in the District of Columbia:

- **System Average Interruption Frequency Index ("SAIFI")**: The average number of sustained interruptions per customer during a year.
- **System Average Interruption Duration Index ("SAIDI")**: The average duration of sustained interruptions per customer during a year.

SAIFI is calculated by dividing the total number of sustained customer interruptions in a year by the total number of utility customers, and provides insight into the frequency of customer interruptions on a system-wide basis. Similarly, SAIDI is calculated by dividing the sum of all sustained customer interruption durations by the total number of customers served, and indicates how long customers were without service. Lower SAIFI and SAIDI values reflect fewer interruptions and shorter outage durations, respectively.

7. Q. What are the reliability performance standards in the District of Columbia?

A. Pepco is required to meet reliability standards contained in the Electricity Quality of Service Standards ("EQSS") as enacted by the District of Columbia

Public Service Commission in February 2012.[1] Under the EQSS, Pepco is required to meet the following levels of reliability under the above metrics:

	2014	2015	2016	2017	2018	2019	2020
SAIDI (hours)	2.43	2.21	2.00	1.81	1.65	1.44	1.35
SAIFI	1.09	1.05	1.02	0.98	0.95	0.92	0.89

These reliability performance targets established by the Commission exclude major service outages. Consistent with Commission requirements, Pepco files an annual report describing its success in achieving the required level.

8. Q. What types of programs does Pepco currently have in place to meet its reliability commitments?

A. Pepco has an extensive set of programs designed to meet these commitments. These programs incorporate proactive replacement and upgrading of existing infrastructure, the addition of new facilities to increase capacity, and corrective maintenance to maintain and improve the reliable operation and performance of system equipment and to reduce the frequency and duration of outages as measured by SAIFI and SAIDI, respectively. Pepco's reliability programs include the following initiatives:

- Vegetation Management: For overhead systems, vegetation management (i.e., tree trimming) is Pepco's largest single preventive maintenance program. Pepco currently has a four year cyclical program of tree trimming. This program is designed to maintain clearances between

[1] District of Columbia Municipal Regulations Title 15, Chapter 36, Electricity Quality of Service Standards, (§3603). Formal Case No. 982, *In re Investigation of the Potomac Elec. Power Co. Regarding Interruption to Elec. Energy Service*; Formal Case No. 1002, *In re Joint Application of Pepco and the New RC, Inc. for Authorization and Approval of Merger Transaction, Notice of Final Rulemaking*, §3603.11 (Feb. 24, 2012).
[1] *Id*. §3603.11(a).

vegetation and overhead facilities, to reduce tree caused outages and to minimize equipment failures. Efficient implementation of strategic and definitive cyclical vegetation management programs throughout the electric distribution industry has proven to minimize incidental contact between vegetation and overhead distribution circuits, leading to improved SAIFI and SAIDI.

- Feeder Improvement: These projects consist of activities designed to address reliability based on historic performance of distribution feeders, which are medium voltage power lines transferring power from the substation to the distribution transformers. The focus of these projects is to arrest negative trends and return a feeder's performance to acceptable levels.
- Underground Residential Distribution ("URD") Cable Replacement and Enhancement: The purpose of the URD Program is to identify, analyze and initiate corrective actions for the mitigation of URD cable failures (mostly due to aged cable, 1970's and 1980's vintages) and to ensure the ongoing integrity of the URD system, in terms of reliability, safety and cost. A focused approach is used to identify sections of underground cable that are approaching the end of their reliable life and to replace and/or repair such sections of cable before multiple interruptions are experienced by customers. The selection criteria for the URD Program include recent cable failure history, number of customers served, system design, cable design and cable vintage.

- Distribution Automation: Pepco recognizes the benefits of deploying smart grid technology to improve infrastructure reliability, enhance the customer experience, and increase interaction levels with the grid. Pepco's distribution automation approach involves the deployment of advanced control systems across the distribution system, which can automatically identify and isolate trouble spots in the system in real time and restore service to customers in the unaffected parts of the system.
- Load Growth and Load Maintenance: Planning for future load growth starts with the development of load growth projections. Peak load forecasts are developed for three years to allow adequate time to complete routine construction work. Longer range forecasting (4 to 10 years) is used to develop advance plans for large construction projects that require more than two or three years to complete, to identify the need for additional supply capacity at existing substations, for new substation capacity and to develop advanced plans for the higher voltage substation supply (i.e., 34.5 kV to 230 kV systems). Accordingly, the foregoing planning process supports both new customer growth as well as increased reliability of the electric system.
- PEPCO-DC Undergrounding Project: Over the past several years, severe weather resulted in a large number of power outages in the District, imposing significant costs and problems for District residents and businesses. In response to the outages, Mayor Vincent Gray formed a task force to provide advice on actions that may be taken to reduce future

storm-related power outages, including the undergrounding of power lines. The recommendations also enumerated the need for a significant plan to be implemented in order to upgrade electric distribution infrastructure so that it may withstand more frequent weather events. On June 17, 2014 Pepco filed its Application, Testimony and Triennial Plan with the Commission for final approval prior to the start of work. We expect this plan to reduce the number of outages that District of Columbia customers will experience and improve the overall performance of the distribution system.

9. Q. Mr. Gausman, do you believe that Pepco will meet the EQSS reliability requirements if the proposed merger is approved?

A. Yes, I do. Pepco's management and engineers have reviewed the commitments and programs I have described with Mr. Alden and other members of Exelon Corporation's ("Exelon's") utility integration team, and we are confident that we will continue to meet our current and proposed reliability commitments following the merger. I am also confident that, as part of the Exelon family of utilities, we will identify additional best practices from the Exelon utilities so that our reliability programs will continue to improve and we will be able to achieve the enhanced reliability commitments that Mr. Alden discusses in his testimony.

10. Q. Mr. Gausman, do you believe that Pepco will complete the Pepco-DC Undergrounding project if the Merger is approved?

A. Yes. Based on my discussions with Mr. Alden and members of Exelon's integration team, Exelon is committed to moving forward with and completing the undergrounding project for the benefit of the District of Columbia and its residents.

III. CONCLUSION

11. Q. Does this conclude your direct testimony?

A. Yes.

C.V. Khouzami Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _____ (F)

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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF CARIM V. KHOUZAMI
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE OF TESTIMONY

1. Q. Please state your name and business address.

A. My name is Carim V. Khouzami. My business address is 750 East Pratt Street, Baltimore, Maryland 21202.[1]

2. Q. By whom are you employed and in what capacity?

A. I am a Senior Vice President of Baltimore Gas and Electric Company ("BGE") and am now serving as Chief Integration Officer for the proposed Merger (the "Merger") of Exelon Corporation ("Exelon") and Pepco Holdings, Inc. ("PHI") (including its utility subsidiaries, Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva Power") and Atlantic City Electric ("ACE") (the "PHI utilities")).[2] Prior to assuming the position of Chief Integration Officer, I served as BGE's Chief Financial Officer and Treasurer.

3. Q. Please describe your responsibilities as Chief Integration Officer.

A. As the Chief Integration Officer for Exelon, I am working with Donna Kinzel (the PHI Chief Integration Officer) to lead the Integration Office for the Merger and report directly to an Integration Steering Committee comprised of

[1] This is my interim business address associated with my role as Chief Integration Officer. My BGE business address is 2 Center Plaza, 110 West Fayette Street, Baltimore, Maryland 21201.

[2] In my testimony, I will refer to the applicants identified in the Application as the "Joint Applicants". The Joint Applicants include Pepco, Exelon, and PHI.

top-level executives from all Exelon business areas involved in the Merger. The Integration Office has oversight of Merger integration activities with responsibilities for establishing strategic, financial, and operational priorities, overseeing development and execution of integration plans, and making recommendations to resolve integration issues.

4. Q. Please describe the responsibilities you have held as Senior Vice President, CFO and Treasurer.

A. My responsibilities have included managing the financial condition of BGE and employing financial policies that maintain the financial health and stability of the utility, enabling BGE to obtain the capital necessary to both provide safe and reliable service and maintain a sound capital structure. In my capacity as CFO, I have had oversight of BGE's accounting, financial reporting, financial planning and budgeting, and tax functions, as well as BGE's internal control structure. As Treasurer, I have been responsible for managing BGE's relationship with the financial community and with the credit rating agencies.

5. Q. What is your educational background?

A. I hold a Bachelor of Arts degree in Economics and Communication Studies from Vanderbilt University and a Master's Degree in Business Administration from Columbia University.

6. Q. Please describe your professional experience and affiliations.

A. I joined Constellation Energy Group, Inc. ("Constellation Energy") in February 2005 and served in various positions of increasing responsibility before being appointed Executive Director, Investor Relations in 2009. During that time, I managed Constellation Energy's relationships with shareholders and analysts. In January 2010, I assumed the additional responsibility of leading Constellation Energy's corporate financial planning and analysis activities. In January of 2011, I was appointed to my position as Treasurer and CFO of BGE. In 2013, I was promoted to Senior Vice President, Treasurer, and CFO of BGE.

Prior to joining Constellation Energy, I worked as an Associate at Bear, Stearns & Co. Inc., primarily focusing on mergers and acquisitions and financing transactions within the financial institutions and insurance sectors. I currently serve on the Board of Directors of two local non-profit organizations – the Port Discovery Children's Museum and the Baltimore Urban Debate League.

7. Q. Have you previously testified before a state utility commission?

A. Yes. I testified before the Maryland Public Service Commission in Case No. 9299, *In the Matter of the Application of Baltimore Gas and Electric Company for Adjustment in Its Electric and Gas Base Rates*, which was filed in July 2012.

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

A. The purpose of my testimony is to discuss: (1) finance and accounting issues associated with the Merger, including Exelon's related commitments; and (2) the Merger integration process and estimated savings and synergies. Specifically as to the finance and accounting matters, I will describe the economic terms of the Merger, the source of funds to be used for the Merger, and the combined company's financial strength. I also will describe Exelon's accounting commitments, its commitment to ring-fence PHI and Pepco, from Exelon's other entities and operations, and Exelon's commitments to ensure the financial strength of Pepco. Additionally, I will testify regarding the accounting treatment of the Merger for Pepco following the closing of the Merger and why that treatment will not impact customer rates. As to Merger integration and synergies, I will provide an overview of the integration process and associated timelines as well as the estimated savings we project to be realized by Pepco. Finally, I will describe changes in affiliated agreements for shared services..

II. OVERVIEW OF THE MERGER TRANSACTION

9. Q. Please describe the economic terms of the Merger.

A. Exelon will acquire PHI for approximately $6.8 billion. Upon consummation of the Merger, each PHI shareholder will receive $27.25 in cash for each outstanding share of PHI common stock not held by PHI, Exelon, Merger Sub, a PHI or Exelon affiliate, or a dissenting PHI stockholder properly asserting appraisal rights.[3] The common stock of Exelon will be unaffected by the merger, with each issued and outstanding share of stock remaining outstanding following the Merger. Moreover, the Merger will not change the terms or character of the debt of Exelon currently outstanding and will have no effect on the outstanding debt securities or the capital structure of Pepco or any other PHI subsidiary utilities.

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[3] Additionally, to protect PHI shareholders, Exelon is pre-funding a "reverse break-up fee" through a Subscription Agreement for Series A Non-Voting Non-Convertible Preferred Stock (the "Subscription Agreement"). Per the terms of the Subscription Agreement, on April 30, 2014, Exelon purchased 9,000 shares of Series A Non-Voting Non-Convertible Preferred Stock ("Preferred Shares") issued by PHI for an aggregate purchase price of $90 million ("Initial Purchase"). Exelon will purchase an additional 1,800 Preferred Shares for a purchase price of $18 million every ninety days following the Initial Purchase until the earlier of: (1) the purchase of an aggregate of 18,000 Preferred Shares; (2) the closing of the Merger; or (3) the termination of the Merger Agreement. The Preferred Shares will be entitled to receive a cumulative, non-participating cash dividend of 0.1% per annum, payable quarterly.

10. Q. Please explain how Exelon proposes to finance the Merger.

A. Exelon has the necessary financial ability to complete this transaction and has obtained a bridge loan agreement to fund the acquisition pending completion of the permanent financing. Exelon's strong balance sheet will enable it to source permanent financing for the purchase price using a balanced mix of debt and equity along with cash on its balance sheet. We plan to fund roughly 50 percent of the acquisition price from the proceeds of debt to be issued and serviced by Exelon at the holding company level. The remaining portion of the transaction will be funded with proceeds from issuing Exelon common stock and mandatory convertible securities and cash from the sale of non-core assets at Exelon Generation. Exelon plans that the permanent financing will be in place before the Merger closing.

11. Q. Will transaction costs associated with the Merger be recovered in Pepco's rates?

A. No. As stated in the Application, and consistent with Exelon's practice in the Exelon-Constellation Energy merger, Exelon will not pass along to Pepco customers transaction costs incurred in connection with consummation of the Merger. The categories of transaction costs incurred in connection with consummation of the Merger which will not be recovered from utility customers are: (1) consultant, investment banker and legal fees, (2) change in control payments, (3) costs associated with the shareholder meetings and a proxy statement related to the Merger approval by PHI shareholders and (4) costs associated with Exelon's financing for the Merger.

12. Q. Please describe the corporate structure that will result from the Merger transaction.

A. PHI will become a limited liability company and an indirect, wholly-owned subsidiary of Exelon; PHI's stock will no longer be publicly traded. Specifically, PHI will become the direct subsidiary of a bankruptcy-remote special purpose entity ("SPE") being created to "ring-fence" PHI and the PHI utilities, which, in turn, will be a direct subsidiary of Exelon Energy Delivery Company, LLC ("EEDC").[4] EEDC is, and will remain, the direct parent of Commonwealth Edison Company ("ComEd"), PECO Energy Company ("PECO"), and RF Holdco, LLC, which is the SPE that owns BGE. PHI's current unregulated businesses (including PHI Service Company, Potomac Capital Investment Corp., Pepco Energy Services, Inc. and related companies) will be transferred from the PHI portion of the holding company structure and will become subsidiaries outside the PHI ring-fenced structure. Pepco and Conectiv will remain as PHI's direct subsidiaries, while Delmarva Power and ACE will continue as Conectiv's subsidiaries.

A corporate organization chart of the post-Merger corporate structure, showing the placement of PHI and its regulated utilities, is attached to the Application as Exhibit 4.

13. Q. What is an SPE and what is its role?

A. An SPE – special purpose entity - is a corporate entity created to provide structural separation of a subsidiary from its parent or affiliates. For a regulated

[4] Ring-fencing is explained later in my testimony.

utility, the structural separation provides protections from exposure to financial risks that may be experienced by the parent company or by unregulated affiliates, such as Exelon generation and nuclear operations. Here, because the SPE serves to separate PHI from EEDC and its other Exelon affiliates, PHI will be an indirect, rather than a direct, subsidiary of Exelon, and as a result, Pepco will benefit from additional insulation from perceived potential risks associated with Exelon's holding company structure and its ownership and operation of nuclear generation.

III. FINANCIAL STRENGTH OF EXELON AND PEPCO, POST-MERGER

14. Q. Please provide an overview of the financial position of the combined company.

A. The Merger builds upon the existing financial strength of Exelon and of PHI to create, both immediately and in the long term, a combined company that is on firm financial footing, with a financial strength similar to that of each of the Joint Applicants currently. The combined company will strive to maintain strong financial metrics, with investment grade ratings and financial discipline.

Exelon is dedicated to maintaining solid investment grade ratings for the combined company and for Pepco. Since the announcement of the Merger, the credit rating agencies have affirmed the credit ratings and stable outlook for Exelon, PHI, and their respective utilities. Exelon places great importance on the maintenance of investment grade credit ratings. Since Exelon's addition of BGE, BGE has not only maintained, but improved, its credit ratings.

15. Q. What is the proposed capital structure of Pepco post-merger?

A. To support the financial condition and solid investment ratings of Pepco, Exelon is committed to target an average equity level of at least 48% in Pepco as well as the other PHI utilities for ratemaking purposes.

IV. RING-FENCING MEASURES

16. Q. What is meant by ring-fencing?

A. "Ring-fencing" refers to the implementation of measures, including certain key legal protections, for specific affiliates within a holding company structure in order to protect such affiliates and their assets. A primary goal of ring-fencing is to provide the ring-fenced entities with "bankruptcy remoteness" from the rest of the holding company structure, such that a bankruptcy filing associated with other parts of the corporate organization, including the holding company itself, would not be expected to result in a bankruptcy of the ring-fenced entities. In practical terms, ring-fencing measures serve as safeguards to ensure a utility is shielded from events at a parent corporation or its other subsidiaries. Such measures legally wall-off elements of a utility's finances and assets from the parent company and its businesses, while still allowing operational efficiencies and the positive flow of best business practices from one utility to another. An additional benefit of ring-fencing is that it allows differentiation of risk profiles among affiliates or between an affiliate and its corporate parent.

17. Q. Are ring-fencing measures currently in effect at any of Exelon's utilities?

A. Yes. The Maryland Public Service Commission adopted a series of ring-fencing measures for BGE in both Case No. 9173, Phase II, Order No. 82986 (Oct. 30, 2009) and in Case No. 9271, Order No. 84698 (Feb. 17, 2012). In addition, both PECO and ComEd have in place respective sets of ring-fencing measures that are intended to maintain independence in the management and direction of the companies.

18. Q. Is Exelon committing to employ any ring-fencing measures for the PHI utilities?

A. Yes. Exelon has committed to a suite of ring-fencing measures that are some of the strongest safeguards employed nationwide. The protection afforded by ring-fencing measures has been recognized by both regulators and credit rating agencies, as I explain later. The PHI utilities will be protected from business, financial and operational risk exposures associated with the other Exelon subsidiaries, including the other Exelon utilities and Exelon's unregulated operations and activities (*e.g.* nuclear operations), through the creation and use of a bankruptcy-remote SPE. In addition, Exelon and PHI will commit to implement the following ring-fencing arrangements for at least five years following completion of the Merger, absent permission from the District of Columbia Public Service Commission (the "Commission") to act otherwise:

- Pepco will maintain its separate existence and separate franchise privileges;
- Pepco will maintain separate books and records;
- Pepco's books and records pertaining to its operations in the District of Columbia will be available for inspection and examination by the Commission;
- Pepco will maintain separate debt so that it will not be responsible for the debts of affiliate companies and preferred stock, if any, and Pepco will

maintain its own corporate and debt credit rating, as well as ratings for long-term debt and preferred stock.

Provisions comparable to those described above will also be adopted by PHI to assure its separateness from the SPE, the PHI utilities, Exelon and other Exelon affiliates.

19. Q. Please describe the ring-fencing measures associated with the SPE that Exelon is proposing to protect the PHI utilities.

A. As previously explained, PHI will become a subsidiary of the SPE being created to ring-fence the PHI utilities, which in turn, will be a subsidiary of EEDC. The sole purpose of the SPE will be to hold 100% of the equity interests in PHI. Exelon will cause EEDC to transfer the PHI shares to the SPE as an absolute conveyance or "true sale" with the intention of removing the PHI shares from the bankruptcy estate of Exelon. Exelon has committed that the SPE will have adequate capitalization for the nature of its business. The SPE will have no employees and no operational functions other than those related to holding the equity interests in PHI.

The Board of Directors of the SPE will have one independent director. The independent director will be an employee of an SPE administration company in the business of protecting SPEs. A voluntary petition for bankruptcy by the SPE or any amendment to the organizational documents of the SPE that would remove this requirement or other ring-fencing requirements will require the approval of the entire Board of Directors of the SPE, including the independent director. In addition, the SPE will issue a non-economic interest (the "Golden

Share") in the SPE to an SPE administration company in the business of protecting SPEs and separate from the SPE administration company retained for the SPE independent director position. A voluntary petition for bankruptcy by the SPE or any amendment to the organizational documents of the SPE that would remove this requirement or other ring-fencing requirements will require the affirmative consent of the holder of the Golden Share.

The SPE will maintain arms-length relationships with Exelon, PHI, and PHI's subsidiaries, including Pepco. At all times, the SPE will hold itself out as a separate entity from each of Exelon, PHI, and PHI's subsidiaries, will conduct business in its own name, and will not assume liability for the debts of Exelon, PHI, or PHI's subsidiaries. To this end, the SPE's funds will not be commingled with the funds of Exelon, PHI, or PHI's subsidiaries; the SPE will maintain a separate name from and will not use the trademarks, service marks or other intellectual property of Exelon, PHI, or PHI's subsidiaries; and the SPE will maintain separate books, accounts and financial statements reflecting its separate assets and liabilities.

Exelon anticipates obtaining a legal opinion that, as a result of the ring-fencing measures it proposes to implement, a bankruptcy court would not consolidate the assets and liabilities of the SPE with those of Exelon, in the event of an Exelon bankruptcy, or the assets and liabilities of PHI with those of either the SPE or Exelon, in the event of a bankruptcy of either of those entities.

20. Q. Do the rating agencies treat BGE differently, relative to the rest of Exelon, due to the ring-fencing measures that were previously put in place?

A. Yes. In light of the credit insulation provided by the ring-fencing measures adopted for BGE, the rating agencies have indicated that they view the credit quality of BGE on a stand-alone basis, which is reflected in the credit ratings of BGE. Specifically, subsequent to institution of BGE's ring-fencing measures in 2009, S&P raised the corporate credit rating of BGE to BBB+, which became two notches higher than the BBB- rating of its then-parent, Constellation. The upgrade reflected the stand-alone credit quality for BGE. This ratings change reflected S&P's views on the structural protections put in place to insulate BGE from Constellation. Currently, BGE enjoys a credit rating of A-, which is still two notches higher than the BBB rating of its parent, Exelon.

21. Q. Have the rating agencies indicated how they will treat the ring-fencing of the PHI Utilities?

A. Yes. S&P has already commented that, in affirming the ratings of PHI and its subsidiaries, the expectation is that the transaction will provide credit insulation for the subsidiaries sufficient to support ratings above the group credit profile of Exelon.

22. Q. Is Exelon making any commitments regarding the administration of the ring-fencing measures you have described?

A. Yes. PHI and Pepco will amend their charters and by-laws to include a unanimous vote of the Board of Directors is required to file a voluntary bankruptcy petition.

V. MERGER ACCOUNTING

23. Q. Please describe the general requirements associated with purchase accounting as they relate to the Merger.

A. For accounting purposes, Exelon is considered the purchaser of PHI pursuant to the terms of the Merger. As such, Exelon will be required by U.S. Generally Accepted Accounting Principles ("GAAP") to apply purchase accounting to record the Merger transaction in its consolidated financial statements. Under purchase accounting, the sum of the purchase price paid for the common stock of PHI plus the consolidated debt recorded on PHI's balance sheet would be allocated to the assets acquired and the liabilities assumed from PHI based on the fair values of such assets and liabilities as of the acquisition date. If the purchase price for PHI common stock plus PHI debt exceeds the fair value of the net assets acquired, the excess will be recorded as goodwill. Alternatively, if the fair value of the net assets acquired exceeds the purchase price for PHI common stock plus PHI debt, the resulting "negative goodwill" will be recognized as income in the accounting period in which the Merger closes.

24. Q. Please describe "push-down" accounting and its relevance to this Merger.

A. Under push-down accounting, Exelon, in its consolidated financial reporting, will be required to adjust the recorded amounts of the assets and liabilities of PHI and each of its subsidiaries to fair value as of the acquisition date. While the U.S. Securities and Exchange Commission ("SEC") generally prefers that such asset and liability adjustments also be reflected on the separate financial statements of each of the acquired company's subsidiaries (referred to as "push down" purchase accounting), such treatment is not always required by the

SEC when an acquired company's subsidiary has significant amounts of public debt or preferred stock securities outstanding.

Here, Exelon currently anticipates that no adjustments will be made to the amounts of assets and liabilities recorded by Pepco in its stand-alone financial statements. Exelon employed this approach to the reporting of BGE's assets and liabilities in the Exelon-Constellation transaction, and it was approved by the SEC. Exelon intends to employ the same approach with Pepco and is seeking SEC approval of this accounting treatment.

25. Q. Will Exelon's application of purchase accounting result in the creation of any regulatory assets or liabilities on Pepco's financial statements or the allocation of any additional costs to Pepco?

A. No costs will be allocated to Pepco related to purchase accounting. As previously discussed, subject to SEC concurrence, Exelon does not currently intend to apply "push down" purchase accounting to Pepco. As such, Exelon expects that Pepco will continue to prepare its financial statements using historical book values, with no adjustments for any new purchase-related regulatory assets or liabilities on their respective books and no additional allocation of costs or credits pursuant to purchase accounting.

26. Q. Will the accumulated deferred income taxes and accumulated deferred investment tax credits on Pepco's books be affected by the Merger?

A. No. The tax basis and book basis of Pepco's assets will be unchanged on the date that the Merger closes from what they were immediately preceding the closing, assuming no "push down" purchase accounting is required. Thus, Exelon does not anticipate any impact on accumulated deferred income taxes, accumulated deferred investment tax credits or the expected utilization of net operating loss carryforwards.

27. Q. Will the Merger affect the PHI money pool?

A. Yes. Currently, Pepco and Delmarva are eligible to fully participate in (i.e. invest in and borrow from) a money pool with one another and their non-utility affiliates; ACE, in contrast, is only permitted to borrow from the money pool. Following the Merger, there will not be any non-utility operating entities within the PHI portion of the combined holding company structure, and the money pool, therefore, will only have the three utility participants (plus PHI and the PHI Service Company, which will only be lenders to the money pool and will facilitate pool transactions).

Given the change in nature of the money pool, Exelon and PHI believe it would be appropriate for ACE to become a full participant in the money pool following the Merger. The three PHI utilities would only participate to the extent they can obtain a more favorable investment or borrowing rate from the money pool than available in the public market. For at least five years following completion of the Merger, no entities other than the PHI utilities (plus PHI and PHI Services Company) will participate in the PHI utilities’ money pool, the PHI utilities will not participate in the money pool operated by Exelon, and there will be no commingling of funds with Exelon.

VI. THE MERGER INTEGRATION PROCESS

28. Q. Please provide an overview of the planned merger integration process.

A. Exelon and the PHI utilities have assembled a group of officers, senior managers, and other employees to plan, execute, and coordinate the business integration of the combined companies. Our goal is to ensure execution of integration plans so that upon closing the Merger partners are combined into a unified organization that operates effectively and efficiently, is well managed and is able to realize the goals and objectives established for the post-Merger operation of Pepco and the other PHI utilities.

29. Q. Please describe the integration process in more detail

A. In order to accomplish this goal, we will use an approach to merger integration developed by Exelon which consists of five distinct phases:

1. **Framework Development –** Establishment of an appropriate foundation for the merger integration process, including formation of "business area teams" ("BATs") and decision-making and issue-resolution processes. A BAT is created for each business area that may be affected by the Merger and its membership includes employees of each company with responsibility for the affected area. The BATs are responsible for developing and executing detailed functional plans so that the combined organization is fully operational upon consummation of the Merger, as well as developing initiatives to achieve synergy targets;

2. **Analysis –** Assessment of the current state of both companies, with an understanding of differences that need to be aligned for "Day 1" (the day on which the companies are merged) and for the long-term realization of savings and synergy opportunities;

3. **Design –** Development of a high-level description of the proposed "end state" for the merged companies, including updating of organizational structures and policies;

4. **Implementation Planning –** Development of an implementation plan to achieve the "end state," with a detailed schedule for completion; and final "Day 1" plans.

5. **Implementation –** During implementation, business areas execute the developed plans. Key activities include transitioning work from the integration teams to the "go forward" management and complying with all merger commitments, so that on "Day 1" the companies can operate as an integrated enterprise.

As Chief Integration Officer, I work with the PHI Chief Integration Officer to lead an extensive integration management structure to plan and guide the integration effort. Given the nature of the integration requirements, other executives from Exelon and PHI are also engaged with this effort to provide insights into current operations.

Additionally, we have developed a Project Management Office ("PMO") to oversee and coordinate all activities related to the planning and execution of the integration process. The PMO is supported by a "Core Team" – comprised of Exelon and PHI employees – from the Information Technology ("IT"), Finance, Human Resources, Supply, Communications and Operations areas of the companies. The Core Team provides integration guidance to all BATs and coordinates with the BATs to identify requirements and constraints (e.g., the impact of IT integration on specific business areas) and resolve cross-functional issues.

The structure I have described is illustrated in an organizational chart as JOINT APPLICANTS (F)-1, which shows how employees from various corporate organizations, operations, and support functions work cooperatively with each other as we work towards integrating the companies: The members of the Integration Office, the Core Teams, and the BATs will be selected based on their knowledge and experience relevant to each core area of the integration process.

30. Q. Are there particular factors that will guide the Joint Applicants' plans for the integration of the PHI utilities into the Exelon family of utilities?

A. Yes. As Mr. Crane has described, the Merger is intended to create the premier Mid-Atlantic energy distribution utility. As such, I expect the integration process to be particularly focused on ensuring that the PHI utilities are aligned with the existing family of Exelon utilities so that best practices for operational excellence can be easily shared.

As Messrs. Crane, Rigby, and O'Brien have also emphasized, Exelon's utility management model allows operating utilities to access the resources, expertise and financial strength of Exelon and all of its utilities while maintaining a strong local presence and remaining fully responsive to local conditions and priorities. As a result, the integration process will also be designed to reflect the fact that Pepco will remain a separate corporate entity, with a Board of Directors, and issue its own debt and preferred stock. The utility management model currently employed by PHI and the PHI utilities and the integration of PHI and the PHI utilities into Exelon's utility management model are described in the direct testimony of Mr. Rigby and Mr. O'Brien, respectively.

31. Q. Will the integration process take into account the Joint Applicants' Merger commitments?

A. Yes, it will. Exelon has been successful in complying with its current merger commitments, and our planned integration process for this Merger will include careful monitoring and compliance with the Merger commitments and the integration of those commitments into Merger implementation plans. By way of example, the integration process and plans will reflect a commitments to maintain PHI's and Pepco's corporate headquarters in the District of Columbia. These plans will also incorporate the commitments Mr. O'Brien has described with respect to employment levels and employee compensation and benefits.

32. Q. What is the current timeline for the integration process?

A. The five-phase integration process I have described is structured so that each phase builds upon the objectives and conclusions of the preceding phase. The companies have already begun the Framework Development phase, and I expect that Framework Development will be complete in July 2014 with formation of all of the necessary BATs. Based upon our work to date, we are focusing on a close in the second or third quarter of 2015 and a thus a "Day 1" for the combined companies in the second or third quarter of 2015.

While the companies will use that timeframe for Day 1 readiness and preparing for effective and efficient operation of the combined organization in the first year of operations, the integration process will continue for several years because the actual combination of business structures, systems and processes must "ramp up" on a carefully staged basis over time. As a consequence, the anticipated savings from the Merger will not be fully realized until several years after the Merger is consummated. To cite just one example, the integration of technology platforms will take place over several years in order to accommodate the priorities of the business and constraints on available resources.

VII. PROJECTED MERGER-RELATED SAVINGS

33. Q. Please describe the level of Merger-related savings that you expect to be achieved at the PHI utilities.

A. Exelon conducted an analysis, utilizing publicly available data, of the potential savings that can reasonably be realized by combining Exelon and PHI and the portion of such savings allocable to the PHI utilities. As shown in Table 1, below, positive Merger-related savings at the PHI utilities, net of the costs that will be incurred to achieve those savings, are projected to begin in the second year after the Merger and grow to approximately $43 million annually by the fifth year. The estimated savings for the PHI utilities, net of the costs to achieve the savings, will total $95 million over that five-year period, as shown below:

TABLE 1

($ Million)	Pre-Closing	Year 1	Year 2	Year 3	Year 4	Year 5	Total
PHI Utilities Synergies		18	25	35	39	43	160
Costs to Achieve	(11)	(49)	(5)	(0)	(0)	(0)	(65)
PHI Utilities Net Synergies	(11)	(31)	20	35	39	43	95

Additional details of the estimated savings and costs-to-achieve are provided in JOINT APPLICANTS (F)-2.

As Mr. Crane explains in his direct testimony, Exelon is proposing to fund a Customer Investment Fund of $100 million to provide an immediate tangible benefit to PHI customers from the Merger-related savings the PHI utilities are expected to achieve during the first five years following completion of the Merger. As the data in Table 1 show, the proposed Customer Investment Fund actually exceeds the estimated PHI utilities' Merger savings during that period. Additionally, Exelon and PHI are committing to flow through net Merger savings allocable to the PHI utilities in future rate proceedings. Consequently, if any PHI utility were to file a rate case utilizing a test year within that five-year post-Merger window, customers will benefit from receiving some portion of the net Merger savings twice – once through the Customer Investment Fund and a second time through lower post-Merger expenses reflected in the ratemaking process.

Of course, annual Merger savings (estimated to be $43 million as shown above) will continue beyond five years following the completion of the Merger. As a result, customers will realize additional benefits, in future rate cases, from avoided expenses that continue to accrue during those future periods beyond the $100 million tangible benefit the companies propose to provide immediately following the Merger. The Customer Investment Fund is not subject to downward adjustment if Exelon does not achieve the expected Merger-related savings attributable to the PHI utilities.

34. Q. How were these estimates of savings developed?

A. Exelon engaged the Boston Consulting Group ("BCG"), a global management consulting firm, to analyze the potential savings that could be realized through the Merger. BCG undertook this project in two phases.

First, BCG conducted an "outside-in" analysis of the PHI companies. In this phase, BCG collected publicly available information, such as PHI investor communications and documents filed with regulatory agencies (e.g., annual reports to the SEC and Federal Energy Regulatory Commission). BCG then estimated potential synergies and savings that could be achieved at the combined Exelon-PHI company based on information from other mergers of electric and gas utilities and additional data provided by Exelon regarding its operations. The additional data used in this "outside-in" analysis included information on synergies and savings achieved at BGE after Exelon's merger with Constellation Energy and the actual costs to achieve those synergies and savings, but did not include any non-public PHI information.

Second, BCG conducted a "bottom-up" analysis. For this analysis, BCG obtained information from PHI about how various corporate, support and utility functions are performed at the PHI companies and the levels of expenditures and full-time equivalent employees for each function. Using this information, BCG "mapped" the functions performed at the PHI companies to the equivalent functions at Exelon and the Exelon utilities. Based on information Exelon provided about how these functions would likely be staffed and performed for the combined enterprise, BCG calculated expected Merger savings in each functional area and estimated the cost and time necessary to achieve those savings.

