

PJM Interconnection, L.L.C. 2750 Monroe Blvd. Audubon, PA 19403

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March 27, 2024

Honorable Debbie-Anne Reese, Acting Secretary Federal Energy Regulatory Commission 888 First Street, N.E., Room 1A Washington, D.C. 20426

Re: PJM Interconnection, L.L.C., Docket No. ER24-1626-000 Revisions to Incorporate Cost Responsibility Assignments for Regional Transmission Expansion Plan Baseline Upgrades; **30-Day Comment Period Requested**

Dear Secretary Reese:

In accordance with PJM Open Access Transmission Tariff ("Tariff"), Schedule 12¹ and Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. ("Operating Agreement"), Schedule 6, section 1.6, and pursuant to section 205 of the Federal Power Act,² PJM Interconnection, L.L.C. ("PJM") hereby submits amendments to Tariff, Schedule 12-Appendix A to incorporate cost responsibility assignments for 33 baseline upgrades in the recent update to the Regional Transmission Expansion Plan ("RTEP") approved by the PJM Board of Managers ("PJM Board") on February 28, 2024.³ PJM requests that the revised Tariff sections become effective on June 25, 2024, which is *90 days after the date of this filing*.

¹ All capitalized terms that are not otherwise defined herein have the meaning as defined in the Tariff, Operating Agreement, and Reliability Assurance Agreement among Load Serving Entities in the PJM Region.

² 16 U.S.C. § 824d.

³ The baseline upgrades approved by the PJM Board on February 28, 2024, with an estimated overall RTEP net increase of approximately \$144.4 million, include the following: (i) 33 PJM reliability criteria expansions and enhancements totaling approximately \$186.29 million, and scope and cost changes to existing RTEP baseline projects resulting in a net increase of approximately \$24.15 million; and (ii) cancellation of existing approved RTEP baseline projects resulting in a net decrease of approximately \$66.04 million. *See* PJM Interconnection, L.L.C., Transmission Expansion Advisory Committee (TEAC) Recommendations to the PJM Board (February 2024), https://www.pjm.com/-/media/committees-groups/committees/teac/2024/20240206/20240206-pjm-teac-board-whitepaper-feburary-2024.ashx.

I. DESCRIPTION OF FILING

A. Tariff, Schedule 12 Requirements to Designate Cost Responsibility Assignments

Pursuant to Tariff, Schedule 12, PJM is required to designate in Tariff, Schedule 12-Appendix A, cost responsibility assignments for all transmission enhancements and expansions included in the RTEP after February 1, 2013.⁴ Similarly, Tariff, Schedule 12 requires that within 30 days of the PJM Board's approval of each RTEP, or addition to the RTEP, PJM shall designate in Tariff, Schedule 12-Appendix A, and in a report filed with the Federal Energy Regulatory Commission ("Commission"), the Responsible Customers⁵ that will be subject to charges related to transmission enhancements and expansions included in the RTEP.⁶

Tariff, Schedule 12 further provides that customers designated to be responsible for assignments of costs that PJM files with the Commission shall have 30 days from the date of such filing to submit comments regarding the proposed cost responsibility assignments.⁷

Accordingly, PJM hereby submits amendments to Tariff, Schedule 12-Appendix A to include the new cost responsibility assignments for RTEP upgrades approved by the PJM Board on February 28, 2024. The revised Tariff sections containing new language, including new cost responsibility assignments, are reflected in redline and clean format in Attachment B to this filing.⁸

⁴ *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214, at PP 411, 448 (2013) (accepting revisions to Tariff, Schedule 12 modifying the cost allocation methodologies for transmission projects included in the RTEP, effective February 1, 2013).

⁵ Responsible Customers include "the customers using Point-to-Point Transmission Service and/or Network Integration Transmission Service and Merchant Transmission Facility owners that will be subject to each such Transmission Enhancement Charge." *See* Tariff, Schedule 12(b)(viii).

⁶ *Id.*; *see also* Operating Agreement, Schedule 6, section 1.6.

⁷ See Tariff, Schedule 12(b)(viii).

⁸ The revised Tariff sections do not include any proposed rates or charges for recovery of any system upgrade costs. In accordance with Tariff, Schedule 12, recovery of the costs of such facilities that the RTEP requires Transmission Owners to construct, own and/or finance is governed by the Transmission Owners' established rates.

1. Assignment of Cost Responsibility for Regional Facilities or Necessary Lower Voltage Facilities

PJM amends Schedule 12-Appendix A to include the cost responsibility for four (4) new transmission enhancements or expansions needed for reliability that are Regional Facilities or Necessary Lower Voltage Facilities⁹ included in the most recent update to the RTEP approved by the PJM Board on February 28, 2024.¹⁰

The cost responsibility assignment for the Regional Facilities and Necessary Lower Voltage Facilities is based on the hybrid cost allocation methodology approved by Commission order issued on March 22, 2013.¹¹ Pursuant to this hybrid methodology, 50 percent of the costs of the Regional Facilities or Necessary Lower Voltage Facilities are allocated on a region-wide postage stamp basis while the other 50 percent is allocated to specifically-identified beneficiaries.¹²

The region-wide, postage stamp allocations for each Transmission Owner zone are based on its annual load-ratio share using the applicable zonal loads at the time of each Transmission Owner's annual peak load from the 12-month period ending October 31 of the year preceding the year for which the annual cost responsibility allocation is determined.¹³ Similarly, the cost responsibility assignments for a new Regional Facility to the owners of merchant transmission

⁹ As defined in PJM Tariff, Schedule 12, section (b)(i), Regional Facilities include transmission enhancements and expansions that, among other things, will operate at or above 500 kV or will be double-circuit 345 kV facilities; and Necessary Lower Voltage Facilities include transmission enhancements and expansions that operate below 500 kV, or 345 kV in the case of double-circuit 345 kV facilities, that must be constructed or strengthened to support new Regional Facilities.

¹⁰ The Regional Facilities or Necessary Lower Voltage Facilities included in the RTEP upgrades are b3780.15, b3780.17, b3796.0, and b3800.52.

¹¹ *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214, at PP 411, 448.

¹² Schedule 12 provides different methodologies to identify and allocate costs to specific beneficiaries depending on whether the project is designed to address one or more reliability or operational adequacy and performance issues ("Reliability Projects") or to relieve one or more economic constraints (*i.e.*, "Economic Projects"). Tariff, Schedule 12(b)(i)(A)(2).

¹³ See Tariff, Schedule 12(b)(i)(A).

facilities with Firm Transmission Withdrawal Rights are based on the merchant transmission facilities' annual peak load (not to exceed actual Firm Transmission Withdrawal Rights set forth in their respective Interconnection Service Agreements) from the 12-month period ending October 31 of the year preceding the year for which the annual cost responsibility allocation is determined. The annual peak loads used to determine the new annual cost responsibility assignments for the Regional Facilities included in this filing are the 2023 peak loads.¹⁴

The Regional Facilities are reliability projects; therefore, the second 50 percent of the costs of the Regional Facilities are allocated using the "solution-based" distribution factor, or DFAX, methodology set forth in Tariff, Schedule 12(b)(iii). The solution-based DFAX methodology evaluates the projected relative use on the new facility by the load of each transmission zone or merchant transmission facility and allocates costs based on such usage. More specifically, to determine cost responsibility under the DFAX methodology, based on a computer model of the electric network and using power flow modeling software, PJM calculates distribution factors, represented as decimal values or percentages, which express the portions of a transfer of energy from a defined source to a defined sink that will flow across a particular transmission facility or group of transmission facility by the load of each transmission facility use of the specific transmission facility by the load of each transmission facility or factors represented as decimal values. These distribution factors represent a measure of the relative use of the specific transmission facility by the load of each transmission zone or merchant transmission facility and a factors represent a measure of the relative use of the specific transmission facility by the load of each transmission zone or merchant transmission facility are proved by a power flow analysis.¹⁵

¹⁴ *PJM Interconnection, L.L.C.*, 2023 RTEP Annual Update Filing, Docket No. ER23-712-000 (Dec. 22, 2022) ("2023 Cost Allocation Update Filing"). *See also PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,101 (2023), *reh'g denied*, 183 FERC ¶ 62,035 (2023) (accepting 2023 Cost Allocation Update Filing).

¹⁵ See Tariff, Schedule 12(b)(iii).

2. Cost Responsibility Assignments for Upgrades Included in the RTEP that are Lower Voltage Facilities Needed for Reliability and With Estimated Costs Greater than \$5 Million

Consistent with Tariff, Schedule 12, PJM submits amendments to the Tariff, Schedule 12-Appendix A to include the cost responsibility assignments for transmission enhancements or expansions that are not Regional Facilities ("Lower Voltage Facilities").¹⁶ On February 28, 2024, the PJM Board approved nine (9) enhancements or expansions, which are included in this filing, that are Lower Voltage Facilities required to address reliability needs and estimated to cost more than \$5 million for which PJM applied the solution-based DFAX analysis described in Tariff, Schedule 12(b)(iii).¹⁷

3. Cost Responsibility for Transmission Enhancements or Expansions Costing Less than \$ 5 Million

The Tariff, Schedule 12, section (b)(vi) provides that notwithstanding Tariff, Schedule 12, sections (b)(i), (b)(ii), (b)(iv) and (b)(v), cost responsibility for an enhancement or expansion for which the good faith estimate of the cost of such enhancement or expansion included for the first time in the RTEP does not equal or exceed \$5 million shall be assigned to the zone where the enhancement or expansion is to be located. Consistent with Tariff, Schedule 12, section (b)(vi), PJM proposes revisions to Tariff, Schedule 12-Appendix A to include cost responsibility assignments for seven (7) enhancements or expansions needed for reliability that are included in the RTEP for the first time and do not equal or exceed \$5 million.¹⁸ Therefore, consistent with

¹⁶ See Tariff, Schedule 12(b)(ii)(A) ("If the Lower Voltage Facility is a Reliability Project, [PJM] shall use the DFAX analysis described in subsection (b)(iii) . . . of this Schedule 12 as applicable;"). As defined in Tariff, Schedule 12(b)(ii), Lower Voltage Facilities include transmission enhancements and expansions that are not Regional Facilities or Necessary Lower Voltage Facilities.

¹⁷ The Lower Voltage Facilities are b3780.14, b3780.16, b3791.0, b3792.0, b3793.1, b3793.2, b3793.3, b3794.1, and b3794.2.

¹⁸ The enhancements and expansions allocated pursuant to Tariff, Schedule 12, section (b)(vi) include the following: b3785.1, b3787.1, b3788.1, b3788.2, b3840.1, b3843.1, and b3844.1

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Tariff, Schedule 12, section (b)(vi), cost responsibility for such enhancements or expansions shall be allocated 100 percent to the zone of the Transmission Owner where the enhancements or expansions are to be located.

4. Cost Responsibility Assignments for Enhancements or Expansions that Address Reliability Violations on Transmission Facilities Operating At or Below 200 kV

Tariff, Schedule 12, section (b)(xvi), provides that solutions for reliability violations on a facility operating at or below 200 kV not included in a competitive proposal window pursuant to Operating Agreement, Schedule 6, section 1.5.8(c) will be allocated 100 percent to the zone in which the transmission facilities will be located.¹⁹ Consistent with Tariff, Schedule 12, section (b)(xvi), PJM proposes revisions to Tariff, Schedule 12-Appendix A to include cost responsibility assignments for six (6) reliability enhancements or expansions²⁰ to address reliability violations on transmission facilities operating at or below 200 kV that were not included in a competitive proposal window. Therefore, consistent with Tariff, Schedule, section (b)(xvi), cost responsibility for such enhancements shall be allocated 100 percent to the zone in which the facilities will be located.

5. Cost Responsibility Assignments that Address Spare Parts, Replacement Equipment and Circuit Breakers Independently Included in the RTEP

Tariff, Schedule 12, section (b)(iv)(C) provides that cost responsibility for circuit breakers independently included in the RTEP and not a part of the design specifications of a transmission

¹⁹ *PJM Interconnection, L.L.C.*, 158 FERC ¶ 61,124 (2017) (accepting Tariff, Schedule 12, section (b)(xvi) cost allocation methodology, effective August 26, 2016, to assign costs of projects exempted from a proposal window pursuant to Operating Agreement, Schedule 6, section 1.5.8(n) 100 percent to the zone in which the transmission facilities will be located).

²⁰ The baseline upgrades addressing reliability violations on transmission facilities operating at or below 200 kV not included in a competitive proposal window include the following: b3786.1, b3789.0, b3836.1, b3846.1, b3846.2, and b3846.3.

element of a Required Transmission Enhancement shall be assigned to the zone of the owner of the circuit breaker, if the owner of the circuit breaker is a Transmission Owner listed in Tariff, Attachment J.

Consistent with Tariff, Schedule 12, section (b)(iv)(C), PJM proposes revisions to Schedule 12-Appendix A to include cost responsibility assignments for seven (7) circuit breakers.²¹ Because such equipment is independently included in the RTEP and not part of the design specifications of a transmission element of a Required Transmission Enhancement, cost responsibility for such enhancements shall be allocated 100 percent to the zone of the Transmission Owner of the circuit breakers.

B. Cost Responsibility Assignment Summary

For informational purposes, PJM also includes, as Attachment A to this filing, a Cost Responsibility Assignment Summary for the enhancements or expansions approved by the PJM Board on February 28, 2024. In addition to specifying the cost responsibility assignments for the enhancements or expansions, the summary sheets provide the criteria violation and test, a description of the upgrade, in-service date, estimated upgrade costs, and the entity designated with construction responsibility for each enhancement or expansion.

II. COMMENT PERIOD

Tariff, Schedule 12(b)(viii) provides that customers designated to be responsible for assignments of cost responsibility shall have 30 days from the date of such filing to seek review regarding the proposed cost responsibility assignments. Consistent with this provision, PJM requests that the comment date for this filing be set as April 26, 2024, 30 days from the date of

²¹ The enhancements and expansions allocated pursuant to Tariff, Schedule 12, section (b)(iv)(B) include the following: b3784.1, b3790.0, b3810.0, b3837.1, b3838.1, b3839.1, and b3845.1.

this filing. To accommodate such a comment date, PJM requests an effective date of June 25,

2024 (90 days from the date of this filing) for all revised Tariff sections submitted in this docket.²²

III. DOCUMENTS ENCLOSED

PJM encloses the following:

- 1. This transmittal letter;
- 2. Attachment A Cost Responsibility Assignment Summary Sheets;
- 3. Attachment B Revised Tariff, Schedule 12-Appendix A (in redlined form); and
- 4. Attachment C Revised Tariff, Schedule 12-Appendix A (in clean form).

IV. CORRESPONDENCE AND COMMUNICATIONS

Correspondence and communications with respect to this filing should be sent to the

following persons:

Craig Glazer Vice President – Federal Government Policy PJM Interconnection, L.L.C. 1200 G Street, N.W., Suite 600 Washington, D.C. 20005 Ph: (202) 423-4743 Fax: (202) 393-7741 craig.glazer@pim.com Aspassia V. Staevska Senior Counsel PJM Interconnection, L.L.C. 2750 Monroe Blvd. Audubon, PA 19403 Ph: (484) 401-4931 Fax: (610) 666-8211 aspassia.staevska@pjm.com

V. SERVICE

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the

²² See, e.g., PJM Interconnection, L.L.C., Errata Notice of Extending Comment Period, Docket No. ER23-364-000 (Nov. 10, 2022) (granting extension of time for filing protests or comments to accommodate Tariff, Schedule 12); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-2653-000 (Aug. 16, 2022) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-1397-000 (Mar. 23, 2022) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-788-000 (Jan. 13, 2022) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-788-000 (Jan. 13, 2022) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-135-000 (Oct. 20, 2021) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-12774-000 (Sept. 2, 2021) (same).

Commission's regulations,²³ PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <u>https://www.pjm.com/library/filing-order</u> with a specific link to the newly-filed document, and will send an e-mail on the same date as this filing to all PJM Members and all state utility regulatory commissions in the PJM Region²⁴ alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC's eLibrary website located at the following link: <u>http://www.ferc.gov/docs-filing/elibrary.asp</u> in accordance with the Commission's regulations and Order No. 714.

VI. CONCLUSION

For the reasons set forth above, PJM respectfully requests that the Commission issue an order accepting the revised Tariff sections to be effective on June 25, 2024.

Respectfully submitted,

Craig Glazer Vice President – Federal Government Policy PJM Interconnection, L.L.C. 1200 G Street, N.W., Suite 600 Washington, D.C. 20005 Ph: (202) 423-4743 Fax: (202) 393-7741 craig.glazer@pjm.com <u>/s/ Aspassia V. Staevska</u> Aspassia V. Staevska Senior Counsel PJM Interconnection, L.L.C. 2750 Monroe Blvd. Audubon, PA 19403 Ph: (484) 401-4931 Fax: (610) 666-8211 aspassia.staevska@pjm.com

²³ See 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3) (2022).

²⁴ PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

Attachment A

Cost Responsibility Assignment Summary Sheets

Baseline Upgrade b3780.14

- Overview of Reliability Problem •
 - Criteria Violation: 2022 Window 3
 - Contingency: 2022 Window 3 Criteria Test: 2022 Window 3 •
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- .
- Criteria Test: 2022 Window 5
 Overview of Reliability Solution

 Description of Upgrade: Reconfigure Cooper transmission feeds by establishing new Cooper North Delta 230 kV line and rerouting existing transmissions lines by Cooper
 Required Upgrade In-Service Date: 6/1/2025
 Estimated Upgrade Cost: \$3.60 M

 - Construction Responsibility: PECO
- Cost Allocation
 - The cost for this baseline upgrade is allocated by solution-based DFAX as below. •

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
DPL	3,765	1.82%	99.99%	38.25%
PECO	8,568	1.29%	99.99%	61.75%

Baseline Upgrade b3780.15

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- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - Contingency: 2022 Window 3
 - Criteria Test: 2022 Window 3
 - Overview of Reliability Solution
 - Description of Upgrade: Cut-in 5012 Peach Bottom Conastone 500 kV line into North Delta 500/230 kV substation by rebuilding 5012 between new terminal at Peach Bottom South and North Delta on single circuit structures and terminating at North Delta
 - Required Upgrade In-Service Date: 6/1/2025
 - Estimated Upgrade Cost: \$7.86 M
 - Construction Responsibility: PECO
- Cost Allocation
 - 50% of the cost of this baseline upgrade is allocated based on load ratio and 50% of the cost for this baseline upgrade is allocated based on solution-based DFAX as below.

Transmission Zone	Peak Load (MW)	Load Ratio Allocation (%)
AEC	2,628.80	1.65%
AEP	22,825.60	14.29%
APS	9,302.90	5.82%
ATSI	11,963.00	7.49%
BGE	6,405.70	4.01%
ComEd	22,467.00	14.06%
Dayton	3,241.00	2.03%
DEOK	5,134.90	3.21%
Dominion	22,189.20	13.89%
DPL	4,077.50	2.55%
DL	2,534.20	1.59%
EKPC	3,754.80	2.35%
JCPL	5,731.30	3.59%
ME	2,890.10	1.81%
OVEC	89.00	0.06%
PECO	8,162.90	5.11%
PENELEC	2,762.80	1.73%
PEPCO	5,871.80	3.68%
PPL	7,082.70	4.43%
PSEG	9,561.00 5.99%	
RĒ	385.00	0.24%
Neptune	676.00	0.42%

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
AEC	2,481	-1.63%	100.00%	11.03%
BGE	6,307	-2.18%	100.00%	37.40%
DPL	3,765	-2.23%	100.00%	22.90%
PECO	8,568	0.56%	0.00%	0.00%
PEPCO	6,213	-1.69%	100.00%	28.67%

Baseline Upgrade b3780.16 • Overview of Reliability Problem • Criteria Violation: 2022 Window 3 • Contingency: 2022 Window 3 • Contingency: 2022 Window 3

- - Criteria Test: 2022 Window 3

 - Overview of Reliability Solution Description of Upgrade: North Delta 230 kV termination for new Cooper North Delta 230 kV line (Transource Scope) Required Upgrade In-Service Date: 6/1/2025 Estimated Upgrade Cost: \$0.47 M Construction Responsibility: Transource
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 - •
 - .
- Cost Allocation •

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The cost for this baseline upgrade is allocated by solution based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
DPL	3,765	1.82%	99.99%	38.25%
PECO	8,568	1.29%	99.99%	61.75%

Baseline Upgrade b3780.17

- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - Contingency: 2022 Window 3
 - Criteria Test: 2022 Window 3
 - Overview of Reliability Solution
 - Description of Upgrade: Cut-in 5012 Peach Bottom Conastone 500 kV line into North Delta 500/230 kV substation by rebuilding 5012 between new terminal at Peach Bottom South and North Delta on single circuit structures and terminating at North Delta (Transource Scope)
 - Required Upgrade In-Service Date: 6/1/2025
 - Estimated Upgrade Cost: \$1.10 M
 - Construction Responsibility: Transource
- Cost Allocation

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50% of the cost of this baseline upgrade is allocated based on load ratio and 50% of the cost for this baseline
upgrade is allocated based on solution-based DFAX as below.

Transmission Zone	Peak Load (MW)	Load Ratio Allocation (%)
AEC	2,628.80	1.65%
AEP	22,825.60	14.29%
APS	9,302.90	5.82%
ATSI	11,963.00	7.49%
BGE	6,405.70	4.01%
ComEd	22,467.00	14.06%
Dayton	3,241.00	2.03%
DEOK	5,134.90	3.21%
Dominion	22,189.20	13.89%
DPL	4,077.50	2.55%
DL	2,534.20	1.59%
EKPC	3,754.80	2.35%
JCPL	5,731.30	3.59%
ME	2,890.10	1.81%
OVEC	89.00	0.06%
PECO	8,162.90	5.11%
PENELEC	2,762.80	1.73%
PEPCO	5,871.80	3.68%
PPL	7,082.70	4.43%
PSEG	9,561.00	5.99%
RE	385.00	0.24%
Neptune	676.00	0.42%

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
AEC	2,481	-1.63%	100.00%	11.03%
BGE	6,307	-2.18%	100.00%	37.40%
DPL	3,765	-2.23%	100.00%	22.90%
PECO	8,568	0.56%	0.00%	0.00%
PEPCO	6,213	-1.69%	100.00%	28.67%

- Baseline Upgrade b3784.1

 • Overview of Reliability Problem

 • Criteria Violation: 138 kV breaker 5 at Canal Street station is overdutied

 • Contingency: N/A

 - Criteria Test: Short Circuit

 - Overview of Reliability Solution

 Description of Upgrade: Replace 138 kV breaker 5 at Canal Street station with a new 3000A 63 kA breaker
 Required Upgrade In-Service Date: 6/1/2028
 Estimated Upgrade Cost: \$0.50 M

 - Construction Responsibility: AEP
 - Cost Allocation

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Baseline Upgrade b3785.1

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- Overview of Reliability Problem •
 - Criteria Violation: Overload of the Mountaineer Belmont 765 kV line
 - Contingency: Multiple contingency
 - Criteria Test: Summer Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Replace existing 3000 A wave trap at Mountaineer 765 kV, on the Belmont -Mountaineer 765 kV line, with a new 5000 A wave trap. Required Upgrade In-Service Date: 6/1/2028
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 - Estimated Upgrade Cost: \$0.46 M Construction Responsibility: AEP
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- Cost Allocation •

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Baseline Upgrade b3786.1

- Overview of Reliability Problem •
 - Criteria Violation: Overload of the Abert Reusens 69 kV line
 - Contingency: N-1-1 .
 - Criteria Test: AEP FERC Form 715 Criteria

 - Overview of Reliability Solution Description of Upgrade: Rebuild approximately 4.5 miles of 69 kV line between Abert and Reusens 69 kV substations. Update line settings at Reusens and Skimmer 69 kV substations.
 - Required Upgrade In-Service Date: 6/1/2028 •
 - Estimated Upgrade Cost: \$14.40 M Construction Responsibility: AEP •
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- Cost Allocation •

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The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3787.1

- Overview of Reliability Problem
 - Criteria Violation: Overload of the Coalton Princess 69 kV
 - Contingency: Multiple contingencies
 - Criteria Test: AEP FERC Form 715 Criteria
 - Overview of Reliability Solution
 - Description of Upgrade: Install a Capacitor Voltage Transformer (CCVT) on 3 phase stand and remove the single phase existing CCVT on the 69 kV Coalton to Bellefonte line exit. The existing CCVT is mounted to lattice on a single phase CCVT stand, which will be replaced with the 3 phase CCVT stand. The line riser between line disconnect and line take off is being replaced. This remote end work changes the most limiting series element (MLSE) of the line section between Coalton Princess 69 kV line section.
 - Required Upgrade In-Service Date: 12/1/2028
 - Estimated Upgrade Cost: \$0.00 M
 - Construction Responsibility: AEP
- Cost Allocation
 - The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3788.1

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- Overview of Reliability Problem Criteria Violation: Overload of the Kyger Creek Sporn 345 kV line
 - Contingency: Multiple contingencies
 - Criteria Test: Summer Generator Deliverability
- Overview of Reliability Solution

 Description of Upgrade: Replace AEP owned station takeoff riser and breaker BB risers at OVEC owned Kyger Creek station.
 - Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$0.41 M Construction Responsibility: AEP •
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- Cost Allocation •
 - The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3788.2

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- Overview of Reliability Problem •
 - Criteria Violation: Overload of the Kyger Creek Sporn 345 kV line
 - Contingency: Multiple contingencies
 - Criteria Test: Summer Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Replace OVEC owned breaker AA risers, bus work, and breaker AA disconnect switches at OVEC owned Kyger Creek station. Required Upgrade In-Service Date: 6/1/2028
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 - Estimated Upgrade Cost: \$0.75 M Construction Responsibility: OVEC •
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- Cost Allocation •
 - The cost for this baseline upgrade is allocated 100% to OVEC.

Baseline Upgrade b3789.0

- Overview of Reliability Problem
 - Criteria Violation: High voltage in several buses around Salt Spring 69 kV station
 - Contingency: N-1 contingency
 - Criteria Test: FE Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: A 69 kV, 60 MVAR shunt reactor will be installed at the Salt Springs substation. The reactor terminal will be connected to the existing 69 kV bus, and an independent-pole operation, 1200A circuit breaker will be installed for reactor switching.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$5.45 M
 - Construction Responsibility: ATSI
- Cost Allocation
 - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to ATSI.

Baseline Upgrade b3790.0

- Overview of Reliability Problem
 - · Criteria Violation: Oliver 345 kV breaker "D" is overdutied
 - Contingency: N/A
 - · Criteria Test: Short Circuit
 - Overview of Reliability Solution
 - Description of Upgrade: Replace the overdutied Olive 345 kV circuit breaker "D" with a 5000A 63 kA circuit breaker. Reuse existing cables and a splice box to support the circuit breaker install.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$1.08 M
 - Construction Responsibility: AEP
- Cost Allocation

•

Baseline Upgrade b3791.0

- Overview of Reliability Problem
 - · Criteria Violation: Overload of the North Meshoppen Mehoopany No. 1 115 kV line
 - Contingency: multiple contingencies.
 - Criteria Test: Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Rebuild the North Meshoppen Mehoopany No. 1 115 kV line with 795 ACSR 26/7
 STR conductor. Upgrade terminal equipment to exceed transmission line ratings.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$17.40 M
 - Construction Responsibility: PENELEC
- Cost Allocation
 - No transmission zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to PENELEC.

Baseline Upgrade b3792.0

- Overview of Reliability Problem
 - · Criteria Violation: Overload of the North Meshoppen Mehoopany No. 2 115 kV Line
 - Contingency: multiple contingencies
 - Criteria Test: Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Rebuild the North Meshoppen Mehoopany No. 2 115 kV line using 795 ACSR 26/7
 STR conductor, and upgrade terminal equipment to exceed the transmission line rating.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$17.70 M
 - Construction Responsibility: PENELEC
- Cost Allocation
 - No transmission zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to PENELEC.

Baseline Upgrade b3793.1

- Overview of Reliability Problem •
 - Criteria Violation: Overload on Silver Run Cedar Creek 230 kV line
 - Contingency: Multiple contingencies
 - Criteria Test: Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Reconductor Silver Run Cedar Creek 230 kV line. Reconductor 8.8 miles of 230 kV Circuit with 1594-T11/ACCR "Lapwing" conductor and replace all insulators with high temperature hardware
 - Required Upgrade In-Service Date: 6/1/2028 •
 - Estimated Upgrade Cost: \$7.68 M
 - Construction Responsibility: DPL
- **Cost Allocation**
 - Only DPL zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to DPL.

Baseline Upgrade b3793.2

.

- Overview of Reliability Problem •
 - Criteria Violation: Overload of Silver Run Cedar Creek 230 kV line
 - Contingency: Multiple contingencies
 - Criteria Test: Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Cedar Creek Replace three (3) standalone CTs, disconnect switch, stranded bus, and rigid bus to achieve higher rating Required Upgrade In-Service Date: 6/1/2028
 - •
 - Estimated Upgrade Cost: \$0.45 M Construction Responsibility: DPL
- **Cost Allocation**
 - Only DPL zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to DPL.

Baseline Upgrade b3793.3

- •
- Overview of Reliability Problem Criteria Violation: Overload of the Silver Run Cedar Creek 230 kV line Contingency: Multiple contingencies

 - Criteria Test: Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Silver Run Replace three(3) 1-1590 ACSR Jumpers and one(1) air disconnect switch
 - Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$0.58 M

 - Construction Responsibility: DPL
- Cost Allocation

•

Only DPL zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to DPL.

Baseline Upgrade b3794.1

- Overview of Reliability Problem •
 - Criteria Violation: High voltage in the Waldwick vicinity
 - Contingency: Multiple contingencies
 - Criteria Test: Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Replace existing Waldwick 230 kV 50 MVAR fixed shunt reactor with a 230 kV 150 MVAR variable shunt reactor
 - Required Upgrade In-Service Date: 6/1/2028 •
 - Estimated Upgrade Cost: \$13.60 M Construction Responsibility: PSEG
- **Cost Allocation**
 - The cost for this baseline upgrade is allocated by solution-based DFAX. The solution-based DFAX calculation was based on an interface entirely within the PSEG zone and therefore no distribution factor is provided. The cost for this baseline upgrade is allocated 100% to PSEG.

Baseline Upgrade b3794.2

- Overview of Reliability Problem •
 - Criteria Violation: High voltage in the Waldwick vicinity Contingency: Multiple contingencies

 - Criteria Test: baseline voltage
- Overview of Reliability Solution Description of Upgrade: Replace existing Waldwick 345 kV 100 MVAR fixed shunt reactor with a 345 kV 150 MVAR variable shunt reactor
 - Required Upgrade In-Service Date: 6/1/2028 •
 - Estimated Upgrade Cost: \$16.00 M Construction Responsibility: PSEG
- **Cost Allocation**

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The cost for this baseline upgrade is allocated by solution-based DFAX. The solution-based DFAX calculation was based on an interface entirely within the PSEG zone and therefore no distribution factor is provided. The cost for this baseline upgrade is allocated 100% to PSEG.

Baseline Upgrade b3796.0

- Overview of Reliability Problem
 - Criteria Violation: Overload of the Belmont 765/345 kV transformer No. 5
 - Contingency: Multiple contingencies
 - Criteria Test: Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Replace the Belmont 765/500 kV transformer No. 5 with a new transformer bank consisting of three single-phase transformers and an additional single phase spare transformer. The project will also replace 500 kV disconnect switches at the Belmont substation.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$42.05 M
 - · Construction Responsibility: APS
- Cost Allocation
 50%
 - 50% of the cost of this baseline upgrade is allocated based on load ratio and 50% of the cost for this baseline upgrade is allocated based on solution-based DFAX as below.

Transmission Zone	Peak Load (MW)	Load Ratio Allocation (%)
AEC	2,628.80	1.65%
AEP	22,825.60	14.29%
APS	9,302.90	5.82%
ATSI	11,963.00	7.49%
BGE	6,405.70	4.01%
ComEd	22,467.00	14.06%
Dayton	3,241.00	2.03%
DEOK	5,134.90	3.21%
Dominion	22,189.20	13.89%
DPL	4,077.50	2.55%
DL	2,534.20	1.59%
EKPC	3,754.80	2.35%
JCPL	5,731.30	3.59%
ME	2,890.10	1.81%
OVEC	89.00	0.06%
PECO	8,162.90	5.11%
PENELEC	2,762.80	1.73%
PEPCO	5,871.80	3.68%
PPL	7,082.70	4.43%
PSEG	9,561.00	5.99%
RE	385.00	0.24%
Neptune	676.00	0.42%

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
AEP	22,702	-1.26%	0.76%	0.28%
APS	9,568	-1.62%	0.76%	0.15%
DAYTON	3,280	-3.12%	0.76%	0.10%
DEOK	5,204	-3.39%	0.76%	0.18%
DL	2,702	1.41%	99.24%	6.57%
Dominion	28,705	1.87%	99.24%	92.68%
EKPC	2,063	-1.92%	0.76%	0.04%

Baseline Upgrade b3800.52

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- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - Contingency: 2022 Window 3
 - Criteria Test: 2022 Window 3
 - Overview of Reliability Solution
 - Description of Upgrade: Reconfigure Peach Bottom North and South yards to allow for termination of 500 kV lines from Peach Bottom to North Delta. North Delta 500 kV termination for the new Peach Bottom - North Delta 500 kV line
 - Required Upgrade In-Service Date: 6/1/2027
 - Estimated Upgrade Cost: \$7.86 M
 - Construction Responsibility: PECO
- Cost Allocation
 - 50% of the cost of this baseline upgrade is allocated based on load ratio and 50% of the cost for this baseline upgrade is allocated based on solution-based DFAX as below.

