

**Supplemental Information for Application for Transportation and Utility Systems
and Facilities on Federal Lands**

***Introductory Note:** This application is filed by PATH Allegheny Transmission Company, LLC (“PATH-Allegheny”) and addresses the crossing of the Chesapeake & Ohio Canal National Historical Park (“C&O Canal”) as part of the construction and operation of the portion of the Potomac-Appalachian Transmission Highline (“PATH”) Project between the proposed Welton Spring Substation to be located approximately two miles north of Old Fields in Hardy County, West Virginia and continuing to the proposed Kemptown Substation to be located approximately three miles southeast of New Market in Frederick County, Maryland (“Welton Spring-Kemptown Segment”).*

The Welton Spring-Kemptown Segment also will require a crossing of the Harpers Ferry National Historical Park (“Harpers Ferry NHP”) and the Appalachian National Scenic Trail (“Appalachian Trail”). A separate application is being filed concurrently for the Harpers Ferry NHP and Appalachian Trail crossings. The separate application is necessary in light of the fact that the crossings of the Harpers Ferry NHP and the Appalachian Trail will involve modification and expansion of an existing right-of-way for the Millville-Doubs 138 kilovolt (“kV”) line which is separately owned and operated by The Potomac Edison Company (“Potomac Edison”) and the ownership configuration (based on state boundary lines) of the PATH Project facilities crossing the Harpers Ferry NHP and Appalachian Trail by PATH-Allegheny and PATH Allegheny Virginia Transmission Corporation (“PATH-VA”).

Overall, PATH extends from the Amos Substation in Putnam County, West Virginia to the proposed Kemptown Substation in Frederick County, Maryland. Portions of PATH will be constructed, owned, operated and maintained by PATH-Allegheny, PATH-VA and PATH West Virginia Transmission Company, LLC (“PATH-WV”). PATH-Allegheny will construct, own, operate and maintain the portion of the project in Jefferson County, West Virginia and all of the project in Maryland. PATH-VA will construct, own, operate and maintain all of the project in Virginia. PATH-WV will construct, own, operate and maintain all of the project in West Virginia, except: (i) the Welton Spring Substation which will be constructed, owned, operated and maintained by PATH-WV and PATH-Allegheny jointly and (ii) the Jefferson County, West Virginia portion of PATH which, as noted above, will be constructed, owned, operated and maintained by PATH-Allegheny.

Supplemental Response to #7: Project description

PATH-Allegheny seeks National Park Service (“NPS”) authorization for the construction, operation and maintenance of a 765 kV electric transmission facility across C&O Canal. The crossing of the C&O Canal is necessary for the construction of a portion of the PATH Project. PATH will be constructed from the existing Amos Substation in Putnam County, West Virginia to the proposed Welton Spring Substation, to be located approximately two miles north of Old Fields in Hardy County, West Virginia, and continuing to the proposed Kemptown Substation to be located approximately three miles southeast of New Market, in Frederick County, Maryland. The following maps of the proposed route for the PATH Project and crossing of C&O Canal are provided as part of this application:

- Attachment 1 – Proposed Route of PATH Project
- Attachment 2 – Proposed PATH Route - Welton Spring to Kemptown Segment
- Attachment 3 – PATH C&O Canal Crossing ROW Diagram
- Attachment 4 – Topographic map of Welton Spring to Kemptown Segment
- Attachment 5 – Viewshed map for Crossing of the C&O Canal

(a) Type of system or facility, (e.g., canal, pipeline, road): A 765 kV electric transmission line.

(b) Related structures and facilities: Support structures, conductors, shield wires, guy wires, insulators, clamps and construction/maintenance roads.

(c) Physical specifications (length, width, grading, etc.): PATH will require a 200 foot wide right-of-way over the C & O Canal, with a distance over the C&O Canal property of approximately 400 feet. The proposed route over the C&O Canal will be adjacent to (on the north side) existing transmission right-of-ways for the 138 kV Millville-Doubs transmission facility operated by The Potomac Edison Company (“Potomac Edison”) and the 500 kV Mt. Storm-Doubs transmission facility operated by Dominion Virginia Power. A map of this proposed crossing is included as Attachment 3 and a further description of the route across the C&O Canal is provided in response to item #13a.