Each approach has strengths and limitations, which are generally associated with the type of data available for each. However, together they serve as a useful "check" on each other to validate projected savings and the associated costs to achieve those savings.

From the "outside-in" analysis, BCG concluded that, at the end of the fifth year following the Merger, the combination of Exelon and the PHI companies (including utility and non-utility operations) would be expected to achieve annual operational expense savings of between $109 million and $151 million. The second "bottom-up" analysis, using more detailed data from the PHI utilities, produced a lower estimate of $96 million in annual savings. In both cases, the estimated annual savings reflect synergies across the entire post-merger company (*i.e.* all Exelon and PHI utilities and non-utility businesses).

In light of these two estimates and the way each was derived, BCG recommended – and Exelon adopted – a projected level of annual savings from the Merger for the entire company of $130 million beginning at the end of the fifth year following the Merger. Although the $130 million is greater than the "bottom-up" analysis, we believe that this estimate is justified because the "bottom-up" analysis does not capture all of the savings that could be achieved, such as additional performance improvements at the PHI utilities and other opportunities that may be found through the integration process.

Once the estimated steady-state annual savings target of $130 million had been established, BCG was able to project the savings and costs to achieve that would be expected at the PHI utilities in each of the first five years following completion of the Merger. After the Merger was announced, Exelon requested that BCG prepare a revised estimate of synergies and savings in light of Exelon's Merger commitments (including commitments relating to PHI employees and facilities). BCG's examination projected net savings of $95 million at the PHI utilities in the first five years of the Merger, as shown in Table 1. JOINT APPLICANTS (F)-2 is a copy of BCG's revised estimate of synergies and savings.

35. Q. Please explain the nature of the synergies and savings that the Joint Applicants expect to achieve.

A. The Merger of Exelon and PHI will create the opportunity to realize savings by eliminating overlap and duplication in company-wide operations, realizing economies of scale and streamlining corporate functions. For example:

- Information Technology: Significant economies of scale are expected to be achieved through integration and select migration of technology environments, with additional savings from eliminating duplicative investments in technology and reducing expenditures on a combined company basis for data centers, network infrastructure, applications, and technology support.
- Corporate Functions and Support Services: Certain corporate functions required by two distinct companies – such as investor relations and employee benefits administration – become duplicative when those functions are combined. By eliminating this functional duplication and streamlining corporate services, the Merger will result in lower overhead expense and more efficient use of resources to meet the needs of the combined companies and, in that way, create substantial savings over time.

While most of the projected savings are associated with eliminating duplication and achieving economies of scale in corporate functions, Exelon also expects to achieve some additional savings through the application of best practices in transmission and distribution functions and customer operations and in supply procurement.

The savings Exelon has projected are based entirely on operational expense savings. Savings in future capital expenditures arising from the Merger at Pepco and the other PHI utilities are expected to be reinvested in other needed capital projects.

36. Q. Mr. Khouzami, what are the "costs to achieve" the savings you have described?

A. Costs to achieve are actual expenditures that will be incurred as a result of the Merger, and include expenses in such areas as employee compensation, communications, technology migration, financing, accounting, and many others. As shown in the table of estimated merger savings I have provided, we expect the costs-to-achieve to be incurred in the early years after the Merger. Because the Joint Applicants have committed that Pepco and the other PHI utilities will not seek recovery in rates of transaction costs incurred in connection with consummating the Merger, those costs are not considered to be "costs to achieve" in estimating savings from the Merger.

37. Q. Mr. Khouzami, how were the estimated savings and costs to achieve at the combined company allocated to the PHI utilities?

A. Because certain functions and resources – such as computer systems and human resource management – at both Exelon and PHI are shared among both regulated and non-regulated or competitive activities, the first step in the allocation process is to determine whether an estimated savings or costs to achieve category could be directly assigned to the regulated or non-regulated business segments based on the nature of the savings or costs to achieve category.

For those savings or costs to achieve that can be directly assigned to the PHI utilities (for example, supply chain benefits within the regional transmission and distribution businesses), the net savings assigned to PHI were allocated among the PHI utilities based on a Modified Massachusetts Formula ("MMF") calculation.[5]

For those savings that could not be directly assigned to the regulated or non-regulated or competitive business segments (for example, consolidation of corporate support functions supporting both the regulated and competitive business segments), the PHI utilities were allocated a portion of the savings among all of the combined company subsidiaries (regulated and non-regulated) based on the MMF calculation. The results of this allocation process are shown in JOINT APPLICANTS (F)-2

38. Q. Mr. Khouzami in light of the fact that the proposed Customer Investment Fund actually exceeds the estimated PHI utilities' Merger savings will it be necessary to monitor the costs and savings of the Merger on a going forward basis?

~~A.~~ No. As Mr. Crane explains in his direct testimony, Exelon is proposing a Customer Investment Fund of $100 million to provide an immediate tangible benefit to PHI customers from the Merger-related savings the PHI utilities are expected to achieve during the first five years following completion of the Merger. As a result, Pepco's customers in the District of Columbia will experience direct and traceable financial benefits resulting from the merger. Additionally, Exelon and PHI are committing to flow through net Merger savings

[5] The MMF calculation reflects a three-part formula consisting of revenues, assets and direct labor.

allocable to the PHI utilities in future rate proceedings. Consequently, if any PHI utility were to file a base rate case within that five-year post-Merger window, customers will benefit from receiving some portion of the net Merger savings twice – once through the Customer Investment Fund and a second time through lower post-Merger expenses reflected in the ratemaking process. The added savings will be reflected in lower test-period costs and expenses. Thus, there is no reason to track merger costs and savings on a going forward basis.

VIII. RELIABILITY COMMITMENTS AND FINANCIAL PENALTIES

39. Q. Mr. Khouzami, Mr. Crane has stated that Exelon will back-up its reliability commitments at Pepco with a performance guaranty that will trigger a financial penalty if reliability performance-improvement goals are not achieved. Can you please explain the performance guaranty and financial penalty proposed by Exelon?

A. Yes. Exelon is providing a performance guaranty that Pepco will achieve a level of improvement by 2020 in two key reliability metrics: its System Average Interruption Frequency Index ("SAIFI") and its System Average Interruption Duration Index ("SAIDI"). As Mr. Alden explains, Exelon is committing that Pepco will achieve a SAIFI of 0.54 and SAIDI of 107 based on a three-year average calculation in 2021 for the 2018-2020 period. The calculation of SAIFI and SAIDI will be performed using the same procedures as the Commission now uses in calculating Pepco's reliability performance. Exelon is proposing to use a three-year average to avoid the effects of weather variability in a single measurement year.

If this level of reliability improvement is not achieved, the return on equity ("ROE") to which Pepco would otherwise be entitled in its next electric distribution rate case filed after January 1, 2021, will be reduced by twenty-five basis points. This financial penalty would be in addition to any other financial penalty the Commission might impose for if Pepco failed to meet its Commission-set reliability requirements in 2020.

40. Q. How long does Exelon propose that the ROE penalty, if imposed, would remain in place?

A. The ROE reduction would apply throughout the period that the rates established by that rate proceeding are in effect. Pepco would be required to initiate a new rate proceeding and obtain an order from the Commission approving new rates in order to end the ROE penalty.

41. Q. Under Exelon's proposal would Pepco be penalized if it meets one reliability commitment but not both?

A. Yes, because the two metrics measure different components of reliability: SAIFI is a measure of the number of sustained customer interruptions, while SAIDI is a measure of the duration of sustained customer outages. Under Exelon's proposal, if Pepco achieves its performance commitment on one metric but not the other metric, the penalty will still be imposed but it would be reduced by half (i.e., 12.5 basis points instead of 25 basis points).

IX. AFFILIATED INTEREST AGREEMENT

42. Q. Please explain the affiliated interest agreement that Pepco will enter into upon the consummation of the Merger.

A. Pepco will participate in Exelon's existing General Services Agreement ("GSA"). A copy of the GSA is attached as part of JOINT APPLICANTS (F)-3. The GSA is an agreement under which Exelon Business Service Company (the "EBSC") provides a variety of services to Exelon utilities and other Exelon subsidiaries. Upon approval and close of the Merger, Pepco will become a party to the GSA and be able to receive services from the EBSC. As a party to the GSA, Pepco will also be able to receive services from (and provide services to) other Exelon utilities, including services relating to storm management.

43. Q. What is the EBSC?

A. Like many other energy holding-company systems, including PHI, Exelon created a service company, the Exelon Business Services Company, or EBSC, to house specific support functions that it believed could be staffed more efficiently and economically on a centralized basis. The EBSC is designed to provide a range of what would typically be regarded as in-house services in the case of a stand-alone utility. In broad terms, those services fall into the following categories: information technology; supply; finance; human resources; government and environmental affairs and public policy; general counsel/legal; corporate secretary; strategy; and communications. The EBSC offers its services to the members of the Exelon family of companies, including PECO, ComEd and BGE, and enables those companies to realize economies of scale and scope that could be very difficult to achieve on an individual-company basis.

44. Q. Will Pepco be required to use the EBSC?

A. No. Under the terms of the GSA, each utility has the discretion to determine whether and to what extent it will utilize the EBSC's services. The only exception to this general policy falls in the area of "corporate governance," where the EBSC provides services to each party to the GSA.

45. Q. How will Pepco be charged for services provided by EBSC?

A. The GSA provides that the services furnished by the EBSC to Pepco will be billed at the EBSC's cost, and direct charges of those costs will be made wherever possible. If a cost cannot be assigned directly to a utility, it is allocated on the basis of the allocation factors/methodologies identified in the EBSC Associate Transaction Procedures Manual ("ATPM"), which is attached as JOINT APPLICANTS (F)-3. The ATPM will be filed with the Commission within thirty days after the effective date of Pepco's first use of EBSC services. After the Merger, the Commission will have the same access to EBSC's books and records and the same transparency into EBSC as it has with PHI Service Company.

46. Q. Will the PHI Service Company be maintained after the Merger?

A. A. The PHI Service Company will remain in place for an undetermined period of time during post-merger integration. As integration proceeds and systems and functions are combined in phases, Pepco may receive different services from the EBSC and the PHI Service Company until all shared corporate support functions are consolidated under EBSC.

X. CONCLUSION

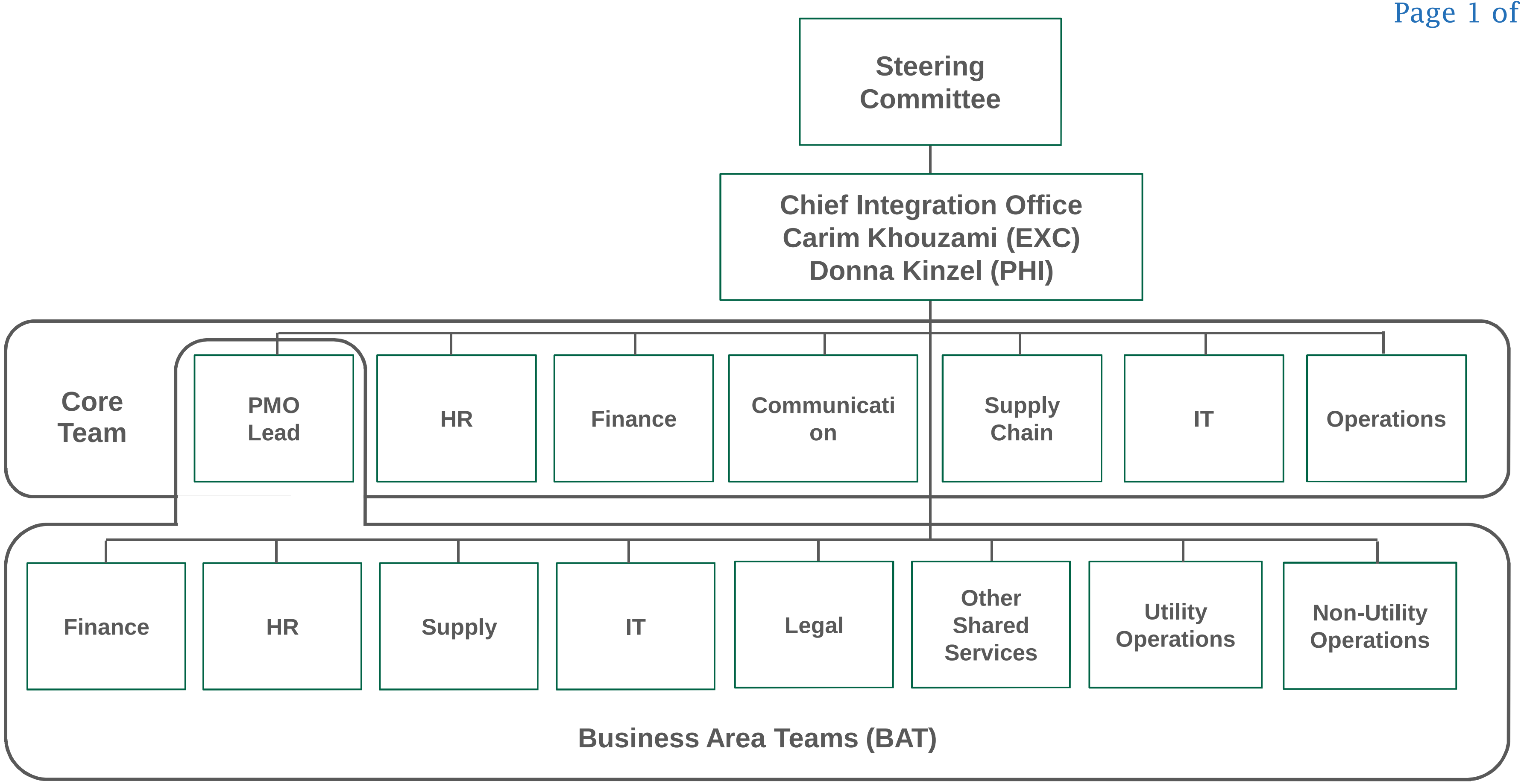
47. Q. Does this conclude your direct testimony?

A. Yes, it does.

C.V. Khouzami Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _____ (F)-1

PMO Organization



C.V. Khouzami Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _____ (F)-2

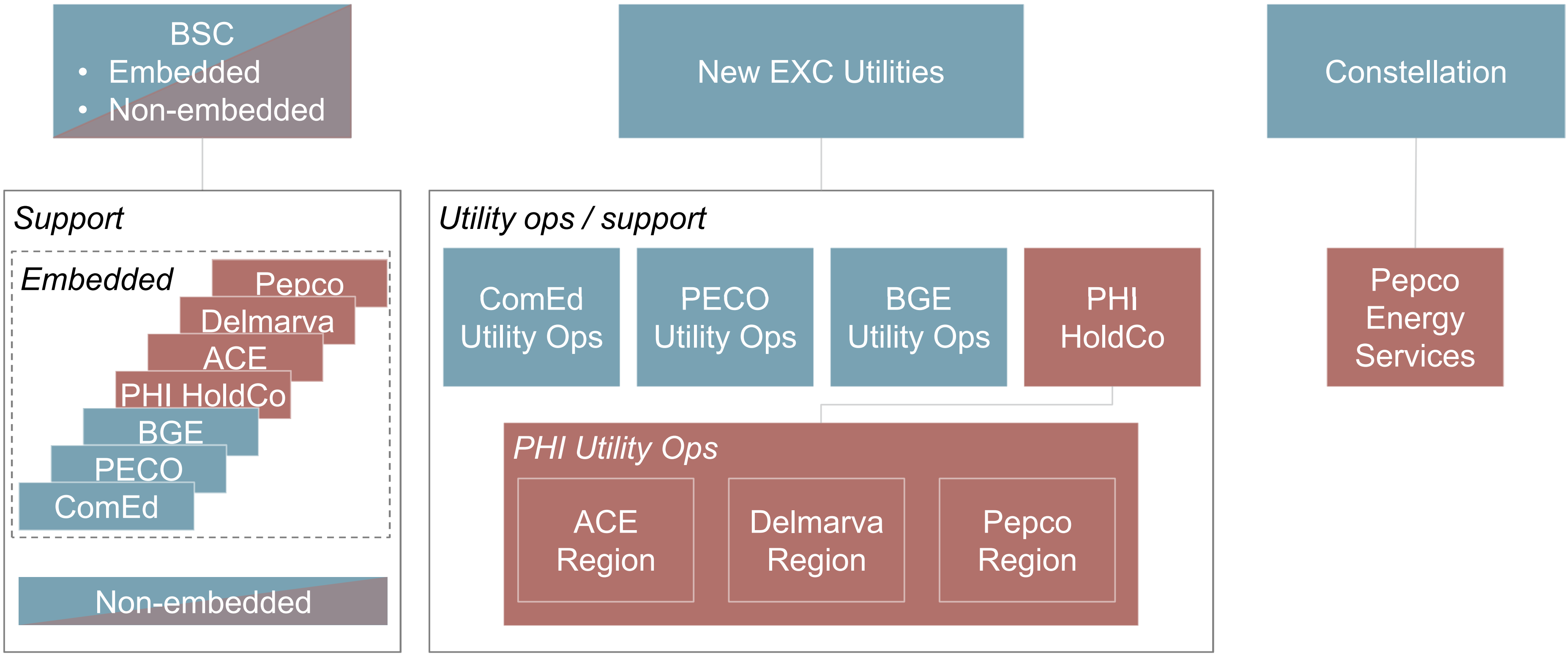
Net synergy estimates

June 2014

Exelon

Target operating model: Incorporate PHI as fourth utility

Non-embedded BSC to be shared, PES to be incorporated into Constellation



Note: "Embedded" represents employees and associated costs (including all departmental costs) that are part of an actual Operating Company (yet role up to BSC); "Non-embedded" represents employees and associated costs that are all shared service company costs

Synergy estimate: Approach overview

Outside-in and bottom-up estimates

Outside-in: Based on publicly available data[1] (FERC, 10-K, PHI external communications)

Scale[2] applied to utility ops/support[3] and BSC

Scale[2] applied to each function

Synergy estimate

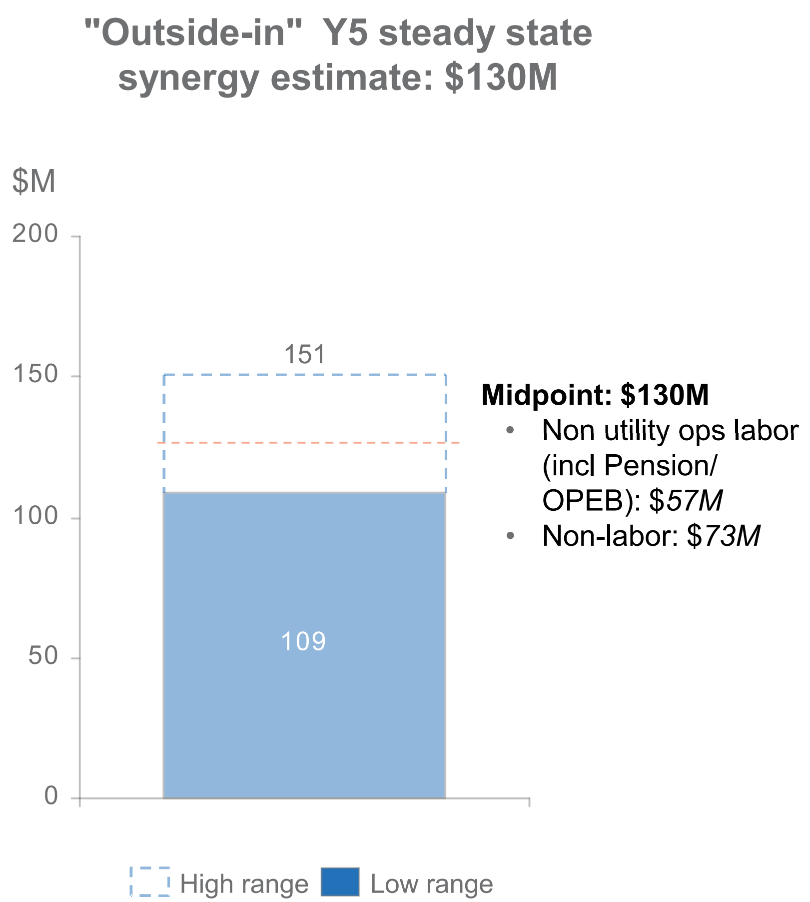
Bottom-up: Based on PHI data from due diligence

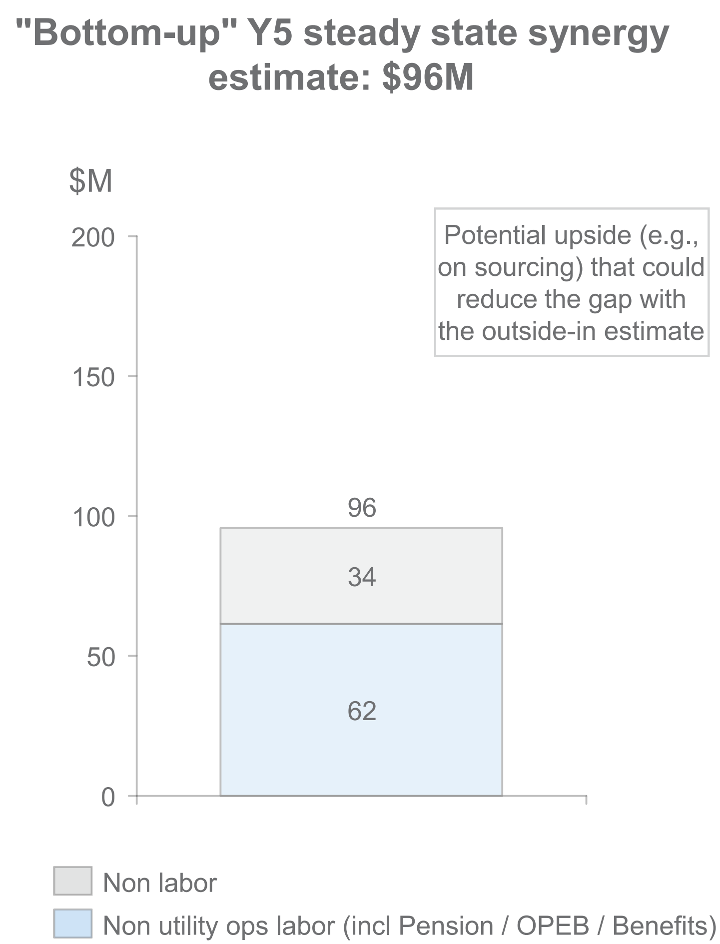
Bottom-up: Performance improvement and scale[3,4] applied to each subfunction

1. No internal information was provided by PHI 2. Based on BCG synergy database for power & gas 3. No labor synergies included for utility ops 4. Estimated by working team without any synergy target

Overview of O&M synergy estimates for EXC and PHI

$130M outside-in vs. $96M bottom-up





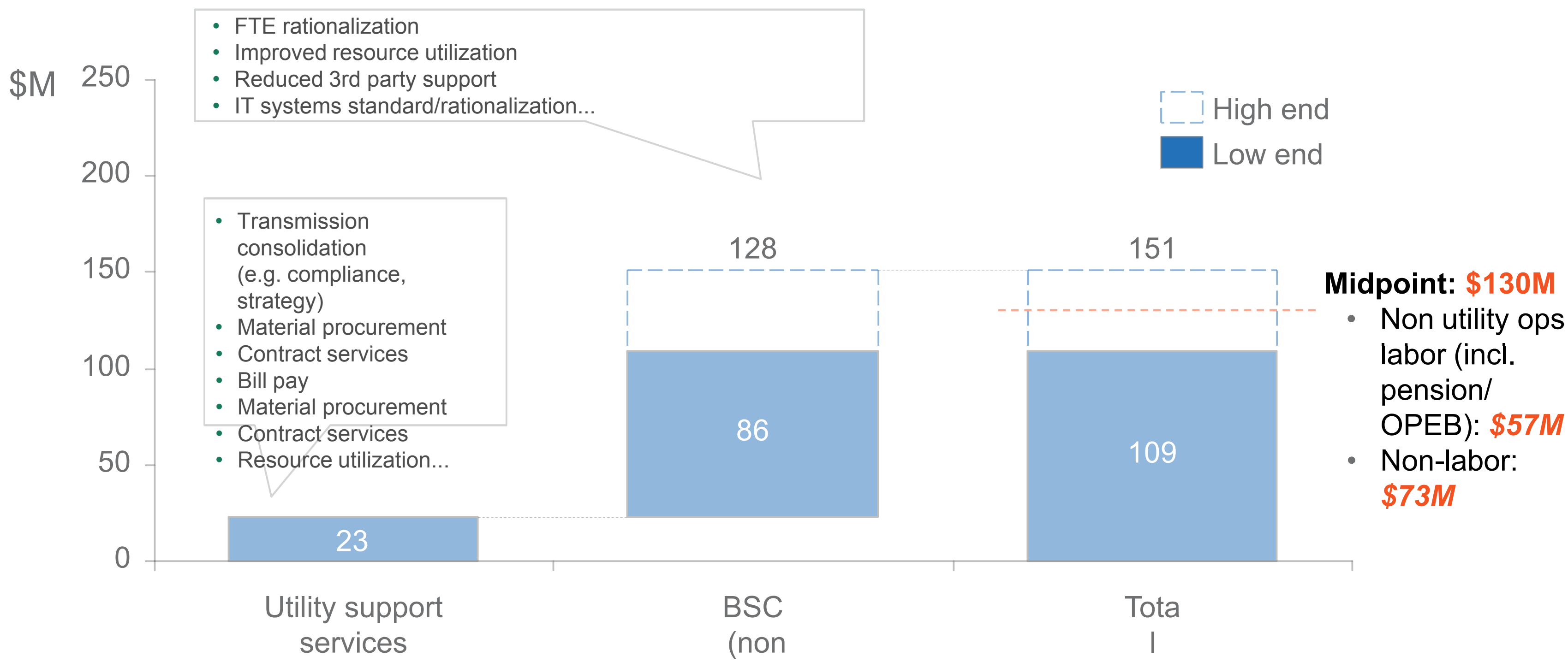
Recommend targeting $130M annual run rate synergy to capture unidentified upside to bottom-up estimate

Exelon.

Outside-in estimate of O&M synergies: ~$130M /yr in year 5

Estimate ranges from $109M to $151M

O&M synergy estimate for EXC and PHI – Year 5 steady state synergies



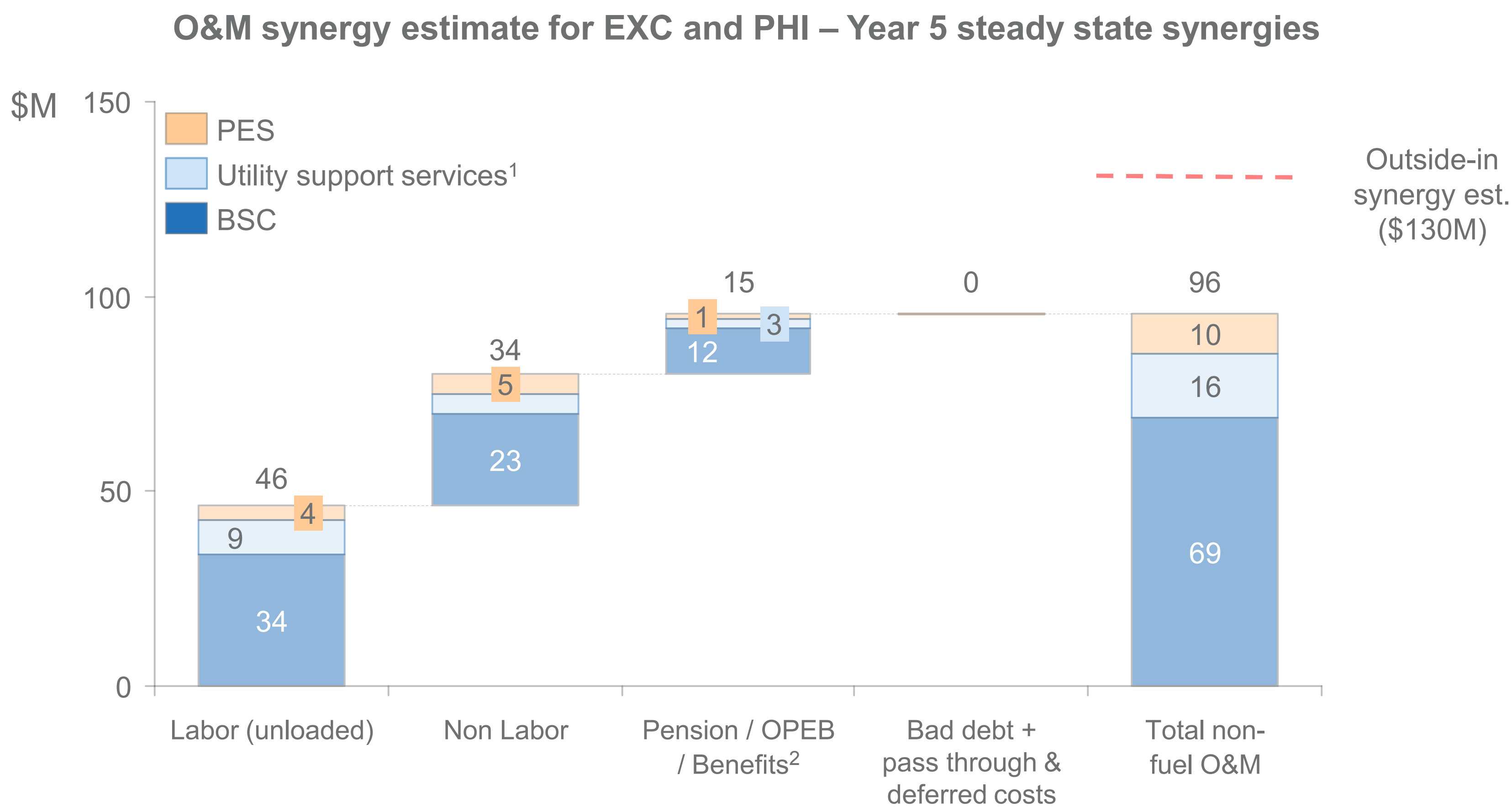
	Utility support services	BSC (non embedded)	Total
Combined EXC/PHI O&M baseline	$2,598M[1]	$1052M	$3650M
Synergy (% EXC /PHI O&M baseline)	~1%	8-12%	3-4%
PHI O&M baseline	$488M[1]	$213M	$701M
Synergy (% PHI baseline)	5%	40-60%	16-22%

Phase 1 baseline

1. Baseline includes utility ops

Bottom-up estimate of O&M synergies: ~$96M / yr in year 5

Breakdown by cost category



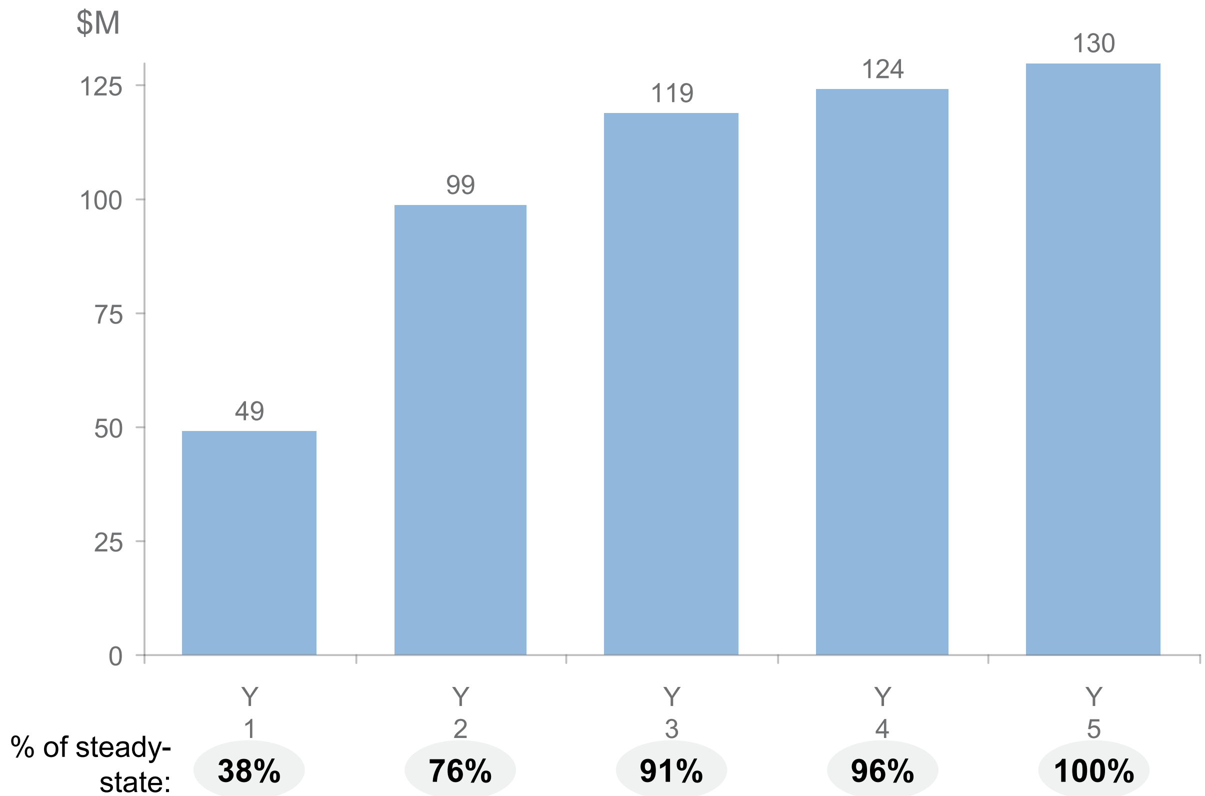
	Labor (unloaded)	Non Labor	Pension / OPEB / Benefits	Bad debt + pass through & deferred costs	Total non-fuel O&M
PHI O&M baseline ($M)	323	561	131	32 + 122	1,169
Synergy (% PHI baseline)	14%	6%	13%	0%	8%

1. Includes sourcing synergies 2. Pension / OPEB / Benefits synergy assumed to be 30% of unloaded labor benefit + SERP

Exelon

Glidepath of O&M synergies for EXC and PHI

Estimated synergy glidepath realization



Assumptions / data sources

BSC labor synergies interdependent with IT integration

- Year 1 FTE reduction: ~30% of target
- Year 2 FTE reduction : ~80% of target
- Years 3-5 FTE reduction: 100% of target

Utility support performance improvement[1] assumed to begin in Year 3 (2-yr commitment not to impact utility)

- Year 1 FTE reduction[1]: 0% of target
- Year 2 FTE reduction[1]: 0% of target
- Year 3 FTE reduction[1]: ~50% of target
- Year 4 FTE reduction[1]: ~75% of target
- Year 5 FTE reduction[1]: 100% of target

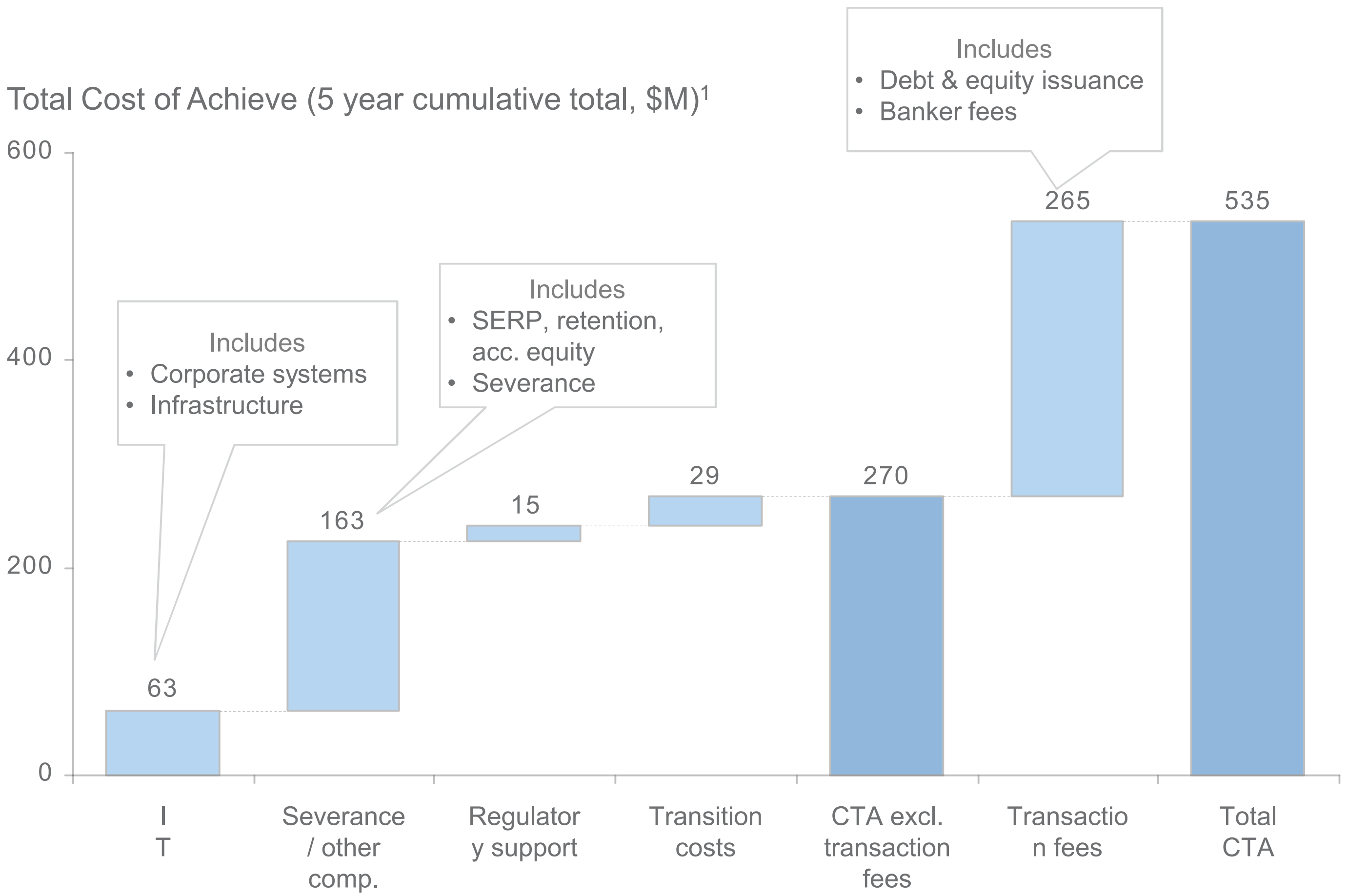
Assumes no reduction of utility ops FTEs

Non-labor synergies (primarily IT) driven by system decommissioning and not realized until Year 2

1. FTE reductions assumed on utility support (e.g., engineering)
Source: Glide path based on bottom-up glide path, grossed up to reach $130M outside-in target synergy

Exelon.