Transmission Zone	Peak Load (MW)	Load Ratio Allocation (%)
AEC	2,628.80	1.65%
AEP	22,825.60	14.29%
APS	9,302.90	5.82%
ATSI	11,963.00	7.49%
BGE	6,405.70	4.01%
ComEd	22,467.00	14.06%
Dayton	3,241.00	2.03%
DEOK	5,134.90	3.21%
Dominion	22,189.20	13.89%
DPL	4,077.50	2.55%
DL	2,534.20	1.59%
EKPC	3,754.80	2.35%
JCPL	5,731.30	3.59%
ME	2,890.10	1.81%
OVEC	89.00	0.06%
PECO	8,162.90	5.11%
PENELEC	2,762.80	1.73%
PEPCO	5,871.80	3.68%
PPL	7,082.70	4.43%
PSEG	9,561.00	5.99%
RE	385.00	0.24%
Neptune	676.00	0.42%

Transmission Zone	Planned Load (MW)	DFAX	%Flow	DFAX Allocation
AEC	2,481	-1.63%	100.00%	11.03%
BGE	6,307	-2.18%	100.00%	37.40%
DPL	3,765	-2.23%	100.00%	22.90%
PECO	8,568	0.56%	0.00%	0.00%
PEPCO	6,213	-1.69%	100.00%	28.67%

- Baseline Upgrade b3810.0

 Overview of Reliability Problem

 Criteria Violation: Overload of the Cherry Valley R 345/138 kV transformer

 Contingency: N-2 outages

 Overview Texts Overload of the Cherry Valley R 345/138 kV transformer

 - Criteria Test: Summer Generator Deliverability

 - Overview of Reliability Solution
 Description of Upgrade: Add three 345 kV circuit breakers to Cherry Valley substation.
 Required Upgrade In-Service Date: 6/1/2028
 Estimated Upgrade Cost: \$7.75 M
 Construction Responsibility: ComEd
 - Cost Allocation

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Baseline Upgrade b3836.1

- Overview of Reliability Problem •
 - Criteria Violation: Overload of the Chemical Washington Street 46 kV line
 - Contingency: N-1-1 .
 - Criteria Test: AEP FERC Form 715 Criteria
 - Overview of Reliability Solution
 - Description of Upgrade: Rebuild approximately 1.7 miles of line on the Chemical Washington Street 46 kV circuit
 - Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$7.60 M Construction Responsibility: AEP •
 - •
 - .
- Cost Allocation •

•

The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3837.1 · Overview of Reliability Problem

- - Criteria Violation: 34.5 kV circuit breaker B at West Huntington is overdutied
 - Contingency: N/A .
 - Criteria Test: AEP FERC Form 715 Criteria

 - Overview of Reliability Solution Description of Upgrade: Replace existing 34.5 kV, 25 kA circuit breaker B at West Huntington station with new 69 kV, 40 kA circuit breaker Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$0.36 M Construction Responsibility: AEP
 - •
 - •
 - .
- Cost Allocation •

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- Baseline Upgrade b3838.1

 Overview of Reliability Problem

 Criteria Violation: 138 kV breakers A and B at Timken station are overdutied

 Contingency: N/A

 - Criteria Test: AEP FERC Form 715 Criteria

 - Overview of Reliability Solution Description of Upgrade: Replace breaker A and B at Timken station with 40 kA breakers Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$1.20 M

 - Construction Responsibility: AEP
 - Cost Allocation

•

- Overview of Reliability Problem

 • Overview of Reliability Problem

 • Criteria Violation: 69 kV breaker C at Haviland station is overdutied

 • Contingency: N/A

 - Criteria Test: AEP FERC Form 715 Criteria

 - Overview of Reliability Solution Description of Upgrade: Replace 69 kV breaker C at Haviland station with a new 3000A 40 kA breaker Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$0.40 M

 - Construction Responsibility: AEP
 - Cost Allocation

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Baseline Upgrade b3840.1

- Overview of Reliability Problem
 - · Criteria Violation: Overload of the 24th Street 26th Street and 24th Street BASF 34.5 kV lines
 - Contingency: N-1-1
 - Criteria Test: AEP FERC Form 715 Criteria
 - Overview of Reliability Solution
 - Description of Upgrade: Replace Structures 382-66 and 382-63 on Darrah East Huntington 34.5 kV line to bypass 24th Street station. Retire structures 1 through 5 on Twenty Fourth Street 34.5 kV extension. Retire 24th Street Station. Remove conductors from BASF Tap to BASF.
 - Required Upgrade In-Service Date: 6/1/2028
 - Estimated Upgrade Cost: \$1.80 M
 - Construction Responsibility: AEP
- Cost Allocation

•

• The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3843.1

- Overview of Reliability Problem •
 - Criteria Violation: Overload of the underground portion of the Ohio University West Clark 69 kV line
 - Contingency: N-1-1 contingency
 - Criteria Test: AEP FERC Form 715 Criteria
- •
- Overview of Reliability Solution Description of Upgrade: Rebuild the underground portion of the Ohio University West Clark 69 kV line, approximately 0.65 miles. Required Upgrade In-Service Date: 6/1/2028 Estimated Upgrade Cost: \$4.60 M Construction Responsibility: AEP
 - •
 - •
 - .
- Cost Allocation •
 - The cost for this baseline upgrade is allocated 100% to AEP.

Baseline Upgrade b3844.1

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- Overview of Reliability Problem
 - · Criteria Violation: Overload of the Ridley Macdade 230 kV line
 - Contingency: Multiple contingency
 - Criteria Test: Summer Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Replacement of relays at Macdade, Printz, and Morton stations to increase rating limits of transmission relay equipment. Line protection relays will be upgraded with latest standard relays used across the PECO system.
 - Required Upgrade In-Service Date: 12/31/2026
 - Estimated Upgrade Cost: \$1.40 M
 - Construction Responsibility: PECO
- Cost Allocation
 - The cost for this baseline upgrade is allocated 100% to PECO.

Baseline Upgrade b3845.1

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- •
- Overview of Reliability Problem Criteria Violation: Overload of the Cecil Glasgow 138 kV line
 - Contingency: Multiple contingency
 - Criteria Test: Summer Generator Deliverability, Light Load Thermal N-1
 - Overview of Reliability Solution
 - Description of Upgrade: Add a second 138 kV breaker next to Nottingham 895 CB to eliminate stuck breaker contingency. Required Upgrade In-Service Date: 5/31/2028 Estimated Upgrade Cost: \$1.28 M Construction Responsibility: PECO
 - •
 - .
- Cost Allocation •
 - The cost for this baseline upgrade is allocated 100% to PECO.

Baseline Upgrade b3846.1

- Overview of Reliability Problem
 - · Criteria Violation: Overload of the Vienna Mardela 69 kV line
 - Contingency: Multiple contingencies
 - Criteria Test: Summer Generator Deliverability
 - Overview of Reliability Solution
 - Description of Upgrade: Rebuild 6.25 miles of 69 kV circuit 6708 (Vienna Mardela) with new single pole steel structures and with 954.0 45/7 "Rail" conductor. This new rebuild will be from the dead-end structure on the east side of the Nanticoke River to the Mardela Tap.
 - Required Upgrade In-Service Date: 5/31/2028
 - Estimated Upgrade Cost: \$18.63 M
 - Construction Responsibility: DPL
- Cost Allocation

•

• The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to DPL.

Baseline Upgrade b3846.2

- •
- Overview of Reliability Problem Criteria Violation: Overload of the Vienna Mardela 69 kV line Contingency: Multiple contingencies

 - Criteria Test: Summer Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Upgrade of disconnect switch at Vienna to increase ratings of existing Vienna Mardela 69 kV transmission facility. Required Upgrade In-Service Date: 5/31/2028
 - •
 - Estimated Upgrade Cost: \$1.00 M Construction Responsibility: DPL •
 - .
- Cost Allocation •
 - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to DPL.

Baseline Upgrade b3846.3

- •
- Overview of Reliability Problem Criteria Violation: Overload of the Vienna Mardela 69 kV line Contingency: Multiple contingencies

 - Criteria Test: Summer Generator Deliverability
- •
- Overview of Reliability Solution Description of Upgrade: Upgrade of three disconnect switches at Mardela station to increase ratings of existing Vienna - Mardela transmission facility. Required Upgrade In-Service Date: 5/31/2028
 - •
 - Estimated Upgrade Cost: \$1.75 M Construction Responsibility: DPL •
 - .
- Cost Allocation •
 - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to DPL.

Attachment B

Schedule 12 – Appendix A of the PJM Open Access Transmission Tariff

(Marked / Redline Format)

SCHEDULE 12 – APPENDIX A

(3) Delmarva Power & Light Company

	-	
1 2200	Build a new 138 kV line	
62288	from Piney Grove –	
	Wattsville	DPL (100%)
	Reconductor the Harmony	
b2395	– Chapel St 138 kV	
	circuit	 DPL (100%)
	Replace Terminal	
b2569	equipment at Silverside	
	69 kV substation	DPL (100%)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
	Implement high speed relaying utilizing OPGW on Red Lion – Hope Creek 500 kV line	BGE (4.01%) / ComEd
		(14.06%) / Dayton (2.03%) /
		DEOK (3.21%) / DL (1.59%) /
		DPL (2.55%) / Dominion
		(13.89%) / EKPC (2.35%) /
b2633.7		JCPL (3.59%) / ME (1.81%) /
		NEPTUNE* (0.42%) / OVEC
		(0.06%) / PECO (5.11%) /
		PENELEC (1.73%) / PEPCO
		(3.68%) / PPL (4.43%) / PSEG
		(5.99%) / RE (0.24%)
		DFAX Allocation:
		AEC (0.01%) / DPL (99.98%) /
		JCPL (0.01%)
	Interconnect the new	AEC (8.01%) / BGE (1.94%) /
	Silver Run 230 kV	DPL (12.99%) / JCPL (13.85%)
1-2622-10	substation with existing	/ ME (5.88%) / NEPTUNE*
02033.10	Red Lion – Cartanza and	(3.45%) / PECO (17.62%) /
	Red Lion – Cedar Creek	PPL (14.85%) / PSEG (20.79%)
	230 kV lines	/ RE (0.62%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

rtequirea III		iliaar reevenae reequirement	
	Rebuild Worcester –		
h2695	Ocean Pine 69 kV ckt. 1 to		
02075	1400A capability summer		
	emergency		DPL (100%)
	Convert existing Preston		
h2046	69 kV substation to DPL's		
02940	current design standard of		
	a 3-breaker ring bus		DPL (100%)
	Upgrade terminal		
b2047 1	equipment at DPL's		
02947.1	Naamans substation		
	(Darley - Naamans 69 kV)		DPL (100%)
	Reconductor 0.11 mile		
b2947.2	section of Darley -		
	Naamans 69 kV circuit		DPL (100%)
	Upgrade terminal		
	equipment at DPL's		
b2948	Silverside Road substation		
	(Dupont Edge Moor –		
	Silver R. 69 kV)		DPL (100%)
	Install a 30 MVAR		
	capacitor bank at DPL's		
	Cool Springs 69 kV		
h2087	substation. The capacitor		
02907	bank would be installed in		
	two separate 15 MVAR		
	stages allowing DPL		
	operational flexibility		DPL (100%)
	Reconductor the Silverside		
b3143.1	Road – Darley 69 kV		
	circuit		DPL (100%)
	Reconductor the Darley –		
b3143.2	Naamans 69 kV circuit		
			DPL (100%)
	Replace three (3) existing		
	1200 A disconnect		
1 0 1 4 0 0	switches with 2000 A		
b3143.3	disconnect switches and		
	install three (3) new 2000		
	A disconnect switches at		
	Silverside 69 kV station		DPL (100%)

Required Tr	ansmission Enhancements Ar	nual Revenue Requirement	Responsible Customer(s)
	Replace two (2) 1200 A		
	disconnect switches with		
	2000 A disconnect		
	switches. Replace existing		
	954 ACSR and 500 SDCU		
	stranded bus with two (2)		
b31/13/	954 ACSR stranded bus.		
03143.4	Reconfigure four (4) CTs		
	from 1200 A to 2000 A		
	and install two (2) new		
	2000 A disconnect		
	switches and two (2) new		
	954 ACSR stranded bus at		
	Naamans 69 kV station		DPL (100%)
	Replace four (4) 1200 A		
	disconnect switches with		
	2000 A disconnect		
	switches. Replace existing		
	954 ACSR and 1272		
	MCM AL stranded bus		
	with two (2) 954 ACSR		
	stranded bus. Reconfigure		
b3143.5	eight (8) CTs from 1200 A		
	to 2000 A and install four		
	(4) new 2000 A (310 MVA		
	SE / 351 MVA WE)		
	disconnect switches and		
	two (2) new 954 ACSR		
	(331 MVA SE / 369 MVA		
	WE) stranded bus at		
	Darley 69 kV station		DPL (100%)
	Rebuild approx. 12 miles		
b3155	of Wye Mills –		
	Stevensville line		DPL (100%)
	Replace a disconnect		
	switch and reconductor a		
b3224	short span of the Mt.		
	Pleasant – Middletown tap		
	138 kV line		DPL (100%)

b3326	Rebuild the Vienna - Nelson 138 kV line	DPL (100%)
b3327	Upgrade the disconnect switch at Kent 69 kV station	DPL (100%)
b3328	Upgrade the disconnect switch and CT at Vienna 138 kV station	DPL (100%)
b3329	Rebuild the Farmview - Milford 138 kV line	DPL (100%)
b3330	Rebuild the Farmview - S. Harrington 138 kV line	DPL (100%)
b3331	Upgrade stranded bus and relay at Seaford 138 kV station	DPL (100%)
b3332	Rebuild the Steel - Milford 230 kV line	DPL (100%)
b3669.1	Replace terminal equipment (stranded bus, disconnect switch and circuit breaker) at Church 138 kV substation	DPL (100%)
b3669.2	Replace terminal equipment (circuit breaker) at Townsend 138 kV substation	DPL (100%)
b3670	Upgrade terminal equipment on the Loretto – Fruitland 69 kV circuit. Replace the 477 ACSR stranded bus on the 6711 line terminal inside Loretto 69 KV substation and the 500 SDCU stranded bus on the 6711 line terminal inside 69 kV Fruitland substation with 954 ACSR conductor	DPL (100%)
b3688	Replace the 4/0 SDCU stranded bus with 954 ACSR and a 600 A disconnect switch with a 1200 A disconnect switch on the 6716 line terminal inside Todd substation on Preston – Todd 69 kV line	DPL (100%)

	Required 7	Transmission	Enhancements	Annual Reve	enue Require	ment Resp	onsible (Customer(s
--	------------	--------------	--------------	-------------	--------------	-----------	-----------	------------

b3749	Rebuild the New Church - Piney Grove 138 kV line	DPL (100%)
<u>b3793.1</u>	Reconductor Silver Run - Cedar Creek 230 kV line. Reconductor 8.8 miles of 230 kV Circuit with 1594-T11/ACCR "Lapwing" conductor and replace all insulators with high temperature hardware	DPL (100%)
<u>b3793.2</u>	<u>Cedar Creek – Replace three (3)</u> <u>standalone CTs, disconnect</u> <u>switch, stranded bus, and rigid bus</u> <u>to achieve higher rating</u>	<u>DPL (100%)</u>
<u>b3793.3</u>	Silver Run - Replace three(3) 1- 1590 ACSR Jumpers and one(1) air disconnect switch	DPL (100%)

Described Transmission Enhancements	A married D er comme D e environme ent	Dean an aileile Createrns and a)
Required Transmission Enhancements	Annual Revenue Reduirement	Responsible Clistomensi
	¹ Innoul ite venue reequitement	

	Rebuild 6.25 miles of 69 kV	
	<u>circuit 6708 (Vienna – Mardela)</u>	
	with new single pole steel	
	structures and with 954.0 45/7	
<u>b3846.1</u>	"Rail" conductor. This new	
	rebuild will be from the dead-end	
	structure on the east side of the	
	Nanticoke River to the Mardela	
	Tap	<u>DPL (100%)</u>
	Upgrade of disconnect switch at	
h2846 2	Vienna to increase ratings of	
<u>D3840.2</u>	existing Vienna - Mardela 69 kV	
	transmission facility	<u>DPL (100%)</u>
	Upgrade of three disconnect	
1-2046-2	switches at Mardela station to	
03840.5	increase ratings of existing Vienna	
	- Mardela transmission facility	<u>DPL (100%)</u>

SCHEDULE 12 – APPENDIX A

(7) Mid-Atlantic Interstate Transmission, LLC for the Pennsylvania Electric Company Zone

Required 7	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2212	Shawville Substation: Relocate 230 kV and 115 kV controls from the generating station building to new control building		PENELEC (100%)
b2293	Replace the Erie South 115 kV breaker 'Buffalo Rd' with 40 kA breaker		PENELEC (100%)
b2294	Replace the Johnstown 115 kV breaker 'Bon Aire' with 40 kA breaker		PENELEC (100%)
b2302	Replace the Erie South 115 kV breaker 'French #2' with 40 kA breaker		PENELEC (100%)
b2304	Replace the substation conductor and switch at South Troy 115 kV substation		PENELEC (100%)
b2371	Install 75 MVAR capacitor at the Erie East 230 kV substation		PENELEC (100%)
b2441	Install +250/-100 MVAR SVC at the Erie South 230 kV station		PENELEC (100%)
b2442	Install three 230 kV breakers on the 230 kV side of the Lewistown #1, #2 and #3 transformers		PENELEC (100%)
b2450	Construct a new 115 kV line from Central City West to Bedford North		PENELEC (100%)
b2463	Rebuild and reconductor 115 kV line from East Towanda to S. Troy and upgrade terminal equipment at East Towanda, Tennessee Gas and South Troy		PENELEC (100%)

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Construct Warren 230 kV		
h2404	ring bus and install a		
02494	second Warren 230/115		
	kV transformer		PENELEC (100%)
	Reconductor the North		
	Meshoppen – Oxbow-		
h2552 1	Lackawanna 230 kV		
02332.1	circuit and upgrade		
	terminal equipment		PENELEC (75.48%) / PPL
	(MAIT portion)		(24.52%)
	Replace the Warren 115		
b2573	kV 'B12' breaker with a		
	40 kA breaker		PENELEC (100%)
	Reconfigure Pierce Brook		
	345 kV station to a ring		
b2587	bus and install a 125		
	MVAR shunt reactor at		
	the station		PENELEC (100%)
	Replace relays at East		
b2621	Towanda and East Sayre		
	115 kV substations		
	(158/191 MVA SN/SE)		PENELEC (100%)
	Replace wave trap, bus		
10(77	conductor and relay at		
62677	Hilltop 115 kV substation.		
	Replace relays at Prospect		
	and Cooper substations		PENELEC (100%)
	Convert the East Towanda		
b2678	headson and half		
	configuration		DENELEC (100%)
	Install a 115 kV Vananga		TENELEC (10070)
b2679	Install a 115 KV Vellango		
	Edinboro South		DENELEC (100%)
	Install a 115 hV breaker		FENELEC (10078)
h2680	on Hooversville #1 115/22		
02080	kV transformer		DENIELEC $(1000/)$
	Ky ualisioning		$\mathbf{FENELEC}(100\%)$
h7691	an the Felines $#2.115/24.5$		
02081	kV transformer		DENIEL EC (1000/)
	K v u ansionnei		PEINELEU(100%)

b2682	Install two 21.6 MVAR capacitors at the Shade Gap		
	115 kV substation	PENELEC (100%)	
	Install a 36 MVAR 115 kV		
b2683	capacitor and associated		
02005	equipment at Morgan		
	Street substation	PENELEC (100%)	
	Install a 36 MVAR 115 kV		
b2684	capacitor at Central City		
	West substation	PENELEC (100%)	
1	Install a second 115 kV		
b2685	3000A bus tie breaker at		
	Hooversville substation	PENELEC (100%)	
10505	Replace the Warren 115		
b2/35	kV 'NO. 2 XFMR' breaker		
	with 40 kA breaker	PENELEC (100%)	
1070(Replace the Warren 115		
b2/36	kV Warren #1 breaker		
	With 40 kA breaker	PENELEC (100%)	
1 0707	Replace the Warren 115		
62/3/	KV A I X #I' breaker with		
	40 KA breaker	PENELEC (100%)	
1.2729	Replace the Warren 115		
02/38	40 kA hreeker with	DENIELEC $(1009/)$	
	Porlage the Warran 115	PENELEC (100%)	
h2720	keptace the warren 115		
02739	with 10 kA breaker	DENIELEC (100%)	
	Povise the real sing of the	FENELEC (10070)	
h2740	Hooversville $115 \mathrm{kV}$		
02740	'Ralphton' breaker	PFNFLFC(100%)	
	Revise the reclosing of the		
b2741	Hooversville 115 kV		
02/11	'Statler Hill' breaker	PENELEC (100%)	
L	1		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required I		indai Nevende Requirement	
b2743.2	Tie in new Rice substation to Conemaugh – Hunterstown 500 kV		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2743.3	Upgrade terminal equipment at Conemaugh 500 kV on the Conemaugh – Hunterstown 500 kV circuit		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2748	Install two 28 MVAR capacitors at Tiffany 115 kV substation		PENELEC (100%)
b2767	Construct a new 345 kV breaker string with three (3) 345 kV breakers at Homer City and move the North autotransformer connection to this new breaker string		PENELEC (100%)
b2803	Reconductor 3.7 miles of the Bethlehem – Leretto 46 kV circuit and replace terminal equipment at Summit 46 kV		PENELEC (100%)
b2804	Install a new relay and replace 4/0 CU bus conductor at Huntingdon 46 kV station, on the Huntingdon – C tap 46 kV circuit		PENELEC (100%)
b2805	Install a new relay and replace 4/0 CU & 250 CU substation conductor at Hollidaysburg 46 kV station, on the Hollidaysburg – HCR Tap 46 kV circuit		PENELEC (100%)

Required 1		indui ne venue negunement	
b2806	Install a new relay and		
	replace meter at the		
	Raystown 46 kV		
	substation, on the		
	Raystown – Smithfield 46		
	kV circuit		PENELEC (100%)
	Replace the CHPV and		
	CRS relay, and adjust the		
	IAC overcurrent relay trip		
b2807	setting; or replace the relay		
	at Eldorado 46 kV		
	substation, on the Eldorado		
	– Gallitzin 46 kV circuit		PENELEC (100%)
	Adjust the JBC overcurrent		
	relay trip setting at		
	Raystown 46 kV, and		
	replace relay and 4/0 CU		
b2808	bus conductor at		
	Huntingdon 46 kV		
	substations, on the		
	Raystown – Huntingdon 46		
	kV circuit		PENELEC (100%)
	Replace Seward 115 kV		
b2865	breaker "Jackson Road"		
	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2866	breaker "Conemaugh N."		
	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2867	breaker "Conemaugh S."		
02007	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2868	breaker "No 8 Xfmr" with		
02000	63 kA breaker		PENELEC (100%)
<u> </u>	Install two 3/5 1-W 80		
h2011	MVAR shunt reactors at		
62944	Mainashurg station		DENIEL EC (1000/)
	wrannesburg station		PEINELEU(100%)

		1	1
b2951	Seward, Blairsville East, Shelocta work		PENELEC (100%)
b2951.1	Upgrade Florence 115 kV line terminal equipment at Seward SS		PENELEC (100%)
b2951.2	Replace Blairsville East / Seward 115 kV line tuner, coax, line relaying and carrier set at Shelocta SS		PENELEC (100%)
b2951.3	Replace Seward / Shelocta 115 kV line CVT, tuner, coax, and line relaying at Blairsville East SS		PENELEC (100%)
b2952	Replace the North Meshoppen #3 230/115 kV transformer eliminating the old reactor and installing two breakers to complete a 230 kV ring bus at North Meshoppen		PENELEC (100%)
b2953	Replace the Keystone 500 kV breaker "NO. 14 Cabot" with 50 kA breaker		PENELEC (100%)
b2954	Replace the Keystone 500 kV breaker "NO. 16 Cabot" with 50 kA breaker		PENELEC (100%)
b2984	Reconfigure the bus at Glory and install a 50.4 MVAR 115 kV capacitor		PENELEC (100%)
b3007.2	Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment - PENELEC portion. 4.8 miles total. The new conductor will be 636 ACSS replacing the existing 636 ACSR conductor. At Blairsville East, the wave trap and breaker disconnects will be replaced		PENELEC (100%)

Required I	ransmission Ennancements Annu	lai Revenue Requirement	Responsible Customer(s)
	Upgrade Blairsville East		
	138/115 kV transformer		
	terminals. This project is an		
	upgrade to the tap of the		
b3008	Seward – Shelocta 115 kV		
	line into Blairsville		
	substation. The project will		
	replace the circuit breaker		
	and adjust relay settings		PENELEC (100%)
	Upgrade Blairsville East 115		
h2000	kV terminal equipment.		
03009	Replace 115 kV circuit		
	breaker and disconnects		PENELEC (100%)
	Replace the existing Shelocta		
b3014	230/115 kV transformer and		
	construct a 230 kV ring bus		PENELEC (100%)
	Upgrade terminal equipment		
	at Corry East 115 kV to		
b3016	increase rating of Four Mile		
	to Corry East 115 kV line.		
	Replace bus conductor		PENELEC (100%)
	Rebuild Glade to Warren 230		
	kV line with hi-temp		
	conductor and substation		
b3017.1	terminal upgrades. 11.53		
	miles. New conductor will be		
	1033 ACSS. Existing		
	conductor is 1033 ACSR		PENELEC (100%)
	Glade substation terminal		
1 2017 2	upgrades. Replace bus		
63017.2	conductor, wave traps, and		
	relaying		PENELEC (100%)
	Warren substation terminal		
1 2017 2	upgrades. Replace bus		
b3017.3	conductor, wave traps, and		
	relaying		PENELEC (100%)
	Replace Saxton 115 kV		
b3022	breaker 'BUS TIE' with a 40		
	kA breaker		PENELEC (100%)

Required T	ransmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
	Upgrade terminal equipment		
b3024	at Corry East 115 kV to		
	increase rating of Warren to		
	Corry East 115 kV line.		
	Replace bus conductor		PENELEC (100%)
	Install one 115 kV 36		
b3043	MVAR capacitor at West		
	Fall 115 kV substation		PENELEC (100%)
	Replace the Blairsville East		
	138/115 kV transformer and		
b3073	associated equipment such		
	as breaker disconnects and		
	bus conductor		PENELEC (100%)
	Reconductor the Franklin		
b3077	Pike B – Wayne 115 kV line		
	(6.78 miles)		PENELEC (100%)
	Reconductor the 138 kV bus		
	and replace the line trap,		
b3078	relays Morgan Street.		
	Reconductor the 138 kV bus		
	at Venango Junction		PENELEC (100%)
h2082	Construct 4-breaker 115 kV		
03082	ring bus at Geneva		PENELEC (100%)
	Rebuild 20 miles of the East		
b3137	Towanda – North		
	Meshoppen 115 kV line		PENELEC (100%)
	Upgrade bus conductor and		
h3111	relay panels of the Jackson		
03144	Road – Nanty Glo 46 kV		
	SJN line		PENELEC (100%)
	Upgrade line relaying and		
h21111	substation conductor on the		
03144.1	46 kV Nanty Glo line exit at		
	Jackson Road substation		PENELEC (100%)
	Upgrade line relaying and		
h2111 2	substation conductor on the		
03144.2	46 kV Jackson Road line		
	exit at Nanty Glo substation		PENELEC (100%)
	Install one (1) 13.2 MVAR		
b3154	46 kV capacitor at the		
	Logan substation		PENELEC (100%)

Required I	ransmission Enhancements Anr	iual Revenue Requirement	Responsible Customer(s)
	Replace the existing No. 2		
b3231	cap bank breaker at		
	Huntingdon substation with		
	a new breaker with higher		
	interrupting capability		PENELEC (100%)
	Replace the existing		
	Williamsburg, ALH		
	(Hollidaysburg) and bus		
b3232	section breaker at the		
	Altoona substation with a		
	new breaker with higher		
	interrupting capability		PENELEC (100%)
	Install one (1) 34 MVAR		
	115 kV shunt reactor and		
1,2222	breaker. Install one (1) 115		
03233	kV circuit breaker to expand		
	the substation to a 4-breaker		
	ring bus		PENELEC (100%)
	Install two (2) 46 kV 6.12		
b3237	MVAR capacitors effective		
	at Mt. Union		PENELEC (100%)
	Construct a new breaker-		
	and-a-half substation near		
	Tiffany substation. All		
	transmission assets and lines		
	will be relocated to the new		
b3245	substation. The two (2)		
	distribution transformers		
	will be fed via two (2)		
	dedicated 115 kV feeds to		
	the existing Tiffany		
	substation		PENELEC (100%)
	Install a second 125 MVAR		
	345 kV shunt reactor and		
	associated equipment at		
b3306	Pierce Brook substation.		
	Install a 345 kV breaker on		
	the high side of the 345/230		
	kV transformer #1		PENELEC (100%)

Tequilea I		idul Hevende Hegunement	
h3665	Replace several pieces of		
	1033.5 AAC substation		
	conductor at East Towanda		
03003	230 kV station on East		
	Towanda - Canyon 230 kV		
	line		PENELEC (100%)
	Install dual reactors and		
b3666	expand existing ring bus at		
	Marshall 230 kV substation		PENELEC (100%)
	Install second 230/115 kV		
b3667	transformer at Pierce Brook		
	substation		PENELEC (100%)
	Rebuild 2.5 miles of East		
	Towanda-North Meshoppen		
	115 kV line with 1113		
b3672	ACSS conductor using		
05072	single circuit construction.		
	Upgrade all terminal		
	equipment to the rating of		
	1113 ACSS		PENELEC (100%)
	Replace the relay panels at		
b3673	Bethlehem 33 46 kV		
00070	substation on the Cambria		
	Prison line		PENELEC (100%)
	Replace the Shawville		
	230/115/17.2 kV		
	transformer with a new		
4	Shawville 230/115 kV		
b3708	transformer and associated		
	facilities. Replace the plant's		
	No. 2B 115/17.2 kV		
	transformer with a larger		
	230/17.2 kV transformer		PENELEC (100%)
	Upgrade Seward terminal		
	equipment of Seward –		
	Blairsville 115 kV line to		
b3750	increase the line rating such		
	that the transmission line		
	conductor is the limiting		
	component		PENELEC (100%)

Required T	ransmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
	Rebuild 6.4 miles of		
	Roxbury – Shade Gap 115		
1.2751	kV line from Roxbury to the		
03/31	AE1-071 115 kV ring bus		
	with single circuit 115 kV		
	construction		PENELEC (100%)
	Rebuild 7.2 miles of the		
	Shade Gap – AE1-071 115		
b3752	kV line section of the		
	Roxbury – Shade Gap 115		
	kV line		PENELEC (100%)
	Replace the Tyrone North		
	115 /46 kV transformer with		
	a new standard 75 MVA top		
b3753	rated bank and upgrade the		
	entire terminal to minimum		
	100 MVA capability for		
	both SN and SE rating		PENELEC (100%)
	Construct a new three		
	breaker ring bus to tie into		
b3754	the Warrior Ridge -		
	Belleville 46 kV D line and		
	the 1LK line at Maclane Tap		PENELEC (100%)
	Purchase one 80 MVAR 345		
h2765	kV spare reactor, to be		
03703	located at the Mainesburg		
	345 kV station		PENELEC (100%)
	Cut and remove the 345 kV		
	and 230 kV generator lead		
	lines at Homer City station.		
	Install new station service		
b3783	supply, separate AC station		
	service, separate protection		
	and controls schemes, and		
	review and adjust relay		
	protection settings		PENELEC (100%)

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Derived Transmission Enhancements Annual Devenue Derivement Decremential Customer(a)

	<u>Rebuild the North</u> <u>Meshoppen - Mehoopany</u> No. 1 115 kV line with 795	
<u>b3791.0</u>	ACSR 26/7 STR conductor. Upgrade terminal equipment	
	to exceed transmission line ratings	PENELEC (100%)
	Rebuild the North	
	Meshoppen - Mehoopany	
1.0.0.0	No. 2 115 kV line using 795	
<u>b3792.0</u>	ACSR 26// STR conductor,	
	and upgrade terminal	
	equipment to exceed the	
	transmission line rating	<u>PENELEC (100%)</u>