The proposed crossing of the C&O Canal will be an aerial crossing only, with no support structures located on NPS properties. The transmission line will be strung from a lattice steel tower placed on the west bank of the Potomac River, across the Potomac River and C&O Canal, to another lattice steel tower placed on a cliff to the east of the C&O Canal. The lattice steel structure is depicted in Attachment 6¹ and will use four foundations supporting three phases. Each phase will consist of six conductors arranged in a circular-shaped bundle about 30 inches in diameter. Each individual conductor will be approximately 1 inch in diameter composed of aluminum wire strands wrapped around

¹ For the overall PATH Project, different line configurations may be used depending on the presence of existing transmission infrastructure and site-specific conditions. The most commonly used structure will be an “H frame” structure.

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inner strands of steel. The phases will be suspended by two strings of porcelain insulators arranged in a “V” pattern. Above the conductors will be two lightning shield optical ground wires. These fiber optic wires also will provide for communications involved in the control of PATH.

(d) Term of years needed: Life of the facility.

(e) Time of year of use or operation: Year-round operations.

(f) Volume or amount of product to be transported: PATH will be a 765 kV electric transmission line.

(g) Duration and timing of construction: The projected in-service date for the PATH Project is June 1, 2014. Right-of-way acquisition, permitting and construction of the PATH Project will require an estimated four years to complete. Construction will likely be staged throughout the project and the timing of construction near and over the NPS property will be determined after further review of the project.

(h) Temporary work areas needed for construction: The need for any temporary work areas on any C&O Canal property has yet to be determined. To the extent required, further information on the nature and scope of such temporary work areas will be developed in the context of an analysis pursuant to applicable requirements under the National Environmental Policy Act (“NEPA”).

Response to # 12: Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

PATH-Allegheny will finance, construct, own, operate and maintain the segments of PATH that will cross the C&O Canal. PATH-Allegheny is a limited liability company, the ownership of which is controlled by Allegheny Energy, Inc. (“Allegheny”).

Allegheny is the ultimate parent company of PATH-Allegheny. Allegheny has extensive experience in the construction, operation and maintenance of transmission facilities. Allegheny is an investor-owned, public utility holding company and its operating subsidiaries own and operate transmission and generating facilities and provide reliable electric service to over 1.5 million customers in West Virginia, Pennsylvania, Maryland and Virginia. Allegheny’s operating revenues are approximately \$ 3 billion annually, and its adjusted net income in 2007 was approximately \$385 million.

Allegheny’s subsidiary, Potomac Edison, currently operates and maintains transmission facilities crossing the C&O Canal parallel to the proposed crossing of the C&O Canal by PATH.

The Federal Energy Regulatory Commission (“FERC”) has approved a formula rate for the recovery of the costs associated with the construction, operation and maintenance of the PATH Project.

Response to #13a: Describe other reasonable alternative routes and modes considered.

(1) Description of Criteria Used in Route Selection Process:

The primary goal in selecting a proposed route for PATH was to minimize the effect of the PATH Project on humans, animals and plants, and the environment, as well as cultural, historical, and recreational resources. The above-stated primary goal and the following criteria and technical guidelines² were used in arriving at recommendations for siting the PATH Project in the three states where it will be constructed.

Criteria

In identifying, evaluating, and selecting routes, the route selection team attempted to minimize:

1. Route length, circuitry, cost, and special design requirements;
2. The removal or substantial interference with the use of existing residences;
3. The removal of existing barns, garages, commercial buildings, and other nonresidential structures;
4. Substantial interference with the use and operation of existing schools, existing and recognized places of worship, existing cemeteries, and existing facilities used for cultural and historical, and recreational purposes;
5. Substantial interference with economic activities;
6. Crossing of designated public resource lands such as national and state forests and parks, large camps and other recreation lands, designated battlefields or other designated historic resources and sites, and wildlife management areas;
7. Crossing large lakes and large wetland complexes, critical habitat, and other scarce, distinct natural resources; and
8. Substantial visual impact on residential areas and public resources.

