



Agenda Date: 07/26/17  
Agenda Item: 2E

**STATE OF NEW JERSEY**  
**Board of Public Utilities**  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, New Jersey 08625-0350  
[www.nj.gov/bpu/](http://www.nj.gov/bpu/)

ENERGY

IN THE MATTER OF THE PETITION OF ATLANTIC )  
CITY ELECTRIC COMPANY FOR A DETERMINATION )  
PURSUANT TO THE PROVISIONS OF N.J.S.A. )  
40:55D-19 THAT THE USE OF CERTAIN LANDS )  
WITHIN THE TOWNSHIP OF UPPER PITTSBORO; )  
THE TOWNSHIP OF PITTSBORO; THE CITY OF )  
VINELAND; THE TOWNSHIP OF FRANKLIN; THE )  
BOROUGH OF BUENA; THE TOWNSHIP OF BUENA )  
VISTA; THE TOWNSHIP OF HAMILTON; THE )  
TOWNSHIP OF WEYMOUTH; THE CITY OF ESTELL )  
MANOR; AND THE TOWNSHIP OF EGG HARBOR; )  
ALL IN THE COUNTIES OF SALEM, CUMBERLAND, )  
GLOUCESTER AND ATLANTIC; ALL IN THE STATE )  
OF NEW JERSEY, ARE REASONABLY NECESSARY )  
FOR THE SERVICE, CONVENIENCE OR WELFARE )  
OF THE PUBLIC; AND THAT THE ZONING AND LAND )  
USE ORDINANCES OF THOSE MUNICIPALITIES AND )  
COUNTIES SHALL HAVE NO APPLICATION )  
THERE TO )

AMENDED ORDER<sup>1</sup>

BPU DOCKET NO. EO16010043  
OAL DOCKET NO. PUC 01505-16

**Parties of Record:**

**Enid L. Hyberg, Esq.**, on behalf of Atlantic City Electric Company  
**Phillip J. Passanante, Esq.**, Atlantic City Electric Company  
**Stefanie A. Brand, Esq.** Director, New Jersey Division of Rate Counsel

**BY THE BOARD:**

On January 15, 2016, Atlantic City Electric Company, ("ACE" or "Company") filed a petition with the Board of Public Utilities ("Board") under N.J.S.A. 40:55D-19 of the New Jersey Municipal Land Use Act ("MLUA") seeking a determination that the Orchard-Lewis Transmission Project ("Project") and all facilities involved in the project are reasonably necessary for the service, convenience and welfare of the public.

<sup>1</sup> The Board Order dated June 30, 2017 ("June 30, 2017 Order") inadvertently referred to the incorrect cost estimate for the upgrades. This Order supersedes the June 30, 2017 Order.

According to the petition, in July 2014, the PJM Interconnection, L.L.C. ("PJM") Board of Mangers approved a set of upgrades for the ACE transmission system which were determined to be necessary due to the continued delay, and possible cancellation of the proposed repowering of the B.L. England generating plant in Beesley's Point, New Jersey or the retirement of said plant. These upgrades had previously been presented at the April 10, 2014 Transmission Planning Advisory Committee meeting at PJM. PJM required ACE, in a timely manner, to complete the installation of these upgrades.

The Project is an accelerated upgrade to a forty-one (41) mile, eighty (80+) year old double circuited 138 kilo-volt ("kV") transmission line consisting of new higher capacity double circuited 230 kV and multiple 138 kV lines (plus an extension). This transmission upgrade traverses through ten (10) municipal entities, the Townships of Upper Pittsgrove, Pittsgrove, Franklin, Buena Vista, Hamilton, Weymouth and Egg Harbor, the Cities of Vineland and Estell Manor and the Borough of Buena located in Salem, Cumberland, Gloucester and Atlantic counties along existing ACE right-of-way.

This Order sets forth the background and procedural history and represents the Final Order in the matter pursuant to N.J.S.A. 52:14B-20. Having reviewed the record, the Board now **ADOPTS** the Initial Decision rendered on May 25, 2017.

#### **BACKGROUND AND PROCEDURAL HISTORY**

The Board is empowered to ensure that regulated public utilities provide safe, adequate and proper service to the citizens of New Jersey. N.J.S.A. 48:2-23. Pursuant to N.J.S.A. 48:2-13, the Board has been vested by the Legislature with the general supervision and regulation of and jurisdiction and control over all public utilities, "so far as may be necessary for the purpose of carrying out the provisions of [Title 48]." The courts of this State have held that the grant of power by the Legislature to the Board is to be read broadly, and that the provisions of the statutes governing public utilities are to be construed liberally. See e.g., In re Public Service Electric and Gas Company, 35 N.J. 358, 371 (1961), Twp. of Deptford v. Woodbury Terrace Sewerage Corp., 54 N.J. 418, 424 (1969), Bergen County v. Dep't. of Public Utilities, 117 N.J. Super. 304 (App. Div. 1971).

ACE's January 15, 2016 Petition with the Board sought the following determinations:

- 1) The construction of the proposed Project and all facilities involved in the project are reasonably necessary for the service, convenience and welfare of the public;
- 2) The rights-of-way and construction requirements currently in effect shall apply to the Project notwithstanding any changes in Right-of-Way or construction requirements that the Board may promulgate between the date of approvals obtained and the date that the Project lines are placed into service; and
- 3) The Zoning and Land Use Ordinances and all regulations promulgated by the municipal entities and the counties shall have no application to the Project, including, but not limited to, substations.

The petition further sought authorization to construct and energize the proposed Project and the facilities in appurtenant thereto in a timely manner in order to permit the Company to satisfy its obligation to continue to provide safe, adequate, and reliable service to ACE's customers and to

enable ACE to construct and energize the Project. Given the environmental restrictions set forth in the amended New Jersey Department of Environmental Protection ("NJDEP") Consent Order, ACE requested expedited approval in order for the construction to commence, thus minimizing the temporary extended operation of the B.L. England plant.

The petition included maps of the proposed Project and zoning maps of the affected municipalities, a planning analysis report, and the prefiled testimony of the following witnesses: Jerome J. McHale, Frank Caroselli, Jason Tucker, Gregory Parsons, Michael J. Garrity, Nicholas Salvatore, Kenneth J. Mosca, and William H. Bailey, Ph. D.

On January 28, 2016, the matter was transferred to the Office of Administrative Law ("OAL") and assigned to Administrative Law Judge ("ALJ") William T. Miller. In October 2016, ALJ Miller was elevated from the Administrative Law bench to the Superior Court bench and this matter was transferred to ALJ Elia A. Pelios.

After notice, public hearings were held on this matter on June 8 and 9, 2016 in Mays Landing, and Elmer, New Jersey, respectively. No members of the public appeared or presented testimony at either public hearing.

ALJ Pelios held a plenary/evidentiary hearing, closed the record on December 2, 2016 and after seeking and being granted extensions issued an initial decision on May 25, 2017.

### **TESTIMONY PRESENTED**

Only ACE presented witnesses at the evidentiary hearing and no parties submitted post-hearing briefs.

#### **A. The Need for the Project**

Frank Caroselli is employed by PHI Service Company, a subsidiary service company of Pepco Holdings, Inc. ("PHI"), as a Consulting Engineer within the Transmission Planning Department, where he provides services to ACE.

According to Mr. Caroselli, the need for the Project was identified as a result of September 2013 notification by RC Cape May Holdings that repowering of the BL England Plant was suspended. This planned work would have included a connection of the plant to the ACE BL England 138kV substation. (P-20 Lines 91 to 93).<sup>2</sup> The repowering was temporarily suspended due to problems with approval of the South Jersey Gas Company pipeline that was proposed to supply fuel to the plant's new generation units. As a result of this suspended connection, the Company contacted PJM to start mitigation of the "at risk" situation. In early 2014, PJM identified multiple contingency transmission system overloads and contingency voltage violations starting in the summer of 2015 should BL England not be in service. The Company then developed and submitted a plan to PJM to mitigate these negative effects on the system. This plan included work to eleven substations and multiple transmission lines which included, upgrades, replacements, rebuilds, reconfiguration, and/or new transmission lines and substation equipment. (*Id.* at Lines 115 to 122). Additionally, the Company developed plans to replace 41 miles of existing 138kV dual circuit towers that were approximately 90 years old and showed signs of deterioration on the lattice towers. The lines run from Upper Pittsgrove to Landis. (*Id.* at

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<sup>2</sup> Mr. Caroselli's prefiled testimony uses sequential line numbers throughout the document, rather than traditional page number transcript citation format.

Lines 130-137). Mr. Caroselli initially stated that the estimated total cost of the upgrades was \$89.2 million. (Id. at Line 144). At the evidentiary hearing, Mr. Caroselli testified that the cost estimate changed and was now \$100.8 million. (T 24, Lines 7-10).

PJM determined that the Company proposed upgrades to the bulk transmission system would mitigate all violations resulting from the BL England deficit. (Id. at Lines 140 to 142). These mitigations were viewed not only for the failure of BL England to come on line but any significant delays to the plant's in-service date.

Mr. Caroselli opined that the upgrade proposal was necessary to ensure continued reliable operation of the Company's transmission system. (Id. at Lines 150 to 151).

## **B. Overview of the Project**

Jason Tucker is employed by PHI as a Supervising Engineer within the Transmission and Civil Engineering Department and he provides services to ACE in that capacity. According to Mr. Tucker's testimony, there is no other practical alternative for the construction of the Project that would have any less adverse impact.

According to Mr. Tucker, ACE examined four different alternatives which were ultimately discounted. These included: a rebuild/reconductor of the 138kV lines from the Upper Pittsgrove substation to Lewis substation; construction of a new transmission line between Cumberland and Corson substations; an additional circuit along the New Freedom to Cardiff corridor; and a new transmission line between Cardiff and Dennis substations. These were rejected as they would not resolve all issues and/or had significant environmental impacts with their construction. (P-21 at 4-80 to 6-120). The proposed route was chosen as the preferred route based on the following factors: (Id. at 6-121 to 131).

- The route will be constructed within ACE's existing Right-of-Way; it's fee-owned land; and secured easements.
- Minimal additional clearing will be required.
- Any aesthetic impacts from this route are de minimus because the line traverses ACE's existing Right-of-Way. As most of the land impacted by the Right-of-Way is farmland and ACE will be replacing the existing lattice towers with steel monopoles, the footprint will be reduced, and the amount of land that can be tilled will be increased.

Therefore, Mr. Tucker stated that the route is the most economic approach with an added benefit of minimizing new environmental impacts. (Id. at 6-132 to 134).

Mr. Tucker asserted that ACE adhered to the PJM Design and Application of Overhead Transmission Lines 69 kV and above and the National Electric Safety Code in the design of the proposed lines. (Id. at 7-154 to 156). ACE incorporated the concept of "prudent field management"<sup>3</sup> where modifications could be made at little or no cost and result in lower

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<sup>3</sup> "Prudent field management" suggests that it is reasonable to make low cost expenditures in the design of transmission lines that can result in a lowering of magnetic and electric fields to less than what would otherwise be experienced had such measures not been undertaken. (Id. at 8-162 to 165).

magnetic and electric fields. For example, ACE is using an existing right-of-way, selecting a phasing arrangement to provide cancellation of the magnetic fields wherever practical, and designing the new structures to provide five feet of additional ground clearance than required by PJM and three feet more than required by the NESC. Although electric fields will be higher with the operation of the 230 kV line segment than the existing 138 kV lines, the electric fields associated with the operation of the 230 kV and 138 kV lines will be less than the New Jersey guideline of 3 kV/m at the edge of the right-of-way. (Id. at 8-162 to 181).

Mr. Tucker represented that ACE's foresters work with contract planners to ensure property owners are notified and aware of the necessity of the work ACE needs to perform to ensure reliable and safe transmission of electrical services to all customers. (Id. at 9-184 to 188). To mitigate the proposed structure height increase of approximately 25 feet, the existing lattice tower structures will be replaced with steel monopoles. (Id. at 11-239 to 243).

Both electric and magnetic fields have been modeled by Exponent, ACE's outside consultant.<sup>4</sup> Tucker opined that the design of the 230 kV and 138 kV series of transmission lines incorporated ACE's concept of prudent field management. (Id. at 13-285 to 288).

In contrast to the proposed construction, an underground transmission line could result in longer outages and service restoration periods. The disturbance caused by the construction equipment necessary to construct and maintain the underground cables can result in significant adverse environmental impact. (Id. at 14-308 to 315). The overhead line costs associated with the Project are estimated at approximately \$2.03 million for the overhead portion of the lines inclusive of the poles, insulators, conductors, hardware, and permitting for approximately 41 miles of line. (Id. at 15-326 to 329).

The Company decided to utilize an underground installation for a small section of line as it enters the Cardiff Substation due to limited right-of-way and clearance requirements. (Id. at 16-364 to 17-368).

### **C. Station and Substation Construction**

Gregory A. Parsons is employed by the Company as a Consulting Engineer. Mr. Parsons provided oversight and review of the design and installation changes to the new 230 kV terminals at Orchard substation. (P-22 at 2-25 to 26).

Mr. Parsons testified that seven substations, Orchard, Upper Pittsgrove, Landis, Minotola, Dorothy, Cardiff, and Lewis, require modifications under the project scope. (Id. at 2-32 to 34). Work at the Orchard substation requires the installation of two new 230kV breakers, six 230kV instrument transformers, a steel structure to terminate the 230kV line, two transmission monopoles and associated relaying and protection devices. (Id. at 2-36 to 43). The modifications at the Upper Pittsgrove, Minotola, Lewis, Dorothy, and Cardiff substations are not part of this petition. (Id. at 3-44 to 62). According to Parsons, the modifications will not increase noise levels at the Orchard station but will increase noise levels at Cardiff by approximately 4dBA. Construction at the Landis, Dorothy and Cardiff substations will require an enlargement of the substations' footprints. (Id. at 4-69 to 78).

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<sup>4</sup> See Direct Testimony of William H. Bailey (P-29) for further details on this issue.

#### D. Route Justification

Michael Garrity is also employed by PHI as a Senior Supervising Scientist within the Environmental Planning Department and in that capacity provides services to ACE. Mr. Garrity's testimony explained the various permits and approvals required for this Project to be completed.

With regard to selecting the route for the Project and studying the alternatives, Mr. Garrity stated that he provided input by overseeing the process of identifying environmentally sensitive areas and jurisdictional limits of the NJDEP and the U.S. Army Corps of Engineers ("USACE"). Mr. Garrity also provided identification of the required environmental permits and actively participated in the site selection process through personal observation of the rights-of-way, review of Geographic Information System ("GIS") data, and an analysis of environmental constraint criteria. (P- 24 at 3-59 to 65).

He indicated that the route was selected utilizing aerial maps, GIS overlays, and coastal and flood information to determine impact areas. The presence of existing right-of-ways was used to minimize impacts. (Id. at 5-93 to 97). Field surveys of the route are also in the process of being conducted to assist in determining impacts of pole installation. The impact to the avian population was also considered.

Mr. Garrity indicated that permits are required for the major water crossing of the Maurice River, Great Egg Harbor River and other minor crossings. (Id. at 4-84 to 86). Consultations will be held with: U.S. Fish and Wildlife; National Marine Fisheries; State Historical Preservation Office; and NJEP's Division of Fish and Wildlife. ACE will also notify Indian Tribes and other interested parties. (Id. at 4-70 to 82).

In the event that environmentally sensitive areas cannot be avoided, protective measures and best management practices will be employed during the construction phase. (Id. at 5-102 to 103). Additionally, ACE will incorporate the Edison Electric Institute's "Suggested Practices for Raptor Protection on Power Lines" avian protection recommendations in order to minimize the potential electrocution of large birds of prey. (Id. at 5-106 to 111).

During the construction phase, with regard to the temporary environmental impacts, Garrity indicated that protective measures will be employed. Disturbed areas will be restored and stabilized. Sediment barriers will be used for work adjacent to streams and wet areas to prevent the flow of sediments into the areas. Work activities will be coordinated to minimize the number and frequency of vehicles in the areas. Measures will be taken to ensure the use or handling of fuels and lubricates will not result in any contamination, and any spills will be cleaned, placed in a proper container, and removed from right-of-way areas. Seasonal restrictions on construction activities may be implemented to minimize impacts to threatened or endangered species. (Id. at 5-113 to 6-138).

Mr. Garrity testified that ACE is aware that permanent impacts will result from the surface area coverage taken up by pole locations in wetland areas. The disturbance associated with a single pole is approximately 13 to 39 feet, and as new poles are constructed, the impact will be limited to the surface area of the pole base or its foundation within an existing cleared right of way. (Id. at 7-140 to 144).

ACE intends to minimize any potential visual impacts by using existing right-of-way containing transmission infrastructure. The new transmission line will be located in line with the existing

lattice transmission tower, and the existing towers will be removed as construction of the new monopoles are constructed to reduce temporary impacts to sensitive areas. This construction method will be employed in existing cleared right-of-way for much of the line from Upper Pittsgrove Substation then, a single lattice tower to Lewis Substation will be applied for much of the line from Deepwater Substation, then a single lattice tower to Orchard Substation, which will occupy less area and provide a cleaner look. (Id. at 7-155 to 8-163).

Mr. Garrity maintains that the selected route is the most reasonable and practicable alternative due to the use of the existing right-of-way, and that there is no other reasonable, practicable alternative that would have any less adverse impact upon the environment. (Id. at 8-169 to 172).

#### **E. Real Estate and Zoning Issues**

Nicholas Kevin Salvatore is employed by ACE as a Senior Real Estate Representative. Mr. Salvatore's testimony addresses the real estate and zoning issues associated with the Project.

Mr. Salvatore purchased the parcel of land that is now the Upper Pittsgrove Substation. (P-25 at 2-38 to 41). Mr. Salvatore was involved with the Planning Board process and securing necessary approvals. Additionally, Mr. Salvatore reviewed ACE's files pertaining to the right-of-way from the Upper Pittsgrove Substation to the Lewis Substation. (P-25 at 2-38 to 41).

Mr. Salvatore described the land use zones and allowances within the respective municipalities through which the proposed line passes, as follows:

- Township of Upper Pittsgrove: Public utilities are considered essential services and are a conditionally permitted use in all zoning districts. A use variance due to height of the poles would be required. (Id. at 3-44 to 50).
- Township of Pittsgrove: the transmission line is classified under "Public Utility for Essential Services" and is conditionally permitted in all zones. A use variance would be required for the tower replacements due to height. (Id. at 3-53 to 64).
- City of Vineland: Mr. Salvatore is uncertain if the transmission line is a permitted use. The line will traverse woodlands, Industrial, Business, Residential, and Agricultural Zones. A use variance would be required for the tower replacements due to height. (Id. at 4-65 to 75).
- Township of Franklin: the line will travel through Residential and Neighborhood Commercial zones. The transmission line is conditionally permitted in the Residential district but the rules are unclear about the allowed use in the Neighborhood Commercial district. A use variance would be required for the tower replacements due to height. (Id. at 76 to 86).
- The Borough of Buena: the permitted use for construction of a transmission line is uncertain. The line will pass through Residential, Highway Business, and Industrial Zoning districts. A use variance could be required for the tower replacements due to height. (Id. at 5-87 to 97).
- Township of Buena Vista: the transmission line is conditionally permitted in the affected zones. The line will pass through Residential, Office Campus Overlay, Business,

Agriculture and Forest districts. A use variance could be required for the tower replacements due to height. (Id. at 5-98 to 6-111).