SCHEDULE 12 – APPENDIX A

(8) **PECO Energy Company**

Required T	ransmission Enhancements Ar	nnual Revenue Requirement	Responsible Customer(s)
	Replace Waneeta 138 kV		
b2130	breaker '15' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		, , , , , , , , , , , , , , , , , , ,
b2131	breaker '35' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		
b2132	breaker '875' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		
b2133	breaker '895' with 63 kA		
	rated breaker		PECO (100%)
	Plymouth Meeting 230 kV		
b2134	breaker '115' with 63 kA		
	rated breaker		PECO (100%)
b 2222	Install a second Eddystone		
02222	230/138 kV transformer		PECO (100%)
	Replace the Eddystone 138		· · · ·
b2222.1	kV #205 breaker with 63		
	kA breaker		PECO (100%)
	Increase Rating of		
b2222.2	Eddystone #415 138 kV		
	Breaker		PECO (100%)
h2226	50 MVAR reactor at		
02230	Buckingham 230 kV		PECO (100%)
	Replace Whitpain 230 kV		
b2527	breaker '155' with 80 kA		
	breaker		PECO (100%)
	Replace Whitpain 230 kV		
b2528	breaker '525' with 80 kA		
	breaker		PECO (100%)
	Replace Whitpain 230 kV		
b2529	breaker '175' with 80 kA		
	breaker		PECO (100%)
	Replace terminal		
	equipment inside		
b2549	Chichester substation on		
	the 220-36 (Chichester –		
	Eddystone) 230 kV line		PECO (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2550	Replace terminal equipment inside Nottingham substation on the 220-05 (Nottingham – Daleville- Bradford) 230 kV line		PECO (100%)
b2551	Replace terminal equipment inside Llanerch substation on the 130-45 (Eddystone to Llanerch) 138 kV line		PECO (100%)
b2572	Replace the Peach Bottom 500 kV '#225' breaker with a 63 kA breaker		PECO (100%)
b2694	Increase ratings of Peach Bottom 500/230 kV transformer to 1479 MVA normal/1839 MVA emergency		AEC (3.97%)/ AEP (5.77%)/ APS (4.27%)/ ATSI (6.15%)/ BGE (1.63%)/ ComEd (0.72%)/ Dayton (1.06%)/ DEOK (1.97%)/ DL (2.25%)/ Dominion (0.35%)/ DPL (14.29%)/ ECP** (0.69%)/ EKPC (0.39%)/ HTP*** (0.96%)/ JCPL (6.84%) MetEd (3.28%)/ NEPTUNE* (2.14%)/ PECO (16.42%)/ PENELEC (3.94%)/ PPL (8.32%)/ PSEG (14.13%)/ RE (0.44%)
b2752.2	Tie in new Furnace Run substation to Peach Bottom – TMI 500 kV		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2752.3	Upgrade terminal equipment and required relay communication at Peach Bottom 500 kV: on the Beach Bottom – TMI 500 kV circuit		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)

*Neptune Regional Transmission System, LLC ** East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP
			(14.29%) / APS (5.82%) /
			ATSI (7.49%) / BGE
			(4.01%) / ComEd (14.06%) /
			Dayton (2.03%) / DEOK
	Un anada substation		(3.21%) / DL (1.59%) / DPL
	equipment at Peach Bottom 500 kV to increase facility rating to 2826 MVA normal and 3525 MVA emergency		(2.55%) / Dominion
			(13.89%) / EKPC (2.35%) /
b2766.2			JCPL (3.59%) / ME (1.81%)
			/ NEPTUNE* (0.42%) /
			OVEC (0.06%) / PECO
			(5.11%) / PENELEC
			(1.73%) / PEPCO (3.68%) /
			PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEC (11.03%)BGE
			(37.40%) / DPL (22.91%) /
			PEPCO (28.66%)

*Neptune Regional Transmission System, LLC

Required T	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Reconductor the Emilie -		
b2774	Falls 138 kV line, and		
	replace station cable and		
	relay		PECO (100%)
1.0775	Reconductor the Falls -		
02773	U.S. Steel 138 kV line		PECO (100%)
	Replace the Waneeta		
b2850	230 kV "285" with 63 kA		
	breaker		PECO (100%)
	Replace the Chichester		
b2852	230 kV "195" with 63 kA		
	breaker		PECO (100%)
	Replace the North		
b2854	Philadelphia 230 kV "CS		
	775" with 63 kA breaker		PECO (100%)
	Replace the North		
b2855	Philadelphia 230 kV "CS		
	885" with 63 kA breaker		PECO (100%)
	Replace the Parrish		
b2856	230 kV "CS 715" with 63		
	kA breaker		PECO (100%)
	Replace the Parrish		
b2857	230 kV "CS 825" with 63		
	kA breaker		PECO (100%)
	Replace the Parrish 230		
b2858	kV "CS 935" with 63 kA		
	breaker		PECO (100%)
4	Replace the Plymouth		
b2859	Meeting 230 kV "215"		
	with 63 kA breaker		PECO (100%)
1.00.00	Replace the Plymouth		
b2860	Meeting 230 kV "235"		
	with 63 kA breaker		PECO (100%)
1.00.01	Replace the Plymouth		
b2861	Meeting 230 kV "325"		
	with 63 kA breaker		PECO (100%)
1.00.00	Replace the Grays Ferry		
b2862	230 KV "/05" with 63 kA		
	breaker		PECO (100%)

Required 7	Transmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
	Replace the Grays Ferry 230		
b2863	kV "985" with 63 kA		
	breaker		PECO (100%)
	Replace the Grays Ferry 230		<u> </u>
b2864	kV "775" with 63 kA		
	breaker		PECO (100%)
	Replace the China Tap 230		<u> </u>
b2923	kV 'CS 15' breaker with a		
	63 kA breaker		PECO (100%)
	Replace the Emilie 230 kV		<u> </u>
b2924	'CS 15' breaker with 63 kA		
	breaker		PECO (100%)
	Replace the Emilie 230 kV		<u> </u>
b2925	'CS 25' breaker with 63 kA		
	breaker		PECO (100%)
	Replace the Chichester 230		· · · ·
b2926	kV '215' breaker with 63		
	kA breaker		PECO (100%)
	Replace the Plymouth		<u> </u>
b2927	Meeting 230 kV '125'		
	breaker with 63 kA breaker		PECO (100%)
	Replace the 230 kV CB		<u> </u>
	#225 at Linwood Substation		
1.2005	(PECO) with a double		
02985	circuit breaker (back to back		
	circuit breakers in one		
	device)		PECO (100%)
	Peach Bottom – Furnace		
b3041	Run 500 kV terminal		
	equipment		PECO (100%)
	Replace the Whitpain 230		
b3120	kV breaker "125" with a 63		
	kA breaker		PECO (100%)
	Move 2 MVA load from the		
	Roxborough to Bala		
b3138	substation. Adjust the tap		
	setting on the Master 138/69		
	kV transformer #2		PECO (100%)
b3146	Upgrade the Richmond 69		
	kV breaker "140" with 40		
	kA breaker		PECO (100%)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3697	Replace station conductor and metering inside Whitpain and Plymouth 230 kV substations to increase the ratings of the Whitpain – Plymouth 230		
	kV line		PECO (100%)
b3728.2	Replace 4 meters and bus work inside Peach Bottom substation on the 500 kV Line 5012 (Conastone – Peach Bottom)		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)
			DFAX Allocation: APS (3.94%) / ATSI (0.03%) / BGE (20.78%) / DL (0.01%) / DPL (0.02%) / Dominion (31.75%) / JCPL (6.99%) / NEPTUNE* (0.80%) / PECO (0.98%) / PEPCO (17.52%) / PPL (2.69%) / PSEG (13.93%) / RE (0.56%)

*Neptune Regional Transmission System, LLC

Required Tr	Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)				
		Load-Ratio Share Allocation:			
		AEC (1.65%) / AEP (14.29%) / APS			
		(5.82%) / ATSI (7.49%) / BGE (4.01%) /			
	Peach Bottom North upgrades – 500 kV substation work. Add 3x 500 kV breakers to form a breaker-and-a-half bay	ComEd (14.06%) / Dayton (2.03%) /			
		DEOK (3.21%) / DL (1.59%) / DPL			
		(2.55%) / Dominion (13.89%) / EKPC			
		(2.35%) / JCPL (3.59%) / ME (1.81%) /			
		NEPTUNE* (0.42%) / OVEC (0.06%) /			
b3780.1		PECO (5.11%) / PENELEC (1.73%) /			
		PEPCO (3.68%) / PPL (4.43%) / PSEG			
		(5.99%) / RE (0.24%)			
		DFAX Allocation:			
		ATSI (0.02%) / BGE (28.40%) /			
		Dominion (33.36%) / DPL (0.02%) /			
		JCPL (6.36%) / NEPTUNE* (0.73%) /			
		PECO (0.01%) / PEPCO (17.90%) /			
		PSEG (12.69%) / RE (0.51%)			
		Load-Ratio Share Allocation:			
		AEC (1.65%) / AEP (14.29%) / APS			
		(5.82%) / ATSI (7.49%) / BGE (4.01%) /			
		ComEd (14.06%) / Dayton (2.03%) /			
		DEOK (3.21%) / DL (1.59%) / DPL			
		(2.55%) / Dominion (13.89%) / EKPC			
	Basch Dattam to Creaston	(2.35%) / JCPL (3.59%) / ME (1.81%) /			
	(PECO) new 500 kV transmission line. New rating: 4503 MVA SN/5022 MVA SE	NEPTUNE* (0.42%) / OVEC (0.06%) /			
b3780.2		PECO (5.11%) / PENELEC (1.73%) /			
		PEPCO (3.68%) / PPL (4.43%) / PSEG			
		(5.99%) / RE (0.24%)			
		DFAX Allocation:			
		ATSI (0.02%) / BGE (28.40%) /			
		Dominion (33.36%) / DPL (0.02%) /			
		JCPL (6.36%) / NEPTUNE* (0.73%) /			
		PECO (0.01%) / PEPCO (17.90%) /			
		PSEG (12.69%) / RE (0.51%)			
	West Cooper substation work				
b3780.3	includes 3 breaker ring, 500/230				
	kV transformer, control house,				
	substation build, and reconfigure				
	Cooper distribution station feed.				
	New transformer rating: 1559				
	MVA SN/ 1940 MVA SE	DPL (41.52%) / PECO (58.48%)			

*Neptune Regional Transmission System, LLC

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
<u>b3780.14</u>	Reconfigure Cooper transmission feeds by establishing new Cooper - North Delta 230 kV line and rerouting existing transmissions lines by Cooper		<u>DPL (38.25%) / PECO</u> (61.75%)
<u>b3780.15</u>	<u>Cut-in 5012 Peach</u> <u>Bottom - Conastone 500</u> <u>kV line into North Delta</u> <u>500/230 kV substation by</u> <u>rebuilding 5012 between</u> <u>new terminal at Peach</u> <u>Bottom South and North</u> <u>Delta on single circuit</u> <u>structures and</u> <u>terminating at North</u> <u>Delta</u>		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (11.03%) / BGE (37.40%) / DPL (22.90%) / PECO (0.00%) / PEPCO (28.67%)

*Neptune Regional Transmission System, LLC
PECO Energy Company (cont.)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share
<u>b3800.52</u>	Reconfigure Peach Bottom North and South yards to allow for termination of 500 kV lines from Peach Bottom to North Delta. North Delta 500 kV termination for the new Peach Bottom - North Delta 500 kV line		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (11.03%) / BGE (37.40%) / DPL (22.90%) / PECO (0.00%) / PEPCO (28, 67%)
<u>b3844.1</u> <u>b3845.1</u>	Replacement of relays at Macdade, Printz, and Morton stations to increase rating limits of transmission relay equipment. Line protection relays will be upgraded with latest standard relays used across the PECO system Add a second 138 kV breaker next to Nottingham 895 CB to eliminate stuck breaker		<u>PECO (100%)</u>

SCHEDULE 12 – APPENDIX A

(12) Public Service Electric and Gas Company

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2218	Rebuild 4 miles of overhead line from Edison - Meadow Rd - Metuchen (Q 1317)		PSEG (100%)
b2239	50 MVAR reactor at Saddlebrook 230 kV		PSEG (100%)
b2240	50 MVAR reactor at Athenia 230 kV		PSEG (100%)
b2241	50 MVAR reactor at Bergen 230 kV		PSEG (100%)
b2242	50 MVAR reactor at Hudson 230 kV		PSEG (100%)
b2243	Two 50 MVAR reactors at Stanley Terrace 230 kV		PSEG (100%)
b2244	50 MVAR reactor at West Orange 230 kV		PSEG (100%)
b2245	50 MVAR reactor at Aldene 230 kV		PSEG (100%)
b2246	150 MVAR reactor at Camden 230 kV		PSEG (100%)
b2247	150 MVAR reactor at Gloucester 230 kV		PSEG (100%)
b2248	50 MVAR reactor at Clarksville 230 kV		PSEG (100%)
b2249	50 MVAR reactor at Hinchmans 230 kV		PSEG (100%)
b2250	50 MVAR reactor at Beaverbrook 230 kV		PSEG (100%)
b2251	50 MVAR reactor at Cox's Corner 230 kV		PSEG (100%)

The Annual Revenue Requirement for all Public Service Electric and Gas Company Projects (Required Transmission Enhancements) in this Section 12 shall be as specified in Attachment 7 of Attachment H-10A and under the procedures detailed in Attachment H-10B.

Required Tr	ansmission Enhancements	Annual Revenue Requirement	t Responsible Customer(s)
	Eliminate the Sewaren 138		
1-2276	kV bus by installing a new		
02270	230 kV bay at Sewaren		
	230 kV		PSEG (95.85%) / RE (4.15%)
	Convert the two 138 kV		
	circuits from Sewaren –		
h2276 1	Metuchen to 230 kV		
02270.1	circuits including		
	Lafayette and Woodbridge		
	substation		PSEG (95.85%) / RE (4.15%)
	Reconfigure the Metuchen		
h2276.2	230 kV station to		
02270.2	accommodate the two		
	converted circuits		PSEG (95.85%) / RE (4.15%)
	Replace disconnect		
	switches at Kilmer, Lake		
h2290	Nilson and Greenbrook		
02270	230 kV substations on the		
	Raritian River - Middlesex		
	(I-1023) circuit		PSEG (100%)
	Replace circuit switcher at		
	Lake Nelson 230 kV		
b2291	substation on the Raritian		
	River - Middlesex (W-		
	1037) circuit		PSEG (100%)
	Replace the Salem 500 kV		
b2295	breaker 10X with 63 kA		
	breaker		PSEG (100%)
	Install all 69 kV lines to		
	interconnect Plainfield,		
b2421	Greenbrook, and		
02421	Bridgewater stations and		
	establish the 69 kV		
	network		PSEG (100%)
	Install two 18 MVAR		
b2421.1	capacitors at Plainfield		
02721.1	and S. Second St		
	substation		PSEG (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2421.2	Install a second four (4) breaker 69 kV ring bus at Bridgewater Switching Station		PSEG (100%)
b2436.10	Convert the Bergen – Marion 138 kV path to double circuit 345 kV and associated substation upgrades	La Al A BG ((2) EK I (1. (4) P	oad-Ratio Share Allocation: EC (1.65%) / AEP (14.29%) / PS (5.82%) / ATSI (7.49%) / E (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (3.55%) / Dominion (13.89%) / XPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.21	Convert the Marion - Bayonne "L" 138 kV circuit to 345 kV and any associated substation upgrades	La Al A BG ((2) EK I (1. (4) P	oad-Ratio Share Allocation: EC (1.65%) / AEP (14.29%) / PS (5.82%) / ATSI (7.49%) / JE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (3.55%) / Dominion (13.89%) / XPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements An	nual Revenue Requirement Responsible Customer(s)
b2436.22	Convert the Marion - Bayonne "C" 138 kV circuit to 345 kV and any associated substation upgrades	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.33	Construct a new Bayway – Bayonne 345 kV circuit and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2436.34	Construct a new North Ave – Bayonne 345 kV circuit and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
	Construct a new North		
b2436 50	Ave - Airport 345 kV		
02450.50	circuit and any associated		
	substation upgrades		PSEG (95.85%) / RE (4.15%)
	Relocate the underground		
	portion of North Ave -		
	Linden "T" 138 kV circuit		
b2436.60	to Bayway, convert it to		
	345 kV, and any		
	associated substation		
	upgrades		PSEG (95.85%) / RE (4.15%)
	Construct a new Airport -		
b2436.70	Bayway 345 KV circuit		
kequired Ir b2436.50 b2436.60 b2436.70 b2436.81	and any associated		$\mathbf{D} \subseteq (05, 950/) / \mathbf{D} \subseteq (4, 150/)$
	substation upgrades		PSEG (95.85%) / RE (4.15%)
			Load-Kallo Share Allocation: A = C (1.65%) / A = D (14.20%)
			AEC (1.0370) / AEF (14.2970) / ADS (5.820%) / ATSI (7.400%)
			/ AFS (5.6270) / AFSI (7.4970) / BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
	Relocate the overhead		DEOK (3.21%) / DL (1.59%) /
	portion of Linden - North		DPL (2.55%) / Dominion
	Ave "T" 138 kV circuit to		(13.89%) / EKPC $(2.35%)$ /
b2436.81	Bayway, convert it to 345		JCPL (3.59%) / ME (1.81%) /
	kV, and any associated		NEPTUNE* (0.42%) / OVEC
	substation upgrades		(0.06%) / PECO (5.11%) /
	18		PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
b2436.83	Convert the Bayway - Linden "Z" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.84	Convert the Bayway – Linden "W" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
b2436.85	Convert the Bayway – Linden "M" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)
			DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.90	Relocate Farragut - Hudson "B" and "C" 345 kV circuits to Marion 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (100%)
b2436.91	Relocate the Hudson 2 generation to inject into the 345 kV at Marion and any associated upgrades		PSEG (100%)

b2437.10	New Bergen 345/230 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.11	New Bergen 345/138 kV transformer #1 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.20	New Bayway 345/138 kV transformer #1 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.21	New Bayway 345/138 kV transformer #2 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.30	New Linden 345/230 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.33	New Bayonne 345/69 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2438	Install two reactors at Tosco 230 kV	PSEG (100%)
b2439	Replace the Tosco 138 kV breaker 'CB1/2 (CBT)' with 63 kA	PSEG (100%)
b2474	Rebuild Athenia 138 kV to 80 kA	PSEG (100%)
b2589	Install a 100 MVAR 230 kV shunt reactor at Mercer station	PSEG (100%)
b2590	Install two 75 MVAR 230 kV capacitors at Sewaren station	PSEG (100%)

Required Tra	ansmission Enhancements Anr	nual Revenue Requirement Responsible Customer(s)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd (14.06%)
		/ Dayton (2.03%) / DEOK
		(3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) /
	Install an SVC at New	EKPC (2.35%) / JCPL (3.59%) /
b2633.3	Freedom 500 kV	ME (1.81%) / NEPTUNE*
	substation	(0.42%) / OVEC (0.06%) /
		PECO (5.11%) / PENELEC
		(1.73%) / PEPCO (3.68%) / PPL
		(4.43%) / PSEG (5.99%) / RE
		(0.24%)
		DFAX Allocation:
		AEC (0.01%) / DPL (99.98%) /
		JCPL (0.01%)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd (14.06%)
		/ Dayton (2.03%) / DEOK
		(3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) /
		EKPC (2.35%) / JCPL (3.59%) /
		ME (1.81%) / NEPTUNE*
10(00.4	Add a new 500 kV bay at 1.00	(0.42%) / OVEC $(0.06%)$ /
62633.4	Hope Creek (Expansion of	$\frac{PECO(5.11\%)}{PENELEC}$
	Hope Creek substation)	(1./3%) / PEPCO $(3.68%)$ / PPL $(4.42%)$ / PEEC $(5.00%)$ / PE
		(4.43%) / PSEG (5.99%) / RE
		 (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%) Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / NEPTUNE* (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
		$\mathbf{DFAX Allocation:}$
		AEC (8.01%) / BGE (1.94%) / DDL $(12.000/)$ / LCDL $(12.950/)$
		DPL (12.99%) / JCPL (13.85%) / ME (5.990/) / NEDTUNE*
		$ \frac{1}{2} \frac{1}{450} \frac{1}{$
		(3.43%) / PEUU (17.02%) / PPL (14.95%) / DEEC (20.70%) / DE
		(14.03%) / PSEU(20.79%) / KE
		(0.62%)

Required Tra	ansmission Enhancements Anr	nual Revenue Requirement Responsible Customer(s)
b2633.5	Add a new 500/230 kV autotransformer at Hope Creek and a new Hope Creek 230 kV substation	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / NEPTUNE* (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE
b2633.8	Implement high speed relaying utilizing OPGW on Salem – Orchard 500 kV, Hope Creek – New Freedom 500 kV, New Freedom - Salem 500 kV, Hope Creek – Salem 500 kV, and New Freedom – Orchard 500 kV lines	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)

		I	
b2633.91	Implement changes to the tap settings for the two Salem units' step up transformers		AEC (0.01%) / DPL (99.98%) /
	transformers		JCPL (0.01%)
b2633.92	Implement changes to the tap settings for the Hope Creek unit's step up transformers		AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)
Ь2702	Install a 350 MVAR reactor at Roseland 500 kV		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (100%)
b2703	Install a 100 MVAR reactor at Bergen 230 kV		PSEG (100%)
b2704	Install a 150 MVAR reactor at Essex 230 kV		PSEG (100%)
b2705	Install a 200 MVAR reactor (variable) at Bergen 345 kV		PSEG (100%)
b2706	Install a 200 MVAR reactor (variable) at Bayway 345 kV		PSEG (100%)
b2707	Install a 100 MVAR reactor at Bayonne 345 kV		PSEG (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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b2712	Replace the Bergen 138 kV '40P'breaker with 80 kA	
02/12	breaker	PSEG (100%)
b2713	Replace the Bergen 138 kV '90P' breaker with 80 kA breaker	PSEG (100%)
b2722	Reconductor the 1 mile Bergen – Bergen GT 138 kV circuit (B-1302)	PSEG (100%)
b2755	Build a third 345 kV source into Newark Airport	PSEG (95.85%) / RE (4.15%)
b2810.1	Install second 230/69 kV transformer at Cedar Grove	PSEG (95.85%) / RE (4.15%)
b2810.2	Build a new 69 kV circuit from Cedar Grove to Great Notch	PSEG (95.85%) / RE (4.15%)
b2811	Build 69 kV circuit from Locust Street to Delair	PSEG (95.85%) / RE (4.15%)
b2812	Construct River Road to Tonnelle Avenue 69kV Circuit	PSEG (95.85%) / RE (4.15%)
b2825.1	Install 2X50 MVAR shunt reactors at Kearny 230 kV substation	PSEG (100%)
b2825.2	Increase the size of the Hudson 230 kV, 2X50 MVAR shunt reactors to 2X100 MVAR	PSEG (100%)
b2825.3	Install 2X100 MVAR shunt reactors at Bayway 345 kV substation	PSEG (100%)
b2825.4	Install 2X100 MVAR shunt reactors at Linden 345 kV substation	PSEG (100%)
b2835	Convert the R-1318 and Q1317 (Edison – Metuchen) 138 kV circuits to one 230 kV circuit	See sub-IDs for cost allocations

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Conver the R-1318 and Q-		
	1317 (Edison – Metuchen)		
b2835.1	138 kV circuits to one 230		AEC (14.94%) / PECO
	kV circuit (Brunswick –		(44.49%) / PSEG (38.89%) /
	Meadow Road)		RE (1.68%)
	Convert the R-1318 and Q-		
	1317 (Edison - Metuchen)		
b2835.2	138 kV circuits to one 230		AEC (13.15%) / PECO
	kV circuit (Meadow Road -		(39.12%) / PSEG (45.75%) /
	Pierson Ave)		RE (1.98%)
	Convert the R-1318 and Q-		
	1317 (Edison - Metuchen)		
b2835.3	138 kV circuits to one 230		AEC (11.57%) / PECO
	kV circuit (Pierson Ave -		(34.41%) / PSEG (51.78%) /
	Metuchen)		RE (2.24%)
	Convert the N-1340 and T-		
12026	1372/D-1330 (Brunswick -		
02850	Trenton) 138 kV circuits to		
	230 kV circuits		See sub-IDs for cost allocations
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.1	Trenton) 138 kV circuits to		AEC (8.23%) / NEPTUNE*
	230 kV circuits (Brunswick		(43.36%) / PECO (30.19%) /
	- Hunterglen)		PSEG (17.46%) / RE (0.76%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.2	Trenton) 138 kV circuits to		AEC (2.14%) / NEPTUNE*
	230 kV circuits (Hunterglen		(11.80%) / PECO (7.72%) /
	- Trenton)		PSEG (75.09%) / RE (3.25%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.3	Trenton) 138 kV circuits to		AEC (6.98%) / NEPTUNE*
	230 kV circuits (Brunswick		(64.26%) / PECO (25.38%) /
	- Devils Brook)		PSEG (3.24%) / RE (0.14%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.4	Trenton) 138 kV circuits to		AEC (5.13%) / NEPTUNE*
	230 kV circuits (Devils		(28.43%) / PECO (18.69%) /
	Brook - Trenton)		PSEG (45.77%) / RE (1.98%)

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	C (1) E 1250/7122(I	
	Convert the F-1358/Z1326		
	and K1363/Y-1325		
b2837	(Trenton – Burlington) 138		
	kV circuits to 230 kV		
	circuits		See sub-IDs for cost allocations
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
1 2027 1	(Trenton - Burlington) 138		
62837.1	kV circuits to 230 kV		
	circuits (Trenton - Yardville		NEPTUNE* (10.75%) / PSEG
	K)		(85.55%) / RE (3.70%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
	(Trenton - Burlington) 138		
b2837.2	kV circuits to 230 kV		
	circuits (Vardville - Ward		NEPTLINE* (8 84%) / PSEG
	Ave K)		(87.38%) / RE (3.78%)
	Convert the N 1240 and T		(87.3870)7 KE (3.7870)
	Convert the N-1340 and 1- $1272/D$ 1220 (Prupoviol		
1-2027 2	Trantan) 128 IV airevits to		
02037.3	220 IV sincuits (Drug anvials		NEDTLINE* $(9.240/)$ / DSEC
	230 KV circuits (Brunswick		$\frac{\text{NEPTUNE}^{+}(8.24\%)}{\text{PSEG}}$
	- Devils Brook)		(87.95%)7 KE (3.81%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
b2837.4	(Trenton - Burlington) 138		
	kV circuits to 230 kV		
	circuits (Crosswicks -		NEPTUNE* (6.96%) / PSEG
	Bustleton Y)		(89.18%) / RE (3.86%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2837 5	(Trenton - Burlington) 138		
02037.5	kV circuits to 230 kV		
	circuits (Bustleton -		NEPTUNE* (5.95%) / PSEG
	Burlington Y)		(90.15%) / RE (3.90%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2827 6	(Trenton - Burlington) 138		
02037.0	kV circuits to 230 kV		
	circuits (Trenton - Yardville		NEPTUNE* (12.83%) / PSEG
	F)		(83.55%) / RE (3.62%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required II		Revenue Requirement	
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
b28377	(Trenton - Burlington) 138		
02057.7	kV circuits to 230 kV		
	circuits (Yardville - Ward		NEPTUNE* (9.98%) / PSEG
	Ave F)		(86.29%) / RE (3.73%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2837.8	(Trenton - Burlington) 138		
02037.0	kV circuits to 230 kV		
	circuits (Ward Ave -		NEPTUNE* (9.98%) / PSEG
	Crosswicks Z)		(86.29%) / RE (3.73%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2837 0	(Trenton - Burlington) 138		
02037.9	kV circuits to 230 kV		
	circuits (Crosswicks -		NEPTUNE* (8.01%) / PSEG
	Williams Z)		(88.18%) / RE (3.81%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2837 10	(Trenton - Burlington) 138		
02037.10	kV circuits to 230 kV		
	circuits (Williams -		NEPTUNE* (7.16%) / PSEG
	Bustleton Z)		(88.99%) / RE (3.85%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
h2027 11	(Trenton - Burlington) 138		
02037.11	kV circuits to 230 kV		
	circuits (Bustleton -		NEPTUNE* (5.54%) / PSEG
	Burlington Z)		(90.54%) / RE (3.92%)
	Build new 138/26 kV		
	Newark GIS station in a		
	building (layout #1A)		
b2870	located adjacent to the		
	existing Newark Switch and		
	demolish the existing		
	Newark Switch		PSEG (100%)
	Third Source for		
b2933	Springfield Rd. and Stanley		
	Terrace Stations		PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2933.1	Construct a 230/69 kV station at Springfield	PSEG (95.85%) / RE (4.15%)
b2933.2	Construct a 230/69 kV station at Stanley Terrace	PSEG (95.85%) / RE (4.15%)
b2933.31	Construct a 69 kV network between Front Street, Springfield and Stanley Terrace (Front Street - Springfield)	PSEG (95.85%) / RE (4.15%)
b2933.32	Construct a 69 kV network between Front Street, Springfield and Stanley Terrace (Springfield – Stanley Terrace)	PSEG (95.85%) / RE (4.15%)
b2934	Build a new 69 kV line between Hasbrouck Heights and Carlstadt	PSEG (95.85%) / RE (4.15%)
b2935	Third Supply for Runnemede 69 kV and Woodbury 69 kV	PSEG (95.85%) / RE (4.15%)
b2935.1	Build a new 230/69 kV switching substation at Hilltop utilizing the PSE&G property and the K-2237 230 kV line	PSEG (95.85%) / RE (4.15%)
b2935.2	Build a new line between Hilltop and Woodbury 69 kV providing the 3rd supply	PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1100[001000 110		
b2935.3	Convert Runnemede's straight bus to a ring bus and construct a 69 kV line from Hilltop to Runnemede	
	69 kV	PSEG (95.85%) / RE (4.15%)
b2955	Wreck and rebuild the VFT – Warinanco – Aldene 230 kV circuit with paired conductor	PSEG (95.85%) / RE (4.15%)
b2956	Replace existing cable on Cedar Grove - Jackson Rd. with 5000 kcmil XLPE cable	PSEG (95.85%) / RE (4.15%)
b2982	Construct a 230/69 kV station at Hillsdale Substation and tie to Paramus and Dumont at 69 kV	PSEG (95.85%) / RE (4.15%)
b2982.1	Install a 69 kV ring bus and one (1) 230/69 kV transformer at Hillsdale	PSEG (95.85%) / RE (4.15%)
b2982.2	Construct a 69 kV network between Paramus, Dumont, and Hillsdale Substation using existing 69 kV circuits	PSEG (95.85%) / RE (4.15%)
b2983	Convert Kuller Road to a 69/13 kV station	PSEG (95.85%) / RE (4.15%)
b2983.1	Install 69 kV ring bus and two (2) 69/13 kV transformers at Kuller Road	PSEG (95.85%) / RE (4.15%)
b2983.2	Construct a 69 kV network between Kuller Road, Passaic, Paterson, and Harvey (new Clifton area switching station)	PSEG (95.85%) / RE (4.15%)
b2986	Replace the existing Roseland – Branchburg – Pleasant Valley 230 kV corridor with new structures	See sub-IDs for cost allocations

1		1	1
	Roseland-Branchburg 230		
b2986.11	kV corridor rebuild		
	(Roseland - Readington)		PSEG (95.85%) / RE (4.15%)
	Roseland-Branchburg 230		
b2986.12	kV corridor rebuild		JCPL (58.66%) / PSEG
	(Readington - Branchburg)		(39.62%) / RE (1.72%)
	Branchburg-Pleasant Valley		
1000001	230 kV corridor rebuild		NEPTUNE* (0.37%) / PECO
62986.21	(Branchburg - East		(98.94%) / PSEG (0.66%) / RE
	Flemington)		(0.03%)
	Branchburg-Pleasant Valley		
1000000	230 kV corridor rebuild		NEPTUNE* (5.83%) / PECO
62986.22	(East Flemington - Pleasant		(83.73%) / PSEG (10.01%) /
	Valley)		RE (0.43%)
	Branchburg-Pleasant Valley		
1000000	230 kV corridor rebuild		JCPL (26.89%) / NEPTUNE*
62986.23	(Pleasant Valley -		(4.81%) / PECO (8.88%) /
	Rocktown)		PSEG (56.96%) / RE (2.46%)
	Branchburg-Pleasant Valley		
12096.24	230 kV corridor rebuild		JCPL (33.60%) / NEPTUNE*
62986.24	(the PSEG portion of		(4.40%) / PECO (6.02%) /
	Rocktown - Buckingham)		PSEG (53.66%) / RE (2.32%)
	Construct a 230/69 kV		
b3003	station at Maywood		PSEG(05.85%) / PE(1.15%)
	Durchasa proportios at		FSEG (95.8576)7 KE (4.1576)
h2002 1	Maxwood to accommodate		
03003.1	nay construction		$DSEC_{1}(05, 850/) / DE_{1}(4, 150/)$
	Futer d Marrie e d 220 I-V		PSEG (95.85%) / KE (4.15%)
h2002.2	Exterio Maywood 250 KV		
03003.2	bus and install one (1) 250		DSEC (05 850/) / DE (4 150/)
	K V Dreaker		<u> </u>
b3003.3	Install one (1) 230/69 kV		
0000010	transformer at Maywood		PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3003.4	Install Maywood 69 kV ring bus	PSEG (95.85%) / RE (4.15%)
b3003.5	Construct a 69 kV network between Spring Valley Road, Hasbrouck Heights, and Maywood	PSEG (95.85%) / RE (4.15%)
b3004	Construct a 230/69/13 kV station by tapping the Mercer – Kuser Rd 230 kV circuit	PSEG (95.85%) / RE (4.15%)
b3004.1	Install a new Clinton 230 kV ring bus with one (1) 230/69 kV transformer Mercer - Kuser Rd 230 kV circuit	PSEG (95.85%) / RE (4.15%)
b3004.2	Expand existing 69 kV ring bus at Clinton Ave with two (2) additional 69 kV breakers	PSEG (95.85%) / RE (4.15%)
b3004.3	Install two (2) 69/13 kV transformers at Clinton Ave	PSEG (95.85%) / RE (4.15%)
b3004.4	Install 18 MVAR capacitor bank at Clinton Ave 69 kV	PSEG (95.85%) / RE (4.15%)
b3025	Construct two (2) new 69/13 kV stations in the Doremus area and relocate the Doremus load to the new stations	PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1	T Contraction of the second seco	
	Install a new 69/13 kV	
b3025.1	station (Vauxhall) with a ring	
	bus configuration	PSEG (95.85%) / RE (4.15%)
	Install a new 69/13 kV	
b3025.2	station (19th Ave) with a ring	
	bus configuration	PSEG (95.85%) / RE (4.15%)
	Construct a 69 kV network	
	between Stanley Terrace,	
h3025 3	Springfield Road, McCarter,	
05025.5	Federal Square, and the two	
	new stations (Vauxhall &	
	19th Ave)	PSEG (95.85%) / RE (4.15%)
	Construct a third 69 kV	
b3703	supply line from Penns Neck	
03703	substation to West Windsor	
	substation	PSEG (100%)
	Replace the Lawrence	
	switching station 230/69 kV	
	Transformer No. 220-4 and	
	its associated circuit	
	switchers with a new larger	
	capacity transformer with	
	load tap changer (LTC) and	
b3704	new dead tank circuit	
	breaker. Install a new 230 kV	
	gas insulated breaker,	
	associated disconnects,	
	overhead bus and other	
	necessary equipment to	
	complete the bay within the	
	Lawrence 230 kV switchyard	PSEG (100%)
	Replace existing 230/138 kV	
b3705	Athenia Transformer No.	
	220-1	PSEG (95.85%) / RE (4.15%)
	Replace Fair Lawn 230/138	
1.2706	kV transformer No. 220-1	
03/06	with an existing O&M	
	system spare at Burlington	PSEG (100%)
	Construct a third 69 kV	``````````````````````````````````````
1.2716	supply line from Totowa	
03/10	substation to the customer's	
	substation	PSEG (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)

b3719	Replace the two existing 1200A Bergen 138 kV circuit switchers with two 138 kV disconnect switches to achieve a minimum summer normal device rating of 298 MVA and a minimum summer emergency rating of 454 MVA	PSEG (100%)
b3757	Convert existing Medford 69 kV straight bus to seven- breaker ring bus, construct a new 230/69 kV transformer at Cox's Corner station and a new 69 kV line from Cox's Corner station to Medford station	PSEG (100%)
<u>b3794.1</u>	Replace existing Waldwick230 kV 50 MVAR fixedshunt reactor with a 230 kV150 MVAR variable shuntreactor	<u>PSEG (100%)</u>
<u>b3794.2</u>	Replace existing Waldwick 345 kV 100 MVAR fixed shunt reactor with a 345 kV 150 MVAR variable shunt reactor	<u>PSEG (100%)</u>

