Bush River 115kV Crossing Rebuild

Tiffany Matthews-Lay & Kevin Elveton
Project Management

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Agenda

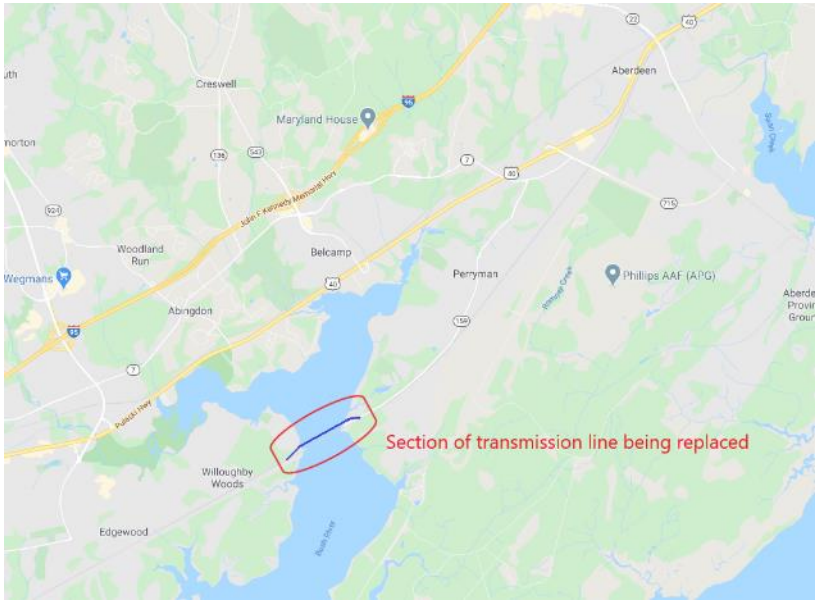
- Team Introduction
- Project Overview
- Project Necessity
- Route Determination
- Existing Line Overview
- Proposed Solution
- Environmental Mitigation
- Schedule
- Questions/Discussion

Project Team

- Baltimore Gas & Electric Company– Owner/Applicant
- McCormick Taylor – Environmental Consultant
- Burns & McDonnell – Project Management
- Power Engineers – Engineering/Project Design

Proposed Bush River Project

- Rebuild the Bush River Crossing
  - Remove 7 existing “lattice” structures
  - Install 9 new mono-pole structures and foundations
  - One structure located in Bush River
  - New conductor
  - 1.1 miles long
  - Additional easements required
  - Construction starts September 2021



Bush River Crossing

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Necessity

- Improve reliability and safety of the transmission line to communities

- The existing transmission line consists of two circuits constructed in 1951 and has experienced substantial reliability and risk problems
  - Severe avian contamination
  - Severe foundation degradation was discovered after an inspection in 1991
  - Mariner safety

Structural Reliability and Safety

- In 1991, these tower foundations were inspected and severe degradation was discovered
- Repairs were made in 1991 by
  - Installing cofferdams
  - Splinting the pipes back together using new steel and grout
  - Encapsulating the piles
- The encapsulation prevents further inspection of the steel piles
- Project reports indicate an expected 25-year life span for the repairs – currently in year 29

Boat Safety

- Lower clearance in existing line

- The line has had a history of sailboat contacts
  - An incident In the late 1960s
  - In June 2000, a sailboat slipped from its mooring and contacted the lines, causing an outage and the total loss of the vessel (no one was on board)
  - In August 2002, another sailboat drifted into the lines

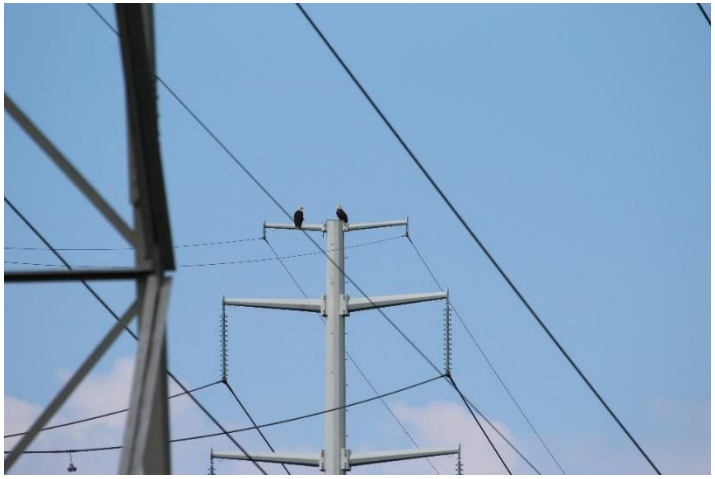
Avian Challenges

- 9 outages (2009-2019) were line-initiated, all 9 occurred within the Bush River Crossing
  - 8 outages were avian interference
    - 7 outages involved bird nest debris
    - 1 outages bird droppings
  - 1 unknown outage

- Momentary outage on 5/10/2017 led to the discovery of a LARGE colony of cormorants
  - Numerous nests
  - Significant contamination found on the insulators, conductors, tower steel, and foundations
  - According to the USDA-APHIS, there are no totally effective ways to keep the cormorants from inhabiting the tower

Avian Challenges (cont.)