- Township of Hamilton: The zoning ordinances do not specifically reference transmission lines. Substations are permitted in all zoning districts. The line will traverse Forest Area, Agricultural, Growth Area, and Rural Development Zoning districts. (Id. at 6-112 to 122).
- Township of Weymouth: the transmission line is permitted in the Rural Residential zone but it is unclear if the line is a permitted use in the Pinelands Forest Area Zones. A use variance could be required for tower replacements due to height. (Id. at 6-122 to 132).
- City of Estell Manor: the zoning ordinances do not specifically reference transmission lines. The line will traverse are residential zone. A use variance could be required for the tower replacements due to height. (Id. at 7-133 to 140).
- Township of Egg Harbor: Public Utilities are a permitted use in the Light Industrial Zone, but it is not clear if the lines are an allowed use in the Regional Growth, Professional Office, Highway Business District and General Commercial zones. A use variance could be required for the tower replacements due to height. (Id. at 7-141 to 152).

The proposed 230 kV and rebuilt/new 138 kV lines will be built within an existing right-of-way, secured circa 1928-1929. Once built, Mr. Salvatore believes that the line will have no additional impact on the adjacent properties because it will be built on the same right-of-way as the current 138 kV line. There are farming structures, single-family homes, industrial and commercial structures within 100 feet of the edge of the right-of-way. (Id. at 8-164 to 174). However, there are no schools, hospitals, nursing homes or other public buildings within the immediate vicinity of the proposed line. (Id. at 9-183 to 185). Mr. Salvatore indicated that ACE does need to remove the existing tower structures within the right-of-way to complete the Project. (Id. at 8-175 to 177). According to Mr. Salvatore, based on his and the PHI's Legal Service Department's review, ACE has rights to use the affected right-of-way and fee-owned property for the upgrade and construction of the transmission lines. (Id. at 9-186 to 189).

Mr. Salvatore asserts that no new property will be affected because no additional right-of-way is required. (Id. at 9-195 to 10-199). J. McHale & Associates, New Jersey certified appraisers, conducted a study to determine any possible adverse impact the line will have on real estate values in the vicinity of the line. The report concluded there are no impacts as the new monopoles are less intrusive on the surrounding landscape, and property owners will not be as limited in the use of their property for agriculture as they are with the current lattice towers. (Id. at 10-202 to 207). Mr. Salvatore does not anticipate any physical structures will need to be taken through Eminent Domain proceedings. No additional easements or rights-of-way are required to allow the construction to proceed. (Id. at 10-209 to 215).

Mr. Salvatore opined that the route selected by ACE is the most appropriate and practicable, having the least adverse impact and conflict with the local Land Use Ordinances. (Id. at 11-226 to 229).

#### **F. Government Affairs and Public Outreach**

Kenneth J. Mosca is employed by ACE as a Public Affairs Manager. Mr. Mosca developed and continues to manage the public outreach plan for the Project.

Mr. Mosca indicated that he and ACE personnel reached out to and continue to communicate with key external stakeholders who took an interest with the construction of the Project. (P-26 at 2-28 to 30).

Mr. Mosca indicated that issues regarding the size and material of the replacement transmission poles were brought up by stakeholders and addressed by the Company. He also stated that the project has generally been met with positive feedback. (Id. at 3-57 to 59).

Mr. Mosca opined that the Company has, and will continue to, address any concerns raised by the affected stakeholders.

### **G. Electric and Magnetic Field Strength and Prudent Field Management**

William H. Bailey, PhD, is employed by Exponent, Inc. ("Exponent"), a scientific research and engineering firm engaged in a broad spectrum of activities in science and technology, as a Principal Scientist in the Center for Exposure Assessment in Exponent's Health Science Practice.

Exponent's role in the project, at the request of ACE and PHI, was to model the levels of electric and magnetic fields ("EMF"), audible noise ("AN"), and radio noise ("RN") associated with the operation of the Project. Exponent also assessed the potential for adverse impacts of these phenomena by reference to relevant standards and guidelines for EMF, AN, and RN. (P-29 at 5-11 to 15).

The purpose of Mr. Bailey's direct testimony describes the levels of EMF, AN, and RN associated with the construction of the Project and compare them to relevant exposure guidelines. (Id. at 4-13 to 20).

#### **a. Electric and Magnetic Fields ("EMF")**

Mr. Bailey described EMF as the following:

When an object contains more of one electric charge or the other, the net charge gives rise to an electric field. Magnetic fields are created when electric charges move or by the movement of electrons in certain materials such as permanent magnets .... [E]lectric and magnetic fields are properties of the space surrounding anything that generates, transmits, or uses electricity. Electric fields result from voltage applied to these objects, while magnetic fields result from the current flowing through these objects.... Electric fields are measured in units of volts per meter (V/m) or kilovolts per meter (kV/m), where 1kV/m = 1,000V/m. Magnetic fields are measured in units of magnetic flux density called milligauss (mG).

[Id. at 6-17 to 7-9].

The new and rebuilt circuits will be a source of EMF, just like other existing transmission circuits on the right-of-way and other parts of the electric system and any device or appliance connected to the electric system. (Id. at 7-14 to 18).

The magnetic field levels from existing transmission lines at the edges of the right-of-way are calculated to decrease or be relatively unchanged from the magnetic fields associated with the existing line configurations. At average loading, the largest increase at the edge of the right-of-

way is 4.2 mG and the largest decrease is 25 mG. Under peak loading, existing levels do not increase by more than 5.7 mG. (Id. at 8-6 to 18). The changes in electric field levels from existing to proposed conditions at the edge of the right-of-way are calculated to be small. The largest increase would be 0.1 kV/m as compared to existing conditions and the highest level in any section of the Project would be 0.5 kV/m. (Id. at 9-3 to 8).

According to Mr. Bailey, there are no standards in New Jersey that apply to magnetic fields from transmission lines and there are no federal standards for EMF from power lines. The NJDEP has a guideline regarding the edge of right-of-way electric field level that was established in 1981 as an interim standard. The interim guideline limit at the edge of a transmission line's right-of-way is 3 kV/m, which has not been revised or rescinded even though a large body of research over the past 30 years has not indicated any health effects from exposure to electric fields at levels encountered by the general public or during occupational exposure. (Id. at 9-11 to 10-7).

Guidelines for exposure of the general public and occupational exposure to EMF have been recommended by the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") and other agencies. (Id. at 10-9 to 10). The ICNIRP's 1998 guidelines recommend basic restrictions as limits to protect against acute effects that occur at very high EMF levels, such as perception, annoyance, and the stimulation of nerves and muscles. ICNIRP recommended reference levels of 4.2 kV/m and 833 mG for exposures of the general public to electric and magnetic fields. After a weight-of-evidence review of research in 2010, ICNIRP increased the reference level for magnetic field exposure to 2,000 mG at 60 Hz. (Id. at 11-3 to 10).

The International Committee on Electromagnetic Safety ("ICES") also recommends standards for the safe use of electromagnetic energy in the range of 0 Hz to 300 GHz, including 60 Hz power frequency fields. (Id. 10-16 to 18). The ICES defines reference levels for AC magnetic field exposure at 9,040 mG and electric field exposure at 5 kV/m, which are higher than ICNIRP's guidelines at 60 Hz. On transmission line right-of-ways, electric field exposures of up to 10 kV/m are permitted. (Id. at 11-13 to 17).

For the Project, Mr. Bailey concluded that even directly under the conductors the highest magnetic field levels at average loading (69 mG) and at peak loading (93 mG) are far below the reference levels for the general public. The electric field levels are also below the recommended reference levels, even where the maximum electric field is 2.3 kV/m. Because the loading of circuits does not affect electric field levels, they will be the same at average and peak loading. The maximum electric field level at the edge of the right-of-way under proposed conditions will be 0.5 kV/m, well below the NJDEP's protection guideline. (Id. at 11- 20 to 12-4). The maximum magnetic field at the edge of the right-of-way under peak loading is calculated to be 26 mG. (P-28, Table A-3).

None of the panels, reviews, or studies on EMF and health that were reviewed by Exponent concluded long-term exposure to electric or magnetic fields at the strengths normally encountered in our environment are known or likely to cause of any adverse health effect. (P-29 at 12-16 to 18). The World Health Organization's ("WHO") Task Group concluded there were no substantive health issues related to ELF electric fields at levels generally encountered by members of the public. (Id. at 13-20 to 22). The National Institute of Environmental Health Sciences ("NIEHS") states no regulatory action was recommended by or taken based on the NIEHS report to the U.S. Congress at the conclusion of the EMF Rapid Program, which suggested power companies and utilities continue siting power lines to reduce exposure and explore the ways to reduce the creation of magnetic fields around transmission and distribution

lines without creating new hazards. (Id. at 14-11 to 16). The WHO recommends that when constructing new facilities, low-cost ways of reducing exposures be explored. The WHO also stated appropriate exposure reduction measures will vary from country to country but policies based on the adoption of arbitrary law exposure limits are not warranted. (Id. at 14-17 to 21). The proposed design of the Project is consistent with the recommendations of the WHO, and NIEHS because it limits the spread of EMF sources in the area and minimizes the magnetic field level at right-of-way edges by utilizing transmission towers with a vertical configuration and phasing that minimizes EMF at right of way edges. (Id. at 15-6 to 12).

Mr. Bailey concludes, with a reasonable degree of scientific certainty, that EMF, at the levels described in Exponent's modeling for the Project, are not harmful to human health. (Id. at 17-6 to 8).

#### **b. AN**

As to the effect on AN levels from the transmission lines, the highest edge of right-of-way AN level in fair weather is between the threshold of human hearing (0 dBA) and the noise level expected in one's bedroom (24 dBA). The calculated levels of AN in fair weather (17dBA) are well below the 50 dBA nighttime limit established by N.J.A.C. 7:29 (2012). (Id. at 15-16 to 16-4). The levels of AN in foul weather are calculated to be 25 dBA higher than the fair weather values, with the maximum at 42 dBA, which is still below the nighttime limit. (Id. at 16-6 to 12). Mr. Bailey concluded that even though the AN levels will increase in some sections of the Project; the levels will remain low and well below the New Jersey limits. (Id. at 17-22 to 18-2).

#### **c. RN**

Mr. Bailey represents that there are no federal or state limits for RN; however, the IEEE Radio Noise Design Guide identifies an acceptable level of fair weather RN from transmission lines as no more than 61 dB $\mu$ V/m at 50 feet from the outside conductors. In terms of the Project, the highest calculated fair weather value at 50 feet from the outside conductors is 42 dB $\mu$ V/m. The highest calculated foul weather value of RN at 50 feet outside the conductor is 59 dB $\mu$ V/m. Therefore, the calculated RN will be below acceptable levels in all sections of the Project. (Id. at 16-19 to 17-4). Mr. Bailey concludes even though the RN levels will increase in some sections of the Project, the levels will remain low and well below the IEEE guideline. (Id. at 17-22 to 18-2).

### **THE INITIAL DECISION**

On May 25, 2017, ALJ Pelios issued his Initial Decision in this matter. ALJ Pelios initially determined that the collective testimony was undisputed and consistent with the documentary evidence and is "therefore adopted in its entirety and found as fact." Consequently, ALJ Pelios found:

1. The Project as proposed is reasonably necessary to provide safe, adequate and reliable electric service in New Jersey;
2. The project as proposed is reasonably necessary for the service, convenience and welfare of the public;
3. ACE considered alternative routes for the Project;

4. The route, along an existing Right-of-Way, is a reasonable route considering the alternatives;
5. The affected municipalities and counties have been notified and no opposition has been filed;
6. The Project as proposed to be designed and constructed will minimize adverse impacts on the environment;
7. Based upon the record, the Project is not adverse to the public health and welfare; and
8. The Project can be constructed without causing undue economic injury to neighboring property owners because it is within an existing right-of-way, and will increase the amount of land that can be farmed within the right-of-way.

ALJ Pelios further concluded that ACE should be able to construct and begin local operation of the Project as proposed; that the Local Land Use and Zoning Ordinances, and any other Ordinances, rules or regulations promulgated under the auspices of the Municipal Land Use Act of the State of New Jersey should not apply to the construction, installation, and operation of the Project; and that the petition of Atlantic City Electric Company should be granted.

ALJ Pelios ordered that:

1. The zoning, site-plan review, and all other municipal land use ordinances, and all regulations promulgated thereunder by the Township of Upper Pittsgrove, Township of Pittsgrove, City of Vineland, Township of Franklin, Borough of Buena, Township of Buena Vista, Township of Hamilton, Township of Weymouth, City of Estell Manor and Township of Egg Harbor in the Counties of Salem, Cumberland, Gloucester and Atlantic, respectively, shall have no application to the proposed transmission line and the pertinent facilities including, but not limited to substations.
2. ACE is authorized to construct and energize the proposed project and the facilities appurtenant thereto, in a timely manner in order to permit the petitioner to satisfy its obligation to continue to provide safe, adequate and reliable service to petitioner's customers, and to enable petitioner to construct and energize the proposed facility.
3. Granted an expedited approval given the environmental restrictions set forth in the amended New Jersey Department of Environmental Protection ("NJDEP") Consent Order, in order to minimize the temporarily extended operation of the B.L. England plant.

### **DISCUSSION AND FINDINGS**

The Board notes that only ACE witnesses were presented at the evidentiary hearing and there was limited cross-examination which undermined the testimony and the documentary evidence presented. Thus, upon careful review and consideration of the record, the Board, **FINDS** ALJ Pelios's findings of fact and conclusions of law to be reasonable and accordingly **HEREBY ACCEPTS** them.

## A. Review Criteria

The applicable criteria to be reviewed by the Board in this matter is set forth in N.J.S.A. 40:55D-19. The statute states that the Board may grant the petition of a public utility for relief from local zoning restrictions on a proposed utility project running through multiple municipalities if, after hearing, on notice to all interested parties, the Board finds that:

the present or proposed use by the public utility ... of the land described in the petition is necessary for the service, convenience or welfare of the public... that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility ... may proceed in accordance with such decision of the Board of Public Utilities, and ordinance or regulation made under the authority of [Municipal Land Use Law] notwithstanding.

The New Jersey Supreme Court, in In Re Public Service Electric & Gas Co., 35 N.J. 368 (1961), explained the applicable legal principles:

- a. The phrase "for the service, convenience and welfare of the public" refers to the whole public served by the utility and not the limited group that benefits from the local zoning ordinance;
- b. The proposed use must be reasonably, not absolutely or indispensably, necessary for the service, convenience, and welfare of the public;
- c. The particular site or location must be found to be "reasonably necessary" and so the Board must consider the community zoning plan, the physical characteristics of the site, and the surrounding neighborhood;
- d. Alternative sites and their comparative advantages and disadvantages, including cost, must be considered in determining reasonable necessity; and
- e. The Board must weigh all interests and factors in light of all the facts, giving the utility preference if the balance is equal. The legislative intent is clear that the broad public interest is greater than local considerations.

Therefore, in making its determination, the Board must weigh all the interests and, in the event the interests are equal, the utility should be entitled to a preference because the legislative intent is clear that the broad public interest to be served is greater than local considerations. See, e.g., In re Monmouth Consolidated Water Co., 47 N.J. 251 (1966); In re Public Service Electric & Gas Company, *supra*, 35 N.J. at 377.

## B. Need for the Project

PJM, a regional transmission operator ("RTO"), has responsibility for ensuring the reliability of the regional transmission system and coordinates the movement of wholesale electricity in its 13 state-plus venue, including most of New Jersey. The reliability criteria are established by North American Reliability Corporation ("NERC") per jurisdiction awarded by FERC. A major component of this responsibility is PJM's planning for the system. The RTO evaluates the projected operation and capacity of its high-voltage electrical transmission system over both a five-year and 15-year planning basis. This evaluation includes assessment of the current

transmission infrastructure, existing generation assets, dedicated capacity, updated load forecasts, and planned assets and generation on a multi-year look ahead and takes the PJM assumed conditions for each study year into account. From this analysis and review, PJM develops a Regional Transmission Expansion Plan ("RTEP"). Part of the function of this process is to specify anticipated NERC Reliability Standards criteria violations on the transmission system and then to develop projects designed to fix or mitigate these violations.

Planning studies completed by PJM in conjunction with ACE determined that the planned deactivation of the BL England generation units or the delayed re-powering of these units would result in multiple voltage and thermal violations along the regional Bulk electrical system by the summer of 2016, specifically, 5 thermal overloads and voltage violations on 12 substation buses. The project envisioned within this petition, the construction of two transmission lines, from Upper Pittsgrove substation through Landing to Lewis substation and from Deepwater substation to Lewis substation will mitigate all thermal and violation issues, and allow the bulk electrical system to operate unimpeded. These upgrades were included in the April 10, 2014 TEAC and were designated the responsibility of ACE.

### **C. Alternatives Routes for the Project**

ACE examined several routing alternatives. None of the alternative routes resolved all of the violations and overloads, as well as allowed for reconstruction of the 90 year-old plus towers that were at risk.

The record demonstrates that the selected route is the most reasonable and practicable alternative due to the use of the existing rights-of-way and a design with a smaller profile, and that there is no other reasonable, practicable alternative that would have any less adverse impact upon the environment.

### **D. Design, Engineering and Construction**

The transmission lines will be constructed within ACE's existing rights-of-way, its fee-owned land and secured easements. According to the information submitted, minimal additional clearing will be required and .3 miles of the 230 kV segment of the line will be constructed underground due to limited easement.

Any aesthetic impacts from this route are de minimus because the line traverses ACE's existing right-of-way. As most of the land impacted is farmland, and ACE will be replacing the existing lattice towers with steel monopoles, the footprint of the line will be reduced, and the amount of land that can be tilled will be increased.

ACE has submitted evidence that it adhered to the PJM Design and Application of Overhead Transmission Lines 69 kV and above, and the requirements of the National Electric Safety Code in the design of the proposed line. Furthermore, ACE has demonstrated that it incorporated the concept of "prudent field management" where modifications could be made at little or no cost. For example, ACE is using an existing right-of-way, selecting a phasing arrangement to provide cancellation of the magnetic fields wherever practical, and designing the new structures to provide five feet of additional ground clearance than required by PJM and three feet more than required by the NESC.

