

New 500kV lines from Chanceford to Nottingham and Nottingham to Keeney

General Information

Proposing entity name	Company confidential and proprietary information.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Company confidential and proprietary information.
Company proposal ID	Company confidential and proprietary information.
PJM Proposal ID	869
Project title	New 500kV lines from Chanceford to Nottingham and Nottingham to Keeney
Project description	New 500kV lines from Chanceford (PPL) to Nottingham (PECO) and Nottingham to Keeney (DPL). Expand Nottingham to add 5 breaker 500kV ring bus with future expandability. Create a new 500/230kV auto transfer termination in to the existing Nottingham 230kV bus. Downstream upgrades include 220-05 rebuild and substation upgrades, additional reconductor of 220-98 and 220-96 with associated terminal upgrades. 500kV portion of line to Keeney from Nottingham to Colora tap requires 230kV rebuild of Conowingo line.
Email	Company confidential and proprietary information.
Project in-service date	06/2034
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Company confidential and proprietary information.

Project Components

1. Nottingham Substation Upgrades
2. New Chanceford-Nottingham 500kV Line
3. 220-05 Bradford-Daleville Tap Rebuild

4. 220-05 Nottingham-Daleville Tap
5. 220-05 Bradford Substation Upgrades
6. 220-96 Bradford-Jennersville
7. 220-96 Clay-Jennersville Reconductor
8. 220-98 Nottingham-Clay Reconductor
9. Establish new 500kV Line Terminal at Chanceford
10. Establish new 500kV Line Terminal at Keeney
11. New Nottingham-Keeney 500kV Line (PECO)
12. Acceleration b4052.10 (Quince Orchard 230kv terminal upgrades)
13. Acceleration b4052.9 (Brighton 500kV terminal upgrades)
14. BGE line 2381 from Waugh Chapel to Solley Rd Rating Upgrade
15. Chichester 230kV Substation Reconfiguration
16. New Nottingham-Keeney 500kV Line (DPL)
17. Rebuild 220-84 Linwood-Claymont 230 kV Tie-line (PECO Portion)
18. Rebuild 220-85 Linwood-Edgemoor 230 kV Tie-line (PECO Portion)
19. Upgrade 220-31 Bradford T2-Tap at Bradford substation
20. 220-48 Bradford 230kV Substation Upgrade
21. 220-25 Middletown 230kV Substation Upgrades
22. Acceleration b4036.3 (Keystone 230kV Terminal Upgrades)
23. Chichester-Post 220-39 Chichester Substation Upgrade
24. Linwood-Chichester 220-43 Operating Temperature Adjustment
25. Linwood-Post 220-97 Operating Temperature Adjustment
26. 220-05 Nottingham Substation Upgrades

Substation Upgrade Component

Component title	Nottingham Substation Upgrades
Project description	Company confidential and proprietary information.
Substation name	Nottingham

Substation zone	PECO		
Substation upgrade scope	At Nottingham 230kV Bus Tie 7-8, replace circuit breaker #785 with a 4000 Amp 63kA 230kV circuit breaker; replace two (2) 230kV disconnect switches #783 and #787; replace two (2) station cables; replace one (1) busbar; replace one (1) tubular bus; and replace two (2) relays. At Nottingham 230kV Bus Tie 8-9, replace circuit breaker #895 with a 4000 Amp 63kA 230kV circuit breaker; replace two (2) 230kV disconnect switches #893 and #897; replace two (2) station cables; and replace one (1) busbar. Expand existing Nottingham substation to create a 5-breaker 500kV ring bus. The substation shall be designed and sited to support future expansion to a 4-leg BaaH configuration.		
Transformer Information			
	Name	Capacity (MVA)	
Transformer	Nottingham 500/230kV	1500	
	High Side	Low Side	Tertiary
Voltage (kV)	500	230	
New equipment description	At Nottingham 230kV Bus Tie 7-8, replace circuit breaker #785 with a 4000 Amp 63kA 230kV circuit breaker; replace two (2) 230kV disconnect switches #783 and #787; replace two (2) station cables; replace one (1) busbar; replace one (1) tubular bus; and replace two (2) relays. At Nottingham 230kV Bus Tie 8-9, replace circuit breaker #895 with a 4000 Amp 63kA 230kV circuit breaker; replace two (2) 230kV disconnect switches #893 and #897; replace two (2) station cables; and replace one (1) busbar. Following the bus upgrades for bus ties 7-8 and 8-9, the facilities will have the following ratings: · Summer Normal Rating: 1480 MVA · Summer Emergency Rating: 1840 MVA · Summer Load Dump Rating: 2021 MVA · Winter Normal Rating: 1826 MVA · Winter Emergency Rating: 2111 MVA · Winter Load Dump Rating: 2262 MVA · Light Load Normal Rating: 1660 MVA · Light Load Emergency Rating: 1850 MVA · Light Load Load Dump Rating: 2114 MVA Install a new Nottingham T3 500/230kV transformer into the new Nottingham 500kV substation to supply the existing Nottingham 230kV substation. The ratings for the new transformer facility will be: · Summer Normal Rating: 1553 MVA · Summer Emergency Rating: 1850 MVA · Summer Load Dump Rating: 2114 MVA · Winter Normal Rating: 1823 MVA · Winter Emergency Rating: 2134 MVA · Winter Load Dump Rating: 2373 MVA · Light Load Normal Rating: 1766 MVA · Light Load Emergency Rating: 2074 MVA · Light Load Load Dump Rating: 2318 MVA For the new Nottingham 500kV substation, a minimum 5000 Amp rating should be used for 500kV bus conductors, circuit breakers, disconnects, and other substation components to meet anticipated future load requirements. The substation will be designed to have a minimum interrupting capacity of 63kA, including the ground grid, foundations, structures, bus work, and disconnect switches, to support the installation of 63kA 500kV circuit breakers.		

Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$79,779,758.00
Component cost (in-service year)	\$85,553,995.00
Greenfield Transmission Line Component	
Component title	New Chanceford-Nottingham 500kV Line
Project description	Company confidential and proprietary information.
Point A	Chanceford
Point B	Nottingham
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	4503.000000	5022.000000
Winter (MVA)	5206.000000	5802.000000
Conductor size and type	3-959.6 kcmil 22/7 Suwannee/ACSS/TW/MA2	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	The proposed Chanceford to Nottingham 500 kV line with ROW extension will extend approximately 27 miles between Chanceford and Nottingham. The route generally parallels existing transmission lines to the southeast, then crosses the Susquehanna River before continuing east to Nottingham.	
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes. The Susquehanna River crossing will involve steeper terrain changes, but the design plans to span this area as much as possible.	
Right-of-way width by segment	The first segment of the Chanceford-Nottingham route extends approximately 1.1 miles from Chanceford Substation to the intersection of the existing 230 kV and 500 kV lines. The existing right-of-way (ROW) is approximately 200' wide and is anticipated to be expanded by 100'. The second segment extends approximately 11.6 miles from the intersection of the existing 230 kV and 500 kV lines to Bramah Substation. The existing ROW width varies. Right-of-way width is anticipated to be extended by 100'. The third segment extends approximately 0.5 mile from Bramah Substation to the Susquehanna River crossing. Approximately 200' of ROW is available, and no additional ROW acquisition is anticipated. The fourth segment consists of approximately 1.7-mile Susquehanna River crossing. Existing ROW width is expected to be utilized, and additional ROW requirements are not applicable to this crossing. The fifth segment extends approximately 11.2 miles from the river crossing to Nottingham Junction. The existing ROW is approximately 350' wide, and no additional ROW acquisition is anticipated. The final segment extends approximately 0.5 mile from Nottingham Junction to Nottingham Substation. The existing ROW is approximately 350' wide, and no additional ROW acquisition is anticipated.	
Electrical transmission infrastructure crossings	The route from Chanceford Substation to Nottingham Substation will cross seven transmission lines, including one at 69 kV, one at 115 kV, one at 138 kV, two at 230 kV, and two at 500 kV.	

Civil infrastructure/major waterway facility crossing plan	US/State/County Permits will be requested and acquired for all necessary line crossings. When possible, road line crossings will be as close to perpendicular as possible. Extra precautions will be taken by construction teams to ensure the safety of the public when installing road crossing spans. For any Waters of the US crossings, an Army Corps of Engineers permit will be required. This permit will be requested, and all requirements will be met. FAA permits will be requested/acquired for all structures.
Environmental impacts	Environmental research will be acquired for the entire project area, and line will comply with all necessary environmental regulations. A Transmission Line Siting Application will be required for the state utility commissions. Army Corps of Engineers permit approval required USFWS permit approval required Pennsylvania DER permit approval required USEPA permit approval required State and local environmental permit(s) will be required
Tower characteristics	Engineered steel monopoles will be used along the entire 500kV route except for the Susquehanna River crossing location. The poles are anticipated to have baseplates anchored to reinforced-concrete-drilled-shaft foundations. Single-circuit monopoles will carry the proposed 500 kV circuit in either a vertical or delta conductor configuration, depending on ROW constraints along the route. The 0.6-mile segment of the existing 230 kV circuit between Nottingham Junction and Nottingham Substation will be rebuilt and will be supported on single-circuit steel monopoles. These 230 kV tangent poles will be direct-embedded, while deadend poles are anticipated to have baseplates anchored to reinforced concrete drilled-shaft foundations. Double-circuit monopoles will support both the existing 230 kV circuit and the proposed 500 kV circuit between the Susquehanna River crossing and Bramah Substation. Tangent and running-angle monopoles will support the phase conductors from pole arms using V-string suspension insulator assemblies. Deadend insulator assemblies will also be mounted on the arms of deadend monopoles. Shield wires will be supported on arms above the phase conductors. Typical monopole spans will range from approximately 700 to 1,200 feet. Anticipated pole heights are 180' to 190' for 500 kV structures and 140' to 150' for 230 kV structures. Towers will be used for the Susquehanna River crossing. The crossing includes spans that are approximately 3,500'. The tower in the river is preliminarily estimated to be 400' to 500' tall, depending on detailed engineering, conductor selection and tension.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.

Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$277,090,049.00
Component cost (in-service year)	\$311,279,748.00
Transmission Line Upgrade Component	
Component title	220-05 Bradford-Daleville Tap Rebuild
Project description	Company confidential and proprietary information.
Impacted transmission line	220-05 Bradford-Daleville Tap
Point A	Bradford
Point B	Daleville Tap
Point C	
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)
Hardware plan description	Rebuild 230kV double-circuit monopole structures and a minimum of 2-bundled 959.6 ACSS/TW Suwannee conductor per phase.
Tower line characteristics	The existing structures are over 90 years old and nearing end of life and double-circuit monopoles will be installed along the length of the line. Only a single circuit will be installed initially.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	832.000000	927.000000
Winter (MVA)	927.000000	927.000000
Conductor size and type	2-959.6 ACSS/TW Suwannee conductor per phase.	
Shield wire size and type	OPGWs (24.7 miles)	
Rebuild line length	13.5 Miles	
Rebuild portion description	Rebuild the entire 220-05 Bradford-Daleville Tap 230kV line (13.5 miles)	
Right of way	Entire line will utilize the existing ROW.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	

