

**BEFORE THE  
PUBLIC SERVICE COMMISSION  
OF MARYLAND**

In the Matter of the Application	)	
Of the Baltimore Gas and Electric Company	)	
for a Certificate of Public Convenience and	)	Case No. 9600
Necessity for the Key Crossing Reliability	)	
Initiative Transmission Line Project	)	

**DIRECT TESTIMONY OF HELEN STEWART**

**ON BEHALF OF THE  
MARYLAND DEPARTMENT OF NATURAL RESOURCES  
POWER PLANT RESEARCH PROGRAM**

Tawes State Office Bldg., B-3

Annapolis, MD 21401

410-260-8691

December 2, 2019

1    **Q.    PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

2    A.    Helen Stewart, Deputy Director, Power Plant Research Program (PPRP),  
3        Department of Natural Resources (DNR), Tawes State Office Building B-3, 580  
4        Taylor Avenue, Annapolis, Maryland 21401.

5    **Q.    WHAT IS YOUR POSITION WITH PPRP?**

6    A.    I am the Deputy Director for PPRP. I am responsible for assisting the PPRP  
7        Director with the management and oversight work of PPRP. I am also  
8        responsible for the management, oversight, and analysis of environmental and  
9        socioeconomic impact assessments related to the construction, operation, and  
10       maintenance of power plants and transmission line projects.

11   **Q.    PLEASE DESCRIBE YOUR EXPERIENCE.**

12   A.    I have been employed by DNR since 1986. I became a Program Manager with  
13        PPRP in 2016, and I have been Deputy Director since January 2019. A brief  
14       statement of my educational background, occupational history, and professional  
15       qualifications is attached to this testimony as Appendix A.

16   **Q.    WHAT IS YOUR EDUCATIONAL BACKGROUND?**

17   A.    I earned a B.S. in Civil Engineering from the University of Maryland in 1988, and  
18        I am a Professional Engineer licensed in Maryland since 1993.

19   **Q.    WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT POSITION?**

20   A.    I provide technical and administrative direction on a variety of environmental  
21        assessment projects and tasks performed by PPRP staff and consultants related to  
22       electricity generation and transmission projects. My responsibilities include  
23       directing the evaluation and analyses necessary to provide a comprehensive  
24       assessment of environmental and socioeconomic impacts associated with the

1 construction and operation of electric generating and transmission facilities. I am  
 2 also responsible for leading the Certificate of Public Convenience and Necessity  
 3 (CPCN) licensing reviews of new electric generation and transmission projects  
 4 before the Public Service Commission (PSC), in which I coordinate the project  
 5 review with other state agencies, prepare written testimony, and serve as an  
 6 expert witness in CPCN proceedings.

7 **Q. WHAT IS YOUR ROLE IN THIS CASE?**

8 A. With respect to this application for a CPCN to construct a new transmission  
 9 facility, I oversee a comprehensive independent environmental and  
 10 socioeconomic review of the project and coordinate the development of  
 11 recommended license conditions that PPRP submits to the PSC. Maryland's  
 12 Power Plant Siting Act of 1971, Chapter 31 of the Laws of Maryland of 1971  
 13 describes this process, which, along with Maryland's Environmental Policy Act,  
 14 requires the PSC to consider a broad range of socioeconomic, environmental,  
 15 health, safety, and system reliability impacts associated with proposed power  
 16 plants, and new or modified overhead electric transmission lines in excess of  
 17 69,000 volts. For transmission line cases, PPRP coordinates the review of such  
 18 projects with other units within DNR and other state agencies, including  
 19 Maryland Department of Agriculture (MDA), Maryland Department of  
 20 Commerce (Commerce), Maryland's Department of Environment (MDE),  
 21 Maryland Department of Planning (MDP), Maryland Department of  
 22 Transportation (MDOT), and Maryland Energy Administration (MEA).

23 PPRP is supported by contractors that address economic (Exeter Associates, Inc.),  
 24 atmospheric (ERM, Inc.), socioeconomic (Metametrics Inc.), biological (Versar,  
 25 Inc.), and engineering (ERM, Inc.) issues. Under my direction, appropriate  
 26 members of these staffs participated in the reviews and evaluations of the  
 27 documents submitted by the Baltimore Gas and Electric Company (BGE) and

1 participated in field visits.

2 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A. The purpose of my testimony is to provide the PSC with the findings and  
4 preliminary recommendations resulting from PPRP's evaluation of BGE's Key  
5 Crossing Reliability Initiative Transmission Line Project (the Key Crossing  
6 Project, or Project) CPCN application to modify a portion of an existing electric  
7 transmission line by constructing new overhead lines that will cross the Patapsco  
8 River. My testimony summarizes the results of PPRP's evaluation and initial  
9 recommendations for the CPCN conditions for this Project. I am also sponsoring  
10 PPRP's evaluation of the Project in the report entitled, *Project Assessment Report*  
11 *(PAR) for the Proposed Key Crossing Reliability Initiative Transmission Line Project*, a  
12 document filed as PPRP Exhibit\_\_ (HS-3) in this case. Appendix A to the PAR is  
13 a summary table of Project-related potential impacts.

14 **Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE PROPOSED PROJECT.**

15 A. BGE proposes to modify a portion of an existing electric transmission line by  
16 constructing new overhead transmission lines between the Riverside Substation  
17 in Baltimore County and the Brandon Shores Substation in Anne Arundel  
18 County. Specifically, the Project includes replacing five existing 230kV  
19 underground electric cables along a 2.25-mile stretch beneath the Patapsco River  
20 at the Baltimore Harbor with overhead lines. The existing cables are adjacent to  
21 the Francis Scott Key Bridge and are a critical portion of the electrical system that  
22 circles the city of Baltimore. According to the BGE, the modification is needed  
23 because the lines are approaching the end of their useful life as they were placed  
24 into service in the 1970s.