### E. Electric and Magnetic Fields

The State of New Jersey has an EMF guideline of 3 kV/m for electric fields at the edge of the right-of-way. This guideline was established by the NJDEP on June 4, 1981. Upon completion, based on the information provided in this proceeding, the Project will meet the State of New Jersey's electric field guidelines at the edge of the right of way. The Project will produce a maximum electric field of 2.3 kV/m.

Dr. Bailey testified as to existing standards for EMF. While there are no standards for electric fields within the right-of-way, New Jersey has adopted a 3 kV/m electric field standard at the edge of the right-of-way. There are also no standards in New Jersey for magnetic fields at the edge of the right-of-way, or within it.

The expected EMF levels outside the right-of-way would be below those recommended in exposure guidelines published by international organizations. Several scientific organizations have published guidelines for exposure to EMF based on acute sensory effects that can occur at very high field levels. In its published guidelines, ICNIRP set limits to protect against the acute effects (i.e., the stimulation of nerves and muscles) that can occur at very high field levels. ICNIRP recommends a screening value of 2000 mG and 4.2 kV/m for the general public.

ICES also recommends limiting EMF exposure at high levels because of the risk of acute effects, although its guidelines are higher than ICNIRP's guidelines at 60 Hz. The ICES recommends a residential exposure limit of 9,040 mG for magnetic fields and 5 kV/m for electric fields (ICES, 2002). Both guidelines incorporate large safety factors.

As previously stated, there are no federal standards for electric fields. New Jersey has adopted a standard of 3 kV/m for electric fields at the edge of a right-of-way. The maximum level of electric fields at the edge of the right-of-way for the Project is projected to be 2.3 kV/m. There are no standards in New Jersey, however, for electric fields within the right-of-way. Thus, the Board reviewed the standards of several other states presented in the record that set maximum levels of permitted electric fields within the right-of-way. The projected maximum level of electric fields associated with the Project at the edge of the right-of-way is 2.3 kV/m. Thus, the Board **HEREBY DETERMINES** that the Project will comply with the New Jersey's standard for electric fields at the edge of the right-of-way, and is well within the guidelines set by other states for electric fields within the right-of-way.

There are no federal standards for magnetic fields at power frequencies. Additionally, New Jersey has not adopted standards for magnetic fields. Therefore, the Board reviewed standards adopted by the international community for guidance on commonly accepted levels of magnetic fields for transmission lines. The projected maximum levels of magnetic fields associated with the Project are 26 mG at peak loading at the edge of the right-of-way. Thus, the projected levels are lower than the standards set in other states. Therefore, the Board **HEREBY FINDS** that the estimated magnetic field levels are within the guidelines set by other states and the international community.

ACE employed reasonable efforts to minimize potential risks from EMF. This includes the transmission tower configuration and phasing of conductors. The Board **HEREBY DETERMINES** that the design and routing of the Project incorporates reasonable efforts to manage EMF exposure.

## F. Cost Allocation

In determining whether the Project is "reasonably necessary for the service, convenience or welfare of the public," the Board must consider the cost that New Jersey electricity customers will bear in connection with the Project. Construing this standard under the predecessor to N.J.S.A. 40:55D-19, the New Jersey Supreme Court stated:

Alternative sites or methods and their comparative advantages and disadvantages to all interests involved, including cost, must be considered in determining such reasonable necessity.

[In re Public Service Electric & Gas Co., 35 N.J. 358, 377 (1961).]

The Board is cognizant that whether the Project is "reasonably necessary for the service, convenience or welfare of the public" must include consideration of the cost of the Project to New Jersey electricity customers.

The estimated cost for the Project is \$100.8 million. The Board concludes, based on the testimony and evidence concerning the expected costs of the Project as well as the other positive economic benefits the Project will have on the economy, that the costs are reasonable. The Board concludes that the proposed line is less expensive than the alternatives, including doing nothing. This conclusion is supported by unrefuted expert testimony.

The Board **HEREBY DETERMINES** that the cost projections and countervailing economic benefits weigh in favor of approving the Project.

## G. ADDITIONAL FINDINGS AND RECOMMENDATIONS

After a thorough review of the record in this proceeding, the Board **HEREBY ADOPTS** the following findings by ALJ Pelios:

- 1) The Project is necessary to provide safe, adequate, and reliable electric service in New Jersey, and in the PJM region;
- 2) The Project is reasonably necessary for the service, convenience and welfare of the public;
- 3) ACE considered alternative routes for the Project;
- 4) The planned route, primarily along ACE's existing right-of-way, is a reasonable route considering the alternatives;
- 5) The affected municipalities and counties have been notified and no opposition have been filed;
- 6) The Project as proposed to be designed and constructed will minimize adverse impacts on the environment;
- 7) Based upon the record in this proceeding, the Project will not be adverse to the public health and welfare; and

- 8) The Project can be constructed, installed, and operated without substantial detriment to the public good and without causing undue economic injury to neighboring property owners.

In addition the Board **HEREBY FINDS**:

- 1) That, in light of the reliability issues identified in this proceeding, there is no reasonable, practical, and permanent alternative to the construction and operation of the Project that would have any less adverse impact upon the environment, surrounding community, or local land use ordinances;
- 2) That ACE conducted a good faith, reasonable, and extensive analysis of alternative methods for the Project, and the Project represents the most effective and efficient solution to the expected reliability criteria violations;
- 3) That the findings contained within this Order are the result of a thorough and complete review of the record in this proceeding. The Board's findings are limited to the facts and circumstances of this particular Project along this particular route and shall not be construed as a determination by this Board on any other application; and
- 4) That the Project as proposed is to be designed and constructed in accordance with all applicable industry standards in a manner that will minimize adverse impacts upon the environment, to the extent known or predictable.

Therefore, the Board **HEREBY DETERMINES**, in accordance with N.J.S.A. 40:55D-19, that the proposed Project is reasonably necessary for the service, convenience, or welfare of the public to enable ACE to continue to provide safe, adequate, and reliable service to its customers; that ACE should be able to construct and begin local operation of the Project, as proposed and modified by the Board in this Order and that the Local Land Use and Zoning Ordinances, and any other Ordinances, rules or regulations promulgated under the auspices of the Municipal Land Use Act of the State of New Jersey shall not apply to the construction, installation, and operation of the Project.

Therefore, the Board **HEREBY ADOPTS** the Initial Decision in its entirety and the Board **HEREBY ORDERS** that neither N.J.S.A. 40:55D-1 et seq., nor any other governmental ordinances or regulations, permits or license requirements made under the authority of N.J.S.A. 40:55D-1 et seq. shall apply to the siting, installation, construction, or operation of the Project, as proposed and modified in this Order. The Board, however, is cognizant that portions of the Project are located within areas governed by statutes and rules of other government agencies, including the New Jersey Pinelands Commission and the NJDEP. This Order shall not be construed as a certificate, license, consent, or permit to construct or disturb any land within the jurisdiction of any other regulatory agency. Should ACE need to obtain any approval or authorization to proceed from these entities or any other entity as may be required by law or rules, it is required to do so.

This Order is applicable only to the route as proposed by ACE. Should ACE determine that additional modifications to the Project route are required, because of the actions of another agency or for any other reason, it must request further approval from this Board.

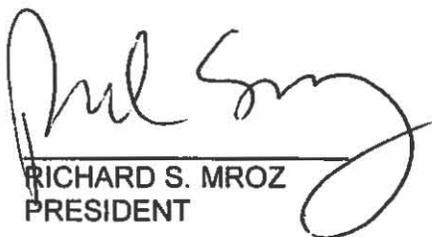
The Board **FURTHER ORDERS** that:

- 1) ACE minimize the visual impact of all transmission structures to the extent practicable;
- 2) ACE complies with the New Jersey audible noise requirements; and
- 3) ACE compensate property owners for any and all physical property damages that may result from construction of the Project.

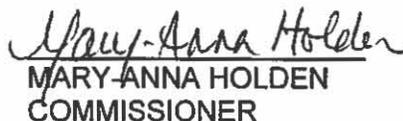
This Order shall be effective on August 5, 2017.

DATED: 7/26/17

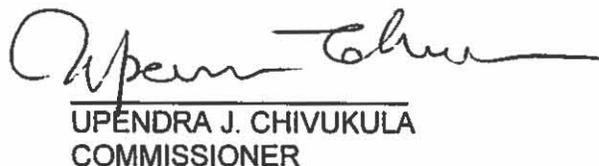
BOARD OF PUBLIC UTILITIES  
BY:

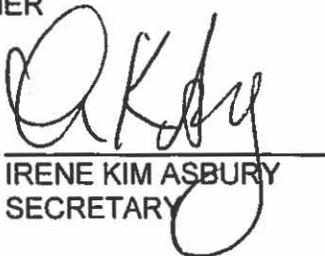
  
RICHARD S. MROZ  
PRESIDENT

  
JOSEPH L. FIORDALISO  
COMMISSIONER

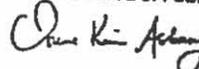
  
MARY-ANNA HOLDEN  
COMMISSIONER

  
DIANNE SOLOMON  
COMMISSIONER

  
UPENDRA J. CHIVUKULA  
COMMISSIONER

ATTEST:   
IRENE KIM ASBURY  
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities



IN THE MATTER OF THE PETITION OF ATLANTIC CITY ELECTRIC COMPANY FOR A DETERMINATION PURSUANT TO THE PROVISIONS OF N.J.S.A. 40:55D-19 THAT THE USE OF CERTAIN LANDS WITHIN THE TOWNSHIP OF UPPER PITTSBORO; THE TOWNSHIP OF PITTSBORO; THE CITY OF VINELAND; THE TOWNSHIP OF FRANKLIN; THE BOROUGH OF BUENA; THE TOWNSHIP OF BUENA VISTA; THE TOWNSHIP OF HAMILTON; THE TOWNSHIP OF WEYMOUTH; THE CITY OF ESTELL MANOR; AND THE TOWNSHIP OF EGG HARBOR; ALL IN THE COUNTIES OF SALEM, CUMBERLAND, GLOUCESTER AND ATLANTIC; ALL IN THE STATE OF NEW JERSEY, ARE REASONABLY NECESSARY FOR THE SERVICE, CONVENIENCE OR WELFARE OF THE PUBLIC; AND THAT THE ZONING AND LAND USE ORDINANCES OF THOSE MUNICIPALITIES AND COUNTIES SHALL HAVE NO APPLICATION THERETO

BPU DOCKET NO EO16010043  
OAL DOCKET NO. PUC 01505-16

**SERVICE LIST**

**ACE**

Philip J. Passanante, Esq.  
Associate General Counsel  
ACE- 92DC42  
500 North Wakefield Drive  
Post Office Box 6066  
Newark, DE 19714-6066  
[philip.passanante@pepcoholdings.com](mailto:philip.passanante@pepcoholdings.com)

Enid Hyberg, Esq.  
Montgomery McCracken Walker &  
Rhoads LLP  
Cornerstone Commerce Center  
1202 New Road, Suite 100  
Linwood, NJ 08221  
[ehyberg@mmwr.com](mailto:ehyberg@mmwr.com)

**Division of Rate Counsel**

Stefanie A. Brand, Esq. Director  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[sbrand@rpa.state.nj.us](mailto:sbrand@rpa.state.nj.us)

Ami Morita, Esq.  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[Amortia@rpa.state.nj.us](mailto:Amortia@rpa.state.nj.us)

**Board of Public Utilities**

Irene Kim Asbury, Esq.  
Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[irene.asbury@bpu.nj.gov](mailto:irene.asbury@bpu.nj.gov)

Thomas Walker, Director  
Division of Energy  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[thomas.walker@bpu.nj.gov](mailto:thomas.walker@bpu.nj.gov)

John Masiello  
Division of Energy  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[john.masiello@bpu.nj.gov](mailto:john.masiello@bpu.nj.gov)

Bethany Rocque-Romaine, Esq.  
Counsel's Office  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
Post Office Box 350  
Trenton, NJ 08625-0350  
[bethany.romaine@bpu.nj.gov](mailto:bethany.romaine@bpu.nj.gov)

Lisa Gurkas  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[lgurkas@rpa.state.nj.us](mailto:lgurkas@rpa.state.nj.us)

#### **Municipalities**

Linda S. Buzby, Clerk  
Upper Pittsgrove Township  
Municipal Building  
431 Route 77  
Elmer, NJ 08318-2756  
[uptclerk@hotmail.com](mailto:uptclerk@hotmail.com)

Mimi Marlor, RMC, Clerk  
Pittsgrove Township Municipal Building  
989 Centerton Road  
Pittsgrove Township, NJ 08318  
[mmarlor@pittsgrovetownship.org](mailto:mmarlor@pittsgrovetownship.org)

Keith Petrosky, Clerk  
Vineland City Hall  
640 E. Wood Street  
P.O. Box 1508  
Vineland, NJ 08362-1508  
[kpetrosky@vinelandcity.org](mailto:kpetrosky@vinelandcity.org)

Barbara Freijomil, Clerk  
Franklin Township Municipal Building  
1571 Delsea Drive  
Franklinville, NJ 08322-0300  
[clerk@franklingtownship.com](mailto:clerk@franklingtownship.com)

Maryann Coraluzzo, Clerk  
Buena Borough Hall  
616 Central Avenue  
Minotola, NJ 08341  
[clerk@buenaboro.org](mailto:clerk@buenaboro.org)

Lisa A. Tilton, Clerk  
Buena Vista Township  
Municipal Building  
890 Harding Highway  
Buena, NJ 08310  
[ltilton@buenavistanj.com](mailto:ltilton@buenavistanj.com)

#### **Deputy Attorneys General**

Geoffrey Gersten, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Geoffrey.gersten@law.njoag.gov](mailto:Geoffrey.gersten@law.njoag.gov)

Alex Moreau, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Alex.moreau@law.njoag.gov](mailto:Alex.moreau@law.njoag.gov)

Andrew Kuntz, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[andrew.kuntz@law.njoag.gov](mailto:andrew.kuntz@law.njoag.gov)

Caroline Vachier, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Caroline.vachier@law.njoag.gov](mailto:Caroline.vachier@law.njoag.gov)

#### **County Boards of Freeholders**

Brenda P. Banks, Interim Board Clerk  
Salem County Board of Freeholders  
Administration Building  
94 Market Street  
Salem, NJ 08079-1914  
[brenda.banks@salemcountynj.gov](mailto:brenda.banks@salemcountynj.gov)

Ken Mecouch, Board Clerk/Administrator  
Cumberland County Board of Freeholders  
Administration Building  
790 E. Commerce Street  
Bridgton, NJ 08302  
[kenme@co.cumberland.nj.us](mailto:kenme@co.cumberland.nj.us)

Rita Martino, Clerk  
Hamilton Township Municipal Building  
6101 Thirteenth Street  
Mays Landing, NJ 08330  
[clerks.office@townshipofhamilton.com](mailto:clerks.office@townshipofhamilton.com)

Dorothy Jo Ayres, CMC, Clerk  
Weymouth Township Municipal Building  
45 S. Jersey Avenue  
Dorothy, NJ 08317  
[weymouth\\_township@verizon.net](mailto:weymouth_township@verizon.net)

Fern Brown, Clerk  
Estell Manor City Hall  
148 Cumberland Avenue  
Estell Manor, NJ 08319-0102  
[emcityclerk@verizon.net](mailto:emcityclerk@verizon.net)

Eileen M. Tedesco, Clerk  
Egg Harbor Township Municipal Building  
3515 Bargaintown Road  
Egg Harbor Township, NJ 08234  
[clerk@ehtgov.org](mailto:clerk@ehtgov.org)

#### **County Counsel**

Anthony J. Pagano, Assistant County Counsel  
County of Atlantic  
1333 Atlantic Avenue  
Atlantic City, NJ 08401  
[pagano\\_anthony@aclink.org](mailto:pagano_anthony@aclink.org)

Anthony J. Fiola, Assistant County Counsel  
County of Gloucester  
2 S. Brood Street  
Woodbury, NJ 08096  
[tfioloa@gloucester.nj.us](mailto:tfioloa@gloucester.nj.us)

Chad M. Bruner, Administrator/Board Clerk  
Gloucester County Board of Freeholders  
2 S. Broad Street  
P.O. Box 337  
Woodbury, NJ 08096  
[ebruner@co.glouster.nj.us](mailto:ebruner@co.glouster.nj.us)

Sonya Harris, Board Clerk  
Atlantic County Board of Freeholders  
Stillwater Building  
201 S. Shore Road  
Northfield, NJ 08225  
[harris\\_sonya@aclink.org](mailto:harris_sonya@aclink.org)

#### **County Engineers**

Mark V. Shourds, P.E.  
Atlantic County Engineer  
Department of Engineering  
P.O. Box 719  
New Road & Dolphin Avenue  
Northfield, NJ 08225  
[shourds\\_mark@aclink.org](mailto:shourds_mark@aclink.org)

John Knoop, P.E.  
Cumberland County Engineer  
800 E. Commerce Street  
Bridgton, New Jersey 08302  
[johnkn@co.cumberland.nj.us](mailto:johnkn@co.cumberland.nj.us)

Vincent Voltaggio, P.E.  
Gloucester County Engineer  
Department of Public Works  
1200 N. Delsea Drive  
Clayton, NJ 08312  
[vvoltaggio@co.gloucester.nj.us](mailto:vvoltaggio@co.gloucester.nj.us)

James McKelvie, P.E.,  
Salem County Engineer  
Alaimo Group  
200 High Street  
Mt. Holly, New Jersey 08060  
[jmckelvie@alaimogroup.com](mailto:jmckelvie@alaimogroup.com)



Agenda Date: 06/30/17  
Agenda Item: 2F

**STATE OF NEW JERSEY**  
**Board of Public Utilities**  
**44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314**  
**Post Office Box 350**  
**Trenton, New Jersey 08625-0350**  
**www.nj.gov/bpu/**

ENERGY

IN THE MATTER OF THE PETITION OF ATLANTIC )  
CITY ELECTRIC COMPANY FOR A DETERMINATION )  
PURSUANT TO THE PROVISIONS OF N.J.S.A. )  
40:55D-19 THAT THE USE OF CERTAIN LANDS )  
WITHIN THE TOWNSHIP OF UPPER PITTSBORO; )  
THE TOWNSHIP OF PITTSBORO; THE CITY OF )  
VINELAND; THE TOWNSHIP OF FRANKLIN; THE )  
BOROUGH OF BUENA; THE TOWNSHIP OF BUENA )  
VISTA; THE TOWNSHIP OF HAMILTON; THE )  
TOWNSHIP OF WEYMOUTH; THE CITY OF ESTELL )  
MANOR; AND THE TOWNSHIP OF EGG HARBOR; )  
ALL IN THE COUNTIES OF SALEM, CUMBERLAND, )  
GLOUCESTER AND ATLANTIC; ALL IN THE STATE )  
OF NEW JERSEY, ARE REASONABLY NECESSARY )  
FOR THE SERVICE, CONVENIENCE OR WELFARE )  
OF THE PUBLIC; AND THAT THE ZONING AND LAND )  
USE ORDINANCES OF THOSE MUNICIPALITIES AND )  
COUNTIES SHALL HAVE NO APPLICATION )  
THERETO )

ORDER ADOPTING  
INITIAL DECISION

BPU DOCKET NO. EO16010043  
OAL DOCKET NO. PUC 01505-16

**Parties of Record:**

**Enid L. Hyberg, Esq.**, on behalf of Atlantic City Electric Company  
**Phillip J. Passanante, Esq.**, Atlantic City Electric Company  
**Stefanie A. Brand, Esq. Director**, New Jersey Division of Rate Counsel

**BY THE BOARD:**

On January 15, 2016, Atlantic City Electric Company, ("ACE" or "Company") filed a petition with the Board of Public Utilities ("Board") under N.J.S.A. 40:55D-19 of the New Jersey Municipal Land Use Act ("MLUA") seeking a determination that the Orchard-Lewis Transmission Project ("Project") and all facilities involved in the project are reasonably necessary for the service, convenience and welfare of the public.