Contingency	Company confidential and proprietary information.	
Total component cost	\$110,093,317.00	
Component cost (in-service year)	\$121,393,053.00	
Transmission Line Upgrade Component		
Component title	220-05 Nottingham-Daleville Tap	
Project description	Company confidential and proprietary information.	
Impacted transmission line	220-05 Nottingham-Daleville Tap	
Point A	Nottingham	
Point B	Daleville Tap	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)	
Hardware plan description	Rebuild 230kV double-circuit monopole structures and a minimum of 2-bundled 959.6 ACSS/TW Suwannee conductor per phase.	
Tower line characteristics	The existing structures are over 90 years old and nearing end of life and double-circuit monopoles will be installed along the length of the line. Only a single circuit will be installed initially.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings

Summer (MVA)	830.000000	925.000000
Winter (MVA)	927.000000	927.000000
Conductor size and type	2-959.6 ACSS/TW Suwannee conductor per phase	
Shield wire size and type	OPGWs (24.7 miles)	
Rebuild line length	11.2 Miles	
Rebuild portion description	Rebuild the entire 220-05 Nottingham-Daleville Tap 230kV line.	
Right of way	Entire line will utilize the existing ROW.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$91,336,676.00	
Component cost (in-service year)	\$100,711,274.00	
Substation Upgrade Component		
Component title	220-05 Bradford Substation Upgrades	

Project description	Company confidential and proprietary information.
Substation name	Bradford
Substation zone	PECO
Substation upgrade scope	Replace two (2) 230kV disconnect switches #249 and #251, two (2) equipment CTs, one (1) AuxCT, three (3) meters (Watt/Var/Amp), two (2) line relays and five (5) station cables. Remove existing wavetrap.
Transformer Information	
None	
New equipment description	Replace two (2) 230kV disconnect switches #249 and #251, two (2) equipment CTs, one (1) AuxCT, three (3) meters (Watt/Var/Amp), two (2) line relays and five (5) station cables. Remove existing wavetrap.
Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.

Total component cost	\$1,015,700.00
Component cost (in-service year)	\$1,156,861.00

Transmission Line Upgrade Component

Component title	220-96 Bradford-Jennersville	
Project description	Company confidential and proprietary information.	
Impacted transmission line	220-96 Bradford-Jennersville	
Point A	Bradford	
Point B	Jennersville	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)	
Hardware plan description	Existing hardwire will be reused.	
Tower line characteristics	The existing structures are double-circuit monopoles will be used for reconductoring. No new structures anticipated.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	633.000000	796.000000

Winter (MVA)	787.000000	916.000000
Conductor size and type	959.6 ACSS/TW Suwannee conductor (Single and Bundled)	
Shield wire size and type	0.638" 96-count OPGW	
Rebuild line length	19.03 Miles	
Rebuild portion description	Reconductor the 220-96 230kV line from Bradford substation to Jennersville Tap (19.03 miles)	
Right of way	Entire line will utilize the existing ROW.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$29,316,020.00	
Component cost (in-service year)	\$32,011,592.00	
Transmission Line Upgrade Component		
Component title	220-96 Clay-Jennersville Reconductor	
Project description	Company confidential and proprietary information.	

Impacted transmission line	220-96	
Point A	Clay	
Point B	Jennersville	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)	
Hardware plan description	Existing hardwire will be reused.	
Tower line characteristics	The existing structures are double-circuit monopoles will be used for reconductoring. No new structures anticipated.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	761.000000	884.000000
Winter (MVA)	798.000000	921.000000
Conductor size and type	959.6 ACSS/TW Suwannee	
Shield wire size and type	0.638" 96-count OPGW	
Rebuild line length	4.03 Miles	
Rebuild portion description	Reconductor the 220-96 230kV line from Clay substation to Jennersville Tap (4.03 miles)	

Right of way	Entire line will utilize the existing ROW.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$12,621,163.00
Component cost (in-service year)	\$13,781,665.00
Transmission Line Upgrade Component	
Component title	220-98 Nottingham-Clay Reconductor
Project description	Company confidential and proprietary information.
Impacted transmission line	220-98 Nottingham-Clay
Point A	Nottingham
Point B	Clay
Point C	

Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)	
Hardware plan description	Existing hardwire will be reused.	
Tower line characteristics	The existing structures are double-circuit monopoles will be used for reconductoring. No new structures anticipated.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	761.000000	884.000000
Winter (MVA)	798.000000	921.000000
Conductor size and type	959.6 ACSS/TW Suwannee conductor (Single and Bundled)	
Shield wire size and type	0.638" 96-count OPGW	
Rebuild line length	15.75 Miles	
Rebuild portion description	Reconductor the 220-98 230kV line from Nottingham substation to Clay Tap (8.81 miles) and 220-98 230kV line from Clay substation to Clay Tap (6.94 miles).	
Right of way	Entire line will utilize the existing ROW.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		

Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$30,518,288.00
Component cost (in-service year)	\$33,592,317.00
Substation Upgrade Component	
Component title	Establish new 500kV Line Terminal at Chanceford
Project description	Company confidential and proprietary information.
Substation name	Chanceford
Substation zone	PPL
Substation upgrade scope	The Chanceford substation is currently configured as a 3-leg BAAH with no spare positions. The new 500kV Chanceford-Keeney line will require the buildout of a 4th leg. The 4th leg will include two breakers, each tied to its corresponding bus.
Transformer Information	
None	
New equipment description	Requires installation of 6 (6) 500kv IPO Circuit Breakers, eighteen (18) 500kV Motor-operated Disconnect Switches, and three (3) CCVTs. New structures and foundations are only general estimates since we have no arrangement to reference.
Substation assumptions	No additional real estate will be required to expand the existing layout.