25 The BGE is proposing to construct the new overhead lines between the  
26 transmission terminal stations on Hawkins Point and Sollers Point, where they

will tie into existing overhead systems. The Project will include construction of eight transmission towers, five of which will be located in the Patapsco River. The towers in the water will be equipped with water-level structures to provide protection from potential collisions from shipping traffic.

Additionally, the Project includes removal of the existing transmission terminal stations on Hawkins Point and Sollers Point that transition the current line from overhead to underground. The existing underground portion of the electric transmission line will be abandoned in place.

**Q PLEASE PROVIDE A BRIEF DESCRIPTION OF THE SITE FOR THE PROPOSED PROJECT.**

A. The Project site encompasses approximately 406 acres and is located southeast of downtown Baltimore at the point where Baltimore City, Baltimore County, and Anne Arundel County meet. The southwestern portion of the site is located on 20 acres of Hawkins Point and is within the limits of Baltimore City. The northeastern portion of the site consists of 65 acres on Sollers Point and is within the limits of Baltimore County. The Patapsco River separates the two landward portions of the Project site and makes up the remaining 321 acres of the site.

**Q. HAS BGE PROVIDED ANY DOCUMENTS CONTAINING ITS ENVIRONMENTAL AND SOCIOECONOMIC ANALYSIS OF THE PROPOSED PROJECT?**

A. Yes. BGE described its environmental and socioeconomic analyses of the potential effects of the proposed Project in its CPCN application, direct testimony, and in responses to PPRP data requests. BGE filed its CPCN application on December 20, 2018. Subsequently, BGE has included relevant environmental and socioeconomic data in its responses to PPRP Data Request No. 1 (dated May 8, 2018), PPRP Data Request No. 2 (dated May 16, 2019), PPRP

Data Request No. 3 (dated June 3, 2019), PPRP Data Request No. 4 (dated July 16, 2019), and PPRP Data Request No. 5 (dated August 12, 2019), PPRP Data Request No. 7 (dated September 16, 2019), and PPRP Data Request No. 9 (dated October 10, 2019). BGE also provided Confidential responses to PPRP Data Request No. 6 (dated August 12, 2019), PPRP Data Request No. 8 (dated September 16, 2019), and PPRP Data Request No. 10 (dated October 10, 2019).

I also reviewed the Direct and Supplemental Testimonies from Casey, Meling, and Munley filed on February 19, 2019 and June 28, 2019, respectively. The case materials also include an Environmental Review Document filed with Mr. Meling's Direct Testimony that PPRP evaluated for completeness and accuracy.

**Q. HAS PPRP PERFORMED AN INDEPENDENT ENVIRONMENTAL AND SOCIOECONOMIC EVALUATION OF THE PROPOSED PROJECT?**

A. Yes. PPRP has performed an independent electrical need, environmental and socioeconomic evaluation of the Project by reviewing the application, testimony and data request responses provided by BGE. In addition, PPRP gathered information necessary to verify BGE's evaluations in these materials and participated in a field review of the Project on March 19, 2019.

**Q. WHAT IS THE STATUS OF PPRP'S ENVIRONMENTAL AND SOCIOECONOMIC EVALUATION OF THE PROPOSED PROJECT?**

A. This filing represents a summary of the technical and environmental analyses of the Project completed to date, as well as preliminary conclusions and initial recommendations.

**Q. ARE PPRP AND OTHER REVIEWING STATE AGENCIES FILING INITIAL RECOMMENDED LICENSE CONDITIONS WITH THE PUBLIC SERVICE COMMISSION FOR THIS PROCEEDING?**

1 A. Yes, accompanying my testimony today, PPRP is also filing the Initial  
2 Recommended License Conditions along with the Secretarial Letter, which is  
3 PPRP Exhibit \_\_\_\_ (HS-2). PPRP developed these recommended conditions in  
4 coordination with the Departments of Environment, Natural Resources,  
5 Agriculture, Transportation, Commerce, Planning, and the Maryland Energy  
6 Administration (reviewing state agencies). On behalf of these seven state  
7 agencies, the Secretaries and the Director of the Maryland Energy  
8 Administration have approved these initial recommended conditions. PPRP  
9 may amend, add to, or delete these recommended license conditions in the final  
10 recommended conditions submitted to the PSC, as necessary, to address any  
11 issues and impacts that may arise during the proceedings in this case. However,  
12 unless additional issues arise requiring such modifications, the Initial  
13 Recommended License Conditions submitted in PPRP Exhibit \_\_\_\_ (HS-2) will  
14 serve as the reviewing state agencies' final recommended conditions to be  
15 incorporated into any order issuing a CPCN in this case.

16 **Q. ARE YOU SUBMITTING ADDITIONAL TESTIMONY TODAY**  
17 **DESCRIBING THESE TECHNICAL EVALUATIONS?**

18 A. Yes. There are numerous complexities of the Project as addressed in PPRP's PAR  
19 and the Project-related Potential Impacts, Appendix A to the PAR.  
20 Consideration of the Project was complicated by BGE's choice of building the  
21 new overhead 230 kV transmission line across the Patapsco River, adjacent to the  
22 Francis Scott Key Bridge to replace the current, submarine cables that cross the  
23 river in approximately the same location. As such, and in addition to my  
24 testimony to describe the environmental and socioeconomic impacts of the  
25 Project, Ric Austria of Pterra, LLC will provide direct testimony to discuss the  
26 technical review of the electrical need and electrical alternatives to the Project.