SCHEDULE 12 – APPENDIX A

Required Tra	Insmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
	Reconductor 0.33 miles of		
	the Parkersburg - Belpre		
b2117	line and upgrade		
	Parkersburg terminal		
	equipment		APS (100%)
b2118	Add 44 MVAR Cap at New		
02110	Martinsville		APS (100%)
b2120	Six-Wire Lake Lynn -		
02120	Lardin 138 kV circuits		APS (100%)
	Replace Weirton 138 kV		
b2142	breaker "Wylie Ridge 210"		
	with 63 kA breaker		APS (100%)
	Replace Weirton 138 kV		
b2143	breaker "Wylie Ridge 216"		
	with 63 kA breaker		APS (100%)
b2174.8	Replace relays at Mitchell		
02171.0	substation		APS (100%)
b2174 9	Replace primary relay at		
02171.9	Piney Fork substation		APS (100%)
	Perform relay setting		
b2174.10	changes at Bethel Park		
	substation		APS (100%)
	Armstrong Substation:		
	Relocate 138 kV controls		
b2213	from the generating station		
	building to new control		
	building		APS (100%)
	Albright Substation: Install		
	a new control building in		
10014	the switchyard and relocate		
b2214	controls and SCADA		
	equipment from the		
	generating station building		
	the new control center		APS (100%)
	Rivesville Switching		
	Station: Relocate controls		
b2215	and SCADA equipment		
02210	from the generating station		
	building to new control		
	building		APS (100%)

Required Tr	ransmission Enhancements A	annual Revenue Requirement	Responsible Customer(s)
	Willow Island: Install a new		
	138 kV cross bus at		
	Belmont Substation and		
h2216	reconnect and reconfigure		
02210	the 138 kV lines to facilitate		
	removal of the equipment at		
	Willow Island switching		
	station		APS (100%)
h2225	130 MVAR reactor at		
02233	Monocacy 230 kV		APS (100%)
h2260	Install a 32.4 MVAR		
02200	capacitor at Bartonville		APS (100%)
h2261	Install a 33 MVAR		
02201	capacitor at Damascus		APS (100%)
	Replace 1000 Cu substation		
b2267	conductor and 1200 amp		
	wave trap at Marlowe		APS (100%)
	Reconductor 6.8 miles of		
h2268	138kV 336 ACSR with 336		
02200	ACSS from Double Toll		
	Gate to Riverton		APS (100%)
	Reconductor from Collins		
b2299	Ferry - West Run 138 kV		
	with 556 ACSS		APS (100%)
b2300	Reconductor from Lake		
02500	Lynn - West Run 138 kV		APS (100%)
	Install 39.6 MVAR		
b2341	Capacitor at Shaffers Corner		
	138 kV Substation		APS (100%)
	Construct a new 138 kV		
	switching station (Shuman		
b2342	Hill substation), which is		
	next the Mobley 138 kV		
	substation and install a 31.7		
	MVAR capacitor	+	APS (100%)
1.00.10	Install a 31.7 MVAR		
b2343	capacitor at West Union 138		
	kV substation		APS (100%)

Required Tr	ransmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
1-2262	Install a 250 MVAR SVC at		
02302	Squab Hollow 230 kV		APS (100%)
	Install a 230 kV breaker at		
b2362.1	Squab Hollow 230 kV		
	substation		APS (100%)
	Convert the Shingletown		· · ·
b2363	230 kV bus into a 6 breaker		
	ring bus		APS (100%)
	Install a new 230/138 kV		
	transformer at Squab		
	Hollow 230 kV substation.		
1-2261	Loop the Forest - Elko 230		
02304	kV line into Squab Hollow.		
	Loop the Brookville - Elko		
	138 kV line into Squab		
	Hollow		APS (100%)
	Install a 44 MVAR 138 kV		
b2412	capacitor at the Hempfield		
	138 kV substation		APS (100%)
	Install breaker and a half		
	138 kV substation (Waldo		
	Run) with 4 breakers to		
b2/133-1	accommodate service to		
02455.1	MarkWest Sherwood		
	Facility including metering		
	which is cut into Glen Falls		
	Lamberton 138 kV line		APS (100%)
	Install a 70 MVAR SVC at		
b2433.2	the new WaldoRun 138 kV		
	substation		APS (100%)
	Install two 31.7 MVAR		
h2/33 3	capacitors at the new		
02455.5	WaldoRun 138 kV		
	substation		APS (100%)
	Replace the Weirton 138 kV		
b2424	breaker 'WYLIE RID210'		
	with 63 kA breakers		APS (100%)
	Replace the Weirton 138 kV		
b2425	breaker 'WYLIE RID216'		
	with 63 kA breakers		APS (100%)

Required Tr	ransmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
	Replace the Oak Grove 138		
b2426	kV breaker 'OG1' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2427	kV breaker 'OG2' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2428	kV breaker 'OG3' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2429	kV breaker 'OG4' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2430	kV breaker 'OG5' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		\$ 7 F
b2431	kV breaker 'OG6' with 63		
	kA breakers		APS (100%)
	Replace the Ridgeley 138		<u> </u>
b2432	kV breaker 'RC1' with a 40		
	kA rated breaker		APS (100%)
	Replace the Cabot 138kV		
b2440	breaker 'C9-KISKI VLY'		
	with 63kA		APS (100%)
	Replace the Ringgold 138		
b2472	kV breaker 'RCM1' with		
	40kA breakers		APS (100%)
	Replace the Ringgold 138		
b2473	kV breaker '#4 XMFR' with		
	40kA breakers		APS (100%)
	Construct a new line		
h2475	between Oak Mound 138		
024/3	kV substation and Waldo		
	Run 138 kV substation		APS (100%)
	Construct a new 138 kV		
	substation (Shuman Hill		
b2545.1	substation) connected to the		
	Fairview – Willow Island		
	(84) 138 kV line		APS (100%)

Required T	ransmission Enhancements Annual R	evenue Requirement	Responsible Customer(s)
	Install a ring bus station with five		
1.2545.2	active positions and two 52.8		
02343.2	MVAR capacitors with 0.941 mH		
	reactors		APS (100%)
h2515 2	Install a +90/-30 MVAR SVC		
02343.5	protected by a 138 kV breaker		APS (100%)
h25151	Remove the 31.7 MVAR capacitor		
02343.4	bank at Mobley 138 kV		APS (100%)
	Install a 51.8 MVAR (rated) 138 kV		
b2546	capacitor at Nyswaner 138 kV		
	substation		APS (100%)
h2517 1	Construct a new 138 kV six breaker		
02347.1	ring bus Hillman substation		APS (100%)
h2517 2	Loop Smith- Imperial 138 kV line		
02347.2	into the new Hillman substation		APS (100%)
h2517 2	Install +125/-75 MVAR SVC at		
02347.3	Hillman substation		APS (100%)
h25171	Install two 31.7 MVAR 138 kV		
02347.4	capacitors		APS (100%)
	Eliminate clearance de-rate on		
	Wylie Ridge – Smith 138 kV line		
b2548	and upgrade terminals at Smith 138		
	kV, new line ratings 294 MVA		
	(Rate A)/350 MVA (Rate B)		APS (100%)
h26121	Relocate All Dam 6 138 kV line and		
02012.1	the 138 kV line to AE units 1&2		APS (100%)
	Install 138 kV, 3000A bus-tie		
h2612.2	breaker in the open bus-tie position		
02012.2	next to the Shaffers corner 138 kV		
	line		APS (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Install a 6-pole manual		
b2612.3	switch, foundation, control		
	cable, and all associated		
	facilities		APS (100%)
1-2666	Yukon 138 kV Breaker		
02000	Replacement		APS (100%)
	Replace Yukon 138 kV		
b2666.1	breaker "Y-11(CHARL1)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.2	breaker "Y-13(BETHEL)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.3	breaker "Y-18(CHARL2)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.4	breaker "Y-19(CHARL2)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.5	breaker "Y-4(4B-2BUS)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.6	breaker "Y-5(LAYTON)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.7	breaker "Y-8(HUNTING)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.8	breaker "Y-9(SPRINGD)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.9	breaker "Y-10(CHRL-SP)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.10	breaker "Y-12(1-1BUS)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.11	breaker "Y-14(4-1BUS)"		
	with an 80 kA breaker		APS (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Replace Yukon 138 kV		
b2666.12	breaker "Y-2(1B-BETHE)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.13	breaker "Y-21(SHEPJ)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666 11	breaker		
02000.14	"Y-22(SHEPHJT)" with an		
	80 kA breaker		APS (100%)
	Change CT Ratio at Seneca		
h2672	Caverns from 120/1 to 160/1		
02072	and adjust relay settings		
	accordingly		APS (100%)
		AE	P (12.91%) / APS (19.04%)
	Carroll Substation: Replace	/	/ ATSI (1.24%) / ComEd
	the Germantown 138 kV	(0).35%) / Dayton (1.45%) /
b2688.3	wave trap, upgrade the bus	DE	OK (2.30%) / DL (1.11%) /
	conductor and adjust CT	De	ominion (44.85%) / EKPC
	ratios	(0.	.78%) / PEPCO (15.85%) /
			RECO (0.12%)
h2680.2	Upgrade terminal equipment		
02089.5	at structure 27A		APS (100%)
	Upgrade 138 kV substation		
	equipment at Butler, Shanor		
	Manor and Krendale		
b2696	substations. New rating of		
	line will be 353 MVA		
	summer normal/422 MVA		
	emergency		APS (100%)
h2700	Remove existing Black Oak		
02700	SPS		APS (100%)
		AE	EP (6.46%) / APS (8.74%) /
	Deconfigure the Dinggold		BGE (19.74%) / ComEd
127426	220 hV substation to double	(2	2.16%) / Dayton (0.59%) /
b2743.6	250 KV substation to double	DÈ	OK (1.02%) / DL (0.01%) /
	bus double breaker scheme	D	ominion (39.95%) / EKPC
		(0	0.45%) / PEPCO (20.88%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2743.6.1	Replace the two Ringgold 230/138 kV transformers		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2743.7	Rebuild/Reconductor the Ringgold – Catoctin 138 kV circuit and upgrade terminal equipment on both ends		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2747.1	Relocate the FirstEnergy Pratts 138 kV terminal CVTs at Gordonsville substation to allow for the installation of a new motor operated switch being installed by Dominion		APS (100%)
b2763	Replace the breaker risers and wave trap at Bredinville 138 kV substation on the Cabrey Junction 138 kV terminal		APS (100%)
b2764	Upgrade Fairview 138 kV breaker risers and disconnect leads; Replace 500 CU breaker risers and 556 ACSR disconnect leads with 795 ACSR		APS (100%)
b2964.1	Replace terminal equipment at Pruntytown and Glen Falls 138 kV station		APS (100%)
b2964.2	Reconductor approximately 8.3 miles of the McAlpin - White Hall Junction 138 kV circuit		APS (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Reconductor the Charleroi –		
	Allenport 138 kV line with		
b2965	954 ACSR conductor.		
	Replace breaker risers at		APS (37.15%) / DL
	Charleroi and Allenport		(62.85%)
	Reconductor the Yukon –		
	Smithton – Shepler Hill Jct		
b2966	138 kV line with 795 ACSS		
	conductor. Replace Line		
	Disconnect Switch at Yukon		APS (100%)
	Reconductor the Yukon -		
	Smithton - Shepler Hill Jct		
b2966 1	138 kV line and replace		
02700.1	terminal equipment as		
	necessary to achieve		
	required rating		APS (100%)
	Convert the existing 6 wire		
	Butler - Shanor Manor -		
	Krendale 138 kV line into		
b2967	two separate 138 kV lines.		
	New lines will be Butler -		
	Keisters and Butler - Shanor		
	Manor - Krendale 138 kV		APS (100%)
b2970	Ringgold – Catoctin		
02510	Solution		APS (100%)
	Install two new 230 kV		
b2970.1	positions at Ringgold for		
	230/138 kV transformers		APS (100%)
	Install new 230 kV position		
b2970.2	for Ringgold – Catoctin 230		
	kV line		APS (100%)
	Install one new 230 kV		
b2970.3	breaker at Catoctin		
	substation		APS (100%)
	Install new 230/138 kV		
	transformer at Catoctin		
b2970.4	substation. Convert		
	Ringgold – Catoctin 138 kV		
	line to 230 kV operation		APS (100%)

Required Tr	ansmission Enhancements Annu	ual Revenue Requirement	Responsible Customer(s)
h2070 5	Convert Garfield 138/12.5 kV		
02770.5	substation to 230/12.5 kV		APS (100%)
h2006	Construct new Flint Run 500/138		See sub-IDs for cost
02990	kV substation		allocations
	Construct a new 500/138 kV		
	substation as a 4-breaker ring bus		
	with expansion plans for double-		
	breaker-double-bus on the 500		
	kV bus and breaker-and-a-half on		
	the 138 kV bus to provide EHV		
	source to the Marcellus shale		
	load growth area. Projected load		
	growth of additional 160 MVA to		
	current plan of 280 MVA, for a		
	total load of 440 MVA served		
1 200 (1	from Waldo Run substation.		
62996.1	Construct additional 3-breaker		
	string at Waldo Run 138 kV bus.		
	Relocate the Sherwood #2 line		
	terminal to the new string.		
	Construct two single circuit Flint		
	Run - Waldo Run 138 kV lines		
	using 795 ACSR (approximately		
	3 miles). After terminal		
	relocation on new 3-breaker		
	string at Waldo Run, terminate		
	new Flint Run 138 kV lines onto		
	the two open terminals		APS (100%)
	Loop the Belmont – Harrison 500		
	kV line into and out of the new		
	Flint Run 500 kV substation (less		
b2996.2	than 1 mile). Replace primary		
	relaving and carrier sets on		
	Belmont and Harrison 500 kV		
	remote end substations		APS (100%)
	Upgrade two (2) existing 138 kV		(/
1.000 5.0	breakers (Rider 50 and $\#1/4$		
b2996.3	transformer breaker) at Glen Falls		
	with 63 kA 3000A units		APS (100%)

Required T	ransmission Enhancements An	nual Revenue Requirement	Responsible Customer(s)
b3005	Reconductor 3.1 mile 556 ACSR portion of Cabot to Butler 138 kV with 556 ACSS and upgrade terminal equipment. 3.1 miles of line will be reconductored for this project. The total length of the line is 7.75 miles		A.D.S. (1009/)
b3006	Replace four Yukon 500/138 kV transformers with three transformers with higher rating and reconfigure 500 kV bus		APS (63.21%) / DL (36.79%)
b3007.1	Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment - AP portion. 4.8 miles total. The new conductor will be 636 ACSS replacing the existing 636 ACSR conductor. At Social Hall, meters, relays, bus conductor, a wave trap, circuit breaker and disconnects will be replaced		APS (100%)
b3010	Replace terminal equipment at Keystone and Cabot 500 kV buses. At Keystone, bus tubing and conductor, a wave trap, and meter will be replaced. At Cabot, a wave trap and bus conductor will be replaced		APS (100%)
b3011.1	Construct new Route 51 substation and connect 10 138 kV lines to new substation		DL (100%)
b3011.2	Upgrade terminal equipment at Yukon to increase rating on Yukon to Charleroi #2 138 kV line (New Yukon to Route 51 #4 138 kV line)		APS (22.82%) / DL (77.18%)

		1 1	
b3011.3	Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #1 138 kV line		DL (100%)
b3011.4	Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #2 138 kV line		DL (100%)
b3011.5	Upgrade terminal equipment at Yukon to increase rating on Yukon to Route 51 #3 138 kV line		APS (22.82%) / DL (77.18%)
b3011.6	Upgrade remote end relays for Yukon – Allenport – Iron Bridge 138 kV line		DL (100%)
b3012.1	Construct two new 138 kV ties with the single structure from APS's new substation to Duquesne's new substation. The estimated line length is approximately 4.7 miles. The line is planned to use multiple ACSS conductors per phase		ATSI (38.21%) / DL (61.79%)
b3012.3	Construct a new Elrama – Route 51 138 kV No.3 line: reconductor 4.7 miles of the existing line, and construct 1.5 miles of a new line to the reconductored portion. Install a new line terminal at APS Route 51 substation		DL (100%)

Required Hunshinssion Emilareements A unital Revenue Requirement (10)			
b3013	Reconductor Vasco Tap to Edgewater Tap 138 kV line. 4.4 miles. The new conductor will be 336 ACSS replacing the existing 336 ACSR conductor		APS (100%)
b3015.6	Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7		DL (100%)
b3015.8	Upgrade terminal equipment at Mitchell for Mitchell – Elrama 138 kV line		APS (100%)
b3028	Upgrade substation disconnect leads at William 138 kV substation		APS (100%)
b3051.1	Ronceverte cap bank and terminal upgrades		APS (100%)
b3052	Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV		APS (100%)
b3064.3	Upgrade line relaying at Piney Fork and Bethel Park for Piney For – Elrama 138 kV line and Bethel Park – Elrama 138 kV		APS (100%)

b3068	Reconductor the Yukon –		
	Westraver 138 kV line (2.8		
	miles), replace the line drops		
	and relays at Yukon 138 kV		
	and replace switches at		
	Westraver 138 kV bus	APS (100%)	
b3069	Reconductor the Westraver –		
	Route 51 138 kV line (5.63		
	miles) and replace line		
	switches at Westraver 138 kV		
	bus	APS (100%)	
_	Reconductor the Yukon –		
	Route 51 #1 138 kV line (8		
b3070	miles), replace the line drops,		
	relays and line disconnect		
	switch at Yukon 138 kV bus	APS (100%)	
	Reconductor the Yukon –		
1-2071	Route 51 #2 138 kV line (8		
63071	miles) and replace relays at		
	Yukon 138 kV bus	APS (100%)	
b3072	Reconductor the Yukon –		
	Route 51 #3 138 kV line (8		
	miles) and replace relays at		
	Yukon 138 kV bus	APS (100%)	
b3074	Reconductor the 138 kV bus		
	at Armstrong substation	APS (100%)	
b3075	Replace the 500/138 kV		
	transformer breaker and		
	reconductor 138 kV bus at		
	Cabot substation	APS (100%)	
b3076	Reconductor the Edgewater –		
	Loyalhanna 138 kV line (0.67		
	mile)	APS (100%)	
b3079	Replace the Wylie Ridge	ATSI (72.30%) / DL	
	500/345 kV transformer #7	(27.70%)	
b3083	Reconductor the 138 kV bus		
	at Butler and reconductor the		
	138 kV bus and replace line		
	trap at Karns City	APS (100%)	
Required Tra	ansmission Enhancements Annual Revenu	ue Requirement	Responsible Customer(s)
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	Relocate 34.5 kV lines from		
b3128	generating station roof R. Paul		
	Smith 138 kV station		APS (100%)
	Reconductor the Yukon – Smithton		
	– Shepler Hill Jct 138 kV Line.		
b3214.1	Upgrade terminal equipment at		
	Yukon and replace line relaying at		APS (12.21%) / DL
	Mitchell and Charleroi		(87.79%)
1 2 2 1 4 2	Reconductor the Smithton – Shepler		
63214.2	Hill Jct 138 kV Line		APS (4.74%) / DL (95.26%)
	At Enon substation install a second		
1.000.0	138 kV. 28.8 MVAR nameplate.		
b3230	capacitor and the associated 138 kV		
	capacitor switcher		APS (100%)
	Upgrade Cherry Run and Morgan		
b3240	terminals to make the transmission		
	line the limiting component		APS (100%)
	Install 138 kV, 36 MVAR capacitor		
	and a 5 uF reactor protected by a		
	138 kV capacitor switcher. Install a		
b3241	breaker on the 138 kV Junction		
	terminal. Install a 138 kV 3.5 uF		
	reactor on the existing Hardy 138		
	kV capacitor		APS (100%)
	Reconfigure Stonewall 138 kV		
	substation from its current		
	configuration to a six-breaker		
b3242	breaker-and-a-half layout and add		
	two (2) 36 MVAR capacitors with		
	capacitor switchers		APS (100%)
	Reconductor the Shanor Manor -		
	Butler 138 kV line with an ungraded		
b3318	circuit breaker at Butler 138 kV		
	station		APS (100%)
	Reconductor the Charleroi - Union		
	138 kV line and upgrade terminal		
b3325	equipment at Charleroi 138 kV		
	station		APS (100%)
			/

b3681	Upgrade the Shingletown #82 230/46 kV Transformer circuit by installing a 230 kV breaker and disconnect switches, removing existing 230 kV switches, replacing 46 kV disconnect switches, replacing limiting substation conductor, and installing/replacing relays	APS (100%)
b3683	Reconductor the existing 556.5 ACSR line segments on the Messick Road – Ridgeley 138 kV line with 954 45/7 ACSR to achieve 308/376 MVA SN/SE and 349/445 MVA WN/WE ratings. Replace the remote end equipment for the line. The total length of the line is 5.02 miles	APS (100%)
b3701	Replace terminal equipment at French's Mill and Junction 138 kV substations	APS (100%)
b3710	Reconductor AA2-161 to Yukon 138 kV Lines #1 and #2 with 954 ACSS conductor	APS (100%)
b3717.1	Install a series reactor on Cheswick - Springdale 138 kV line	APS (1.93%) / DL (98.07%)
b3738	Replace limiting terminal equipment on Charleroi – Dry Run 138 kV line	APS (100%)
b3739	Replace limiting terminal equipment on Dry Run – Mitchell 138 kV line	APS (100%)
b3740	Replace limiting terminal equipment on Glen Falls – Bridgeport 138 kV line	APS (100%)
b3741	Replace limiting terminal equipment on Yukon - Charleroi #1 138 kV line	APS (100%)

	Replace limiting terminal	
b3742	equipment on Yukon - Charleroi	
	#2 138 kV line	APS (100%)
	At Bedington substation:	
	Replace substation conductor,	
	wave trap, Current Transformers	
	(CT's) and upgrade relaying	
	At Cherry Run substation:	
1-2742	Replace substation conductor,	
03/43	wave trap, CT's, disconnect	
	switches, circuit breaker and	
	upgrade relaying	
	At Marlowe substation: Replace	
	substation conductor, wave trap,	
	CT's and upgrade relaying	APS (100%)
	Replace one span of 1272 ACSR	
	from Krendale substation to	
	structure 35	
	(approximately 630 feet)	
	Replace one span of 1272 ACSR	
	from Shanor Manor to structure	
	21 (approximately 148 feet)	
1-2744	Replace 1272 ACSR risers at	
03/44	Krendale and Shanor Manor	
	substations	
	Replace 1272 ACSR substation	
	conductor at Krendale substation	
	Replace relaying at Krendale	
	substation	
	Revise relay settings at Butler	
	and Shanor Manor substations	APS (100%)
	Install redundant relaying at	
b3745	Carbon Center 230 kV	
	substation	APS (100%)
	Install redundant relaying at	
b3746	Meadow Brook 500 kV	
	substation	APS (100%)
h2747	Install redundant relaying at	
03/4/	Bedington 500 kV substation	APS (100%)

	Install 138 kV breaker on the	
b3761	Ridgway 138/46 kV #2	
	Transformer	APS (100%)
	Reconductor 27.3 miles of	
	the Messick Road – Morgan	
	138 kV line from 556 ACSR	
	to 954 ACSR. At Messick	
	Road substation, replace 138	
b3772	kV wave trap, circuit	
	breaker, CT's, disconnect	
	switch, and substation	
	conductor and upgrade	
	relaying. At Morgan	
	substation, upgrade relaying	APS (100%)
	Install 33 MVAR switched	
	capacitor, 138 kV breaker,	
b3773	and associated relaying at	
	McConnellsburg 138 kV	
	substation	APS (100%)
	Adjust relay settings at	
h3782	Riverton substation on the	
03762	Riverton-Bethel Tap 138 kV	
	line	APS (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)

			Load-Ratio Share
			Allocation:
			<u>AEC (1.65%) / AEP (14.29%)</u>
			<u>/ APS (5.82%) / ATSI (7.49%)</u>
			<u>/ BGE (4.01%) / ComEd</u>
	Replace the Belmont		(14.06%) / Dayton (2.03%) /
	765/500 kV transformer		DEOK (3.21%) / DL (1.59%) /
	No. 5 with a new		DPL (2.55%) / Dominion
	transformer bank		(13.89%) / EKPC (2.35%) /
	consisting of three single- phase transformers and an		JCPL (3.59%) / ME (1.81%) /
h2706.0			<u>NEPTUNE* (0.42%) / OVEC</u>
03/90.0	additional single phase		<u>(0.06%) / PECO (5.11%) /</u>
	spare transformer. The		PENELEC (1.73%) / PEPCO
	project will also replace		(3.68%) / PPL (4.43%) / PSEG
	500 kV disconnect		(5.99%) / RE (0.24%)
	switches at the Belmont		
	substation		DFAX Allocation:
			<u>AEP (0.28%) / APS (0.15%) /</u>
			Dayton (0.10%) / DEOK
			(0.18%) / DL (6.57%) /
			Dominion (92.68%) / EKPC
			(0.04%)

*Neptune Regional Transmission System, LLC

SCHEDULE 12 – APPENDIX A

(15) Commonwealth Edison Company and Commonwealth Edison Company of Indiana, Inc.

Required T	Transmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Remove Byron SPS upon		
b2141.1	completion of Byron -		
	Wayne 345 kV		ComEd (100%)
	Replace 138 kV bus tie 1-2		
	circuit breaker, station		
b2365	conductor, relays, and a		
	wave trap at TSS 55		
	Hegewisch substation		ComEd (100%)
	Reconductor 1.4 miles of		
1.0266	138 kV line 0112, Kickapoo		
02300	Creek - LaSalle County		
	138kV line		ComEd (100%)
	Install a 138 kV Red Blue		
1.2415	bus tie with underground		
02413	cable and a line 15913 CB		
	at Highland Park		ComEd (100%)
	Reconductor 0.125 miles of		
b2416	the East Frankfort - Mokena		
	138 kV line L6604		ComEd (100%)
	Replace Ridgeland 138 kV		
h2417	bus tie CB and underground		
02417	cable at TSS 192 Ridgeland		
	138 kV substation		ComEd (100%)
	Reconductor 7.5 miles of		
b2418	Waukegan - Gurnee 138 kV		
	line L1607		ComEd (100%)
	Reconductor 0.33 miles of		
b2419	138 kV underground cable		
02417	on the Sawyer - Crawford		
	138 kV Blue line (L1324)		ComEd (100%)
	Replace the Skokie 138 kV		
b2465	breaker '88 L8809' with a		
	63 kA breaker		ComEd (100%)
	Replace the Skokie 138 kV		
b2466	breaker '88 L8810' with		
	63kA breaker		ComEd (100%)
	Replace the Skokie 138 kV		
b2467	breaker '88 L11416' with		
	63 kA breaker		ComEd (100%)

Required 1		Allinual Revenue Require	inchi Responsible Custoffici(s)
	Replace the Skokie 138 kV		
b2468	breaker '88 L8803' with		
	63kA breaker		ComEd (100%)
	Replace the Des Plaines 138		
b2469	kV breaker '46 11702' with		
	63 kA breaker		ComEd (100%)
	Install a new 345 kV circuit		
b2561	breaker 5-7 at Elwood		
	substation		ComEd (100%)
	Remove 2.0 miles of wood		
	poles on 138 kV line 17105,		
h2562	erect new steel structures,		
02302	and install new 1113 kcmil		
	ACSR conductor from		
	Roscoe Bert to Harlem		ComEd (100%)
h2612	Replace relays at Mazon		
02015	substation		ComEd (100%)
			AEC (0.18%) / AEP
			(18.68%) / APS (5.86%) /
			ATSI (7.85%) / BGE
			(3.32%) / ComEd (38.21%) /
			Dayton (2.76%) / DEOK
			(4.13%) / DL (2.23%) /
	Replace station equipment		Dominion (5.15%) / DPL
b2692.1	at Nelson, ESS H-471 and		(1.97%) / EKPC (1.36%) /
	Quad Cities		HTP (0.05%) / JCPL
	~		(0.52%) / MetED (0.04%) /
			Neptune (0.04%) / PECO
			(1.08%) / PENELEC
			(1.25%) / PEPCO (3.56%) /
			PPL (0.45%) / PSEG
			(1.17%) / RECO (0.14%)

Required T	ransmission Enhancements	Annual Revenue Requir	ement Responsible Customer(s)
b2692.2	Upgrade conductor ratings of Cordova – Nelson, Quad Cities – ESS H-471 and ESS H-471 – Nelson 345 kV lines and mitigating sag limitations		AEC (0.18%) / AEP (18.68%) / APS (5.86%) / ATSI (7.85%) / BGE (3.32%) / ComEd (38.21%) / Dayton (2.76%) / DEOK (4.13%) / DL (2.23%) / Dominion (5.15%) / DPL (1.97%) / EKPC (1.36%) / HTP (0.05%) / JCPL (0.52%) / MetED (0.04%) / Neptune (0.04%) / PECO (1.08%) / PENELEC (1.25%) / PEPCO (3.56%) / PPL (0.45%) / PSEG (1.17%) / RECO (0.14%)
b2693	Replace L7815 B phase line trap at Wayne substation		ComEd (100%)
b2699.1	Replace 5 Powerton 345 kV CB's with 2 cycle IPO breakers, install one new 345 kV CB; swap line 0302 and line 0303 bus positions; reconfigure Powerton 345 kV bus as single ring configuration		ComEd (100%)
b2699.2	Remove SPS logic at Powerton that trips generators or sectionalizes bus under normal conditions; minimal SPS logic will remain		ComEd (100%)
b2721	Goodings Grove – Balance Station Load (swap bus positions for 345 kV lines 1312 & 11620 and 345 kV lines 11604 & 11622) and replace 138 kV bus tie 2-3		ComEd (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
b2728	Mitigate sag limitations on Loretto – Wilton Center 345 kV Line and replace station	1	ATSI (3.43%) / AEP (3.34%) / ComEd (92.02%) / DLCO
b2732.1	Cut-in of line 93505 Tazewell – Kendall 345 kV		(1.21%)
b2732.2	Raise towers to remove the sag limitations on Pontiac –		ComEd (100%)
b2751	Rebuild/Resag the H440 - H440 Tap 138 kV line 16914-2 (Hays Road - SW 1403 138 kV)		ComEd (100%)
b2930	Upgrade capacity on E. Frankfort – University Park 345 kV		ComEd (100%)
b2931	Upgrade substation equipment at Pontiac Midpoint station to increase capacity on Pontiac – Brokaw 345 kV line		ComEd (100%)
b2941	Build an indoor new Elk Grove 138 kV GIS substation at the point where Rolling Meadows & Schaumburg tap off from the main lines, between Landmeier and Busse. The four 345 kV circuits in the ROW will be diverted into Gas Insulated Bus (GIB) and go through the basement of the building to provide clearance for the above ground portion of the building		ComEd (100%)
b2959	Install a new 138 kV circuit 18702 from Schauff Road to Rock Falls and install a fourth breaker and a half run at Schauff Road		ComEd (100%)

b2995	Remove Davis Creek RAS	ComEd (100%)
b2997	Remove University Park North RAS	ComEd (100%)
b2998	Install a 120 MVAR 345 kV shunt inductor at Powerton (the 345 kV yard already contains an empty bus position on the ring we only need a switching breaker for the inductor)	ComEd (100%)
b2999	Rebuild the 12.36 mile Schauff Road to Nelson tap 138 kV line L15508	ComEd (100%)
b3049	Replace 345 kV breaker at Joliet substation	ComEd (100%)
b3111	Install high-speed backup clearing scheme on the E. Frankfort – Matteson 138 kV line (L6603)	ComEd (100%)
b3147	Modify 138 kV blue bus total clearing times at TSS 111 Electric Junction to eleven (11) cycles for fault on 345/138 kV Transformer 81, and to thirteen (13) cycles for faults on 138 kV Line #11106, 138 kV Line #11102 and 345/138 kV Transformer 82	ComEd (100%)
b3317	Modify backup relay clearing times at the 138 kV STA16 Waukegan station	ComEd (100%)
b3677	Rebuild a 13 mile section of 138 kV line between LaSalle and Mazon stations with 1113 ACSR or higher rated conductor	ComEd (100%)
b3711	Install 345 kV bus tie 5-20 circuit breaker in the ring at Dresden station in series with existing bus tie 5-6	ComEd (100%)

Required Tr	ansmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
b3760	At Powerton substation, replace most limiting facility 800A wave trap with 2000A wave trap on the Powerton – Towerline 138 kV line terminal		AEC (0.93%) / AEP (13.17%) / APS (5.41%) / ATSI (6.91%) / BGE (3.21%) / Dayton (1.80%) / DEOK (2.68%) / DL (1.38%) / Dominion (10.80%) / DPL (1.92%) / ECP (0.14%) / EKPC (1.40%) / HTP (0.12%) / JCPL (2.22%) / ME (1.68%) / Neptune (0.50%) / OVEC (0.02%) / PECO (4.06%) / PENELEC (2.17%) / PEPCO (3.37%) / PPL (3.41%) / PSEG (4.18%) / RE (0.14%) / MISO (28.38%)
b3775.3	Rebuild ComEd's section of 345 kV double circuit in IL from St. John to Crete (5 miles) with twin bundled 1277 ACAR conductor		Reliability Driver: ComEd (62.41%) / Dayton (37.59%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

Required T	Transmission Enhancements And	nual Revenue Requirement	Responsible Customer(s)
			Reliability Driver:
			ComEd (100%)
b3775.4	Rebuild 12.7 miles of 345 kV double circuit extending from Crete to E. Frankfort with twin bundled 1277 ACAR conductor		Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG
b3775.5	Replace E. Frankfort 345 kV circuit breaker "9-14" with 3150A SF6 circuit breaker		PPL (3.64%) / PSEG (3.93%) / RE (0.14%) Reliability Driver: ComEd (100%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

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**East Coast Power, L.L.C.