Preliminary estimate of transaction Cost To Achieve



1. Includes O&M (~94%) and Capex. (~6%)

Note: Estimates assume no attrition; Transaction costs estimated by EXC Corporate development

Exelon

Total of ~$250M in cumulative net synergy through Y5

Disaggregated view

Breakdown of Total Cumulative 5Y Savings (Synergies + CTA) by organization

5-year Cumulative Net Synergy (Synergies – CTA[1]) $522 - $270M = $252M

- **PECO** ~$16M
- **BGE** ~$26M
- **ComEd** ~$32M
- **PHI utility** ~$95M
  - Pepco MD ~$29M
  - Pepco DC ~$15M
  - Delmarva DE ~$18M
  - Delmarva MD ~$9M
  - ACE ~$23M
- **Combined non-utility** ~$84M

Total Regulated net synergy ~$168M — **~67%**

Total Non-regulated net synergy ~$84M — **~33%**

Regulated utilities | *Non-regulated*

1. Excluding transaction costs

Note: MMF calculated using Exelon's methodology (Gross revenue, Assets, Direct labor); Pepco and Delmarva synergies split across jurisdictions using ratio of customer counts

Source: FERC Form 1,2,60; Project PHI synergy estimates, BCG analysis

Appendix

Net synergies by PHI entity

($M)	Pre-close	Y1	Y2	Y3	Y4	Y5	Total
Pepco							
Synergies		8	12	16	18	20	74
CTA	(5)	(23)	(2)	0	0	0	(30)
Net synergies	(5)	(14)	9	16	18	20	44
DPL							
Synergies		5	7	10	11	12	46
CTA	(3)	(14)	(1)	0	0	0	(19)
Net synergies	(3)	(9)	6	10	11	12	27
ACE							
Synergies		4	6	9	10	11	40
CTA	(3)	(12)	(1)	0	0	0	(16)
Net synergies	(3)	(8)	5	9	10	11	23
PHI utilities							
Synergies		18	25	35	39	43	160
CTA	(11)	(49)	(5)	0	0	0	(65)
Net synergies	(11)	(31)	20	35	39	43	95
Cumulative	(11)	(42)	(22)	13	52	95	

Note: Pepco and Delmarva synergies split across jurisdictions using ratio of customer counts

Net synergies by PHI entity and jurisdiction

($M)	Pre-close	Y1	Y2	Y3	Y4	Y5	Total
Pepco MD							
Synergies	0	6	8	11	12	13	50
CTA	(3)	(15)	(2)	0	0	0	(20)
Net synergies	(3)	(10)	6	11	12	13	29
Pepco DC							
Synergies	0	3	4	5	6	7	24
CTA	(2)	(7)	(1)	0	0	0	(10)
Net synergies	(2)	(5)	3	5	6	7	14
Delmarva DE							
Synergies	0	4	5	7	8	8	32
CTA	(2)	(10)	(1)	0	0	0	(13)
Net synergies	(2)	(6)	4	7	8	8	19
Delmarva MD							
Synergies	0	2	2	3	4	4	15
CTA	(1)	(4)	0	0	0	0	(6)
Net synergies	(1)	(3)	2	3	4	4	9
ACE							
Synergies	0	4	6	9	10	11	40
CTA	(3)	(12)	(1)	0	0	0	(16)
Net synergies	(3)	(8)	5	9	10	11	23
PHI utilities							
Synergies		18	25	35	39	43	160
CTA	(11)	(49)	(5)	0	0	0	(65)
Net synergies	(11)	(31)	20	35	39	43	95
Cumulative	(11)	(42)	(22)	13	52	95	

Note: Pepco and Delmarva synergies split across jurisdictions using ratio of customer counts

Exelon.

C.V. Khouzami Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _____ (F)-3

EXELON BUSINESS SERVICES COMPANY

ASSOCIATE TRANSACTION PROCEDURES MANUAL

January 2014

Introduction

Exelon Business Services Company, LLC (BSC or Services Company) provides a variety of administrative, management and support services to Exelon Corporation and other Exelon system companies and business units (Client Companies). BSC is subject to the rules and regulations of the Federal Energy Regulatory Commission (FERC) pursuant to the Public Utility Holding Company Act of 2005 (PUHCA). In addition, each of the individual state regulated public utility companies have additional requirements related to associate transactions. Where applicable, these requirements have been incorporated into these Policies and Procedures.

Service Agreements and Work Orders

BSC has entered into a General Services Agreement or Service Agreement with Client Companies that is substantially similar to the General Services Agreement (GSA) attached hereto as Exhibit A. The Service Agreement sets forth in general terms the services to be performed by BSC directly or indirectly for Client Companies. BSC and each Client Company will prepare Work Orders, in the form of Service Level Arrangements (SLA), to specify the services to be performed by BSC for a Client Company. A sample SLA is attached hereto as Exhibit B. Additional documentation of work to be performed pursuant to SLAs may be used by the parties.

The purpose of the SLA is to establish service expectations between BSC and each Client Company. Each SLA will be reviewed and agreed upon on an as needed basis by authorized representatives of BSC and each Client Company. In conjunction with this review of SLAs, the allocation methods and ratios presented in Service Agreement Schedules 1 and 2, attached to the GSA, shall be reviewed and agreed upon by the parties.

An SLA typically contains the following elements:

1. Scope of Services
2. Service Level Expectations
3. Unit Cost Expectations
4. Performance Measures
5. Billing Process
6. Major Contingencies

Each SLA is approved by the individual(s) authorized to represent BSC and the Client Company related to the services to be provided.

BSC currently has three distinct processes related to SLAs.

1. The SLA process starts with the BSC Service Providers and the Client Companies representatives meeting to agree upon services to be provided over a future period of time, generally one to three years in duration. As BSC has been in operation for over ten years, most services have been defined and have been agreed to by the parties, and have been delivered efficiently and consistently to the Client Companies for a period of time. New service areas and services may be added in the future, or may be removed from the BSC services offerings. The SLA meetings focus on changes to service offerings and on refining the expected quantities to be consumed, as well as on improvements in providing the services or changes in the operational requirements around providing the services, including benchmarking and performance metrics, definition of responsibilities and other provisions between Service Providers and customer. The Service Providers are responsible for the over-all content in each SLA. Portions of the SLA template are reviewed by Legal. Early in the SLA process, the Legal review concentrates on the purpose, scope, governing agreement and certain terms and conditions. The Accounting review of SLA drafts takes place near the end of the process and concentrates on the billing approach and pricing table sections of the SLAs for compliance to the GSA and other PUHCA 2005 requirements. The billing / pricing sections of the SLAs are broken down into billing components for entry into the BSC Billing Systems. BSC Finance will check completed SLAs to make sure that changes are not made after Legal and Accounting review, or if such changes have been made, will obtain Legal and/or Accounting review of the changes. BSC Finance shall retain documentation evidencing the required SLA reviews in accordance with the record retention requirements. BSC works with the accounting and finance departments in the Client Companies to set-up the code block that the customer wants to be charged for the various services, and the level (company level, intermediate level, or department level) at which they wish to be billed. BSC Accounting works with BSC Finance to set up the appropriate accounting – cost capture pools on BSC's books. For most customers, the BSC Billing Systems journalize the actual monthly charges on the customer's books during the financial close.

2. The second process relates to change orders and other emergent work that appear after budgets have been locked down and the actual year has begun. Similar to the SLA process, BSC Accounting is involved to review any change orders for GSA and PUHCA compliance, and work with the customers' accounting departments to set-up and bill each item appropriately.

3. The third process relates to acquisitions or other new potential business for BSC. The BSC Service Providers interface with the M&A Team. The BSC support services costs are developed and include one-time and on-going support costs. Emergent work projects are set-up to collect one-time charges of adding the acquisition into BSC established services. BSC may prepare a proposal capturing integrated support service scope, schedule, budget, and assumptions. Linkage to an existing customer SLA is generally preferred, otherwise a new SLA may need to be created. For new SLA work, general terms and conditions are reviewed and signed by the controlling customer authorizing the work to proceed. BSC Finance and BSC Accounting gets involved in similar roles as mentioned above for the other processes.

Accounting Procedures

BSC will maintain processes which allow it to accumulate costs in Cost Centers and cost pools. Where possible, these costs will be charged out to Client Companies using direct charging methodologies, including time and materials and unit price (standard rate) basis. Cost Centers and cost pools collect resource costs for services and activities described in the SLA. This process supports the philosophy of billing costs to the Client Company on an appropriate basis. BSC will use this process to maintain accounting systems to record all of its costs.

Costs will be billed to Client Companies as work is performed and costs are incurred. When a service requested by a Client Company has not been previously specified, a new SLA may be created or the existing one revised. BSC Accounting is responsible for ensuring that all of the billing methodologies are consistent with the GSA.

Direct Costs are defined as those that can be identified as applicable to services performed for a single Client Company or group of Client Companies. Direct costs include the fully distributed cost of providing a particular service. The fully distributed costs include labor costs, labor related costs (such as pensions and benefit costs, and facility costs), IT costs, outside services where applicable, back office support costs of running BSC, and other non-labor costs such as materials and supplies. Direct Costs will be charged to the Client Company or Companies responsible for the activity.

BSC will use direct charging (e.g., standard costing or unit prices and/or time and materials) and cost allocations to bill Client Companies. Under a standard costing methodology, as product or service units are used by the Client Companies, the services are directly billed to Client Companies at standard rates. Standard rates are fully cost burdened billing unit rates used by a specific department for a specified service. These rates are established for a number of services offered by the Services Company including invoice processing cost per invoice, mainframe computing cost per CPU minute, and IT desktop support cost per desktop computer. In general, these standard rates are calculated by estimating the fully distributed cost of providing the service for the year divided by the expected number of units (selected as the unit of measurement) to be consumed by all associated customers.

Residual amounts or costs that cannot be directly billed using reasonable measures will remain in the Cost Center to be allocated to Client Companies on an appropriate basis.

Indirect Costs include those costs of a general nature such as general services, and other support costs which cannot be specifically identified to a specific client company or smaller group of companies or to a specific service and therefore must be allocated. An example of Indirect Costs includes most corporate governance services that benefit all companies, which consists of, for example, functions such as accounting, finance, executive, strategic planning, investor relations, government affairs and policy, and corporate communications. The allocation methods used to assign costs to Client Companies will be based on factors identified in Schedule 1 attached to the GSA.

Services and Service Level Arrangements (SLA)

Based on experience and discussions with the Client Companies, BSC has made available a list of service offerings that are defined in each SLA for the SLA period. Responsibilities of Client Companies for requesting services are defined in the SLAs. A listing of current SLAs can be found on the Exelon Intranet under Organizations – Business Services (under Popular Links).

Services provided will be reviewed on an as needed basis by BSC and Client Companies. SLAs will be prepared for on-going and for special services, which benefit one or more Client Companies. Examples of on-going services are payroll processing and IT desktop support. SLAs will be approved by the individual(s) authorized to represent BSC and each Client Company in accordance with Company Capital Approval Policies. In all cases, the authorized approvers representing BSC and the Client Company will be different individuals.

When a new service or project is identified, BSC Finance and BSC Accounting will determine whether a new SLA shall be used or whether the costs shall be captured in an existing SLA. One or more of the following criteria should be considered in determining the need for a new SLA:

1. No existing SLA uses the billing methodology that is needed for the new service project.

2. No existing SLA charges costs to the benefiting Client Company for the new service or project.

3. There is a specific regulatory requirement to allocate costs in a specific manner regardless of amount for the new project/service.

4. No existing SLA captures similar activity or services.

5. The total estimated annual cost of the new service or project is greater than $500,000.

SLA (Work Order) Monitoring and Control

BSC Finance and BSC Accounting are responsible for reviewing, monitoring and maintaining the SLA (Work Order) documentation. BSC Finance and BSC Accounting will also authorize new SLAs as necessary. A formal annual review will be required of all SLAs including a review by legal. As part of the annual review, inactive SLAs will be removed from the manual.

Allocation Factors Update and Revisions

Allocation factors will be based on cost drivers specifically applicable to the service provided. BSC Accounting will have the primary responsibility for ensuring that allocation factors are correct, accurate and current. BSC Finance and the Service Providers will assist in gathering required usage and other data to calculate the allocation factors.

BSC Accounting will be responsible for evaluating new allocation methodologies in coordination with the Legal Department. Adequate supporting documentation shall be obtained from all associate companies/business units for the raw data used in the allocation methodologies, and maintained in accordance with record retention requirements set forth in the Exelon record retention policy and schedule.

A list of current allocations will be filed annually with the FERC on FERC Form No. 60.

Time Reporting

All BSC employees, including executives, shall keep, within reasonable cost, time records supporting labor charged to separately identifiable goods and services performed for Client Companies. Time records are kept in a timekeeping management system or manually on time sheets.

Employees will record time weekly in a minimum of one-hour increments. Departments may elect to record employees' time in increments smaller than an hour to meet special needs.

The employee's immediate supervisor will review and approve time reports. The BSC Controller's organization will be the authorized delegate for the review of executive time records. Time records will be maintained in accordance with record retention requirements set forth in the Exelon record retention policy and schedule.

Billing and Review

BSC shall prepare a monthly invoice report detailing the services / products provided by Service Area for each Client Company. Payment shall be made by the Client Company by making remittance or by making (offsetting) accounting entries of the amount billed. Payment term (or appropriate offsetting accounting entries) is within thirty days of receipt.

Dispute Resolution Procedure

In the event there is a dispute between the Client Company and BSC regarding a billing methodology and/or amount, representatives of the Services and Client Companies will meet to discuss the issue. If a resolution cannot be reached among the Parties, the issue will be referred to each Party's executive management for final resolution.

Internal Audit Control

Internal Audit, under the direction of the General Auditor, will conduct periodic reviews of BSC's business processes and systems to ensure that the services provided are properly documented and charged to the Client Companies on an appropriate basis. Reviews shall be performed such that all major service areas are evaluated over time. Internal Audit will also conduct reviews of transactions and SLA charge methods to assess whether they comply with regulatory requirements. Internal Audit will also review the BSC allocations and corporate governance costs every two years.

Internal Audit maintains an independent role and has direct contact to Exelon's Audit Committee. Audit findings, recommendations and progress toward resolution of findings are reported to the Audit Committee and Senior Management as appropriate.

Budgeting

Budgeting for BSC will be a joint effort between it and other Client Companies. Renewal / revision of SLAs for the upcoming budget period will provide the basis for preparing budgets.

Evaluation

BSC will review its costs for competitiveness on a regular basis. Benchmarking and other measurement techniques will be used to the extent deemed appropriate by senior management. Additionally, BSC will also initiate a customer review process to gauge the value and quality of the services provided. Results will be shared with the Client Companies to allow them to evaluate cost effectiveness and assess alternate options.

EXHIBIT A

GENERAL SERVICES AGREEMENT

BETWEEN

EXELON BUSINESS SERVICES COMPANY

AND

EXELON CORPORATION; EXELON ENERGY DELIVERY COMPANY, LLC; COMMONWEALTH EDISON COMPANY; PECO ENERGY COMPANY; EXELON VENTURES COMPANY, LLC; EXELON GENERATION COMPANY, LLC; EXELON ENTERPRISES COMPANY, LLC; UNICOM INVESTMENT INC.; AND THE SUBSIDIARIES, AFFILIATES AND ASSOCIATES OF EACH LISTED ENTITY.

THIS AGREEMENT, made and entered into this 1st day of January, 2001, by and between the following Parties: EXELON BUSINESS SERVICES COMPANY ("Services Company"), EXELON CORPORATION; EXELON ENERGY DELIVERY COMPANY, LLC; COMMONWEALTH EDISON COMPANY; PECO ENERGY COMPANY; EXELON VENTURES COMPANY, LLC; EXELON GENERATION COMPANY, LLC; EXELON ENTERPRISES COMPANY, LLC; UNICOM INVESTMENT INC; AND THE SUBSIDIARIES, AFFILIATES AND ASSOCIATES OF EACH LISTED ENTITY (collectively, the "Client Companies");

WITNESSETH:

WHEREAS, Client Companies, including EXELON CORPORATION, which is registered under the terms of the Public Utility Holding Company Act of 1935 (the "Act") and its other subsidiaries, affiliates and associates desire to enter into this agreement providing for the performance by Services Company for the Client Companies of certain services as more particularly set forth herein;

WHEREAS, Services Company is organized, staffed and equipped and has filed with the Securities and Exchange Commission ("the SEC") to be a subsidiary service company under Section 13 of the Act to render to EXELON CORPORATION, and other subsidiaries, affiliates and associates of EXELON CORPORATION, certain services as herein provided; and

WHEREAS, to maximize efficiency, and to achieve merger related savings, the Client Companies desire to avail themselves of the advisory, professional, technical and other services of persons employed or to be retained by Services Company, and to compensate Services Company appropriately for such services;

NOW, THEREFORE, in consideration of these premises and of the mutual agreements set forth herein, the Parties agree as follows:

Section 1. Agreement to Provide Services

Services Company agrees to provide to Client Companies, upon the terms and conditions set forth herein, the services hereinafter referred to and described in Section 2, at such times, for such period and in such manner as Client Companies may from time to time request. Except with respect to "Corporate Governance Services" as defined in Section 7 hereof, the Services Company shall perform only those services as are requested by the Client Companies. Services Company will keep itself and its personnel available and competent to provide to Client Companies such services so long as it is authorized to do so by the appropriate federal and state regulatory agencies. In providing such services, Services Company may arrange, where it deems appropriate, for the services of such experts, consultants, advisers and other persons with necessary qualifications as are required for or pertinent to the provision of such services.

Section 2. Services to be Provided

The services expected to be provided by Services Company hereunder may, upon request by a Client Company, include the services as set out in Schedule 2, attached hereto and made a part hereof. In addition to those identified in Schedule 2, Services Company shall provide such additional general or special services, whether or not now contemplated, as Client Companies may request from time to time and Services Company determines it is able to provide.

Notwithstanding the foregoing paragraph, no change in the organization of the Services Company, the type and character of the companies to be serviced, the factors for allocating costs to associate companies, or in the broad general categories of services to be rendered subject to Section 13 of the Act, or any rule, regulation or order thereunder, shall be made unless and until the Services Company shall first have given the SEC written notice of the proposed change not less than 60 days prior to the proposed effectiveness of any such change. If, upon the receipt of any such notice, the SEC shall notify the Services Company within the 60-day period that a question exists as to whether the proposed change is consistent with the provisions of Section 13 of the Act, or of any rule, regulation or order thereunder, then the proposed change shall not become effective unless and until the Services Company shall have filed with the SEC an appropriate declaration regarding such proposed change and the SEC shall have permitted such declaration to become effective.

Section 3. Changes in Parties

New direct or indirect subsidiaries, affiliates and associates of EXELON CORPORATION, which may come into existence after the effective date of this Services Agreement, may become additional Client Companies of Services Company and subject to this General Services Agreement. In addition, entities which are, as of the effective date of this General Services Agreement, direct or indirect subsidiaries, affiliates and associates of EXELON CORPORATION, may thereafter leave the holding company system, in which case they will no longer be subject to this General Services Agreement. The parties hereto shall make such changes in the scope and character of the services to be provided and the method of assigning, distributing or allocating costs of such services as may become necessary to achieve a fair and equitable assignment, distribution, or allocation of Services Company costs among associate companies taking into account both the new subsidiaries and the subsidiaries which have left the holding company system, subject to the provisions of Section 2 above.

Section 4. Compensation of Services Company

As compensation for the services to be rendered hereunder, Client Companies listed in Attachment A hereto, as revised from time to time, shall pay to Services Company all costs which reasonably can be identified and related to particular services provided by Services Company for or on Client Company's behalf (except as may otherwise be permitted by the SEC). All other Client Companies and their affiliates and associates (see Attachment B) shall pay to Services Company charges for services that are to be no less than cost (except as may otherwise be permitted by the SEC), insofar as costs can reasonably be identified and related by Services Company to its performance of particular services for or on behalf of Client Company.

The services described herein or contemplated to be provided hereunder shall be directly assigned, distributed or allocated by activity, project, program, work order or other appropriate basis. The factors for assigning or allocating Services Company costs to Client Company, as well as to other associate companies, are set forth in Schedules 1 and 2 attached hereto. Attachments A and B and Schedules 1 and 2 are each expressly incorporated herein and made a part hereof.

Any charges to the Client Companies on account of use of capital shall reflect a reasonable and efficient capital structure.

Section 5. Securities and Exchange Commission Rules

It is the intent of the Parties that the determination of the costs as used in this Agreement shall be consistent with, and in compliance with, the rules and regulations of the SEC, as they now exist or hereafter may be modified by the Commission.

Section 6. Service Review

The parties shall review each service covered by this Agreement on an as needed basis, to assess the quality of the service and to determine the continued need therefor, and shall, subject to the provisions of Section 2 above, amend the scope of services, delete services entirely from this Agreement, and/or decline services which are not "Corporate Governance Services," as defined in Section 7 hereof, as they determine to be necessary or desirable.

Section 7. Corporate Governance Services.

Whether or not requested by the Client Companies, the Services Company may provide to all Client Companies, and Client Companies shall pay Services Company for, “Corporate Governance Services.” Corporate governance consists of those activities and services reasonably determined to be necessary for the lawful and effective management of Exelon System businesses. Corporate Governance Services may be supplied from functions such as accounting, finance, executive, strategic planning, legal, human resources/benefits, audit, corporate communications and public affairs, environmental, health and safety, government affairs and policy, and investor relations. Corporate Governance Services may include, but are not limited to, the following: planning and project evaluation; finance and treasury; accounting and analysis; risk management; tax; shareholder and investor relations; merger and acquisition services; strategic planning; diversity; employee and labor relations; HR planning and development; compensation and benefits; legal services in the areas of securities, PUHCA, employment, regulatory, contract, litigation and intellectual property laws; legal and administrative support to the Board of Directors; environmental compliance activities; ethics and compliance programs; management services for compliance with Federal laws, regulations and other policy requirements, including relationship management with the U.S. Congress and Federal agencies; corporate communications; branding; corporate events; charitable support; community relations and communications to local organizations; and communications to employees.

Section 8. Payment

Payment shall be by making remittance of the amount billed or by making appropriate accounting entries on the books of the companies involved. Invoices shall be prepared on a monthly basis for services provided hereunder.

Section 9. EXELON CORPORATION

Except as authorized by rule, regulation, or order of the SEC, nothing in this Agreement shall be read to permit EXELON CORPORATION, or any person employed by or acting for EXELON CORPORATION, to provide services for other Parties, or any companies associated with said Parties.

Section 10. Client Companies

Except as limited by law or order of the SEC, Client Companies, their subsidiaries, affiliates and associates may provide services described herein to other Client Companies, their subsidiaries, affiliates and associates on the same terms and conditions as set out for the Services Company.

Section 11. Effective Date and Termination

This Agreement is executed subject to the consent and approval of all applicable regulatory agencies, and if so approved in its entirety, shall be deemed effective from the date that the merger between PECO ENERGY COMPANY and UNICOM CORPORATION was consummated, and shall remain in effect from said date unless terminated by mutual agreement or by any Party giving at least 90 days' written notice to the other Parties prior to the beginning of any calendar year, each Party fully reserving the right to so terminate this Agreement.

This Agreement may also be terminated or modified to the extent that performance may conflict with any rule, regulation or order of the SEC adopted before or after the making of this Agreement. This Agreement shall be terminated with respect to any Client Company immediately upon such Client Company ceasing to be a member of the Exelon holding company system.

The Parties' obligations under this Agreement which by their nature are intended to continue beyond the termination or expiration of this Agreement shall survive such termination or expiration.

Section 12. Access to Records

Records will be maintained in accordance with 17 C.F.R. §257 and in any event no less than seven years following a transaction under this Agreement. The Client Company may request access to and inspect the accounts and records of the Services Company, provided that the scope of access and inspection is limited to accounts and records that are related to such transaction.

Section 13. Assignment

This Agreement and the rights hereunder may not be assigned without the mutual written consent of all Parties hereto.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed and attested by their authorized officers as of the day and year first above written.

EXELON BUSINESS SERVICES COMPANY

By /s/ Ruth Ann M. Gillis
Ruth Ann M. Gillis
Title: President

EXELON CORPORATION,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES, AFFILIATES AND ASSOCIATES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Senior Vice President and Treasurer

EXELON ENERGY DELIVERY COMPANY, LLC,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Vice President and Treasurer

COMMONWEALTH EDISON COMPANY,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Senior Vice President, Treasurer, and Chief Financial Officer

PECO ENERGY COMPANY,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Vice President, Treasurer, and Chief Financial Officer

EXELON VENTURES COMPANY LLC,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Vice President, Treasurer, and Chief Financial Officer

EXELON GENERATION COMPANY, LLC,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Vice President, Treasurer, and Chief Financial Officer

EXELON ENTERPRISES COMPANY, LLC,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Vice President and Treasurer

UNICOM INVESTMENT INC.,
ON BEHALF OF ITSELF AND ITS SUBSIDIARIES

By /s/ J. Barry Mitchell
J. Barry Mitchell
Title: Chairman, President and Chief Executive Officer,
Director, Vice President and Treasurer

Attachment A

Commonwealth Edison Company

Commonwealth Edison Of Indiana, Inc.

PECO Energy Company

Exelon Generation Company, LLC

Any subsidiary involved in directly providing goods,
construction or services to the foregoing companies

Attachment B

All other Client Companies and their affiliates and associates not referred to in Attachment A.

Service Agreement Schedule 1

<u>Allocation Ratios:</u>

General:

Direct charges shall be made so far as costs can be identified and related to the particular transactions involved without excessive effort or expense. Other elements of cost, including taxes, interest, other overhead, and compensation for the use of capital procured by the issuance of capital stock, shall be fairly and equitably allocated using the ratios set forth below.

Revenue Related Ratios:

Revenues
Sales - Units sold and/or transported
Number of Customers

Expenditure Related Ratios:

Total Expenditures
Operations and Maintenance Expenditures
Capital Expenditures
Service Company Billings
Service Company SLA Billings (Non-governance)

Labor/Payroll Related Ratios:

Labor / Payroll
Number of Employees

Units Related Ratios:

Usage	(for example: CPU's, square feet , number of vendor invoice payments)
Consumption	(for example: tons of coal, gallons of oil, MMBTU's)
Capacity	(for example: nameplate generating capacity, peak load, gas throughput)
Other units related	

Assets Related Ratios:

Total Assets
Current Assets
Gross Plant

Composite Ratios:

Total Average Assets and 12 months ended Gross Payroll
Modified Massachusetts Formula

Other composite ratios

Service Agreement Schedule 2

Services Including But Not Limited To:

General:

Direct charges shall be made so far as costs can be identified and related to the particular transactions involved without excessive effort or expense. Other elements of cost, including taxes, interest, other overhead, and compensation for the use of capital procured by the issuance of capital stock, shall be fairly and equitably allocated using the ratios set forth in Schedule 1.

Administrative & management services including but not limited to:

- accounting
  - bookkeeping
  - billing
  - accounts receivable
  - accounts payable
  - financial reporting
- audit
- claims
- communications
- customer operations
- customer services
- executive
- finance
- insurance
- information systems services
- investment advisory services
- legal
- library
- record keeping
- secretarial & other general office support
- real estate management
- security holder services
- tax
- treasury
- other administration & management services

Expected allocation ratios: Revenue Related, Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, Composite

Personnel services including but not limited to:

recruiting
training & evaluation services
payroll processing
employee benefits administration & processing
labor negotiations & management
other personnel services

Expected allocation ratios: Labor/Payroll Related, Units Related, Composite

Purchasing services including but not limited to:

preparation & analysis of product specifications
requests for proposals & similar solicitations
vendor & vendor-product evaluations
purchase order processing
receipt, handling, warehousing and disbursement of purchased items contract negotiation & administration
inventory management & disbursement
other purchasing services

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, Composite

Facilities management services including but not limited to:

office space
warehouse & storage space
transportation facilities (including dock & port, rail sidings and truck facilities)
repair facilities
manufacturing & production facilities
fixtures, office furniture & equipment

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Composite

Computer services including but not limited to:

computer equipment & networks
peripheral devices
storage media
software

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, Composite

Communications services including but not limited to:

communications equipment
audio & video equipment
radio equipment
telecommunications equipment & networks
transmission & switching capability

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, Composite

Machinery management services including but not limited to:

equipment
tools
parts & supplies

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Composite

Vehicle management services including but not limited to:

automobiles
trucks
vans
trailers
railcars
marine vessels
aircraft
transport equipment
material handling equipment
construction equipment

Expected allocation ratios: Expenditure Related, Labor/Payroll Related, Units Related, Composite

Operational services including but not limited to:

drafting & technical specification, development & evaluation
consulting
engineering
environmental
safety
nuclear
construction

design
resource planning
economic & strategic analysis
research
testing
training
customer solicitation
support & other marketing related services
public & governmental relations
other operational services

Expected allocation ratios: Revenue Related, Expenditure Related, Labor/Payroll Related, Units Related, Assets Related, Composite

Exhibit B

Service Level Arrangement

Arrangement between _________________ Services Department and [Client Company]

Purpose

Governing Agreement

Term of Service

Scope of Services

Scope of Services

Service Responsibility Matrix

Services, Tasks		

Billing Approach

Pricing Table:

Service, Product # and Description	**Billing Approach, Basis, Service Owner**

Performance Metrics & Performance Reporting

Signatures	
Exelon Business Services Company, LLC _______________ _____ Signature Date	Name (Client) Title _______________ _____ Signature Date

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ________(G)

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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY
OF
SUSAN F. TIERNEY, Ph.D.
FORMAL CASE NO.____

I. INTRODUCTION AND PURPOSE

1. Q. Please state your full name and business address.

A. My name is Susan Fallows Tierney. I am employed at Analysis Group, Inc., 111 Huntington Avenue, 10th Floor, Boston, Massachusetts, 02199.