According to the petition, in July 2014, the PJM Interconnection, L.L.C. ("PJM") Board of Mangers approved a set of upgrades for the ACE transmission system which were determined to be necessary due to the continued delay, and possible cancellation of the proposed repowering of the B.L. England generating plant in Beesley's Point, New Jersey or the retirement of said plant. These upgrades had previously been presented at the April 10, 2014 Transmission Planning Advisory Committee meeting at PJM. PJM required ACE, in a timely manner, to complete the installation of these upgrades.

The Project is an accelerated upgrade to a forty-one (41) mile, eighty (80+) year old double circuited 138 kilo-volt ("kV") transmission line consisting of new higher capacity double circuited 230 kV and multiple 138 kV lines (plus an extension). This transmission upgrade traverses through ten (10) municipal entities, the Townships of Upper Pittsgrove, Pittsgrove, Franklin, Buena Vista, Hamilton, Weymouth and Egg Harbor, the Cities of Vineland and Estell Manor and the Borough of Buena located in Salem, Cumberland, Gloucester and Atlantic counties along existing ACE right-of-way.

This Order sets forth the background and procedural history and represents the Final Order in the matter pursuant to N.J.S.A. 52:14B-20. Having reviewed the record, the Board now **ADOPTS** the Initial Decision rendered on May 25, 2017.

### **BACKGROUND AND PROCEDURAL HISTORY**

The Board is empowered to ensure that regulated public utilities provide safe, adequate and proper service to the citizens of New Jersey. N.J.S.A. 48:2-23. Pursuant to N.J.S.A. 48:2-13, the Board has been vested by the Legislature with the general supervision and regulation of and jurisdiction and control over all public utilities, "so far as may be necessary for the purpose of carrying out the provisions of [Title 48]." The courts of this State have held that the grant of power by the Legislature to the Board is to be read broadly, and that the provisions of the statutes governing public utilities are to be construed liberally. See e.g., In re Public Service Electric and Gas Company, 35 N.J. 358, 371 (1961), Twp. of Deptford v. Woodbury Terrace Sewerage Corp., 54 N.J. 418, 424 (1969), Bergen County v. Dep't. of Public Utilities, 117 N.J. Super. 304 (App. Div. 1971).

ACE's January 15, 2016 Petition with the Board sought the following determinations:

- 1) The construction of the proposed Project and all facilities involved in the project are reasonably necessary for the service, convenience and welfare of the public;
- 2) The rights-of-way and construction requirements currently in effect shall apply to the Project notwithstanding any changes in Right-of-Way or construction requirements that the Board may promulgate between the date of approvals obtained and the date that the Project lines are placed into service; and
- 3) The Zoning and Land Use Ordinances and all regulations promulgated by the municipal entities and the counties shall have no application to the Project, including, but not limited to, substations.

The petition further sought authorization to construct and energize the proposed Project and the facilities in appurtenant thereto in a timely manner in order to permit the Company to satisfy its obligation to continue to provide safe, adequate, and reliable service to ACE's customers and to

enable ACE to construct and energize the Project. Given the environmental restrictions set forth in the amended New Jersey Department of Environmental Protection ("NJDEP") Consent Order, ACE requested expedited approval in order for the construction to commence, thus minimizing the temporary extended operation of the B.L. England plant.

The petition included maps of the proposed Project and zoning maps of the affected municipalities, a planning analysis report, and the prefiled testimony of the following witnesses: Jerome J. McHale, Frank Caroselli, Jason Tucker, Gregory Parsons, Michael J. Garrity, Nicholas Salvatore, Kenneth J. Mosca, and William H. Bailey, Ph. D.

On January 28, 2016, the matter was transferred to the Office of Administrative Law ("OAL") and assigned to Administrative Law Judge ("ALJ") William T. Miller. In October 2016, ALJ Miller was elevated from the Administrative Law bench to the Superior Court bench and this matter was transferred to ALJ Elia A. Pelios.

After notice, public hearings were held on this matter on June 8 and 9, 2016 in Mays Landing, and Elmer, New Jersey, respectively. No members of the public appeared or presented testimony at either public hearing.

ALJ Pelios held a plenary/evidentiary hearing, closed the record on December 2, 2016 and after seeking and being granted extensions issued an initial decision on May 25, 2017.

## **TESTIMONY PRESENTED**

Only ACE presented witnesses at the evidentiary hearing and no parties submitted post-hearing briefs.

### **A. The Need for the Project**

Frank Caroselli is employed by PHI Service Company, a subsidiary service company of Pepco Holdings, Inc. ("PHI"), as a Consulting Engineer within the Transmission Planning Department, where he provides services to ACE.

According to Mr. Caroselli, the need for the Project was identified as a result of September 2013 notification by RC Cape May Holdings that repowering of the BL England Plant was suspended. This planned work would have included a connection of the plant to the ACE BL England 138kV substation. (P-20 Lines 91 to 93).<sup>1</sup> The repowering was temporarily suspended due to problems with approval of the South Jersey Gas Company pipeline that was proposed to supply fuel to the plant's new generation units. As a result of this suspended connection, the Company contacted PJM to start mitigation of the "at risk" situation. In early 2014, PJM identified multiple contingency transmission system overloads and contingency voltage violations starting in the summer of 2015 should BL England not be in service. The Company then developed and submitted a plan to PJM to mitigate these negative effects on the system. This plan included work to eleven substations and multiple transmission lines which included, upgrades, replacements, rebuilds, reconfiguration, and/or new transmission lines and substation equipment. (*Id.* at Lines 115 to 122). Additionally, the Company developed plans to replace 41 miles of existing 138kV dual circuit towers that were approximately 90 years old and showed

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<sup>1</sup> Mr. Caroselli's prefiled testimony uses sequential line numbers throughout the document, rather than traditional page number transcript citation format.

signs of deterioration on the lattice towers. The lines run from Upper Pittsgrove to Landis. (Id. at Lines 130-137). The estimated total cost of the upgrades was \$89.2 Million. (Id. at Line 144).

PJM determined that the Company proposed upgrades to the bulk transmission system would mitigate all violations resulting from the BL England deficit. (Id. at Lines 140 to 142). These mitigations were viewed not only for the failure of BL England to come on line but any significant delays to the plant's in-service date.

Mr. Caroselli opined that the upgrade proposal was necessary to ensure continued reliable operation of the Company's transmission system. (Id. at Lines 150 to 151).

## **B. Overview of the Project**

Jason Tucker is employed by PHI as a Supervising Engineer within the Transmission and Civil Engineering Department and he provides services to ACE in that capacity. According to Mr. Tucker's testimony, there is no other practical alternative for the construction of the Project that would have any less adverse impact.

According to Mr. Tucker, ACE examined four different alternatives which were ultimately discounted. These included a rebuild/reconductor of the 138kV lines from the Upper Pittsgrove substation to Lewis substation; construction of a new transmission line between Cumberland and Corson substations; an additional circuit along the New Freedom to Cardiff corridor; and a new transmission line between Cardiff and Dennis substations. These were rejected as they would not resolve all issues and/or had significant environmental impacts with their construction. (P-21 4-80 to 6-120). The proposed route was chosen as the preferred route based on the following factors: (Id. at 6-121 to 131).

- The route will be constructed within ACE's existing Right-of-Way; it's fee-owned land; and secured easements.
- Minimal additional clearing will be required.
- Any aesthetic impacts from this route are de minimus because the line traverses ACE's existing Right-of-Way. As most of the land impacted by the Right-of-Way is farmland and ACE will be replacing the existing lattice towers with steel monopoles, the footprint will be reduced, and the amount of land that can be tilled will be increased.

Therefore, Mr. Tucker stated that the route is the most economic approach with an added benefit of minimizing new environmental impacts. (Id. at 6-132 to 134).

Mr. Tucker asserted that ACE adhered to the PJM Design and Application of Overhead Transmission Lines 69 kV and above and the National Electric Safety Code in the design of the proposed lines. (Id. at 7-154 to 156). ACE incorporated the concept of "prudent field management"<sup>2</sup> where modifications could be made at little or no cost and result in lower magnetic and electric fields. For example, ACE is using an existing right-of-way, selecting a

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<sup>2</sup> "Prudent field management" suggests that it is reasonable to make low cost expenditures in the design of transmission lines that can result in a lowering of magnetic and electric fields to less than what would otherwise be experienced had such measures not been undertaken. (Id. at 8-162 to 165).

phasing arrangement to provide cancellation of the magnetic fields wherever practical, and designing the new structures to provide five feet of additional ground clearance than required by PJM and three feet more than required by the NESC. Although electric fields will be higher with the operation of the 230 kV line segment than the existing 138 kV lines, the electric fields associated with the operation of the 230 kV and 138 kV lines will be less than the New Jersey guideline of 3 kV/m at the edge of the right-of-way. (Id. at 8-162 to 181).

Mr. Tucker represented that ACE's foresters work with contract planners to ensure property owners are notified and aware of the necessity of the work ACE needs to perform to ensure reliable and safe transmission of electrical services to all customers. (Id. at 9-184 to 188). To mitigate the proposed structure height increase of approximately 25 feet, the existing lattice tower structures will be replaced with steel monopoles. (Id. at 11-239 to 243).

Both electric and magnetic fields have been modeled by Exponent, ACE's outside consultant.<sup>3</sup> Tucker opined that the design of the 230 kV and 138 kV series of transmission lines incorporated ACE's concept of prudent field management. (Id. at 13-285 to 288).

In contrast to the proposed construction, an underground transmission line could result in longer outages and service restoration periods. The disturbance caused by the construction equipment necessary to construct and maintain the underground cables can result in significant adverse environmental impact. (Id. at 14-308 to 315). The overhead line costs associated with the Project are estimated at approximately \$2.03 million for the overhead portion of the lines inclusive of the poles, insulators, conductors, hardware, and permitting for approximately 41 miles of line. (Id. at 15-326 to 329).

The Company decided to utilize an underground installation for a small section of line as it enters the Cardiff Substation due to limited right-of-way and clearance requirements. (Id. at 16-364 to 17-368).

### **C. Station and Substation Construction**

Gregory A. Parsons is employed by the Company as a Consulting Engineer. Mr. Parsons provided oversight and review of the design and installation changes to the new 230 kV terminals at Orchard substation. (P-22 2-25 to 26).

Mr. Parsons testified that seven substations, Orchard, Upper Pittsgrove, Landis, Minotola, Dorothy, Cardiff, and Lewis, require modifications under the project scope. (Id. at 2-32 to 34). Work at the Orchard substation requires the installation of two new 230kV breakers, six 230kV instrument transformers, a steel structure to terminate the 230kV line, two transmission monopoles and associated relaying and protection devices. (Id. at 2-36 to 43). The modifications at the Upper Pittsgrove, Minotola, Lewis, Dorothy, and Cardiff substations are not part of this petition. (Id. at 3-44 to 62). According to Parsons, the modifications will not increase noise levels at the Orchard station but will increase noise levels at Cardiff by approximately 4dBA. Construction at the Landis, Dorothy and Cardiff substations will require an enlargement of the substations' footprints. (Id. at 4-69 to 78).

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<sup>3</sup> See Direct Testimony of William H. Bailey (P-29) for further details on this issue.

#### **D. Route Justification**

Michael Garrity is also employed by PHI as a Senior Supervising Scientist within the Environmental Planning Department and in that capacity provides services to ACE. Mr. Garrity's testimony explained the various permits and approvals required for this Project to be completed.

With regard to selecting the route for the Project and studying the alternatives, Mr. Garrity stated that he provided input by overseeing the process of identifying environmentally sensitive areas and jurisdictional limits of the NJDEP and the U.S. Army Corps of Engineers ("USACE"). Mr. Garrity also provided identification of the required environmental permits and actively participated in the site selection process through personal observation of the rights-of-way, review of Geographic Information System ("GIS") data, and an analysis of environmental constraint criteria. (P- 24 at 3-59 to 65).

He indicated that the route was selected utilizing aerial maps, GIS overlays, and coastal and flood information to determine impact areas. The presence of existing right-of-ways was used to minimize impacts. (Id. at 5-93 to 97). Field surveys of the route are also in the process of being conducted to assist in determining impacts of pole installation. The impact to the avian population was also considered.

Mr. Garrity indicated that permits are required for the major water crossing of the Maurice River, Great Egg Harbor River and other minor crossings. (Id. at 4-84 to 86). Consultations will be held with: U.S. Fish and Wildlife; National Marine Fisheries; State Historical Preservation Office; and NJEP's Division of Fish and Wildlife. ACE will also notify Indian Tribes and other interested parties. (Id. at 4-70 to 82).

In the event that environmentally sensitive areas cannot be avoided, protective measures and best management practices will be employed during the construction phase. (Id. at 5-102 to 103). Additionally, ACE will incorporate the Edison Electric Institute's "Suggested Practices for Raptor Protection on Power Lines" avian protection recommendations in order to minimize the potential electrocution of large birds of prey. (Id. at 5-106 to 111).

During the construction phase, with regard to the temporary environmental impacts, Garrity indicated that protective measures will be employed. Disturbed areas will be restored and stabilized. Sediment barriers will be used for work adjacent to streams and wet areas to prevent the flow of sediments into the areas. Work activities will be coordinated to minimize the number and frequency of vehicles in the areas. Measures will be taken to ensure the use or handling of fuels and lubricates will not result in any contamination, and any spills will be cleaned, placed in a proper container, and removed from right-of-way areas. Seasonal restrictions on construction activities may be implemented to minimize impacts to threatened or endangered species. (Id. at 5-113 to 6-138).

Mr. Garrity testified that ACE is aware that permanent impacts will result from the surface area coverage taken up by pole locations in wetland areas. The disturbance associated with a single pole is approximately 13 to 39 feet, and as new poles are constructed, the impact will be limited to the surface area of the pole base or its foundation within an existing cleared right of way. (Id. at 7-140 to 144).

ACE intends to minimize any potential visual impacts by using existing right-of-way containing transmission infrastructure. The new transmission line will be located in line with the existing lattice transmission tower, and the existing towers will be removed as construction of the new monopoles are constructed to reduce temporary impacts to sensitive areas. This construction method will be employed in existing cleared right-of-way for much of the line from Upper Pittsgrove Substation then, a single lattice tower to Lewis Substation will be applied for much of the line from Deepwater Substation, then a single lattice tower to Orchard Substation, which will occupy less area and provide a cleaner look. (Id. at 7-155 to 8-163).

Mr. Garrity maintains that the selected route is the most reasonable and practicable alternative due to the use of the existing right-of-way, and that there is no other reasonable, practicable alternative that would have any less adverse impact upon the environment. (Id. at 8-169 to 172).

### **E. Real Estate and Zoning Issues**

Nicholas Kevin Salvatore is employed by ACE as a Senior Real Estate Representative. Mr. Salvatore's testimony addresses the real estate and zoning issues associated with the Project.

Mr. Salvatore purchased the parcel of land that is now the Upper Pittsgrove Substation. (P-25 at 2-38 to 41). Mr. Salvatore was involved with the Planning Board process and securing necessary approvals. Additionally, Mr. Salvatore reviewed ACE's files pertaining to the right-of-way from the Upper Pittsgrove Substation to the Lewis Substation. (P-25 at 2-38 to 41).

Mr. Salvatore described the land use zones and allowances within the respective municipalities through which the proposed line passes, as follows:

- Township of Upper Pittsgrove: Public utilities are considered essential services and are a conditionally permitted use in all zoning districts. A use variance due to height of the poles would be required. (Id. at 3-44 to 50).
- Township of Pittsgrove: the transmission line is classified under "Public Utility for Essential Services" and is conditionally permitted in all zones. A use variance would be required for the tower replacements due to height. (Id. at 3-53 to 64).
- City of Vineland: Mr. Salvatore is uncertain if the transmission line is a permitted use. The line will traverse woodlands, Industrial, Business, Residential, and Agricultural Zones. A use variance would be required for the tower replacements due to height. (Id. at 4-65 to 75).
- Township of Franklin: the line will travel through Residential and Neighborhood Commercial zones. The transmission line is conditionally permitted in the Residential district but the rules are unclear about the allowed use in the Neighborhood Commercial district. A use variance would be required for the tower replacements due to height. (Id. at 76 to 86).
- The Borough of Buena: the permitted use for construction of a transmission line is uncertain. The line will pass through Residential, Highway Business, and Industrial Zoning districts. A use variance could be required for the tower replacements due to height. (Id. at 5-87 to 97).

- Township of Buena Vista: the transmission line is conditionally permitted in the affected zones. The line will pass through Residential, Office Campus Overlay, Business, Agriculture and Forest districts. A use variance could be required for the tower replacements due to height. (Id. at 5-98 to 6-111).
- Township of Hamilton: The zoning ordinances do not specifically reference transmission lines. Substations are permitted in all zoning districts. The line will traverse Forest Area, Agricultural, Growth Area, and Rural Development Zoning districts. (Id. at 6-112 to 122).
- Township of Weymouth: the transmission line is permitted in the Rural Residential zone but it is unclear if the line is a permitted use in the Pinelands Forest Area Zones. A use variance could be required for tower replacements due to height. (Id. at 6-122 to 132).
- City of Estell Manor: the zoning ordinances do not specifically reference transmission lines. The line will traverse are residential zone. A use variance could be required for the tower replacements due to height. (Id. at 7-133 to 140).
- Township of Egg Harbor: Public Utilities are a permitted use in the Light Industrial Zone, but it is not clear if the lines are an allowed use in the Regional Growth, Professional Office, Highway Business District and General Commercial zones. A use variance could be required for the tower replacements due to height. (Id. at 7-141 to 152).