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
	Add three 345 kV circuit		
<u>b3810.0</u>	breakers to Cherry Valley		
	substation		<u>ComEd (100%)</u>

SCHEDULE 12 – APPENDIX A

(17) American Electric Power Service Corporation on behalf of its affiliate companies: AEP Appalachian Transmission Company, Inc.; AEP Indiana Michigan Transmission Company, Inc.; AEP Ohio Transmission Company, Inc.; AEP West Virginia Transmission Company, Inc.; Appalachian Power Company; Indiana Michigan Power Company; Kingsport Power Company; Ohio Power Company and Wheeling Power Company

	-	1	
b1570.4	Add a 345 kV breaker at Marysville station and a 0.1 mile 345 kV line extension from Marysville to the new 345/69 kV Dayton transformer		AEP (100%)
b1660.1	Cloverdale: install 6-765 kV breakers, incremental work for 2 additional breakers, reconfigure and relocate miscellaneous facilities, establish 500 kV station and 500 kV tie with 765 kV station		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEP (37.66%) / BGE (26.21%) / Dayton (0.01%) / DEOK (0.02%) / EKPC (0.01%) / PEPCO (36.09%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

Required Tra	insmission Enhancements Annu	ial Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
			DEOK (3.21%) / DL (1.59%) /
			DPL (2.55%) / Dominion
			(13.89%) / EKPC (2.35%) /
	Reconductor the AEP		JCPL (3.59%) / ME (1.81%) /
h1707 1	portion of the Cloverdale -		NEPTUNE* (0.42%) / OVEC
01/9/.1	Lexington 500 kV line with		(0.06%) / PECO (5.11%) /
	2-1780 ACSS		PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEP (0.06%) / BGE (19.46%) /
			Dayton (0.02%) / DEOK
			(0.04%) / Dominion (53.61%) /
			EKPC (0.02%) / PEPCO
			(26.79%)
b2055	Upgrade relay at Brues		
02055	station		AEP (100%)
	Upgrade terminal		
	equipment at Howard on		
b2122.3	the Howard - Brookside		
	138 kV line to achieve		
	ratings of 252/291 (SN/SE)		AEP (100%)
b2122.4	Perform a sag study on the		
	Howard - Brookside 138		
	kV line		AEP (100%)
b2229	Install a 300 MVAR		
	reactor at Dequine 345 kV		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

Required Tr	ansmission Enhancements Annu	ual Revenue Requirement	Responsible Customer(s)
b2230	Replace existing 150 MVAR reactor at Amos 765 kV substation on Amos - N. Proctorville - Hanging Rock with 300 MVAR reactor		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEP (100%)
b2231	Install 765 kV reactor breaker at Dumont 765 kV substation on the Dumont - Wilton Center line		AEP (100%)
b2232	Install 765 kV reactor breaker at Marysville 765 kV substation on the Marysville - Maliszewski line		AEP (100%)
b2233	Change transformer tap settings for the Baker 765/345 kV transformer		AEP (100%)
b2252	Loop the North Muskingum - Crooksville 138 kV line into AEP's Philo 138 kV station which lies approximately 0.4 miles from the line		AEP (100%)

*Neptune Regional Transmission System, LLC

-		
	Install an 86.4 MVAR	
b2253	capacitor bank at Gorsuch	
	138 kV station in Ohio	AEP (100%)
	Rebuild approximately 4.9	
b2254	miles of Corner - Degussa	
	138 kV line in Ohio	AEP (100%)
	Rebuild approximately 2.8	
b2255	miles of Maliszewski -	
	Polaris 138 kV line in Ohio	AEP (100%)
	Upgrade approximately 36	
	miles of 138 kV through	
b2256	path facilities between	
	Harrison 138 kV station and	
	Ross 138 kV station in Ohio	AEP (100%)
	Rebuild the Pokagon -	
	Corey 69 kV line as a	
	double circuit 138 kV line	
b2257	with one side at 69 kV and	
	the other side as an express	
	circuit between Pokagon	
	and Corey stations	AEP (100%)
	Rebuild 1.41 miles of #2	
	CU 46 kV line between	
1,2259	Tams Mountain - Slab Fork	
02238	to 138 kV standards. The	
	line will be strung with	
	1033 ACSR	AEP (100%)
	Install a new 138/69 kV	
	transformer at George	
1.2250	Washington 138/69 kV	
02239	substation to provide	
	support to the 69 kV system	
	in the area	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

required in		ai ne venae neequitement	
	Rebuild 4.7 miles of		
b2286	Muskingum River - Wolf		
	Creek 138 kV line and		
	remove the 138/138 kV		
	transformer at Wolf Creek		
	Station		AEP (100%)
	Loop in the Meadow Lake -		
b2287	Olive 345 kV circuit into		
	Reynolds 765/345 kV		
	station		AEP (100%)

	Establish a new 138/12 kV	
1.0044.1	station, transfer and	
	consolidate load from its	
62344.1	Nicholsville and Marcellus	
	34.5 kV stations at this new	
	station	AEP (100%)
	Tap the Hydramatic –	
	Valley 138 kV circuit (~	
b2344.2	structure 415), build a new	
	138 kV line (~3.75 miles) to	
	this new station	AEP (100%)
	From this station, construct	
h22112	a new 138 kV line (~1.95	
02344.3	miles) to REA's Marcellus	
	station	AEP (100%)
	From REA's Marcellus	
	station construct new 138	
b2344.4	kV line (~2.35 miles) to a	
02344.4	tap point on Valley –	
	Hydramatic 138 kV ckt	
	(~structure 434)	AEP (100%)
	Retire sections of the 138	
b2344.5	kV line in between structure	
	415 and 434 (~ 2.65 miles)	AEP (100%)
	Retire AEP's Marcellus	
	34.5/12 kV and Nicholsville	
b2344.6	34.5/12 kV stations and also	
	the Marcellus – Valley 34.5	
	kV line	AEP (100%)
	Construct a new 69 kV line	
b2345.1	from Hartford to Keeler (~8	
	miles)	AEP (100%)
	Rebuild the 34.5 kV lines	
h2345 2	between Keeler - Sister	
02343.2	Lakes and Glenwood tap	
	switch to 69 kV (~12 miles)	AEP (100%)

	Implement in - out at Keeler	
b2345.3	and Sister Lakes 34.5 kV	
	stations	AEP (100%)
	Retire Glenwood tap switch	
	and construct a new	
b2345.4	Rothadew station. These	
	new lines will continue to	
	operate at 34.5 kV	AEP (100%)
	Perform a sag study for	
	Howard - North Bellville -	
b2346	Millwood 138 kV line	
	including terminal	
	equipment upgrades	AEP (100%)
	Replace the North Delphos	
	600A switch. Rebuild	
	approximately 18.7 miles of	
b2347	138 kV line North Delphos	
	- S073. Reconductor the	
	line and replace the existing	
	tower structures	AEP (100%)
	Construct a new 138 kV	
	line from Richlands Station	
b2348	to intersect with the Hales	
	Branch - Grassy Creek 138	
	kV circuit	AEP (100%)
	Change the existing CT	
	ratios of the existing	
b2374	equipment along Bearskin -	
	Smith Mountain 138kV	
	circuit	AEP (100%)
	Change the existing CT	
	ratios of the existing	
b2375	equipment along East	
	Danville-Banister 138kV	
	circuit	AEP (100%)

h2276	Replace the Turner 138 kV	
02370	breaker 'D'	AEP (100%)
b2377	Replace the North Newark 138 kV breaker 'P'	AEP (100%)
b2378	Replace the Sporn 345 kV breaker 'DD'	AEP (100%)
b2379	Replace the Sporn 345 kV breaker 'DD2'	AEP (100%)
b2380	Replace the Muskingum 345 kV breaker 'SE'	AEP (100%)
b2381	Replace the East Lima 138 kV breaker 'E1'	AEP (100%)
b2382	Replace the Delco 138 kV breaker 'R'	AEP (100%)
b2383	Replace the Sporn 345 kV breaker 'AA2'	AEP (100%)
b2384	Replace the Sporn 345 kV breaker 'CC'	AEP (100%)
b2385	Replace the Sporn 345 kV breaker 'CC2'	AEP (100%)
b2386	Replace the Astor 138 kV breaker '102'	AEP (100%)
b2387	Replace the Muskingum345 kV breaker 'SH'	AEP (100%)
b2388	Replace the Muskingum345 kV breaker 'SI'	AEP (100%)
b2389	Replace the Hyatt 138 kV breaker '105N'	AEP (100%)
b2390	Replace the Muskingum345 kV breaker 'SG'	AEP (100%)
b2391	Replace the Hyatt 138 kV breaker '101C'	AEP (100%)
b2392	Replace the Hyatt 138 kV breaker '104N'	AEP (100%)
b2393	Replace the Hyatt 138 kV breaker '104S'	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2394	Replace the Sporn 345 kV	
02371	breaker 'CC1'	AEP (100%)
	Install two 56.4 MVAR	
h2400	capacitor banks at the	
02407	Melmore 138 kV station in	
	Ohio	AEP (100%)
	Convert Hogan Mullin 34.5	
	kV line to 138 kV, establish	
	138 kV line between Jones	
h2410	Creek and Strawton, rebuild	
02410	existing Mullin Elwood	
	34.5 kV and terminate line	
	into Strawton station, retire	
	Mullin station	AEP (100%)
	Rebuild the 3/0 ACSR	
	portion of the Hadley -	
b2411	Kroemer Tap 69 kV line	
	utilizing 795 ACSR	
	conductor	AEP (100%)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd (14.06%)
		/ Dayton (2.03%) / DEOK
		(3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) /
1-2422	Install a 500 W VAR shuft	EKPC (2.35%) / JCPL (3.59%) /
62423	765 by station	ME (1.81%) / NEPTUNE*
	703 KV station	(0.42%) / OVEC (0.06%) /
		PECO (5.11%) / PENELEC
		(1.73%) / PEPCO (3.68%) / PPL
		(4.43%) / PSEG (5.99%) / RE
		(0.24%)
		DFAX Allocation:
		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

		1	1
b2444	Willow - Eureka 138 kV		
	line: Reconductor 0.26 mile		
	of 4/0 CU with 336 ACSS		AEP (100%)
	Complete a sag study of		
b2445	Tidd - Mahans Lake 138 kV		
	line		AEP (100%)
	Rebuild the 7-mile 345 kV		<u> </u>
1 2 4 4 0	line between Meadow Lake		
62449	and Reynolds 345 kV		
	stations		AEP (100%)
	Add two 138 kV circuit		
1-2462	breakers at Fremont station		
02402	to fix tower contingency		
	·408 2'		AEP (100%)
	Construct a new 138/69 kV		
	Yager station by tapping 2-		
b2501	138 kV FE circuits		
	(Nottingham-Cloverdale,		
	Nottingham-Harmon)		AEP (100%)
	Build a new 138 kV line		
b2501.2	from new Yager station to		
	Azalea station		AEP (100%)
	Close the 138 kV loop back		
h2501.2	into Yager 138 kV by		
02301.5	converting part of local 69		
	kV facilities to 138 kV		AEP (100%)
	Build 2 new 69 kV exits to		
	reinforce 69 kV facilities		
h2501 4	and upgrade conductor		
02301.4	between Irish Run 69 kV		
	Switch and Bowerstown 69		
	kV Switch		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Construct new 138 kV	
	switching station	
	Nottingham tapping 6-138	
	kV FE circuits (Holloway-	
	Brookside, Holloway-	
b2502.1	Harmon #1 and #2,	
	Holloway-Reeds,	
	Holloway-New Stacy,	
	Holloway-Cloverdale). Exit	
	a 138 kV circuit from new	
	station to Freebyrd station	AEP (100%)
h2502.2	Convert Freebyrd 69 kV to	
02302.2	138 kV	AEP (100%)
	Rebuild/convert Freebyrd-	
b2502.3	South Cadiz 69 kV circuit	
	to 138 kV	AEP (100%)
b2502.4	Upgrade South Cadiz to 138	
02002.1	kV breaker and a half	AEP (100%)
	Replace the Sporn 138 kV	
b2530	breaker 'G1' with 80 kA	
	breaker	AEP (100%)
1.0.504	Replace the Sporn 138 kV	
b2531	breaker 'D' with 80 kA	
	breaker	AEP (100%)
1 0 5 0 0	Replace the Sporn 138 kV	
62532	breaker 'O1' with 80 kA	
	breaker	AEP (100%)
1 0 5 0 0	Replace the Sporn 138 kV	
b2533	breaker 'P2' with 80 kA	
	breaker	AEP (100%)
1.0.50.4	Replace the Sporn 138 kV	
b2534	breaker U with 80 kA	
-	breaker	AEP (100%)
10525	Keplace the Sporn 138 kV	
b2535	breaker 'O' with 80 kA	
	breaker	AEP (100%)

	Replace the Sporn 138 kV	
b2536	breaker 'O2' with 80 kA	
	breaker	AEP (100%)
	Replace the Robinson Park	
	138 kV breakers A1, A2,	
b2537	B1, B2, C1, C2, D1, D2,	
	E1, E2, and F1 with 63 kA	
	breakers	AEP (100%)
	Reconductor 0.5 miles	
	Tiltonsville – Windsor 138	
10555	kV and string the vacant	
62555	side of the 4.5 mile section	
	using 556 ACSR in a six	
	wire configuration	AEP (100%)
	Install two 138 kV prop	\ \
	structures to increase the	
10556	maximum operating	
62556	temperature of the Clinch	
	River- Clinch Field 138 kV	
	line	AEP (100%)
	Temporary operating	
	procedure for delay of	
	upgrade b1464. Open the	
	Corner 138 kV circuit	
	breaker 86 for an overload	
1.0501	of the Corner – Washington	
62581	MP 138 kV line. The tower	
	contingency loss of	
	Belmont – Trissler 138 kV	
	and Belmont – Edgelawn	
	138 kV should be added to	
	Operational contingency	AEP (100%)

		1	1
	Construct a new 69 kV line approximately 2.5 miles from		
h2591	Colfax to Drewry's. Construct		
02071	a new Drewry's station and		
	install a new circuit breaker at		
	Colfax station.		AEP (100%)
	Rebuild existing East		
	Coshocton – North Coshocton		
	double circuit line which		
b2592	contains Newcomerstown – N.		
	Coshocton 34.5 kV Circuit		
	and Coshocton – North		
	Coshocton 69 kV circuit		AEP (100%)
	Rebuild existing West Bellaire		
	– Glencoe 69 kV line with 138		
b2593	kV & 69 kV circuits and		
	install 138/69 kV transformer		
	at Glencoe Switch		AEP (100%)
	Rebuild 1.0 mile of Brantley –		
h2504	Bridge Street 69 kV Line with		
02394	1033 ACSR overhead		
	conductor		AEP (100%)
	Rebuild 7.82 mile Elkhorn		
h2505 1	City – Haysi S.S 69 kV line		
02393.1	utilizing 1033 ACSR built to		
	138 kV standards		AEP (100%)
	Rebuild 5.18 mile Moss –		
12505 2	Haysi SS 69 kV line utilizing		
02393.2	1033 ACSR built to 138 kV		
	standards		AEP (100%)
	Move load from the 34.5 kV		
	bus to the 138 kV bus by		
b2596	installing a new 138/12 kV XF		
	at New Carlisle station in		
	Indiana		AEP (100%)

	Rebuild approximately 1	
	Virgil Street 34.5 kV line	
	between Dragoon and	
b2597	Dodge Tap switch and	
	replace Dodge switch	
	MOAB to increase thermal	
	capability of Dragoon-	
	Dodge Tap branch	AEP (100%)
	Rebuild approximately 1	
	mile section of the Kline-	
	Virgil Street 34.5 kV line	
b2598	between Kline and Virgil	
	Street tap. Replace MOAB	
	Vline guitches and bug at	
	Virgil Street	$\Delta FP (100\%)$
	Rebuild approximately 0.1	
b2599	miles of 69 kV line between	
	Albion and Albion tap	AEP (100%)
12(00	Rebuild Fremont – Pound	
62600	line as 138 kV	AEP (100%)
b2601	Fremont Station	
02001	Improvements	AEP (100%)
	Replace MOAB towards	
b2601.1	Beaver Creek with 138 kV	
	breaker	AEP (100%)
10(010	Replace MOAB towards	
b2601.2	Clinch River with 138 kV	
	breaker	AEP (100%)
b2601.3	Replace 138 kV Breaker A	
	with new bus-tie breaker	AEP (100%)
1.2601 4	Ke-use Breaker A as high	
b2601.4	side protection on	
	transformer #1	AEP (100%)

	Install two (2) circuit switchers	
b2601.5	on high side of transformers # 2	
	and 3 at Fremont Station	AEP (100%)
1.2(02.1	Install 138 kV breaker E2 at	
02002.1	North Proctorville	AEP (100%)
	Construct 2.5 Miles of 138 kV	
h2602.2	1033 ACSR from East	
02002.2	Huntington to Darrah 138 kV	
	substations	AEP (100%)
	Install breaker on new line exit	
b2602.3	at Darrah towards East	
	Huntington	AEP (100%)
	Install 138 kV breaker on new	
b2602.4	line at East Huntington towards	
	Darrah	AEP (100%)
	Install 138 kV breaker at East	
b2602.5	Huntington towards North	
	Proctorville	AEP (100%)
b2603	Boone Area Improvements	
	Providence and an and a first state of	AEP (100%)
	200X200 station site near	
b2603.1	200A500 station site hear	
	(Wilbur Station)	AED (100%)
	(Wildui Station)	AEF (10076)
h2602.2	histali 5 138 KV circuit	
02003.2	Hernshaw 138 kV circuit	AED (100%)
	Construct 1 mi of double	ALI (10070)
	circuit 138 kV line on Wilbur -	
	Boone 46 kV line with 1590	
	ACSS 54/19 conductor @ 482	
b2603.3	Degree design temp and 1-159	
	12/7 ACSR and one 86	
	Sq.MM. 0.646" OPGW Static	
	wires	AEP (100%)
1000	Bellefonte Transformer	
b2604	Addition	AEP (100%)
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Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

AEP Service Corporation on behalf of its Affiliate Companies: AEP Indiana Michigan Transmission Company, AEP Ohio Transmission Company, AEP West Virginia Transmission Company, Appalachian Power Company, Indiana Michigan Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company (cont.)

	Remove approximately 11.32	
b2604.1	miles of the 69 kV line	
02004.1	between Millbrook Park and	
	Franklin Furnace	AEP (100%)
	At Millbrook Park station,	
	add a new 138/69 kV	
	Transformer #2 (90 MVA)	
	with 3000 A 40 kA breakers	
b2604.2	on the high and low side.	
	Replace the 600 A MOAB	
	switch and add a 3000 A	
	circuit switcher on the high	
	side of Transformer #1	AEP (100%)
	Replace Sciotoville 69 kV	
	station with a new 138/12 kV	
h2604.2	in-out station (Cottrell) with	
02004.5	2000 A line MOABs facing	
	Millbrook Park and East	
	Wheelersburg 138 kV station	AEP (100%)
	Tie Cottrell switch into the	
	Millbrook Park – East	
h2604.4	Wheelersburg 138 kV circuit	
02004.4	by constructing 0.50 mile of	
	line using 795 ACSR 26/7	
	Drake (SE 359 MVA)	AEP (100%)
	Install a new 2000 A 3-way	
h2604 5	PoP switch outside of Texas	
02004.3	Eastern 138 kV substation	
	(Sadiq switch)	AEP (100%)
	Replace the Wheelersburg 69	
	kV station with a new 138/12	
	kV in-out station (Sweetgum)	
b2604.6	with a 3000 A 40 kA breaker	
	facing Sadiq switch and a	
	2000 A 138 kV MOAB	
	facing Althea	AEP (100%)

Build approximately 1.4	
miles of new 138 kV line	
using 795 ACSR 26/7	
b2604.7 Drake (SE 359 MVA)	
between the new Sadiq	
switch and the new	0 ()
Sweetgum 138 kV station AEP (100	%)
$b_{2604.8}$ Remove the existing 69 kV	
Hayport Road switch AEP (100	%)
Rebuild approximately 2.3	
miles along existing Right-	
Of-Way from Sweetgum to	
the Hayport Road switch 69	
kV location as 138 kV	
single circuit and rebuild	
approximately 2.0 miles	
h2604 0 from the Hayport Road	
switch to Althea 69 kV with	
double circuit 138 kV	
construction, one side	
operated at 69 kV to	
continue service to K.O.	
Wheelersburg, using 795	
ACSR 26/7 Drake (SE 359	
MVA) AEP (100	%)
Build a new station (Althea)	
with a 138/69 kV, 90 MVA	
transformer. The 138 kV	
side will have a single 2000	
b2604.10 A 40 kA circuit breaker and	
the 69 kV side will be a	
2000 A 40 kA three breaker	
ring bus AEP (100	%)
Remote end work at	<i>.</i>
Hanging Rock, East	
^{b2604.11} Wheelersburg and North	
Haverhill 138 kV AEP (100	%)

	Rebuild and reconductor	
	Kammer – George	
	Washington 69 kV circuit and	
	George Washington –	
b2605	Moundsville ckt #1. designed	
	for 138 kV. Upgrade limiting	
	equipment at remote ends and	
	at tap stations	AEP (100%)
	Convert Bane –	
b2606	Hammondsville from 23 kV to	
02000	69 kV operation	AEP (100%)
b2607	Pine Gap Relay Limit Increase	AEP (100%)
b2608	Richlands Relay Upgrade	AEP (100%)
	Thorofare – Goff Run –	
b2609	Powell Mountain 138 kV	
	Build	AEP (100%)
10(10	Rebuild Pax Branch –	
62610	Scaraboro as 138 kV	AEP (100%)
h2611	Strin Forth Ange Improvements	
02011	Skiil Folk Alea Implovements	AEP (100%)
	New 138/46 kV station near	
b2611.1	Skin Fork and other	
	components	AEP (100%)
	Construct 3.2 miles of 1033	
	ACSR double circuit from	
b2611.2	new Station to cut into	
	Sundial-Baileysville 138 kV	
	line	AEP (100%)
	Replace metering BCT on	
	Tanners Creek CB T2 with a	
	slip over CT with higher	
b2634.1	thermal rating in order to	
	remove 1193 MVA limit on	
	facility (Miami Fort-Tanners	
	Creek 345 kV line)	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2643	Replace the Darrah 138 kV breaker 'L' with 40 kA rated breaker	AEP (100%)
b2645	Ohio Central 138 kV Loop	AEP (100%)
b2667	Replace the Muskingum 138 kV bus # 1 and 2	AEP (100%)
b2668	Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductor	AEP (98.19%) / OVEC (1.81%)
b2668.1	Replace the bus/risers at Dequine 345 kV station	AEP (100%)
b2669	Install a second 345/138 kV transformer at Desoto	AEP (100%)
b2670	Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)	AEP (100%)
b2671	Replace/upgrade/add terminal equipment at Bradley, Mullensville, Pinnacle Creek, Itmann, and Tams Mountain 138 kV substations. Sag study on Mullens – Wyoming and Mullens – Tams Mt. 138 kV circuits	AEP (100%)

Required Tr	ansmission Enhancements Ar	nual Revenue Requirement	Responsible Customer(s)
b2687.1	Install a +/- 450 MVAR SVC at Jacksons Ferry 765 kV substation		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEP (100%)

*Neptune Regional Transmission System, LLC

Required II	ansinission Ennancements Anni	iai Kevenue Kequitement	Responsible Customer(s)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
	Install a 300 MVAR shunt		DEOK (3.21%) / DL (1.59%) /
	line reactor on the		DPL (2.55%) / Dominion
h2687.2	Broadford end of the		(13.89%) / EKPC (2.35%) /
02007.2	Broadford – Jacksons Ferry		JCPL (3.59%) / ME (1.81%) /
	765 kV line		NEPTUNE* (0.42%) / OVEC
			(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEP (100%)
	Mitigate violations		
	identified by sag study to		
	operate Fieldale-Thornton-		
b2697 1	Franklin 138 kV overhead		
02097.1	line conductor at its max.		
	operating temperature. 6		
	potential line crossings to		
	be addressed		AEP (100%)
	Replace terminal equipment		
	at AEP's Danville and East		
h2697.2	Danville substations to		
02097.2	improve thermal capacity of		
	Danville – East Danville		
	138 kV circuit		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

	Replace relays at AEP's	
1.2(00	Cloverdale and Jackson's	
	Ferry substations to improve	
02098	the thermal capacity of	
	Cloverdale – Jackson's Ferry	
	765 kV line	AEP (100%)
	Construct Herlan station as	
	breaker and a half	
b2701.1	configuration with 9-138 kV	
	CB's on 4 strings and with 2-	
	28.8 MVAR capacitor banks	AEP (100%)
	Construct new 138 kV line	
	from Herlan station to Blue	
h2701.2	Racer station. Estimated	
02/01.2	approx. 3.2 miles of 1234	
	ACSS/TW Yukon and	
	OPGW	AEP (100%)
	Install 1-138 kV CB at Blue	
b2701.3	Racer to terminate new	
	Herlan circuit	AEP (100%)
	Rebuild/upgrade line	
b2714	between Glencoe and	
	Willow Grove Switch 69 kV	AEP (100%)
	Build approximately 11.5	
	miles of 34.5 kV line with	
h2715	556.5 ACSR 26/7 Dove	
02713	conductor on wood poles	
	from Flushing station to	
	Smyrna station	AEP (100%)
	Replace the South Canton	
h2727	138 kV breakers 'K', 'J',	
62727	'J1', and 'J2' with 80 kA	
	breakers	 AEP (100%)

b2731	Convert the Sunnyside –	
	East Sparta – Malvern 23 kV	
	sub-transmission network to	
	69 kV. The lines are already	
	built to 69 kV standards	AEP (100%)
b2733	Replace South Canton 138	
	kV breakers 'L' and 'L2'	
	with 80 kA rated breakers	AEP (100%)
b2750.1	Retire Betsy Layne	
	138/69/43 kV station and	
	replace it with the greenfield	
	Stanville station about a half	
	mile north of the existing	
	Betsy Layne station	AEP (100%)
b2750.2	Relocate the Betsy Layne	
	capacitor bank to the	
	Stanville 69 kV bus and	
	increase the size to 14.4	
	MVAR	AEP (100%)
b2753.1	Replace existing George	
	Washington station 138 kV	
	yard with GIS 138 kV	
	breaker and a half yard in	
	existing station footprint.	
	Install 138 kV revenue	
	metering for new IPP	
	connection	AEP (100%)
b2753.2	Replace Dilles Bottom 69/4	
	kV Distribution station as	
	breaker and a half 138 kV	
	yard design including AEP	
	Distribution facilities but	
	initial configuration will	
	constitute a 3 breaker ring	
	bus	AEP (100%)
	Connect two 138 kV 6-wired	
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	circuits from "Point A"	
	(currently de-energized and	
	owned by FirstEnergy) in	
h2752.2	circuit positions previously	
02755.5	designated Burger #1 &	
	Burger #2 138 kV. Install	
	interconnection settlement	
	metering on both circuits	
	exiting Holloway	AEP (100%)
	Build double circuit 138 kV	
	line from Dilles Bottom to	
	"Point A". Tie each new	
	AEP circuit in with a 6-wired	
b2753.6	line at Point A. This will	
	create a Dilles Bottom –	
	Holloway 138 kV circuit and	
	a George Washington –	
	Holloway 138 kV circuit	AEP (100%)
	Retire line sections (Dilles	
	Bottom – Bellaire and	
	Moundsville – Dilles Bottom	
	69 kV lines) south of	
h2753 7	FirstEnergy 138 kV line	
02733.7	corridor, near "Point A". Tie	
	George Washington –	
	Moundsville 69 kV circuit to	
	George Washington – West	
	Bellaire 69 kV circuit	AEP (100%)
	Rebuild existing 69 kV line	
	as double circuit from	
	George Washington – Dilles	
b2753.8	Bottom 138 kV. One circuit	
02755.0	will cut into Dilles Bottom	
	138 kV initially and the other	
	will go past with future plans	
	to cut in	AEP (100%)

Required II	ansmission enhancements Annual	i Kevenue Kequitement	Responsible Customer(s)
b2760	Perform a Sag Study of the Saltville – Tazewell 138 kV		
02700	line to increase the thermal		
	rating of the line		AEP (100%)
	Perform a Sag Study of the		
1.2761.2	Hazard – Wooten 161 kV line		
02/01.2	to increase the thermal rating		
	of the line		AEP (100%)
	Rebuild the Hazard – Wooton		
h2761 2	161 kV line utilizing 795 26/7		
02/01.5	ACSR conductor (300 MVA		
	rating)		AEP (100%)
	Perform a Sag Study of Nagel		
h2762	– West Kingsport 138 kV line		
02702	to increase the thermal rating		
	of the line		AEP (100%)
	Reconductor the entire		
b2776	Dequine – Meadow Lake 345		
	kV circuit #2		AEP (98.19%) / OVEC (1.81%)
	Reconductor the entire		
b2777	Dequine – Eugene 345 kV		
	circuit #1		AEP (100%)
	Construct a new 138 kV		
b2770 1	station, Campbell Road,		
02779.1	tapping into the Grabill –		
	South Hicksville138 kV line		AEP (100%)
	Reconstruct sections of the		
	Butler-N.Hicksville and		
h2770.2	Auburn-Butler 69 kV circuits		
02117.2	as 138 kV double circuit and		
	extend 138 kV from		
	Campbell Road station		AEP (100%)

b2779.3	Construct a new 345/138 kV SDI Wilmington Station which will be sourced from Collingwood 345 kV and serve the SDI load at 345 kV and 138 kV, respectively	AEP (100%)
b2779.4	Loop 138 kV circuits in-out of the new SDI Wilmington 138 kV station resulting in a direct circuit to Auburn 138 kV and an indirect circuit to Auburn and Rob Park via Dunton Lake, and a circuit to Campbell Road; Reconductor 138 kV line section between Dunton Lake – SDI Wilmington	AEP (100%)
b2779.5	Expand Auburn 138 kV bus	AEP (100%)
b2779.6	Construct a 345 kV ring bus at Dunton Lake to serve Steel Dynamics, Inc. (SDI) load at 345 kV via two (2) circuits	AEP (100%)
b2779.7	Retire Collingwood 345 kV station	AEP (100%)
b2787	Reconductor 0.53 miles (14 spans) of the Kaiser Jct Air Force Jct. Sw section of the Kaiser - Heath 69 kV circuit/line with 336 ACSR to match the rest of the circuit (73 MVA rating, 78% loading)	AEP (100%)