The route selection also was guided by the use of: (1) the technical expertise of engineers and other industry professionals responsible for the reliable and economic construction, operation, and maintenance of the PATH Project and other electric system facilities; (2) North American Electric Reliability Corporation (“NERC”) Reliability Standards as implemented by PJM Interconnection, L.L.C. (“PJM”); (3) industry “best practices;” and (4) the electrical need determination for the PATH Project. In implementing the foregoing route selection criteria, internal and external electric industry professionals were consulted as necessary in the consideration of any proposed routes that may be inconsistent with the application of the specific technical guidelines.

Guidelines Applicable to 765 kV Line:

1. Avoid double-circuiting or crossing existing 500 kV or 765 kV lines.
2. Do not parallel existing 765 kV lines for more than 1 mile in any particular location.

² No order of importance or weight has been assigned to these criteria and guidelines.

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3. Minimize the crossing of 345 kV and 500 kV transmission lines.
4. Minimize paralleling corridors with more than one existing 345 kV or 500 kV circuit.
5. Maintain 200 feet of centerline-to-centerline separation when paralleling existing 345 kV, 500 kV, and 765 kV transmission lines.
6. Maintain 150 feet of centerline-to-centerline separation when paralleling 138 kV or lower voltage transmission lines.
7. Minimize angles greater than 65 degrees and sloping soils more than 30 degrees (20 degrees at angle points).
8. Do not triple-circuit lines of 345 kV or greater voltage.

Early on in the development of the proposed route, representatives of PATH-Allegheny met with representatives of the NPS and other federal and state agencies to review the routing process. The input from these meetings and the *Appalachian Trail Conference, Policy on Roads and Utility Developments, 2000*, indicated that any crossing of these resources should be at an already disturbed location, such as at an existing transmission line crossing or a highway crossing. This preference for crossings at or near existing transmission lines was taken into consideration during route selection.

(2) Description of Proposed Route:

Based on the information and the analysis conducted as part of a line route evaluation, a proposed route was selected with the intent of meeting the primary goal of minimizing impacts on the natural, human, and historic resources along the route, while maintaining consistency with the previously described selection criteria and avoiding circuitous routes, extreme costs, and non-standard design requirements.

A map showing the proposed route of the Welton Spring-Kempton Segment of PATH is included as Attachment 2 and a more specific map of the proposed crossing over the C&O Canal is appended as Attachment 3.

The Welton Spring Substation is proposed to be located approximately two miles north of Old Fields in Hardy County, West Virginia. For a majority of the proposed route's length, the transmission line will follow existing right-of-way corridors for electric transmission facilities. Starting from the Welton Spring Substation, the line will run in a northeasterly direction through Hardy and Hampshire Counties, West Virginia, cross the state boundary into Frederick and Clarke Counties, Virginia and then return into Jefferson County, West Virginia. From a position south of Charles Town, West Virginia, the transmission line will then run in an easterly direction. Over the remainder of the proposed route, the facility will be situated in Loudoun County, Virginia and Frederick County, Maryland.

C&O Canal Crossing Description

PATH-Allegheny seeks a right-of-way authorization over the C&O Canal which will be 200 feet wide and approximately 400 feet in length. This crossing will be in conjunction with a crossing of the Potomac River (which parallels the C&O Canal). The proposed route across both the Potomac River and the C&O Canal will be approximately 1,000 feet

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wide at the crossing, although this segment of the transmission line (i.e., the span between structures) will be longer because it will reach from the top of the bank on each side of the river. The transmission line will be strung across the Potomac River and C&O Canal from a lattice steel tower located on private property on the west bank of the Potomac River to a similar lattice steel tower located on private property to the east of the C&O Canal.