The proposed 230 kV and rebuilt/new 138 kV lines will be built within an existing right-of-way, secured circa 1928-1929. Once built, Mr. Salvatore believes that the line will have no additional impact on the adjacent properties because it will be built on the same right-of-way as the current 138 kV line. There are farming structures, single-family homes, industrial and commercial structures within 100 feet of the edge of the right-of-way. (Id. at 8-164 to 174). However, there are no schools, hospitals, nursing homes or other public buildings within the immediate vicinity of the proposed line. (Id. at 9-183 to 185). Mr. Salvatore indicated that ACE does need to remove the existing tower structures within the right-of-way to complete the Project. (Id. at 8-175 to 177). According to Mr. Salvatore, based on his and the PHI's Legal Service Department's review, ACE has rights to use the affected right-of-way and fee-owned property for the upgrade and construction of the transmission lines. (Id. at 9-186 to 189).

Mr. Salvatore asserts that no new property will be affected because no additional right-of-way is required. (Id. at 9-195 to 10-199). J. McHale & Associates, New Jersey certified appraisers, conducted a study to determine any possible adverse impact the line will have on real estate values in the vicinity of the line. The report concluded there are no impacts as the new monopoles are less intrusive on the surrounding landscape, and property owners will not be as limited in the use of their property for agriculture as they are with the current lattice towers. (Id. at 10-202 to 207). Mr. Salvatore does not anticipate any physical structures will need to be taken through Eminent Domain proceedings. No additional easements or rights-of-way are required to allow the construction to proceed. (Id. at 10-209 to 215).

Mr. Salvatore opined that the route selected by ACE is the most appropriate and practicable, having the least adverse impact and conflict with the local Land Use Ordinances. (Id. at 11-226 to 229).

## **F. Government Affairs and Public Outreach**

Kenneth J. Mosca is employed by ACE as a Public Affairs Manager. Mr. Mosca developed and continues to manage the public outreach plan for the Project.

Mr. Mosca indicated that he and ACE personnel reached out to and continue to communicate with key external stakeholders who took an interest with the construction of the Project. (P-26 at 2-28 to 30).

Mr. Mosca indicated that issues regarding the size and material of the replacement transmission poles were brought up by stakeholders and addressed by the Company. He also stated that the project has generally been met with positive feedback. (Id. at 3-57 to 59).

Mr. Mosca opined that the Company has, and will continue to, address any concerns raised by the affected stakeholders.

## **G. Electric and Magnetic Field Strength and Prudent Field Management**

William H. Bailey, PhD, is employed by Exponent, Inc. ("Exponent"), a scientific research and engineering firm engaged in a broad spectrum of activities in science and technology, as a Principal Scientist in the Center for Exposure Assessment in Exponent's Health Science Practice.

Exponent's role in the project, at the request of ACE and PHI, was to model the levels of electric and magnetic fields ("EMF"), audible noise ("AN"), and radio noise ("RN") associated with the operation of the Project. Exponent also assessed the potential for adverse impacts of these phenomena by reference to relevant standards and guidelines for EMF, AN, and RN. (P-29 at 5-11 to 15).

The purpose of Mr. Bailey's direct testimony describes the levels of EMF, AN, and RN associated with the construction of the Project and compare them to relevant exposure guidelines. (Id. at 4-13 to 20).

### **a. Electric and Magnetic Fields ("EMF")**

Mr. Bailey described EMF as the following:

When an object contains more of one electric charge or the other, the net charge gives rise to an electric field. Magnetic fields are created when electric charges move or by the movement of electrons in certain materials such as permanent magnets .... [E]lectric and magnetic fields are properties of the space surrounding anything that generates, transmits, or uses electricity. Electric fields result from voltage applied to these objects, while magnetic fields result from the current flowing through these objects.... Electric fields are measured in units of volts per meter (V/m) or kilovolts per meter (kV/m), where 1kV/m = 1,000V/m. Magnetic fields are measured in units of magnetic flux density called milligauss (mG).

[Id. at 6-17 to 7-9].

The new and rebuilt circuits will be a source of EMF, just like other existing transmission circuits on the right-of-way and other parts of the electric system and any device or appliance connected to the electric system. (Id. at 7-14 to 18).

The magnetic field levels from existing transmission lines at the edges of the right-of-way are calculated to decrease or be relatively unchanged from the magnetic fields associated with the existing line configurations. At average loading, the largest increase at the edge of the right-of-way is 4.2 mG and the largest decrease is 25 mG. Under peak loading, existing levels do not increase by more than 5.7 mG. (Id. at 8-6 to 18). The changes in electric field levels from existing to proposed conditions at the edge of the right-of-way are calculated to be small. The largest increase would be 0.1 kV/m as compared to existing conditions and the highest level in any section of the Project would be 0.5 kV/m. (Id. at 9-3 to 8).

According to Mr. Bailey, there are no standards in New Jersey that apply to magnetic fields from transmission lines and there are no federal standards for EMF from power lines. The NJDEP has a guideline regarding the edge of right-of-way electric field level that was established in 1981 as an interim standard. The interim guideline limit at the edge of a transmission line's right-of-way is 3 kV/m, which has not been revised or rescinded even though a large body of research over the past 30 years has not indicated any health effects from exposure to electric fields at levels encountered by the general public or during occupational exposure. (Id. at 9-11 to 10-7).

Guidelines for exposure of the general public and occupational exposure to EMF have been recommended by the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") and other agencies. (Id. at 10-9 to 10). The ICNIRP's 1998 guidelines recommend basic restrictions as limits to protect against acute effects that occur at very high EMF levels, such as perception, annoyance, and the stimulation of nerves and muscles. ICNIRP recommended reference levels of 4.2 kV/m and 833 mG for exposures of the general public to electric and magnetic fields. After a weight-of-evidence review of research in 2010, ICNIRP increased the reference level for magnetic field exposure to 2,000 mG at 60 Hz. (Id. at 11-3 to 10).

The International Committee on Electromagnetic Safety ("ICES") also recommends standards for the safe use of electromagnetic energy in the range of 0 Hz to 300 GHz, including 60 Hz power frequency fields. (Id. 10-16 to 18). The ICES defines reference levels for AC magnetic field exposure at 9,040 mG and electric field exposure at 5 kV/m, which are higher than ICNIRP's guidelines at 60 Hz. On transmission line right-of-ways, electric field exposures of up to 10 kV/m are permitted. (Id. at 11-13 to 17).

For the Project, Mr. Bailey concluded that even directly under the conductors the highest magnetic field levels at average loading (69 mG) and at peak loading (93 mG) are far below the reference levels for the general public. The electric field levels are also below the recommended reference levels, even where the maximum electric field is 2.3 kV/m. Because the loading of circuits does not affect electric field levels, they will be the same at average and peak loading. The maximum electric field level at the edge of the right-of-way under proposed conditions will be 0.5 kV/m, well below the NJDEP's protection guideline. (Id. at 11- 20 to 12-4). The maximum magnetic field at the edge of the right-of-way under peak loading is calculated to be 26 mG. (P-28, Table A-3).

None of the panels, reviews, or studies on EMF and health that were reviewed by Exponent concluded long-term exposure to electric or magnetic fields at the strengths normally encountered in our environment are known or likely to cause of any adverse health effect. (P-29

at 12-16 to 18). The World Health Organization's ("WHO") Task Group concluded there were no substantive health issues related to ELF electric fields at levels generally encountered by members of the public. (Id. at 13-20 to 22). The National Institute of Environmental Health Sciences ("NIEHS") states no regulatory action was recommended by or taken based on the NIEHS report to the U.S. Congress at the conclusion of the EMF Rapid Program, which suggested power companies and utilities continue siting power lines to reduce exposure and explore the ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards. (Id. at 14-11 to 16). The WHO recommends that when constructing new facilities, low-cost ways of reducing exposures be explored. The WHO also stated appropriate exposure reduction measures will vary from country to country but policies based on the adoption of arbitrary law exposure limits are not warranted. (Id. at 14-17 to 21). The proposed design of the Project is consistent with the recommendations of the WHO, and NIEHS because it limits the spread of EMF sources in the area and minimizes the magnetic field level at right-of-way edges by utilizing transmission towers with a vertical configuration and phasing that minimizes EMF at right of way edges. (Id. at 15-6 to 12).

Mr. Bailey concludes, with a reasonable degree of scientific certainty, that EMF, at the levels described in Exponent's modeling for the Project, are not harmful to human health. (Id. at 17-6 to 8).

#### **b. AN**

As to the effect on AN levels from the transmission lines, the highest edge of right-of-way AN level in fair weather is between the threshold of human hearing (0 dBA) and the noise level expected in one's bedroom (24 dBA). The calculated levels of AN in fair weather (17dBA) are well below the 50 dBA nighttime limit established by N.J.A.C. 7:29 (2012). (Id. at 15-16 to 16-4). The levels of AN in foul weather are calculated to be 25 dBA higher than the fair weather values, with the maximum at 42 dBA, which is still below the nighttime limit. (Id. at 16-6 to 12). Mr. Bailey concluded that even though the AN levels will increase in some sections of the Project; the levels will remain low and well below the New Jersey limits. (Id. at 17-22 to 18-2).

#### **c. RN**

Mr. Bailey represents that there are no federal or state limits for RN; however, the IEEE Radio Noise Design Guide identifies an acceptable level of fair weather RN from transmission lines as no more than 61 dB $\mu$ V/m at 50 feet from the outside conductors. In terms of the Project, the highest calculated fair weather value at 50 feet from the outside conductors is 42 dB $\mu$ V/m. The highest calculated foul weather value of RN at 50 feet outside the conductor is 59 dB $\mu$ V/m. Therefore, the calculated RN will be below acceptable levels in all sections of the Project. (Id. at 16-19 to 17-4). Mr. Bailey concludes even though the RN levels will increase in some sections of the Project, the levels will remain low and well below the IEEE guideline. (Id. at 17-22 to 18-2).

### **THE INITIAL DECISION**

On May 25, 2017, ALJ Pelios issued his Initial Decision in this matter. ALJ Pelios initially determined that the collective testimony was undisputed and consistent with the documentary evidence and is "therefore adopted in its entirety and found as fact." Consequently, ALJ Pelios found:

1. The Project as proposed is reasonably necessary to provide safe, adequate and reliable electric service in New Jersey;
2. The project as proposed is reasonably necessary for the service, convenience and welfare of the public;
3. ACE considered alternative routes for the Project;
4. The route, along an existing Right-of-Way, is a reasonable route considering the alternatives;
5. The affected municipalities and counties have been notified and no opposition has been filed;
6. The Project as proposed to be designed and constructed will minimize adverse impacts on the environment;
7. Based upon the record, the Project is not adverse to the public health and welfare; and
8. The Project can be constructed without causing undue economic injury to neighboring property owners because it is within an existing right-of-way, and will increase the amount of land that can be farmed within the right-of-way.

ALJ Pelios further concluded that ACE should be able to construct and begin local operation of the Project as proposed; that the Local Land Use and Zoning Ordinances, and any other Ordinances, rules or regulations promulgated under the auspices of the Municipal Land Use Act of the State of New Jersey should not apply to the construction, installation, and operation of the Project; and that the petition of Atlantic City Electric Company should be granted.

ALJ Pelios ordered that:

1. The zoning, site-plan review, and all other municipal land use ordinances, and all regulations promulgated thereunder by the Township of Upper Pittsgrove, Township of Pittsgrove, City of Vineland, Township of Franklin, Borough of Buena, Township of Buena Vista, Township of Hamilton, Township of Weymouth, City of Estell Manor and Township of Egg Harbor in the Counties of Salem, Cumberland, Gloucester and Atlantic, respectively, shall have no application to the proposed transmission line and the pertinent facilities including, but not limited to substations.
2. ACE is authorized to construct and energize the proposed project and the facilities appurtenant thereto, in a timely manner in order to permit the petitioner to satisfy its obligation to continue to provide safe, adequate and reliable service to petitioner's customers, and to enable petitioner to construct and energize the proposed facility.
3. Granted an expedited approval given the environmental restrictions set forth in the amended New Jersey Department of Environmental Protection ("NJDEP") Consent Order, in order to minimize the temporarily extended operation of the B.L. England plant.

## **DISCUSSION AND FINDINGS**

The Board notes that only ACE witnesses were presented at the evidentiary hearing and there was limited cross-examination which undermined the testimony and the documentary evidence presented. Thus, upon careful review and consideration of the record, the Board, **FINDS** ALJ Pelios's findings of fact and conclusions of law to be reasonable and accordingly **HEREBY ACCEPTS** them.

### **A. Review Criteria**

The applicable criteria to be reviewed by the Board in this matter is set forth in N.J.S.A. 40:55D-19. The statute states that the Board may grant the petition of a public utility for relief from local zoning restrictions on a proposed utility project running through multiple municipalities if, after hearing, on notice to all interested parties, the Board finds that:

the present or proposed use by the public utility ... of the land described in the petition is necessary for the service, convenience or welfare of the public... that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit, the public utility ... may proceed in accordance with such decision of the Board of Public Utilities, and ordinance or regulation made under the authority of [Municipal Land Use Law] notwithstanding.

The New Jersey Supreme Court, in In Re Public Service Electric & Gas Co., 35 N.J. 368 (1961), explained the applicable legal principles:

- a. The phrase "for the service, convenience and welfare of the public" refers to the whole public served by the utility and not the limited group that benefits from the local zoning ordinance;
- b. The proposed use must be reasonably, not absolutely or indispensably, necessary for the service, convenience, and welfare of the public;
- c. The particular site or location must be found to be "reasonably necessary" and so the Board must consider the community zoning plan, the physical characteristics of the site, and the surrounding neighborhood;
- d. Alternative sites and their comparative advantages and disadvantages, including cost, must be considered in determining reasonable necessity; and
- e. The Board must weigh all interests and factors in light of all the facts, giving the utility preference if the balance is equal. The legislative intent is clear that the broad public interest is greater than local considerations.

Therefore, in making its determination, the Board must weigh all the interests and, in the event the interests are equal, the utility should be entitled to a preference because the legislative intent is clear that the broad public interest to be served is greater than local considerations. See, e.g., In re Monmouth Consolidated Water Co., 47 N.J. 251 (1966); In re Public Service Electric & Gas Company, supra, 35 N.J. at 377.

## **B. Need for the Project**

PJM, a regional transmission operator ("RTO"), has responsibility for ensuring the reliability of the regional transmission system and coordinates the movement of wholesale electricity in its 13 state-plus venue, including most of New Jersey. The reliability criteria are established by North American Reliability Corporation ("NERC") per jurisdiction awarded by FERC. A major component of this responsibility is PJM's planning for the system. The RTO evaluates the projected operation and capacity of its high-voltage electrical transmission system over both a five-year and 15-year planning basis. This evaluation includes assessment of the current transmission infrastructure, existing generation assets, dedicated capacity, updated load forecasts, and planned assets and generation on a multi-year look ahead and takes the PJM assumed conditions for each study year into account. From this analysis and review, PJM develops a Regional Transmission Expansion Plan ("RTEP"). Part of the function of this process is to specify anticipated NERC Reliability Standards criteria violations on the transmission system and then to develop projects designed to fix or mitigate these violations.

Planning studies completed by PJM in conjunction with ACE determined that the planned deactivation of the BL England generation units or the delayed re-powering of these units would result in multiple voltage and thermal violations along the regional Bulk electrical system by the summer of 2016, specifically, 5 thermal overloads and voltage violations on 12 substation buses. The project envisioned within this petition, the construction of two transmission lines, from Upper Pittsgrove substation through Landing to Lewis substation and from Deepwater substation to Lewis substation will mitigate all thermal and violation issues, and allow the bulk electrical system to operate unimpeded. These upgrades were included in the April 10, 2014 TEAC and were designated the responsibility of ACE.

## **C. Alternatives Routes for the Project**

ACE examined several routing alternatives. None of the alternative routes resolved all of the violations and overloads, as well as allowed for reconstruction of the 90 year-old plus towers that were at risk.

The record demonstrates that the selected route is the most reasonable and practicable alternative due to the use of the existing rights-of-way and a design with a smaller profile, and that there is no other reasonable, practicable alternative that would have any less adverse impact upon the environment.

## **D. Design, Engineering and Construction**

The transmission lines will be constructed within ACE's existing rights-of-way, its fee-owned land and secured easements. According to the information submitted, minimal additional clearing will be required and .3 miles of the 230 kV segment of the line will be constructed underground due to limited easement.

Any aesthetic impacts from this route are de minimus because the line traverses ACE's existing right-of-way. As most of the land impacted is farmland, and ACE will be replacing the existing lattice towers with steel monopoles, the footprint of the line will be reduced, and the amount of land that can be tilled will be increased.

ACE has submitted evidence that it adhered to the PJM Design and Application of Overhead Transmission Lines 69 kV and above, and the requirements of the National Electric Safety Code in the design of the proposed line. Furthermore, ACE has demonstrated that it incorporated the concept of "prudent field management" where modifications could be made at little or no cost. For example, ACE is using an existing right-of-way, selecting a phasing arrangement to provide cancellation of the magnetic fields wherever practical, and designing the new structures to provide five feet of additional ground clearance than required by PJM and three feet more than required by the NESC.

### **E. Electric and Magnetic Fields**

The State of New Jersey has an EMF guideline of 3 kV/m for electric fields at the edge of the right-of-way. This guideline was established by the NJDEP on June 4, 1981. Upon completion, based on the information provided in this proceeding, the Project will meet the State of New Jersey's electric field guidelines at the edge of the right of way. The Project will produce a maximum electric field of 2.3 kV/m.

Dr. Bailey testified as to existing standards for EMF. While there are no standards for electric fields within the right-of-way, New Jersey has adopted a 3 kV/m electric field standard at the edge of the right-of-way. There are also no standards in New Jersey for magnetic fields at the edge of the right-of-way, or within it.

The expected EMF levels outside the right-of-way would be below those recommended in exposure guidelines published by international organizations. Several scientific organizations have published guidelines for exposure to EMF based on acute sensory effects that can occur at very high field levels. In its published guidelines, ICNIRP set limits to protect against the acute effects (i.e., the stimulation of nerves and muscles) that can occur at very high field levels. ICNIRP recommends a screening value of 2000 mG and 4.2 kV/m for the general public.

ICES also recommends limiting EMF exposure at high levels because of the risk of acute effects, although its guidelines are higher than ICNIRP's guidelines at 60 Hz. The ICES recommends a residential exposure limit of 9,040 mG for magnetic fields and 5 kV/m for electric fields (ICES, 2002). Both guidelines incorporate large safety factors.