2. Q. What is your position?

A. I am one of Analysis Group's Senior Advisors.

3. Q. What are your duties as a senior advisor at Analysis Group?

A. I am a lead consultant for many of our engagements with businesses, government agencies, non-governmental organizations, and other clients on matters relating to the electric and natural gas industries. For these projects, I supervise and work with teams of consultants with training in economics, business and finance, public policy and planning, math and computer science, and other fields.

4. Q. Please summarize your educational background and training.

A. I hold a Ph.D. in regional planning (1980) and a Masters in Regional Planning (1976), both from Cornell University. I was an assistant professor for

3.5 years at the University of California at Irvine, and have taught on a part-time basis at the Massachusetts Institute of Technology. I have lectured at numerous universities, including Harvard University, Yale University, MIT, New York University, Tufts University, the University of Pennsylvania, the University of Michigan, and others.

5. Q. Please describe your professional experience.

A. I have been involved in issues related to public utilities, ratemaking and regulation, and energy and environmental economics and policy for nearly 30 years. During this period, I have worked on electric and gas industry issues as a utility regulator and energy/environmental policy maker, educator, consultant, and expert witness. For more than 15 years, I have been a consultant and advisor on a variety of economic and policy issues in the energy sector. Prior to joining Analysis Group in July 2003, I was a consultant at Lexecon, Inc., and its predecessor, the Economics Resource Group, Inc.

Before that, I served in senior state and federal policy and regulatory positions for 13 years. I was the Assistant Secretary for Policy at the U.S. Department of Energy from 1993 through mid-1995. I held senior positions in the Massachusetts state government as Secretary of Environmental Affairs (1991-1993); Commissioner of the Department of Public Utilities (1988-1991); Executive Director of the Energy Facilities Siting Council (during the mid-1980s); and Senior Economist for the Executive Office of Energy Resources.

I currently sit on several non-profit boards and commissions, including serving as chair of the External Advisory Board of the National Renewable Energy Laboratory ("NREL"), chair of the Board of the ClimateWorks Foundation, and a director of World Resources Institute, the Alliance to Save Energy, and the Energy Foundation. I co-chair the NAESB Gas-Electric Harmonization Committee, am a member of the National Academy of Sciences panel on shale gas risk, and am co-lead author of the energy chapter of the National Climate Assessment. I am a member of the Bipartisan Policy Center's Energy Project, and the Environmental Advisory Council of the New York Independent System Operator. Previously, I served on the U.S. Secretary of Energy Advisory Board (and its Shale Gas Subcommittee), was a director of several companies (including EnerNOC, Inc.; Evergreen Solar; and Ze-gen, Inc), and served on the boards of several non-governmental organizations. On several occasions, I have served on technical review panels conducting peer reviews of DOE's national labs, including NREL's and the Energy Division of the Lawrence Berkeley National Laboratory ("LBNL"). I served as chair of the Policy Subgroup of the National Petroleum Council's study of the North American natural gas and oil resource base; chair of the Massachusetts Ocean Advisory Commission; co-chair of the National Commission on Energy Policy; a director of the Electric Power Research Institute; chair of the Electricity Innovation Institute's Board of Directors; a representative to committees of the North American Electric Reliability Council; a member of the National Academy of Sciences' Committee on Enhancing the Robustness and Resilience of Electrical Transmission and

Distribution in the United States to Terrorist Attack; and a member of the U.S. Secretary of Energy's Electric Reliability Task Force. My complete vita is attached as JOINT APPLICANTS (G)-1.

6. Q. Have you previously submitted testimony before state or federal bodies?

A. Yes. I have testified before utility regulatory agencies in many states, the Federal Energy Regulatory Commission, the U.S. Congress, several state legislatures, arbitration panels, and federal and state courts.

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

A. I have been asked by Exelon Corporation ("Exelon"), Pepco Holdings Inc. ("PHI"), and Potomac Electric Power Company ("Pepco") (together, the "Applicants") to provide testimony on the direct and indirect economic and policy benefits of their proposed merger (the "Merger"). At the request of the Applicants, I have reviewed the Application and have familiarized myself with the various commitments (the "Regulatory Commitments") the Applicants are making to the customers of Pepco and to the District of Columbia in support of the request for the District of Columbia Public Service Commission's ("Commission") approval of the proposed Merger. The Regulatory Commitments are enumerated in the Application. They are also described in more detail in the testimonies of the Applicants' witnesses.

8. Q. What are your overall conclusions about the economic benefits of the proposed Merger for Pepco customers and the economy of the District of Columbia?

A. As I describe in detail in my testimony below, the Merger offers many benefits to Pepco's District of Columbia customers and to the District of Columbia, itself, as a result of the Regulatory Commitments, which I summarize in Table SFT-1, below.

In terms of basic monetary commitments, Exelon pledges an amount of $100 million for the direct benefit of retail customers of all of the PHI companies, which is apportioned to the various companies based on the number of customers of each distribution company. In the District of Columbia, this Customer Investment Fund amounts to $14 million, or $52.95 per customer.

Additionally, Exelon has strengthened Pepco's commitments to reliability improvements for customers by pledging to be held financially accountable for the achievement of enhanced reliability performance goals ("Enhanced Reliability Commitments") by 2020.[1] Combined with reliability improvement projects already announced by PHI and underway (including the undergrounding project in Washington, D.C.), I calculate that the direct value to Pepco's retail customers of experiencing fewer and shorter service outages is $75.9 million.

1 See the direct testimonies of Mr. Mark Alden ((Exelon's Vice President for Utilities Oversight) and Mr. Carim Khouzami (Exelon's Chief Integration Officer) for a description of Exelon's proposal to back-up its enhanced reliability commitments with a performance guaranty that will trigger a financial penalty if performance-improvement goals are not achieved.

Table SFT-1
Summary of Overall Benefits of the Proposed Merger

Benefits to:	Type of Benefits	Estimated Economic Benefits Associated with Merger's Regulatory Commitments to the District of Columbia:
Pepco customers	Tangible, quantifiable benefits	**Customer Investment Fund:** ▪ The Applicants will provide $14 million, which equates to $52.95 per distribution customer of Pepco. **Enhanced Reliability Commitments:** ▪ Pepco will continue implementation of its District of Columbia undergrounding project as currently planned and, moreover, to improve upon its reliability targets, with financial penalties in the event that Pepco does not achieve increased performance levels for system reliability. These benefits amount to $75.9 million in direct economic benefits to customers.

	Other unquantified benefits and commitments	**Rates and Costs:**
		▪ Pepco customers receive the benefit of synergy savings to Pepco in the future if/when rates are reset (assuming that such relies on a test year covering at least part of the first five years after the Merger is consummated).
		▪ Reliability and customer-service benefits from sharing best practices among the merged company's distribution companies.
		Regulatory Supervision and Governance:
		▪ Pepco and its parent submit to the jurisdiction of the Public Service Commission of the District of Columbia for all matters related to the Merger and the enforcement of these commitments, as well as to all matters relating to affiliate transactions among the various companies.
		▪ Customers of Pepco will be protected from business and financial risk exposures associated with its parent's unregulated operations and activities through appropriate ring-fencing provisions, which include a commitment to the following arrangements for at least 5 years following completion of the Merger:
		  ▪ Pepco will maintain its separate existence and its separate franchises and privileges, as well as maintaining separate books and records and will commit that all books and records pertaining to its regulated operations in the District of Columbia will be available for inspection and examination by the Commission.
		  ▪ Pepco will maintain separate debt so that it will not be responsible for the debts of affiliated companies and preferred stock, if any, and will maintain its own corporate and debt credit rating as well as ratings for long-term debt and preferred stock.
		  ▪ Pepco will maintain at least a common equity ratio consistent with the common equity ratios accepted in recent rate cases by the Commission for Pepco.
		Low Income Assistance:
		▪ Pepco commits to maintain and promote programs that provide assistance to low-income customers.
		Merger-Related Costs:
		▪ Pepco will not seek to recover any acquisition premium or transaction costs in rates, nor will it incur or assume any debt directly related to the Merger.

District of Columbia economy	Tangible, quantifiable benefits	**Direct, indirect and induced effects of the combined Customer Investment Fund and Enhanced Reliability Commitments on the economy of the District of Columbia:** ▪ 907 – 1,281 new jobs in the District of Columbia. ▪ Approximately $95.4 million – $133.6 million in overall economic value to the District of Columbia. ▪ Approximately $3.6 million – $5.5 million in incremental tax benefits to the District of Columbia.
	Other unquantified benefits and commitments	**Support for the District of Columbia's economic goals:** ▪ Continued local presence of a major corporation with strong community, economic and other goals: The Applicants will maintain the headquarters of Pepco's system, with appropriate levels of senior management, in the District of Columbia. The Exelon Board, Committee or Subsidiary Board meetings or Leadership meetings will be periodically held in the District of Columbia. ▪ Continued commitment to existing supplier diversity programs. **Support for community and charitable organizations in the District of Columbia**: ▪ Approximately $16 million over 10 years. In 2013, contributions amounted to about $1.6 million. **Employment benefits:** ▪ Commitment to honor all existing collective bargaining agreements. ▪ Commitment that, for at least 2 years following consummation of the Merger, there will not be a net reduction, due to involuntary attrition as a result of the Merger integration process, in the employment levels at Pepco and shall provide current and former employees at Pepco with compensation and benefits that are at least as favorable in the aggregate as the compensation and benefits provided to the employees immediately before the Merger Agreement.

Those two sets of tangible, quantifiable benefits to Pepco customers – the District-specific Customer Investment Fund and the Enhanced Reliability Commitments – provide not only direct and traceable financial benefits to Pepco's retail customers totaling $89.9 million in value, but also other, larger economic benefits to the District of Columbia's economy. Taking those two monetary commitments into account, I estimate conservatively that the Applicants' Regulatory Commitments introduce the following ranges of quantifiable economic benefits to the District of Columbia's economy (with the ranges based on different assumptions about how the Commission will decide to use the money in the Customer Investment Fund)[2]:

- 907 – 1,281 new jobs,
- $95.4 million – $133.6 million in overall economic value to the District of Columbia[3], and
- $3.6 million – $5.5 million in incremental tax revenues to the District of Columbia.

I say that those quantitative estimates of Merger benefits are conservative because they do not include several of the Applicants' other Regulatory Commitments that provide value to customers and the District of Columbia. For customers of Pepco, these other benefits (as shown on Table SFT-1) include[4]: the expectation that retail customers will receive the benefit of synergy savings at the next time that rates are reset (assuming that a test year is within the first five years after the Merger is consummated); the benefits associated with the Applicants'

[2] The estimates of economic impacts on the District reflect different scenarios and assumptions regarding potential uses of the Customer Investment Fund in the District of Columbia, including for (a) a one-time credit of $52.95 on each customer's electricity bill; (b) use of the funds for low-income customer bill assistance; and (c) energy efficiency programs. See further explanation in my testimony below.

[3] As described later in my testimony, overall economic value to the District is presented as economic "value added" in the macroeconomic model I use to calculate these benefits. This "value added" is separate from the direct value of the commitments that Pepco customers would receive.

[4] These other Merger commitments are described in detail in the testimony of Mr. Khouzami.

submitting to the jurisdiction of the Commission, their proposed "ring-fencing" provisions, the Applicants' commitment to retain low-income assistance programs, and the Applicants' commitment to not seek recovery of merger-related costs or any debt directly related to the Merger. For the District of Columbia, these other unquantified but nonetheless real benefits include Exelon's commitment to maintain Pepco's contributions to community and charitable organizations (which amounted to approximately $1.6 million in 2013); to maintain a "local presence" in the District of Columbia; to maintain existing supplier diversity programs; to honor all existing collective bargaining agreement and other labor-related actions during at least the first two years following consummation of the Merger. These various Regulatory Commitments provide real benefits to the communities in which Pepco conducts its utility service, but I have not quantified their monetary value here in my analysis.

9. Q. In reaching these conclusions and in your testimony more generally, did you focus on all aspects of the Merger?

A. No. I focused on the two elements of the package of Regulatory Commitments to the District of Columbia that the Applicants are making as part of their proposed Merger and that provide tangible, quantifiable benefits to Pepco customers. These Regulatory Commitments include those investments, expenditures, and other activities devoted to Pepco customers and the District of Columbia and pledged by Exelon and PHI as part of the Merger package. The Application provides substantial information on these commitments which has allowed me to provide quantitative estimates and qualitative assessments of the Merger's overall benefits in the District of Columbia.

10. Q. How is your testimony organized?

A. After this introductory section, I describe my analysis in Section II and provide a detailed discussion of my analytic framework, my analysis of benefits to Pepco customers, and my assessment of economic and policy benefits to the District of Columbia. In Section III, I briefly summarize my conclusions about the benefits to Pepco customers and to the District of Columbia.

11. Q. Before describing your analysis, please comment on whether there are aspects of the District of Columbia's electric reliability and economic-development policy goals that you found to be important as you reviewed the economic benefits of the proposed Merger.

A. I noted the attention of public officials and regulators on ensuring gradual improvement in Pepco's reliability performance for the benefit of customers. For example, I am aware that the Commission adopted new quality of service standards in 2011.[5] Also, I understand that after the 2012 Derecho and other extreme weather events, the Commission reviewed Pepco's planning and preparation prior to the storms,[6] and that the Power Line Undergrounding Task

[5] "District Regulators Tighten Reliability Standards for Pepco," Public Service Commission of the District of Columbia, Press Release, July 8, 2011, available at: http://205.177.170.130/pdf_files/pressreleases/DRTRS_for_Pepco.pdf.

[6] "District Regulators Require Answers about Pepco's Performance," Public Service Commission of the District of Columbia, Press Release, July 5, 2012, available at: http://205.177.170.130/pdf_files/pressreleases/PR_PSC_Pepco_Performance.pdf.

Force further investigated reliability issues in the District of Columbia.[7] Additionally, I am aware of the 2014 legislation authorizing revenue bonds to help support undergrounding of parts of the Pepco distribution system. [8]

I note further that Pepco has already made significant progress to accomplish reliability improvements, as reflected in its recent reliability metrics.[9] I also recognized that the Commission has sought to balance the level and speed of reliability improvements with customer rate impacts. I conducted my assessment of the Merger with these electric-reliability and ratemaking goals in mind, and noted that the Merger builds upon the sound policy guidance expressed by the Commission while strengthening the Company's ability to reach the targeted improvements through the institutional and financial commitments accompanying the Merger.

[7] "This summer's [2012] severe weather events resulted in multi-day power outages. Mayor Gray has voiced his strong concern about the repeated outages and said the District needed a 'game changer' to prevent the hardship caused by such power failures in the future. To that end, he has appointed top administrators, financial officials, utility industry leaders and residents of heavily impacted areas to study the feasibility of burying power lines underground, potential associated costs, and other alternatives for short-term solutions." Source: "Mayor Vincent C. Gray to Hold First Meeting of the Power Line Undergrounding Task Force," Executive Office of the Mayor, Press Release, August 22, 2012, available at: http://205.177.170.130/pdf_files/pressreleases/Undergrounding_Task_Force_Meeting_Advisory.pdf.

[8] Please note that one of the commitments in the preliminary Merger Agreements was that Pepco would continue to implement the undergrounding project as planned.

[9] I have reviewed the testimony of Mr. Alden and Mr. William Gausman (PHI's Senior Vice President for Strategic Initiatives).

II. ANALYSIS OF THE ECONOMIC BENEFITS OF THE PROPOSED MERGER'S REGULATORY COMMITMENTS

A. Overview

12. Q. Please provide an overview of your analysis of the benefits of the proposed Merger.

A. As stated previously, I focused my review and assessment on the Applicants' Regulatory Commitments in the District of Columbia. I performed two types of quantitative analyses: one focused specifically on the measurable and direct benefits that will flow to the District of Columbia *customers* of Pepco as a result of two elements of the Regulatory Commitments (i.e., the Customer Investment Fund and the Enhanced Reliability Commitments); in the other, I calculated economic impacts of these two regulatory commitments on the *overall economy of the District of Columbia* in which Pepco provides utility service. As part of the latter analysis, I utilized IMPLAN, a commonly used proprietary modeling tool, to quantify these effects.[10] Specifically, I estimated the direct, indirect and induced impacts of the relevant Regulatory Commitments on employment, income, and the creation of net economic value ("value added") in the District of Columbia.

In addition, I have noted other elements of the Regulatory Commitments that provide intangible but still important benefits to the customers of Pepco and to the District of Columbia as a result of an approved Merger.

13. Q. Please describe IMPLAN in general terms.

[10] IMPLAN (the "IMpact analysis for PLANning") model, available at http://implan.com.

A. The IMPLAN model is a social accounting/input-output model that attempts to replicate the structure and functioning of a specific economy. The model allows one to investigate various interactions in a defined economy (in this case, the District of Columbia) and to calculate various economic impacts in that economy when a new activity introduces a change in the conditions in the economy. A typical change could be an investment in a new facility being built in the District, or a new government program to support an economic development strategy. IMPLAN is widely used by government agencies, companies, academics, and others to evaluate the economic impacts of such different activities. JOINT APPLICANTS (G)-2 provides a sampling of applications of IMPLAN in analyses conducted for agencies of the District of Columbia.

In this particular instance, the changes in economic activity that are occurring as part of the Applicants' Regulatory Commitments are: (a) the monetary payment associated with the new "Customer Investment Fund," supplied by shareholders of one utility (e.g., Exelon) as part of its acquisition of another utility (e.g., PHI) and to be used for the benefit of customers of the acquired utility; and (b) the economic value that customers will experience associated with their being exposed to fewer and shorter electric service outages (i.e., the Enhanced Reliability Commitments).

IMPLAN relies on a detailed system of accounting for relationships among different parts of an economy, and employs state-specific national economic data for the relevant region. The model provides estimates of impacts such as new income and employment, "value added" effects (the net economic value to the economy after taking into account the input costs), and the impacts on state and local taxes.

While the model is focused on economic activity inside an economy, the model tracks the movement of money and people into and out of that economy. For example, IMPLAN tracks the effects of money injected into an economy (e.g., the provision of funding for the new Customer Investment Fund in the District of Columbia) from an outside source, with various economic interactions and dollars flowing from that new activity. At the same time, activities that occur outside of the economy (such as the local utility's purchases of new electric distribution equipment or very-efficient lighting devices manufactured or produced outside of the District of Columbia) show up in the model's accounts in the form of money or people exiting the economy. The model thus examines inflows, outflows, and interactions within the economy under study.

In JOINT APPLICANTS (G)-3, I have provided more information on the IMPLAN model and certain definitions of terms it uses.

14. Q. What are the key concepts and IMPLAN terms that you use in your analysis?

A. As described in more technical terms in JOINT APPLICANTS (G)-3, I track several core impacts of new economic activity associated with the two elements of the Regulatory Commitments that I have quantified (the Customer Investment Fund and the value of Enhanced Reliability Commitments to customers):

- *Employment effects* (the total number of jobs created); and
- *"Value-added" effects* (the total economic value added to the economy, which reflects the gross economic output of the area less the cost of the inputs).

There are various ways in which the new activity creates impacts, each of which is separately tracked by the model:

- *Direct effects* (the initial set of inputs that are being introduced into the economy, such as dollars associated with the Customer Investment Fund, or the value (or avoided costs) to customers of experiencing shorter and/or fewer electric outages as a result of Enhanced Reliability Commitments to improve electric distribution system reliability);
- *Indirect effects* (the new demand for local goods, services and jobs as a result of the new activity, such as use of the Customer Investment Fund to purchase goods and services related to energy efficiency, or the indirect effects of having shorter/fewer outages); and
- *Induced effects* (the increased spending of workers resulting from income earned from direct and indirect economic activity, or customers' purchases as a result of having received a credit on their utility bill).

Finally, I also track the District of Columbia taxes that flow from these direct, indirect and induced effects.

15. Q. When you used IMPLAN to model the economic impacts of the Applicants' Regulatory Commitments in the District of Columbia, how did you frame your analysis?

A. I made appropriately different assumptions for modeling the economic impacts of the two types of Regulatory Commitments I analyzed quantitatively.

16. Q. Please explain your core assumptions about modeling the economic impacts of the Customer Investment Fund.

A. I assumed that the Customer Investment Fund would operate as a one-time infusion of dollars in 2015 leading to some potential economic activity as directed by the Commission. The direct infusion of money flowing into the District of Columbia's economy amounts to $14 million, provided by Exelon for the benefit of Pepco customers through the Customer Investment Fund. Depending upon the Commission's decisions about how to use that fund, the combined direct, indirect and induced impacts of that initial investment amount could vary, and my analysis (described further below) provides illustrations of the types of macroeconomic effects that could occur through different uses of the fund.

17. Q. Regarding the economic impacts of the Enhanced Reliability Commitments, how did you frame your analysis through IMPLAN?

A. Based on the expectation that the Enhanced Reliability Commitments will cause customers to experience fewer outages and service disruptions of shorter length, and that the fact that the Enhanced Reliability Commitments will enable avoidance of cost impacts (i.e., out-of-pocket costs and/or lost opportunity costs) or other damages associated with outages, I then used estimates of those avoided costs as inputs to IMPLAN in order to calculate the economic value to the economy of the District of Columbia that will result from shorter/less-frequent electric distribution-system outages.

I made a number of assumptions about the ways in which the Regulatory Commitments would show up in economic activity in the District of Columbia's economy; I list these core assumptions in JOINT APPLICANTS (G)-4. I provide the results of the basic analyses in the description of my assessment, below.

18. Q. Does IMPLAN provide an estimate of the impacts of the Regulatory Commitments on Pepco customers *per se*?

A. No. The IMPLAN analysis focuses on the effects on the District of Columbia economy at large, and does not track how those would specifically affect the customers of Pepco. That is why I chose to specifically discuss those singular impacts on Pepco customers as a separate piece of analysis and in a separate portion of my testimony, below.

B. Assessment of the Tangible and Intangible Impacts of the Regulatory Commitments on Pepco Customers

19. Q. Please describe the ways that the customers of Pepco will be directly affected by the proposed Merger.

A. Several aspects of the proposed Merger will result in direct, tangible, and measurable benefits to Pepco customers. Together, these amount to approximately $89.9 million in direct benefits that will flow to Pepco customers if the Merger is approved and consummated. This estimate is based on the combined monetary benefits to customers from the Customer Investment Fund and the Enhanced Reliability Benefits.

20. Q. Which Regulatory Commitment provides the highest monetary value to Pepco customers?

A. Although the Applicants' upfront cash contribution to the Customer Investment Fund is a highly concrete and visible commitment being offered for the benefit of Pepco's customers, the Enhanced Reliability Commitments ends up providing more value to customers than the Customer Investment Fund. The value associated with these two types of commitments may affect how the Commission weighs options for use of the money in the Customer Investment Fund. Although the decision as to how to direct the Customer Investment Fund will be up to the Commission, my analysis could provide some early insights into the trade-offs of how to spend the money to allow different customer segments to share in the value of the Merger benefits. My discussion below highlights some of the relevant issues.

21. Q. Please describe the value of the Customer Investment Fund to Pepco customers.

A. The Regulatory Commitment with the most direct benefit and obvious monetary value to Pepco customers is the one-time contribution by Exelon of $14 million to the Customer Investment Fund, which equates to $52.95 for every customer buying utility service from Pepco.

For context, this particular Regulatory Commitment equates to roughly 2.7 weeks of "free" bundled electricity service (or 1.7 months of free electric delivery service) for a typical residential electric customer.[11] Alternatively, it reflects approximately 102 percent of the District of Columbia Sustainable Energy Utility's spending on customer-funded energy efficiency programs in 2013.[12]

22. Q. How does the size of this customer contribution compare to other recent mergers?

A. Based on my review of other recent utility mergers and acquisitions, the \$52.95/customer contribution is larger than in most other corporate consolidations approved by utility regulators. Among all mergers or acquisitions of investor-owned electric and electric/gas utilities since 2010, the per-customer amounts range from \$11/customer to \$100/customer, with all but one falling below \$30/customer, as summarized in Table SFT-2, below.

[11] This assumes that average bills for a residential Pepco electric customer are as follows: delivery service at \$374 per year, or \$31 per month; and bundled electric service at \$1,022 per year, or \$85 per month. These estimated rates are based on 2012 data, and assume no change in base rates (for distribution charges) and known supply rates for standard offer service customers. Source: the Applicants and Energy Information Administration ("EIA") Form-861 2012 data. The \$52.95 on-bill credit to each residential customer could also be seen as approximately 14 percent of the typical residential electric customer's annual delivery charges, or five percent of his/her typical total annual electric bill.

[12] 2013 energy efficiency totals come from the District of Columbia Sustainable Energy Utility's 2013 Annual Report.

TABLE SFT-2
Monetary Commitments of the Acquiring Utility to the Direct Benefit of Customers of the Acquired Utility: Recent Mergers/Acquisitions of Investor-Owned Electric and Electric/Gas Utilities Since 2011

Acquirer	Target Acquisition	State	Year	Pledge	Total Amount (million $)	# of Customers Receiving Credit	Average Amount per Customer	Sources
FirstEnergy	Allegheny (Potomac Edison)	MD	2011	$/Customer and Total $	$6.5 million	~224,138 (residential)	$29.00	[1], [2]
	Allegheny (Potomac Edison, Monongahela Power Co.)	WV	2011	Total $	$7.5 million (over 2 years)	522,864 (all classes)	$14.34	[3], [4]
	Allegheny (West Penn Power Co.)	PA	2011	Total $	$10.8 million (over 3 years)	620,151 (residential)	$17.42	[4], [5]
Northeast Utilities (NU, Western Massachusetts Electric Co, Connecticut Light & Power)	NSTAR	CT	2012	Total $	$25 million	1,215,257 (all classes)	$20.57	[6], [7]
	NSTAR (NSTAR Electric)	MA	2012	Total $	$15 million	1,172,997 (all classes)	$12.79	[6], [8], [9]
	NSTAR (NSTAR Gas)	MA	2012	Total $	$3 million	~272,000 (all classes)	$11.03	[7], [8], [9], [10]
	NSTAR (Western Massachusetts Electric Co.)	MA	2012	Total $	$3 million	211,185 (all classes)	$14.21	[6], [8], [9]
MidAmerican	NV Energy (Nevada Power Company; Sierra Pacific Power Company)	NV	2013	Total $	$20 million	1,300,000 (all classes)	$15.38	[6], [11], [12]
Exelon	Constellation (BGE)	MD	2012	$/Customer and Total $	$112 million	~1,120,000 (residential)	$100.00	[13], [14]

Notes:

[1] Unless otherwise specified, rate credits are assumed to be spread across all rate classes.

Sources

[1] Maryland Public Service Commission, Order No. 83788, January 18, 2011.

[2] "MD PSC approves Allegheny Energy Merger with FirstEnergy," The Daily Record, January 19, 2011.

[3] "West Virginia PSC approves Allegheny Energy/First Energy merger proposal," SNL Financial, December 16, 2010.

[4] EIA 861 file-2, 2011.

[5] "Allegheny Energy, FirstEnergy tout merger benefits," Herald-mail, January 22, 2011.

[6] EIA 861 file-2, 2012.

[7] "NU and NSTAR Reach Comprehensive Merger-Related Agreement with Connecticut AG and OCC," Company Release, March 13, 2012.

[8] "Massachusetts Department of Public Utilities Announces Approval of NSTAR - NU Merger," MA Executive Office of Energy and Environmental Affairs, Press Release, April 5, 2012.

[9] "UPDATE: NSTAR, NU agree to more renewables, rate freeze in Mass. merger deal," SNL Financial, February 15, 2012.

[10] Northeast Utilities 2012 Annual Report

[11] "MidAmerican Energy holdings Company and NV Energy, Inc. Merger Complete," MidAmerican Press Release, December 19, 2013.

[12] "Nev. Regulators OK with MidAmerican's Acquisition of NV Energy, with stipulations," SNL Financial, December 16, 2013.

[13] "Exelon's proposed acquisition of Pepco Holdings," SNL Financial, RRA Special Report, May 7, 2014.

[14] "In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Inc., - Supplemental Testimony of Susan F. Tierney, Ph.D. In Support of the Joint Petition for Approval of Settlement," Before the PSC of Maryland, Case No. 9271, December 15, 2011.

All mergers and acquisitions are different and provide different opportunities for contributing value to customers at the outset of the transaction versus over time (as synergy opportunities end up affecting the utility's cost of service and customer rates). Exelon's proposed contribution to a Customer Investment Fund based on $52.95/customer represents an amount above the range of all but one recent merger and acquisition approved by state regulators (i.e., the Exelon/Constellation Merger).

23. Q. Do you know whether each customer will actually receive exactly $52.95 as contributed by the Applicants?

A. No. The Applicants have offered this Regulatory Commitment in a form that anticipates the Commission determining the appropriate use of the Customer Investment Fund. The Commission might choose to disburse the Customer Investment Fund to customers in the form of a one-time customer credit on each customer's electric bill. Or, the Commission might decide to use the funds to support incremental energy efficiency investments, which might not only fund efficiency measures on customer premises but also lead, over time, to lower demand in the relevant wholesale markets with resulting effects on lowering energy prices paid by customers over many years. Or, the Commission might allocate some portion to low-income customer assistance, or to targeted reliability improvements, and/or any other public-interest benefit deemed to be valuable to customers of Pepco. These diverse examples underscore that different uses of the funds will likely lead to different types of impacts for different types of customers.

As I explain further below, the Commission might decide to distribute this benefit on an equal basis to all customers (e.g., through a $52.95/customer credit on each customer's bill), or disproportionally in favor of those customers who receive fewer of the other types of benefits likely to flow from the Merger (e.g., to residential customers and/or low-income residential customers, for whom the economic value of other Regulatory Commitments, such as the Enhanced Reliability Commitments, may be lower than it is to commercial and industrial customers), or exclusively through investments that will lead to longer-term additional benefits over time (e.g., through use of the money for energy efficiency programs that end up lowering costs to all customers over time). But from a system-wide point of view, the $52.95/customer contribution to the Customer Investment Fund is a direct and traceable financial benefit of the proposed Merger for District of Columbia customers, totaling $14 million.

24. Q. Have you quantified any other Regulatory Commitment in terms of benefits provided to customers of Pepco in the District of Columbia?

A. Yes. I have quantified the value to customers associated with the Applicants' strengthened commitments to achieve improvements in the local distribution-system reliability that accrue to the benefit of customers (i.e., the Enhanced Reliability Commitments).

25. Q. Please describe the Enhanced Reliability Commitments and how you have estimated the economic value of this benefit to customers.

A. Based on the direct testimonies of Mr. Mark Alden (Exelon's Vice President for Utilities Oversight) and Mr. William Gausman (PHI's Senior Vice President for Strategic Initiatives), I understand that Exelon has committed to further strengthening Pepco's recently demonstrated progress to improving reliability in two ways: first, by committing to performance outcomes by 2020 that will result in less frequent outages of utility service to customers; and second, by committing to putting shareholders' money on the line (i.e., in the form of financial penalties) in the event that the utility does not meet those guaranteed performance outcomes by 2020, as measured by a set of quantifiable metrics reflecting actual performance in a three-year period (2018-2020).

26. Q. Please define the foregoing reliability metrics.

A. There are several metrics that are commonly used in the electric industry to measure how often and how long customers undergo outages of electricity service. The more common metrics are "SAIFI," "SAIDI," and "CAIDI". "SAIFI" stands for "system average interruption frequency index," and reflects the average number of sustained service interruptions per customer during a time period. "SAIDI" stands for "system average interruption duration index," and reflects the length of time that customers are without service. "CAIDI" stands for the "customer average interruption duration index," and reflects the average duration of interruptions experienced by a customer during a time period.

SAIFI is typically calculated through the following formula:

SAIFI = total number of customer interruptions divided by the total number of customers served.

SAIDI, in turn, is typically calculated according to the following formula:

SAIDI = sum of all customer interruption durations divided by the total number of customers served.

CAIDI is typically calculated according to the following formula:

CAIDI = the sum of the duration of all customer interruptions divided by the total number of customer interruptions (or, SAIDI divided by SAIFI).

Thus, SAIFI indicates how often a customer has a service interruption, SAIDI expresses how long all customers go without power (i.e., the average length of service disruptions faced by customers), and CAIDI represents how long each customer experiences an outage on average.

Utilities commonly use these indices to benchmark reliability, because they provide a reference point for characterizing the frequency and duration of interruptions for a particular company during a reporting period, how that utility compares to other utilities' service, and how a utility's performance changes over time.

27. Q. Are there factors that affect a company's performance with regard to service frequency and service duration outages?

A. Yes. There are many factors that can affect a company's performance on these metrics. For example, the extent to which a system's distribution and transmission system is located underground may affect outages (both their frequency and the length of time to repair equipment in the event of damage). Similarly, the amount of tree coverage and the tree-trimming practices of the utility could affect performance. Other factors can include weather events, age of facilities, utility metering and data-management systems used to collect information on and address outage conditions, and utility practices for system restoration. In recent years, for example, extreme weather events have wreaked havoc on energy and other critical infrastructure in the District of Columbia, and have disrupted electric service to homes, businesses and other critical systems.

28. Q. Are you aware of any studies that estimate the economic costs of unreliable electric service to customers?

A. Yes. One early study (2004) conducted by the LBNL estimated the national cost of power interruptions at $80 billion annually, with a likely range of $30 billion to $130 billion after a sensitivity analysis.[13] More recently, a 2013 study issued by the Executive Office of the President estimated the average cost to the U.S. economy of power outages caused only by severe weather at between $18 billion to $33 billion annually for the years 2003 to 2012.[14] The report notes that annual costs can fluctuate significantly and are greatest in the years of major

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[13] Kristina LaCommare and Joseph Eto, "Understanding the Cost of Power Interruptions to U.S. Electricity Consumers," Ernest Orlando Lawrence Berkeley National Laboratory, LBNL-55718, September 2004.

[14] "Economic Benefits of Increasing Electric Grid Resilience to Weather Outages," Executive Office of the President, August 2013, available at http://energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf.

storms such as Hurricane Ike in 2008, a year in which cost estimates range from $40 billion to $75 billion, and Superstorm Sandy in 2012, a year in which cost estimates range from $27 billion to $52 billion. A 2012 Congressional Research Service study estimates the inflation-adjusted cost of weather-related outages at $20 to $55 billion annually.[15] Additionally, as co-lead convening author of the recent National Climate Assessment's chapter on "Energy Supply and Use," I am aware of the literature on the impacts of extreme weather events and other climate-related conditions and trends on energy infrastructure (such as electric transmission and distribution systems) and of related impacts on customers of critical services (like electricity) that depend upon that infrastructure.[16]

29. Q. What is your understanding of Exelon's commitments to improving service-quality performance of Pepco?

A. I understand that Exelon proposes to use the following metrics to enable the Commission to measure Pepco's reliability outcomes by 2020, as summarized in Table SFT-3:

[15] Richard J. Campbell, "Weather-Related Power Outages and Electric System Resiliency," Congressional Research Service, August 28, 2012. http://www.fas.org/sgp/crs/misc/R42696.pdf.