Real-estate description	No additional real estate required.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$24,029,371.00
Component cost (in-service year)	\$26,186,364.00
Substation Upgrade Component	
Component title	Establish new 500kV Line Terminal at Keeney
Project description	Company confidential and proprietary information.
Substation name	Keeney Substation
Substation zone	DPL
Substation upgrade scope	Keeney substation is currently configured as a 4-position ring bus with no spare positions. Keeney can be converted to a BAAH by adding three new circuit breakers and reconfiguring the existing bus layout. This will allow for the addition of the 500kV Bramah-Keeney Line and a future position for an additional 500kV line.

Transformer Information

None

New equipment description

Requires installation of nine (9) 500kV IPO Circuit Breakers, twenty-seven (27) 500kV Motor-operated Vertical Break Disconnect Switches, six (6) 500kV Motor-operated Vertical Break Switches with ground switch, twelve (12) CCVT's, twelve (12) 500kV lightning arresters, two (2) station service transformers, and one (1) 40' x 20' control enclosure. New structures and foundations will be required for all new equipment and altered bus. Structures include: two (2) A-Frame 500kV Dead-end structures, one (1) 500kV control enclosure, sixty (60) high bus support structures, sixty-six (66) low bus support structures, twelve (12) MOD high support structures, fifty-four (54) MOD low support structures, twelve (12) lightning arrester stands, and twelve (12) CCVT stands. Foundations include: eight (8) control enclosure drilled piers, sixty-six (66) drilled pier low bus support foundations, sixty (60) drilled pier high bus support foundations, twelve (12) drilled pier high disconnect support foundations, eight (8) drilled pier A Frame deadend structure foundations, twelve (12) drilled pier CCVT foundations, fifty-four (54) drilled pier low disconnect foundations, two (2) padmount SST pads, twelve (12) 500kV circuit breaker pads, and twelve (12) drilled pier lightning arrester foundations.

Substation assumptions

DPL metering will be able to be done via the line CCVTs and an added metering class CT to the line breakers. Vacuum excavation/hand digging is expected for construction in a brownfield substation. No dewatering is expected at this time, however a geotechnical report should be obtained during detailed design. Fire protection is not anticipated at this time, but will need to be verified during detailed design. Oil containment is not expected at this time, but it may be required for the new station service transformers. Ground grid spacing assumed to be 30' x 30'. This will need to be verified during detailed design. Circuit breakers will require 2-4" conduit, MOD's will require 2-4" conduit, and CCVT's will require 2-2" conduit. All sizes and lengths of cables will need to be verified during detailed design. Lighting study will need to be performed. No changes anticipated at this time. All cable lengths have been approximated for new equipment only, not existing. New Control Enclosure (40' x 20') to include AC/DC panels, security, batteries, etc. New Control Enclosure (40' x 20') is sized to accommodate future cutovers of existing 500kV equipment. New conduits installed will be tapped into the new trench. Structures and foundations match the existing substation except for dead-end structures. Keeney Substation's existing dead-end structures are lattice; Red Lion dead-end structures are used as a reference. The site is over 5000 SF of disturbance; it is anticipated that a soil erosion and control permit will be required. A full list of permits will be evaluated during the project's conceptual design phase. At this time, it is assumed the existing stormwater detention systems will be adequate for the planned scope of work.

Real-estate description

No additional real estate required

Construction responsibility

Company confidential and proprietary information.

Benefits/Comments

Company confidential and proprietary information.

Component Cost Details - In Current Year \$

Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$46,823,616.00
Component cost (in-service year)	\$51,297,559.00

Greenfield Transmission Line Component

Component title	New Nottingham-Keeney 500kV Line (PECO)
Project description	Company confidential and proprietary information.
Point A	Nottingham
Point B	Keeney
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	2707.000000	3016.000000
Winter (MVA)	3208.000000	3480.000000
Conductor size and type	3-959.6 kcmil 22/7 Suwannee/ACSS/TW/MA2	

Nominal voltage	AC
Nominal voltage	500
Line construction type	Overhead
General route description	The PECO portion of the proposed Nottingham-Keeney 500 kV transmission line will extend approximately 27.3 miles from Nottingham to the Delaware state line. Line will be built within existing right-of-way.
Terrain description	This segment of the line is approximately 27.3 miles in length between Nottingham Substation and Delaware state line. The route begins at Nottingham and parallels existing transmission lines across rolling hills, avoids major residential development, and through rural farmland to the southwest. After approximately 7.3 miles at an intersection of existing transmission lines at Colora Tap, the route turns east and southeast toward Keeney Substation.
Right-of-way width by segment	From Nottingham Substation to Colora Tap, the route follows an existing right-of-way approximately 300' wide. No additional right-of-way is anticipated. From Colora Tap to Colora, the route extends 1.75 miles within an existing right-of-way approximately 380' wide. No additional right-of-way is anticipated for this segment. From Colora to the Delaware state line, the route extends 18.2 miles within an existing right-of-way approximately 380' wide. No additional right-of-way is anticipated for this segment.
Electrical transmission infrastructure crossings	The proposed 500 kV transmission line will cross three (3) existing 230 kV transmission lines.
Civil infrastructure/major waterway facility crossing plan	US/State/County Permits will be requested and acquired for all necessary line crossings. When possible, road crossings will be as close to perpendicular as possible. Extra precautions will be taken by construction teams to ensure the safety of the public when installing road crossing spans. For any Waters of the US crossings, an Army Corps of Engineers permit is required. This permit will be requested, and all requirements will be met. FAA permits will be requested/acquired for all structures.
Environmental impacts	Environmental research will be acquired for the entire project area, and line will comply with all necessary environmental regulations. A Transmission Line Siting Application will be required for the state utility commissions. Army Corps of Engineers permit approval required USFWS permit approval required Pennsylvania DER permit approval required USEPA permit approval required State and local environmental permit(s) will be required