As previously stated, there are no federal standards for electric fields. New Jersey has adopted a standard of 3 kV/m for electric fields at the edge of a right-of-way. The maximum level of electric fields at the edge of the right-of-way for the Project is projected to be 2.3 kV/m. There are no standards in New Jersey, however, for electric fields within the right-of-way. Thus, the Board reviewed the standards of several other states presented in the record that set maximum levels of permitted electric fields within the right-of-way. The projected maximum level of electric fields associated with the Project at the edge of the right-of-way is 2.3 kV/m. Thus, the Board **HEREBY DETERMINES** that the Project will comply with the New Jersey's standard for electric fields at the edge of the right-of-way, and is well within the guidelines set by other states for electric fields within the right-of-way.

There are no federal standards for magnetic fields at power frequencies. Additionally, New Jersey has not adopted standards for magnetic fields. Therefore, the Board reviewed standards adopted by the international community for guidance on commonly accepted levels of magnetic fields for transmission lines. The projected maximum levels of magnetic fields associated with the Project are 26 mG at peak loading at the edge of the right-of-way. Thus, the projected

levels are lower than the standards set in other states. Therefore, the Board **HEREBY FINDS** that the estimated magnetic field levels are within the guidelines set by other states and the international community.

ACE employed reasonable efforts to minimize potential risks from EMF. This includes the transmission tower configuration and phasing of conductors. The Board **HEREBY DETERMINES** that the design and routing of the Project incorporates reasonable efforts to manage EMF exposure.

#### **F. Cost Allocation**

In determining whether the Project is "reasonably necessary for the service, convenience or welfare of the public," the Board must consider the cost that New Jersey electricity customers will bear in connection with the Project. Construing this standard under the predecessor to N.J.S.A. 40:55D-19, the New Jersey Supreme Court stated:

Alternative sites or methods and their comparative advantages and disadvantages to all interests involved, including cost, must be considered in determining such reasonable necessity.

[In re Public Service Electric & Gas Co., 35 N.J. 358, 377 (1961).]

The Board is cognizant that whether the Project is "reasonably necessary for the service, convenience or welfare of the public" must include consideration of the cost of the Project to New Jersey electricity customers.

The estimated cost for the Project is \$89.2 million. The Board concludes, based on the testimony and evidence concerning the expected costs of the Project as well as the other positive economic benefits the Project will have on the economy, that the costs are reasonable. The Board concludes that the proposed line is less expensive than the alternatives, including doing nothing. This conclusion is supported by unrefuted expert testimony.

The Board **HEREBY DETERMINES** that the cost projections and countervailing economic benefits weigh in favor of approving the Project.

#### **G. ADDITIONAL FINDINGS AND RECOMMENDATIONS**

After a thorough review of the record in this proceeding, the Board **HEREBY ADOPTS** the following findings by ALJ Pelios:

- 1) The Project is necessary to provide safe, adequate, and reliable electric service in New Jersey, and in the PJM region;
- 2) The Project is reasonably necessary for the service, convenience and welfare of the public;
- 3) ACE considered alternative routes for the Project;
- 4) The planned route, primarily along ACE's existing right-of-way, is a reasonable route considering the alternatives;

- 5) The affected municipalities and counties have been notified and no opposition have been filed;
- 6) The Project as proposed to be designed and constructed will minimize adverse impacts on the environment;
- 7) Based upon the record in this proceeding, the Project will not be adverse to the public health and welfare; and
- 8) The Project can be constructed, installed, and operated without substantial detriment to the public good and without causing undue economic injury to neighboring property owners.

In addition the Board **HEREBY FINDS**:

- 1) That, in light of the reliability issues identified in this proceeding, there is no reasonable, practical, and permanent alternative to the construction and operation of the Project that would have any less adverse impact upon the environment, surrounding community, or local land use ordinances;
- 2) That ACE conducted a good faith, reasonable, and extensive analysis of alternative methods for the Project, and the Project represents the most effective and efficient solution to the expected reliability criteria violations;
- 3) That the findings contained within this Order are the result of a thorough and complete review of the record in this proceeding. The Board's findings are limited to the facts and circumstances of this particular Project along this particular route and shall not be construed as a determination by this Board on any other application; and
- 4) That the Project as proposed is to be designed and constructed in accordance with all applicable industry standards in a manner that will minimize adverse impacts upon the environment, to the extent known or predictable.

Therefore, the Board **HEREBY DETERMINES**, in accordance with N.J.S.A. 40:55D-19, that the proposed Project is reasonably necessary for the service, convenience, or welfare of the public to enable ACE to continue to provide safe, adequate, and reliable service to its customers; that ACE should be able to construct and begin local operation of the Project, as proposed and modified by the Board in this Order and that the Local Land Use and Zoning Ordinances, and any other Ordinances, rules or regulations promulgated under the auspices of the Municipal Land Use Act of the State of New Jersey shall not apply to the construction, installation, and operation of the Project.

Therefore, the Board **HEREBY ADOPTS** the Initial Decision in its entirety and the Board **HEREBY ORDERS** that neither N.J.S.A. 40:55D-1 et seq., nor any other governmental ordinances or regulations, permits or license requirements made under the authority of N.J.S.A. 40:55D-1 et seq. shall apply to the siting, installation, construction, or operation of the Project, as proposed and modified in this Order. The Board, however, is cognizant that portions of the Project are located within areas governed by statutes and rules of other government agencies, including the New Jersey Pinelands Commission and the NJDEP. This Order shall not be construed as a certificate, license, consent, or permit to construct or disturb any land within the jurisdiction of any other regulatory agency. Should ACE need to obtain any approval or

authorization to proceed from these entities or any other entity as may be required by law or rules, it is required to do so.

This Order is applicable only to the route as proposed by ACE. Should ACE determine that additional modifications to the Project route are required, because of the actions of another agency or for any other reason, it must request further approval from this Board.

The Board **FURTHER ORDERS** that:

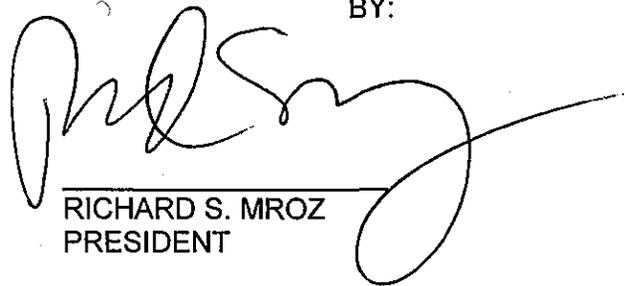
- 1) ACE minimize the visual impact of all transmission structures to the extent practicable;
- 2) ACE complies with the New Jersey audible noise requirements; and
- 3) ACE compensate property owners for any and all physical property damages that may result from construction of the Project

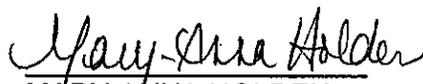
This Order shall be effective on July 10, 2017.

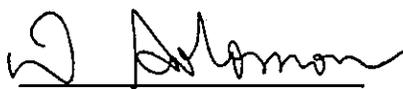
DATED: 6/30/17

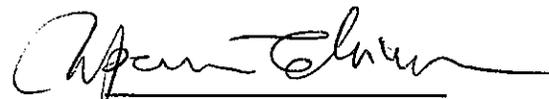
BOARD OF PUBLIC UTILITIES  
BY:

  
JOSEPH L. FIORDALISO  
COMMISSIONER

  
RICHARD S. MROZ  
PRESIDENT

  
MARY-ANNA HOLDEN  
COMMISSIONER

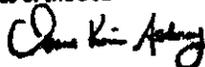
  
DIANNE SOLOMON  
COMMISSIONER

  
UPENDRA J. CHIVUKULA  
COMMISSIONER

ATTEST:

  
IRENE KIM ASBURY  
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities



IN THE MATTER OF THE PETITION OF ATLANTIC CITY ELECTRIC COMPANY FOR A DETERMINATION PURSUANT TO THE PROVISIONS OF N.J.S.A. 40:55D-19 THAT THE USE OF CERTAIN LANDS WITHIN THE TOWNSHIP OF UPPER PITTSBORO; THE TOWNSHIP OF PITTSBORO; THE CITY OF VINELAND; THE TOWNSHIP OF FRANKLIN; THE BOROUGH OF BUENA; THE TOWNSHIP OF BUENA VISTA; THE TOWNSHIP OF HAMILTON; THE TOWNSHIP OF WEYMOUTH; THE CITY OF ESTELL MANOR; AND THE TOWNSHIP OF EGG HARBOR; ALL IN THE COUNTIES OF SALEM, CUMBERLAND, GLOUCESTER AND ATLANTIC; ALL IN THE STATE OF NEW JERSEY, ARE REASONABLY NECESSARY FOR THE SERVICE, CONVENIENCE OR WELFARE OF THE PUBLIC; AND THAT THE ZONING AND LAND USE ORDINANCES OF THOSE MUNICIPALITIES AND COUNTIES SHALL HAVE NO APPLICATION THERETO  
BPU DOCKET NO EO16010043  
OAL DOCKET NO. PUC 01505-16

**SERVICE LIST**

Philip J. Passanante, Esq.  
Associate General Counsel  
ACE- 92DC42  
500 North Wakefield Drive  
Post Office Box 6066  
Newark, DE 19714-6066  
[philip.passanante@pepcoholdings.com](mailto:philip.passanante@pepcoholdings.com)

Irene Kim Asbury, Esq.  
Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[Irene.asbury@bpu.nj.gov](mailto:Irene.asbury@bpu.nj.gov)

Enid Hyberg, Esq.  
Montgomery McCracken Walker & Rhoads  
LLP  
Cornerstone Commerce Center  
1202 New Road, Suite 100  
Linwood, NJ 08221  
[ehyberg@mmwr.com](mailto:ehyberg@mmwr.com)

Thomas Walker, Director  
Division of Energy  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[Thomas.walker@bpu.nj.gov](mailto:Thomas.walker@bpu.nj.gov)

Stefanie A. Brand, Esq. Director  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[sbrand@rpa.state.nj.us](mailto:sbrand@rpa.state.nj.us)

John Masiello  
Division of Energy  
Board of Public Utilities  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, NJ 08625-0350  
[john.masiello@bpu.nj.gov](mailto:john.masiello@bpu.nj.gov)

Ami Morita, Esq.  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[Amortia@rpa.state.nj.us](mailto:Amortia@rpa.state.nj.us)

Bethany Rocque-Romaine, Esq.  
Counsel's Office  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
Post Office Box 350  
Trenton, NJ 08625-0350  
[bethany.romaine@bpu.nj.gov](mailto:bethany.romaine@bpu.nj.gov)

Lisa Gurkas  
Division of Rate Counsel  
140 East Front Street, 4<sup>th</sup> Floor  
Post Office Box 003  
Trenton, NJ 08625-0003  
[lgurkas@rpa.state.nj.us](mailto:lgurkas@rpa.state.nj.us)

Township of Pennsville  
90 North Broadway  
Pennsville, NJ 08070  
Attn: Angela Foote, Clerk

Township of Mannington  
491 Route 45  
Mannington, NJ 08079  
Attn: Esther Mitchell, Clerk

Township of Pittsgrove  
1180 Route 40  
Pilesgrove, NJ 08098-9523  
Attn: Maureen R. Abdill, Clerk

Township of Upper Pittsgrove  
431 Route 77  
Elmer, NJ 08318-2756  
Attn: Linda S. Buzby, Clerk

Borough of Woodstown  
Borough Hall  
25 West Avenue  
P.O. Box 286  
Woodstown, NJ 08098-0286  
Attn: Cynthia Dalessio, Clerk

James H. McKelvie, P.E., County Engineer  
11 Fifth Street, Suite 600  
Salem, NJ 08079

Salem County Board of Chosen Freeholders  
Administration Building  
94 Market Street  
Salem, NJ 08079-1914  
Attn: Evern Ford, Board Clerk

Geoffrey Gersten, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Geoffrey.gersten@law.njoag.gov](mailto:Geoffrey.gersten@law.njoag.gov)

Alex Moreau, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Alex.moreau@law.njoag.gov](mailto:Alex.moreau@law.njoag.gov)

Andrew Kuntz, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[andrew.kuntz@law.njoag.gov](mailto:andrew.kuntz@law.njoag.gov)

Caroline Vachier, DAG  
Division of Law  
124 Halsey Street  
Post Office Box 45029  
Newark, NJ 07101-45029  
[Caroline.vachier@law.njoag.gov](mailto:Caroline.vachier@law.njoag.gov)



**State of New Jersey**  
OFFICE OF ADMINISTRATIVE LAW

**INITIAL DECISION**

OAL DKT. NO. PUC 01505-16

AGENCY DKT. NO. EO16010043

IN THE MATTER OF THE PETITION OF  
ATLANTIC CITY ELECTRIC COMPANY FOR A  
DETERMINATION PURSUANT TO THE PROVISIONS  
OF N.J.S.A. 40:55D-19 THAT THE USE OF CERTAIN  
LANDS WITHIN THE TOWNSHIP OF UPPER  
PITTSBORO; THE TOWNSHIP OF PITTSBORO;  
THE CITY OF VINELAND; THE TOWNSHIP  
OF FRANKLIN; THE BOROUGH OF BUENA;  
THE TOWNSHIP OF BUENA VISTA; THE  
TOWNSHIP OF HAMILTON; THE TOWNSHIP  
OF WEYMOUTH; THE CITY OF ESTELL MANOR;  
AND THE TOWNSHIP OF EGG HARBOR;  
ALL IN THE COUNTIES OF SALEM, CUMBERLAND,  
GLOUCESTER, AND ATLANTIC; ALL IN THE STATE  
OF NEW JERSEY, ARE REASONABLY NECESSARY  
FOR THE SERVICE, CONVENIENCE OR WELFARE  
OF THE PUBLIC; AND THAT THE ZONING  
AND LAND USE ORDINANCES OF THOSE  
MUNICIPALITIES AND COUNTIES SHALL  
HAVE NO APPLICATION THERETO.

---

**Enid L. Hyberg, Esq.**, for petitioner Atlantic City Electric Company (Montgomery, McCracken, Walker & Rhoads, attorneys)

**Philip J. Passanante**, Associate General Counsel, for petitioner Pepco Holdings Inc., Atlantic City Electric Company

**Alex Moreau**, and **Veronica Beke**, Deputies Attorney Generals, for respondent Board of Public Utilities (Christopher S. Porrino, Attorney General of New Jersey, attorney)

**Geoffrey Gersten**, Deputy Attorney General, for respondent Board of Public Utilities (Christopher S. Porrino, Attorney General of New Jersey, attorney)

**James W. Glassen, Esq.**, Assistant Deputy Rate Counsel, for Division of Rate Counsel, appearing pursuant to N.J.A.C. 1:1-5.4(a)2.

Record Closed: December 2, 2016

Decided: May 25, 2017

BEFORE **ELIA A. PELIOS**, ALJ:

### **STATEMENT OF THE CASE**

This proceeding involves a petition by Atlantic City Electric Company (petitioner, ACE), for a determination pursuant to the provisions of N.J.S.A. 40:55D-19, that the use of certain lands within Upper Pittsgrove Township, Pittsgrove Township, the city of Vineland, Franklin Township, the borough of Buena, Buena Vista Township, Hamilton Township, Weymouth Township, the city of Estell Manor, and Egg Harbor Township, all the counties of Salem, Cumberland, Gloucester, and Atlantic, all in the State of New Jersey, are reasonably necessary for the service, convenience or welfare of the public, and that the zoning and land use ordinances of those municipalities and counties shall have no application thereto.

## **PROCEDURAL HISTORY**

ACE filed the current petition with the New Jersey Board of Public Utilities on January 15, 2016. The petition was transmitted to the Office of Administrative Law (OAL), on January 23, 2016, for determination as a contested case. Duly-noticed public hearings were scheduled before Honorable William T. Miller, ALJ, on June 8, 2016, in Mays Landing, NJ and on June 9, 2016, in Elmer, New Jersey. No members of the public appeared or presented testimony at either public hearing. The matter was subsequently reassigned to the undersigned. An evidentiary hearing was held on December 2, 2016, and the record closed. Orders were entered to allow for the extension of time in which to file the initial decision.

## **FACTUAL DISCUSSION AND FINDINGS**

In July 2014, the PJM Interconnection, L.L.C. Board of Managers (PJM), approved a set of upgrades for the Atlantic City Electric transmission system which were determined to be necessary due to the continued delay, and possible cancellation, of the proposed repowering of the BL England generating plant in Beesley's Point, New Jersey, or the retirement of said plant. These upgrades had previously been presented at the April 10, 2014, Transmission Planning Advisory Committee meeting at PJM. PJM requires Atlantic City Electric, in a timely manner, to complete the installation of these upgrades. ACE filed the herein petition as a result of transmission studies completed by PJM and the petitioner that identify the potential for multiple contingency transmission system overloads and voltage violations should the B.L. England Facility (Facility) cease operation. Petitioner believes the transmission system upgrades proposed will mitigate the overloads and voltage issues should that shutdown occur. Further, should the Facility repower to burn natural gas, petitioner believes the proposed transmission upgrades would likely be needed to maintain reliability during that process when the Facility is off-line.

Petitioner proposes to upgrade approximately a forty-one mile, 80+ year-old, double-circuited 138 kV transmission line, with new, higher-capacity double-circuited 230 kV and 138 kV lines. These facilities had been previously targeted for replacement at a later date due to their age and condition. Petitioner argues the proposed transmission system upgrades are required to address the potential for multiple contingency transmission system overloads.

At the evidentiary hearing, ACE presented its exhibits, which were placed into the record without objection. The exhibits included the pre-filed testimony of Frank Caroselli, Jason Tucker, Gregory A. Parsons, Michael Garrity, Nicholas Salvatore, Kenneth Mosca, and William H. Bailey, Ph.D. Each of the witnesses attended the evidentiary hearing in person, noted on the record any subsequent changes to their pre-filed testimony, and were made available for cross-examination.

The preceding statements are not in dispute and are hereby **FOUND** as **FACT**.

Frank Caroselli (Caroselli) testified on behalf of petitioner. A senior engineer employed by ACE, he has worked for petitioner for thirty-two years. He presented testimony regarding the need for the proposed project. His prefiled testimony (P-20) was supplemented at the evidentiary hearing. According to Caroselli, starting in the summer of 2015, petitioner, in conjunction with PJM, performed transmission planning studies that identified the potential for multiple contingency transmission system overloads and voltage violations should the Facility shut down. Over a period of months, certain transmission system upgrades were identified which petitioner maintains would, upon completion, mitigate the identified transmission system overloads and voltage issues. These upgrades in total impact eleven different substations and numerous transmission lines through a combination of replacing, rebuilding, upgrading, reconfiguring, and/or installing, new transmission lines and substation equipment. Further, should the Facility repower using natural gas, the transmission system upgrades would likely be needed to maintain reliability during that process when the Facility is offline.

On or about July 17, 2014, an Amended N.J.D.E.P. Consent Order found:

B.L. England is strategically vital for energy reliability in the southern New Jersey region, and DEP, in consultation with BPU, has determined that B.L. England should continue to operate beyond May 1, 2015, for a limited time period to assure that the region's power and reliability needs are not jeopardized.