[16] See J. Dell, S. Tierney, G. Franco, R. G. Newell, R. Richels, J. Weyant, and T. J. Wilbanks, 2014: Ch. 4: Energy Supply and Use. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 113-129. doi:10.7930/J0BG2KWD. http://nca2014.globalchange.gov/report/sectors/energy . See additionally, T. Wilbanks, S. Fernandez, G. Backus, P. Garcia, K. Jonietz, P. Kirshen, M. Savonis, B. Solecki, and L. Toole, 2012: Climate Change and Infrastructure, Urban Systems, and Vulnerabilities. Technical Report to the U.S. Department of Energy in Support of the National Climate Assessment, Oak Ridge National Laboratory. U.S. Department of Energy, Office of Science, Oak Ridge, TN. http://www.esd.ornl.gov/eess/Infrastructure.pdf.

Table SFT-3
Applicants' Enhanced Reliability Commitments for Pepco

	Historical Performance (3-Year Average: 2011-2013)	Average Performance Commitment from the Merger by 2020 (Based on 3-Year Average: 2018-2020)	Change in Performance
SAIFI	1.03	0.54	48%
SAIDI	149	107	28%
Source: Testimony of Mr. Mark Alden.			

I understand that these Enhanced Reliability Commitments result in part from the Applicants' plan to share best practices across all of the distribution utilities that will be part of the merged entity's holding company, with opportunities for improvements for Pepco operations and for customer service.[17]

30. Q. In light of Pepco's expected requirements, why do you think that the Merger will provide benefits to customers in terms of reliability of service?

A. This Merger commitment will provide value to customers by avoiding outages of electricity service which otherwise have well-known and adverse impacts on customers' household activities, their business operations, and other aspects of their day-to-day lives. The value to customers of shorter and fewer outages is that they will experience lower economic and other negative impacts from outages.

31. Q. How have you translated this Enhanced Reliability Commitments into a specific benefit to customers?

[17] For example, in his testimony, Mr. Alden describes Exelon's Management Model (a management system designed to identify and generate best practices for operational excellence at each of its utilities and to share and implement those practices system-wide), including such things as standardized "Lock Out" and "Tag Out" ("LOTO") practices to restore service during emergency response events.

A. I have interpreted Exelon's new Regulatory Commitment to absorb a financial penalty for non-performance on guaranteed reliability metrics as a strengthening of Pepco's prior commitment to improve electric system reliability for customers. In addition, Exelon has committed to reliability improvements by the end of 2020 that go beyond those commitments now in place for Pepco. My understanding is based substantially on other witnesses testifying on behalf of the Applicants, including Mr. Alden and Mr. Gausman.

32. Q. What is the basis for your view that such reliability improvements will provide economic benefits to Pepco's customers?

Much has been written about the value of reliability to customers in recent years.[18] Studies have examined the types of costs incurred by electricity customers during outages, which include out-of-pocket costs associated with business disruptions (e.g., damage to equipment), opportunity costs resulting from inability to access electric service (e.g., inability to provide restaurant services that cannot be made up when electricity service is resumed on another day), lost perishables (e.g., food lost due to loss of refrigeration), diminished capability to provide critical services (e.g., street lighting, telecommunications, pumping of gasoline), public health impacts (e.g., due to loss of heating or cooling during extreme weather periods), adverse impacts on quality of life (e.g., due to loss of

[18] Michael J. Sullivan, Ph.D., Matthew Mercurio, Ph.D., Josh Schellenberg, M.A Freeman, Sullivan & Co, "Estimated Value of Service Reliability for Electric Utility Customers in the United States," Prepared for Office of Electricity Delivery and Energy Reliability, U.S. Department of Energy, by the Energy Analysis Department (Environmental Energy Technologies Division), Ernest Orlando Lawrence Berkeley National Laboratory, June 2009, http://certs.lbl.gov/pdf/lbnl-2132e.pdf; Michael J. Sullivan, Matthew G. Mercurio, Josh A. Schellenberg, and Joseph H. Eto, LBNL, "How to Estimate the Value of Service Reliability Improvements," 2010, http://certs.lbl.gov/pdf/lbnl-3529e.pdf.

electricity for cooking, lighting, electronic equipment at homes), and many other impacts. These impacts vary by type of customer; time of day, day of the week, and season of the year during which an outage occurs; length and frequency of outages; extent to which there are substitutes for electricity service; the extent to which an economy depends upon electricity (i.e., its electricity intensity); and other factors. Economic studies have examined these various impacts and quantified the cost of outages and the related value of reliable service. These studies consistently indicate that the value that customers place on reliable electricity service exceeds the cost of paying for electricity service.

33. Q. How have you quantified the value to customers of such reliability improvements?

A. I have based my assessment on an economic analysis of the 'value of reliability.' which is customers' avoided economic loss(es) associated with outages. The value of reliability shows up in customers experiencing lower costs and other lower adverse impacts as a result of having fewer and shorter interruptions of electricity service.

More specifically, I have quantified the value to customers as a whole by using a publicly available, on-line calculator (the "Interruption Cost Estimator" ("ICE Calculator")[19]) provided by the U.S. Department of Energy ("DOE") and based on research and analysis from the DOE's national laboratory, LBNL.[20]

[19] "The Interruption Cost Estimate (ICE) Calculator is an electric reliability planning tool developed by Freeman, Sullivan & Co. and LBNL. This tool is designed for electric reliability planners at utilities, government organizations or other entities that are interested in estimating interruption costs and/or the

Using information about the value of reliability and the costs of outages to customers, I proceeded as follows to estimate the value of Enhanced Reliability Commitments (and associated reliability improvements) to customers. First, I entered the three-year average historical values (2011-2013) from Table SFT-3 into the ICE Calculator to populate the "without reliability improvements" scenario in the model.[21] Second, to determine the inputs for the "with reliability improvements" scenario, I entered an annual value for each year between 2015 and 2020 by calculating a linear trend between the historical values and the 2018-2020 average commitment values from Table SFT-3. I also entered the number of residential and non-residential customers, and otherwise accepted the District-specific default values that the ICE Calculator contains.

The resulting output from the ICE Calculator provides two important results that I used in my quantification of benefits: the annual benefits resulting from the reliability improvements for each year between 2015 and 2020, and the portion of benefits attributable to residential versus non-residential (i.e., commercial and industrial) customers. I then calculated the net present value of

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benefits associated with reliability improvements in the United States. The ICE Calculator was funded by the Office of Electricity Delivery and Energy Reliability at the U.S. Department of Energy." http://www.icecalculator.com/ice/

[20] As indicated in a prior footnote, LBNL has conducted much of the research to compile information about value of reliability service to retail electricity customers.

[21] The ICE Calculator includes three settings: 1) calculating the cost of an interruption event, 2) estimating the value of a reliability improvement in a static setting (where reliability does not improve over time), and 3) estimating the value of a reliability improvement in a dynamic setting based on forecasts of SAIDI, SAIFI, and CAIDI. I used the setting that allows for calculating benefits in a dynamic environment.

these reliability benefits over the period from 2015 through 2020 using a social discount rate.[22]

34. Q. What are the results of your assessment of the direct value of the Enhanced Reliability Commitments to Pepco's customers?

A. The results, shown in Table SFT-4, reflect the different economic impacts on residential customers as well as commercial and industrial customers, who often experience direct business losses and opportunity costs in addition to the inconvenience of service disruptions. As indicated, these customer benefits are substantial.

Table SFT-4
Total Dollar Benefit:
Pepco Customers (DC)

	All Company Customers	Average Benefit per Customer
Residential	$2,276,047	$9.56
Commercial and Industrial	$73,592,171	$2,786

Note: Amounts are shown as Net Present Value ("NPV") of Benefits (2014$), 2015-2020.

35. Q. What is your estimate of the total value to customers of the Applicants' two Regulatory Commitments (i.e., the Customer Investment Fund and the Enhanced Reliability Commitments)?

[22] The discount rate is the tool that accounts for the time value of money – the concept that a dollar today is typically worth more than the same amount of money in the future because of the opportunity cost of money to various private and public entities in society. I used a social discount rate (i.e., 3 percent) in my analysis because it reflects dollars in the hands of producers, who are largely private enterprises, and consumers, made up of households, businesses, government energy users, and others. See, e.g., U.S. Environmental Protection Agency (National Center for Environmental Economics, Office of Policy), "Guidelines for Preparing Economic Analyses," EPA 240-R-10-001, December 2010, pages 6-7 to 6-8 ("As of the date of this publication, current estimates of the consumption rate of interest, based on recent returns to Government-backed securities, are close to 3%.").

A. Based on $14 million in the Applicants' payments to the Customer Investment Fund and the $75.9 million in value associated with the Enhanced Reliability Commitments, I conservatively calculate that the Merger will provide $89.9 million in direct and traceable financial benefits to customers. These benefits are summarized in Table SFT-1.

36. Q. Are there other benefits that Pepco customers will receive, on top of the $89.9 million you describe above?

A. Yes. There are other, less-easily-measurable but still-important benefits that will flow to Pepco's customers if the Merger is consummated.

First, Pepco's customers will receive the benefit of the Merger's synergy savings to Pepco.[23] In future rate cases based on test years after the Merger is consummated, Pepco's cost of service will be lower than it would otherwise have been in the absence of the Merger. This is the effect of the incremental synergy savings from the Merger (net of costs to achieve those savings) that arise over time. In fact, the company's customers will receive the benefits of synergy savings twice: once in the form of the immediate share of the Customer Investment Fund (equivalent to approximately $52.95 per-distribution-customer credit in 2015); and then again when rates are reset in the future (assuming that such relies on a test year covering at least part of the first five years after the Merger is consummated).

[23] Mr. Khouzami describes such merger synergies in his direct testimony.

Second, the Applicants have committed to retain and promote current assistance provided to low-income customers.

Third, the Applicants have made commitments to the District of Columbia with respect to regulatory supervision and corporate governance, all of which will provide protections to customers of Pepco. As described by Mr. Khouzami, these protections include not only the commitment to submit to the jurisdiction of the Commission on matters related to the Merger and the enforcement of commitments and on matters related to affiliate transactions, but also the commitment to 'ring-fence' the distribution company Pepco to separate it from the business and financial risks associated with the Applicants' unregulated business activities. These latter commitments support the financial integrity of Pepco and the role of the Commission in supervising it.

Finally, the Applicants have committed to not seek recovery of any acquisition premium or transaction costs in rates, and to not incur or assume any debt, including the provision of guarantees or collateral support, directly related to the Merger.

Together, these regulatory, organizational and financial commitments will support and further enhance the performance of Pepco's utility business units in meeting their public service obligations. In sum, the Applicants are putting in place a number of safeguards that appropriately address and mitigate both perceived and potential risks from the Merger – all of which will accrue to the benefits of Pepco's customers.

C. Assessment of the Economic Impacts of the Regulatory Commitments to the District of Columbia

37. Q. In addition to those measurable direct benefits and less measurable benefits to Pepco customers in the District of Columbia, are there other measurable economic benefits of the proposed Merger to the District of Columbia's economy and local community?

A. Yes. I examined these other measurable economic benefits through my IMPLAN analysis, to which I referred above.

38. Q. Before you describe the specific economic impacts of the different pieces of the Merger package, please summarize your assessment.

A. The Regulatory Commitments will result in substantial economic benefits for the District of Columbia's economy. These various benefits derive from the infusion of dollars and economic value into the local economy.

The *direct* benefits derive from two things: the Customer Investment Fund and the Enhanced Reliability Commitments affecting Pepco's distribution system. Both of these two Regulatory Commitments provide direct value to customers, but both also have larger impacts on the District's economy.

For example, as I described previously, the Customer Investment Fund will have different impacts on the local economy, depending upon how the Commission decides to deploy the dollars in the Customer Investment Fund. Without knowing how the Commission will choose to use that fund for the benefit of customers of Pepco, and without meaning to suggest that one particular use of the fund is preferable to others, I have modeled the impacts under three different sets of assumptions about potential use of the Customer Investment Fund's monies:

- In one scenario, I assumed that the Customer Investment Fund would be fully deployed in the form of a $52.95 credit on each distribution customer's bill, including residential and commercial and industrial customers. In this analysis, the money in the fund would go into the pockets of households, businesses and other organizations, as if it were new after-tax income to each of them.

- In another analysis, I assumed instead the money in the fund would be used to pay for energy efficiency measures. Spending the money this way would lead to the direct expenditure of the funds to hire contractors to install energy efficiency measures and to purchase more energy-efficient electricity-using equipment, and to lower electricity usage in general, resulting in savings on customers' electricity bills. My analysis assumed that such expenditures on energy efficiency would lower customers' purchases of electricity, but I only counted the avoided cost of commodity supply but not the distribution portion of customers' bills.[24] Thus, from a larger economic point of view, the use of the Customer Investment Fund for energy efficiency leads to expenditures on goods and services in the

[24] I made this assumption because of ratemaking policies which end up – over time – resetting distribution rates to ensure recovery of fixed costs of distribution service from all customers. In light of different investment recovery assumptions for commodity supply, I did not assume that lost revenues from lower sales resulting from energy efficiency would be made up by suppliers over time.

local economy, as well as to new after-tax income to consumers in the form of lower electricity bills.[25]

- I also explored the implications of using the Customer Investment Fund to provide direct credits on the electricity bills of low-income residential electricity customers alone. This impact shows up in the form of new after-tax income to such customers.

In each instance where I quantified benefits for customers in the form of direct impacts, there are also indirect and "induced" effects of the Customer Investment Fund and the Enhanced Reliability Commitments.

Indirect impacts flow from purchases of goods and services associated with the direct activity. An example might be the use of the Customer Investment Fund to invest in energy efficiency measures, with the direct impact being the original $14 million contribution from the Applicants, and the indirect impact being the purchase of more energy efficient appliances or equipment. Regarding

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[25] My analysis is conservative in that it does not track the impact of any avoided distribution or 'wires' charges, nor does it project the impact of energy efficiency on wholesale electricity prices (i.e., reflecting any reduction in such prices because demand is lower than it otherwise would be). I presumed that because of ratemaking for utility distribution service, loss of revenues from energy efficiency measures' impact on total sales would be addressed in subsequent rate case or revenue decoupling mechanisms. With respect to estimating the value to Pepco's customers and the economy associated with lower wholesale energy prices from investments in energy efficiency, I did not calculate the value of this indirect impact through the IMPLAN tool, in part because quantifying this impact involves more complicated modeling that would be required to simulate the specific dispatch of the PJM electric energy market with a lower demand curve and the consequent impact on lowering locational marginal clearing prices in wholesale markets. That said, my knowledge of and participation in prior studies leads me to conclude that the benefits of the Merger for customers that I did quantify are conservative because such impacts on wholesale electric energy clearing prices are not quantified in my analysis submitted here. See, for example, Paul J. Hibbard, and Susan F. Tierney, "Carbon Control and the Economy: Economic Impacts of RGGI's First Three Years." Electricity Journal, December 2011; and Paul J. Hibbard, Susan F. Tierney, Andrea M. Okie, Pavel G. Darling, "The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States: Review of the Use of RGGI Auction Proceeds from the First Three-Year Compliance Period, November 15, 2011.

the value of fewer or shorter outages, customers receive the direct value of avoided outages, and the indirect impacts reflect economic transactions between those residential and business customers that experience fewer/shorter outages and other businesses and economic actors with whom the customers can interact in the absence of the outage.

For both the Customer Investment Fund and the Enhanced Reliability Commitments, there are also "induced" effects associated with the direct and indirect economic impacts. These induced impacts result from the increased spending of workers who either get new income from the direct activity (e.g., the $52.95 in each household's or business' pocket) or are employed in the activities funded by the initial projects (e.g., the workers hired to install energy efficiency or reliability improvements on the distribution system). Together, these effects add new economic value to the local economy and generate tax revenues to governments in the District of Columbia.

39. Q. What are the results of your assessment?

A. Using IMPLAN and the core assumptions I previously described (and summarized in JOINT APPLICANTS (G)-4), I estimate that the Merger will result in: (a) 907 – 1,281 new jobs; (b) $95.4 million – $133.6 million in added value to the District of Columbia economy; and (c) incremental tax benefits (revenues) to the District of Columbia and local communities totaling $3.6 million

– $5.5 million dollars.[26] These results are summarized in Table SFT-5 (and in more detail in JOINT APPLICANTS (G)-5).

Table SFT-5
Economic Benefits Resulting from the Merger:
Applicants' Customer Investment Fund and Enhanced Reliability Commitments for Pepco in the District of Columbia:
Net Present Value (2014 $)

	Customer Investment Fund			Enhanced Reliability Commitments	Total Economic Benefits
	Assuming a $52.95 per Customer Credit on Each Customer's Utility Bill	Assuming the Funds are Spent on Energy Efficiency Measures	Assuming a Credit on Low-Income Residential Customers' Utility Bill		
Jobs	62	436	73	846	907 – 1,281
Value Added (NPV, 2014$)	$19.1 million	$57.3 million	$22.2 million	$76.3 million	$95.4 – $133.6 million
Incremental Tax Revenues (NPV, 2014$)	$0.5 million	$2.4 million	$0.6 million	$3.2 million	$3.6 – $5.5 million

As indicated, I have estimated economic impacts based on various scenarios reflecting different ways the Commission might decide to spend the money in the Customer Investment Fund, and the quantitative economic impacts vary according to these scenarios. I fully and respectfully recognize that there are intangible unquantified benefits that the Commission may want to take into consideration in determining how to use the Customer Investment Fund, and therefore my assumptions are illustrative and not intended to suggest a

[26] In general, I am rounding the numbers that were produced in my IMPLAN analyses. See JOINT APPLICANTS (G)-4 and (G)-5 for the back-up information for these estimates. District of Columbia taxes include personal income and corporate profit taxes, along with indirect personal and business taxes and dividends. Federal taxes are assumed to exit the District of Columbia economy.

recommendation as to the Commission's decision. I have thus described the results in terms of ranges of economic impacts, with a reasonable representation of the economic value of the Merger for the District of Columbia's economy.

40. Q. Are there any parts of the Regulatory Commitments that you did not include in the IMPLAN results reported above? If so, please explain.

A. Yes. To be conservative, there are several aspects of the Regulatory Commitments that I did not attempt to quantify. Many such commitments are described in the testimonies of Mr. Crane and Mr. Rigby, as well as in the testimony of Mr. Calvin Butler, Chief Executive Officer of Baltimore Gas and Electric Company.

For example, I did not include in my IMPLAN analysis any of the approximately $16.4 million that the Applicants have committed to provide to community and charitable organizations in the District of Columbia over the next 10 years. In 2013, for example, the direct economic value of such charitable contributions was approximately $1.6 million.

Also, I did not quantify the economic impacts associated with the Applicants' commitment to "local presence" – that is, retaining various business operations in places where they now exist before the Merger. The Regulatory Commitments include support for labor and other economic activity through maintaining the headquarters of the Company's system, with appropriate levels of senior management, and Pepco's local operational headquarters in the District of Columbia at Edison Place, as well as the Exelon Board, Committee or Subsidiary

Board meetings or Leadership meetings being held periodically in the District of Columbia.

Additionally, I did not quantify the economic benefits of the Applicants committing to retain existing supplier diversity programs, to honor all existing collective bargaining agreements, and to labor-related actions during at least the first two years following consummation of the Merger. The latter commitment would preclude, for several years, any net reduction (due to involuntary attrition as a result of the Merger integration process) in the employment levels at Pepco and would maintain compensation and benefits for current and former employees at Pepco that are at least as favorable in the aggregate as the compensation and benefits provided to the employees immediately before the Merger Agreement.

These various Regulatory Commitments provide real but unquantified benefits to the communities in which Pepco conducts its utility service.

III. CONCLUSIONS ON ECONOMIC IMPACTS OF THE PROPOSED MERGER

41. Q. Please summarize your overall conclusions.

A. Based on my review of the Application and the Regulatory Commitments in particular, along with my assessment of the economic impacts for Pepco customers and for the larger economy in the District of Columbia, I conclude that the proposed Merger will provide significant tangible and intangible benefits, including direct and traceable financial benefits, to customers of Pepco and to the economy of the District of Columbia.

42. Q. Does this conclude your testimony?

A. Yes.

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ________(G)-1

JOINT APPLICANTS (G)-1
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Dr. Tierney, a Senior Advisor at Analysis Group, is an expert on energy economics, regulation and policy, particularly in the electric and gas industries. She has consulted to businesses, government, tribes, environmental groups, and other organizations on energy markets, economic and environmental regulation and strategy, and energy projects. Her expert witness and consulting services have involved market analyses, wholesale and retail market design, contract disputes, resource planning and procurements, regional transmission organizations, the siting of electric and gas infrastructure projects, electric system reliability, ratemaking for electric and gas utilities (including cost allocation, rate design, incentive ratemaking mechanisms), clean energy resources, climate change policy, and other environmental policy and regulation. She has participated as an expert in civil litigation cases, regulatory proceedings before state and federal agencies, and business consulting engagements.

Previously, she served as the Assistant Secretary for Policy at the U.S. Department of Energy in the Clinton Administration. She was the Secretary for Environmental Affairs in Massachusetts, Commissioner at the Massachusetts Department of Public Utilities, Chairman of the Board of the Massachusetts Water Resources Authority, and executive director of the Massachusetts Energy Facilities Siting Council.

Dr. Tierney has authored numerous articles and speaks frequently at industry conferences. She serves on a number of boards of directors and advisory committees, including chairing the External Advisory Council of the National Renewable Energy Laboratory (NREL) and the board of ClimateWorks Foundation. She is a director of the World Resources Institute, the Alliance to Save Energy, and the Energy Foundation. She is a member of the Bipartisan Policy Center's Energy Project, the National Petroleum Council (NPC), the China Sustainable Energy Program's Policy Advisory Council, and the Environmental Advisory Council of the New York Independent System Operator (NYISO). She co-chairs the NAESB Gas-Electric Harmonization Committee, the Bipartisan Policy Center's cyber security and the electric grid, is a member of the National Academy of Sciences panel on shale gas risk, and is co-lead author of the energy chapter of the National Climate Assessment. She chaired the Policy Subgroup of the NPC's study of the natural gas and oil resource base in North America, and served on the U.S. Secretary of Energy Advisory Board (and its Shale Gas Subcommittee). Previously, she chaired several non-profit organizations (the National Commission on Energy Policy; the Electricity Innovations Institute; and the Massachusetts Ocean Commission); was formerly a director of several companies (EnerNOC, Inc.; Evergreen Solar, Inc.; Ze-gen, Inc.; Catalytica Energy Systems Inc.), and several non-profit organizations (Clean Air Task Force; Clean Air – Cool Planet; the Electric Power Research Institute); and was a member of the Advisory Council of the New England Independent System Operator (ISO-NE) and the Massachusetts Renewable Energy Trust Advisory Council. She taught at the Department of Urban Studies and Planning at MIT and at the University of California at Irvine, and has lectured at Harvard University, Yale University, New York University, Tufts University, Northwestern University, and University of Michigan. She earned her Ph.D. and M.A. degrees in regional planning at Cornell University and her B.A. at Scripps College.

EDUCATION

1980	Ph.D. in Regional Planning, Public Policy, Cornell University, Ithaca, NY Dissertation: *Congressional policy making on energy policy issues*
1976	M.A. in Regional Planning, Public Policy, Cornell University, Ithaca, NY
1973	B.A. in Art History, Scripps College, Claremont, CA (studied political science at L'Institute d'Etudes Politiques, Paris, France)

PROFESSIONAL EXPERIENCE

2003-present	Analysis Group, Inc., Boston, MA *Senior Advisor (April 2014 – present); Managing Principal (July 2003 – March 2014)*
1999-2003	Lexecon, Inc., Cambridge, MA (formerly The Economics Resource Group, Inc.) *Senior Vice President*
1995-1999	Economics Resource Group, Inc., Cambridge, MA *Principal and Managing Consultant*
1993-1995	U.S. Department of Energy, Washington, DC *Assistant Secretary for Policy*
1991-1993	Commonwealth of Massachusetts, Executive Office of Environmental Affairs, Boston *Secretary of Environmental Affairs*
1988-1991	Commonwealth of Massachusetts, Department of Public Utilities, Boston, MA *Commissioner*
1984-1988	Commonwealth of Massachusetts, Energy Facilities Siting Council, Boston, MA *Executive Director*
1983-1984	Commonwealth of Massachusetts, Executive Office of Energy Resources, Boston, MA *Senior Economist*
1982-1983	Commonwealth of Massachusetts, Energy Facilities Siting Council, Boston, MA *Policy Analyst*
1982	National Academy of Sciences, Washington, DC *Researcher*
1978-1982	University of California at Irvine, Irvine, CA *Assistant Professor*

SELECTED CONSULTING EXPERIENCE

- **Various confidential engagements** involving power sales agreements, gas supply contracts, advisory services on gas and electric matters, transmission policy, oil market issues, water utility issues, and market power and monitoring issues.
- **Entergy Wholesale Commodities**
  Provided strategic advice on wholesale and retail market issues. (2013-ongoing)
- **Barr Foundation**

Prepared a report on the impacts of the Massachusetts Green Communities Act of 2008 on the Massachusetts economy. (2013-2014)

- **Five California Utilities (LADWP, PG&E, SCE, SDG&E, SMUD)**
  Served on the four-person expert Independent Advisory Panel for the third-party study of integration of renewable energy into California's Electric System ("Investigating a Higher Renewables Portfolio Standard in California"). (2013-2014)
- **State of Colorado**
  Prepared expert report on behalf of the three public utility commissioners in Colorado, in support of the complaint against them on implementing Colorado's renewable energy standard under alleged violations of interstate commerce clause. (2013-2014)
- **Energy Foundation**
  Wrote white paper on the implications for electric system reliability of the Environmental Protection Agency's implementation of its authority under Section 111(d) of the Clean Air Act, to regulate greenhouse gas emissions from existing power plants. (2013-2014)
- **Ambri (battery company)**
  Analyzed energy system issues related to integration of renewables on a military base. (2013-2014)
- **Advanced Energy Economy Institute**
  Facilitated workshop for state utility commissioners in Midwest states, on advanced energy technologies and related regulatory issues. (2013)
- **Environmental Defense Fund – North Carolina**
  Testified on energy efficiency program design issues. (2013)
- **Advanced Energy Economy Institute (with the New England Clean Energy Council and the New England Conference of Regulatory Utility Commissioners)**
  Supported workshop on advanced energy technologies and related regulatory issues. (2013)
- **Lawrence Berkeley National Laboratory Energy Program**
  Support on regulatory issues at workshop for the New Jersey Board of Public Utilities on smart grid issues. (2013)
- **Advanced Energy Economy Ohio**
  Testimony before the Ohio Senate Public Utilities Committee in support of the Ohio Energy Efficiency Resource Standard. (2013)
- **Pepco Holdings Inc., and its operating affiliates, Potomac Electric Power Company, Delmarva Power & Light Company, and Atlantic City Electric Company**
  Testimony in support of appropriate incentives for investment in electric transmission. (2013)
- **Baltimore Gas and Electric Company**
  Testimony in support of appropriate incentives for investment in electric transmission. (2013)
- **Advanced Energy Economy Institute**
  Survey of CEOs of advanced energy companies doing business in California, with regard to the state's energy and environmental policies. (2012-2013)
- **NSTAR and Cape Wind**
  Testimony in support of the long-term power purchase agreement of NSTAR and Cape Wind. (2012)
- **Energy Foundation**
  Strategic planning for the China Sustainable Energy Program. (2012)
- **Pacific Gas & Electric Company**
  Testimony on ratemaking issues for PG&E's proposed pipeline safety enhancement plan. (2012)
- **COMPETE Coalition**
  Testimony on energy efficiency as part of the performance of state and wholesale electric markets in New Jersey. (2011)
- **Compressed Air Energy Storage Company**

Confidential engagement to analyze regional wholesale markets for baseload and renewable energy power generation. (2011)

- **Merck Family Foundation**
  Analysis of the economic impacts of the funds collected through the auction of allowances under the Regional Greenhouse Gas Initiative. (2011)
- **American Clean Skies Foundation Corporation**
  Analysis of the reliability and air emission issues associated with potential retirement of the Potomac River Generating Station. (2011)
- **Colorado Public Utilities Commission**
  Analysis of the Colorado solar photovoltaic incentive program. (2011)
- **Exelon Corporation and Constellation Energy (Baltimore Gas & Electric)**
  Analysis of the economic impacts on the Maryland economy associated with the proposed clean-energy commitments tied to the proposed merger of Exelon and Constellation Energy. (2011-2012)
- **New England Power Generators Association**
  Analysis of competition issues associated with the proposed merger of Northeast Utilities and NSTAR. (2011)
- **Dominion Generation**
  Analysis of proposed state tax on output from in-state power generation. (2011)
- **Exelon Corporation and Clean Energy Group**
  Analysis of electric industry issues involved in responding to the U.S. Environmental Protection Agency's air emission regulations. (2010-present)
- **Major electric distribution company and independent power producer**
  Analysis of the net benefits of retiring a set of generating units, and replacing it with a long-term contract to provide power from a gas-fired power plant and biomass power plant. Modeled locational energy prices, capacity prices, and revenue streams in the region. (2010)
- **Major electric utility company**
  Analysis of changing fuel-market conditions affecting the value of gas-fired power generation in the context of litigation. (2010)
- **Commonwealth Edison Company**
  Analysis of the ratemaking issues for a electric distribution utility with respect to energy efficiency program effects in Illinois. (2010-2011)
- **National Grid – Massachusetts electric distribution companies**
  Analysis of the market for and other attributes of the long-term contract for power from the Cape Wind project. (2010)
- **Spectra Energy (with the Interstate Natural Gas Association of America)**
  Analysis of the markets for natural gas, and analysis of the implications of the U.S. Environmental Protection Agency's Advanced Notice of Proposed Rulemaking on PCBs. (2010-2011)
- **Renewable energy company**
  Analysis of transmission access, planning, cost allocation and siting conditions in regions through the U.S. (2010-present)
- **Indian tribe in MidWest**
  Analysis of the value of an oil pipeline right-of-way. (2010)
- **Dominion Generation**
  Analysis of the proposed legislation in Connecticut to establish a windfall profits tax on all generating assets located in the state. (2010)
- **Transmission consortium**
  Analysis of cost-allocation models for an interstate transmission project involving transmission utilities and merchant transmission companies. (2009-2010)

- **Massachusetts renewable energy trust**
  Analysis of transmission-related models and considerations for the development of offshore renewable energy. (2009)
- **Major electric utility**
  Development of business models and approaches for deploying energy efficiency within the context of the American Climate and Energy Security Act framework. (2009)
- **Major industrial electricity consumer**
  Assistance in analyzing the implications of the American Climate and Energy Security Act for the company, in light of impacts on energy prices and trade considerations. (2009)
- **National Grid**
  Assistance in developing a revenue decoupling mechanism for retail distribution service, and providing expert witness assistance in electric and natural gas distribution rate cases in Massachusetts, Rhode Island, New York and New Hampshire. (2009-2011)
- **Sandia Pueblo**
  Assistance in valuing a transmission corridor on tribal reservation land. (2008-present)
- **Major electric and gas company**
  Analytic and strategic support for company's development of a business plan for energy efficiency and other energy-related investments on the customer side of the meter. (2008)
- **AEP Transmission**
  Prepared a white paper on the design and cost allocation framework for a high-voltage transmission system designed to support renewable and other resources. (2008)
- **Reliant**
  Prepared study assessing competition in the wholesale and retail electricity markets in ERCOT. (2008)
- **Major environmental organization**
  Analytic and strategic support for utility ratemaking policies for advancing energy efficiency in many states. (2008-present)
- **New York Independent System Operator**
  Supported strategic planning and assessment for the Board of Directors. (2008-2010)
- **Commonwealth Edison Company**
  Provided testimony on ratemaking policy issues relating to regulatory lag. (2008)
- **Energy Association of Pennsylvania (EGA)**
  Analysis of proposed legislation to cap retail electricity rates in Pennsylvania after the expiration of rate caps. (2008)
- **National Association of Regulatory Utility Commissioners (NARUC)**
  Preparing study on best practices relating to state regulatory agency policies and utility practices on competitive procurement of resources to serve retail electricity customers. (2007)
- **KeySpan/Boston Gas**
  Analysis of the implications of utility ratemaking for valuation of utility assets for property taxation purposes. (2008)
- **Electric company**
  Analysis of state's retail and wholesale power market structure. (2008)
- **Electric company**
  Preparation of expert report on electric industry structure in the 1990s and 2000s. (2007-2008)
- **Major electric company**
  Analytic support for company's development of strategic plan for company-wide greenhouse gas reduction commitments. (2008)
- **Sierra Pacific Power Company**

Provided testimony on policy issues relating to the use of historic, future, and hybrid test years in state utility rate cases. (2007-2008)

- **Harvard University**
  Provided strategic assistance relating to regulatory issues affecting the planning and design of Harvard's "green campus" development in Allston Landing. (2007-2008)

- **Public Service Gas & Electric Company of New Jersey (PSEG)**
  Provided assistance in facilitating the development of a policy to address "leakage" of greenhouse gas emissions associated with the adoption of a cap-and-trade program in various Northeast states and the interstate sales of electricity in various Northeast/MidAtlantic power markets. (2007)

- **Electric Power Supply Association**
  Prepared white paper on economic, environmental & regulatory trends in the electric industry (2007).