Tower characteristics	For most of this segment, single-circuit steel monopoles will carry the proposed 500 kV circuit in a vertical or delta conductor configuration, depending on the route section. Where right-of-way constraints require shared structures, approximately 9.1 miles of double-circuit steel monopoles will support both the rebuilt 230 kV circuit and the proposed 500 kV circuit. Steel monopoles are anticipated to have base plates anchored to reinforced-concrete drilled-shaft foundations. Tangent and running-angle monopoles will support the phase conductors on pole arms using V-string suspension insulator assemblies. Deadend insulator assemblies will be mounted on the arms of deadend monopoles. Shield wires will be supported on arms above the phase conductors. Typical spans are expected to range from approximately 1,000 to 1,350 feet, with pole heights of approximately 185 feet.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$172,992,711.00
Component cost (in-service year)	\$196,197,729.00
Substation Upgrade Component	
Component title	Acceleration b4052.10 (Quince Orchard 230kv terminal upgrades)
Project description	Company confidential and proprietary information.

Substation name	Quince Orchard
Substation zone	PEPCO
Substation upgrade scope	Accelerate existing baseline project scope with no additional scope added.
Transformer Information	
None	
New equipment description	NA
Substation assumptions	Acceleration from 6/1/2032 to 6/1/2031 assuming that PJM can support the outage schedule necessary to construct the projects.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$.00
Component cost (in-service year)	\$.00

Substation Upgrade Component

Component title	Acceleration b4052.9 (Brighton 500kV terminal upgrades)
Project description	Company confidential and proprietary information.
Substation name	Brighton
Substation zone	PEPCO
Substation upgrade scope	Accelerate existing baseline project scope with no additional scope added.
Transformer Information	
None	
New equipment description	NA
Substation assumptions	Acceleration from 6/1/2032 to 6/1/2031 assuming that PJM can support the outage schedule necessary to construct the projects.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.

Contingency	Company confidential and proprietary information.
Total component cost	\$.00
Component cost (in-service year)	\$.00
Substation Upgrade Component	
Component title	BGE line 2381 from Waugh Chapel to Solley Rd Rating Upgrade
Project description	Company confidential and proprietary information.
Substation name	Waugh Chapel
Substation zone	BGE
Substation upgrade scope	Remove the constraints of a limiting wire drop at the Waugh Chapel terminal and a 110544 line crossing issue to increase ratings of line 2381 from Waugh Chapel to Solley RD (previously known as 2342) to 799/945MVA SN/SE.
Transformer Information	
None	
New equipment description	NA
Substation assumptions	NA
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.

Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$3,791,181.00
Component cost (in-service year)	\$4,171,476.00
Substation Upgrade Component	
Component title	Chichester 230kV Substation Reconfiguration
Project description	Company confidential and proprietary information.
Substation name	Chichester
Substation zone	PECO
Substation upgrade scope	Install two new 230kV 4000 Amp 63kA circuit breakers #125 and #215 on the Chichester 230kV bus to create a second double-bus tie and third 230kV bus. Relocate existing 230kV CB #125 to the other side of existing CB #215. Install new CCVTs for the new Bus #2. Swap the 220-04 Chichester-Foult and 220-36 Chichester-Eddystone line terminal positions at Chichester substation. At the existing 230kV 220-04 line terminal position at Chichester substation, PECO to replace two 230kV disconnect switches #43 and #47, three meters (Watt/Var/Amp), four relays (CBF) at existing CB #045 and wave traps.
Transformer Information	
None	

New equipment description	Project will establish new 230kV double-bus ties #125-#215 and #235-#325 with the following ratings: · Summer Normal Rating: 1301 MVA · Summer Emergency Rating: 1622 MVA · Summer Load Dump Rating: 1785 MVA · Winter Normal Rating: 1604 MVA · Winter Emergency Rating: 1861 MVA · Winter Load Dump Rating: 1997 MVA · Light Load Normal Rating: 1543 MVA · Light Load Emergency Rating: 1811 MVA · Light Load Load Dump Rating: 1953 MVA At the existing 230kV 220-04 line terminal position at Chichester substation, work scope will upgrade equipment to maintain the following existing facility ratings for the 220-36 Chichester-Eddystone line: · Summer Normal Rating: 1245 MVA · Summer Emergency Rating: 1387 MVA · Summer Load Dump Rating: 1586 MVA · Winter Normal Rating: 1476 MVA · Winter Emergency Rating: 1601 MVA · Winter Load Dump Rating: 1780 MVA · Light Load Normal Rating: 1427 MVA · Light Load Emergency Rating: 1555 MVA · Light Load Load Dump Rating: 1738 MVA At the existing 230kV 220-36 line terminal position at Chichester substation, no additional work is required to maintain existing facility ratings for the 220-04 Chichester-Foulk line: · Summer Normal Rating: 927 MVA · Summer Emergency Rating: 927 MVA · Summer Load Dump Rating: 956 MVA · Winter Normal Rating: 927 MVA · Winter Emergency Rating: 927 MVA · Winter Load Dump Rating: 956 MVA · Light Load Normal Rating: 927 MVA · Light Load Emergency Rating: 927 MVA · Light Load Load Dump Rating: 956 MVA
Substation assumptions	Assessment of the existing Chichester bus configuration determined there is adequate space to add the additional equipment and perform the line terminal changes as described in the project. It is assumed that the scope is limited to the equipment in the scope. It is assumed that no expansion of the substation is required.
Real-estate description	N/A
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.

Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$6,820,000.00	
Component cost (in-service year)	\$7,551,683.00	
Greenfield Transmission Line Component		
Component title	New Nottingham-Keeney 500kV Line (DPL)	
Project description	Company confidential and proprietary information.	
Point A	Nottingham	
Point B	Keeney	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	2707.000000	3016.000000
Winter (MVA)	3208.000000	3480.000000
Conductor size and type	3-959.6 kcmil 22/7 Suwannee/ACSS/TW/MA2	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	The proposed Nottingham-Keeney 500 kV line will extend approximately 3.8 miles between Delaware stale line and Keeney substation. Line will be built within existing right-of-way.	
Terrain description	This 3.8-mile segment of the transmission parallels existing transmission lines to Keeney Substation and avoids residential areas. Terrain varies outside rural farmland and commercial and industrial areas, with slightly greater elevation changes near creeks, rivers, and ponds.	

Right-of-way width by segment	From the Delaware-Maryland state line to the first 90-degree turn, the route extends 1.2 miles within an existing right-of-way approximately 400 feet wide. No additional right-of-way is anticipated for this segment. Between the first and second 90-degree turns, the route extends 0.5 miles within an existing right-of-way approximately 300 feet wide. No additional right-of-way is anticipated for this segment. Lastly, from the second 90-degree turn to Keeney Substation, the route extends 2.1 miles within an existing right-of-way approximately 300 feet wide. No additional right-of-way is anticipated for this segment.
Electrical transmission infrastructure crossings	The proposed line will cross two (2) existing 230 kV transmission lines.
Civil infrastructure/major waterway facility crossing plan	US/State/County Permits will be requested and acquired for all necessary line crossings. When possible, road line crossings will be as close to perpendicular as possible. Extra precautions will be taken by construction teams to ensure the safety of the public when installing road crossing spans. For any Waters of the US crossings, an Army Corps of Engineers permit will be required. This permit will be requested, and all requirements will be met. FAA permits will be requested/acquired for all structures.
Environmental impacts	Environmental research will be acquired for the entire project area, and line will comply with all necessary environmental regulations. A Transmission Line Siting Application will be required for the state utility commissions. Army Corps of Engineers permit approval required USFWS permit approval required Pennsylvania DER permit approval required USEPA permit approval required State and local environmental permit(s) will be required
Tower characteristics	Engineered steel monopoles will be used along the 500 kV route from the Delaware state line to Keeney Substation. The poles are anticipated to have base plates anchored to reinforced-concrete drilled-shaft foundations. For approximately 2.1 miles, right-of-way constraints require two separate vertical monopoles at each structure location. One will replace the lattice tower carrying the existing 500 kV circuit, while the other will carry the proposed 500 kV circuit. This arrangement makes use of the existing right-of-way without placing both 500 kV circuits on shared structures. Other sections will use double-circuit monopoles to carry the proposed 500 kV circuit alongside a rebuilt 500 kV or 230 kV circuit, depending on the location. The portion with both 500 kV circuits on shared monopoles will be limited to less than one mile due to contingency considerations. Tangent and running-angle monopoles will support the phase conductors on pole arms using V-string suspension insulator assemblies. Deadend insulator assemblies will be mounted on the arms of deadend monopoles. Shield wires will be supported on arms above the phase conductors. Typical monopole spans will range from approximately 700' to 950', with pole heights of approximately 180'.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.

Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$59,354,612.00
Component cost (in-service year)	\$67,582,298.00
Transmission Line Upgrade Component	
Component title	Rebuild 220-84 Linwood-Claymont 230 kV Tie-line (PECO Portion)
Project description	Company confidential and proprietary information.
Impacted transmission line	220-84
Point A	Linwood Substation
Point B	Claymont Substation
Point C	
Terrain description	Generally flat along Amtrak ROW.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	Single 1590 ACSR "Falcon"
Hardware plan description	The existing hardware will be replaced. OPGW fiber will be installed the entire length.

Tower line characteristics	Existing transmission structures are inadequate to support proposed Dual 959.6 ACSS/TW "Suwannee" conductor.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1245.000000	1387.000000
Winter (MVA)	1476.000000	1601.000000
Conductor size and type	Dual 959.6 ACSS/TW "Suwannee"	
Shield wire size and type	0.638" 96-count OPGW	
Rebuild line length	.51 miles	
Rebuild portion description	The entire length is proposed to be rebuilt.	
Right of way	Existing ROW should be adequate.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	

Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$3,808,137.00	
Component cost (in-service year)	\$4,190,253.00	
Transmission Line Upgrade Component		
Component title	Rebuild 220-85 Linwood-Edgemoor 230 kV Tie-line (PECO Portion)	
Project description	Company confidential and proprietary information.	
Impacted transmission line	220-85	
Point A	Linwood Substation	
Point B	Edgemoor Substation	
Point C		
Terrain description	Generally flat along Amtrak ROW.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	Single 1590 ACSR "Falcon"	
Hardware plan description	The existing hardware will be replaced. OPGW fiber will be installed the entire length.	
Tower line characteristics	Existing transmission structures are inadequate to support proposed Dual 959.6 ACSS/TW "Suwannee" conductor.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings

Summer (MVA)	1192.000000	1387.000000
Winter (MVA)	1445.000000	1590.000000
Conductor size and type	Dual 959.6 ACSS/TW "Suwannee"	
Shield wire size and type	OPGW fiber (0.638" 96-count)	
Rebuild line length	.55 miles	
Rebuild portion description	The entire length is proposed to be rebuilt.	
Right of way	Existing ROW should be adequate.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$3,808,137.00	
Component cost (in-service year)	\$4,190,253.00	
Transmission Line Upgrade Component		
Component title	Upgrade 220-31 Bradford T2-Tap at Bradford substation	

Project description	Company confidential and proprietary information.	
Impacted transmission line	220-31 Bradford- T2 tap at Bradford	
Point A	Bradford	
Point B	Bradford T2-Tap	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	795 KCMIL 30/19 ACSR (MALLARD)	
Hardware plan description	Existing hardware will be reused.	
Tower line characteristics	The existing structures will be used for reconductoring. No new structures anticipated.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1159.000000	1159.000000
Winter (MVA)	1159.000000	1159.000000
Conductor size and type	Dual Suwannee 959.6 TW/ACSS Conductor	
Shield wire size and type	0.638" 96-count OPGW	
Rebuild line length	1000 ft.	