The proposed design for crossing of the C&O Canal parallels the north side of the existing Potomac Edison Millville-Doubs 138 kV line right-of-way to minimize the height and size of the structures. In addition, PATH-Allegheny intends to limit clearing over the actual C&O Canal pathway so that visibility of the transmission line from the C&O Canal will be reduced. Trees on the ridge east of the C&O Canal may need to be cleared. This design will require the expansion of the crossing corridor over the C&O Canal. The distance across the C&O Canal property will be approximately 400 feet. The right-of-way required for the transmission line crossing of the C&O Canal will be 200 feet wide, extending north from the boundary of the Potomac Edison right-of-way for the Millville-Doubs 138 kV line. As reflected in Attachment 3, some of the right-of-way for the PATH Project will overlap existing transmission right-of-way for the Millville-Doubs 138 kV line.

From the crossing of the Potomac River and C&O Canal, the proposed route continues approximately 1.6 miles to the property where the Doubs Substation is located. Thereafter, the line will continue generally northeasterly to the proposed Kemptown Substation

(3) Discussion of Other Reasonable Alternative Routes and Modes Considered:

The PATH Project was first identified by PJM as necessary to address long-term reliability issues in the PJM Region in the 2007 PJM Regional Transmission Expansion Plan (“RTEP”). The project continued to be recognized as needed for reliability purposes in the 2008 RTEP. Recent analyses by PJM project violations of NERC Reliability Standards as early as June 1, 2014 if the PATH Project is not constructed.

The following alternative routes and modes were considered by PJM:

(a) Non-Transmission Solutions

PJM considered the possibility of market-driven additions of new generation capacity as well as demand-side management/energy efficiency programs located in the eastern PJM Region as potential non-transmission solutions for resolving the identified reliability needs.

(b) Upgrading or Expanding Existing Transmission Lines

Electrical alternatives such as reconductoring (i.e., installing new conductors) of existing transmission facilities to enable the overloaded facilities to transport more energy also were considered.

(c) Transmission Line Alternatives

In addition to PATH, several transmission line alternatives were evaluated prior to selecting PATH. These alternatives included:

- A new Amos to Bedington 765 kV line and twin 500 kV lines from Bedington to Kemptown (*i.e.*, the PATH Original Configuration directed in the 2007 RTEP);
- A new 500 kV line from Kammer to 502 Junction to Hunterstown to Three Mile Island;
- A new 500 kV line from Kammer to Prexy to Conemaugh to Three Mile Island;
- A new 765 kV line from a tap on the Kammer to South Canton line extended to Keystone and Sunbury;
- A new 765 kV line from Kammer to Three Mile Island;
- A new 500 kV line from Keystone to Sunbury; and
- A new 500 kV line from Keystone to Three Mile Island.

(d) Alternatives for Crossings of the C&O Canal

During initial route evaluations, the PATH Project was premised upon an original configuration consisting of a 765 kV transmission line from the Amos Substation in Putnam County, West Virginia to the existing Bedington Substation in Berkeley County, West Virginia, and continuing from the Bedington Substation with two 500 kV transmission lines eastward to the proposed Kemptown Substation in Frederick County, Maryland. The original configuration likely would have required two crossings of the C&O Canal rather than the currently proposed single crossing. For the original configuration, consideration was given to several possible locations for the crossings over the C&O Canal at points north of the currently proposed single crossing as well as an alternative that would use a route across the C&O Canal that is similar to what is now proposed. In October 2008, PJM, at the request of PATH-Allegheny, considered a re-configuration of PATH consisting of a single 765 kV transmission line from Amos Substation to the proposed Kemptown Substation with a new intermediate substation (now known as Welton Spring Substation). PJM determined that the re-configuration would resolve the anticipated violations of NERC Reliability Standards that would have been resolved by the original configuration and authorized the use of the re-configuration for the construction of the PATH Project. As a result of the re-configuration of the PATH Project, the northern route crossings over the C&O Canal which were in closer proximity to other NPS properties, including certain Civil War battlefields, were eliminated from further consideration.

Response to # 13b: Why were these alternatives not selected.