27 **Q. PLEASE DESCRIBE ANY LIMITATIONS OF THE ANALYSIS YOU ARE**

**PRESENTING TODAY.**

A. My review is limited by the completeness and accuracy of the information about the proposed configuration of the Project that BGE provided in its Application, direct testimony, and supplemental filings. As I will describe in more detail below, there are certain gaps in BGE's analysis of alternatives that limit my findings with respect to minimizing environmental impacts. In addition, it should be noted that BGE's engineering design was presented in the Application at 30 percent design, thus, the information provided was not complete at the time of the initial CPCN review. Any design changes and or other new information about planned construction activities or vegetation treatments may change my analyses or conclusions.

**PPRP's Environmental Review**

**Q. PLEASE OUTLINE PPRP'S REVIEW OF THE ENVIRONMENTAL EFFECTS OF THE PROPOSED KEY CROSSING PROJECT.**

A. My environmental review team assessed the information provided by BGE, evaluated the potential environmental impacts using data from a variety of independent sources, consulted with state agencies, and made field observations of the Project location. Based on these data, the team assessed the potential effects of the Project on streams and non-tidal wetlands; rare, threatened, and endangered species; forest resources and Maryland's Green Infrastructure Network; and land use and vegetation management in the relevant portions of Anne Arundel and Baltimore Counties and Baltimore City. PPRP also evaluated the cumulative impacts of the Project and assessed the siting studies that led to the selection of the proposed route.

**Q. WHAT MATERIALS IS BGE REQUIRED TO PROVIDE FOR THE STATE'S ENVIRONMENTAL REVIEW?**



1 A. An Application for a CPCN issued under Section 7-207 of the Public Utilities  
2 Article must provide the information specified in COMAR 20.79; Section 20.79.04  
3 is specific to transmission lines. In addition to providing the purpose and  
4 justification for the project (20.79.04.01), a thorough description is required  
5 (20.79.04.02) that addresses engineering and construction features, property  
6 rights to be acquired, access road construction or maintenance, visibility from  
7 sensitive cultural and environmental sites, construction within any 100-year  
8 floodplain, adjacency to public airports, and a depiction on a topographic map.  
9 When new transmission lines are being proposed, alternative transmission line  
10 routes must be considered (20.79.04.03). It is important to note that under  
11 Section 7-209 of the Public Utilities Article, the Commission shall specifically  
12 consider as alternatives transmission lines of another company if they are  
13 convenient, economical, and efficient. Finally, the application must include an  
14 assessment, by BGE, of environmental conditions and impacts (20.79.04.04),  
15 including: a general description of the physical, biological, aesthetic, and cultural  
16 features, and conditions of the site and adjacent areas; a summary of the  
17 environmental and socioeconomic effects of the construction and operation of the  
18 project, including a description of the unavoidable impacts and recommended  
19 mitigation; a copy of all studies of the environmental impact of the proposed  
20 project prepared by the applicant; and a statement of the ability to conform to the  
21 applicable environmental standards.

22 **Q. DO THE MATERIALS SUPPLIED BY BGE MEET ALL OF THE**  
23 **REQUIREMENTS FOR THE STATE'S ENVIRONMENTAL REVIEW?**

24 A. Overall, the Application and the Environmental Review Document (ERD)  
25 provided by BGE enumerate the environmental issues that may be encountered  
26 by the Project. However, the technical detail required for PPRP's review of  
27 potential impacts is often not present in the text, and while that information may

1 be in the voluminous appendices, it is not directly referenced in the ERD or  
2 otherwise indexed for usable access. In some cases (such as RTE species), the  
3 same topic appears to be addressed separately in different appendices. There is  
4 minimal or no discussion as to how the data presented (from various sources and  
5 databases) support the conclusions about the likely impacts of construction and  
6 operation of the Project.

7 Supplemental filings and responses to data requests clarified some aspects of the  
8 Project. However, there remains insufficient information to assess fully the  
9 potential impacts on fish, benthic resources, tidal wetland habitat quality,  
10 pollinators and vegetation, waterfowl usage patterns, and RTE species  
11 protection.

12 **Q. HOW DO THE LACUNAE IN BGE'S MATERIALS AFFECT PPRP'S**  
13 **REVIEW?**

14 A. Because some of BGE's environmental materials and studies are general and  
15 lacking in substantive data, many potential construction impact issues cannot be  
16 resolved precisely. In some cases, PPRP was constrained to review impacts  
17 using data from other locations or by inference from other studies. This works to  
18 the disadvantage of BGE, in that PPRP's Initial Recommended Licensing  
19 Conditions must be broader, cautionary, and more protective than might  
20 otherwise be required.