- **Sempra Energy Company – San Diego Gas & Electric Company and SoCalGas Company**
  Provided testimony on policy issues relating to the provision of financial incentives to electric and gas utilities for the successful provision of energy efficiency programs. (2007)

- **PECO Energy Company**
  Provided advice on various economic and policy issues relating to electric industry restructuring policy. (2007)

  Provided testimony on issues relating to the market for alternative energy credits and the proposal of PECO to voluntarily solicit, procure and bank alternative energy credits. (2007)

- **Commonwealth Edison Company**
  Provided testimony on issues relating to the relationship of auctions for wholesale supply for basic service customers and alternative proposals for utility resource procurement. (2007)

- **ISO New England**
  Assisting Regional Transmission Organization in scenario planning process examining various future technology mixes for New England's electric system. (2006-2007)

- **PJM**
  Preparing report on market monitoring functions performed under various federal regulatory agencies with responsibility to oversee electricity and energy markets (i.e., the Federal Energy Regulatory Commission and the Commodities Futures Trading Commission). (2006-2007)

- **Major Industrial and Power Plant Company**
  Assisted company (located outside of New England) in analyzing market and negotiating the price and other terms and conditions for long-term gas supply (2006-2007). Assisted company in valuing a power plant asset. (2007)

- **State of North Carolina**
  Provided expert witness services on electric utility economics and regulatory issues, on behalf of the North Carolina Attorney General in a nuisance lawsuit to require the Tennessee Valley Authority to put in place air pollution control equipment on coal-fired power plants in TVA's system. (2006-2008)

- **Major Regional Transmission Organization**
  Performed analysis of market conditions and trends, and benchmarking market rules and reliability performance with other comparable organizations – in support of RTO's strategic planning process. (2006-2007)

- **Special LNG Committee, Commonwealth of Massachusetts**
  Prepared report on the need for natural gas and liquefied natural gas in the Northeast, the need for LNG facilities, the role of government in the LNG facility siting process, and other issues relating to LNG proposals in the Commonwealth. Provided on *pro-bono* basis to the Commonwealth. (2006)

- **Ute Indian Tribe of the Uintah and Ouray Reservation**
  Prepared a report on economic and policy issues relating to use of tribal lands for energy rights-of-way, as called for in Section 1813 of the Energy Policy Act of 2005. (2006)

- **New York ISO**
  Prepared white paper on fuel diversity issues in the New York market. (2008)

  Prepared white papers on long-term contracting issues in states with restructured electric industries, and on the economic foundations for single-clearing-price markets versus pay-as-bid markets. (2007)

Performed economic benefit/cost study of the introduction of competition into the wholesale electric market in the region. (2006-2007)

- **Commonwealth Edison Company**
  Provided testimony on appropriate ratemaking principles for recovery of pension-related costs in proceeding to set rates to go into effect following the transition period. (2006)
- **Commonwealth Edison Company**
  Provided testimony on economic principles associated with single-price auction design versus pay-as-bid auction design, for the procurement of wholesale power supplies to meet the needs of retail all-requirements customers. (2006)
- **Exelon Corporation**
  Provided analysis of designs of mandatory carbon control policies. (2005-2007)
- **Sonosky, Chambers, Sachse, Endreson & Perry, LLP, on behalf of various Indian Tribes**
  Provided analysis in support of comments filed with the Departments of Interior and Energy with respect to the study of energy rights of way on tribal land which was called for in Section 1813 of the Energy Policy Act of 2005. (2005-2006)

  Provided analysis in support of various tribal negotiations with energy companies with respect to valuation of energy rights of way on tribal reservation lands. (2007)
- **Electric utility company**
  Performed independent evaluator services in procurement for power resources. (2005-2006)
- **Power Generation Company**
  Provided analysis of product market development in MidWest and Eastern RTOs. (2005)
- **New England Energy Alliance**
  Prepared a white paper on energy infrastructure needs in the New England states. (2005)
- **Committee on Regional Electric Power Cooperation (of the Western Interstate Energy Board)**
  Provides research and advising with respect to market monitoring and assessment for the Western wholesale electric markets. (2005-2007)
- **Southern California Edison Company**
  Provided Independent Evaluator services for a competitive procurement of new long-term generation resources and renewable resources. (2005)
- **LNG / Interstate Gas Pipeline project – Duke Energy/Excelerate project**
  Prepared regional market study for the project proposed for Massachusetts. (2004-2005)
- **Electric Generating Company**
  In a contract dispute, provided expert witness services relating to whether changes in a region's wholesale power market rules nullified a power sales agreement. (2004-2006)
- **Louisville Gas & Electric and Kentucky Utilities**
  For two vertically integrated electric companies, provided expert witness services in a state investigation of which regional transmission approach satisfies state policy objectives. (2004)
- **Independent Generating Company**
  For a power company owned by commercial lenders in a Northeast power market, provided consulting services to monitor state regulatory policies and actions with respect to utility regulation and environmental regulation, and legislation affecting power plants. (2004)
- **Major Electric and Gas Company**
  Performed confidential study of the benefits, costs and current conditions in certain wholesale and retail electric power markets. (2004-2005)
- **Regional Transmission Organization**
  For a confidential project, analyzed market monitoring and mitigation approaches. (2004-2005)

- **Major Commercial Bank**
  For a confidential project, advise with regard to electric industry restructuring and profitability of large energy marketer and trading organization. (2004-2005)
- **Consumer Energy Council of America**
  For a group of electric industry market participants, regulators, and interest groups, prepared white papers on the need for transmission enhancements in U.S. power markets. (2004)
- **Retail electric company**
  Provides confidential analysis of business models and regulation approaches for providing retail electric service in the state. (2004)
- **Independent system operator**
  Provided confidential analysis and research on aligning retail and wholesale market policies. (2004)
- **California State attorney general**
  Provided expert witness services with regard to state resource adequacy & planning practices. (2004)
- **Pacific Gas & Electric Company**
  Provided expert witness services relating to the public benefits of the settlement between PG&E and the California Public Utility Commission, to enable PG&E to emerge from bankruptcy. (2003)
- **Independent power company**
  Provided consulting advice on economics of compliance strategies for air and water permits. (2003)
- **Major public utility company**
  Provided expert advisory services to a buyer of power supplies relating to the pricing and other terms for a long-term purchase power agreement. (2003)
- **Duke Power**
  Provided expert advisory services relating to rate-making and other regulatory practices. (2003)
- **Exelon Generation**
  Provided strategic advice and analytic services relating to market conditions affecting the client's generating assets in New England. (2003)
- **Entergy Services Inc.**
  Provides services as the independent monitor of Entergy's Fall 2002, Spring 2003 and Fall 2003 Requests for Proposals for Supply-Side Resources. (2002-2005)
- **Power generation company in New England**
  Provided expert testimony in contract dispute regarding allocation of uplift costs in an agreement concerning the supply of wholesale power for standard offer service. (2002)
- **Connecticut Light and Power Company**
  Provided expert testimony in contract dispute regarding allocation of congestion costs in an agreement concerning the supply of wholesale power for standard offer service. (2002-2003)
- **Ocean State Power**
  Provided arbitration services in a dispute regarding a gas purchase contract between Ocean State Power and ProGas Ltd. (2002-2003)
- **Regional independent system operator**
  Provided strategic advice on regional transmission organization strategy. (2002)
- **PJM Interconnection**
  Provided advice to the appointed mediator as part of the Alternative Dispute Resolution process, in a dispute involving PJM and a market participant. (2002)
- **Duke Energy Corporation**
  Provided analysis on strategic issues in gas and electric regulatory policy for Duke Energy’s corporate office, including with regard to code of conduct issues, wholesale competition, regional transmission organization policy. (2001-2002)

- **Pacific Gas and Electric Corporation**
  Provided expert witness testimony in proceedings of the Federal Energy Regulatory Commission on public benefits of the proposed restructuring of PG&E assets as part of its emergence from bankruptcy. (2001-2002)

- **Massachusetts Renewables Trust**
  Provided assistance in support of the Trust's renewables and power quality program. (2001-2002)

- **Major electric holding company**
  Prepared an analysis of the regulatory policies for reviewing merger applications in states where potential merger candidates are located. (2001)

- **Western Massachusetts Electric Company**
  Provided expert testimony in contract disputes regarding allocation of congestion costs in agreements concerning the supply of wholesale power for standard offer service. (2001-2002)

- **The Energy Foundation**
  Researched and wrote a white paper on California's process for permitting new power plants. (2001)

- **Cross-Sound Cable Company**
  Provided expert testimony regarding public benefits of proposal to construct merchant transmission facility across Long Island Sound. (2001-2002)

- **Major independent power company**
  Provides expert witness support in litigation surrounding power plant development project, involving viability of project's environmental and siting permitting. (2001-2004)

- **MASSPOWER Inc.**
  Mediator in a contract dispute involving pricing of power purchases. (2001)

- **NRG Energy and Dynegy**
  Provided expert witness support in regulatory proceeding to review these companies' acquisition of power plants being divested by Sierra Pacific and Nevada Power. (2001)

- **Occidental Chemical Corporation**
  Provided expert witness support and economic analysis of a major electric utility's transmission policies and practices, and review of the proposed RTO. (2000)

- **PP&L Global**
  Provided economic and environmental analysis and expert witness support for proposal to build the Kings Park Energy power plant in Long Island, New York. (2000)

- **Calpine Corporation**
  Provided economic and environmental analysis and expert witness support for proposal to build the Wawayanda power project in Rockland County, New York. (2000)

  Provided environmental analysis and expert witness support for proposal to build the Towantic power plant in Oxford, Connecticut. (2001)

- **American National Power, Calpine, El Paso, NRG Energy, Sithe, Southern Energy**
  Provided support for the development of a proposal for a Regional Transmission Organization for New England. (2000-2001)

- **Duke Energy/Maritimes and Northeast Pipeline**
  Provided expert reports on the market and environmental impacts of new natural gas infrastructure and supply in New England and the public benefits of the Maritimes and Northeast Phase III and Hubline project. (2000-2003)

- **Arkansas Electric Distribution Cooperatives and Arkansas Electric Cooperative Corporation**
  Provided expert witness support and analysis on economic and public policy issues associated with various aspects of wholesale and retail competition in Arkansas. (2000-2001)

- **TransÉnergie U.S.**
  Provided expert testimony regarding public benefits of proposal to construct merchant transmission facility. (2000-2001)

- **Conectiv**
  Provided strategic wholesale market analysis and support for procurement of supplies for distribution utility company's provision of Basic Generation Services to retail customers. (2000)
- **SCS Energy Corp. – Astoria Energy**
  Provided economic and environmental analysis and expert witness support for proposal to build new power plant in New York City. (2000-2001)
- **HEFA Power Options**
  Provided strategic advice regarding wholesale power market for retail buyers' group. (2000-2003)
- **Major real estate development company**
  Provided strategic support for configuration of electric and gas infrastructure for large regional mixed-use development project. (2000-2001)
- **Investment company**
  Provided strategic advice to investment company with regard to potential investment in major electric generating equipment manufacturing company. (2000)
- **Major independent power company**
  Provided economic and environmental support for company's application to construct a merchant power plant in Florida. (2000)
- **Major railroad company**
  Provided expert witness support on economic and regulatory policy issues for railroad in state regulatory proceeding on a proposed utility merger. (2000)
- **Coalition of Wireless Telecommunications Carriers**
  Prepared an expert report on economic benefits of wireless telecommunications. (2000)
- **Major brownfield property developer**
  Provided valuation of property to be developed as site for new electric generating facility. (2000)
- **Fitchburg Gas and Electric Company**
  Provided litigation support for a gas and electric company on rate design policy. (2000)
- **Consortium of electric companies**
  Provided economic analysis, contract review, and litigation support for a consortium of electric companies with power purchase agreements with PURPA projects. (1999)
- **FirstEnergy Corp.**
  Provided expert witness support regarding generation asset valuation and the impacts of a new electric industry restructuring law on the company. (1999-2000)
- **Ozone Attainment Coalition**
  Provided strategic analysis and advice on electric system reliability issues relating to electric companies' implementation of 2003 NOx requirements issued by the U.S. EPA. (1999)
- **Municipal electric department**
  Provided expert witness services and analysis of the economics and need for a new natural gas pipeline proposed to serve an existing electric power plant in Massachusetts. (1998-2001)
- **Seneca Nation**
  Provided expert analysis and strategic advice regarding the value of transmission rights of way, in a dispute with an electric utility company. (1998-2000)
- **Major cable company**
  Provided strategic advice in a series of regulatory and court cases involving inter-affiliate transactions of electric utility company entering into competitive telecommunications and cable markets. (1998)
- **Major electric utility company**
  Provided expert witness support regarding structural changes in the electric industry, in litigation pertaining to the company's restructuring plans. (1998-1999)

- **Sithe Energies, Inc.**
  Provided strategic advice and regulatory support on a variety of issues (market analysis, transmission and ISO issues, federal and state market rules, legislation, siting, environmental strategy) relating to the company's participation in the New England, New York, and PJM markets. (1997-2003**)**

  Provided transition assistance to the company in its acquisition and integration of approximately 2,000 MW of existing fossil fuel generation from Boston Edison Company. (1997-1998)

  Provided transition assistance to the company in its acquisition and integration of approximately 4,100 MW of existing fossil and hydroelectric generation capacity from GPU Genco. (1998-1999)

  Provided support for the company's participation in electricity product markets structured by NEPOOL and operated by the Independent System Operator-New England, the New York power pool and the New York ISO, and PJM. (1997-2002)

  Provided strategic project development advice and expert witness support for the company's applications to construct three natural gas merchant power plants (totaling 2865 megawatts) in Everett, Weymouth, and Medway, Massachusetts. (1998-2001)

  Provided strategic guidance and regulatory support regarding design of air quality improvement plan for existing fossil units at Mystic Station. (1998-2001)

  Provided strategic guidance regarding company's natural gas-fired merchant power plant development projects in Ontario, Canada. (2000-2001)

- **Natural Resources Canada**
  Prepared a white paper on the implications for electric system reliability in Canada that are associated with restructuring the electric industry in the United States. (1999)

- **Cummins Engine Company, Inc.**
  Provided strategic analysis on implications of national energy and environmental policies for the Company's long-term business opportunities. (1999)

- **Electric utility company**
  Provided advice and regulatory support with regard to the economics and prudency of an existing long-term power purchase agreement. (1998)

- **National Association of Regulatory Utility Commissioners (NARUC)**
  Assisted the Executive Director and NARUC leadership in updating its strategic plan and in preparing a business plan for its implementation. (1998)

- **State energy office**
  Assisted the office in analyzing options for supporting renewable resource development in the state and in designing a market-based strategy to implement a new legislative mandate for a "renewables portfolio standard." (1997-1998)

- **U.S. Generating Company (now PG&E Generating Company)**
  Provided analysis of the economic, reliability, and environmental benefits to the host state and region of a new merchant power generation facility: the 360-megawatt Millennium project in Massachusetts. Provided expert witness testimony on the results of this analysis to the Massachusetts Energy Facility Siting Board. (1996-1997)

  Provided analysis of the economic, reliability, and environmental benefits of a new merchant power generation facility: the 792-megawatt Lake Road Generating Project in Connecticut. Provided expert witness testimony on the need for this project to the Connecticut Siting Board. (1997-1998)

- **Pennsylvania Power & Light Company**
  Provided strategic guidance, economic and policy analysis, and regulatory support for electric utility company as it developed and proposed its plan for restructuring its company for retail competition. Issues and tasks included electricity market price estimation, rate design, revenue analysis, consumer protection, corporate structure, and regulatory strategy. Provided expert witness testimony on rate design policy issues. (1996-1998)

- **Major diversified electric equipment company**
  Provided strategic advice and analysis on market opportunities and risk in various regions of the U.S. electric industry, under numerous restructuring scenarios. (1996-1997)

- **Major nationwide electricity consumer**
  Conducted analysis of buying options and strategies for acquisition of electricity services in states with customer choice in retail generation markets. Analysis included review and comparison of eight states' implementation of customer choice, from the perspective of how retail rate and function are unbundled, how the commercial and reliability functions are structured in the regional generation market, and how the customer should approach the market to competitively procure power across various states. (1997)

- **National Council on Competition in the Electric Industry**
  Prepared a Briefing Paper on Regional Issues in Electric Industry Restructuring, for the NCCEI—a joint project of the National Association of Regulatory Utility Commissioners, the National Conference of State Legislatures, the U.S. Department of Energy, and the U.S. Environmental Protection Agency. Analyzed regional issues, including electric system reliability, transmission access and siting, environmental protection, market power, interstate reciprocity in retail access policies, and regulation of multi-state electric utility companies. (1997)

- **Major western coal company**
  Analysis of western states' electric industry restructuring policies and market prices for power in various states within the Western Systems Coordinating Council area. (1996-1997)

- **Major gas pipeline company**
  Provided analysis of market structures and prices for generation and delivery services in electric service territories where the gas pipeline would locate facilities that use electricity. (1997)

- **Major electric supply company**
  Provided analysis of regional electricity market conditions to support this company's analysis of the value of various utility assets that were being divested as part of an electric utility company's corporate restructuring. (1997)

- **Massachusetts Division of Energy Resources**
  Analyzed Boston Gas Company's proposal for unbundling its retail service, its proposal for performance-based rates, and its plan for departing the merchant function. Provided analytic, policy and negotiation support on gas industry restructuring issues in a variety of cases. (1996-1998)

- **Massachusetts Division of Energy Resources**
  Assisted the state's energy office in developing policies for establishing a statewide fund to support renewable resource development as part of the state's electric industry restructuring plan. Provided analytic support to the energy office as it participated in a working group of stakeholders attempting to reach consensus on the institutional design of such a renewables fund. Drafted legislative language to create the fund and the non-bypassable charge on distribution service in the state. (1997)

- **Massachusetts Water Resources Authority Advisory Board**
  Analyzed opportunities for the MWRA, a public authority with major energy-using and -producing assets, to position itself beneficially as a participant in a restructured retail electricity market in New England. (1996-1997).

- **Coalition of marketers and independent power producers**
  Analyzed state public utility commission proposed rules for restructuring the electric industry, from the point of view of whether the proposed structure would assure a workably competitive market. Examined the transmission owners' proposal for an independent system operator. (1996-1997)

- **Major independent power producer**
  Analyzed market opportunities and risks for merchant plant development in a U.S. region. (1996)

- **Major independent power producer**
  Analyzed the expected market price of power in two regions of the U.S. electricity markets. Presented results to company board of directors. (1996)

- **MCI, Inc.**
  Provided strategic regulatory advice in local competition proceeding before a state public utility commission. Provided testimony on local competition policy issues in public utility commission proceedings in Massachusetts and New York. (1996)

- **Group of municipal electric companies in New York State**
  Provided expert witness testimony on cost allocation issues in court litigation on wholesale power contracts. (1996)

- **Intercontinental Energy Corporation**
  Provided strategic guidance, analytic support, and regulatory support for the company, a major independent power producer, as it developed its position in the state's electric industry restructuring proceeding. Issues involved regional industry structure (including independent system operator proposals), stranded cost recovery policy, stranded cost calculation methodologies, horizontal and vertical market power issues, environmental protection, and securitization. Provided expert witness testimony in state retail restructuring proceedings in Massachusetts and New Jersey. (1995-1997).

- **Nextel Communications**
  Provided economic and policy analysis on barriers to entry in the local commercial mobile radio service market in region. Provided expert witness testimony before the Massachusetts Department of Public Utilities. (1995-1998)

- **Arizona Public Service Company**
  Provided expert witness testimony on regulatory reforms necessary to align traditional existing utility planning proceedings with competitive retail markets as being proposed in the state. (1995)

TESTIMONY ON BEHALF OF CLIENTS

Many confidential expert reports, testimonies, declarations, affidavits, and depositions in confidential arbitrations and mediations.

- **On her own behalf**
  Before the Oregon State Legislature's House Interim Committee on Revenue, Senate Interim Committee on Finance and Revenue, on "Consideration of the Feasibility and Implications of a Clean Air Tax or Fee in Oregon: Implementing Greenhouse Gas Emission Reduction Policies – Experience from Other States," January 15-16, 2014.

- **On her own behalf**
  Before the U.S. House of Representatives Energy and Commerce Subcommittee on Energy and Power, "Hearing on EPA's Proposed GHG Standards for New Power Plants and H.R. _, Whitfield-Manchin Legislation," November 14, 2013**.**

- **Joshua Epel, James Tarpey, and Pamela Patto, et. al.**
  Before the U.S. District Court of the State of Colorado, on behalf of Joshua Epel, James Tarpey, and Pamela Patton (commissioners of the Colorado Public Utilities Commission), and Environment Colorado, Conservation Colorado Education Fund, Sierra Club, The Wilderness Society, Solar Energy Industries Association, and Interwest Energy Alliance, in re: *American Tradition Institute and Rod Lueck, v. Epel at al*., Civil Action Number 11-cv-00859-WJM-BMB, expert report, November 7, 2013.

- **On her own behalf**
  Before the Federal Energy Regulatory Commission, in the Matters of Centralized Capacity Markets in Regional Transmission Organizations and Independent System Operators," Docket No. AD13-7-000, re: considerations for the future, September 9, 2013.

- **Environmental Defense Fund and North Carolina Sustainable Energy Association**
  Before the Public Utilities Commission of North Carolina, Docket E-7, SUB 1032, August 7, 2013.

- **Advanced Energy Economy Ohio**
  Before the Ohio Senate Public Utilities Committee in support of the Ohio Energy Efficiency Resource Standard, April 9, 2013.

- **Pepco Holdings, Inc., and its operating affiliates, Potomac Electric Power Company, Delmarva Power & Light Company, and Atlantic City Electric Company**
  Before the Federal Energy Regulatory Commission, in Delaware Division of Public Advocate, *et. al*., v. Baltimore Gas and Electric Company and Pepco Holdings Inc., Docket No. EL13-48-000, April 3, 2013.

- **Baltimore Gas and Electric Company**
  Before the Federal Energy Regulatory Commission, in Delaware Division of Public Advocate, *et. al*., v. Baltimore Gas and Electric Company and Pepco Holdings Inc., Docket No. EL13-48-000, April 3, 2013.

- **NSTAR Electric Company and Cape Wind LLC**
  Before the Massachusetts Department of Public Utilities, in the Petition of NSTAR Electric Company for Approval

of a Proposed Long-Term Contract for Renewable Energy with Cape Wind Associates, LLC Pursuant to St. 2008, c. 169, §83, Prefiled Direct Testimony, March 30, 2012; testimony under cross-examination, August 2, 2012.

- **Pacific Gas and Electric Company**
  Before the California Public Utilities Commission, in the Rulemaking on the Commission's Own Motion to Adopt New Safety and Reliability Regulations for Natural Gas Transmission and Distribution Pipelines and Related Ratemaking Mechanisms, Rulemaking 11-02-019, Rebuttal Testimony filed on February 28, 2012; testimony under cross-examination, March 20, 2012.

- **COMPETE Coalition**
  Before the New Jersey Board of Public Utilities, In the Matter, In the Matter of the Board's Investigation of Capacity Procurement and Transmission Planning, Docket No. EO11050309, October 14, 2011.

- **On her own behalf**
  Before the U.S. House Energy and Commerce Committee, Subcommittee on Energy and Power, EPA Regulations and Electric System Reliability, September 14, 2011.

- **On her own behalf**
  Before the U.S. Senate Environment and Public Works Committee, Subcommittee on Clean Air and Nuclear Safety, June 30, 2011, Oversight Hearing: Review of EPA Regulations Replacing the Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR).

- **Exelon Corporation and Constellation Energy Group**
  Before the *Maryland Public Service Commission*, In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Case No. 9271, prefiled direct testimony (May 25, 2011); rebuttal testimony (October 12, 2011), supplemental testimony (December 15, 2011), testimony under cross-examination (November 10, 2011, January 25, 2012).

- **New England Power Generators Association**
  Before the *Massachusetts Public Utilities Commission, In the Matter of the Joint Petition for Approval of Merger [of Northeast Utilities and NSTAR] Pursuant to G.L. c. 164* , § 96, Docket D.P.U. 10-170, prefiled direct testimony (May 20, 2011); testimony under cross-examination (July 15 and 18, 2011).

- **Commonwealth Edison Company**
  Before the *Illinois Commerce Commission*, Investigation of Proposed General Increase in Electric Rates of Commonwealth Edison Company, Docket No. 10-0467, ComEd Exhibit 13.0, prefiled direct testimony (filed June 30, 2010); rebuttal testimony (filed November 22, 2010); surrebuttal testimony (filed January 2, 2011), testimony under cross-examination (January 18, 2011).

- **National Grid: Massachusetts Electric Company and Nantucket Electric Company**
  Before the *Massachusetts Department of Public Utilities*, Investigation as to the Petition of Massachusetts Electric Company and Nantucket Electric Company each d/b/a National Grid for approval by the Department of Public Utilities of two long-term contracts to purchase wind power and renewable energy certificates, pursuant to G.L. c. 169, § 83 and 220 C.M.R. § 17.00 et seq. – Docket D.P.U. 10-54 (the Cape Wind contract proceeding), prefiled direct testimony (filed June 4, 2010), rebuttal testimony (filed September 1, 2010), testimony under cross examination (September 8, 13, 14, 23, 24, 2010).

- **National Grid: Boston Gas Company, Essex Gas Company, Colonial Gas Company**
  Before the *Massachusetts Department of Public Utilities*, Investigation as to the Propriety of Proposed Tariff Changes, Docket No. D.P.U. 10-55, prefiled direct testimony (filed April 16, 2010); testified under cross-examination, June 28-29, 2010.

- **National Grid: EnergyNorth Natural Gas, Inc., d/b/a National Grid NH**
  Before the *New Hampshire Public Utilities Commission*, Investigation as to the Propriety of Proposed Natural Gas Tariff Changes, Docket DG 10-017, prefiled direct testimony (filed February 26, 2010).

- **National Grid: Niagara Mohawk Power Corporation**
  Before the *New York Public Service Commission*, Investigation as to the Propriety of Proposed Electric Tariff Changes, Docket No. 10-E-0050, prefiled direct testimony (filed January 29, 2009), rebuttal testimony (filed August 2010).

- **National Grid: Narragansett Electric Company**
  Before the *Rhode Island Public Utilities Commission,* Investigation as to the Propriety of Proposed Tariff Changes, Docket No. R.I.P.U.C. 4065, prefiled direct testimony (filed June 1, 2009; testimony under cross-examination, November 4, 2009).

- **National Grid: Massachusetts Electric Company and Nantucket Electric Company**
  Before the *Massachusetts Department of Public Utilities*, Investigation as to the Propriety of Proposed Tariff Changes, Docket No. D.P.U. 09-39, prefiled direct testimony (filed May 15, 2009; testimony under cross-examination, August 7 and 25, 2009, and September 8, 2009).

- **Amerada Hess Corp., et al.**
  Before the District Court of the United States for the Southern District of New York, on behalf of Amerada Hess Corp., et al., in *City of New York v. Amerada Hess Corp. et al.*, Case No. 1:00-1898, testimony in deposition, May 12, 2009.

- **State of North Carolina**
  Before the District Court of the United States for the Western District of North Carolina, on behalf of North Carolina in *State of North Carolina, ex rel. Roy Cooper, Attorney General, v. Tennessee Valley Authority*, Case No. 1:06CV20, testimony in deposition, May 17, 2007; testimony at July 22, 2008.

- **KeySpan Energy Delivery (National Grid)**
  Before the Massachusetts Appellate Tax Board, Boston Gas Company, d/b/a KeySpan Energy Delivery New England v. City of Boston, Docket No. F275055-F275056 (FY 2004), F279207-F279208 (FY 2005), F284088-F286194 (FY 2006), testimony and cross-examination, May 20-21, 28, June 4, 2008.

- **Commonwealth Edison Company**
  Before the *Illinois Commerce Commission*, Investigation of Proposed General Increase in Electric Rates of Commonwealth Edison Company, Docket No. 07-0566, ComEd Exhibit 18.0, prefiled rebuttal testimony (filed April 12, 2008).

- **Sierra Pacific Power Company**
  Before the Public Utilities Commission of Nevada, In the Matter of the Application of Sierra Pacific Power, filed pursuant to NRS 704.110(3), for authority to increase its general rates charged to all classes of electric customers to reflect an increase in annual revenue requirement, Docket No. 07-12 (filed December 3, 2007), Prefiled Direct Testimony; cross examination, April 17-18, 2008.

- **Amerada Hess Corp., et al.**
  Before the District Court of the United States for the Southern District of New York, on behalf of Amerada Hess Corp., et al., in *County of Suffolk and Suffolk County Water Authority v. Amerada Hess Corp. et al.*, Case No. 1:00-1898, testimony filed October 1, 2007.

- **Sempra Energy Company – San Diego Gas & Electric Company and SoCalGas Company**
  Before the *California Public Utility Commission*, Order Instituting Rulemaking to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification and Related Issues, Rulemaking Docket 06-04-010 (Filed April 13, 2006), testimony filed May 3, 2007, cross examination, May 29, 2007.

- **Commonwealth Edison Company**
  Before the *Illinois Commerce Commission*, Investigation of Rider CPP of Commonwealth Edison Company, and Rider MV of Central Illinois Light Company d/b/a AmerenCILCO, of Central Illinois Public Service Company d/b/a/ AmerenCIPS, and of Illinois Power Company d/b/a Ameren IP, pursuant to Commission Orders regarding the Illinois Auction, Docket No. 06-0800, testimony filed April 6, 2007; cross-examination, April 24, 2007.

- **PECO Energy Company**
  Before the *Pennsylvania Public Utility Commission*, Petition of PECO for Approval of (1) a Process to Procure Alternative Energy Credits During the AEPS Banking Period, and (2) A Section 1307 Surcharge and Tariff to Recover AEPS Costs, Prefiled Direct Testimony, March 19, 2007.

- **Masspower**
  Before the Superior Court Department of Suffolk County, Massachusetts, *Massachusetts Municipal Wholesale Electric Company v. Masspower, et al*., Civil No. 05-02710 (BLS1), on the changes in conditions in the electric industry in New England as they relate to Masspower's performance under its power supply agreement with

MMWEC; Expert Report, September 11, 2006; oral testimony under cross examination at trial, October 16-17, 2006.

- **Commonwealth Edison Company**
  Before the *Illinois Commerce Commission*, Proposed general increase in electric rates, general restructuring of rates, price unbundling of bundled service rates, and revision of other terms and conditions of service, Docket No. 05-0597, Rebuttal Testimony, January 30, 2006; Surrebuttal Testimony, March 14, ,2006; oral testimony under cross-examination, March 23, 2006. Testimony on rehearing, September 20, 2006.

- **Commonwealth Edison Company**
  Before the *Illinois House of Representatives, Electric Utility Oversight Committee*, on the Pay-as-Bid versus Uniform Price Auction Approach To Procurement of Wholesale Power for ComEd's Full-Requirements Customers, January 18, 2006, Springfield, Illinois.

- **Louisville Gas & Electric Company and Kentucky Utilities Company**
  Before the *Kentucky Public Service Commission*, Application of LG&E and KU to transfer functional control of their transmission assets, Case No. 2005-xxxx, Direct Testimony, November 19, 2005.

- **Western Massachusetts Electric Company**
  Before the Superior Court Department of Norfolk County, Massachusetts, *Alternative Power Source, Inc., v. Western Massachusetts Electric Company*, Civil Action No. 00-1967, on the allocation of costs related to transmission congestion in wholesale power contract for standard offer service. Expert Report, September 19, 2001; deposition, October 15, 2001; testimony at trial, July 15, 2005.

- **Entergy Louisiana, Inc. and Entergy Gulf States Inc.**
  Before the *Louisiana Public Service Commission*, Application of Entergy Louisiana, Inc. for Approval of the Purchase of Electric Generating Facilities and Entergy Gulf States, Inc. for Authority to Participate in Contract for the Purchase of Capacity and Electric Power, Docket No. U27836, January 21, 2005.

- **Louisville Gas & Electric Company and Kentucky Utilities Company**
  Before the *Kentucky Public Service Commission*, Investigation Into The Membership of Louisville Gas and Electric Company and Kentucky Utilities Company In The Midwest Independent Transmission System Operator, Inc., Case No. 2003-00266, September 29, 2004; Supplemental Rebuttal Testimony, January 10, 2005; testimony at hearing, June 2005.

- **Entergy Services Inc.**
  Before the *Federal Energy Regulatory Commission,* Entergy Services Inc., et al., in support of the application for approval of market-based power purchase agreements under Section 205 of the Federal Power Act. Affidavit, February 28, 2003; Affidavit, March 31, 2003; Testimony, September 2003; Testimony at deposition, November 20, 2003; Rebuttal Testimony, May 11, 2004; Deposition, May 27, 2004, and June 10-11, 2004; Testimony under cross-examination, July 19-23, 26-27, 2004.

- **Pacific Gas & Electric Company**
  Before the *California Public Utilities Commission*, In Re: Order Instituting Investigation into the ratemaking implications for Pacific Gas and Electric Company (PG&E) pursuant to the Commission's Alternative Plan of Reorganization under Chapter 11 of the Bankruptcy Code for PG&E, in the United States Bankruptcy Court, Northern District of California, San Francisco Division, In re Pacific Gas and Electric Company, Investigation 02-04-026, Pre-Filed Testimony, July 23, 2003, Testimony under cross-examination, September 12, 2003.

- **Entergy Louisiana, Inc.**
  Before the *Louisiana Public Service Commission, Entergy Service*, In Re: Application of Entergy Louisiana, Inc., for Authorization to Enter into Certain Contracts for the Purchase of Capacity and Energy, Docket No. U-27136, Rebuttal Testimony, April 25, 2003.

- **Pacific Gas and Electric Company/PG&E Corporation**
  Before the *Federal United States Bankruptcy Court, Northern District of California, San Francisco Division*, In Re: Pacific Gas and Electric Company, Debtor, Federal I.D. No. 94-0742640, on the public policy concerns raised by the proposed reorganization plan of PG&E Corporation. Expert report, November 8, 2002; rebuttal report, November 26, 2002.

- **PP&L Global**
  Before the *New York Public Service Commission, Article X Siting Board*, on the economic and environmental

benefits of the Kings Park Energy power plant. Prefiled direct testimony (with James Potter, Stephen T. Marron, David J. Kettler, and Thomas Conoscenti), January 2002; rebuttal testimony (with James Potter, Stephen T. Marron, William C. Miller, Jr., N. Dennis Eryou, and Robert W. Brown), October 23, 2002.

- **Connecticut Light & Power Company**
  Before the *Federal United States District Court, District of Connecticut, Connecticut Light & Power Company v. NRG Power Marketing Inc.*, on their standard offer service wholesale sales agreement. Expert report, August 30, 2002; deposition, September 27, 2002.

- **Pacific Gas and Electric Company/PG&E Corporation**
  Before the *Federal Energy Regulatory Commission, in the Matter of Pacific Gas and Electric Company, PG&E Corporation, on behalf of its Subsidiaries Electric Generation LLC, ETrans LLC, and GTrans LLC,* on the public benefits of the application seeking approval under Section 203 of the Federal Power Act and Section 12 of the Natural Gas Act for various actions relating to restructuring of the company to emerge from bankruptcy, November 30, 2001.