Rebuild portion description	Reconductor 1000' of Dual Suwannee 959.6 TW/ACSS Conductor at Bradford to T2-Tap at Bradford.
Right of way	Entire line will utilize the existing ROW.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$3,596,815.00
Component cost (in-service year)	\$3,980,611.00
Substation Upgrade Component	
Component title	220-48 Bradford 230kV Substation Upgrade
Project description	Company confidential and proprietary information.
Substation name	Bradford
Substation zone	PECO
Substation upgrade scope	Replace Bradford 240 CB with a standard 230 kV breaker and its two (2) associated Disconnect switches.

Transformer Information

None

New equipment description	Replace Bradford 240 CB with a standard 230 kV breaker and its two (2) associated Disconnect Switches to achieve overall facility ratings of 1126/1387 MVA Summer Normal/Summer Emergency.
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Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
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Real-estate description

Construction responsibility	Company confidential and proprietary information.
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Benefits/Comments	Company confidential and proprietary information.
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Component Cost Details - In Current Year \$

Engineering & design	Company confidential and proprietary information.
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Permitting / routing / siting	Company confidential and proprietary information.
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ROW / land acquisition	Company confidential and proprietary information.
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Materials & equipment	Company confidential and proprietary information.
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Construction & commissioning	Company confidential and proprietary information.
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Construction management	Company confidential and proprietary information.
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Overheads & miscellaneous costs	Company confidential and proprietary information.
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Contingency	Company confidential and proprietary information.
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Total component cost	\$2,721,206.00
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Component cost (in-service year)	\$3,041,106.00
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Substation Upgrade Component

Component title	220-25 Middletown 230kV Substation Upgrades
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Project description	Company confidential and proprietary information.
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Substation name	Middletown
Substation zone	PECO
Substation upgrade scope	Replace four (4) station cables for the 230kV line 220-25 at Middletown substation.
Transformer Information	
None	
New equipment description	Replace four (4) Station Cables to meet a minimum requirement of 796 MVA Summer Emergency Ratings.
Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$742,755.00
Component cost (in-service year)	\$824,996.00

Substation Upgrade Component

Component title	Acceleration b4036.3 (Keystone 230kV Terminal Upgrades)
Project description	Company confidential and proprietary information.
Substation name	Keystone
Substation zone	PENELEC
Substation upgrade scope	Accelerate existing baseline project scope with no additional scope added.
Transformer Information	
None	
New equipment description	N/A
Substation assumptions	Acceleration from 6/1/2032 to 6/1/2031 assuming that PJM can support the outage schedule necessary to construct the projects.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.

Contingency	Company confidential and proprietary information.
Total component cost	\$.00
Component cost (in-service year)	\$.00
Substation Upgrade Component	
Component title	Chichester-Post 220-39 Chichester Substation Upgrade
Project description	Company confidential and proprietary information.
Substation name	Chichester
Substation zone	PECO
Substation upgrade scope	Replace one (1) rigid bus section.
Transformer Information	
None	
New equipment description	Replace one (1) rigid bus section to increase overall facility ratings to 1462/1770/1644/1956 MVA (SN/SE/WN/WE).
Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.

Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$1,618,777.00	
Component cost (in-service year)	\$1,807,466.00	
Transmission Line Upgrade Component		
Component title	Linwood-Chichester 220-43 Operating Temperature Adjustment	
Project description	Company confidential and proprietary information.	
Impacted transmission line	220-43	
Point A	Linwood	
Point B	Chichester	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	1590 KCMIL ACSR (FALCON)	
Hardware plan description	N/A	
Tower line characteristics	No new structures.	
Proposed Line Characteristics		
	Designed	Operating

Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1648.000000	1805.000000
Winter (MVA)	1842.000000	1984.000000
Conductor size and type	1590 KCMIL ACSR (FALCON)	
Shield wire size and type	N/A	
Rebuild line length	2.27 Miles	
Rebuild portion description	Replace shunts to increase line operating temperature.	
Right of way	No ROW impacts.	
Construction responsibility	Company confidential and proprietary information.	
Benefits/Comments	Company confidential and proprietary information.	
Component Cost Details - In Current Year \$		
Engineering & design	Company confidential and proprietary information.	
Permitting / routing / siting	Company confidential and proprietary information.	
ROW / land acquisition	Company confidential and proprietary information.	
Materials & equipment	Company confidential and proprietary information.	
Construction & commissioning	Company confidential and proprietary information.	
Construction management	Company confidential and proprietary information.	
Overheads & miscellaneous costs	Company confidential and proprietary information.	
Contingency	Company confidential and proprietary information.	
Total component cost	\$199,998.00	
Component cost (in-service year)	\$205,997.00	

Transmission Line Upgrade Component

Component title	Linwood-Post 220-97 Operating Temperature Adjustment	
Project description	Company confidential and proprietary information.	
Impacted transmission line	220-97	
Point A	Linwood	
Point B	Post	
Point C		
Terrain description	Variable terrain is expected in areas outside rural farmland and commercial/industrial areas. Areas near creeks/rivers/ponds will have slightly steeper elevation changes.	
Existing Line Physical Characteristics		
Operating voltage	230	
Conductor size and type	1590 KCMIL ACSR (FALCON)	
Hardware plan description	N/A	
Tower line characteristics	No new structures.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1480.000000	1840.000000
Winter (MVA)	1826.000000	2111.000000
Conductor size and type	1590 KCMIL ACSR (FALCON)	
Shield wire size and type	N/A	