1000		
	Install a new 3-way 69 kV	
	line switch to provide service	
	to AEP's Barnesville	
b2788	distribution station. Remove a	
	portion of the #1 copper T-	
	Line from the 69 kV through-	
	path	AEP (100%)
	Rebuild the Brues - Glendale	
b2789	Heights 69 kV line section (5	
	miles) with 795 ACSR (128	
	MVA rating, 43% loading)	AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Install a 3 MVAR, 34.5 kV		
b2790	cap bank at Caldwell		
	substation		AEP (100%)
h2701	Rebuild Tiffin – Howard, new		
02/91	transformer at Chatfield		AEP (100%)
	Rebuild portions of the East		
	Tiffin - Howard 69 kV line		
	from East Tiffin to West		
b2791.1	Rockaway Switch (0.8 miles)		
	using 795 ACSR Drake		
	conductor (129 MVA rating,		
	50% loading)		AEP (100%)
	Rebuild Tiffin - Howard 69		
	kV line from St. Stephen's		
	Switch to Hinesville (14.7		
b2791.2	miles) using 795 ACSR		
	Drake conductor (90 MVA		
	rating, non-conductor limited,		
	38% loading)		AEP (100%)
	New 138/69 kV transformer		
b2791.3	with 138/69 kV protection at		
	Chatfield		AEP (100%)
h2701 /	New 138/69 kV protection at		
02771.4	existing Chatfield transformer		AEP (100%)
	Replace the Elliott		
	transformer with a 130 MVA		
	unit, reconductor 0.42 miles		
	of the Elliott – Ohio		
h2702	University 69 kV line with		
02772	556 ACSR to match the rest		
	of the line conductor (102		
	MVA rating, 73% loading)		
	and rebuild 4 miles of the		
	Clark Street – Strouds R		AEP (100%)

Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Energize the spare Fremont Center		
h2702	138/69 kV 130 MVA transformer		
02795	#3. Reduces overloaded facilities to		
	46% loading		AEP (100%)
	Construct new 138/69/34 kV		
	station and 1-34 kV circuit		
1 2704	(designed for 69 kV) from new		
62794	station to Decliff station,		
	approximately 4 miles, with 556		
	ACSR conductor (51 MVA rating)		AEP (100%)
	Install a 34.5 kV 4.8 MVAR		X/
b2795	capacitor bank at Killbuck 34.5 kV		
	station		AEP (100%)
	Rebuild the Malvern - Oneida		
1.0707	Switch 69 kV line section with 795		
62796	ACSR (1.8 miles, 125 MVA rating,		
	55% loading)		AEP (100%)
	Rebuild the Ohio Central -		
	Conesville 69 kV line section (11.8		
	miles) with 795 ACSR conductor		
b2797	(128 MVA rating, 57% loading).		
	Replace the 50 MVA Ohio Central		
	138/69 kV XFMR with a 90 MVA		
	unit		AEP (100%)
	Install a 14.4 MVAR capacitor		
	bank at West Hicksville station.		
b2798	Replace ground switch/MOAB at		
	West Hicksville with a circuit		
	switcher		AEP (100%)
	Rebuild Valley - Almena, Almena -		
	Hartford, Riverside - South Haven		
b2799	69 kV lines. New line exit at		
	Valley Station. New transformers		
	at Almena and Hartford		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
	Rebuild 12 miles of Valley –		
	Almena 69 kV line as a		
	double circuit 138/69 kV line		
b2799.1	using 795 ACSR conductor		
	(360 MVA rating) to		
	introduce a new 138 kV		
	source into the 69 kV load		
	pocket around Almena station		AEP (100%)
	Rebuild 3.2 miles of Almena		
h2700.2	to Hartford 69 kV line using		
02/99.2	795 ACSR conductor (90		
	MVA rating)		AEP (100%)
	Rebuild 3.8 miles of		
h2700 3	Riverside – South Haven 69		
02/99.3	kV line using 795 ACSR		
	conductor (90 MVA rating)		AEP (100%)
	At Valley station, add new		
	138 kV line exit with a 3000		
h2700 /	A 40 kA breaker for the new		
02799.4	138 kV line to Almena and		
	replace CB D with a 3000 A		
	40 kA breaker		AEP (100%)
	At Almena station, install a		
	90 MVA 138/69 kV		
h2799 5	transformer with low side		
02799.5	3000 A 40 kA breaker and		
	establish a new 138 kV line		
	exit towards Valley		AEP (100%)
	At Hartford station, install a		
	second 90 MVA 138/69 kV		
b2799.6	transformer with a circuit		
	switcher and 3000 A 40 kA		
	low side breaker		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)	
	Replace Delaware 138 kV		
b2817	breaker 'P' with a 40 kA		
	breaker		AEP (100%)
	Replace West Huntington 138		
b2818	kV breaker 'F' with a 40 kA		
	breaker		AEP (100%)
	Replace Madison 138 kV		
b2819	breaker 'V' with a 63 kA		
	breaker		AEP (100%)
	Replace Sterling 138 kV		
b2820	breaker 'G' with a 40 kA		
	breaker		AEP (100%)
	Replace Morse 138 kV		
62821	breakers '103', '104', '105',		
02021	and '106' with 63 kA		
	breakers		AEP (100%)
	Replace Clinton 138 kV		
b2822	breakers '105' and '107' with		
	63 kA breakers		AEP (100%)
	Install 300 MVAR reactor at		
b2826.1	Ohio Central 345 kV		
	substation		AEP (100%)

	Install 300 MVAR reactor at	
b2826.2	West Bellaire 345 kV	
	substation	AEP (100%)
	Upgrade the Tanner Creek –	DFAX Allocation:
b2831.1	Miami Fort 345 kV circuit	AEP (24.63%) / Dayton (38.63%)
	(AEP portion)	/ DEOK (36.74%)
	Six wire the Kyger Creek –	
1,2022	Sporn 345 kV circuits #1 and	
02832	#2 and convert them to one	
	circuit	AEP (100%)
	Reconductor the Maddox	
1,2022	Creek – East Lima 345 kV	
02833	circuit with 2-954 ACSS	DFAX Allocation:
	Cardinal conductor	AEP (75.78%) / Dayton (24.22%)
	Reconductor and string open	
h2924	position and sixwire 6.2 miles	
02034	of the Chemical – Capitol Hill	
	138 kV circuit	AEP (100%)
	Replace the South Canton 138	
b2872	kV breaker 'K2' with a 80 kA	
	breaker	AEP (100%)
	Replace the South Canton 138	
b2873	kV breaker "M" with a 80 kA	
	breaker	AEP (100%)
	Replace the South Canton 138	
b2874	kV breaker "M2" with a 80	
	kA breaker	AEP (100%)
h2878	Upgrade the Clifty Creek	
02878	345 kV risers	AEP (100%)
	Rebuild approximately 4.77	
	miles of the Cannonsburg –	
b2880	South Neal 69 kV line section	
	utilizing 795 ACSR	
	conductor (90 MVA rating)	AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
	Rebuild ~1.7 miles of the		
b2881	Dunn Hollow – London 46		
	kV line section utilizing 795		
	26/7 ACSR conductor (58		
	MVA rating, non-conductor		
	limited)	AEP (100%)	
	Rebuild Reusens - Peakland		
b2882	Switch 69 kV line. Replace		
	Peakland Switch	AEP (100%)	
	Rebuild the Reusens -		
	Peakland Switch 69 kV line		
12002 1	(approximately 0.8 miles)		
02002.1	utilizing 795 ACSR		
	conductor (86 MVA rating,		
	non-conductor limited)	AEP (100%)	
	Replace existing Peakland S.S		
b2882.2	with new 3 way switch phase		
	over phase structure	AEP (100%)	
	Rebuild the Craneco – Pardee		
	– Three Forks – Skin Fork 46		
12002	kV line section		
02883	(approximately 7.2 miles)		
	utilizing 795 26/7 ACSR		
	conductor (108 MVA rating)	AEP (100%)	
	Install a second transformer at		
	Nagel station, comprised of 3		
	single phase 250 MVA		
	500/138 kV transformers.		
h2884	Presently, TVA operates their		
02004	end of the Boone Dam –		
	Holston 138 kV		
	interconnection as normally		
	open preemptively for the loss		
<u> </u>	of the existing Nagel	AEP (100%)	
b2885	New delivery point for City		
	of Jackson	AEP (100%)	

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)	
	Install a new Ironman Switch		
	to serve a new delivery point		
b2885.1	requested by the City of		
	Jackson for a load increase		
	request	AEP (100%)	
	Install a new 138/69 kV		
	station (Rhodes) to serve as a		
b2885.2	third source to the area to help		
	relieve overloads caused by		
	the customer load increase	AEP (100%)	
	Replace Coalton Switch with		
b2885.3	a new three breaker ring bus		
	(Heppner)	AEP (100%)	
	Install 90 MVA 138/69 kV		
	transformer, new transformer		
12006	high and low side 3000 A 40		
02000	kA CBs, and a 138 kV 40 kA		
	bus tie breaker at West End		
	Fostoria	AEP (100%)	
	Add 2-138 kV CB's and		
	relocate 2-138 kV circuit exits		
h2887	to different bays at Morse		
02007	Road. Eliminate 3 terminal		
	line by terminating Genoa -		
	Morse circuit at Morse Road	AEP (100%)	
	Retire Poston substation.		
b2888	Install new Lemaster		
	substation	AEP (100%)	
62888 1	Remove and retire the Poston		
02000.1	138 kV station	AEP (100%)	
	Install a new greenfield		
b2888.2	station, Lemaster 138 kV		
	Station, in the clear	AEP (100%)	

Required Tr	ansmission Enhancements	Annual Revenue Requirement	t Responsible Customer(s)
	Relocate the Trimble 69 kV AEP Ohio radial delivery point to 138 kV, to be served off of		
b2888.3	the Poston – Strouds Run –		
	Crooksville 138 kV circuit via a	L	
	new three-way switch. Retire th	e	
	Poston - Trimble 69 kV line		AEP (100%)
b2889	Expand Cliffview station		AEP (100%)
	Cliffview Station: Establish 13	8	
	kV bus. Install two 138/69 kV		
b2889.1	XFRs (130 MVA), six 138 kV		
	CBs (40 kA 3000 A) and four 6	9	
	kV CBs (40 kA 3000 A)		AEP (100%)
	Byllesby – Wythe 69 kV: Retin	e	
b2889.2	all 13.77 miles (1/0 CU) of this		
02009.2	circuit (~4 miles currently in		
	national forest)		AEP (100%)
	Galax – Wythe 69 kV: Retire		
	13.53 miles $(1/0 \text{ CU section})$ of		
	line from Lee Highway down to	•	
	Byllesby. This section is		
b2889.3	currently double circuited with		
	Byllesby – Wythe 69 kV.		
	Terminate the southern 3/0		
	ACSR section into the newly		
	opened position at Byllesby		AEP (100%)
	Cliffview Line: Tap the existin	g	
	Pipers Gap – Jubal Early 138 k	\checkmark	
	line section. Construct double		
b2889.4	circuit in/out (~2 miles) to		
	newly established 138 kV bus,		
	utilizing 795 26/7 ACSR		
	conductor		AEP (100%)

Required T	ransmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
	Rebuild 23.55 miles of the East		
b2890.1	Cambridge – Smyrna 34.5 kV		
	circuit with 795 ACSR		
	conductor (128 MVA rating)		
	and convert to 69 kV		AEP (100%)
	East Cambridge: Install a 2000		
h2800.2	A 69 kV 40 kA circuit breaker		
02890.2	for the East Cambridge –		
	Smyrna 69 kV circuit		AEP (100%)
	Old Washington: Install 69 kV		
b2890.3	2000 A two way phase over		
02890.3	phase switch		AEP (100%)
1.2000.4	Install 69 kV 2000 A two way		
02890.4	phase over phase switch		AEP (100%)
	Rebuild the Midland Switch to		
	East Findlay 34.5 kV line (3.31		
b2891	miles) with 795 ACSR (63		
	MVA rating) to match other		
	conductor in the area		AEP (100%)
	Install new 138/12 kV		
	transformer with high side		
	circuit switcher at Leon and a		
	new 138 kV line exit towards		
b2892	Ripley. Establish 138 kV at the		
	Ripley station with a new 138/6	9	
	kV 130 MVA transformer and		
	move the distribution load to		
	138 kV service		AEP (100%)
	Rebuild approximately 6.7 mile	5	· · ·
	of 69 kV line between Mottville		
	and Pigeon River using 795		
b2936.1	ACSR conductor (129 MVA		
	rating). New construction will b	e	
	designed to 138 kV standards		
	but operated at 69 kV		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requiremen	t Responsible Customer(s)
b2936.2	Pigeon River Station: Replace existing MOAB Sw. 'W' with a new 69 kV 3000 A 40 kA breaker, and upgrade existing		
	relays towards HMD station. Replace CB H with a 3000 A 40 kA breaker		AEP (100%)
b2937	Replace the existing 636 ACSR 138 kV bus at Fletchers Ridge with a larger 954 ACSR conductor		AEP (100%)
b2938	Perform a sag mitigations on the Broadford – Wolf Hills 138 kV circuit to allow the line to operate to a higher maximum temperature		AEP (100%)
b2958.1	Cut George Washington – Tidd 138 kV circuit into Sand Hill and reconfigure Brues & Warton Hill line entrances		AEP (100%)
b2958.2	Add 2 138 kV 3000 A 40 kA breakers, disconnect switches, and update relaying at Sand Hill station		AEP (100%)
b2968	Upgrade existing 345 kV terminal equipment at Tanner Creek station		AEP (100%)
b2969	Replace terminal equipment on Maddox Creek - East Lima 345 kV circuit		AEP (100%)
b2976	Upgrade terminal equipment at Tanners Creek 345 kV station. Upgrade 345 kV bus and risers at Tanners Creek for the Dearborn circuit		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2988	Replace the Twin Branch 345 kV breaker "JM" with 63 kA breaker and associated substation works including	
	switches, bus leads, control cable and new DICM	AEP (100%)
b2993	Rebuild the Torrey – South Gambrinus Switch – Gambrinus Road 69 kV line section (1.3 miles) with 1033 ACSR 'Curlew' conductor and steel poles	AEP (100%)
b3000	Replace South Canton 138 kV breaker 'N' with an 80 kA breaker	AEP (100%)
b3001	Replace South Canton 138 kV breaker 'N1' with an 80 kA breaker	AEP (100%)
b3002	Replace South Canton 138 kV breaker 'N2' with an 80 kA breaker	AEP (100%)
b3036	Rebuild 15.6 miles of Haviland - North Delphos 138 kV line	AEP (100%)
b3037	Upgrades at the Natrium substation	AEP (100%)
b3038	Reconductor the Capitol Hill – Coco 138 kV line section	AEP (100%)
b3039	Line swaps at Muskingum 138 kV station	AEP (100%)
b3040.1	Rebuild Ravenswood – Racine tap 69 kV line section (~15 miles) to 69 kV standards, utilizing 795 26/7 ACSR conductor	AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3040.2	Rebuild existing Ripley – Ravenswood 69 kV circuit (~9 miles) to 69 kV standards, utilizing 795 26/7 ACSR conductor		AED (100%)
b3040.3	Install new 3-way phase over phase switch at Sarah Lane station to replace the retired switch at Cottageville		AEP (100%)
b3040.4	Install new 138/12 kV 20 MVA transformer at Polymer station to transfer load from Mill Run station to help address overload on the 69 kV network		AEP (100%)
b3040.5	Retire Mill Run station		AEP (100%)
b3040.6	Install 28.8 MVAR cap bank at South Buffalo station		AEP (100%)
b3051.2	Adjust CT tap ratio at Ronceverte 138 kV		AEP (100%)
b3085	Reconductor Kammer – George Washington 138 kV line (approx. 0.08 mile). Replace the wave trap at Kammer 138 kV		AEP (100%)
b3086.1	Rebuild New Liberty – Findlay 34 kV line Str's 1–37 (1.5 miles), utilizing 795 26/7 ACSR conductor		AEP (100%)
b3086.2	Rebuild New Liberty – North Baltimore 34 kV line Str's 1- 11 (0.5 mile), utilizing 795 26/7 ACSR conductor		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirer	ment Responsible Customer(s)
12096 2	Rebuild West Melrose –		
	Whirlpool 34 kV line Str's		
03080.3	55–80 (1 mile), utilizing 795		
	26/7 ACSR conductor		AEP (100%)
	North Findlay station: Install		
	a 138 kV 3000A 63kA line		
h2086 1	breaker and low side 34.5 kV		
03080.4	2000A 40 kA breaker, high		
	side 138 kV circuit switcher		
	on T1		AEP (100%)
	Ebersole station: Install		
	second 90 MVA 138/69/34		
b3086.5	kV transformer. Install two		
	low side (69 kV) 2000A 40		
	kA breakers for T1 and T2		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Rebuild Lakin – Racine Tap		
h2005	69 kV line section (9.2 miles)		
03095	to 69 kV standards, utilizing		
	795 26/7 ACSR conductor		AEP (100%)
	Install a 138 kV 3000A 40 kA		
	circuit switcher on the high		
b3099	side of the existing 138/34.5		
	kV transformer No.5 at		
	Holston station		AEP (100%)
	Replace the 138 kV MOAB		
	switcher "YY" with a new		
b3100	138 kV circuit switcher on the		
	high side of Chemical		
	transformer No.6		AEP (100%)
	Rebuild the 1/0 Cu. conductor		
	sections (approx. 1.5 miles) of		
	the Fort Robinson – Moccasin		
	Gap 69 kV line section		
1,2101	(approx. 5 miles) utilizing		
03101	556 ACSR conductor and		
	upgrade existing relay trip		
	limit (WN/WE: 63 MVA, line		
	limited by remaining		
	conductor sections)		AEP (100%)
	Replace existing 50 MVA		<u> </u>
	138/69 kV transformers #1		
b3102	and #2 (both 1957 vintage) at		
	Fremont station with new 130		
	MVA 138/69 kV transformers		AEP (100%)

Required T	ransmission Enhancements	Annual Revenue Requi	rement Responsible Customer(s)
	Install a 138/69 kV		
	transformer at Royerton		
	station. Install a 69 kV bus		
	with one 69 kV breaker		
b3103.1	toward Bosman station.		
03103.1	Rebuild the 138 kV portion		
	into a ring bus configuration		
	built for future breaker and a		
	half with four 138 kV		
	breakers		AEP (100%)
	Rebuild the		
	Bosman/Strawboard station in		
h2102.2	the clear across the road to		
05105.2	move it out of the flood plain		
	and bring it up to 69 kV		
	standards		AEP (100%)
	Retire 138 kV breaker L at		
b3103 3	Delaware station and re-		
03103.3	purpose 138 kV breaker M		
	for the Jay line		AEP (100%)
	Retire all 34.5 kV equipment		
h2102 /	at Hartford City station. Re-		
03103.4	purpose breaker M for the		
	Bosman line 69 kV exit		AEP (100%)
	Rebuild the 138 kV portion of		
	Jay station as a 6 breaker,		
	breaker and a half station re-		
	using the existing breakers		
h2102 5	"A", "B", and "G." Rebuild		
05105.5	the 69 kV portion of this		
	station as a 6 breaker ring bus		
	re-using the 2 existing 69 kV		
	breakers. Install a new 138/69		
	kV transformer		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
	Rebuild the 69 kV Hartford	
	City – Armstrong Cork line	
b3103.6	but instead of terminating it	
	into Armstrong Cork,	
	terminate it into Jay station	AEP (100%)
h2102 7	Build a new 69 kV line from	
03103.7	Armstrong Cork – Jay station	AEP (100%)
	Rebuild the 34.5 kV	
	Delaware – Bosman line as	
1.2102.0	the 69 kV Royerton –	
03103.8	Strawboard line. Retire the	
	line section from Royerton to	
	Delaware stations	AEP (100%)
	Perform a sag study on the	
	Polaris – Westerville 138 kV	
1.2104	line (approx. 3.6 miles) to	
03104	increase the summer	
	emergency rating to 310	
	MVA	AEP (100%)
	Rebuild the Delaware – Hyatt	
	138 kV line (approx. 4.3	
b3105	miles) along with replacing	
	conductors at both Hyatt and	
	Delaware substations	AEP (100%)
	Perform a sag study (6.8	
	miles of line) to increase the	
	SE rating to 310 MVA. Note	
b3106	that results from the sag study	
	could cover a wide range of	
	outcomes, from no work	
	required to a complete rebuild	AEP (100%)
	Rebuild 5.2 miles Bethel –	
b3109	Sawmill 138 kV line	
	including ADSS	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requi	rement Responsible Customer(s)
b3112	Construct a single circuit 138 kV line (approx. 3.5 miles) from Amlin to Dublin using 1033 ACSR Curlew (296 MVA SN), convert Dublin station into a ring configuration, and re- terminating the Britton UG cable to Dublin station		AEP (100%)
b3116	Replace existing Mullens 138/46 kV 30 MVA transformer No.4 and associated protective equipment with a new 138/46 kV 90 MVA transformer and associated protective equipment		AEP (100%)
b3119.1	Rebuild the Jay – Pennville 138 kV line as double circuit 138/69 kV. Build a new 9.8 mile single circuit 69 kV line from near Pennville station to North Portland station		AEP (100%)

Required T	Transmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
	Install three (3) 69 kV breakers		
12110.2	to create the "U" string and add		
03119.2	a low side breaker on the Jay		
	transformer 2		AEP (100%)
	Install two (2) 69 kV breakers at		
12110.2	North Portland station to		
03119.3	complete the ring and allow for		
	the new line		AEP (100%)
	At Conesville 138 kV station:		, , , , , , , , , , , , , , , , , , ,
	Remove line leads to generating		
	units, transfer plant AC service		
b3129	to existing station service feeds		
	in Conesville 345/138 kV yard,		
	and separate and reconfigure		
	protection schemes		AEP (100%)
	At East Lima and Haviland 138		X /
1.2121	kV stations, replace line relays		
03131	and wavetrap on the East Lima -		
	Haviland 138 kV facility		AEP (100%)
	Rebuild approximately 12.3		, , , , , , , , , , , , , , , , , , ,
	miles of remaining Lark		
1 2 1 2 1 1	conductor on the double circuit		
03131.1	line between Haviland and East		
	Lima with 1033 54/7 ACSR		
	conductor		AEP (100%)
	Rebuild 3.11 miles of the		, , , , , , , , , , , , , , , , , , ,
b3132	LaPorte Junction – New Buffalo		
	69 kV line with 795 ACSR		AEP (100%)
	Rebuild the Garden Creek –		, , , , , , , , , , , , , , , , , , ,
b3139	Whetstone 69 kV line (approx. 4		
	miles)		AEP (100%)
	Rebuild the Whetstone – Knox		` , , , , , , , , , , , , , , , ,
b3140	Creek 69 kV line (approx. 3.1		
	miles)		AEP (100%)

Required Tr	ansmission Enhancements A	Annual Revenue Requiremen	t Responsible Customer(s)
	Rebuild the Knox Creek – Coal		
b3141	Creek 69 kV line (approx. 2.9		
	miles)		AEP (100%)
	Rebuild the 46 kV Bradley –		
	Scarbro line to 96 kV standards		
	using 795 ACSR to achieve a		
1.21401	minimum rate of 120 MVA.		
03146.1	Rebuild the new line adjacent to		
	the existing one leaving the old		
	line in service until the work is		
	completed		AEP (100%)
	Bradley remote end station		
b3148.2	work, replace 46 kV bus, install		
	new 12 MVAR capacitor bank		AEP (100%)
	Replace the existing switch at		
h3148 3	Sun substation with a 2-way		
03140.5	SCADA-controlled motor-		
	operated air-breaker switch		AEP (100%)
	Remote end work and		
b3148.4	associated equipment at Scarbro		
	station		AEP (100%)
	Retire Mt. Hope station and		
b3148.5	transfer load to existing Sun		
	station		AEP (100%)
	Rebuild the 2.3 mile Decatur –		
b3149	South Decatur 69 kV line using		
	556 ACSR		AEP (100%)
	Rebuild Ferguson 69/12 kV		
	station in the clear as the 138/12		
	kV Bear station and connect it		
b3150	to an approx. 1 mile double		
00100	circuit 138 kV extension from		
	the Aviation – Ellison Road 138		
	kV line to remove the load from		
	the 69 kV line		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3151.1	Rebuild the 30 mile Gateway – Wallen 34.5 kV circuit as the 27 mile Gateway – Wallen 69 kV line	AEP (100%)
b3151.2	Retire approx. 3 miles of the Columbia – Whitley 34.5 kV line	AEP (100%)
b3151.3	At Gateway station, remove all 34.5 kV equipment and install one (1) 69 kV circuit breaker for the new Whitley line entrance	AEP (100%)
b3151.4	Rebuild Whitley as a 69 kV station with two (2) lines and one (1) bus tie circuit breaker	AEP (100%)
b3151.5	Replace the Union 34.5 kV switch with a 69 kV switch structure	AEP (100%)
b3151.6	Replace the Eel River 34.5 kV switch with a 69 kV switch structure	AEP (100%)
b3151.7	Install a 69 kV Bobay switch at Woodland station	AEP (100%)
b3151.8	Replace the Carroll and Churubusco 34.5 kV stations with the 69 kV Snapper station. Snapper station will have two (2) line circuit breakers, one (1) bus tie circuit breaker and a 14.4 MVAR cap bank	AEP (100%)
b3151.9	Remove 34.5 kV circuit breaker "AD" at Wallen station	AEP (100%)
b3151.10	Rebuild the 2.5 miles of the Columbia – Gateway 69 kV line	AEP (100%)

Required Transmission Enhancements		Annual Revenue Requirer	ment Responsible Customer(s)
	Rebuild Columbia station in		
b3151 11	the clear as a 138/69 kV		
	station with two (2) 138/69		
	kV transformers and 4-		
03131.11	breaker ring buses on the high		
	and low side. Station will		
	reuse 69 kV breakers "J" &		
	"K" and 138 kV breaker "D"		AEP (100%)
	Rebuild the 13 miles of the		
b3151.12	Columbia – Richland 69 kV		
	line		AEP (100%)
	Rebuild the 0.5 mile Whitley		
b3151.13	– Columbia City No.1 line as		
03131.13	69 kV		AEP (100%)
	Rebuild the 0.5 mile Whitley		
b3151.14	– Columbia City No.2 line as		
	69 kV		AEP (100%)
	Rebuild the 0.6 mile double		
	circuit section of the Rob		
b3151.15	Park – South Hicksville / Rob		
	Park – Diebold Road as 69		
	kV		AEP (100%)
	Construct an approx. 2.4		
	miles double circuit 138 kV		
b3160.1	extension using 1033 ACSR		
0010011	(Aluminum Conductor Steel		
	Reinforced) to connect Lake		
	Head to the 138 kV network		AEP (100%)
	Retire the approx.2.5 miles		
b3160.2	34.5 kV Niles – Simplicity		
	Tap line		AEP (100%)
b3160.3	Retire the approx.4.6 miles		
55100.5	Lakehead 69 kV Tap		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirer	ment Responsible Customer(s)
	Build new 138/69 kV drop		
	down station to feed		
	Lakehead with a 138 kV		
b3160.4	breaker, 138 kV switcher,		
	138/69 kV transformer and a		
	138 kV Motor-Operated Air		
	Break		AEP (100%)
	Rebuild the approx. 1.2 miles		
	Buchanan South 69 kV		
b3160.5	Radial Tap using 795 ACSR		
	(Aluminum Conductor Steel		
	Reinforced)		AEP (100%)
	Rebuild the approx.8.4 miles		
	69 kV Pletcher – Buchanan		
	Hydro line as the approx. 9		
b3160.6	miles Pletcher – Buchanan		
	South 69 kV line using 795		
	ACSR (Aluminum Conductor		
	Steel Reinforced)		AEP (100%)
	Install a PoP (Point-of-		
	Presence) switch at Buchanan		
b3160.7	South station with 2 line		
	MOABs (Motor-Operated Air		
	Break)		AEP (100%)

Required 7	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Retire approximately 38		
	miles of the 44 mile Clifford		
	 Scottsville 46 kV circuit. 		
	Build new 138 kV "in and		
	out" to two new distribution		
	stations to serve the load		
	formerly served by Phoenix,		
	Shipman, Schuyler (AEP),		
	and Rockfish stations.		
	Construct new 138 kV lines		
b3208	from Joshua Falls – Riverville		
	(approx. 10 miles) and		
	Riverville – Gladstone		
	(approx. 5 miles). Install		
	required station upgrades at		
	Joshua Falls, Riverville and		
	Gladstone stations to		
	accommodate the new 138		
	kV circuits. Rebuild Reusen –		
	Monroe 69 kV (approx. 4		
	miles)		AEP (100%)
	Rebuild the 10.5 mile Berne –		
b3209	South Decatur 69 kV line		
	using 556 ACSR		AEP (100%)
	Replace approx. 0.7 mile		
b3210	Beatty – Galloway 69 kV line		
	with 4000 kcmil XLPE cable		AEP (100%)
h3220	Install 14.4 MVAR capacitor		
03220	bank at Whitewood 138 kV		AEP (100%)

Required Tr	ired Transmission Enhancements Annual Revenue Requirement Responsible Custom		ement Responsible Customer(s)
h32/13	Replace risers at the Bass		
03243	34.5 kV station		AEP (100%)
	Rebuild approximately 9		
b3244	miles of the Robinson Park –		
	Harlan 69 kV line		AEP (100%)
	Install a low side 69 kV		
b3248	circuit breaker at the Albion		
	138/69 kV transformer #1		AEP (100%)
	Rebuild the Chatfield –		
12240	Melmore 138 kV line		
63249	(approximately 10 miles) to		
	1033 ACSR conductor		AEP (100%)

Required T	ransmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Install a 3000A 40 kA 138 kV		
	breaker on the high side of		
	138/69 kV transformer #5 at		
b3253	the Millbrook Park station. The		
	transformer and associated bus		
	protection will be upgraded		
	accordingly		AEP (100%)
	Upgrade 795 AAC risers at the		
h2255	Sand Hill 138 kV station		
03233	towards Cricket Switch with		
	1272 AAC		AEP (100%)
	Upgrade 500 MCM Cu risers at		
h3256	Tidd 138 kV station towards		
03230	Wheeling Steel; replace with		
	1272 AAC conductor		AEP (100%)
	Replace two spans of 336.4		
h3257	26/7 ACSR on the Twin		
b3257	Branch – AM General #2 34.5		
	kV circuit		AEP (100%)
	Install a 3000A 63 kA 138 kV		
	breaker on the high side of		
	138/69 kV transformer #2 at		
b3258	Wagenhals station. The		
	transformer and associated bus		
	protection will be upgraded		
	accordingly		AEP (100%)
	At West Millersburg station,		
	replace the 138 kV MOAB on		
b3259	the West Millersburg –		
	Wooster 138 kV line with a		
	3000A 40 kA breaker		AEP (100%)
	Upgrade circuit breaker "R1"		
	at Tanners Creek 345 kV.		
b3261	Install Transient Recovery		
	Voltage capacitor to increase		
	the rating from 50 kA to 63 kA		AEP (100%)

Required	Fransmission Enhancements	Annual Revenue Requir	rement Responsible Customer(s)
	At West New Philadelphia		
	station, add a high side 138		
h3260	kV breaker on the 138/69 kV		
03209	Transformer #2 along with a		
	138 kV breaker on the line		
	towards Newcomerstown		AEP (100%)
	Install 1.7 miles of 795 ACSR		
	138 kV conductor along the		
	other side of Dragoon Tap		
	138 kV line, which is		
	currently double circuit tower		
	with one position open.		
	Additionally, install a second		
h3270	138/34.5 kV transformer at		
03270	Dragoon, install a high side		
	circuit switcher on the current		
	transformer at the Dragoon		
	Station, and install two (2)		
	138 kV line breakers on the		
	Dragoon – Jackson 138 kV		
	and Dragoon – Twin Branch		
	138 kV lines		AEP (100%)
	Replace Dragoon 34.5 kV		
b3270.1	breakers "B", "C", and "D"		
	with 40 kA breakers		AEP (100%)
	Install a 138 kV circuit		
	breaker at Fremont station on		
b3271	the line towards Fremont		
03271	Center and install a 9.6		
	MVAR 69 kV capacitor bank		
	at Bloom Road station		AEP (100%)
	Install two 138 kV circuit		
h2272	switchers on the high side of		
03272	138/34.5 kV Transformers #1		
	and #2 at Rockhill station		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Custor	ner(s)
Rebuild and convert the	
existing 17.6 miles East	
b3273.1 Leipsic – New Liberty 34.5	
kV circuit to 138 kV using	
795 ACSR AEP (100%)	
Convert the existing 34.5	
kV equipment to 138 kV	
and expand the existing	
McComb station to the	
north and east to allow for	
b3273.2 new equipment to be	
installed. Install two (2)	
new 138 kV box bays to	
allow for line positions and	
two (2) new 138/12 kV	
transformers AEP (100%)	
Expand the existing East	
Leipsic 138 kV station to	
the north to allow for	
another 138 kV line exit to	
be installed. The new line	
exit will involve installing	
b3273.3 a new 138 kV circuit	
breaker, disconnect	
switches and the addition	
of a new dead end structure	
along with the extension of	
the existing 138 kV bus	
work AEP (100%)	
Add one (1) 138 kV circuit	
breaker and disconnect	
switches in order to add an	
additional line position at	
b32/3.4 New Liberty 138 kV	
station. Install line relaying	
potential devices and retire	
the 34.5 kV breaker 'F' AEP (100%)	