To minimize the temporarily extended operation of the Facility pursuant to the Consent Order, and to maintain reliability in the event of a repowering while the Facility is offline,

petitioner seeks to replace approximately forty-one miles of an 80+ year-old, double-circuited 138 kV transmission line on steel lattice towers which traverses ten municipalities and four counties across southern New Jersey with new, higher-capacity, double-circuited 230 kV and 138 kV lines on steel monopoles, and to perform substation work to facilitate the upgrades. Prior to the transmission planning studies, these facilities were scheduled for replacement in 2020, because of deteriorated hardware and issues with ground-line deterioration of the lattice tower legs. Additionally, one section of the line from Upper Pittsgrove Substation to Landis Substation, received a comprehensive inspection in 2014, and there were corrosion and abrasion issues with the hardware identified in more than half of the structures. Forty-one miles of the existing and proposed lines are within petitioner's existing Right-of-Way 106 and no more than one-half mile is located on petitioner's fee-owned property.

According to Caroselli, the lines run along parallel routes. The first line connects the Upper Pittsgrove Substation in Upper Pittsgrove Township, Salem County, to the Landis Substation in the City of Vineland, Cumberland County. The line continues on to the Minotola Substation in Buena Borough, Atlantic County, and terminates at the Lewis Substation in Egg Harbor Township, Atlantic County. A parallel line runs from the Deepwater Substation in Pennsville Township, Salem County, past the Upper Pittsgrove and Landis Substations onto the Dorothy Substation in the City of Estell Manor, Atlantic County, and terminates at the Lewis Substation, in Egg Harbor Township, Atlantic County.

Caroselli explained that the construction of the upgrades, as proposed, will be beneficial to petitioner's customers since both age and deteriorating conditions, as well as reliability issues associated with the Facility will be addressed with the same transmission solution. While in his prefiled testimony Caroselli estimated the cost of the project to be 89.2 million dollars, at the evidentiary hearing he stated the figure had been revised to 100.8 million dollars, with 3.4 million dollars allocated for the Orchard Substation work and 97.4 million allocated for transmission-line work. He ascribed the revision to changed assumptions regarding the foundations and design of the project, and explained that the design had been revised in order to minimize the amount of tree clearing along the right-of-way.

Jason Tucker (Tucker) also testified on behalf of the petitioner. He has been employed by petitioner for approximately seven years, and currently serves as the

supervisor of the transmission reinforcement group. Tucker oversaw the design activities for the transmission lines that are the subject of the present matter, and his prefiled testimony (P-21) was supplemented at the evidentiary hearing.

Tucker also described the Project as the replacement of a forty-one mile 80+ year-old double circuited 138 kV steel lattice tower line located within petitioner's existing Right-of-Way 106, with new higher capacity double circuited 230 kV and 138 kV lines installed on steel monopoles, also within petitioner's existing Right-of-Way 106. He agreed that not more than one-half mile of the line is located on petitioner's fee-owned property. The typical pole designs and conductor configurations to be utilized were more specifically described in the supplied pole design and conductor configuration (P-5). Tucker noted that the Project consists of seven parts, Sections A through G. Tucker noted that the individual sections were more fully depicted in exhibits placed into the record by petitioner (P-6 through P-11) and described in the petition as follows:

#### Section 'A' (P-6)

Between the existing Orchard Substation in Upper Pittsgrove Township and the existing Right-of-Way corridor designated as Right-of-Way 106, Petitioner proposes to install a new 230 kV overhead circuit from the existing substation terminal to Right-of-Way 106. This line segment is designated as Section 'A' of the Project and is 0.2 miles in length. Section 'A' of the Project is not part of the existing 138 kV line. Poles in this section will be double circuited structures with the new Orchard-Cardiff 230 kV circuit on one side of the pole and the existing Churchtown-Orchard 230 kV circuit on the opposite side.

Within Section 'A' of the Project, the Company proposes to relocate the existing Churchtown-Orchard 230 kV circuit to a new terminal within the Orchard Substation and terminate the new Orchard-Cardiff 230 kV line at the existing Churchtown terminal. This will require replacing the two (2) existing single circuit steel poles with two (2) double circuit steel poles and the addition of three (3) single circuit steel poles within Petitioner's fee-owned property and Right-of-Way 106. The new structures will utilize 230 kV rated insulators made of toughened glass or polymers, supporting 1590 kcmil conductors. There will also be two (2) fiber optic cable static wire to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'A' will

be approximately one hundred twenty (120) foot to one hundred thirty (130) foot in height, which will be determined when final engineering studies are completed, and where higher pole heights may be required as a result of vertical clearance requirements over topographic and/or physical obstruction to span waterways or existing structures or as a result of field conditions encountered.

#### Section 'B' (P-6A)

Section 'B' is one and four-tenths (1.40) miles in length and will be constructed by adding an additional arm on the same structures as the Deepwater-Upper Pittsgrove 138 kV line, approved by the Board on November 24, 2014. It will be constructed within Petitioner's Right-of-Way 106, which is two hundred (200) foot in width in this area.

Within Section 'B', the Company proposes to install a new conductor on the double circuit steel monopoles which are being installed as part of the Deepwater-Upper Pittsgrove 138 kV project. Petitioner proposes to replace one (1) existing single circuit steel pole structure with one (1) double circuit steel pole 3-pole structure. All other structures within Section 'B' will be installed as part of the Deepwater-Upper Pittsgrove 138 kV project. These structures will utilize 230 kV rated toughened glass or polymer insulators and 1590 kcmil conductors. There will be one (1) 230 kV circuit and one (1) 138 kV circuit built to 230 kV standards, within Section 'B' of the Project. Each such circuit will utilize three (3) conductors as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors as well as communication capability. The proposed steel structures within Section 'B' will be approximately one hundred fifteen (115) foot in height, except where higher pole heights may be required as a result of vertical clearance requirements over topographic and/or physical obstructions to span waterways or existing structures or as a result of field conditions encountered.

#### Section 'C' (P-7)

Section 'C', which is nine and six-tenths (9.6) miles in length will be between Petitioner's existing Upper Pittsgrove and Landis Substations and constructed along the same route as the existing double circuit 138 kV line. It will be constructed within a portion of Petitioner's Right-of-Way 106 which is two hundred (200) foot in width.

Within Section 'C' of the Project, The Company proposes to remove the structures, the attached conductors and

appurtenances, replacing approximately fifty-five (55) double circuit steel lattice tower structures with approximately the same number of double circuit monopole structures. Petitioner proposes to install four (4) new single circuit steel monopole structures. The new structures will utilize 230 kV rated insulators made of either toughened glass or polymers, supporting 1590 kcmil conductors. There will be one (1) 138 kV circuit built to 230 kV standards and one (1) 230 kV circuit within Section 'C' of the Project. Each such circuit will utilize the three (3) conductors as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'C' will be approximately one hundred twenty-five (125) foot in height, which will be determined when final engineering studies are completed, and where higher pole heights may be required as a result of vertical clearance requirements over topographic and/or physical obstructions to span waterways or existing structures as a result of field conditions encountered.

#### Section 'D' (P-8)

Section 'D', which is six and four-tenths (6.4) miles in length, will be between Petitioner's Landis and Minotola Substations and will be constructed along the same route as the existing double circuit 138 kV line. It will be constructed within a portion of Petitioner's Right-of-Way 106 and is two hundred (200) foot in width.

Within Section 'D' of the Project, Petitioner proposes to remove the structures, the attached conductors and appurtenances replacing approximately thirty-five (35) double circuit steel lattice tower structures with approximately the same number of double circuit steel monopole structures. The Company proposes to install two (2) new single circuit steel monopole structures. The new structures will utilize 230 kV rated insulators made of either toughened glass or polymers, supporting 1590 kcmil conductors. There will be one (1) 138 kV circuit, built to 230 kV standards and one (1) 230 kV circuit within Section 'D' of the Project. Each such circuit will utilize three (3) conductors as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'D' will be approximately one hundred twenty-five (125) foot in height, which will be determined when final engineering studies are completed and where higher pole heights may be required as a result of vertical clearance requirements over

topographic and/or physical obstructions to span waterways or existing structures or as a result of field conditions encountered.

#### Section 'E' (P-9)

Section 'E', which is ten and nine-tenths (10.9) miles in length, will be between Petitioner's Minotola and Dorothy Substations and constructed along the same route as the existing double circuit 138 kV line. It will be constructed within a portion of Petitioner's Right-of-Way 106 and is two hundred (200) foot in width.

Within Section 'E' of the Project, Petitioner proposes to remove the structures, the attached conductors and appurtenances replacing approximately sixty (60) double circuit steel lattice tower structures with approximately the same number of double circuit steel monopole structures. The Company proposes to install one (1) new single circuit steel monopole structures. The new structures will utilize 230 kV rated insulators made of either toughened glass or polymers, supporting 1590 kcmil conductors. There will be one (1) 138 kV circuit, built to 230 kV standards, and one (1) 230 kV circuit within Section 'E' of the Project. Each such circuit will utilize three (3) conductors as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'E' will be approximately one hundred twenty-five (125) foot in height, which will be determined when final engineering studies are completed and where higher pole heights may be required as a result of vertical clearance requirements over topographic and/or physical obstructions to span waterways or existing structures or as a result of field conditions encountered.

#### Section 'F' (P-10)

Section 'F', which is seven and nine-tenths (7.9) miles in length, will be between Petitioner's Dorothy and Cardiff Substations and constructed along the same route as the existing double circuit 138 kV line. It will be constructed within a portion of Petitioner's Right-of-Way 106 and is two hundred (200) foot in width.

Within Section 'F' of the Project, Petitioner proposes to remove the structures, the attached conductors and appurtenances, replacing approximately forty-four (44) double circuit steel lattice tower structures with approximately the same number of double circuit steel monopole structures. Petitioner proposes to install one (1) new single circuit steel monopole

structure. The new structures will utilize 230 kV rated insulators made of either toughened glass or polymers, supporting 1590 kcmil conductors. There will be one (1) 138 kV circuit built to 230 kV standards and one (1) 230 kV circuit within Section 'F' of the Project. Each such circuit will utilize three (3) conductors as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'F' will be approximately one hundred twenty-five (125) foot in height, which will be determined when final engineering studies are completed and where higher pole heights may be required as a result of vertical clearance requirements over topographic and/or physical obstructions to span waterways or existing structures or as a result of field conditions encountered.

There will be a 0.1 miles 230 kV underground cable section for the entrance to Cardiff Substation within Section 'F' of the Project. Each such circuit will utilize a minimum of three (3) 230 kV rated cross-linked polyethylene (XLPE) underground cable supported in dielectric conduit and duct bank. There will also be one (1) fiber optic cable installed in underground conduit which will provide communication capability. This segment is being constructed underground into Cardiff Substation due to overhead obstructions with existing overhead circuits.

#### Section 'G' (P-11)

Section 'G', which is four and nine-tenths (4.9) miles in length, will be between Petitioner's Cardiff and Lewis Substations and constructed along the same route as the existing double circuit 138 kV line. It will be constructed within a portion of the Company's Right-of-Way 106 and is two hundred (200) foot in width.

Within Section 'G' of the Project, Petitioner proposes to remove the structures, the attached conductors and appurtenances, replacing approximately twenty-eight (28) double circuit steel lattice tower structures with approximately the same number of double circuit steel monopole structures. Petitioner proposes to replace three (3) single circuit structures with approximately the same number of single circuit steel monopoles and steel H-frames. Additionally, Petitioner proposes to install approximately five (5) new double circuit steel monopole structures and one (1) single circuit steel monopole riser structure. The new structures will utilize 138 kV rated insulators made of either toughened glass or polymers, supporting 1590 kcmil conductors. There will be two (2) 138 kV circuits within Section 'G' of the Project, both built to 138 kV. Each such circuit

will utilize three (3) conductors, as more specifically shown in Exhibit P-5. There will also be two (2) fiber optic cable static wires to provide lightning protection for the energized conductors, as well as communication capability. The new steel pole structures within Section 'G' will be approximately one hundred five (105) foot in height, which will be determined when final engineering studies are completed and where higher poles may be required as a result of vertical clearance requirements over topographic and/or physical obstruction to span waterways or existing structures or as a result of field conditions encountered.

There will be a 0.1 miles 138 kV underground cable section for the entrance to Cardiff Substation within Section 'G' of the Project. Each such circuit will utilize a minimum of three (3) 138 kV rated cross-linked polyethylene (XLPE) underground cable supported in dielectric conduit and duct bank. There will also be one (1) fiber optic cable installed in underground conduit which will provide communication capability. This segment is being constructed underground into Cardiff Substation due to overhead obstructions with existing overhead circuits.

Tucker also discussed and described several transmission upgrade alternatives which were evaluated in the process of finalizing Petitioner's plans:

- A. Rebuild and Reconductor the double circuited 138 kV lines detailed in Paragraph 10 from Upper Pittsgrove Substation to Lewis Substation 138 kV to 2000 amps each. While this alternative would have mitigated overloads on these lines and would have addressed the age and deteriorating condition of the forty-one (41) mile, 80+ year old double circuited 138 kV transmission lines identified in Paragraph 10 by replacing the old equipment, it would not provide sufficient system impact in terms of mitigating other identified N-1-1 reliability violations.
- B. Construct a new transmission line from possibly the Cumberland Substation to possibly the Corson Substation. This alternative could be useful in mitigating identified N-1-1 reliability violations, however it would require new transmission Rights-of-Way through the Pinelands Forested Region, which would result in greater environmental and community impacts and was not considered further. Additionally, this alternative would not have addressed the age and deteriorating condition issue of the forty-one (41) mile, 80+ year old double circuited 138 kV transmission lines.

- C. Add second circuit to the existing New Freedom Substation to Cardiff Substation 230 kV line. This alternative provided short term system impact in terms of mitigating identified N-1-1 reliability violations. This line is located in the Pinelands Forested and Regional Growth areas, complicating the approval process because significant clearing of the existing Right-of-Way would be required. This line would also be difficult to construct in part because the existing New Freedom Substation to Cardiff Substation 230 kV line uses both sides of the existing double circuit structures by transitioning from side to side frequently as the line makes turns along the Right-of-Way. A lack of 230 kV terminal availability at New Freedom (Public Service Electric and Gas Company ("PSE&G")-owned) also discounts this alternative (a terminal availability inquiry was made to PSE&G in 2012 which ultimately resulted in a response of "No"). This alternative also increases an already excessive reliance on New Freedom Substation. Additionally, this alternative would not have addressed the age and deteriorating condition issue of the forty-one (41) mile, 80+ year old double circuited 138 kV transmission lines.
  
- D. Construct a Cardiff Substation to Dennis Substation 230 kV line. This alternative would provide insufficient system impact in terms of mitigating identified N-1-1 reliability violations. However, it would be sited in the Pinelands Growth area and replacing the existing single 69 kV line with a double circuited 230 kV line would require additional clearing in the Petitioner's Right-of-Way. This alternative would not have addressed the age and deteriorating condition of the forty-one (41) mile, 81+ year old double circuited 138 kV transmission lines.

Gregory Parsons (Parsons) also testified on behalf of petitioner. He has been employed by petitioner for thirty-seven years and currently serves as the principal engineer in the substation engineering department. He oversaw the construction drawing preparation and equipment specifications for the new equipment at the Orchard Substation. His prefiled testimony (P-22) was supplemented at the evidentiary hearing.

Parsons described the modifications to be made to the various substations involved in the project. The required modifications at the Orchard Substation consist of the installation of two 230 kV circuit breakers, two 230 kV instrument transformers, their supporting structures and the steel structure for the termination of the 230 kV line; installation of protective relaying,

testing and commissioning of all equipment and protective relay scheme; and installation of two additional transmission monopoles. Petitioner is requesting relief for the height of the transmission poles and terminal structures.

At the Upper Pittsgrove, Minotola, and Lewis Substations, minor relay upgrades are required as these substations are connected to the 138 kV line on the north-side of the Deepwater-Lewis transmission corridor. It is anticipated that no permits will be required for the work at the Upper Pittsgrove and Minotola Substations, and only a local building permit will be required for the work at the Lewis Substation

At the Landis and Dorothy Substations, new 138 kV ring buses will be installed for reconnection to the 138 kV line on the north-side of the Deepwater-Lewis transmission corridor. Approvals have already been obtained from Weymouth Township for the Dorothy Substation, and local approvals from the City of Vineland will be obtained for the Landis Substation due to the interconnection of Vineland's Manaway Substation at that location. No changes will be made to Vineland's Manaway Substation, but an outage of the substation will be coordinated during construction so as to avoid unnecessary customer interruptions.

At the Cardiff Substation, the existing 230 kV ring bus will be expanded to accommodate the new Orchard line terminal as well as a new 230/138 kV transformer and a new 138 kV line terminal for the 138 kV Cardiff-Lewis line. This project will be submitted to Egg Harbor Township for local approval.

Michael Garrity (Garrity) also testified on behalf of the petitioner. He has been employed by ACE for nine years, and currently serves as the manager of environmental programs. He oversaw the permitting and licensing of the project through D.E.P. and Pinelands permitting requirements. His prefiled testimony (P-24) was supplemented at the evidentiary hearing. Garrity stated that all necessary permits and approvals will be obtained by the petitioner from the United States Army Corps of Engineers, the N.J.D.E.P. (Waterfront Development, Coastal Wetlands Permit, Flood Hazard Area Permit, Freshwater Wetlands Permit, and Tidelands Conveyance, Green Acres authorization), and the Pinelands Commission, as required in order to complete the proposed construction and rebuild of the transmission lines associated with the project. He noted that petitioner did receive a

certificate of filing on November 22, 2016, from the Pinelands Commission. Garrity noted that petitioner endeavored to minimize the environmental impact of the project through route selection and design, and will further minimize impact utilizing best management practices during the construction stage.

Nicholas Salvatore (Salvatore) also testified on behalf of ACE. He has been employed by petitioner for approximately twenty-nine years, and currently serves as the senior real estate representative. He purchased the parcel of land which is now Upper Pittsgrove Substation, and was involved with the planning board processes associated with the Project, and securing of all approvals. He reviewed the files pertaining to the existing 200-foot-wide Right-of-Way from the Upper Pittsgrove Substation to the Lewis Substation. He states that petitioner does hold the necessary rights to rebuild the line, noting that petitioner has acquired the necessary easements from the owners of the property for the Project. His prefiled testimony (P-25) was supplemented at the evidentiary hearing.