21 **Q. DID PPRP USE INDEPENDENT SOURCES TO VERIFY AND FILL GAPS IN**  
22 **THE INFORMATION THAT BGE PROVIDED FOR THE KEY CROSSING**  
23 **PROJECT?**

24 A. Yes. In addition to the documents initially provided by BGE and subsequent  
25 data request responses, PPRP based its assessment on publicly available data  
26 about environment resources; information from Maryland DNR documents, web

pages, and agency communications; and observations from a site visit on March 19, 2019 by PPRP staff and consultants. The PPRP environmental review team also independently compiled and analyzed the most current and accurate spatial data available from State of Maryland and other reliable sources, and conducted its own assessments of these data within a Geographic Information System (GIS). This included photointerpretation of landscape features, assessments of current and historic land use, and intersections of the proposed right-of-way (ROW) with designated resource areas such as Maryland's Green Infrastructure Network (GIN), Maryland's Biodiversity Conservation Network (BIONET), Tier II stream locations, Wetlands of Special State Concern (WSSC), and Sensitive Species Project Review Areas (SSPRA).

**Q. HOW HAVE YOU ORGANIZED THE FINDINGS OF PPRP'S ENVIRONMENTAL EVALUATION?**

A. PPRP's assessment of the Project included a thorough review of natural resources that could be at risk due to the construction and operation of the Project. The following sections provide a summary of the potential environmental effects of the Project on streams, wetlands, vegetation, wildlife, and species designated as rare, threatened, or endangered (RTE). A concluding section addresses the cumulative impacts of the Project, presents my findings with respect to the overall impact of the Project on natural resources, and discusses whether these impacts can be avoided.

**Aquatic Resources at Risk from the Key Crossing Project**

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO WATER QUALITY?**

A. No. While pile installation within the Patapsco River is expected to cause some sediment resuspension, the increase in suspended sediment is not expected to

1 result in adverse impacts to water quality. Levels of Total Suspended Solids  
2 from resuspension are projected to be at least 50 times lower than lethal level of  
3 the most sensitive species. For comparison, an average of more than 3 million  
4 cubic yards of dredged materials must be removed annually from Baltimore  
5 Harbor's shipping and approach channels to maintain operations. The amounts  
6 which may be released by pile-driving during construction are very minor by  
7 comparison and are not expected to have any significant additional impact to  
8 biota.

9 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
10 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO AQUATIC RESOURCES**  
11 **FROM LAND-BASED SEDIMENT?**

12 A. No. Potential impacts from upland construction activities can be avoided as long  
13 as the required sediment and erosion control measures are implemented and  
14 maintained correctly during construction.

15 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
16 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO FISH?**

17 A. Yes. Significant impacts to fish populations are likely without closure periods  
18 and other mitigation measures. At least 58 fish species could occur in the Project  
19 vicinity at some time of year. Construction impacts to fish could occur from  
20 vessel traffic, sediment resuspension, and underwater noise from construction  
21 (e.g. pile driving). In addition to construction impacts, additional structures in  
22 the waterway could affect migratory fish passage. Mitigation measures include  
23 avoiding construction during migration and spawning periods, use of turbidity  
24 curtains, ramp-up constructions methods to allow animals to move from impact  
25 zones, and use of a vibratory hammer as much as possible to limit noisier impact  
26 hammering. PPRP has worked with the state and federal fisheries agencies to  
27 balance the recommended closure periods with the requirements of construction.

In combination with other mitigation measures, the closures contained in the agency permits should minimize fish impacts.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO SHELLFISH?**

A. No. Although overwintering blue crab could be present and there are oyster reefs in the vicinity, there will be little direct impact. The area of bottom blocked by the Project is very small compared to the total benthic habitat available, and the oyster reefs are a sufficient distance outside of the construction zone to be unaffected. It is possible that the new pilings would actually provide additional hard surface substrate for some species.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO PHYTOPLANKTON OR ZOOPLANKTON?**

A. No. Minor direct mortality could result from construction traffic and turbidity associated with pile installation could suppress phytoplankton growth, but the effects would be localized and unlikely to be different from other normal harbor activities. These effects would be temporary and not significant, and no long-term effects are expected.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO MARINE MAMMALS?**

A. No. Marine mammals are infrequent and transitory in Baltimore Harbor, and potential for interactions with construction vessels or noise impacts is small. Nonetheless, their vulnerability and value demands attention if they are present. NOAA's National Marine Fisheries Service (NMFS) will provide guidance and reporting requirements to BGE with respect to marine mammals.

1 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
2 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO SEA TURTLES?**

3 A. No. Sea turtles do not nest in the area, although they may forage in the Harbor  
4 on occasion. Potential for interactions with construction vessels or noise impacts  
5 is small. Nonetheless, their vulnerability and value demands attention if they  
6 are present. NOAA's NMFS will provide guidance and reporting requirements  
7 to BGE with respect to sea turtles.

8 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
9 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO BENTHIC**  
10 **RESOURCES?**

11 A. The information provided by BGE was not sufficient for PPRP to determine the  
12 full extent of potential impacts of the Project on benthic resources, but impacts to  
13 benthic resources are likely. Our evaluation was necessarily incomplete because  
14 benthic community information at the local scale, such as in the shallow areas of  
15 the Project area, was missing. It is known that the mainstem of the Patapsco  
16 River estuary in the vicinity of the Project area is a mix of degraded and good  
17 benthic communities. Many waterfowl and fish feed on benthos, and the area  
18 adjacent to the project area is well-used waterfowl habitat, which implies that  
19 abundant good benthos is likely to be present and may be affected by the Project.  
20 The loss of even a small area of high-quality benthos is a concern because of the  
21 wide extent of degraded conditions in the Harbor.

22 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
23 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO SUBMERGED**  
24 **AQUATIC VEGETATION (SAV)?**

25 A. No. There are no current or historical SAV beds located in the construction zone,  
26 or close enough to be affect by the construction activities.