- **Cross-Sound Cable Company LLC**
  Before the *Connecticut Siting Council*, on the public benefits of the proposed Cross Sound Cable Project's *Application for a Certificate of Environmental Compatibility and Public Need*, Docket No. 208. Prepared direct testimony, July 23, 2001; oral testimony under cross-examination, October 24-26, 29-30, 2001.

- **Sithe New England (Sithe Edgar LLC, Sithe New Boston LLC, Sithe Framingham LLC, Sithe West Medway LLC, Sithe Mystic LLC)**
  Before the *Federal Energy Regulatory Commission, in the Matter of NSTAR Electric & Gas Corp., v. Sithe Edgar LLC, Sithe New Boston LLC, Sithe Framingham LLC, Sithe West Medway LLC, Sithe Mystic LLC, and PG&E Energy Trading*, Docket No. EL01-79-000. Affidavit comparing historical cost recovery by Boston Edison for its fossil generation units (pre-divestiture) under rate regulation, versus Sithe's revenue recovery for these same units (post-divestiture) under market prices, June 5, 2001.

- **NRG Energy Inc. and Dynegy Holdings Inc.**
  Before the *Public Utilities Commission of Nevada*, In Re: petition of the Attorney General's Bureau of Consumer Protection to issue an Order staying further proceedings regarding divestiture of Nevada's electric generation assets and to open a docket to consider whether to issue a moratorium on divestiture in Nevada. Supplemental prepared direct testimony on behalf of Valmy Power LLC, April 6, 2001; testimony under cross-examination.

  Before the *Public Utilities Commission of Nevada*, In Re: petition of the Attorney General's Bureau of Consumer Protection to issue an Order staying further proceedings regarding divestiture of Nevada's electric generation assets and to open a docket to consider whether to issue a moratorium on divestiture in Nevada, prepared direct testimony on behalf of Reid Gardner Power LLC and Clark Power LLC, April 3, 2001; testimony under cross-examination.

- **Sithe New England, LLC**
  Before the *Federal Energy Regulatory Commission, In the Matter of Maine Public Utilities Commission and The United Illuminating Company v. ISO New England, Inc.*, affidavit on the role of price "spikes" in compensating generators for the services that they provide in the region, September 7, 2000.

- **Arkansas Electric Distribution Cooperatives**
  Before the *Arkansas Public Service Commission, In the Matter of a Generic Proceeding to Establish Uniform Policies and Guidelines for a Standard Service Package*. Prepared joint reply testimony (with Janet Gail Besser), July 21, 2000; prepared joint surreply testimony (with Janet Gail Besser), August 3, 2000.

- **TransEnergie U.S.**
  Before the *Connecticut Siting Council*, on the public benefits of the proposed Cross Sound Cable Project. Expert report, July, 2000; prepared direct testimony, September 20, 2000; oral testimony, September 27, 2000; supplemental written testimony, December 7, 2000; oral testimony under cross-examination, December 14, 2000; oral testimony January 9-11, 2001.

- **SCS Energy Corp.**
  Before the *New York State Public Service Commission*, on the economic and environmental impact of a new combined cycle power plant in Queens, NY, June 19, 2000.

- **Reading Municipal Light Department**

Before the *Massachusetts Energy Facilities Siting Board, Docket No. EFSB 97-4*, on the economics and need for a new natural gas pipeline, June 19, 2000; testimony under cross-examination September 19, 2000, September 21-22, 2000, October 5, 2000, and October 17, 2000.

- **Fitchburg Gas and Electric Light Company**
  Before the *Massachusetts Department of Telecommunications and Energy, Docket D.T.E. 99-66*, on gas and electric company rate design policy, testimony under cross-examination, January 14, 2000.

- **FirstEnergy Corp.**
  Before the *Public Utilities Commission of Ohio*, In the Matter of the Application of FirstEnergy Corp. on behalf of Ohio Edison Company, the Toledo Edison Company, and The Cleveland Electric Illuminating Company: for Approval of an Electric Transition Plan and for Authorization to Recover Transition Revenues (Case No. 99-1212-EL-ETP); for Approval of New Tariffs (Case No. 99-1213-EL-ATA); for Certain Accounting Authority (Case No. 99-1214-EL-AAM), on recovery of transition costs and calculation of the market value of generation assets. Joint testimony (with Dr. Scott T. Jones), December 22, 1999; supplemental testimony (with Dr. Scott T. Jones), April 4, 2000; deposition, April 7, 2000.

- **Sithe New England, LLC**
  Before the *Massachusetts Energy Facilities Siting Board, Docket EFSB 98-10*, in support of an application to construct a 540 MW gas-fired single cycle peaking power plant in Medway, Massachusetts. Prepared direct testimony, April 1999; oral testimony under cross-examination, July 27, 1999.

- **Village of Bergen, et al.**
  Before the *Supreme Court of the State of New York, Index No. 081556*, Affidavit in Response to Defendant's Submission of February 25, 1999, in *Village of Bergen, et al., Plaintiffs, v. Power Authority of the State of New York, Defendant*, March 3, 1999.

  Before the *Supreme Court of the State of New York*, *Index No. 081556*, Affidavit in Support of Petition to Correct Rates, in *Village of Bergen, et al., Plaintiffs, v. Power Authority of the State of New York, Defendant*, October 17, 1996.

- **Sithe New England, LLC**
  Before the *Massachusetts Energy Facilities Siting Board, Docket EFSB 98-7*, in support of an application to construct a 750 MW gas-fired combined cycle power plant at the Fore River Station in Weymouth, Massachusetts (Edgar). Prepared direct testimony, February 10, 1999; oral testimony under cross-examination, July 26, 1999.

- **Sithe New England, LLC**
  Before the *Massachusetts Energy Facilities Siting Board, Docket EFSB 98-8*, in support of an application to construct a 1500 MW gas-fired combined cycle power plant at the Mystic Station in Everett, Massachusetts. Prepared direct testimony, February 10, 1999; oral testimony under cross-examination, May 25, June 2, 1999.

- **U.S. Generating Company**
  Before the *Connecticut Siting Board, Docket No. 189*, on an application to construct a new Lake Road Generating Project, September 1998. Oral testimony under cross-examination.

- **Central Hudson Gas & Electric Corporation**
  Before the *Supreme Court of New York, Index No. 255/1998, CHGE v. West Delaware Hydro Associates*, on issues relating to ratemaking treatment of costs relating to power contracts, April 13, 1998.

- **Sithe New England Holdings, LLC**
  Before the *Massachusetts Department of Telecommunications and Energy and the Massachusetts Energy Facilities Siting Board, Docket Nos. DTE98-84 and EFSB98-5,* on issues pertinent to forecast and supply planning by electric companies, September 14, 1998.

- **Sithe Energies, Inc.**
  Before the *Massachusetts Energy Facilities Siting Board, Docket No. EFSB98-3,* on issues related to the agency's rulemaking establishing a Technology Performance Standard, June 8, 1998.

  Before the *Massachusetts Energy Facilities Siting Board, Docket No. EFSB98-1,* on issues related to the agency's review of project viability as part of review of power plant applications, March 16, 1998.

- **Pennsylvania Power & Light**
  Rebuttal testimony on codes of conduct governing affiliate relations. *Pennsylvania Public Utility Commission*,

Docket Nos. A-122050F0003, A-120650F0006, testimony under cross-examination, February 17, 1998.

Rebuttal testimony on rate unbundling and rate design issues, on consumer protection issues. *Pennsylvania Public Utility Commission, Docket No. R-00973954,* testimony under cross-examination, August 5, 1997.

Before the *Penn Public Utility Commission, Docket No. R-00973954*, on rate design, April 1, 1997.

- **Nextel Communications**
  Before the *Massachusetts Department of Public Utilities, Docket 95-59-B,* on telecommunications facility matters, testimony under cross-examination, January 1997.

- **Arizona Public Service Company**
  Before the *Arizona Corporation Commission, Docket No. U-0000-95-506,* on integrated resource planning and competition, October 1996.

- **U.S. Generating Company**
  Before the *Massachusetts Energy Facilities Siting Board, Docket 96-4,* on an application to construct a new Millennium power generating facility, testimony under cross-examination, October 1996.

- **MCI Communications, Inc.**
  Before the *Massachusetts Department of Public Utilities*, in the NYNEX interconnection docket. Opening up the Local Exchange Market to Competition: Common Themes with Retail Competition in Electricity and Natural Gas Industries, August 30, 1996.

- **Intercontinental Energy Corporation**
  Before the *New Jersey Board of Public Utilities, No. EX94120585Y,* on the Energy Master Plan Phase I Proceeding to Investigate the Future Structure of the Electric Power Industry, July 1996.

  Before the *Massachusetts Department of Public Utilities, DPU 96-100,* on the Investigation Commencing a Notice of Inquiry/Rulemaking for Electric Industry Restructuring, July 1996.

PUBLICATIONS, REPORTS, ARTICLES

Tierney, Susan, **"**Greenhouse Gas Emission Reductions From Existing Power Plants Under Section 111(d) of the Clean Air Act: Options to Ensure Electric System Reliability," May 8, 2014.

Tierney, Susan, "State shouldn't pursue hydropower from Quebec," *The Boston Globe* Opinion (The Podium (online)), March 25, 2014.

Hibbard, Paul, Susan Tierney, and Pavel Darling, "The Impacts of the Green Communities Act on the Massachusetts Economy: A Review of the First Six Years of the Act's Implementation," March 4, 2014.

Arvizu, Dan, Severin Borenstein, Susan Tierney, and Stephen Wright, "Report of the Independent Advisory Panel Regarding the Five California Utilities' Study of Integration of Renewable Energy into California's Electric System: 'Investigating a Higher Renewables Portfolio Standard in California'," January 2014.

Tierney, Susan, with Steve Carpenter, "Planning for Offshore Energy Development: How Marine Spatial Planning Could Improve the Leasing/Permitting Processes for Offshore Wind and Offshore Oil/Natural Gas Development," paper prepared for the Fund for Ocean Economic Research," June 2013.

Tierney, Susan, "Framing the Issues: Growing Tensions at the Interface of the Natural Gas and Electricity Markets (or, If You Want People to Think Outside of the Box, Don't Put Them in One)," paper prepared for MIT Energy Initiative (MITEI) Symposium: Growing Concerns, Possible Solutions: The Interdependency of Natural Gas and Electricity Systems, April 16, 2013.

Hibbard, Paul, Andrea Okie, Susan Tierney, "California's Advanced Energy Economy: Advanced Energy Business Leaders' Perspectives and Recommendations on California's Energy Policies," February 2012.

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Bipartisan Policy Center Energy Project (Susan Tierney, member), "America's Energy Resurgence: Sustaining Success, Confronting Challenges," February 2013.

Tierney, Susan, Co-lead Convening Author, Energy Supply and Use Chapter, Draft National Climate Assessment, January 2013.

Tierney, Susan, “The Positive Outlook for Cleaner Air and Reliable Electric Service,” June 11, 2012.

Tierney, Susan, “America’s Bright Future: Cleaner Air and Affordable, Reliable Electricity,” April 23, 2012.

Tierney, Susan, Foreword to CERES Report, “Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know (How State Regulatory Policies Can Recognize and Address the Risk in Electric Utility Resource Selection,” authored by Ron Binz, with Richard Sedano, Denise Furey, Dan Mullen, April 2012.

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Tierney, Susan, “Guest Commentary: EPA Air Pollution Rules are Good for the Nation,” CarbonMarket North America, February 11, 2011.

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Report to the Massachusetts Special Commission Relative to Liquefied Natural Gas Facility Siting and Use, June 2006.

"Energy Policy Act Section 1813 Comments: Report of the Ute Indian Tribe of the Uintah and Ouray Reservation for Submission to the U.S. Departments of Energy and Interior," co-authored with Paul J. Hibbard, In Cooperation With The Ute Indian Tribe of the Uintah and Ouray Reservation, May 15, 2006.

"In support of a Sound plan," Op Ed co-authored with John DeVillars, *Boston Globe*, April 23, 2006.

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"Principles for Market Monitoring and Mitigation in PJM: A Review of Economic Principles, Legal and Regulatory Structures, and Practices of Other Regions, with Recommendations," White Paper prepared for PJM Interconnection, January 3, 2005.

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Signatory to "Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges, Summary of Recommendations," National Commission on Energy Policy, December 2004.

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"Energy and Environmental Policy in the United States: Synergies and Challenges in the Electric Industry" (with Paul J. Hibbard), prepared for Le Centre Français sur les Etats-Unis (The French Center on the United States), July 2003; presentation in Paris, October, 2003.

"Supplemental Report on the Benefits of New Gas Infrastructure in New England: The Everett Extension Project" (with Charles Augustine), prepared for Algonquin Gas Transmission Company, February 5, 2003.

"The Political Economy of Long-Term Generation Adequacy: Why an ICAP Mechanism Is Needed as Part of Standard Market Design" (with Janet Gail Besser and John Farr), *The Electricity Journal*, August/September 2002.

"Siting Power Plants in the New Electric Industry Structure: Lessons California and Best Practices for Other States" (with Paul J. Hibbard), *The Electricity Journal*, June 2002.

"Maritimes Phase III & Algonquin Hubline: 'Coastal Dependency'" *CZM Consistency Review*, May 2002.

"Siting Power Plants: Recent Experience in California and Best Practices in Other States" (with Paul J. Hibbard), prepared for The Hewlett Foundation and The Energy Foundation, February 2002.

"Economic and Environmental Benefits of the Kings Park Energy Project: System Production Modeling Report" (with Joseph Cavicchi), prepared for PPL Global, January 25, 2002.

"The Benefits of New Gas Infrastructure in New England: The Maritimes & Northeast Phase IV Pipeline Project" (with Charles Augustine), prepared for Maritimes & Northeast Pipeline, LLC, January 2002.

"Activating Ontario's Capacity Market: Design and Implementation Issues" (with Janet Gail Besser and John Farr), prepared for Sithe Energies, Inc., October 24, 2001.

White paper on "Ensuring Sufficient Capacity Reserves in Today's Energy Markets" (with Janet Gail Besser and John Farr), prepared for submission as part of comments filed by Sithe Power Marketing LLC, Sithe New England Holdings, FPL Energy LLC, in FERC Docket No. EX01-1-000, October 17, 2001.

"The Rationale and Need for Capacity Obligations and a Capacity Market in a Restructured Ontario Electricity Industry" (with Janet Gail Besser & John Farr), prepared for Sithe., September 27, 2001.

"Economic and Environmental Benefits of the Wawayanda Energy Center: System Production Modeling Report" (with Joseph Cavicchi), prepared for Wawayanda Energy Center, LLC, August 24, 2001.

"A Better CO_2 Rule," op-ed, *The New York Times*, May 16, 2001.

"Air Pollution Reductions Resulting from the Kings Park Energy Project" (with Joseph Cavicchi), prepared for PPL Global, January 24, 2001.

"Report on "Economic Benefits of Wireless Telecommunications," prepared on behalf of the N.H. Coalition of Wireless Carriers for the New Hampshire HB 733 Study Committee, November 13, 2000.

Expert Report: "Public Benefits of the Proposed Cross Sound Cable Project Prepared for TransÉnergie U.S. Ltd.," July 2000.

"The Benefits of New Gas Infrastructure in Massachusetts and New England: The Maritimes & Northeast Phase III Pipeline and the Algonquin Gas Transmission Company HubLine Projects" (with Wayne Oliver of Navigant Consulting), prepared for Maritimes & Northeast Pipeline, LLC and Algonquin Gas Transmission Company, October 2000.

"Production Modeling for the Astoria Project: Report on Results" (with John G. Farr), report for SCS Energy Corp., June 14, 2000.

"Observations from Across the Border: Implications for Canadian Reliability of Recent Changes in U.S. Electricity Markets and Policy," white paper for Natural Resources Canada, 1999.

"Research Support for the Power Industry" (with M. Granger Morgan), *Issues in Science and Technology*, Fall 1998.

"Maintaining Reliability in a Competitive U.S. Electricity Industry," Final Report of the Task Force on Electric System Reliability, U.S. Department of Energy, September 29, 1998.

"Regional Issues in Restructuring the Electric Industry," *The Electricity Industry Briefing Papers*, The National Council on Competition and the Electric Industry, April 1998.

"Fueling the Future: America's Automotive Alternatives" (with Philip Sharp), The American Assembly, Columbia University, Arden House, NY, September, 1995.

"Needed: Broad Perspective, Fresh Ideas," guest editorial, *The Electricity Journal*, November 1994.

Foreword in J. Raab, *Using Consensus Building to Improve Utility Regulation*, American Council for an Energy-Efficient Economy, Washington, DC, 1994.

"Massachusetts' Pre-Approval Approach to Prudence in Massachusetts," *The Electricity Journal*, December 1990.

"Using Existing Tools to Pry Open Transmission—A New England Proposal," *The Electricity Journal*, April 1990.

"Sustainable Energy Strategy: Clean and Secure Energy for a Competitive Economy" (directed), National Energy Policy Plan, July 1995.

"The Domestic Natural Gas and Oil Initiative: First Annual Progress Report" (directed), U.S. Department of Energy, February 1995.

General Guidelines for Voluntary Reporting of Greenhouse Gases under Section 1605(b) of the Energy Policy Act of 1992 (directed), U.S. Department of Energy, October 1994.

"Fueling a Competitive Economy: Strategic Plan for the U.S. Department of Energy" (directed), 1994.

"The Domestic Natural Gas and Oil Initiative: Energy Leadership in the World Economy" (directed), U.S. Department of Energy, December 1993.

"Siting Needs: Issues and Options," U.S. Department of Energy, June 1993.

"The Nuclear Waste Controversy," in D. Nelkin, *Controversy: The Politics of Technical Decisions*, Sage, 1977; 1984 (second edition).

DATAWARS: Computer Models in the Federal Government (with Kenneth L. Kraemer, Siegfried Dickhoven, and John Leslie King), Columbia University Press, 1987.

"The Evolution of the Nuclear Debate: Role of Public Participation," *Annual Review of Energy*, 1978.

RECENT SPEECHES AND PRESENTATIONS

"Electric Power Systems: The Outlook for Electric Transmission: Where You Stand Depends Upon Where You Sit," Harvard Law School, March 20, 2014.

"Section 111(d) of the Clean Air Act: Drivers of Power Sector CO2 Reductions," Bipartisan Policy Center Workshop on GHG Regulation of Existing Power Plants under the Clean Air Act: Policy Design and Impacts, Washington, DC, December 6, 2013.

"The World of Abundant Natural Gas in the U.S.: Looking Ahead for Power-Sector Implications," presentation to the Keystone Energy Board, Washington, DC, October 30, 2013.

"Energy: From the Last to the Next 150 years," keynote address to the Energy Forum of Boston College's Sesquicentennial Celebration, October 25, 2013.

"Capacity Markets in the Northeast: A Preview of Comments at the FERC Technical Conference on Centralized Capacity Markets in RTOs/ISOs," presentation to the Independent Power Producers of New York, Saratoga Springs, New York, September 10, 2013.

"Opportunities and Risks of Shale Gas Development," presentation to the Governors' Policy Forum on Shale Energy Development, National Governors Association, Denver, September 9, 2013.

"The National Climate Assessment (Draft): Chapter on Energy Supply and Use," presentation to the National Association of Regulatory Utility Commissioners, Denver, July 23, 2013.

"Climate Change Preparedness in New Jersey: Utilities – Leading Practices and Trends Nationally," presentation to the New Jersey Climate Adaptation Alliance, Rutgers University, New Brunswick, May 21, 2013.

"Is New England Over-Reliant on Natural Gas?" presentation to the 20th Annual Energy Conference of the Northeast Energy and Commerce Association, Groton CT, May 21, 2013.

"Jevons' Boomerang: Is the rebound effect real? If so, is the effect negative or positive?" presentation to the EE Global Conference, Washington, DC, May 20, 2013.

"Framing the Issues: Growing Tensions at the Interface of the Natural Gas and Electric Industries," presentation to the MIT Energy Initiative (MITEI) Symposium on "Growing Concerns, Possible Solutions: Gas/Electric Interdependence," April 16, 2013.

"Unconventional Natural Gas: The Fracking Debate," Northeast Gas Association, Providence RI, March 15, 2013.

"Unconventional Natural Gas: Trends, Opportunities, and Challenges with America's New Energy Resource, Center for the American West series on "FrackingSENSE: What We Know, What We Don't Know, and What We Hope to Learn about Natural Gas Development," Boulder, Colorado, March 5, 2013.

"Global Energy Security: Upcoming challenges and opportunities (from a U.S. vantage point)," Tufts University Energy Conference – Powering Global Energy Security, Medford, Massachusetts, March 3, 2013.

”Old Made New –Conventional Resource Innovation in the 21st Century,” MIT Energy Conference, Boston, March 2, 2013.

“The Evolving Energy Landscape: Standing at the Crossroads in 2013,” Keynote Address, Kellogg School of Management Energy Conference, Northwestern University, Chicago, February 13, 2013.

“The Starting Point: Interconnection/Grid Planning in the Face of Diversity, Technical Complexity, Uncertainties, Challenges, Opportunities,” Three Interconnections Meeting, NARUC/DOE, Washington D.C., February 6, 2013.

“Electric Power Systems: The Outlook for Electric Transmission: Where You Stand Depends Upon Where You Sit,” Yale University School of Forestry/Management, February 5, 2013.

“Electric Power Systems: The Outlook for Electric Transmission: Where You Stand Depends Upon Where You Sit,” New York University Law School, February 4, 2013.

“The Future of Energy,” DOE Energy All Stars, Department of Energy, January 19, 2013.

“The Economic Impacts of RGGI’s First Three Years,” Columbia University Law School – Center for Climate Change Law, Conference on the Future of the Regional Greenhouse Gas Initiative, New York, City, October 22, 2012.

“Reality Check on Energy Conditions,” New Hampshire Energy Summit, Concord, NH, October 22, 2012.

“Natural gas and renewables: Curious bedfellows,” Renewable Energy Law & Policy Summit, University of Denver Sturm College of Law, October 19, 2012.

“Smart Grid and Air Emissions,” Gridweek, Washington DC, October 4, 2012.

“C3E Women in Clean Energy Symposium,” Keynote Address, Boston, September 28, 2012.

“Natural Gas: Risks and Opportunities – Shale Gas, Hydraulic Fracturing, and Other Facts,” EPA Region 1 seminar, Boston, September 27, 2012.

“Finding the Sensible Middle: Policies and Institutional Roles in Unconventional Gas Development,” Unconventional Gas Research Forum, Board on Energy and Environmental Systems, National Academy of Sciences, Washington DC, September 11, 2012.

“Unlocking the Potential of Regional Collaboration,” California ISO Stakeholders Symposium, Sacramento, September 6, 2012.

“The Context for Compliance with EPA Air Regulations: Power Market Conditions,” EPA/DOE/NETL/ EPRI/AWMA Power Plant Air Pollution Control Mega-Symposium, Baltimore, August 20, 2012.

“Finding the Sensible Middle: Unconventional Gas Development,” 24th Annual Natural Gas Strategy Conference & Executive Forum, August 15, 2012.

Intelligence Squared U.S. debate: “No fracking way: The natural gas boom has done more harm than good,” Against the proposition (with team mate, Joe Nocera (New York Times)), Aspen, Colorado, July 1, 2012.

“What, Me, Worry? The New Outlook for Natural Gas in New England - How Will Natural Gas Impact New England's Electricity Markets and Reliability,” New England Restructuring Roundtable – June 15, 2012.

“China’s Energy Challenges and Policy Responses: Observations from a U.S. Vantage Point,” Connecticut College Vietnam Program, June 15, 2012.

“Economic Impacts of RGGI: Following the Dollars,” presentation to the RGGI Board, June 2012.

“The Energy Scene: Update on a Few Key Issues,” presentation to the Ozone Transport Commission, April 23, 2012.

“Shale Gas: Analyzing Risks and Opportunities,” Society for Risk Assessment, Boston University – April 9, 2012

“Sustainable Energy Highway,” New York State Energy Highway Summit, April 4, 2012.

“Electric and Natural Gas Markets – Interactions, Opportunities, Challenges (with a focus on Texas), Gulf Coast Power Association Spring Meeting, April 3, 2012.

“Natural Gas: Risks and Opportunities – Shale Gas, Hydraulic Fracturing, and Other Facts,” Tufts University – Fletcher School, March 29, 2012.

"Fracking and Shale Gas, Part I: Impacts on Energy Markets and Massachusetts," Boston Bar Association, March 6, 2012.

"Electric Power Systems: "The Outlook for Electric Transmission: Where You Stand Depends Upon Where You Sit," Harvard Law School, February 16, 2012.

"Natural Gas: Policy Recommendations of the NPC, SEAB, and BPC," Energy, Utility and Environment Conference 2012, January 30, 2012.

"Economic Impacts of RGGI: Following the Dollars," Energy, Utility and Environment Conference 2012, January 30, 2012.

"Electric Power Systems: "The Outlook for Electric Transmission: Where You Stand Depends Upon Where You Sit," Yale University School of Forestry and Environmental Studies, January 24, 2012.

"U.S. Renewable Energy Policy: Overview, with comparisons to European approaches," presentation to the Wharton School, January 3, 2012.

"The Truth about Fracking," presentation to the New York Energy Forum, December 19, 2011.

"The Clean Energy Economy," presentation to the Environmental Lawyers, Environmental League of Massachusetts," November 30, 2011.

"Outlook for the Electric Generating Fleet: Effects of the Upcoming EPA Regulations," presentation to the Harvard Kennedy School Energy Policy Series, November 28, 2011.

"The National Petroleum Council's "Prudent Development: Realizing the Potential of North America's Abundant Natural Gas and Oil Resources," panel discussion at the NARUC Annual Meeting, St. Louis, November 15, 2011.

"The Future of U.S. Energy Policy: What happens when we assume no changes in the near term….?" Wharton Energy Conference – Energy Frontiers: A Global Perspective, Philadelphia, October 28, 2011**.**

"Natural Gas: Risks and Opportunities (* with an emphasis on shale gas developments)," Harvard University Center for the Environment – Future of Energy Series, Cambridge, October 26, 2011.

"An Expanded Toolkit – Environmental Regulations, Natural Gas, and Modernizing the U.S. Generating Fleet," Great Lakes Symposium on Smart Grid and the New Energy Economy, Chicago, October 19, 2011.

"Pricing in a Western Energy Imbalance Market: Market Clearing Price versus Pay-As-Bid Pricing." Western Interstate Energy Board – Webinar on the Energy Imbalance Market," October 18, 2011.

"Federal and State Legislative and Regulatory Outlook: Connecting the Dots: Options for Upcoming Electric Resources," Emerging Issues Policy Forum, Amelia Island, October 9, 2011.

"Environmental Challenges Associated with Meeting Future Energy Needs: The role of shale gas?" National Association of Clean Air Agencies, Cleveland, October 4, 2011.

"Facing tough realities: Upcoming Energy and Environmental Issues – With a Focus on Electricity and Natural Gas," National Association of Clean Air Agencies, Cleveland, October 4, 2011.

"Assessing Natural Gas' New Promises and Controversies: Strategies to Improve the Safety & Environmental Performance of Shale Gas Extraction," Wisconsin Public Utilities Institute, University of Wisconsin at Madison, October 3, 2011.

"The Outlook for Natural Gas: Role of Shale Gas," EnerNOC EnergySMART Conference, Boston, September 27, 2011.

"The Outlook for Natural Gas: What does shale gas look like?" NECA Fuels Conference, Marlboro, MA, September 27, 2011.

"Facing tough realities: Upcoming Energy and Environmental Issues – With a Focus on Electricity and Natural Gas," Environmental Council of the States, Indianapolis, September 25, 2011.

"Electric Reliability Under EPA's New Air Regulations: What We Know, and What We Can Do About What We Don't Yet Know," National Association of State Energy Offices, September 12, 2011.

"The Future of Electricity Generation in the U.S. – A Modest Set of Observations," 19th Annual MIT-NESCAUM Endicott House Symposium (Opportunities for Technology and Policy Innovation in Energy and Environment), August

18, 2011.

"Unconventional Approaches: Part of the Electric Industry's Response to Upcoming EPA Regulations," Panel on Infrastructure Reliability and Adequacy at the Aspen Energy Policy Forum ("Changing Currents – Turbulence for the Electric Industry: Is Reliability a Real Issue for power plants given the EPA rules?), Aspen, July 5, 2011.

"What we know, what we might know, and what we know we don't know yet," Joint Meeting of the NARUC, NASEO, and NACAA states, Baltimore, June 23, 2011.

"Facing tough realities: Energy and environmental issues in 2011 and beyond," Joint Meeting of the NARUC, NASEO, and NACAA states, Baltimore, June 23, 2011.

"China's Energy Challenges and Policy Responses: Observations from a U.S. Vantage Point," Connecticut College Vietnam Program, June 16, 2011.

"Strategies for Addressing Change at FERC and the RTOs: A new lens on responding to near-term changes," FERC/RTO Training Session, Panel on "Beyond Reliability: Economics, driving efficiency, demand response, and clean energy," Sponsored by the Institute Policy Integrity, New York City, July 15th, 2011.

"'May you live in interesting times…': The Regulators' Tool-Kit in an Era of Uncertainty," Western Conference of Public Service Commissioner, Denver, June 14, 2011.

"Dirty to Clean? The future of Electric Power in America," CERES Conference 2011, Oakland, CA, May 12, 2011.

"EPA Regulations, Power Generation Capacity & Reliability," presentation to the MIT Center for Energy & Environmental Policy Research Workshop, Cambridge, MA, May 5, 2011.

"The Electric Industry's Response to EPA's Upcoming Regulations: Options for Owners and Others," presentation to the Energy Bar Association, Panel on Environmental Regulations, Washington, D.C., May 4, 2011.

"Framing the Issues: Energy and the Environment," Keynote address to the Health Effects Institute, Boston, May 2, 2011.

"Federal Air Pollution Regulations Affecting Fossil Power Plants: Current issues, implications, strategies," presentation to the 6th Annual Conference on Tribal Energy in the Southwest: New Opportunities for tribal projects, new policies, regulations and markets, Law Seminars International, Phoenix, April 29, 2011.

"China and U.S. Energy and Environmental Policy Challenges: Learning from Each Other, In It Together," presentation to China Energy & Environment Conference, Harvard University, April 9, 2011.

"EPA's MACT, Water Cooling Intake and Transport Rules: What now for power generation?" presentation to SNL Energy Webinar, April 12, 2011.

"Policies for a Secure Energy Future: Issues in Supply and Demand," presentation to the Aspen Institute Congressional Program's meeting on Energy Security: Policy Considerations in the New Congress, San Juan, Puerto Rico, February 22-27, 2011.

"Responding to EPA's Regulations Affecting Coal Plants: Using a 21st Century Toolkit (or, upgrading to the "Champ" from the "Classic"), presentation to the Panel on Environmental Regulations and Impacts on Electricity System Infrastructure, 2011 DOE/NARUC National Electricity Forum, Washington, D.C., February 16, 2011.

"Responding to EPA's Regulations Affecting Coal Plants: Using a 21st Century Toolkit (or, upgrading to the "Champ" from the "Classic"), presentation to the Roundtable on the EPA Regulations, NARUC Winter Meeting, Washington, D.C., February 14, 2011.

"Local, State and Regional Coordination and Solutions: Non-conventional capacity and energy resources," presentation to the Bipartisan Policy Center's Workshop on Power Sector Environmental Regulations, Washington, D.C., January 19, 2011.

"Renewable Energy in New England," presentation to the New Hampshire Business and Industry Conference, Concord, New Hampshire, December 7, 2010.

"Framing the Issues: Energy and the Environment," presentation to the annual meeting of the National Academy of Public Administration, Washington, D.C., November 18, 2010.

"Toolkit for Ensuring Reliable, Economic Responses to EPA's Proposed Air Regulations," presentation on the panel on "The Climate Syndrome: Without Congressional Action, What Do State Regulators Need to Know?" NARUC Meeting, Atlanta, Georgia, November 17, 2010.

"Challenges for Recovering Costs During a Push for Cleaner Generation and More Efficient Energy Use," Law Seminars International conference (Utility Rate Cases), Boston, November 9, 2010 (conference co-chair).

"Public Policy for Advanced Energy Technology," presentation to the New York Advanced Energy Technology Conference, New York City, November 8, 2010.

"Energy Future: Bridging the Gap," presentation to the Wharton Energy meeting, Philadelphia, October 28, 2010.

"Upcoming Power Sector Environmental Regulations: Framing the issues about potential reliability/ cost impacts," presentation to the National Commission on Energy Policy Workshop on Power Sector Environmental Regulations, Washington, D.C., October 22, 2010.

"Vulnerability of the Gulf Coast Energy Infrastructure," presentation to the Deltas 2010 – World Deltas Dialogue, America's Energy Coast Policy Forum on The Future of the U.S. Gulf Coast Energy Infrastructure in the Face of Changing Climate," New Orleans, October 20, 2010.

"Today's Energy Landscape: Scanning the terrain – with tips for a safe journey," presentation to the annual meeting of the National Association of State Energy Officials, September 30, 2010.

"2020: What can we expect? Where we are now, and how it influences where we'll be a decade from now," Law Seminars International conference, "Energy in the Northeast," September 29, 2010.

"Today's Energy Landscape: Exploring economic, environmental and technological trends," presentation to the annual meeting of the Independent Power Producers of New York, September 22, 2010.

"Transforming America's Energy Systems: Challenges and opportunities along the nation's coastal and marine environments," Annual Lecture at the Metcalf Institute, University of Rhode Island, June 8, 2010.

"New England at the Crossroads: The Intersection between Regulatory Policy and Future Energy Supply," presentation to the Northeast Energy and Commerce Association, 17th New England Energy Conference, Green Thumb on the Scale: Impact on Future Energy Choices, June 8, 2010.

"Is Competition Dead?" presentation to the Annual Meeting of the New England Conference of Public Utility Commissioners, May 17, 2010.

"Why it is so Darn Hard to Adopt Advanced Energy Technologies, But So Worth the Effort," presentation to the Tufts University Energy Conference, "The Evolution of Energy," April 17, 2010.