Salvatore, referencing the planning analysis report prepared by ARH (P-18), described the land-use zones within the respective municipalities through which the project is anticipated to pass:

Within the Township of Upper Pittsgrove, public utilities are 'Essential Services', which are conditionally permitted uses in all zoning districts in the Township. Right-of-Way 106 and the transmission line will traverse the following zone:

A - Agricultural Zoning District

Replacement of the existing lattice towers will require a use variance because the proposed +/- 160-foot structure height exceeds the 100-foot maximum height standard set forth in the ordinance. The Orchard Substation, which will require modifications for the Project is a permitted conditional use in the Agricultural Zoning District (P-12 and P-13).

Within the Township of Pittsgrove, the proposed transmission line is classified as a 'Public Utility for Essential Services' and is a conditionally permitted use in the affected zoning districts. Right-of-Way 106 and the proposed transmission line will traverse the following zones:

A      Agricultural Zoning District;

- C Conservation Zoning District;
- RR Rural Residential Zoning District;
- R-2 Residential Zoning District; and
- P Public Zoning District.

Replacement of the existing lattice towers will require a use variance because the proposed +/- 145-foot structure height exceeds the 100-foot maximum height standard set forth in the ordinance (P-13).

Within the City of Vineland, the proposed transmission line may or may not be a permitted use. Right-of-Way 106 and the transmission line will traverse the following zones:

- W-5 Woodlands Zoning District;
- I-1 Industrial Zoning District;
- B-3 Business Zoning District;
- R-4 Residential Zoning District;
- I-2 Industrial Zoning District; and
- A-5 Agricultural Zoning District.

A use variance will be required for the +/- 150-foot structure height because there is no height exemption for transmission towers in the affected zoning districts (P-13 and P-14).

Within the Township of Franklin, Right-of-Way 106 and the proposed transmission line will traverse the following zones:

- R-A Residential Zoning District; and
- NC Neighborhood Commercial District.

The proposed transmission line is a conditionally permitted use in the RA Zoning District. The NC Zoning District lists public utility substations as a permitted use, but is silent as to transmission lines. The ordinance is silent as to height limitations for public utility tower installations. It is therefore assumed that the 35-foot building height limitation for both the RA and NC districts applies. A use variance would be required for the proposed +/- 135-foot structure height because the height exceeds the 35-foot maximum building height in the affected zoning districts (P-14).

Within the Borough of Buena, the zoning ordinance is silent as to the use of transmission lines. Right-of-Way 106 and the proposed transmission line will traverse the following zones:

- R-4 Residential (low density) Zoning District;
- R-5 Residential (lowest density) Zoning District;
- B-2 Highway Business Zoning District; and
- I-1 Industrial Zoning District.

The proposed transmission line may or may not be a permitted use in the Borough of Buena. A use variance may be required for the proposed use and for the proposed structure height because the height exceeds the 25- to 35-foot maximum height limitation in each of the affected zoning districts (P-14 and P-15).

Within the Township of Buena Vista, the proposed transmission lines are conditionally permitted uses in the affected zoning districts. Right-of-Way 106 and the proposed transmission line will traverse the following zones:

- RA Residence Agriculture Zoning District;
- OC Office Campus Overlay Zoning District;
- B-1 Business Zoning District;
- RDR1 Rural Development Residence Zoning District;
- RDR1I Rural Development Residence/Industry Zoning District;
- API Agriculture Industrial Zoning District;
- AP Agriculture Production Zoning District; and
- FA2 Forest Area Zoning District.

While the proposed structures are conditionally permitted uses in the affected zoning districts, a use variance may be required because the proposed +/- 145-foot structure height exceeds the maximum height limit in the affected zoning districts (P-14 and P-15).

Within the Township of Hamilton, the zoning ordinance is silent as to the use of transmission lines. Public utility substations are permitted in all zoning districts. Right-of-Way 106 and the proposed transmission line will traverse the following zones:

- FA-10 Forest Area Zoning District;

- FA-25 Forest Area Zoning District;
- AG Agriculture Zoning District;
- GA-I Growth Area – Intensive Zoning District;
- GA-L Growth Area – Low Zoning District;
- RD-5 Rural Development Zoning District; and
- RD-20 Rural Development Zoning District.

The Ordinance provides for exceptions to height limitations for transmission towers (P-15 and P-16).

Within the Township of Weymouth, Right-of-Way 106 and the proposed transmission line traverse the following zones:

- PFA-10 Pinelands Forest Area 10;
- PFA-20 Pinelands Forest Area 20;
- PFA MH Pinelands Forest Area Mobile Home Park; and
- RR Rural Residential Zoning District.

The proposed transmission line is a permitted conditional use in the RR zoning district and may or may not be permitted in the other affected zoning districts. A use variance may also be required for the proposed +/- 155-foot structures because the height exceeds the maximum building height (P-15 and P-16).

Within the City of Estell Manor, the zoning ordinance is silent as to the use of transmission lines. Right-of-Way 106 and the proposed transmission line will traverse the following zone:

- R-10 Residential Zoning District.

The proposed transmission line may or may not be a permitted use in the City of Estell Manor. A use variance may be required for the proposed use and because the height of the +/- 135-foot structures exceeds the maximum permitted building height in the affected zoning districts (P-16).

Within the Township of Egg Harbor, Right-of-Way 106 and the proposed transmission line traverse the following zones:

- RG-2 Regional Growth Residential District;
- RG-4 Regional Growth Residential District;
- PO-1 Professional Office District;
- GC-3 General Commercial District;
- HB Highway Business District; and
- M-1 Light Industrial District.

Public utilities are permitted for conditional uses in the M-1, Light Industrial District and may or may not be permitted in the other affected zoning districts. A use variance may also be required for the proposed +/- 145-foot structures because the height exceeds the maximum building height (P-16 and P-17).

Referencing the analysis report prepared by J. McHale and Associates (P-19), Salvatore asserts that the project will not have any adverse impact on real estate values in the vicinity of the project.

Kenneth Mosca (Mosca) also testified on behalf of petitioner. He has been employed by ACE for seven years, and currently serves as the public affairs manager. His prefiled testimony (P-26) was supplemented at the evidentiary hearing. Mosca detailed and described the outreach efforts made on behalf of or by petitioner to the various communities, municipalities and counties that are identified in the petition for the purpose of discussing the project. He described meetings with key stakeholders, government officials, community leaders and the office of emergency management. Mosca stated that petitioner has, and continues to engage in dialogue with members of the public, property owners, and governmental entities regarding the Project. According to Mosca, petitioner began its public outreach immediately after completion of its due diligence and identification of the proposed route as the preferred route over alternatives considered by petitioner and described herein.

Mosca described petitioner's public outreach efforts as consisting of conversations with: The Governor's Office on Public Policy; The Honorable Frank LoBiondo, United States Congressman for the Second District of New Jersey; State Legislatives Districts Nos. 1, 2 and

3; Salem County Board of Chosen Freeholders and Salem County Engineer; Cumberland County Board of Chosen Freeholders and Cumberland County Engineer; Gloucester County Board of Chosen Freeholders and Gloucester County Engineer; Atlantic County Board of Chosen Freeholders and Atlantic County Engineer; Cape May County Board of Chosen Freeholders and Cape May County Engineer; the Mayor of Upper Pittsgrove Township; the Administrator for the Township of Pittsgrove; the Mayor of the City of Vineland; the Vineland Municipal Utilities Authority; the Mayor of Franklin Township; the Clerk for Weymouth Township; the Administrator for Hamilton Township; the Mayor of the City of Estelle Manor; the Mayor of the City of Absecon; the Mayor of the Township of Egg Harbor; the Mayor of Maurice River Township; the Mayor of Upper Township; the Mayor of Buena Borough; the Mayor of Buena Vista and Stop The Poles, to discuss the route and the Project in general.

According to Mosca, petitioner established an "800" telephone number [(855) 939-1444] to field inquiries regarding the route and the Project in general. Petitioner also developed a web page which was designed to field inquiries regarding the route and the Project in general, and was scheduled to go live after the filing of the petition. Petitioner also attended public meetings to inform stakeholders about the route and the process of obtaining approval from the Board, and will continue the efforts identified herein throughout the BPU process and thereafter.

William H. Bailey, Ph.D., also testified on behalf of petitioner. He was stipulated to be an expert in the field of bioelectromagnetics, and was asked to calculate the electric and magnetic fields associated with the existing lines along the Project route, and how they would be affected or changed by the Project. He prepared a report of his findings, which was also submitted into the record (P-28). His prefiled testimony (P-29) was supplemented at the evidentiary hearing. Dr. Bailey, through his testimony and his report, summarized calculations of the EMF, AN, and RN associated with the existing, proposed, and rebuilt transmission lines on the ACE Right-of-Way between the Orchard and Lewis substations. Dr. Bailey maintains these calculations were performed using previously verified and accepted methods, and have been compared to applicable standards or guidelines. Calculated levels of EMF, AN, and RN, were all found to be below recommended limits published by relevant national, international, and industry standards.

According to Dr. Bailey, the Project and appurtenant facilities comply with the New Jersey guidelines for electric field levels at edge of Right-of-Way and are substantially similar to other bulk transmission facilities for 230 kV and 138 kV transmission lines already in operation within New Jersey and across the United States. Both electric and magnetic fields for the proposed project are calculated to generally decrease or remain unchanged at the edge of Right-of-Way. The edge of Right-of-Way magnetic field will increase in two sections, but this increase is small, less than 4 milligauss (mG) for average loading.

Dr. Bailey also noted that under both fair and foul weather conditions, the audible noise levels generated by noise from the transmission line will be well below the 50 dBA night time limits established by the New Jersey Administrative Code 7:29 (2012) and although there are no Federal or State limits for radio noise (RN), the RN levels will be below the IEEE Radio Noise Guide (IEEE, 1971).

No witnesses were presented at the evidentiary hearing other than those produced by the petitioner. Although limited cross-examination was performed, no evidence was presented which undermines or otherwise controverts the clear, concise, and credible testimony presented by these witnesses. Their collective testimony is undisputed and consistent with the documentary evidence placed in the record and is therefore **ADOPTED** in its entirety and **FOUND** as **FACT**.

### **LEGAL ANALYSIS AND CONCLUSIONS**

N.J.S.A. 40:55D-19 provides that the Board of Public Utilities may grant the petition of a public utility for relief from local zoning restrictions on a proposed utility project running through multiple municipalities if, after hearing, on notice to all interested parties, the Board finds that:

. . . the present or proposed use by the public utility . . . of the land described in the petition is necessary for the service, convenience or welfare of the public, that the present or proposed use of the land is necessary to maintain reliable electric or natural gas supply service for the general public and that no alternative site or sites are reasonably available to achieve an equivalent public benefit; the public utility . . . may proceed in accordance with such decision of the Board of Public

Utilities, and ordinance or regulation made under the authority of  
[Municipal Land Use Law notwithstanding.

The New Jersey Supreme Court in In Re: Public Service Electric & Gas Co., 35 N.J. 358 (1961), explained the applicable legal principles:

- a. The phrase 'for the service, convenience and welfare of the public' refers to the whole public served by the utility and not the limited group that benefits from the local zoning ordinance;
- b. The proposed use must be reasonably, not absolutely or indispensably, necessary for the service, convenience, and welfare of the public;
- c. The particular site or location must be found to be 'reasonably necessary' and so the Board must consider the community zoning plan, the physical characteristics of the site, and the surrounding neighborhood;
- d. Alternative sites and their comparative advantages and disadvantages, including cost, must be considered in determining reasonable necessity; and
- e. The Board must weigh all interests and factors in light of all the facts, giving the utility preference if the balance is equal. The legislative Intent is clear that the broad public interest is greater than local considerations.

The Board must weigh all the interests and, in the event the interests are equal, the utility should be entitled to a preference because the legislative intent is clear that the broad public interest to be served is greater than local considerations. See, In re Monmouth Consolidated Water Co., 47 N.J. 251 (1966); In re Public Service Electric & Gas Company, supra, 35 N.J. at 377.

The record reflects undisputed testimony and evidence that the proposed project is reasonable and necessary to allow the company to provide for the service, convenience, and welfare of the public, and to enable petitioner to adequately, safely, reliably, and economically provide service to its customers. It appears to be a reasonable and prudent part of the company's system planning program. Petitioner's significant efforts tend toward a conclusion that there is no reasonable, practicable, permanent, economic, and reliable alternative to the

construction and routing of the proposed lines, which would have any less adverse impact upon the zoning and land use ordinances of the affected municipalities or counties.

The record further supports the proposition that the Project and the associated appurtenances and structures can be constructed, installed, energized, and operated without substantial detriment to the public good, and that such can be accomplished without materially violating the intent and purpose of the zoning plans and zoning ordinances of the respective municipalities and counties, and without causing undue economic injury to property owners.

Weighing all interests and factors, in light of all the facts present in the record, including but not limited to ELF/EMF, cost allocation, and design, engineering and construction, analysis tends to weigh in favor of the benefits of performing the upgrade over the costs, financial or otherwise, of not completing the Project. The results of the ELF/EMF report anticipate compliance and consistency with what is required by New Jersey and industry standards, the costs appear reasonable, and the Project appears to be anticipated to have no adverse economic or aesthetic impact.

Upon considering the documentary and testimonial evidence provided in the matter, and weighing the relevant factors and considerations outlined above, I **FIND** and **CONCLUDE:**

1. That the project as proposed is reasonably necessary to provide safe, adequate and reliable electric service in New Jersey;
2. That the project as proposed is reasonably necessary for the service, convenience and welfare of the public;
3. That petitioner considered alternative routes for the Project;
4. That the route, along an existing Right-of-Way, is a reasonable route considering the alternatives;

5. That the affected municipalities and counties have been notified and no opposition has been filed;
6. That the Project as proposed to be designed and constructed will minimize adverse impacts on the environment;
7. That based upon the record, the Project is not adverse to the public health and welfare;
8. That the Project can be constructed without causing undue economic injury to neighboring property owners because it is within an existing right-of-way, and will increase the amount of land that can be farmed within the right-of-way.

Considering the foregoing, I further **CONCLUDE** that petitioner should be able to construct and begin local operation of the Project as proposed; that the Local Land Use and Zoning Ordinances, and any other Ordinances, rules or regulations promulgated under the auspices of the Municipal Land Use Act of the State of New Jersey should not apply to the construction, installation, and operation of the Project; and that the petition of Atlantic City Electric Company should be **GRANTED**.

### **ORDER**

Consistent with the herein decision, it is hereby **ORDERED** that the zoning, site-plan review, and all other municipal land use ordinances, and all regulations promulgated thereunder by the Township of Upper Pittsgrove, Township of Pittsgrove, City of Vineland, Township of Franklin, Borough of Buena, Township of Buena Vista, Township of Hamilton, Township of Weymouth, City of Estell Manor and Township of Egg Harbor in the Counties of Salem, Cumberland, Gloucester and Atlantic, respectively, shall have no application to the proposed transmission line and the pertinent facilities including, but not limited to substations. It is further **ORDERED** that petitioner be authorized to construct and energize the proposed project and the facilities appurtenant thereto, in a timely manner in order to permit the petitioner to satisfy its obligation to continue to provide safe, adequate and reliable service to petitioner's customers, and to enable petitioner to construct and energize

the proposed facility. It is finally **ORDERED** that an expedited approval is granted in order for the construction to commence, and the temporarily extended operation of the B.L. England Plant be minimized, given the environmental restrictions set forth in the amended N.J.D.E.P. Consent Order dated July 17, 2014.

I hereby **FILE** my initial decision with the **BOARD OF PUBLIC UTILITIES** for consideration.

This recommended decision may be adopted, modified or rejected by the **BOARD OF PUBLIC UTILITIES**, which by law is authorized to make a final decision in this matter. If the Board of Public Utilities does not adopt, modify or reject this decision within forty-five days and unless such time limit is otherwise extended, this recommended decision shall become a final decision in accordance with N.J.S.A. 52:14B-10.

Within thirteen days from the date on which this recommended decision was mailed to the parties, any party may file written exceptions with the **SECRETARY OF THE BOARD OF PUBLIC UTILITIES, 44 South Clinton Avenue, P.O. Box 350, Trenton, NJ 08625-0350**, marked "Attention: Exceptions." A copy of any exceptions must be sent to the judge and to the other parties.

May 25, 2017  
DATE

  
\_\_\_\_\_  
ELIA A. PELIOS, ALJ

Date Received at Agency:

May 25, 2017

Date Mailed to Parties:  
/nd

\_\_\_\_\_

**APPENDIX**

**WITNESSES**

**For Petitioner:**

William H. Baily, Ph.D.  
Frank Caroselli  
Michael Garrity  
Kenneth Mosca  
Gregory Parsons  
Nicholas Salvatore  
Jason Tucker

**For Respondent:**

None

**EXHIBITS**

**For Petitioner:**

- P-1 Atlantic Transmission System Map
- P-2 Notification of Designation of Construction Responsibility Letter
- P-3 TEAC Meeting Slides, pages twenty-five and twenty-six
- P-4 Steven R. Herling, Vice-President of Planning at PJM Interconnection, L.L.C., Certification
- P-5 Pole Design and Conductor Configuration
- P-6 Orchard-Lewis Line Section A and B
  - a. Orchard-Lewis Line Section B
- P-7 Orchard-Lewis Line Section C
- P-8 Orchard-Lewis Line Section D
- P-9 Orchard-Lewis Line Section E
- P-10 Orchard-Lewis Line Section F
- P-11 Orchard-Lewis Line Section G
- P-12 Zoning Map, Upper Pittsgrove Township

- P-13 Zoning Map, Upper Pittsgrove Township; Pittsgrove Township; City of Vineland
- P-14 Zoning Map, City of Vineland; Franklin Township; Borough of Buena; Buena Vista Township
- P-15 Zoning Map, Borough of Buena; Buena Vista Township; Hamilton Township; Weymouth Township
- P-16 Zoning Map, Weymouth Township; City of Estell Manor; Hamilton Township; Egg Harbor Township
- P-17 Zoning Map, Egg Harbor Township
- P-18 Planning Report—ARH
- P-19 Real Estate Analysis by J. McHale
- P-20 Frank Caroselli, Transmission Planning Testimony
- P-21 Jason Tucker, Transmission Engineering Testimony
- P-22 Gregory Parsons, Substation Engineering Testimony
- P-23 Orchard Substation Plan
- P-24 Michael Garrity, Environmental Testimony
- P-25 Testimony of Nicholas Salvatore
- P-26 Kenneth Mosca, Government Affairs Testimony
- P-27 William Bailey, Ph.D., Curriculum vitea
- P-28 EMF, AD & RF Report-Exponent
- P-29 William Bailey, Ph.D., Electric and Magnetic Fields, Audible Noise, and Radio Noise Testimony
- P-30 Petitioner's Responses to Division of Rate Counsel Data Requests RCR-1 to RCR-11
- P-31 Petitioner's Responses to the Board of Public Utility Staff Data Requests S-ENR-1 to S-ENR-87
- P-32 Petitioner and Petition Summary

**For Respondent:**

None