- During the inspection, an active osprey nest was also found on tower 56 (Perryman side)
- Insulators were replaced and “guano shields” were installed, but due to the liquid state of the contaminant and the steady wind, the shields were not entirely effective
- Coexisting with cormorants means accessing a severely “contaminated” tower, maneuvering around mildly aggressive birds, and maintaining insulators and conductors that will continue to become contaminated



Route Determination

- BGE reviewed several possible alternatives
  - Overhead Construction
  - Submarine Cable Installation (Underground Construction)
  - Horizontal Directional Drill (Underground Construction)

- Evaluation Considerations
  - Tree clearing requirements, critical area impacts, wetland impacts
  - Overall project cost
  - Maintenance costs
  - Consideration of adjacent utilities (existing T-line, forced sewer main)
  - Ease of maintenance/repair outage duration
  - Shorter construction period
  - Constructability
  - Operational reliability

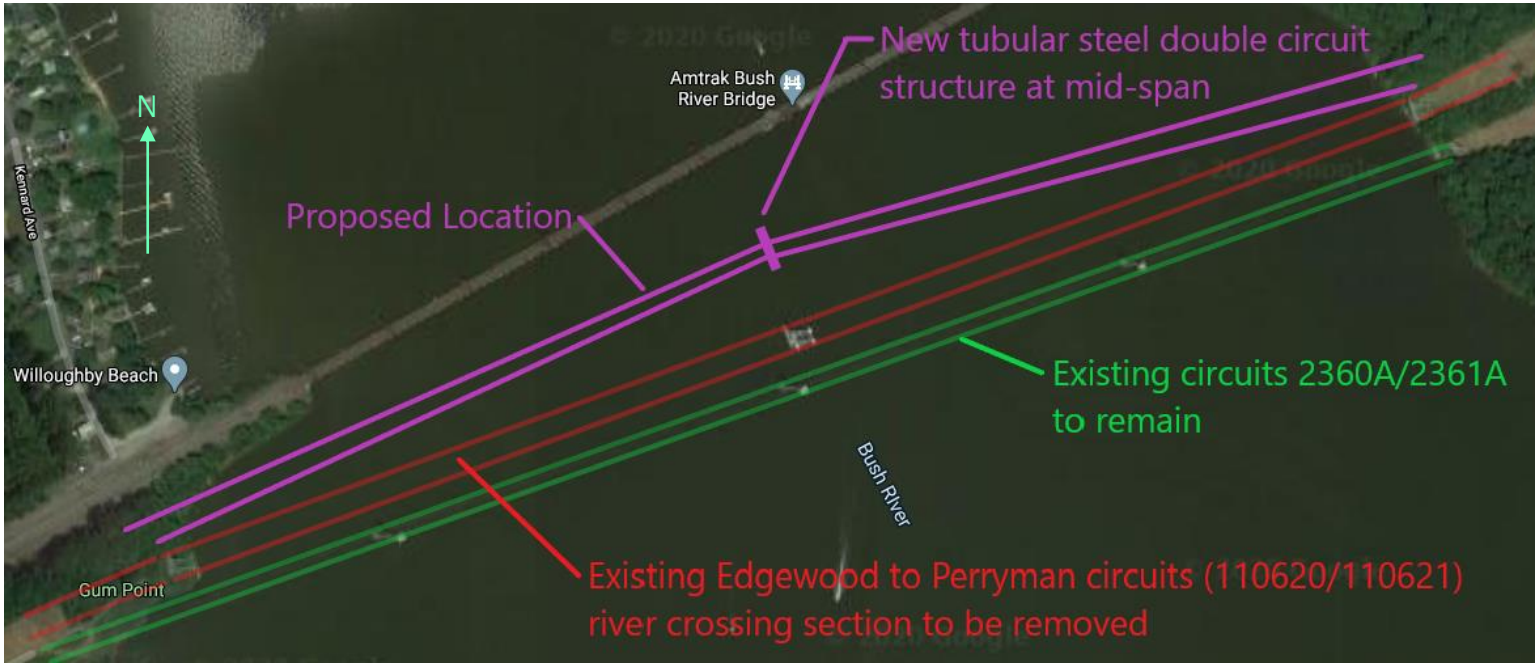
- All alternatives require:
  - State and local permits
  - Easements from the Aberdeen Proving Ground (APG) and Constellation
  - Environmental mitigation