Rebuild line length	0.8 Miles
Rebuild portion description	Replace shunts to increase line operating temperature.
Right of way	No ROW impacts.
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$249,998.00
Component cost (in-service year)	\$257,497.00
Substation Upgrade Component	
Component title	220-05 Nottingham Substation Upgrades
Project description	Company confidential and proprietary information.
Substation name	Nottingham
Substation zone	PECO

Substation upgrade scope	At Nottingham substation, replace two (2) 230kV disconnect switches #53 and #57, one (1) AuxCT (metering), three (3) meters (Watt/Var/Amp), two (2) line relays and six (6) station cables. One (1) wavetrap will be removed.
Transformer Information	
None	
New equipment description	At Nottingham substation, replace two (2) 230kV disconnect switches #53 and #57, one (1) AuxCT (metering), three (3) meters (Watt/Var/Amp), two (2) line relays and six (6) station cables. One (1) wavetrap will be removed.
Substation assumptions	Assume that there is no additional land acquisition or clearance issues associated with replacing the existing equipment with the new equipment within the facility.
Real-estate description	
Construction responsibility	Company confidential and proprietary information.
Benefits/Comments	Company confidential and proprietary information.
Component Cost Details - In Current Year \$	
Engineering & design	Company confidential and proprietary information.
Permitting / routing / siting	Company confidential and proprietary information.
ROW / land acquisition	Company confidential and proprietary information.
Materials & equipment	Company confidential and proprietary information.
Construction & commissioning	Company confidential and proprietary information.
Construction management	Company confidential and proprietary information.
Overheads & miscellaneous costs	Company confidential and proprietary information.
Contingency	Company confidential and proprietary information.
Total component cost	\$2,259,000.00
Component cost (in-service year)	\$2,577,614.00

Congestion Drivers

None

Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2026W1-N11-ST2	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST5	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST6	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST7	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST16	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST17	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST31	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST32	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST33	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST46	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST49	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST50	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST51	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST52	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST53	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST54	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST66	213846	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST67	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST102	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST104	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST105	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST106	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST107	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2026W1-N11-ST111	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST112	213869	PCHBTMTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-GD-S302	213559	DELCOTAP	228401	MCKLTON	1	230	230/234	Summer Gen Deliv	Included
2026W1-GD-S560	213559	DELCOTAP	228401	MCKLTON	1	230	230/234	Summer Gen Deliv	Included
2026W1-GD-S304	213559	DELCOTAP	228401	MCKLTON	1	230	230/234	Summer Gen Deliv	Included
2026W1-GD-S303	213559	DELCOTAP	228401	MCKLTON	1	230	230/234	Summer Gen Deliv	Included
2026W1-GD-S305	213559	DELCOTAP	228401	MCKLTON	1	230	230/234	Summer Gen Deliv	Included

New Flowgates

Company confidential and proprietary information.

Financial Information

Capital spend start date 03/2027

Construction start date 01/2029

Project Duration (In Months) 87

Cost Containment Commitment

Cost cap (in current year) Company confidential and proprietary information.

Cost cap (in-service year) Company confidential and proprietary information.

Components covered by cost containment

1. Nottingham Substation Upgrades - PROPOSER
2. New Chanceford-Nottingham 500kV Line - PROPOSER
3. 220-05 Bradford-Daleville Tap Rebuild - PROPOSER
4. 220-05 Nottingham-Daleville Tap - PROPOSER
5. 220-05 Bradford Substation Upgrades - PROPOSER

6. 220-96 Bradford-Jennersville - PROPOSER
7. 220-96 Clay-Jennersville Reconductor - PROPOSER
8. 220-98 Nottingham-Clay Reconductor - PROPOSER
9. Establish new 500kV Line Terminal at Keeney - DPL
10. New Nottingham-Keeney 500kV Line (PECO) - PROPOSER
11. Acceleration b4052.10 (Quince Orchard 230kv terminal upgrades) - PEPCO
12. Acceleration b4052.9 (Brighton 500kV terminal upgrades) - PEPCO
13. BGE line 2381 from Waugh Chapel to Solley Rd Rating Upgrade - BGE
14. Chichester 230kV Substation Reconfiguration - PROPOSER
15. New Nottingham-Keeney 500kV Line (DPL) - DPL
16. Rebuild 220-84 Linwood-Claymont 230 kV Tie-line (PECO Portion) - PROPOSER
17. Rebuild 220-85 Linwood-Edgemoor 230 kV Tie-line (PECO Portion) - PROPOSER
18. Upgrade 220-31 Bradford T2-Tap at Bradford substation - PROPOSER
19. 220-48 Bradford 230kV Substation Upgrade - PROPOSER
20. 220-25 Middletown 230kV Substation Upgrades - PROPOSER
21. Chichester-Post 220-39 Chichester Substation Upgrade - PROPOSER
22. Linwood-Chichester 220-43 Operating Temperature Adjustment - PROPOSER
23. Linwood-Post 220-97 Operating Temperature Adjustment - PROPOSER
24. 220-05 Nottingham Substation Upgrades - PROPOSER

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	Yes
ROW / land acquisition	Yes
Materials & equipment	Yes
Construction & commissioning	Yes
Construction management	Yes

Overheads & miscellaneous costs	Yes
Taxes	No
AFUDC	No
Escalation	No
Additional Information	Company confidential and proprietary information.
Is the proposer offering a binding cap on ROE?	No
Is the proposer offering a Debt to Equity Ratio cap?	Company confidential and proprietary information.
Additional cost containment measures not covered above	Company confidential and proprietary information.

Additional Comments

None