



# PHILADELPHIA ZOO TO PAOLI ELECTRIFICATION TRANSMISSION LINE PROJECT

## Frequently Asked Questions

### What is the purpose of the project?

This project proposes to meet several goals:

1. The 100-year old structures that support the existing overhead contact system, commonly called catenary, will be replaced. The catenaries provide electrical power to trains.
2. The project will bring the electrical power transmission system onto Amtrak-owned property from its present route which runs outside of Amtrak's current property.
3. By converting the switching station at Bryn Mawr to a traction power substation, the project will fill a critical gap in the power supply system.

### Why is this project being implemented now?

1. The existing catenary support structures on the Harrisburg Line between Zoo and Paoli are greater than 100-years old and are beyond their useful life span. They are showing signs of significant deterioration and frequently require extensive repairs.
2. The transmission lines that supply the system of its power run on a much longer route using a combination of other railroad and public train rights-of-way. These rights-of-way are difficult for Amtrak to access and are expensive to maintain. The structures that carry the transmission lines are also approaching the end of their useful life.
3. The section between the Philadelphia Zoo and Paoli is the only segment of the Keystone Corridor that has not had a traction power upgrade. Amtrak typically spaces traction power substations every 10 miles. The section between Zoo and Paoli is 20 miles long. A consequence is that the existing trains operated by Amtrak and SEPTA experience low-voltage conditions in this section of railroad during periods of higher train density, causing disruptions to rail service. The new Bryn Mawr substation will solve this problem.

### Will the project occur all at once or will it be phased?

The project has been divided into three components:

**Bryn Mawr Substation Replacement:** Construction Notice to Proceed was April 2024. It is anticipated to be completed by winter 2027.



## PHILADELPHIA ZOO TO PAOLI ELECTRIFICATION TRANSMISSION LINE PROJECT FREQUENTLY ASKED QUESTIONS

Paoli to Bryn Mawr: Construction Notice to Proceed is anticipated in 2025. It is anticipated to be completed by 2030.

Bryn Mawr to Zoo: Construction Notice to Proceed is anticipated in 2029. It is anticipated to be completed by 2035.

### **What changes in voltage are proposed and why is the higher voltage needed?**

The traction power voltage in the catenary is 12 kilovolt (kV) and is not going to change. The voltage for the transmission lines being brought back onto the Amtrak right-of-way will be 138 kV. It is more efficient to transmit electrical energy at high voltages and consistent with the rest of Amtrak's system.

### **How will the new catenary structures differ from the existing ones?**

The existing structures are between 45 and 65 feet tall. They consist of a pair of vertical poles outside of the outermost track that are joined together by wire head-spans. The poles are made of several circular steel tubes welded together. The diameter of the tube changes abruptly at the welded joint, so they are typically referred to as "stepped" tubes. They have guy wires on the field side to counteract the forces from the head-spans. The structures are painted but in many cases the paint coating has failed and the structures are showing rust.

### **The new structures are different in a number of ways:**

1. They will be taller. Typically, they will be 75 feet in height in order to accommodate the new transmission lines, but where they cross highway overpasses, they will be 100 feet to maintain required electrical clearances.
2. They will be steel and have a wide flange shape (like an "I" beam).
3. They will be galvanized and will retain their gray color rather than rusting.
4. They will have a steel k-frame in lieu of the head-span.
5. They will not have guy wires.
6. The spacing across the tracks will be slightly wider to provide additional track clearance.

### **What will the spacing be between the new transmission towers?**

The current spacing between the towers varies between 250 and 320 feet. The structure spacing will remain the same. The exception will be at locations where additional structures are required. This will occur in location where the catenary will be permanently detached from highway overpasses.



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### **Why are the new power lines proposed to be taller than the existing ones?**

The heights of the proposed structures are a result of meeting both Amtrak's design requirements and the requirements of the National Electric Safety Code. In order to accommodate the new transmission lines, the new poles will be the minimum height necessary to meet those clearances. Additional height is needed for structures to provide required clearances at bridges and other crossings.

### **What is the purpose of increasing the power along the rail corridor?**

The traction power itself is not being increased. It will remain at 12 kV. Instead, the power density is increasing. The need to increase this power density is due to the number of trains operated by both Amtrak and SEPTA.

### **How will Bryn Mawr substation be impacted?**

Currently, the Bryn Mawr substation functions only as a switching station. With this project, the substation will be replaced with a traction power substation, where 138 kV electricity is converted to 12 kV electricity and fed into the catenary system. The existing switching station building will be demolished and replaced with a smaller control building. Because of this added functionality, the substation needs a larger footprint than the existing facility. This expansion results in a permanent loss of 12 parking spaces from the parking lot that SEPTA leases from Amtrak. During construction, 19 parking spaces will be impacted for the entire 3-year construction duration.

### **Will the vibrations from the trains increase as a result of the increase voltages?**

No.

### **Will the old catenary support structures be removed once the new structures are in place?**

Most of the old catenary support structures currently within the Amtrak right-of-way will be removed once the new structures are in place.

### **Will construction take place during the day or at night?**

The project construction will take place during both the daytime and nighttime. Construction crews may be on-site 24 hours a day.



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### **How will vehicular traffic be impacted?**

There will be no street detours or street closures. There will be an increased amount of truck traffic on local streets during construction due to equipment delivery and construction activities.

### **Will tree trimming be necessary?**

Yes, tree trimming is needed within Amtrak right-of-way to achieve the required electrical clearances to ensure safety, and Amtrak will adhere to the tree trimming plan developed for the project. The tree trimming needed for the Paoli to Bryn Mawr and the Bryn Mawr to Zoo projects will be limited to the minimum required for electrical clearances. No tree trimming is needed for the Bryn Mawr Substation project.

### **Will construction impact my property?**

No, construction and tree trimming will be limited to within the Amtrak right-of-way and no private property will be impacted.

### **Were National Environmental Policy Act (NEPA) studies held for the project?**

An Environmental Assessment was undertaken to satisfy the requirements of NEPA. The primary impact of the project was found to be the replacement of catenary structures and Bryn Mawr Substation, which would have an adverse effect on the National Register-eligible Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) under Section 106 of the National Historic Preservation Act. A Section 106 Memorandum of Agreement (MOA) was executed to document how FRA and Amtrak would mitigate the adverse effects on historic properties. The Federal Railroad Administration issued a Finding of No Significant Impact (FONSI) on September 15, 2017. The MOA mitigation measures, tree trimming plan, and public notification of construction activities are among the environmental commitments being implemented for the project. A NEPA reevaluation was approved on June 24, 2024.

### **Is there a project website where the public can direct questions or find updates?**

Project updates can be found at: <https://railroads.dot.gov/environment/environmental-reviews/philadelphia-zoo-paoli-transmission-line-project>. A project website is under development.