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Rebuild approximately 8.9		
	miles of 69 kV line between		
b3274	Newcomerstown and Salt		
	Fork Switch with 556 ACSR		
	conductor	AEP (100%)	
	Rebuild the Kammer Station		
b3275.1	– Cresaps Switch 69 kV line,		
	approximately 0.5 mile	AEP (100%)	
	Rebuild the Cresaps Switch –		
b3275.2	McElroy Station 69 kV,		
	approximately 0.67 mile	AEP (100%)	
	Replace a single span of 4/0		
	ACSR from Moundsville -		
	Natrium structure 93L to		
h2275 2	Carbon Tap switch 69 kV		
03273.3	located between the		
	Colombia Carbon and Conner		
	Run stations. Remainder of		
	the line is 336 ACSR	AEP (100%)	
	Rebuild from Colombia		
	Carbon to Columbia Carbon		
	Tap structure 93N 69 kV,		
	approximately 0.72 mile. The		
b3275.4	remainder of the line between		
	Colombia Carbon Tap		
	structure 93N and Natrium		
	station is 336 ACSR and will		
	remain	AEP (100%)	
	Replace the Cresaps 69 kV 3-		
	Way Phase-Over-Phase		
b3275.5	switch and structure with a		
	new 1200A 3-Way switch		
	and steel pole	AEP (100%)	
	Replace 477 MCM Alum bus		
b3275.6	and risers at McElroy 69 kV		
	station	AEP (100%)	

Required Tra	ansmission Enhancements	Annual Revenue Requirem	nent Responsible Customer(s)
	Replace Natrium 138 kV bus		
	existing between CB-BT1		
	and along the 138 kV Main		
	Bus #1 dropping to CBH1		
b3275.7	from the 500 MCM		
	conductors to a 1272 KCM		
	AAC conductor. Replace the		
	dead end clamp and strain		
	insulators		AEP (100%)
	Rebuild the 2/0 Copper		
	section of the Lancaster –		
	South Lancaster 69 kV line,		
b3276 1	approximately 2.9 miles of		
03270.1	the 3.2 miles total length with		
	556 ACSR conductor. The		
	remaining section has a 336		
	ACSR conductor		AEP (100%)
	Rebuild the 1/0 Copper		
	section of the line between		
h3276.2	Lancaster Junction and		
03270.2	Ralston station 69 kV,		
	approximately 2.3 miles of		
	the 3.1 miles total length		AEP (100%)
	Rebuild the 2/0 Copper		
	portion of the line between		
b3276.3	East Lancaster Tap and		
	Lancaster 69 kV,		
	approximately 0.81 mile		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirer	ment Responsible Customer(s)
	Replace H.S. MOAB		
	switches on the high side of		
h3278 1	the 138/69/34.5 kV		
03278.1	transformer T1 with a H.S.		
	circuit switcher at Saltville		
	station		AEP (100%)
	Replace existing 138/69/34.5		
	kV transformer T2 with a		
b3278.2	new 130 MVA 138/69/13 kV		
	transformer at Meadowview		
	station		AEP (100%)
	Install a new 138 kV, 21.6		
h3270	MVAR cap bank and circuit		
03277	switcher at Apple Grove		
	station		AEP (100%)
	Rebuild the existing Cabin		
	Creek – Kelly Creek 46 kV		
	line (to Structure 366-44),		
	approximately 4.4 miles. This		
b3280	section is double circuit with		
	the existing Cabin Creek –		
	London 46 kV line so a		
	double circuit rebuild would		
	be required		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requi	rement Responsible Customer(s)
	Install a second 138 kV		
	circuit utilizing 795 ACSR		
	conductor on the open		
	position of the existing		
	double circuit towers from		
	East Huntington – North		
	Proctorville. Remove the		
b3282.1	existing 34.5 kV line from		
	East Huntington – North		
	Chesapeake and rebuild this		
	section to 138 kV served		
	from a new PoP switch off		
	the new East Huntington –		
	North Proctorville 138 kV #2		
	line		AEP (100%)
	Install a 138 kV 40 kA circuit		
b3282.2	breaker at North Proctorville		
	station		AEP (100%)
	Install a 138 kV 40 kA circuit		
b3282.3	breaker at East Huntington		
	station		AEP (100%)
	Convert the existing 34/12 kV		
b3282.4	North Chesapeake to a 138/12		
	kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Rebuild approximately 5.44		
b3284	miles of 69 kV line from		
Required Tri b3284 b3285 b3285 b3286 b3287 b3289.1	Lock Lane to Point Pleasant		AEP (100%)
	Replace the Meigs 69 kV 4/0		
	Cu station riser towards		
	Gavin and rebuild the section		
	of the Meigs – Hemlock 69		
h3285	kV circuit from Meigs to		
03283	approximately Structure #40		
	(about 4 miles) replacing the		
	line conductor 4/0 ACSR		
	with the line conductor size		
	556.5 ACSR		AEP (100%)
	Reconductor the first 3 spans		
	from Merrimac station to		
	Structure 464-3 of 3/0 ACSR		
b3286	conductor utilizing 336		
	ACSR on the existing		
	Merrimac – Midway 69 kV		
	circuit		AEP (100%)
	Upgrade 69 kV risers at		
b3287	Moundsville station towards		
b3285 b3286 b3287 b3289.1 b3289.2	George Washington		AEP (100%)
	Install high-side circuit		
b3289.1	switcher on 138/69/12 kV T5		
	at Roanoke station		AEP (100%)
	Install high-side circuit		
h2280.2	switcher on 138/69/34.5 kV		
03209.2	T1 at Huntington Court		
	station		AEP (100%)
Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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	Build 9.4 miles of single		
h2200 1	circuit 69 kV line from		
03270.1	Roselms to near East		
	Ottoville 69 kV switch		AEP (100%)
	Rebuild 7.5 miles of double		
	circuit 69 kV line between		
h2200.2	East Ottoville switch and		
03290.2	Kalida station (combining		
	with the new Roselms to		
	Kalida 69 kV circuit)		AEP (100%)
	At Roselms switch, install a		
1,2200,2	new three way 69 kV, 1200 A		
03290.3	phase-over-phase switch,		
	with sectionalizing capability		AEP (100%)
12200 4	At Kalida 69 kV station,		
	terminate the new line from		
	Roselms switch. Move the CS		
03290.4	XT2 from high side of T2 to		
	the high side of T1. Remove		
	existing T2 transformer		AEP (100%)
h2201	Replace the Russ St. 34.5 kV		
03291	switch		AEP (100%)
	Replace existing 69 kV		
1,2202	capacitor bank at Stuart		
03292	station with a 17.2 MVAR		
	capacitor bank		AEP (100%)
	Replace 2/0 Cu entrance span		
	conductor on the South Upper		
1,2202	Sandusky 69 kV line and 4/0		
03293	Cu Risers/Bus conductors on		
	the Forest line at Upper		
	Sandusky 69 kV station		AEP (100%)
	Replace existing 69 kV		
h2204	disconnect switches for		
63294	circuit breaker "C" at Walnut		
	Avenue station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
b3295 Grundy 34.5 kV: Install a			
05275	34.5 kV 9.6 MVAR cap bank		AEP (100%)
	Rebuild the overloaded		
	portion of the Concord –		
h3206	Whitaker 34.5 kV line (1.13		
03270	miles). Rebuild is double		
	circuit and will utilize 795		
	ACSR conductor		AEP (100%)
	Rebuild 4.23 miles of 69 kV		
h3207 1	line between Sawmill and		
03297.1	Lazelle station, using 795		
	ACSR 26/7 conductor		AEP (100%)
	Rebuild 1.94 miles of 69 kV		
h3207.2	line between Westerville and		
03297.2	Genoa stations, using 795		
	ACSR 26/7 conductor		AEP (100%)
	Replace risers and switchers		
	at Lazelle, Westerville, and		
b3297.3	Genoa 69 kV stations.		
	Upgrade associated relaying		
	accordingly		AEP (100%)
	Rebuild 0.8 mile of double		
	circuit 69 kV line between		
b3298	South Toronto and West		
	Toronto. Replace 219 ACSR		
	with 556 ACSR		AEP (100%)
	Replace the 69 kV breaker D		
b3298.1	at South Toronto station with		
	40 kA breaker		AEP (100%)
	Rebuild 0.2 mile of the West		
	End Fostoria - Lumberjack		
	Switch 69 kV line with 556		
b3299	ACSR (Dove) conductors.		
	Replace jumpers on West End		
	Fostoria line at Lumberjack		
	Switch		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Reconductor and rebuild 1		
b3308	span of T-line on the Fort		
	Steuben – Sunset Blvd 69 kV		
	branch with 556 ACSR		AEP (100%)
	Rebuild 1.75 miles of the		
	Greenlawn – East Tiffin line		
	section of the Carothers –		
h2200	Greenlawn 69 kV circuit		
05509	containing 133 ACSR		
	conductor with 556 ACSR		
	conductor. Upgrade relaying		
	as required		AEP (100%)
	Rebuild 10.5 miles of the		
h22101	Howard – Willard 69 kV line		
03310.1	utilizing 556 ACSR		
	conductor		AEP (100%)
h2210.2	Upgrade relaying at Howard		
03310.2	69 kV station		AEP (100%)
h2210.2	Upgrade relaying at Willard		
03310.3	69 kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
	Rebuild approximately 4	
	miles of existing 69 kV line	
	between West Mount Vernon	
	and Mount Vernon stations.	
b3312	Replace the existing 138/69	
	kV transformer at West	
	Mount Vernon with a larger	
	90 MVA unit along with	
	existing 69 kV breaker 'C'	AEP (100%)
	Add 40 kA circuit breakers	
1 2 2 1 2	on the low and high side of	
63313	the East Lima 138/69 kV	
	transformer	AEP (100%)
	Install a new 138/69 kV 130	
1.22141	MVA transformer and	
03314.1	associated protection at Elliot	
	station	AEP (100%)
	Perform work at Strouds Run	
	station to retire 138/69/13 kV	
b3314.2	33.6 MVA Transformer #1	
	and install a dedicated 138/13	
	KV distribution transformer	AEP (100%)
	Upgrade relaying on Mark	
	Center – South Hicksville 69	
b3315	kV line and replace Mark	
	Center cap bank with a 7.7	
	MVAR unit	AEP (100%)
1,2220	Replace the CT at Don	
63320	Marquis 345 kV station	AEP (100%)
	Rebuild 6 miles Benton	
b3336	Harbor - Riverside 138 kV	
	double circuit extension	AEP (100%)
	Replace the one (1) Hyatt 138	
1 2 2 2 7	kV breaker "AB1" (101N)	
b3337	with 3000 A, 63 kA	
	interrupting breaker	AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirem	nent Responsible Customer(s)
	Replace the two (2) Kenny		
1 2 2 2 0	138 kV breakers, "102" (SC-		
63338	3) and " $106"$ (SC-4), each		
	with a 3000 A, 63 kA		
	Interrupting breaker		AEP (100%)
1 2 2 2 0	Replace the one (1) Canal		
63339	138 kV breaker "3" with		
	3000 A, 63 kA breaker		AEP (100%)
	Replace the 2156 ACSR and		
	28/4 ACSR bus and risers		
1.0.0.4.0	with 2-bundled 2156 ACSR		
b3342	at Muskingum River 345 kV		
	station to address loading		
	issues on Muskingum -		
	Waterford 345 kV line		AEP (100%)
	Rebuild approximately 0.3		
	miles of the overloaded 69		
b3343	kV line between Albion -		
00010	Philips Switch and Philips		
	Switch - Brimfield Switch		
	with 556 ACSR conductor		AEP (100%)
	Install two (2) 138 kV circuit		
	breakers in the M and N		
	strings in the breaker-and-a		
	half configuration in West		
b3344.1	Kingsport station 138 kV		
	yard to allow the Clinch		
	River - Moreland Dr. 138 kV		
	to cut in the West Kingsport		
	station		AEP (100%)
	Upgrade remote end relaying		
h3344 2	at Riverport 138 kV station		
03344.2	due to the line cut in at West		
	Kingsport station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	nt Responsible Customer(s)
	Rebuild approximately 4.2		
	miles of overloaded sections		
b3345.1	of the 69 kV line between Salt		
	Fork switch and Leatherwood		
	switch with 556 ACSR		AEP (100%)
12245 2	Update relay settings at		
05545.2	Broom Road station		AEP (100%)
	Rebuild approximately 3.5		
	miles of overloaded 69 kV		
	line between North Delphos –		
	East Delphos – Elida Road		
	switch station. This includes		
	approximately 1.1 miles of		
	double circuit line that makes		
	up a portion of the North		
b3346.1	Delphos – South Delphos 69		
	kV line and the North Delphos		
	– East Delphos 69 kV line.		
	Approximately 2.4 miles of		
	single circuit line will also be		
	rebuilt between the double		
	circuit portion to East Delphos		
	station and from East Delphos		
	to Elida Road switch station		AEP (100%)
	Replace the line entrance		
	spans at South Delphos station		
b3346.2	to eliminate the overloaded		
	4/0 Copper and 4/0 ACSR		
	conductor		AEP (100%)
	Rebuild approximately 20		
1 2 2 4 7 1	miles of 69 kV line between		
63347.1	Bancroft and Milton stations		
	with 556 ACSR conductor		AEP (100%)
	Replace the jumpers around		<i></i>
b3347.2	Hurrican switch with 556		
	ACSR		AEP (100%)

b3347.3	Replace the jumpers around Teavs switch with 556 ACSR	AFP (100%)
b3347.4	Update relay settings at Winfield station to coordinate with remote ends on line rebuild	AEP (100%)
b3347.5	Update relay settings at Bancroft station to coordinate with remote ends on line rebuild	AEP (100%)
b3347.6	Update relay settings at Milton station to coordinate with remote ends on line rebuild	AEP (100%)
b3347.7	Update relay settings at Putnam Village station to coordinate with remote ends on line rebuild	AEP (100%)
b3348.1	Construct a 138 kV single bus station (Tin Branch) consisting of a 138 kV box bay with a distribution transformer and 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Sprigg stations), and distribution will have one 12 kV feed. Install two 138 kV circuit breakers on the line exits. Install 138 kV circuit switcher for the new transformer	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3348.2	Construct a new 138/46/12 kV Argyle station to replace Dehue 46 kV station. Install a 138 kV ring bus using a breaker-and-a-half configuration, with an autotransformer with a 46 kV feed and a distribution transformer with a 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Wyoming stations). There will also be a 46 kV feed from this station to Becco station. Distribution will have two 12 kV feeds. Retire Dehue 46 kV station in its entirety	AEP (100%)
b3348.3	Bring the Logan – Sprigg #2 138 kV circuit in and out of Tin Branch station by constructing approximately 1.75 miles of new overhead double circuit 138 kV line. Double circuit T3 series lattice towers will be used along with 795,000 cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD, and one shield wire will be optical ground wire (OPGW)	AEP (100%)
b3348.4	Logan-Wyoming No. 1 circuit in and out of the proposed Argyle 46 kV station. Double circuit T3 series lattice towers will be used along with 795,000 cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD, and one shield wire will be OPGW	AEP (100%)
b3348.5	Rebuild approximately 10 miles of 46 kV line between Becco and the new Argyle 46 kV substation. Retire approximately 16 miles of 46 kV line between the new Argyle substation and Chauncey station	AEP (100%)
b3348.6	Adjust relay settings due to new line terminations and retirements at Logan, Wyoming, Sprigg, Becco and Chauncey stations	AEP (100%)

	D = 1 $D = 11.0 + 0.1 V$	
b3350.1	Replace Bellefonte 69 KV	
	breakers C, G, I, Z, AB and JJ in	
0000011	place. The new 69 kV breakers to	$\Delta FP (100\%)$
	be rated at 3000 A 40 kA	MLI (10070)
	Upgrade remote end relaying at	
b3350.2	Point Pleasant, Coalton and	
	South Point 69 kV substations	AEP (100%)
	Replace the 69 kV in-line	
b3351	switches at Monterey 69 kV	
	substation	AEP (100%)
	Replace circuit breakers '42' and	
	'43' at Bexley station with 3000	
b3354	A, 40 kA 69 kV breakers	
	(operated at 40 kV), slab, control	AEP (100%)
	cables and jumpers	
	Replace circuit breakers 'A' and	
	'B' at South Side Lima station	
b3355	with 1200 A, 25 kA 34.5 kV	
	breakers, slab, control cables and	AEP (100%)
	jumpers	
	Replace circuit breaker 'H' at	
1.2250	West End Fostoria station with	
03330	3000 A, 40 kA 69 kV breaker,	
	slab, control cables and jumpers	AEP (100%)
	Replace circuit breakers 'C', 'E,'	
1 2 2 5 7	and 'L' at Natrium station with	
6335/	3000 A, 40 kA 69 kV breakers,	
	slab, control cables and jumpers	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3358	Install a 69 kV 11.5 MVAR capacitor at Biers Run 69 kV station	AEP (100%)
b3359	Rebuild approximately 2.3 miles of the existing North Van Wert Sw. – Van Wert 69 kV line utilizing 556 ACSR conductor	AEP (100%)
b3362	Rebuild approximately 3.1 miles of the overloaded conductor on the existing Oertels Corner – North Portsmouth 69 kV line utilizing 556 ACSR	AEP (100%)
b3731	Replace 40 kV breaker J at McComb 138 kV station with a new 3000A 40 kA breaker	AEP (100%)
b3732	Install a 6 MVAR, 34.5 kV cap bank at Morgan Run station	AEP (100%)
b3733	Rebuild the 1.8 mile 69 kV line between Summerhill and Willow Grove Switch. Replace 4/0 ACSR conductor with 556 ACSR	AEP (100%)
b3734	Install a 7.7 MVAR, 69 kV cap bank at both Otway station and Rosemount station	AEP (100%)
b3735	Terminate the existing Broadford – Wolf Hills #1 138 kV line into Abingdon 138 kV Station. This line currently bypasses the existing Abingdon 138 kV station; Install two new 138 kV circuit breakers on each new line exit towards Broadford and towards Wolf Hills #1 station; Install one new 138 kV circuit breaker on line exit towards South Abingdon station for standard bus sectionalizing	AEP (100%)

	Establish 69 kV bus and new 69 kV	
b3736.1	line Circuit Breaker at Dorton	A = D (1000%)
	substation	ALF (10070)
	At Breaks substation, reuse 72 kV	
b3736.2	breaker A as the new 69 kV line	A EP (100%)
	breaker	ALF (10070)
	Rebuild approximately 16.7 miles	
b3736.3	Dorton – Breaks 46 kV line to 69 kV	A = D (1000%)
	line	AEP (10076)
1.27264	Retire approximately 17.2 miles	
05/50.4	Cedar Creek – Elwood 46 kV line	AEP (100%)
	Retire approximately 6.2 miles	
b3736.5	Henry Clay – Elwood 46 kV line	
	section	AEP (100%)
	Retire Henry Clay 46 kV substation	
	and replace with Poor Bottom 69 kV	
b3736.6	station. Install a new 0.7 mile double	
	circuit extension to Poor Bottom 69	AEP (100%)
	kV station	` , ,
	Retire Draffin substation and replace	
1.27267	with a new substation. Install a new	
05/50./	0.25 mile double circuit extension to	A = D (1000/)
	New Draffin substation	AEP (100%)
	Romata and work at Ionlying	
b3736.8	substation	
	substation	AEP (100%)
	Provide transition fiber to Dorton,	
b3736.9	Breaks, Poor Bottom, Jenkins and	
	New Draffin 69 kV substations	AEP (100%)
h2726 10	Honry Clay switch station ratingment	
05/50.10	Henry Clay switch station lethement	AEP (100%)
h2726 11	Coder Crook substation work	
03730.11		AEP (100%)

Required 1		Requirement	
b3736.12	Breaks substation 46 kV equipment retirement		AEP (100%)
b3736.13	Retire Pike 29 switch station and Rob Fork switch station		AEP (100%)
b3736.14	Serve Pike 29 and Rob Fork substation customers from nearby 34 kV distribution sources		AEP (100%)
b3736.15	Poor Bottom 69 kV substation install		AEP (100%)
b3736.16	Henry Clay 46 kV substation retirement		AEP (100%)
b3736.17	New Draffin 69 kV substation install		AEP (100%)
b3736.18	Draffin 46 kV substation retirement		AEP (100%)
b3763	Replace the Jug Street 138 kV breakers M, N, BC, BD, BE, BF, D, H, J, L, BG, BH, BJ, BK with 80 KA breakers		AEP (100%)
b3764	Replace the Hyatt 138 kV breakers AB1 and AD1 with 63 kA breakers		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Hayes – New Westville 138 kVline: Build approximately 0.19miles of 138 kV line to theIndiana/ Ohio State line toconnect to AES's line portion ofthe Hayes – New Westville 138kV line with the conductor size795 ACSR26/7 Drake. This sub-ID includes the cost of lineconstruction and Right of Way(ROW)Hayes – Hodgin 138 kV line:Build approximately 0.05 mile of138 kV line with the conductorsize 795 ACSR26/7 Drake. Thissub-ID includes the lineconstruction, ROW, and fiberHayes 138 kV: Build a new 4-138 kV circuit breaker ring bus.This sub-ID includes the cost ofrung withingmultiplicationconstruction breaker ring bus.This sub-ID includes the cost ofmultiplication<	Required 1		evenue Requirement	Responsible Customer(s)
b3766.1 Intel Build approximately 0.19 miles of 138 kV line to the Indiana/ Ohio State line to connect to AES's line portion of the Hayes – New Westville 138 kV line with the conductor size AEP (100%) 795 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line AEP (100%) construction, ROW, and fiber AEP (100%) Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of This sub-ID includes the cost of		Hayes – New Westville 138 kV		
b3766.2 b3766.1 hinds of 138 kV line to the Indiana/ Ohio State line to connect to AES's line portion of the Hayes – New Westville 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of run station construction		miles of 128 kV line to the		
b3766.1 Indiana/ Onlo State line to connect to AES's line portion of the Hayes – New Westville 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of rows attribute a construction		Indiana/ Obio Stata line to		
b3766.1 the Hayes – New Westville 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of rest events the cost of	h2766 1	and and Onto State line to		
b3766.1 the Hayes – New Westville 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of rew station construction		the Haves New Westwills 129		
kV line with the conductor size AEP (100%) 795 ACSR26/7 Drake. This sub- ID includes the cost of line AEP (100%) construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This AEP (100%) b3766.2 Hayes 138 kV: line Hayes 138 kV: Build a new 4- AEP (100%) Last 138 kV circuit breaker ring bus. This sub-ID includes the cost of This sub-ID includes the cost of This sub-ID includes the cost of	03/00.1	the Hayes – New Westville 138		
195 ACSR26/7 Drake. This sub- ID includes the cost of line construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of row attain construction		KV line with the conductor size		AEP (100%)
b3766.2 Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of run station construction		195 ACSR20/7 Drake. This sub-		
construction and Right of Way (ROW) Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of row station construction		ID includes the cost of line		
b3766.2 Hayes – Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber AEP (100%) Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of This sub-ID includes the cost of		(DOW)		
hayes - Hodgin 138 kV line: Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of new station construction		(ROW)		
b3766.2 Build approximately 0.05 mile of 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber AEP (100%) Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of new station construction This sub-ID includes the cost of		Hayes – Hodgin 138 kV line:		
b3766.2 138 kV line with the conductor size 795 ACSR26/7 Drake. This sub-ID includes the line construction, ROW, and fiber AEP (100%) Hayes 138 kV: Build a new 4-138 kV circuit breaker ring bus. This sub-ID includes the cost of new station construction This sub-ID includes the cost of new station		Build approximately 0.05 mile of		
size 795 ACSR26/7 Drake. This AEP (100%) sub-ID includes the line AEP (100%) construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of result of the cost of result of the cost of	b3766.2	138 kV line with the conductor		
sub-ID includes the line AEP (100%) construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of result of the senset metrical Here and the senset metrical	00,00.2	size 795 ACSR26/7 Drake. This		
construction, ROW, and fiber Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of new station		sub-ID includes the line		AEP (100%)
Hayes 138 kV: Build a new 4- 138 kV circuit breaker ring bus. This sub-ID includes the cost of		construction, ROW, and fiber		
138 kV circuit breaker ring bus. This sub-ID includes the cost of		Hayes 138 kV: Build a new 4-		
This sub-ID includes the cost of		138 kV circuit breaker ring bus.		
a any station constant of a		This sub-ID includes the cost of		
h2766.2 new station construction,	h2766 2	new station construction,		
property purchase, metering,	03700.5	property purchase, metering,		
station fiber and the College AEP (100%)		station fiber and the College		AEP (100%)
Corner – Randolph 138 kV line		Corner – Randolph 138 kV line		
connection		connection		

			Reliability Driver:
			AEP (12.38%) / ComEd
			(87.62%)
			Market Efficiency
			Driver:
			AEC (0.87%) / AEP
			(24.07%) / APS (3.95%) /
	Perform sag study mitigation work on		ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%)
	the Dumont Stillwell		
	345 kV line (remove a center-pivot irrigation system from under the line, allowing for the normal and emergency ratings of the line to increase)		/ DEOK (5.35%) /
h3775 6			Dominion (20.09%) / DPL
03775.0			(1.73%) / DL (2.11%) /
			ECP** (0.17%)/ EKPC
			(1.73%) / HTP***
			(0.07%) / JCPL (1.98%) /
			ME (1.63%) /
			NEPTUNE* (0.43%) /
			OVEC (0.07%) / PECO
			(3.59%) / PENELEC
			(1.68%) / PEPCO (3.91%)
			/ PPL (3.64%) / PSEG
			(3.93%) / RE (0.14%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

		Reliability Driver: AEP (12.38%) / Dayton (87.62%)
b3775.7	Upgrade the limiting element at Stillwell or Dumont substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

**East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

		Reliability Driver:
		AEP (100%)
		Market Efficiency Driver:
		AEC (0.87%) / AEP (24.07%) / APS
	Perform a sag study on the	(3.95%) / ATSI (11.04%) / BGE
	Olive – University Park 345	(4.30%) / Dayton (3.52%) / DEOK
	kV line to increase the	(5.35%) / Dominion (20.09%) / DPL
b3775.10	operating temperature to	(1.73%) / DL (2.11%) / ECP**
	225 F. Remediation work	(0.17%)/ EKPC (1.73%) / HTP***
	includes two tower	(0.07%) / JCPL (1.98%) / ME
	replacements on the line.	(1.63%) / NEPTUNE* (0.43%) /
		OVEC (0.07%) / PECO (3.59%) /
		PENELEC (1.68%) / PEPCO
		(3.91%) / PPL (3.64%) / PSEG
		(3.93%) / RE (0.14%)
		Reliability Driver:
		Reliability Driver: AEP (12.38%) / ComEd (87.62%)
		Reliability Driver:AEP (12.38%) / ComEd (87.62%)Market Efficiency Driver:
		Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS
	Upgrade the limiting	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE
	Upgrade the limiting element at Stillwell	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK
h2775 11	Upgrade the limiting element at Stillwell substation to increase the	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell –	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP**
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%)/ EKPC (1.73%) / HTP***
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) /
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) /
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

**East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

Required T	ransmission Enhancements Annual R	evenue Requirement	Responsible Customer(s)
	Replace 138 kV breaker 5 at	•	
<u>b3784.1</u>	Canal Street station with a new		
	3000A 63 kA breaker		AEP (100%)
	Replace existing 3000 A wave		
	trap at Mountaineer 765 kV, on		
b3785.1	the Belmont - Mountaineer 765		
	kV line, with a new 5000 A wave		
	trap		AEP (100%)
	Rebuild approximately 4.5 miles		
	of 69 kV line between Abert and		
<u>b3786.1</u>	Reusens 69 kV substations.		
	Update line settings at Reusens		
	and Skimmer 69 kV substations		<u>AEP (100%)</u>
	Install a Capacitor Voltage		
	Transformer (CCVT) on 3 phase		
	stand and remove the single		
	phase existing CCVT on the 69		
	kV Coalton to Bellefonte line		
	exit. The existing CCVT is		
	mounted to lattice on a single		
12707 1	phase CCVT stand, which will be		
03/8/.1	replaced with the 3 phase CCVT		
	stand. The line riser between line		
	disconnect and line take off is		
	being replaced. This remote end		
	work changes the most limiting		
	series element (MLSE) of the		
	line section between Coalton -		
	Princess 69 kV line section		<u>AEP (100%)</u>
	Replace AEP owned station		
h2788 1	takeoff riser and breaker BB		
03/00.1	risers at OVEC owned Kyger		
	Creek station		AEP (100%)

Required T	ransmission Enhancements Annual R	evenue Requirement	Responsible Customer(s)
<u>b3790.0</u>	Replace the overdutied Olive 345 kV circuit breaker "D" with a 5000A 63 kA circuit breaker. Reuse existing cables and a splice box to support the circuit		
<u>b3836.1</u>	Breaker install Rebuild approximately 1.7 miles of line on the Chemical - Washington Street 46 kV circuit		<u>AEP (100%)</u> <u>AEP (100%)</u>
<u>b3837.1</u>	Replace existing 34.5 kV, 25 kA circuit breaker B at West Huntington station with new 69 kV, 40 kA circuit breaker		AEP (100%)
<u>b3838.1</u>	Replace breaker A and B at Timken station with 40 kA breakers		<u>AEP (100%)</u>
<u>b3839.1</u>	Replace 69 kV breaker C atHaviland station with a new3000A 40 kA breaker		<u>AEP (100%)</u>
<u>b3840.1</u>	Replace Structures 382-66 and 382-63 on Darrah - East Huntington 34.5 kV line to bypass 24th Street station. Retire structures 1 through 5 on Twenty Fourth Street 34.5 kV extension. Retire 24th Street Station. Remove conductors from BASF Tap to BASF		<u>AEP (100%)</u>
<u>b3843.1</u>	Rebuild the underground portion of the Ohio University - West Clark 69 kV line, approximately 0.65 miles		AEP (100%)

SCHEDULE 12 – APPENDIX A

(23) American Transmission Systems, Inc.