"The Prospects for Natural Gas, Coal, and Nuclear Power in America's Energy Future," discussions with members of Congress at the Aspen Institute's Congressional Program on Energy Security and Climate Change: Policy Challenges for the Congress, April 6-10, 2010.

"Why is Modernizing Our Energy Technologies So Darn Hard, But Worth the Effort?" presentation to the MIT Energy Initiative Lecture Series, February 2, 2010.

"Themes in federal energy and climate policy issues in Washington – end of 3rd Q, 2009," presentation to the Kennedy School, Harvard University, November 18, 2009.

"Update on federal energy and climate policy issues in Washington – end of 3rd Q, 2009," presentation to the New York Independent System Operator Environmental Advisory Council, October 23, 2009.

"Challenges and Opportunities in Colorado's New Energy Economy – A View From Washington," presentation to the "Powering the Future – Colorado's New Energy Economy," Denver, Colorado –October 20th, 2009.

Financial Meltdown and Recovery: Challenges and Opportunities in the New Clean Energy Economy – Taking Stock in 3rd Q 2009," ABA Environment, Energy and Resources Law Summit 17th Section Meeting – Baltimore, September 25, 2009.

"Off-Shore Renewable Energy Development in NE: Massachusetts's New Ocean Management Plan," presentation to the New England Electric Restructuring Roundtable, September 18, 2009.

"Energy Policy for the 'Climate Change Era' – What's Your Definition of Green?" presentation to the 55th Annual Rocky Mountain Mineral Law Institute, San Francisco, July 23, 2009.

"The Goals for an Electricity Grid for the 21st Century: Where You Stand Depends Upon Where You Sit," presentation to the Aspen Institute Energy Policy Forum, Aspen, Colorado, July 9, 2009

"Linking Ends and Means in Energy & Environmental Policy: Intended and Unintended Consequences," presentation to the Harvard Electricity Policy Group, Cambridge, Massachusetts, May 28, 2009.

"Today's Energy Landscape: What's Coming Next for Energy & Resources Policy & Regulations," presentation to the Chief EH&S Officers Council (Joint with EH&S Legal Officers), The Conference Board – Washington, DC, May 14, 2009.

"Scanning Today's Energy Landscape in New England: Objects are Closer Than They Appear," Presentation to the New England Conference of Public Utility Commissioners, Newport, Rhode Island, May 3, 2009.

"Today's Energy Landscape: Objects are Closer Than They Appear." Presentation to the Energy Bar Association's 63rd Annual Meeting: Infrastructure, Policy, and Practice Amidst Economic Turmoil, Washington, D.C., April 23, 2009.

"Regulatory Treatment of Purchased Power: Pass Through or Profit Center? Give Away or Value Creation?" presentation to Harvard Electricity Policy Group, October 3, 2008., Harvard Electric Policy Group – Chicago, Illinois, October 3, 2008.

"Leadership Panel: Barriers to Acting in Time on Energy, and Strategies for Overcoming Them," Harvard University Conference: Acting in Time on Energy Policy, September 18, 2008.

"New England's Power Markets: The context for renewables development," Law Seminars International, September 8, 2008.

OTHER PROFESSIONAL ACTIVITIES

Chair, ClimateWorks Foundation (2013-present)

Participant in studies of the Colorado State University's Center for Clean Energy Economy ("*Powering Forward: Presidential and Executive Agency Actions to Drive Clean Energy in America*," January 2014.

Co-Lead Convening Author, Energy Supply and Use Chapter, National Climate Assessment (2012-present)

Member, Committee on Risk Management and Government Issues in Shale Gas Development, of the National Academy of Sciences, Board on Environmental Change and Society (of the Division of Behavioral and Social Sciences and Education) (2013-2014)

Co-chair, Bipartisan Policy Center's Cyber-security and the Electric Grid project (2013-2014)

Co-chair, National American Energy Standards Board (NAESB) Gas-Electric Harmonization Committee (2012, 2014)

Alliance Commission on National Energy Efficiency Policy (2012-2013): Report (Energy 2030: Doubling Energy Productivity by 2030; February 2013).

Bipartisan Policy Center – Energy Project (2011 to present): Report ("America's Energy Resurgence: Sustaining Success, Confronting Challenges," February 2013).

U.S. Secretary of Energy Advisory Board (July 2010 to May 2013). Member of the Natural Gas Subcommittee examining shale gas development. (2011-2013)

Chair, Policy Subgroup of the National Petroleum Council's study on North American Gas and Oil Resource Development (2010-2011)

Member, Board of Directors, Alliance to Save Energy (2011 to present)

Visiting Professor, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Spring 2010.

Massachusetts Clean Energy Grand Prize Judge, May 11, 2010.

Member, Board of Directors, EnerNOC, Inc. (February 2010 to May 2013)

Member, Board of Directors, World Resources Institute (2009 to present). Chair of Presidential Search Committee (2011).

Co-Lead, Department of Energy Agency Review Team, Obama/Biden Presidential Transition Team, Washington D.C., 2008-2009 (while on full-time leave for four months from Analysis Group).

Chair, Massachusetts Ocean Advisory Commission, 2008 to 2010.

Member, Board of Directors, Evergreen Solar, Inc., 2008 to 2011.

Member, Board of Directors, Ze-gen Inc., 2009 to 2011, Market Advisory Board, 2008-2009.

Member, Board of Directors, Renegy Holdings, 2007 to 2009.

Member, Blue Ribbon Commission on Cost-Allocation Issues for Transmission Investment, WIRES, 2007.

Chair, External Advisory Council, National Renewables Energy Laboratory (2009 to present).

Member, National Academy of Sciences Committee on Enhancing the Robustness and Resilience of Electrical Transmission and Distribution in the United States to Terrorist Attack, 2005 to 2008.

Member, New York Independent System Operator, Environmental Advisory Council, 2004 to present.

Member, National Commission on Energy Policy, member, 2002 to 2011; co-chair, 2009-2011.

Member, Board of Directors, Clean Air Task Force, 2008-June 3, 2013; Advisory Council, 2002 to 2008.

Member, Board of Directors, Catalytica Energy Systems Inc., 2001 to 2007.

Member, Board of Directors, Climate Policy Center, 2001 to 2007.

Member, Advisory Committee, Carnegie Mellon Electricity Industry Center, 2001 to 2009.

Member, Policy Advisory Committee, China Sustainable Energy Project–A Joint Project of The Packard Foundation and The Energy Foundation (1999 to present).

Director, NorthEast States Center for a Clean Air Future, 1998 to 2010.

Chair of the Board of Directors, The Energy Foundation, 2000 to 2011; Vice-Chair, 1999-2000; Director, 1997 to 2011; Director, 2013 to present.

Chair of the Board of Directors, Clean Air–Cool Planet / Climate Policy Center, 2004 to 2009; director, 1999-present.

Member, Board of Directors, ACORE (American Council on Renewable Energy), 2006-2007.

Co-Chair, Energy/Environment Working Group, Governor Deval Patrick Transition Team (2006-2007).

Presenter, Economic Issues, National LNG Forums, U.S. Department of Energy, Boston Massachusetts; Astoria, Oregon (2006).

Chair of the Technical Review Panel, Critical Infrastructure Protection Decision Support Systems (CIP-DSS), Argonne, Los Alamos and Sandia National Laboratories, 2006.

Advisory Council member, New England Energy Alliance, 2005-2006.

Member, Board of Directors, Electric Power Research Institute, 1998 to 2003, 2005-2006.

Chair of the Laboratory Direction’s Division Review Panel for the Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, 2005.

Chair, Ocean Management Task Force, Commonwealth of Massachusetts, 2003-2004.

Co-Chair, RTO Futures: Regional Power Working Group, 2001-2002.

Chair, Board of Directors, Electricity Innovations Institute, 2002 to 2004; Director, 2001 to 2002.

Member, Florida Energy 2020 Study Commission, Environmental Technical Advisory Committee, 2001.

Technical Advisor, Mid-Atlantic Area Council/PJM, Dispute Resolution Procedure, 1998 to 2008.

Member, “ISO-New England” (Independent System Operator) Advisory Committee, 1998 to 2003.

Director, The Randers Group (subsidiary of Thermo TERRATEK), 1997 to 2000.

Director, MHI, Inc. (electric utility aggregator in Massachusetts), 1997 – 1999.

Director, Thermo ECOTEK Corporation, 1996 – 1999.

Member, United States Department of Energy, Electricity Reliability Task Force, 1996-1998.

Member, Harvard Electricity Policy Group, 1993 to 2005.

HONORS AND AWARDS

Champions Award, Charles River Watershed Association, 2013

Leadership Award, New England Women in Energy and the Environment, 2013.

Clean Energy Hall of Fame, New England Clean Energy Council, 2012.

DOE Women in Clean Energy Initiative, C3 Ambassador, 2012

Climate Champion Award, Clean Air – Cool Planet, 2009.

Distinguished Alumna Award, Scripps College, Claremont, CA, 1998

Award for Individual Leadership in Public Service, *The Energy Daily*, 1995

Special Recognition Award for Outstanding Contribution to the Industry, Cogeneration and Competitive Power Institute, Association of Energy Engineers, 1994

Leadership Award, National Association of State Energy Officials, 1994

Commencement Speaker and Honorary Doctorate of Laws, Regis College, Weston, MA, 1992.

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants _________(G)-2

JOINT APPLICANTS (G)-2
Examples of the District of Columbia Agency Studies that Use IMPLAN

In preparation for this testimony, I searched the internet to find instances where a District of Columbia government agency had used or contracted for, or had submitted before it, a study that used IMPLAN for an economic impacts analysis. A few of the examples include:

- Report prepared by Mayor's Power Line Undergrounding Task Force pursuant to EO 2012-130, "Findings and Recommendations" (May 2013), available at: http://oca.dc.gov/sites/default/files/dc/sites/oca/page_content/attachments/Mayor%27s%20Power%20Line%20Undergrounding%20Task%20Force%20-%20Findings%20and%20Recommendations%20Report%20%28Abridged%20Version%29-May%202013.pdf.
- Report prepared for Metropolitan Washington Airports Authority by the Louis Berger Group, Inc., "Technical Report: Economic Impact Study - 2009" (October 2010), available at: http://www.mwaa.com/file/mwaa_-_economic_impact_study_2009_-_02_tech_report_final_10_20_2010.pdf.
- Report prepared for the DC Office of Motion Picture and Television Development by ECONorthwest, "An Analysis of the Entertainment and Media Industry in Washington, D.C." (July 2013), available at: http://www.dcfpi.org/wp-content/uploads/2013/09/ECONorthwest-Study.pdf.
- Report commissioned by DC Office of Local Business Development, "Evaluation: Local Small Disadvantage Business Enterprise Program: Cost Effectiveness and Financial Impact Analysis" (December 2002), available at: http://www.dcps.dc.gov/DC/DSLBD/DSLBD%20Publication%20Files/Evaluation%20LSDBE%20Enterprise%20Program.pdf.

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ________ (G)-3

JOINT APPLICANTS (G)-3
Description and Overview of IMPLAN and Definition of Terms[27]

IMPLAN's Social Accounting Matrices ("SAMs") capture the actual dollar amounts of all business transactions taking place in a regional economy as reported each year by businesses and governmental agencies. SAM accounts are a better measure of economic flow than traditional input-output accounts because they include "non-market" transactions. Examples of these transactions would be taxes and unemployment benefits.

SAMs can be constructed to show the effects of a given change on the economy of interest. These are called Multiplier Models. Multiplier Models study the impacts of a user-specified change in the chosen economy for 440 different industries. Because the Multiplier Models are built directly from the region specific SAMs, they will reflect the region's unique structure and trade situation. Multiplier Models are the framework for building impact analysis questions. Derived mathematically, these models estimate the magnitude and distribution of economic impacts, and measure three types of effects which are displayed in the final report. These are the direct, indirect, and induced changes within the economy.

Direct effects are determined by the Event as defined by the user (i.e. a $10 million dollar order is a $10 million dollar direct effect). The indirect effects are determined by the amount of the direct effect spent within the study region on supplies, services, labor and taxes. Finally the induced effect measures the money that is re-spent in the study area as a result of spending from the indirect effect. Each of these steps recognizes an important leakage from the economic study region spent on purchases outside of the defined area. Eventually these leakages will stop the cycle. More specifically, the effects are:

> *Direct effects* - The set of expenditures applied to the predictive model (i.e., I/O multipliers) for impact analysis. It is a series (or single) of production changes or expenditures made by producers/consumers as a result of an activity or policy. These initial changes are determined to be a result of this activity or policy. Applying these initial changes to the multipliers in an IMPLAN model will then display how the region will respond, economically, to these initial changes.
>
> *Indirect effects* - The impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying Direct Effects to the Type I Multipliers.
>
> *Induced effects* - The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not a leakage to the regional economy. This money is recirculated through the household spending patterns causing further local economic activity.

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[27] Information taken directly from IMPLAN.s website, available at http://implan.com/V4/Index.php.

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ________ (G)-4

JOINT APPLICANTS (G)-4
Overview of Core Inputs and Assumptions Used in
IMPLAN Analysis of Economic Benefits of the Regulatory Commitments to the District of Columbia

Activity	Actual Commitment and Modeled Use	Input Assumption in IMPLAN Study
Customer Investment Fund: Assuming a $52.95 credit on Each Customer's Utility Bill	$14 million, modeled as a $52.95 credit to each distribution customer	Residential benefits: Modeled as increased income to households Commercial/industrial benefits: Modeled as increased sales to businesses
Customer Investment Fund: Assuming the Funds are Spent on Energy Efficiency Measures	$14 million, modeled based on current District energy efficiency spending	Modeled in two parts: Part 1: Spending on appliance programs (retail sales) and residential and commercial/industrial retrofits/new construction programs (construction and maintenance) – ten year lifespan assumed Part 2: Customer electricity savings resulting from reduced usage modeled as increased income to residential customers, increased sales to commercial and industrial customers – ten year lifespan assumed
Customer Investment Fund: Assuming a Credit on Low-Income Residential Customers' Utility Bills	$14 million, modeled as a credit to low-income residential customers	Modeled as increased income to lowest residential income bracket
Reliability Benefits	Reliability benefits determined using Department of Energy ICE Calculator, commitments based on testimony of Mark Alden	Residential benefits: Modeled as increased income to households Commercial/industrial benefits: Modeled as increased sales to businesses

S.F. Tierney Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants ________ (G)-5

JOINT APPLICANTS (G)-5
Economic Impacts of the Customer Investment Fund and the Enhanced Reliability Commitments to Customers of Pepco and the District of Columbia

Direct Benefits to Customers of PEPCO	
Customer Investment Fund (2014)	$14,000,000
Value of Reliability Benefits to Customers (2015-2020) (NPV, 2014 $)	$75,868,218

Macroeconomic Benefits of the Merger to the District of Columbia						
	Customer Investment Fund			Enhanced Reliability Commitments	Total Economic Benefits (Low estimate)	Total Economic Benefits (Higher Estimate)
	Assuming a $52.95 per Customer Credit on Each Customer's Utility Bill	Assuming the Funds are Spent on Energy Efficiency Measures	Assuming a Credit on Low-Income Residential Customers' Utility Bill			
Jobs	62	436	73	846	907	1,281
Value Added (NPV, 2014$)	$19,090,341	$57,260,245	$22,153,091	$76,302,465	$95,392,806	$133,562,710
Incremental Tax Revenues (NPV, 2014$)	$459,701	$2,358,592	$640,345	$3,173,393	$3,633,095	$5,531,985

C.G. Butler Direct Testimony
DC P.S.C. - - June 18, 2014

Introduced as:
Joint Applicants __________ (H)

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JOINT APPLICANTS
BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA
DIRECT TESTIMONY OF CALVIN G. BUTLER, JR.
FORMAL CASE NO. _____

I. INTRODUCTION AND PURPOSE OF TESTIMONY

1. Q. Please state your name and business address.

A. My name is Calvin G. Butler, Jr. My business address is 110 West Fayette Street, Baltimore, Maryland 21201.

2. Q. By whom are you employed and in what capacity?

A. I am the Chief Executive Officer ("CEO") of Baltimore Gas and Electric Company ("BGE" or the "Company").

3. Q. What is your professional and educational background?

A. I began my career at Central Illinois Light Company, where I worked in a variety of positions in the government affairs, legal, and operations areas before moving to R.R. Donnelley & Sons, Co. ("RR Donnelley"), a global producer of integrated communications. I spent eight years at RR Donnelley, first as senior director of government affairs and eventually as senior vice president of external affairs. I also managed the firm's supplier diversity and government sales groups and served as president of the R.R. Donnelley Foundation. I joined Commonwealth Edison Company ("ComEd") in 2008 as its Vice President of Legislative Affairs, where I managed all state and local legislative initiatives while overseeing real estate and facilities and economic development functions. In 2009, I was promoted to Senior Vice President of Corporate Affairs for ComEd.

On August 16, 2010, I accepted a position with Exelon Corporation ("Exelon") as its Senior Vice President of Human Resources and, on May 2, 2011, I became Senior Vice President of Corporate Affairs at Exelon. Following Exelon's 2012 acquisition of Constellation Energy Group ("Constellation") and its operating subsidiaries, I was named Senior Vice President, Regulatory and External Affairs at BGE. On March 1, 2014, I was named CEO of BGE. I also serve on BGE's Board of Directors and the Management Executive Committee of Exelon.

I received my bachelor's degree from Bradley University in Peoria, Illinois. I also hold a Juris Doctor from Washington University School of Law in St. Louis, Missouri.

4. Q. Are you currently involved with any civic organizations?

A. Yes. I am on the Board of Directors for the Economic Alliance of Greater Baltimore and the Maryland Zoological Society (the Maryland Zoo in Baltimore). I was also appointed as the Chair of the American Heart Association's Greater Baltimore Heart Walk 2014, which will take place in Baltimore on October 11, 2014.

5. Q. Have you previously testified before the District of Columbia Public Service Commission (the "Commission")?

A. No. This is the first time I have provided testimony before this Commission.

6. Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the approach of Exelon Corporation ("Exelon") to honoring past commitments made when acquiring utilities and to managing its utility company subsidiaries with respect to the following important areas: electric system reliability, supplier diversity, charitable giving and community involvement. I will also discuss how BGE, since being acquired by Exelon in 2012, has been able to benefit in these particular areas. Finally, I will reference specific commitments that Exelon is making in certain of these areas in connection with its proposed acquisition and integration of Pepco Holdings, Inc. ("PHI") and its utility company subsidiaries Potomac Electric Power Company ("Pepco"), Delmarva Power & Light Company ("Delmarva Power"), and Atlantic City Electric Company ("ACE").

7. Q. Mr. Butler, how are you qualified to testify regarding Exelon's dedication to various key initiatives and programs, both at the corporate and utility company levels?

A. I have had the distinct opportunity to serve in leadership positions at each of Exelon, ComEd and now BGE. This background gives me a unique perspective on how Exelon runs its programs at the corporate level, and how it integrates and then supports the operations and goals of its utility companies. Perhaps most importantly, as the CEO of BGE, I am able to discuss how the employees and customers of a utility company that recently merged with Exelon have benefitted from the resources and opportunities available as the result of being part of the Exelon family of companies.

II. HONORING COMMITMENTS

8. Q. Mr. Butler, please explain Exelon's general approach to honoring commitments it makes in merger transactions.

A. Certainly. Exelon carefully tracks its merger commitments and ensures that it follows through on all commitments made as part of any merger transaction. I can testify from personal experience that Exelon honors the merger commitments it makes to utilities, their employees, customers and regulators.

When Exelon merged with Constellation and its subsidiary companies in 2012, it made a variety of commitments that encompassed employment level protections; preservation of employee compensation and benefits; contributions to a customer investment fund; ring-fencing requirements; maintenance of local presence; support for supplier diversity initiatives; and a concrete, long-term funding commitment for local charitable and community involvement efforts. I am happy to report that Exelon has followed through on these commitments and continues to do so.

9. Q. Will Exelon similarly honor all commitments made regarding PHI and its utility company subsidiaries, including Pepco?

A. Yes. I realize that there may be some apprehension associated with the merger of Exelon and PHI and its three utility company subsidiaries, which is normal in the face of change. As an individual who worked for Exelon when it was in the process of merging with BGE, and then who subsequently went to work for BGE as a Senior Vice President and now as CEO, I can assure all stakeholders that Exelon is a company that honors its commitments to its utility operating subsidiaries. The Exelon approach described by Mr. Crane and Mr. O'Brien of providing all necessary resources and support to Exelon utilities while also allowing those utilities to manage their business and maintain their local identity and ties to the communities and customers they serve has been clearly demonstrated throughout the fulfillment of Exelon's commitments with respect to BGE, and I expect nothing less in terms of Exelon's commitments with respect to Pepco.

III. DEDICATION TO ENHANCING ELECTRIC SYSTEM RELIABILITY

10. Q. Mr. Butler, please discuss Exelon's dedication to enhancing the electric system reliability of its subsidiary utility companies.

A. Exelon strives to enhance the electric system reliability of its utility company subsidiaries. This is accomplished through ensuring that appropriate resources and personnel work at all levels to keep the lights on, and that whenever possible, all of the Exelon utilities share best practices to promote the safe, efficient and reliable delivery of utility service to customers in the communities Exelon serves. The results have been improved reliability at all of the Exelon utilities, as discussed in the direct testimony of Mr. Alden.

11. Q. Since merging with Exelon in 2012, has BGE's electric system reliability improved?

A. Yes. BGE has seen significant improvements in its reliability metrics since becoming part of the Exelon family of utilities. In 2013, the first full year following the Exelon-Constellation transaction, BGE achieved the best reliability performance – both in fewer outages and shorter outage duration – in its history.

Among other things, BGE reduced the average time to restore service to BGE customers by almost 32%. BGE customer satisfaction scores also improved following BGE's acquisition by Exelon, as Mr. Alden explains.

12. Q. Has BGE demonstrated enhanced storm response capabilities at BGE since it became part of the Exelon family of companies?

A. Yes. As a result of the 2012 merger, BGE now has access to many additional Exelon resources to assist BGE crews in restoring power during a storm or other emergency event. For instance, during the devastating June 2012 Derecho storm, many PECO Energy Company ("PECO") crews were quickly dispatched to the BGE service territory to assist BGE personnel in restoring power. In advance of the arrival of Hurricane Sandy, BGE was able to call on ComEd crews to travel from Illinois to Maryland to assist BGE personnel in restoring power. Being able to rely on the additional resources from affiliated Exelon utility companies during storm events has been of great benefit to BGE and its customers.

13. Q. Earlier you mentioned the sharing of best practices to enhance electric service reliability. Could you provide an example of an Exelon best practices that BGE adopted?

A. Certainly. After the 2012 merger, BGE began utilizing ComEd and PECO's practice of establishing and tracking daily metrics to ensure the timely repair of system equipment. In addition, operational personnel from around the company hold a conference call every weekday morning to review system performance and any operational events from the past 24 hours to determine – in real time – any steps that may be necessary to improve service. Breaking down and reviewing performance in 24-hour increments is a best practice that yields important customer benefits. Mr. O'Brien describes other best practices that ComEd and PECO shared with BGE which have substantially enhanced reliability for our customers.

14. Q. Mr. Butler, do you believe that with respect to electric service reliability, Pepco will benefit from joining Exelon?

A. I certainly do. For instance, upon consummation of the merger, Pepco will be an Exelon utility company with service territories geographically contiguous or close to the service territories of two other Exelon utilities, BGE and PECO. This proximity will allow BGE and PECO crews to quickly respond to events in Pepco's service territory, assisting crews in safely and expeditiously restoring power. I know that Pepco has been working in recent years with success to enhance electric system reliability in its service territory, and Exelon will continue to support and enhance those efforts after the Merger, as reflected in the reliability commitments it is making as part of this Merger.

IV. DEDICATION TO SUPPLIER DIVERSITY

15. Q. Mr. Butler, please discuss Exelon's dedication to supplier diversity.

A. Exelon is focused on obtaining a variety of equipment, goods, supplies and services from a diverse array of vendors. To reach that goal, Exelon maintains a mature and strategically focused supplier diversity program. Exelon implements its supplier diversity strategy by increasing spending with certified Minority and

Women Business Enterprises ("MWBEs"), including professional service firms, investment banks and law firms.

Exelon's supplier diversity program is managed by its Diverse Business Empowerment Office ("DBEO"), reporting ultimately to the Executive Vice President and Chief Administrative and Diversity Officer. The DBEO, led by Emmett Vaughn, Exelon's Director of Diverse Business Empowerment, manages the four core elements of Exelon's supplier diversity program: (1) planning and tracking supplier diversity spend; (2) diverse business advocacy; (3) supplier development; and (4) managing a supplier diversity center of expertise.

Furthermore, Exelon is a long-standing member of the National Minority Supplier Development Council and holds a leadership position with the group's affiliated National Utilities Industry Group. Exelon is a past recipient of the Utility Leadership Award presented by the National Association of Regulatory Utility Commissioners' ("NARUC") Utility Access Partnership Committee – an award given annually to one utility company demonstrating national leadership and excellence in supplier diversity.

16. Q. How does the Exelon DBEO promote the supplier diversity program?

A. The DBEO supports multiple diverse business advocacy organizations of regional and national scope. These organizations facilitate conferences, meetings, and technical assistance workshops in support of developing diverse suppliers. Exelon's DBEO initiatives have been recognized for excellence and contributions to diverse supplier development by such organizations as the National Minority

Supplier Development Council and the United States Department of Commerce Minority Business Development Agency.

17. Q. Mr. Butler, what has been Exelon's recent direct support for Minority and Women Business Enterprises?

A. In 2013, Exelon's diverse supplier spend increased $155 million, or 21%, over the prior year, to approximately $906 million. Of the total spend, $714 million was with prime ("Tier 1") suppliers and $192 million was with subcontractor ("Tier 2") suppliers. Exelon's utility companies – ComEd, PECO and BGE – played a critical role in Exelon's supplier diversity strategy, collectively accounting for 64% of 2013 year-end diversity spend totals. In addition, as part of its commitment to expand opportunities for MWBEs outside of the supply chain facilitated spend, Exelon's spending with diverse professional service firms totaled nearly $82 million in 2013. This initiative is known as Exelon's "high-margin strategy" and focuses on eight categories: Advertising and Marketing, Business Consulting, Engineering and Technical Consulting, Financial Services, Human Resources Services, Information Technology Professional Services, Legal, and Banking. The high-margin strategy was undertaken because these businesses typically have higher profit margins and, therefore, have an increased capacity to contribute to community economic development.

Additionally, Exelon maintains a community and minority banking initiative. Launched in 2003, the initiative establishes credit facilities with community and minority-owned banks. Through these arrangements, Exelon and its subsidiaries get access to liquidity at competitive rates, and community banks gain experience with more complex transactions and the opportunity to strengthen their businesses by building a relationship with a Fortune 500 company. Local economies are also supported through the business the initiative brings. Exelon's community and minority banking initiative has grown from $36 million in 2003 to $123 million in 2013. In 2013, Exelon established a $123 million credit facility with 31 community and minority banks.

18. Q. Mr. Butler, what has been BGE's experience with supplier diversity since merging with Exelon in 2012?

A. The experience has been very positive. As part of the Exelon family of companies, BGE maintains a robust and successful supplier diversity program. Frank Kelly, BGE's Manager of Diverse Business Empowerment, oversees BGE's efforts to grow relationships with diverse suppliers and ultimately increase BGE's spending with certified MWBEs – efforts that have proven to be successful. BGE has had particular success in encouraging prime suppliers to utilize diverse subcontractors, and has realized year-over-year gains in spending on goods and services from diverse firms. Regarding the Exelon "high-margin strategy" I described above, BGE has been a significant contributor to the overall effort, establishing financial services relationships with 32 diversity certified professional services firms, including many local firms such as The Harbor Bank of Maryland, Industrial Bank, and Brown Capital Management.

BGE's recent supplier diversity efforts stem from the February 6, 2009, Memorandum of Understanding ("MOU") BGE signed with the Maryland Public Service Commission that established a target of awarding 25 percent of BGE's total eligible annual dollar spend for contracts, subcontracts, and purchase orders for products and services with diverse suppliers by 2025. When Exelon merged with BGE, it committed to fully supporting the goals of the MOU and to using its best efforts to assist BGE in meeting BGE's obligations. Exelon has honored that commitment and today BGE continues to make progress toward meeting the goals of the MOU, awarding 16.3% of total eligible dollar spend in 2013 to diverse suppliers, an amount equal to $151 million. This represents an increase of $35 million or 30% from 2012 levels. In July 2013, with the full support of Exelon, BGE launched its own internal supplier development program known as Focus 25, which was inspired by the 2009 MOU goal of achieving 25% diverse supplier spend by 2025. The underlying purpose of the program is to provide a selected group of diversity certified suppliers with the tools and knowledge to attain their next level of growth in their business through on-going one-on-one mentorship, technical assistance workshops highlighting business development processes, safety policies, and the nuances of BGE sourcing processes. The inaugural Focus 25 participants include professional services firms that are part of the "high margin strategy" I described above.

19. Q. Mr. Butler, do you expect Exelon to continue to support the current supplier diversity efforts of Pepco following the merger with PHI?

A. Yes, I do. Exelon has a longstanding track record of fully supporting the supplier diversity efforts of its operating utility companies, including providing resources and sharing best practices, experiences and expertise. As I mentioned previously, when it merged with Constellation and BGE, Exelon committed to maintaining BGE's supplier diversity efforts. Exelon has followed through on that commitment and the result is that BGE's supplier diversity efforts have continued to grow and succeed. I understand that Pepco has a MOU with the Public Service Commission of the District of Columbia. Exelon is committed to promoting the supplier diversity efforts at Pepco, through the provision of resources and the sharing of best practices, experiences and expertise.

I know that PHI is a strong supporter of efforts to increase supplier diversity, with both total company and utility-specific diverse spend increasing in 2013. Indeed, PHI has received many accolades in the past two years for its efforts in this area, including the Minority Business News USA "101 Companies Supplier Diversity Best in Class" award and being named one of Black Enterprise Magazine's "40 Best Companies for Diversity" for Supplier Diversity, Senior Management and Board of Director Diversity. By becoming part of the Exelon family, the PHI utility companies, including Pepco, will gain the full support of Exelon and its existing utility companies to build upon what have been very successful efforts to increase supplier diversity. Personally, I look forward to seeing the benefits that will result from combining the resources and initiatives of these two ardent supporters of supplier diversity efforts.

V. DEDICATION TO COMMUNITY INITIATIVES AND CHARITABLE GIVING

20. Q. Mr. Butler, please describe Exelon's focus on community initiatives and charitable giving in the communities it serves.

A. Exelon has always been focused on supporting organizations and groups within the areas and communities its subsidiary utilities serve. Over the past five years, Exelon and its distribution companies have donated over $134 million to local charitable and civic organizations that focus their efforts in four primary areas: (1) education; (2) the environment; (3) arts and culture; and (4) neighborhood development. Exelon also provides community support through the Exelon Foundation, an independent, nonprofit philanthropic organization that is funded solely by Exelon. Since its creation at the end of 2007, the Exelon Foundation has donated nearly $13.5 million to nonprofits.

In addition to monetary support, Exelon's Corporate Citizenship program strives to improve the quality of life for the people who live and work in Exelon's utility service territories. Exelon seeks to accomplish these goals through employee volunteer activities and executive involvement on non-profit boards. Exelon's employee volunteer engagement program is called "Energy for the Community." This program is designed to help Exelon employees practice the company's community service values through volunteerism. Employees can easily find and sign up for service projects in their area of interest or near where they live. In 2013, Exelon employees devoted many hours to various projects and activities benefitting the communities Exelon serves.

Exelon also sponsors its Energy for the Community Employee Volunteer Awards program, which recognizes employees who demonstrate extraordinary dedication and commitment to community service. Winning employees receive grants that are directed to the non-profit organizations at which they volunteer. In

2013, Exelon awarded 18 grants totaling $140,000 to non-profit organizations to honor employee volunteer service. Furthermore, Exelon's Dollars for Doers program rewards dedicated employee volunteers with grants to non-profit organizations where they serve at least 25 hours per year.

21. Q. Since merging with Exelon in 2012, has BGE been supportive of community initiatives and charitable giving?

A. Yes. With Exelon's support, BGE has been a significant contributor to community initiatives and charities, including several new grant initiatives. In 2013, BGE employees, friends and family logged over 25,000 hours to more than 135 community organizations through 230 events. Each year, hundreds of BGE employees volunteer their time and/or donate to the United Way of Central Maryland as part of an annual campaign. Many employees make their financial contributions through payroll deductions. In 2013, BGE employees raised over $1 million for this cause. BGE employees also serve as board members on more than 124 local non-profit organizations.

In 2014, BGE is supporting a new event – the American Heart Association's Baltimore Heart Walk on Saturday, October 11. As I mentioned previously, I have the honor of serving as the Chairman of this year's event and, in that role, I will be bringing BGE employees together to raise funds for the event as well as reaching out to other Baltimore-area businesses for support. In subsequent years, I expect that many other worthy causes will receive support as part of a long-term commitment from BGE.

BGE has also maintained its high level of direct contributions to local organizations, with more than $3.5 million donated to 237 organizations in Central Maryland in 2013. We have also initiated new programs since merging with Exelon. For example, in 2013, BGE initiated a Green Grants Program whereby BGE provided more than $415,000 in grants to nearly 50 nonprofit organizations in support of environmental stewardship initiatives. Individual grant amounts ranged from $500 to $10,000 and were focused on the areas of conservation, energy efficiency, education, pollution prevention and community activism. Additionally, as part of an Emergency Response and Safety Grants Program started in September 2012, BGE has provided more than $670,000 in grants to 80 nonprofit organizations that support emergency response and safety efforts. Grant monies from that program are used to fund equipment, programs or services that are critical to the safety of the communities BGE serves.

22. Q. Mr. Butler, do you expect Exelon to continue supporting the community initiatives of PHI and Pepco following the Merger?

A. Absolutely. Much like the charitable giving commitment Exelon made when it merged with Constellation and BGE, Exelon and its subsidiaries have agreed to provide at least an annual average of charitable contributions and traditional local community support that exceeds the 2013 level of contributions and support of PHI and Pepco for the decade following consummation of the merger. Exelon has honored the charitable giving commitments it made as part of acquiring BGE, and I am confident that Exelon will honor its charitable commitment regarding PHI and Pepco as well.

VI. CONCLUSION

23. Q. Does this conclude your prepared direct testimony?

A. Yes, it does.