Existing Edgewood to Perryman Transmission Lines

- Built in 1951 to support the APG load after WWII
  - 6.59 miles from Edgewood to Perryman
  - Two single circuit wood pole H-frame lines
    - Short sections of double circuit lattice towers, including the Bush River crossing

- The Existing Bush River crossing
  - Two spans supported by three double circuit (horizontally-configured) lattice towers
  - The two spans are approximately 2000 ft each
  - The middle tower is located in the middle of Bush River
  - Pile and cap foundations
  - Existing structures range in height from 110-115’

Proposed Solution



Removal

- Three double circuit steel lattice towers (one on each shore and one located within Bush River)
- Four single circuit wood H-frames (two on each side of the river)
- Existing conductor (4 spans total)

Install

- 4 new single circuit structures at each bank,
- 1 double circuit structure at mid-span in Bush River on pile foundation
- New section will be built parallel to the existing line to minimize outage impacts
- Design clearance of 49.1 ft (40 ft safe vessel height)

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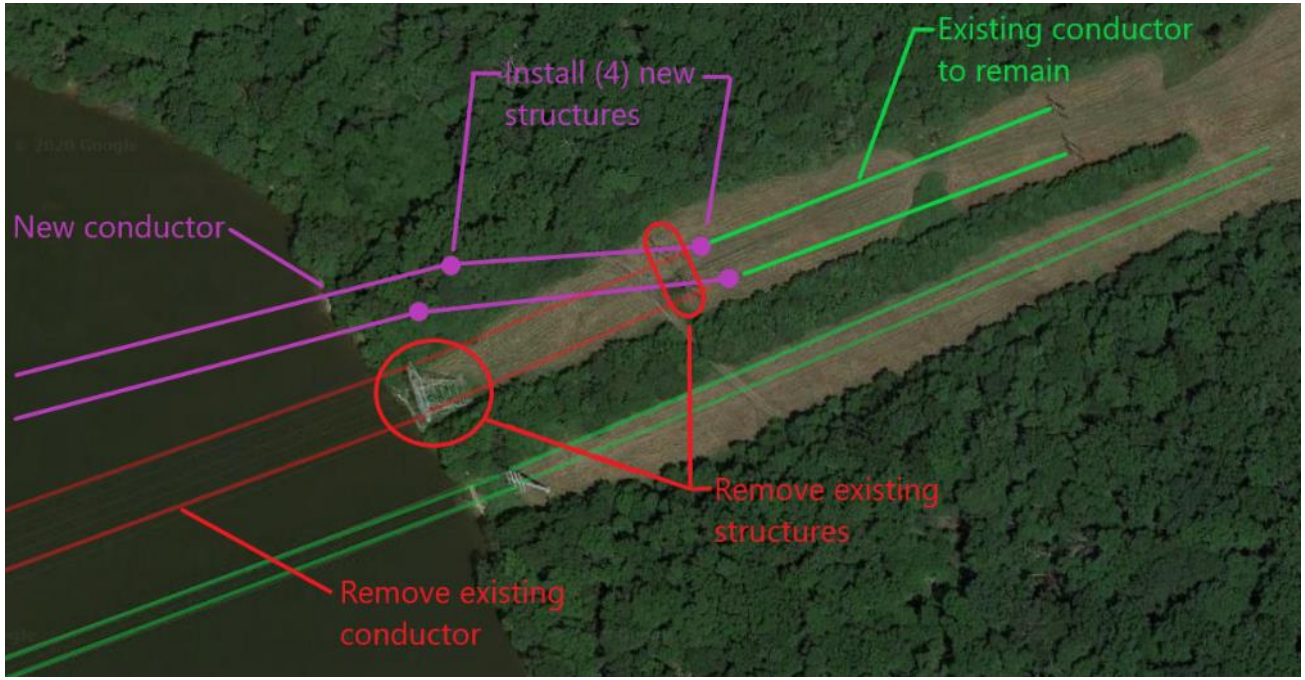
Proposed Solution – Each Bank



Removal

- Three double circuit steel lattice towers (one on each shore and one located within Bush River)
- Four single circuit wood H-frames (two on each side of the river)
- Existing conductor (4 spans total)