(1) Non-Transmission Alternatives

PJM determined that it is unlikely that sufficient amounts of new generation capacity or demand-side management/energy efficiency resources can be implemented in the densely developed metropolitan areas of the eastern PJM Region to offset entirely the need for additional backbone transmission capability. The recent slow pace of net additions of generation capacity in this area, particularly when considered together with increasingly stringent environmental restrictions and increasingly contentious local opposition to siting of such facilities, makes it highly unlikely that the need for the addition of new, high-voltage transmission capability could be avoided through additional generation capacity in the vicinity of the load centers of northern New Jersey, Philadelphia, Baltimore, Washington, D.C., and Northern Virginia.

Similarly, demand-side management and energy efficiency resources cannot be realistically expected to substitute for new bulk transmission capability to serve customers in eastern PJM. When dealing with complex interregional electric systems, demand-side management/energy efficiency estimates must be realistic to ensure that system reliability is maintained. Unlike a generator, demand-side management or energy efficiency resources are not expected to provide steady firm capacity output over an extended period of time.

Accordingly, for purposes of long-term planning for total system adequacy, substituting demand-side management and/or energy efficiency resources for incremental transmission capability could require several times the equivalent amount of new generation that would be needed to offset the new transmission capacity. Demand-side management/energy efficiency does not produce a steady stream of megawatts (MWs) equivalent output because it is normally cycled over a given time period (*i.e.*, load would be switched off and on to ensure minimal impact to the provider, rather than switched off for the entire duration of the system need). Also, demand-side management/energy efficiency is produced in a variety of diverse programs, which also result in varied measurements.

Additional information relating to this matter is included in materials submitted as part of PATH's applications for certificates of public convenience and necessity before West Virginia, Virginia and Maryland. Due to the size of these materials, PATH-Allegheny will be providing this information to the NPS in a supplemental filing.

(2) Upgrading or Expanding Existing Transmission Facilities

The electrical need for PATH is caused by voltage violations and thermal overloads projected to occur as early as June 1, 2014. Additional thermal overloads are projected to occur in 2015, 2016, 2017, 2019, 2020, 2022, 2023 and 2024. Upgrading or

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expanding existing transmission facilities will not resolve the voltage violations projected for June 1, 2014 and the thermal overloads projected in subsequent years.

Additional information relating to this matter is included in materials submitted as part of PATH's applications for certificates of public convenience and necessity before West Virginia, Virginia and Maryland. Due to the size of these materials, PATH-Allegheny will be providing this information to the NPS in a supplemental filing.

(3) Transmission Line Alternatives

As noted earlier, in addition to the PATH Project, several transmission line alternatives were evaluated prior to selecting the PATH Project. These alternatives included:

- A new Amos to Bedington 765 kV line and twin 500 kV lines from Bedington to Kemptown (*i.e.*, the PATH Original Configuration directed in the 2007 RTEP);
- A new 500 kV line from Kammer to 502 Junction to Hunterstown to Three Mile Island;
- A new 500 kV line from Kammer to Prexy to Conemaugh to Three Mile Island;
- A new 765 kV line from a tap on the Kammer to South Canton line extended to Keystone and Sunbury;
- A new 765 kV line from Kammer to Three Mile Island;
- A new 500 kV line from Keystone to Sunbury; and
- A new 500 kV line from Keystone to Three Mile Island.

Each of the transmission line alternatives was evaluated to determine the impact of the alternative on the loading of thirteen key 500 kV facilities throughout the 15-year planning horizon. The Amos Substation to Bedington Substation to Kemptown Substation alternative (the "PATH Original Configuration") that was chosen and approved in the 2007 RTEP had the most significant impact on relieving the loadings of the key 500 kV facilities throughout the 15-year planning horizon.

The PATH Original Configuration was later refined due to siting considerations around the Bedington substation to the current PATH Project. During the routing study this electrical configuration was reconsidered as a result of interactions with government agencies, public input, and a desire to identify a solution that minimizes the impact on communities and the environment. Each of these elements played a role in spurring additional review and revision of the electrical configuration, ultimately resulting in the current configuration of the PATH Project.

Based on a review of all of the alternatives considered, PJM recommended the construction of the PATH Project as the best solution because the PATH solution was the most effective at resolving the multiple reliability criteria violations.