**Wetland and Critical Area Resources at Risk from the Key Crossing Project**

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO WETLANDS?**

A. Yes. The Project is located in and will affect tidal wetlands, the Critical Area buffer surrounding these wetlands, and freshwater wetlands in or adjacent to the Critical Area. The land areas at the endpoints of the line are small and crowded, allowing little positional flexibility that would spare wetland areas. Both permanent and temporary impacts are unavoidable.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO NON-TIDAL WETLANDS?**

A. Yes. At Hawkins Point, 0.08 acres of palustrine scrub-shrub wetlands will be permanently converted to emergent wetlands. At Sollers Point, 0.41 acres of palustrine forested wetland will be permanently converted to an emergent wetland. Conversion of non-tidal wetlands to a lower functional type requires in-kind mitigation at a ratio determined by MDE.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO THE CHESAPEAKE BAY CRITICAL AREA?**

A. Yes. The Project will be constructed within the Critical Area, with five towers placed in tidal waters and the remaining three on adjacent lands that are also included in the Critical Area<sup>1</sup>. As noted above, utility transmission facilities are

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<sup>1</sup> The Critical Area (Natural Resources Article 8-1807) has two components: (1) All waters of and lands under the Chesapeake Bay and its tributaries to the head of tide as indicated on the State wetlands maps, and all State and private wetlands designated under Title 16 of the Environment Article; and (2) All land and water areas

restricted to "intensively developed" portions of the Critical Area, with required mitigation activities that are determined by the CAC and the MDE. The construction of the Project's towers and conductors will have permanent impacts on the land adjacent to the Patapsco River, the river bottom sediments, the waters of the river, and the air above the river surface.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO TIDAL WETLANDS?**

A. Yes. The foundations for five of the towers supporting the new overhead transmission line will be placed in the bottom sediments of the Patapsco River. Additional impacts will include the pilings in the river waters, the tower support platforms above the surface, and the conductors strung above the river. In addition to affecting the Critical Area, these impacts amount to permanent occupancy of State Tidal Wetlands. BGE must obtain a license for occupancy of State Tidal Wetlands from the Board of Public Works (BPW) for the project to proceed.

**Terrestrial Resources at Risk from the Key Crossing Project**

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO STREAMS AND FLOODPLAINS?**

A. Yes. The Project entails substantial construction in the floodplain of the Patapsco River. I have previously described the direct impacts to the Patapsco River in my discussion of impacts to Tidal Wetlands. At Hawkins Point, the entire limit of disturbance lies within the FEMA 100-year floodplain boundary, however, there are no additional streams or ponds present that are affected. At Sollers Point,

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within 1,000 feet beyond the landward boundaries of State or private wetlands and the heads of tides designated under Title 16 of the Environment Article.



there are two open ponds and one perennial man-made tidally influenced stream that connects a pond to a river, none of which will be affected by the Project.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO FORESTS OR GREEN INFRASTRUCTURE?**

A. No. There are no forest stands at Hawkins Point and the three forest stands at Sollers Point will be avoided by the Project. The forest stands are not part of the state's Green Infrastructure Network. As there will be no forest clearing, the Forest Conservation Act criteria for ROW development are satisfied and no mitigation is required.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO OTHER VEGETATION?**

A. No. Both Hawkins Point and Sollers Point have been previously cleared and are actively managed for utility clearances. Hawkins Point is dominated by weedy herbs and shrubs, with no mature trees. Sollers Point contains areas of wetlands, hedgerows, and scrub-shrub communities. Vegetation management in the ROW and adjacent substation areas could be augmented to support Patapsco River water quality and wildlife goals and to support pollinator species. PPRP recommends that, to the most practical extent, the land areas in the ROW should be maintained as riverbank wildlife habitat, with minimal mowing.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN ADDITIONAL IMPACTS FROM INVASIVE SPECIES?**

A. Yes. Several invasive plants were found within the Project area, including common reed, Japanese honeysuckle, and Japanese knotweed. Such invasive species are likely spread into areas affected by construction disturbance and

1 reduce the area of native plant habitat that can support a diverse wildlife  
2 community. PPRP recommends that vegetation management protocols that  
3 control invasive species be implemented.

4 **Wildlife Resources at Risk from the Key Crossing Project**

5 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
6 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO WILDLIFE?**

7 A. Impacts to wildlife are unlikely; however, BGE has provided insufficient  
8 information for PPRP to make a definitive determination in some cases. Local  
9 wildlife, when present, has adapted to the urban, disturbed nature of the Project  
10 site and will likely be unaffected as long as standard avoidance procedures are  
11 followed. However, the project area also supports migratory waterfowl and  
12 some sensitive or protected species that may find construction disruptive.

13 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
14 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO BIRDS?**

15 A. Minor impacts are possible. The area supports avian fauna typical of mid-  
16 Atlantic urban environments. Additionally, an active bald eagle nest has been  
17 observed, peregrine falcons are known to nest on the bridge, and numerous  
18 ospreys and osprey nests were detected. Although these species live in a  
19 developed environment, they have found protected niches that allow them to  
20 survive while accessing the resources provided by the Patapsco River Estuary.  
21 Construction of the line may impinge on those niches or create new hazards that  
22 reduce their value, but the reviewing state agencies have determined that the  
23 likelihood of a significant impact is small and that no specific construction  
24 mitigation is required except for waterfowl (see below). During operation, BGE  
25 must mitigate for potential bird electrocution by using isolation standards,  
26 protect against collision through the use of line marking spheres, and follow

1 clear Avian Management Program Guidelines to prevent or remediate nest  
2 construction on the transmission structures.