Install

- 4 new single circuit structures at each bank
- New conductor (4 spans)
- Caisson foundations on land
- Pole caps will be used to deter birds from nesting on structures

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Renderings

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Renderings

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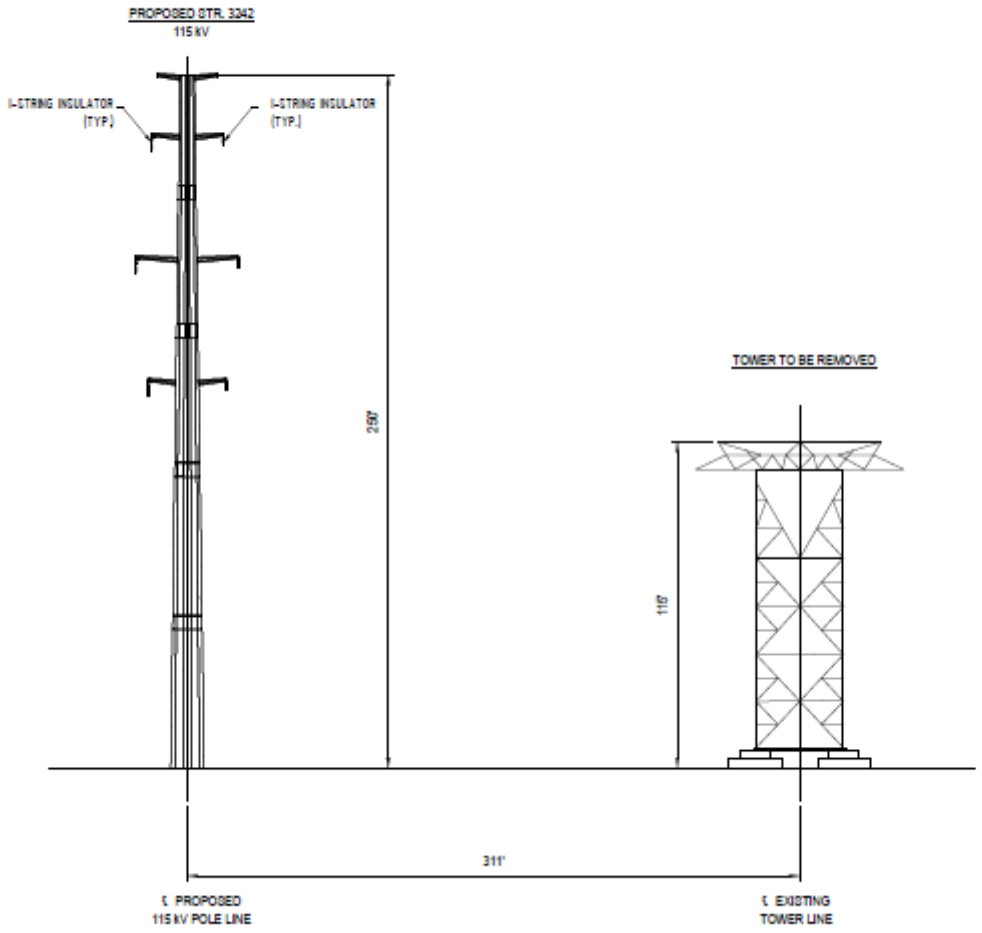
Proposed Solution



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Environmental Mitigation

- Required to mitigate all environmental impacts
- Mitigation plans will be developed with Harford County and the Maryland Department of Environment and Department of Natural Resources and will address:
  - Restoring areas where existing structures are removed
  - Planting new trees
  - Restoring the Critical Area Buffer
  - Requiring contractor to use Best Management Practices during construction activities
  - Ensuring the construction schedule takes the wildlife impact into consideration

Project Schedule

• All Necessary Permits Received	Second Quarter, 2021
• Tree clearing and foundations	Third Quarter, 2021
• Erect Steel Structures	Fourth Quarter, 2021
• Energize New Circuits	April 2022 - May 2022
• Demolition of Existing Structures	September 2022 - November 2022

- Schedule Considerations
  - Water restrictions
  - Nesting bird (FID) restrictions in tree removal area
  - Nesting bird (Osprey) restrictions on the existing structure
  - No outages permitted in the first quarter

Project Summary

- Improve reliability and safety of the transmission line to communities
  - Raise the conductor for marine safety
  - Replace deteriorating foundations
  - Reduce avian presence and impact
  - Improve line maintenance and operations
  - Environmental mitigation
    - Replant trees
    - Restore critical areas
    - Construction plan and schedule

- Permitting Process is just beginning
  - Other opportunities for public engagement

Questions

Questions from the Public

Open Discussion