With respect to the specific, proposed route for the PATH Project, the routing criteria and technical guidelines that informed the selection of the proposed route are described above in response to question 13a. The proposed route, including its crossing over the C&O

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Canal, is consistent with generally accepted routing philosophies of minimizing impacts to the environmental, cultural and social features of the study area. Well-established siting best practices, such as utilizing existing corridors where appropriate, were incorporated early in the routing analysis. Moreover, public feedback from the open houses suggested that following existing transmission lines was highly favored, and so additional focus was placed on utilizing existing corridors wherever possible.

(4) Alternative Crossings of the NPS Property

The other crossings considered for the C&O Canal under the PATH Original Configuration are not feasible crossings with the new configuration of the PATH Project. As an initial matter, the PATH Original Configuration was determined to have many routing constraints in and around the Bedington Substation and Jefferson County, West Virginia, as well as in areas further to the east in Washington and Frederick Counties, Maryland. Further such a configuration, most likely, would have resulted in two crossings of the C&O Canal. Information gathered through agency consultations, public open houses, and time spent in the field reviewing a wide range of potential routes provided insight into the high level of residential development and mosaic of state and federal lands that PATH potentially would affect if it crossed these areas. For example, routes through Washington County and northern Frederick County would inescapably cross some sensitive state lands such as the Maryland Department of Natural Resources park lands, open space, and conservation easements.

The single 765 kV line configuration as now proposed for the PATH Project as compared to the PATH Original Configuration continues to address the projected violations of NERC Reliability Standards identified by PJM; reduces the overall length of the proposed line by approximately 70 to 90 miles and greatly reduces impacts to the human and natural environment. Even using a single 765 kV line over the more northerly crossing routes would have required approximately 15 to 20 miles or more of additional construction of transmission line and would have encountered the same concerns that were raised by the use of such routes under the PATH Original Configuration.

Response to # 13c: Give explanation as to why it is necessary to cross Federal Lands.

The C&O Canal is a linear system which must be crossed in order to accomplish the project purpose of constructing a transmission line between the Amos Substation in West Virginia and the Kemptown Substation in Maryland. The proposed route for PATH, which includes the proposed crossing of the C&O Canal, was selected after completion of an extensive line route evaluation. Based on specified technical and siting criteria, the proposed route was determined to minimize the overall effect of the line on humans, animals and plants, and the environment, as well as cultural, historical and recreational resources.

Response to # 15: Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (*construction, operation, and maintenance*); (b) estimated cost of next best alternative; and (c) expected public benefits.

The PATH Project has been identified by PJM as necessary to address long-term reliability issues in the PJM Region. The electrical need for PATH is caused by voltage violations and thermal overloads projected to occur as early as June 1, 2014. Additional thermal overloads are projected to occur in 2015, 2016, 2017, 2019, 2020, 2022, 2023 and 2024. Upgrading or expanding existing transmission facilities will not resolve the voltage violations projected for June 1, 2014 and the thermal overloads projected in subsequent years.

15a. Estimated Cost of Proposed PATH Project

The estimated total cost of the PATH Project is approximately \$1.8 billion. This includes the Welton Spring-Kempton Segment which will cross the C&O Canal property (as well as the Harpers Ferry NHP and Appalachian Trail, which is the subject of a separate application for right-of-way authorization), the Amos-Welton Spring Segment, modifications at Amos Substation and construction of the Welton Spring and Kempton Substations.

15b. Estimated Cost of Next Best Alternative

The estimated cost of the next best alternative is not available. Analysis of reasonable alternatives will be analyzed in a comprehensive analysis pursuant to NEPA.

15c. Expected Public Benefits

As described above, the PATH Project was identified to resolve a number of anticipated violations of NERC Reliability Standards. A number of public benefits will be realized through the completion of the PATH Project, including:

- Significant improvement to the reliability of the existing PJM transmission system;
- Reduction in loading on several highly congested transmission facilities;
- Relief to voltage and thermal limitations; and
- Increased transmission transfer capability.