3 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
4 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO SEABIRDS AND**  
5 **WATERFOWL?**

6 A. Yes. Areas in the River along the shoreline adjacent to the Project area are  
7 identified by DNR as historical waterfowl concentration areas, and waterfowl  
8 were observed in surveys conducted by BGE's consultants. The surveys were  
9 limited in time and did not cover the entire overwintering period for waterfowl,  
10 so the full potential impact of construction activities cannot be determined.  
11 Waterfowl may move from preferred feeding areas during tower foundation  
12 construction and may be affected by construction noise. The response of diving  
13 ducks to pile driving is not known, but benthic resources on which diving ducks  
14 feed are sensitive to vibrations in the marine environment, becoming more  
15 deeply buried and less exposed to predators. Because diving duck feeding  
16 habitat has decreased in Chesapeake Bay over time, it is a critical resource for  
17 maintaining population sizes. The reviewing state agencies are recommending  
18 that pile-driving and above water construction of towers located in the  
19 designated waterfowl concentration areas be suspended during the  
20 overwintering period (November 15 to March 1).

21 **Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING**  
22 **PROJECT BE LIKELY TO RESULT IN IMPACTS TO POLLINATORS?**

23 A. Probably not. BGE did not provide information on the current presence of or  
24 vegetation maintenance for pollinators in the terrestrial areas of the ROW. Given  
25 the ecologically sparse condition of the vegetation observed during PPRP's field  
26 visit, only minimal pollinator activity typical of urban industrial areas is likely.  
27 DNR encourages ROW vegetation management practices that create and

maintain pollinator habitat, and suggests that after construction, areas within the ROW could be maintained to support an enhanced suite of pollinators. The location of this project on the banks of a tidal estuary may provide opportunities to support pollinator species not found elsewhere.

**Q. WILL CONSTRUCTION AND OPERATION OF THE KEY CROSSING PROJECT BE LIKELY TO RESULT IN IMPACTS TO RARE, THREATENED, OR ENDANGERED (RTE) SPECIES?**

A. While the potential for impacts is small if proper construction practices are used, RTE and other sensitive species are present and could be affected. It will be necessary for BGE to observe noise and activity levels specified by state and federal agencies and to implement a third-party environmental monitoring program during construction activities. An abundance of caution is necessary if sensitive species are unexpectedly encountered in or near the construction zone. If BGE encounters RTE species during construction or operation of the proposed project, they must alert Wildlife and Heritage Service (WHS) and NMFS and adhere to any avoidance or impact minimization instructions.

#### **Summary of Environmental Impacts**

**Q. PLEASE SUMMARIZE THE POTENTIAL DIRECT IMPACTS OF THE KEY CROSSING PROJECT ON NATURAL RESOURCES.**

A. PPRP's evaluation has identified environmental impacts that would potentially result from construction and operation of the Project. These include potentially adverse changes to sensitive natural resources, including rivers and wetlands, along with undesirable effects on the wildlife that occupy these habitats, including fish, waterfowl, and RTE species. In light of the impacts discussed above, PPRP is proposing Initial Recommended Licensing Conditions that address sediment and erosion control, wetlands and waterways, tidal wetlands,

vegetation management, wildlife protection, the Critical Area, invasive species, and pollinator habitat.

### PPRP's Socioeconomics Review

#### Land Use

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING LAND USE IMPACTS DUE TO THE PROPOSED PROJECT?**

**A.** Most land use in the Key Crossing Project area is currently dedicated to maritime and manufacturing activities. Several marine terminals are upriver from the Project in Baltimore Harbor, while Tradepoint Atlantic is just south of the Francis Scott Key Memorial Bridge. Two residential enclaves are to the east and north of the Project. The first, Turner Station, is a historically African American settlement. The second, Carnegie Plat, is separated from Turner Station by the Broening Highway.

The Key Crossing Project aerially overlays and will ultimately replace the current submarine transmission line. Conductors will be carried by eight monopole structures, of which five will be anchored in the Patapsco River. Land-based structures will be located near existing terminal stations for the submarine transmission line at Hawkins Point and Sollers Point. Because both endpoints of the project are located on BGE-owned land, which is surrounded by industrial, port and ground transportation facilities, it is unlikely that land use will change in adjoining or nearby areas due to construction or operation of the transmission line.

#### Visual Quality

**Q. WHAT ARE PPRP'S CONCLUSIONS REGARDING THE PROPOSED PROJECT'S VISUAL IMPACTS?**

A. Baltimore Harbor presents a maritime industrial and urban industrial landscape to viewers. Waterside views include multiple port facilities, electric generating plants and transportation infrastructure. Other than Fort McHenry, there are few unimpeded public views downriver from the harbor side. Waterfront land uses south of the Key Bridge are also industrialized for at least two miles, with the exception of Fort Armistead Park, which is wedged between the I-695 approach to the Key Bridge and a chemical manufacturing facility. Further downriver, some of the Riviera Beach community has views upon the Patapsco River. However, views upriver from points south are obstructed by the Key Bridge.

Although the Key Crossing Project will add another industrial element to the harbor landscape, the Project's monopole design is the least intrusive, visually, of the overhead options considered. Photo-simulations created by BGE suggest far views, such as from Fort McHenry and from taller buildings overlooking the harbor from Baltimore's central business district, will be minimally impaired. Even though the Project will insert a visual contrast into views (from the north) upon the Key Bridge, the bridge is neither historic nor of particular scenic value.

### Cultural and Aesthetic Resources

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING IMPACTS ON HISTORICAL AND CULTURAL RESOURCES FROM THE PROPOSED PROJECT?**

A. Although there are many terrestrial historical and cultural resources in the area, none will be directly affected by Project construction or operation, and indirect impacts will be minimal.

Nearby sites listed on the National Register of Historic Places (NRHP) include Fort Carroll, U.S. Coast Guard Yard Curtis Bay, and the Dundalk Historic

District. Fort McHenry National Monument and Historic Shrine (NMHS) is approximately 4 miles from the Project.

Nearby sites listed in the Maryland Inventory of Historic Properties (MIHP) include several buildings associated with the former Baltimore Municipal Airport, which was Baltimore's major commercial airport in the 1940's. Turner Station, including Carnegie Plat, is designated an African American Survey District.

Research and field data indicate the presence of several maritime wrecks within the Patapsco River. BGE conducted a terrestrial archeological investigation on lands within Hawkins Point and Sollers Point targeted for construction and found no areas with the potential to contain intact archeological resources.

Underwater archeological investigations within an 800 to 1,000-foot band of the Patapsco River bed adjacent to the harbor side of the Key Bridge confirmed the existence several cultural resources which will be avoided during construction. The reviewing state agencies recommend a license condition requiring BGE to conduct further underwater investigations, in consultation with the Maryland Historic Trust (MHT) and United States Army Corp of Engineers (USACE), if avoidance of known underwater resources is not possible (Initial Recommended License Condition - Maryland Historical Trust). In addition, if construction reveals unforeseen archeological sites, the state reviewing agencies recommend that BGE be required to develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of such relics or sites (Initial Recommended License Condition - Maryland Historical Trust).

The Project could indirectly affect terrestrial historic resources by altering their settings by introducing barges and cranes during construction, and structures and conductors when completed. In consultation with the MHT, BGE undertook an analysis of indirect Project effects within the Project's area of potential effect

(APE) by comparing existing photographic views toward the Project to identical views containing a superimposed rendering of the transmission line. For several resources, the photographic survey determined the Project would not be visible due to intervening structures. Visual impacts upon historic resources south of the Key Bridge (Fort Carroll, Sparrow's Point Shipyard District) were determined to be relatively minor because views are already compromised by the bridge and nearby industrial development. Finally, photo-simulations of views from other historic properties looking downriver from Baltimore Harbor suggest visual impacts will be mitigated by the Project's small visual footprint within an existing visual landscape that is distinctly industrial.

Despite its distance from the Project, BGE's analysis of cultural resources was extended to Fort McHenry NMHS because of its historic significance, which includes its location facing Baltimore Harbor. At a distance of nearly 4 miles, photo-simulations suggest the Project would be minimally visible from Fort McHenry, particularly against the backdrop of the Key Bridge. As such, the Project would not diminish the integrity of the resource. The reviewing state agencies recommend a license condition that prior to construction, BGE shall certify to the PSC and PPRP that it has addressed all MHT concerns and recommendations for the mitigation of Project impacts upon cultural and archaeological resources (Initial Recommended License Condition – Maryland Historical Trust).

The Key Crossing Project does not fall within the existing or potential future boundary of the Baltimore National Heritage Area.

The Key Crossing Project requires filling 0.11 acres of tidal waterway. To offset this impact, BGE has proposed a mitigation project to stabilize eroding shoreline in nearby Chestnut Hill Cove. BGE commissioned reports on impacts to terrestrial and submerged archeological resources in the mitigation project's



APE. In a letter dated May 13, 2019, MHT concurred that the mitigation project will not affect any terrestrial archeological resources and that establishment of 50-foot buffers will mitigate impacts on four submerged archeological sites.

**Economic, Demographic, and Fiscal Issues**

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE ECONOMIC, DEMOGRAPHIC AND FISCAL IMPACTS OF THE PROPOSED KEY CROSSING PROJECT?**

**A.** The Key Crossing Project will have modest, positive economic and fiscal impacts for Baltimore City, Baltimore County, and Maryland.

Construction will take approximately two years and will employ an average of 50 workers, increasing to 75 during the peak construction period. Most construction jobs will be sourced from the local labor pool if area subcontractors competitively bid the work. This will have a positive effect on the local economy from construction worker payrolls and subsequent consumption expenditures, local purchases of common construction materials, and associated multiplier effects. Not all benefits will accrue to Maryland since specialized components, particularly steel monopoles and conductors, are manufactured elsewhere and will be imported into the State.

With most of the construction workforce within daily commuting distance, the Key Crossing Project will have no effect upon population and housing, or on population-related public service provision. With public service levels largely unaffected, the net benefit of Project construction will be positive for the surrounding region.

Construction of the transmission line will produce a small fiscal benefit to local jurisdictions, primarily through local income tax receipts on some construction

wages, and sales tax receipts from local consumption expenditures by the construction labor force. The State of Maryland will also benefit from the collection of additional revenues from state income taxes. However, the benefits are not significant in the context of local and state economies.

### Transportation

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING TRANSPORTATION IMPACTS FROM THE PROPOSED KEY CROSSING PROJECT?**

**A.** Transportation impacts on nearby roads will be limited to the construction period. Given current traffic volumes on roads near the project, there will be no significant traffic impacts on local roads from construction workers commuting to and from the work site. BGE has stated its engineering procurement and construction (EPC) contractor will coordinate special needs with public service agencies on an as-needed basis. Post-construction, the project will require no public services under normal operating conditions.

Transport of materials to the Project will be via truck over state and local roads. Steel poles will be transported to staging areas in sections for assembly on-site. Overhead conductors will be transported on reels and strung across the spans by helicopter. For in-water structures, Project materials will be transported to a staging area with water access, and will be delivered to tower locations by barge. Land-based structure construction will be staged from BGE's Hawkins Point or Sollers Point properties. Any oversize or overweight loads of materials or equipment transported by truck to staging areas will require permits. The reviewing state agencies recommend a license condition requiring BGE to comply with all permit requirements for transport of oversize or overweight loads on State and local roads (Initial Recommended License Conditions - Oversize/Overweight Loads). Although delays from moving heavy equipment

1 on public roads are inevitable, disruptions to commuter traffic should be  
2 mitigated to the extent possible by scheduling these activities during non-peak  
3 hours. The reviewing state agencies recommend a license condition requiring  
4 BGE to mitigate disruptions to commuter traffic to the extent practicable by  
5 scheduling the transport of materials and equipment to staging areas and  
6 construction sites during non-peak hours (Initial Recommended License  
7 Condition – Traffic Management).

8 Construction will take place in the Port of Baltimore, one of the nation's largest  
9 ports. BGE is coordinating staging and construction of the project with all  
10 stakeholders involved in Port of Baltimore operations. Construction of the  
11 Project could potentially interfere with commercial and recreational maritime  
12 traffic during the construction of tower foundations and vessel collision  
13 protection structures, and erection of towers. However, the monopole design for  
14 the towers minimizes the Project footprint within the Patapsco River. With  
15 appropriate planning, no adverse effects to commercial maritime traffic are  
16 anticipated. The reviewing state agencies recommend a license condition  
17 requiring BGE to communicate all construction activities to the U.S. Coast Guard  
18 for publication in its weekly "Local Notice to Mariners" (Initial Recommended  
19 License Condition – U. S. Coast Guard Notification.).

20 Post-construction, navigation of the Baltimore Harbor will be largely unchanged,  
21 and Project operation will not generate significant road traffic. The reviewing  
22 state agencies recommend a license condition requiring BGE to certify to PPRP  
23 and PSC that proposed lighting of structures and marking on shield wires  
24 satisfies FAA obstruction standards (Initial Recommended License Condition –  
25 Federal Aviation Administration Compliance).

## 26 Noise

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING IMPACTS ON PUBLIC SERVICES AND SAFETY FROM THE PROPOSED PROJECT?**

**A.** Most Project noise will occur during the construction phase, particularly, during pile driving for the towers. All tower locations are expected to comply with COMAR regulations for maximum allowable daytime noise levels during construction. Due to the proximity of residential, commercial, and industrial receptors, Towers 1, 2, 4, 5, and 6 are expected to comply with nighttime maximum allowable noise levels for all construction activities except pile driving. Additionally, Tower 3 is expected to comply with nighttime maximum allowable noise levels for all construction activities, including pile driving. Tower 7 and 8 are not expected to comply with nighttime maximum allowable noise levels for construction activities. Due to distance and unpredictable wind patterns, existing sound attenuation barriers on Broening Highway are not expected to provide reliable sound attenuation during the construction phase. The reviewing state agencies recommend a license condition requiring BGE to design, construct, and operate the Project in a manner that complies with all applicable County and State noise regulations (Initial Recommended License Condition – Applicable Laws and Regulations).

**WHAT IS YOUR RECOMMENDATION CONCERNING THIS PROJECT?**

**A.** The proposed new overhead portion of the transmission line can be built while avoiding significant environmental impacts if PPRP's Initial Recommended Licensing Conditions are included as part of the CPCN for the project.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?**

**A.** Yes. I reserve the right to supplement or amend this testimony at a later date if additional information becomes available or the project configuration is materially changed.

**APPENDIX A:**  
**STATEMENT OF QUALIFICATIONS**  
**for Helen Stewart**

Helen Stewart received a B.S. in 1988 from the University of Maryland in Civil Engineering. She is a Professional Engineer licensed in Maryland since 1993. Ms. Stewart has worked at the Department of Natural Resources (Department) since 1986.

Ms. Stewart has served as a Program Manager with the Maryland Power Plant Research Program (PPRP) since July 2016. She is responsible for leading the Certificate of Public Convenience and Necessity (CPCN) licensing reviews of new electric generation projects before the Public Service Commission (PSC), including coordinating project review with other State agencies, preparing written testimony, and serving as expert witness in CPCN proceedings.

From 2007 to 2016, Ms. Stewart served as the Department's BayStat/StateStat Director and liaison to the Governor's Office of StateStat. Created by Executive Order on February 14, 2007, BayStat was implemented to advance accountability and coordination among key government agencies. Its chief function was to provide the impetus to regularly evaluate state initiatives directed at improving the health of the Chesapeake Bay, ensuring these programs were coordinated and operating at the highest efficiency.

From 1995 to 2007, Ms. Stewart was Chief of the Watershed Analysis Section in the Ecosystem Analysis Center, where she supervised a multidisciplinary team of scientists, engineers and economists to integrate scientific (e.g., biological, ecological, spatial, and demographic) and economic information into cost-effective and sustainable strategies and policies for improving water quality and protecting

and managing natural resources.

From 1986 to 1995, Ms. Stewart worked as a Water Resources Engineer with the three regulatory programs within the Department: the Dam Safety Division, the Waterway Permits Division, and the Tidal Wetlands Division. (These programs were subsequently moved to Maryland Department of the Environment.)