Required'	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2019.2	Terminate Burger – Longview 138 kV, Burger – Brookside 138 kV, Burger – Cloverdale 138 kV #1, and Burger – Harmon 138 kV #2 into Holloway substation; Loop Burger – Harmon #1 138 kV and Burger – Knox 138 kV into Holloway substation		ATSI (100%)
b2019.3	Reconfigure Burger 138 kV substation to accommodate two 138 kV line exits and generation facilities		ATSI (100%)
b2019.4	Remove both Burger 138 kV substations (East and West 138 kV buses) and all 138 kV lines on the property		ATSI (100%)
b2019.5	Terminate and de- energize the 138 kV lines on the last structure before the Burger Plant property		ATSI (100%)
b2122.1	Reconductor the ATSI portion of the Howard – Brookside 138 kV line		ATSI (100%)
b2122.2	Upgrade terminal equipment at Brookside on the Howard – Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)		ATSI (100%)
b2188	Revise the reclosing for the Bluebell 138 kV breaker '301-B-94'		ATSI (100%)
b2192	Replace the Longview 138 kV breaker '651-B- 32'		ATSI (100%)
b2193	Replace the Lowellville 138 kV breaker '1-10-B 4'		ATSI (100%)

Required '	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2195	Replace the Roberts 138 kV breaker '601-B-60'		ATSI (100%)
b2196	Replace the Sammis 138 kV breaker '780-B-76'		ATSI (100%)
b2262	New Castle Generating Station – Relocate 138 kV, 69 kV, and 23 kV controls from the generating station building to new control building		ATSI (100%)
b2263	Niles Generation Station – Relocate 138 kV and 23 kV controls from the generation station building to new control building		ATSI (100%)
b2265	Ashtabula Generating Station – Relocate 138 kV controls from the generating station building to new control building		ATSI (100%)
b2284	Increase the design operating temperature on the Cloverdale – Barberton 138 kV line		ATSI (100%)
b2285	Increase the design operating temperature on the Cloverdale – Star 138 kV line		ATSI (100%)
b2301	Reconductor 0.7 miles of 605 ACSR conductor on the Beaver Black River 138 kV line		ATSI (100%)
b2301.1	Wave trap and line drop replacement at Beaver (312/380 MVA SN/SE)		ATSI (100%)
b2349	Replace the East Springfield 138 kV breaker 211-B-63 with 40 kA		ATSI (100%)
b2367	Replace the East Akron 138 kV breaker 36-B-46 with 40 kA		ATSI (100%)

Required		initial Revenue Requirement	Responsible Customer(s)
b2413	Replace a relay at McDowell 138 kV substation		ATSI (100%)
b2434	Build a new London – Tangy 138 kV line		ATSI (100%)
b2435	Build a new East Springfield – London #2 138 kV line		ATSI (15.61%) / Dayton (84.39%)
b2459	Install +260/-150 MVAR SVC at Lake Shore		ATSI (100%)
b2492	Replace the Beaver 138 kV breaker '426-B-2' with 63 kA breaker		ATSI (100%)
b2493	Replace the Hoytdale 138 kV breaker '83-B-30' with 63 kA breaker		ATSI (100%)
b2557	At Avon substation, replace the existing 345/138 kV 448 MVA #92 transformer with a 560 MVA unit		ATSI (100%)
b2558	Close normally open switch A 13404 to create a Richland J Bus – Richland K Bus 138 kV line		ATSI (100%)
b2559	Reconductor the Black River – Lorain 138 kV line and upgrade Black River and Lorain substation terminal end equipment		ATSI (100%)
b2560	Construct a second 138 kV line between West Fremont and Hayes substation on open tower position of the West Fremont –Groton –Hayes 138 kV line		ATSI (100%)
b2616	Addition of 4th 345/138 kV transformer at Harding		ATSI (100%)

Required		dui revenue requirement responsible customer(s)
b2673	Rebuild the existing double circuit tower line section from Beaver substation to Brownhelm Jct. approx. 2.8 miles	ATSI (100%)
b2674	Rebuild the 6.6 miles of Evergreen to Ivanhoe 138 kV circuit with 477 ACSS conductor	ATSI (100%)
b2675	Install 26.4 MVAR capacitor and associated terminal equipment at Lincoln Park 138 kV substation	ATSI (100%)
b2725	Build new 345/138 kV Lake Avenue substation w/ breaker and a half high side (2 strings), 2-345/138 kV transformers and breaker and a half (2 strings) low side (138 kV). Substation will tie Avon – Beaver 345 kV #1/#2 and Black River – Johnson #1/#2 lines	ATSI (100%)
b2725.1	Replace the Murray 138 kV breaker '453-B-4' with 40 kA breaker	ATSI (100%)
b2742	Replace the Hoytdale 138 kV '83-B-26' and '83-B-30' breakers with 63 kA breakers	ATSI (100%)
b2753.4	Double capacity for 6 wire "Burger-Cloverdale No. 2" 138 kV line and connect at Holloway and "Point A"	ATSI (100%)
b2753.5	Double capacity for 6 wire "Burger-Longview" 138 kV line and connect at Holloway and "Point A"	ATSI (100%)
b2778	Add 2nd 345/138 kV transformer at Chamberlin substation	ATSI (100%)
b2780	Replace Bruce Mansfield 345 kV breaker 'B57' with an 80 kA breaker, and associated gang-operated disconnect switches D56 and D58	ATSI (100%)

Itequinea		
b2869	Replace the Crossland 138 kV breaker "B-16" with a 40 kA breaker	ATSI (100%)
b2875	Relocate the Richland to Ridgeville 138 kV line from Richland J bus to K, extend the K bus and install a new breaker	ATSI (100%)
b2896	Rebuild/Reconductor the Black River – Lorain 138 kV circuit	ATSI (100%)
b2897	Reconductor the Avon – Lorain 138 kV section and upgrade line drop at Avon	ATSI (100%)
b2898	Reconductor the Beaver – Black River 138 kV with 954 Kcmil ACSS conductor and upgrade terminal equipment on both stations	ATSI (100%)
b2942.1	Install a 100 MVAR 345 kV shunt reactor at Hayes substation	ATSI (100%)
b2942.2	Install a 200 MVAR 345 kV shunt reactor at Bayshore substation	ATSI (100%)
b2972	Reconductor limiting span of Lallendorf – Monroe 345 kV	MISO (11.00%) / AEP (5.38%) / APS (4.27%) / ATSI (66.48%) / Dayton (2.71%) / Dominion (5.31%) / DL (4.85%)
b3031	Transfer load off of the Leroy Center - Mayfield Q2 138 kV line by reconfiguring the Pawnee substation primary source, via the existing switches, from the Leroy Center - Mayfield Q2 138 kV line to the Leroy Center - Mayfield Q1 138 kV line	ATSI (100%)

Required		Annual Revenue Requirement	it Responsible Customer(s)
b3032	Greenfield - NASA 138 kV terminal upgrades: NASA substation, Greenfield exit: Revise CT tap on breaker B22 and adjust line relay settings; Greenfield substation, NASA exit: Revise CT tap on breaker B1 and adjust line relay settings; replace 336.4 ACSR line drop with 1033.5 AL		ATSI (100%)
b3033	Ottawa – Lakeview 138 kV reconductor and substation upgrades		ATSI (100%)
b3034	Lakeview – Greenfield 138 kV reconductor and substation upgrades		ATSI (100%).
b3066	Reconductor the Cranberry – Jackson 138 kV line (2.1 miles), reconductor 138 kV bus at Cranberry bus and replace 138 kV line switches at Jackson bus		ATSI (100%)
b3067	Reconductor the Jackson – Maple 138 kV line (4.7 miles), replace line switches at Jackson 138 kV and replace the line traps and relays at Maple 138 kV bus		ATSI (100%)
b3080	Reconductor the 138 kV bus at Seneca		ATSI (100%)
b3081	Replace the 138 kV breaker and reconductor the 138 kV bus at Krendale		ATSI (100%)

Required		Annual Revenue Requireme	In Responsible Customer(s)
	At Sammis 345 kV station:		
	Install a new control		
	building in the switchyard,		
	construct a new station		
	access road, install new		
b3123	switchyard power supply to		
05125	separate from existing		
	generating station power		
	service, separate all		
	communications circuits,		
	and separate all protection		
	and controls schemes		A1SI (100%)
	Separate metering, station		
b3124	power, and communication		
03124	at Bruce Mansfield 345 kV		
	station		ATSI (100%)
	At Bay Shore 138 kV		
	station: Install new		
	switchyard power supply to		
	separate from existing		
b3127	generating station power		
	service, separate all		
	communications circuits,		
	and construct a new station		
	access road		ATSI (100%)
	Reconductor the 8.4 mile		
	section of the Leroy Center		
	– Mayfield Q1 line		
b3152	between Leroy Center and		
	Pawnee Tap to achieve a		
	rating of at least 160 MVA		
	/ 192 MVA (SN/SE)		ATSI (100%)
	Extend both the east and		
	west 138 kV buses at Pine		
	substation, and install one		
b3234	(1) 138 kV breaker,		
	associated disconnect		
	switches, and one (1) 100		A TOL (1000/)
	MVAR reactor		AISI (100%)
	Extend 138 kV bus work to		
	the west of langy		
b3235	substation for the addition		
00200	of the 100 MVAR reactor		
	bay and one (1) 138 KV 40		A TOL (1000/)
	KA circuit breaker		AISI (100%)
	Extend the Broadview 138		
12226	K V bus by adding two (2)		
03236	new breakers and		
b3123 b3124 b3127 b3152 b3234 b3235 b3236	associated equipment and		A TOL (1000/)
	install a / 3 IVI VAK reactor		AISI (100%)

Required	Transmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
	Replace the existing		
	breaker 501-B-251 with a		
b3260	new 69 kV breaker with a		
	higher (40 kA)		
	interrupting capability		ATSI (100%)
	Replace the existing East		
	Akron 138 kV breaker 'B-		
	22' with 3000A		
b3277	continuous, 40 kA		
	momentary current		
	interrupting rating circuit		
	breaker		ATSI (100%)
	Install a second 345/138		
	kV transformer at Hayes,		
	448 MVA nameplate		
	rating. Add one 345 kV		
	circuit breaker (3000A) to		
	provide transformer high-		
	side connection between		
	breaker B-18 and the new		
	breaker. Connect the new		
h3282	transformer low side to		
05202	the 138 kV bus. Add one		
	138 kV circuit breaker		
	(3000A) at Hayes 138 kV		
	substation between B-42		
	and the new breaker.		
	Relocate the existing 138		
	kV No. 1 capacitor bank		
	between B-42 and the new		
	breaker. Protection per		
	First Energy standard		ATSI (100%)

Required	Transmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
	Expand Galion 138 kV		
Required b3678 b3679 b3680 b3680 b3713	substation, Install 100		
	MVAR reactor, associated		
	breaker and relaying		ATSI (100%)
	Replace West Fremont		
1.2(70	138/69 kV Transformer #2		
030/9	with a transformer having		
	additional high-side taps	Annual Revenue Requirement	ATSI (100%)
	Replace limiting substation		
	conductors on Ashtabula		
1,2690	138 kV exit to make		
03080	transmission line conductor		
	the limiting element at		
	Sanborn 138 station		ATSI (100%)
	Disconnect and remove five		
	138 kV bus tie lines and		
	associated equipment from		
	the Avon Lake Substation to		
	the plant (800-B Bank, 8-		
	AV-T Generator, 5-AV-T,		
	6-AV-T, and 7-AV-T).		
	Disconnect and remove one		
	345 kV bus tie line and		
	associated equipment from		
	the Avon substation to the		
b3713	plant (Unit 9). Adjust relay		
	settings at Avon Lake, Avon		
	and Avondale substations.		
	Removal/rerouting of fiber		
	to the plant and install new		
	fiber between the 345 kV		
	and 138 kV yards for the		
	Q4-AV-BUS relaying.		
	Remove SCADA RTU,		
	communications and		
	associated equipment from		
	plant.		ATSI (100%)

Required	Transmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
	Replace four 345 kV		
	disconnect switches (D74,		
	D92, D93, & D116) with		
	3000 A disconnect switches		
	at Beaver station. Replace		
	dual 954 45/7 ACSR		
	SCCIR conductors between		
	5" pipe and WT with new,		
	which meets or exceeds		
	ratings of SN: 1542 MVA,		
	SSTE: 1878 MVA at		
b3714	Beaver station. Replace		
	3000 SAC TL drop and		
	3000 SAC SCCIR between		
	954 ACSR and 5" bus with		
	new, which meets or		
	exceeds ratings of SN: 1542		
	MVA, SSTE: 1878 MVA at		
	Beaver station. Upgrade		
	BDD relays at breaker B-88		
	and B-115 at Beaver station.		
	Relay settings changes at		
	Hayes station.		ATSI (100%)
	Rebuild the 69 kV Abbe –		
	Johnson #2 Line		
	(approximately 4.9 miles)		
	with 556 kcmil ACSR		
	conductor. Replace three		
	disconnect switches (A17,		
	D15 & D16) and line drops		
	and revise relay settings at		
b3720	Abbe. Replace one		
	disconnect switch (A159)		
	and line drops and revise		
	relay settings at Johnson.		
	Replace two MOAB		
	disconnect switches (A4 &		
	A5), one disconnect switch		
	(D9), and line drops at		
	Redman		ATSI (100%)

Required '	Transmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Rebuild and reconductor the		
h3721	Avery – Hayes 138 kV line		
03721	(approximately 6.5 miles)		
	with 795 kcmil 26/7 ACSR		ATSI (100%)
	Disconnect and remove		
	three 345 kV breakers,		
	foundations and associated		
	equipment from Sammis		
	345 kV substation. Remove		
	nine 345 kV Capacitor		
h3777	voltage transformers.		
03777	Remove two 345 kV		
	disconnect switches. Install		
	new 345 kV bus work and		
	foundations. Install new		
	fencing. Remove and adjust		
	relaying at Sammis 345 kV		
	substation		ATSI (100%)
	A 69 kV, 60 MVAR shunt		
	reactor will be installed at		
	the Salt Springs substation.		
	The reactor terminal will be		
b3789.0	connected to the existing 69		
	<u>kV bus, and an</u>		
	independent-pole operation,		
	<u>1200A circuit breaker will</u>		
	be installed for reactor		
	switching		<u>ATSI (100%)</u>

SCHEDULE 12 – APPENDIX A

(28) Transource, LLC

Required Tra	insmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Tap the Conemaugh –		AEP (6.46%) / APS
	Hunterstown 500 kV		(8.73%) / BGE (19.73%) /
	line & create new Rice		ComEd (2.16%) / ConEd
1.2742 1	500 kV & 230 kV		(0.06%) / Dayton (0.59%) /
02/43.1	stations. Install two		DEOK (1.02%) / DL
	500/230 kV		(0.01%) / Dominion
	transformers operated		(39.92%) / EKPC (0.45%)
	together		/ PEPCO (20.87%)
			AEP (6.46%) / APS
	Build new 230 kV		(8.73%) / BGE (19.73%) /
	double circuit line		ComEd (2.16%) / ConEd
h27/13 5	between Rice and		(0.06%) / Dayton (0.59%) /
02743.3	Ringgold 230 kV,		DEOK (1.02%) / DL
	operated as a single		(0.01%) / Dominion
	circuit		(39.92%) / EKPC (0.45%)
			/ PEPCO (20.87%)
	Tap the Peachbottom –		AEP (6.46%) / APS
	TMI 500 kV line &		(8.73%) / BGE (19.73%) /
	create new Furnace		ComEd (2.16%) / ConEd
b2752 1	Run 500 kV & 230 kV		(0.06%) / Dayton (0.59%) /
02702.1	stations. Install two		DEOK (1.02%) / DL
	500/230 kV		(0.01%) / Dominion
	transformers, operated		(39.92%) / EKPC (0.45%)
	together		/ PEPCO (20.87%)
			AEP (6.46%) / APS
	Build new 230 kV		(8.73%) / BGE (19.73%) /
	double circuit line		ComEd (2.16%) / ConEd
b2752 5	between Furnace Run		(0.06%) / Dayton (0.59%) /
02702.0	and Conastone 230 kV,		DEOK (1.02%) / DL
	operated as a single		(0.01%) / Dominion
	circuit		(39.92%) / EKPC (0.45%)
			/ PEPCO (20.87%)
	North Delta 230 kV		
10500 16	termination for new		DPL (38.25%) / PECO
<u>b3780.16</u>	Cooper - North Delta		(61.75%)
	$\frac{230 \text{ kV line}}{(T)}$		· · · · · · · · · · · · · · · · · · ·
	(Transource Scope)		

Transource, LLC (cont.)

Required Tra	nsmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
<u>Required Tra</u>	Cut-in 5012 Peach Bottom - Conastone 500 kV line into North Delta 500/230 kV substation by rebuilding 5012 between new terminal at Peach Bottom South and North Delta on single circuit structures and terminating at North Delta (Transource Scope)	Annual Revenue Requirement	Responsible Customer(s) Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (11.03%) / BGE

*Neptune Regional Transmission System, LLC

SCHEDULE 12 – APPENDIX A

(29) Ohio Valley Electric Corporation

	Perform a LIDAR study on	
	the Clifty Creek –	
h20/2	Dearborn 345 kV line to	OVEC(1009/)
02945	increase the Summer	OVEC (10078)
	Emergency rating above	
	1023 MVA	
	Replace OVEC owned	
	breaker AA risers, bus	
h2700 2	work, and breaker AA	OVEC(100%)
03/88.2	disconnect switches at	OVEC (10076)
	OVEC owned Kyger	
	Creek station	

Attachment C

Schedule 12 – Appendix A of the PJM Open Access Transmission Tariff

(Clean Format)

SCHEDULE 12 – APPENDIX A

(3) Delmarva Power & Light Company

	-		
1 2200	Build a new 138 kV line		
62288	from Piney Grove –		
b2288 Build a new 138 kV line from Piney Grove – Wattsville b2395 Reconductor the Harmony – Chapel St 138 kV circuit b2569 Replace Terminal equipment at Silverside 69 kV substation b2633.7 Implement high speed relaying utilizing OPGW on Red Lion – Hope Creek 500 kV line b2633.10 Interconnect the new Silver Run 230 kV substation with existing Pad Lion	DPL (100%)		
	Reconductor the Harmony		
b2395	– Chapel St 138 kV		
	circuit	/ line 	DPL (100%)
	Replace Terminal		
b2569	equipment at Silverside		
b2395 Reconductor the Harmony – Chapel St 138 kV circuit b2569 Replace Terminal equipment at Silverside 69 kV substation b2633.7 Implement high speed relaying utilizing OPGW on Red Lion – Hope Creek 500 kV line p P (3	DPL (100%)		
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
			DEOK (3.21%) / DL (1.59%) /
	T 1 (1·1 1		DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) /
	Implement high speed		
b2633.7	relaying utilizing OPGW	JCPL (3.59%) / ME (1.8	JCPL (3.59%) / ME (1.81%) /
	on Red Lion – Hope Creek 500 kV line		NEPTUNE* (0.42%) / OVÉC
			(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
		(3.68%) / PPL (4.43%) / PSEG	
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEC (0.01%) / DPL (99.98%) /
			JCPL (0.01%)
	Interconnect the new		AEC (8.01%) / BGE (1.94%) /
	Silver Run 230 kV		DPL (12.99%) / JCPL (13.85%)
1-2622-10	substation with existing		/ ME (5.88%) / NEPTUNE*
02033.10	Red Lion – Cartanza and		(3.45%) / PECO (17.62%) /
	Red Lion – Cedar Creek		PPL (14.85%) / PSEG (20.79%)
	230 kV lines		/ RE (0.62%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

Delmarva Power & Light Company (cont.)

1000		
	Rebuild Worcester –	
b2695	Ocean Pine 69 kV ckt. 1 to	
b2695 b2946 b2947.1 b2947.2 b2948	1400A capability summer	
	emergency	DPL (100%)
	Convert existing Preston	
h2016	69 kV substation to DPL's	
02940	current design standard of	
	a 3-breaker ring bus	DPL (100%)
	Upgrade terminal	
b2047 1	equipment at DPL's	
02947.1	Naamans substation	
	(Darley - Naamans 69 kV)	DPL (100%)
	Reconductor 0.11 mile	
b2947.2	section of Darley -	
	Naamans 69 kV circuit	DPL (100%)
	Upgrade terminal	
	equipment at DPL's	
b2948	Silverside Road substation	
b2695 b2946 b2947.1 b2947.2 b2948 b2948 b2987 b3143.1 b3143.2 b3143.3	(Dupont Edge Moor –	
	Silver R. 69 kV)	DPL (100%)
	Install a 30 MVAR	
	capacitor bank at DPL's	
	Cool Springs 69 kV	
1-2097	substation. The capacitor	
02987	bank would be installed in	
	two separate 15 MVAR	
	stages allowing DPL	
	operational flexibility	DPL (100%)
	Reconductor the Silverside	
b3143.1	Road – Darley 69 kV	
	circuit	DPL (100%)
	Reconductor the Darley –	
b3143.2	Naamans 69 kV circuit	
		DPL (100%)
	Replace three (3) existing	
	1200 A disconnect	
	switches with 2000 A	
b3143.3	disconnect switches and	
	install three (3) new 2000	
	A disconnect switches at	
	Silverside 69 kV station	DPL (100%)

Delmarva Power & Light Company (cont.)

Required IT	ansmission enhancements Ani	iuai Revenue Requirement	Responsible Customer(s)
	Replace two (2) 1200 A		
	disconnect switches with		
	2000 A disconnect		
	switches. Replace existing		
	954 ACSR and 500 SDCU		
	stranded bus with two (2)		
b3143.4	954 ACSR stranded bus.		
03143.4	Reconfigure four (4) CTs		
	from 1200 A to 2000 A		
	and install two (2) new		
	2000 A disconnect		
	switches and two (2) new		
	954 ACSR stranded bus at		
	Naamans 69 kV station		DPL (100%)
	Replace four (4) 1200 A		
	disconnect switches with		
	2000 A disconnect		
	switches. Replace existing		
	954 ACSR and 1272		
	MCM AL stranded bus		
	with two (2) 954 ACSR		
	stranded bus. Reconfigure		
b3143.5	eight (8) CTs from 1200 A		
	to 2000 A and install four		
	(4) new 2000 A (310 MVA		
	SÉ / 351 MVA WE)		
	disconnect switches and		
	two (2) new 954 ACSR		
	(331 MVA SE / 369 MVA		
	WE) stranded bus at		
	Darley 69 kV station		DPL (100%)
	Rebuild approx. 12 miles		
b3155	of Wye Mills –		
	Stevensville line		DPL (100%)
	Replace a disconnect		
	switch and reconductor a		
b3224	short span of the Mt.		
	Pleasant – Middletown tan		
b3155 b3224	138 kV line		DPL (100%)
L		1	===(10070)
Delmarva Power & Light Company (cont.)

b3326	Rebuild the Vienna - Nelson 138 kV line	DPL (100%)
b3327	Upgrade the disconnect switch at Kent 69 kV station	DPL (100%)
b3328	Upgrade the disconnect switch and CT at Vienna 138 kV station	DPL (100%)
b3329	Rebuild the Farmview - Milford 138 kV line	DPL (100%)
b3330	Rebuild the Farmview - S. Harrington 138 kV line	DPL (100%)
b3331	Upgrade stranded bus and relay at Seaford 138 kV station	DPL (100%)
b3332	Rebuild the Steel - Milford 230 kV line	DPL (100%)
b3669.1	Replace terminal equipment (stranded bus, disconnect switch and circuit breaker) at Church 138 kV substation	DPL (100%)
b3669.2	Replace terminal equipment (circuit breaker) at Townsend 138 kV substation	DPL (100%)
b3670	Upgrade terminal equipment on the Loretto – Fruitland 69 kV circuit. Replace the 477 ACSR stranded bus on the 6711 line terminal inside Loretto 69 KV substation and the 500 SDCU stranded bus on the 6711 line terminal inside 69 kV Fruitland substation with 954 ACSR conductor	DPL (100%)
b3688	Replace the 4/0 SDCU stranded bus with 954 ACSR and a 600 A disconnect switch with a 1200 A disconnect switch on the 6716 line terminal inside Todd substation on Preston – Todd 69 kV line	DPL (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Delmarva Power & Light Company (cont.)

b3749	Rebuild the New Church - Piney Grove 138 kV line	DPL (100%)
b3793.1	Reconductor Silver Run - Cedar Creek 230 kV line. Reconductor 8.8 miles of 230 kV Circuit with 1594-T11/ACCR "Lapwing" conductor and replace all insulators with high temperature	
	hardware	DPL (100%)
b3793.2	Cedar Creek – Replace three (3) standalone CTs, disconnect switch, stranded bus, and rigid bus to achieve higher rating	DPL (100%)
b3793.3	Silver Run - Replace three(3) 1- 1590 ACSR Jumpers and one(1) air disconnect switch	DPL (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Delmarva Power & Light Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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	Rebuild 6.25 miles of 69 kV	
	circuit 6708 (Vienna – Mardela)	
	with new single pole steel	
	structures and with 954.0 45/7	
b3846.1	"Rail" conductor. This new	
	rebuild will be from the dead-end	
	structure on the east side of the	
	Nanticoke River to the Mardela	
	Тар	DPL (100%)
	Upgrade of disconnect switch at	
h2816 2	Vienna to increase ratings of	
03840.2	existing Vienna - Mardela 69 kV	
	transmission facility	DPL (100%)
	Upgrade of three disconnect	
h2816 2	switches at Mardela station to	
03840.3	increase ratings of existing Vienna	
	- Mardela transmission facility	DPL (100%)

SCHEDULE 12 – APPENDIX A

Required 7	Fransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Shawville Substation:		
	Relocate 230 kV and 115		
b2212	kV controls from the		
	generating station building		
	to new control building		PENELEC (100%)
	Replace the Erie South		
b2293	115 kV breaker 'Buffalo		
	Rd' with 40 kA breaker		PENELEC (100%)
	Replace the Johnstown		
b2294	115 kV breaker 'Bon Aire'		
	with 40 kA breaker		PENELEC (100%)
	Replace the Erie South		
b2302	115 kV breaker 'French		
	#2' with 40 kA breaker		PENELEC (100%)
	Replace the substation		
h2204	conductor and switch at		
02304	South Troy 115 kV		
	substation		PENELEC (100%)
	Install 75 MVAR		
b2371	capacitor at the Erie East		
	230 kV substation		PENELEC (100%)
	Install +250/-100 MVAR		
b2441	SVC at the Erie South 230		
	kV station		PENELEC (100%)
	Install three 230 kV		
h2112	breakers on the 230 kV		
02442	side of the Lewistown #1,		
	#2 and #3 transformers		PENELEC (100%)
	Construct a new 115 kV		
b2450	line from Central City		
	West to Bedford North		PENELEC (100%)
	Rebuild and reconductor		
	115 kV line from East		
	Towanda to S. Troy and		
b2463	upgrade terminal		
	equipment at East		
	Towanda, Tennessee Gas		
	and South Troy		PENELEC (100%)

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Construct Warren 230 kV		
h2404	ring bus and install a		
02494	second Warren 230/115		
	kV transformer		PENELEC (100%)
	Reconductor the North		
	Meshoppen – Oxbow-		
h2552 1	Lackawanna 230 kV		
02332.1	circuit and upgrade		
	terminal equipment		PENELEC (75.48%) / PPL
	(MAIT portion)		(24.52%)
	Replace the Warren 115		
b2573	kV 'B12' breaker with a		
	40 kA breaker		PENELEC (100%)
	Reconfigure Pierce Brook		
	345 kV station to a ring		
b2587	bus and install a 125		
	MVAR shunt reactor at		
	the station		PENELEC (100%)
	Replace relays at East		
b2621	Towanda and East Sayre		
	115 kV substations		
	(158/191 MVA SN/SE)		PENELEC (100%)
	Replace wave trap, bus		
10(77	conductor and relay at		
62677	Hilltop 115 kV substation.		
	Replace relays at Prospect		
	and Cooper substations		PENELEC (100%)
	Convert the East Towanda		
b2678	headson and half		
	configuration		DENELEC (100%)
	Install a 115 kV Vananga		TENELEC (10070)
h2670	Install a 115 KV Vellango		
02077	Edinboro South		DENELEC (100%)
	Install a 115 hV breaker		FENELEC (10078)
h2680	on Hooversville #1 115/22		
b2680	kV transformer		DENIELEC $(1000/)$
	Ky ualisioning		$\mathbf{FEINELEC}(100\%)$
h7691	an the Felines $#2.115/24.5$		
62681	kV transformer		DENIEL EC (1000/)
	K v u ansionnei		PEINELEU(100%)

b2682	Install two 21.6 MVAR capacitors at the Shade Gap	
	115 kV substation	PENELEC (100%)
	Install a 36 MVAR 115 kV	
b2683	capacitor and associated	
02005	equipment at Morgan	
	Street substation	PENELEC (100%)
	Install a 36 MVAR 115 kV	
b2684	capacitor at Central City	
	West substation	PENELEC (100%)
	Install a second 115 kV	
b2685	3000A bus tie breaker at	
	Hooversville substation	PENELEC (100%)
	Replace the Warren 115	
b2735	kV 'NO. 2 XFMR' breaker	
	with 40 kA breaker	PENELEC (100%)
	Replace the Warren 115	
b2736	kV 'Warren #1' breaker	
	with 40 kA breaker	PENELEC (100%)
	Replace the Warren 115	
b2737	kV 'A TX #1' breaker with	
	40 kA breaker	PENELEC (100%)
	Replace the Warren 115	
b2738	kV 'A TX #2' breaker with	
	40 kA breaker	PENELEC (100%)
	Replace the Warren 115	
b2739	kV 'Warren #2' breaker	
	with 40 kA breaker	PENELEC (100%)
	Revise the reclosing of the	
b2740	Hooversville 115 kV	
	'Ralphton' breaker	PENELEC (100%)
	Revise the reclosing of the	
b2741	Hooversville 115 kV	
	'Statler Hill' breaker	PENELEC (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	Transmission Enhancements A	Annual Revenue Requirement	Responsible Customer(s)
			AEP (6.46%) / APS (8.74%) /
	Tie in new Rice substation		BGE (19./4%) / ComEd
b2743.2	to Conemaugh –		(2.16%) / Dayton $(0.59%)$ /
	Hunterstown 500 kV		DEOK (1.02%) / DL (0.01%)
			/ Dominion (39.95%) / EKPC
			(0.45%) / PEPCO (20.88%)
	Upgrade terminal		AEP (6.46%) / APS (8.74%) /
	equipment at Conemaugh		BGE (19.74%) / ComEd
b2743.3	500 kV on the Conemaugh		(2.16%) / Dayton $(0.59%)$ /
	– Hunterstown 500 kV		DEOK (1.02%) / DL (0.01%)
	circuit		/ Dominion (39.95%) / EKPC
			(0.45%) / PEPCO (20.88%)
10740	Install two 28 MVAR		
62/48	capacitors at 1iffany 115		
	KV substation		PENELEC (100%)
	Construct a new 345 kV		
	breaker string with three		
1.07(7	(3) 345 KV breakers at		
62/6/	Homer City and move the		
	North autotransformer		
	breaker string		PENELEC (100%)
	Reconductor 3.7 miles of		TENELEC (10076)
	the Bethlehem _ I eretto 46		
b2803	kV circuit and replace		
02003	terminal equipment at		
	Summit 46 kV		PENELEC (100%)
	Install a new relay and		
	replace 4/0 CU bus		
1.0004	conductor at Huntingdon		
62804	46 kV station, on the		
	Huntingdon – C tap 46 kV		
	circuit		PENELEC (100%)
	Install a new relay and		, , , , , , , , , , , , , , , , , , ,
	replace 4/0 CU & 250 CU		
	substation conductor at		
b2805	Hollidaysburg 46 kV		
	station, on the		
	Hollidaysburg – HCR Tap		
	46 kV circuit		PENELEC (100%)

Required 1		indui ne venue negunement	
	Install a new relay and		
b2806	replace meter at the		
	Raystown 46 kV		
	substation, on the		
	Raystown – Smithfield 46		
	kV circuit		PENELEC (100%)
	Replace the CHPV and		
	CRS relay, and adjust the		
	IAC overcurrent relay trip		
b2807	setting; or replace the relay		
	at Eldorado 46 kV		
	substation, on the Eldorado		
	– Gallitzin 46 kV circuit		PENELEC (100%)
	Adjust the JBC overcurrent		
	relay trip setting at		
	Raystown 46 kV, and		
	replace relay and 4/0 CU		
b2808	bus conductor at		
	Huntingdon 46 kV		
	substations, on the		
	Raystown – Huntingdon 46		
	kV circuit		PENELEC (100%)
	Replace Seward 115 kV		
b2865	breaker "Jackson Road"		
	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2866	breaker "Conemaugh N."		
	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2867	breaker "Conemaugh S."		
02007	with 63 kA breaker		PENELEC (100%)
	Replace Seward 115 kV		
b2868	breaker "No 8 Xfmr" with		
02000	63 kA breaker		PENELEC (100%)
<u> </u>	Install two 3/5 1-W 80		
h2011	MVAR shunt reactors at		
62944	Mainashurg station		DENIEL EC (1000/)
	wrannesburg station		PEINELEU(100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2951	Seward, Blairsville East, Shelocta work	PENELEC (100%)
b2951.1	Upgrade Florence 115 kV line terminal equipment at Seward SS	PENELEC (100%)
b2951.2	Replace Blairsville East / Seward 115 kV line tuner, coax, line relaying and carrier set at Shelocta SS	PENELEC (100%)
b2951.3	Replace Seward / Shelocta 115 kV line CVT, tuner, coax, and line relaying at Blairsville East SS	PENELEC (100%)
b2952	Replace the North Meshoppen #3 230/115 kV transformer eliminating the old reactor and installing two breakers to complete a 230 kV ring bus at North Meshoppen	PENELEC (100%)
b2953	Replace the Keystone 500 kV breaker "NO. 14 Cabot" with 50 kA breaker	PENELEC (100%)
b2954	Replace the Keystone 500 kV breaker "NO. 16 Cabot" with 50 kA breaker	PENELEC (100%)
b2984	Reconfigure the bus at Glory and install a 50.4 MVAR 115 kV capacitor	PENELEC (100%)
b3007.2	Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment - PENELEC portion. 4.8 miles total. The new conductor will be 636 ACSS replacing the existing 636 ACSR conductor. At Blairsville East, the wave trap and breaker disconnects will be replaced	PENELEC (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Req	uired Transmission Enhan	cements Annual Reve	enue Requirement	Responsible (Customer(s)
				responsione .	

	Upgrade Blairsville East	•
	138/115 kV transformer	
	terminals. This project is an	
	upgrade to the tap of the	
b3008	Seward – Shelocta 115 kV	
	line into Blairsville	
	substation. The project will	
	replace the circuit breaker	
	and adjust relay settings	PENELEC (100%)
	Upgrade Blairsville East 115	
1,2000	kV terminal equipment.	
03009	Replace 115 kV circuit	
	breaker and disconnects	PENELEC (100%)
	Replace the existing Shelocta	
b3014	230/115 kV transformer and	
	construct a 230 kV ring bus	PENELEC (100%)
	Upgrade terminal equipment	
	at Corry East 115 kV to	
b3016	increase rating of Four Mile	
	to Corry East 115 kV line.	
	Replace bus conductor	PENELEC (100%)
	Rebuild Glade to Warren 230	
	kV line with hi-temp	
	conductor and substation	
b3017.1	terminal upgrades. 11.53	
	miles. New conductor will be	
	1033 ACSS. Existing	
	conductor is 1033 ACSR	PENELEC (100%)
	Glade substation terminal	
h3017.2	upgrades. Replace bus	
05017.2	conductor, wave traps, and	
	relaying	PENELEC (100%)
	Warren substation terminal	
h30173	upgrades. Replace bus	
03017.3	conductor, wave traps, and	
	relaying	PENELEC (100%)
	Replace Saxton 115 kV	
b3022	breaker 'BUS TIE' with a 40	
	kA breaker	PENELEC (100%)

		1	1
	Upgrade terminal equipment		
b3024	at Corry East 115 kV to		
	increase rating of Warren to		
	Corry East 115 kV line.		
	Replace bus conductor		PENELEC (100%)
	Install one 115 kV 36		
b3043	MVAR capacitor at West		
	Fall 115 kV substation		PENELEC (100%)
	Replace the Blairsville East		
	138/115 kV transformer and		
b3073	associated equipment such		
	as breaker disconnects and		
	bus conductor		PENELEC (100%)
	Reconductor the Franklin		
b3077	Pike B – Wayne 115 kV line		
	(6.78 miles)		PENELEC (100%)
	Reconductor the 138 kV bus		
	and replace the line trap,		
b3078	relays Morgan Street.		
	Reconductor the 138 kV bus		
	at Venango Junction		PENELEC (100%)
b3082	Construct 4-breaker 115 kV		
05002	ring bus at Geneva		PENELEC (100%)
	Rebuild 20 miles of the East		
b3137	Towanda – North		
	Meshoppen 115 kV line		PENELEC (100%)
	Upgrade bus conductor and		
b3144	relay panels of the Jackson		
	Road – Nanty Glo 46 kV		
	SJN line		PENELEC (100%)
	Upgrade line relaying and		
b3144.1	substation conductor on the		
0011111	46 kV Nanty Glo line exit at		
	Jackson Road substation		PENELEC (100%)
	Upgrade line relaying and		
b3144.2	substation conductor on the		
	46 kV Jackson Road line		
	exit at Nanty Glo substation		PENELEC (100%)
	Install one (1) 13.2 MVAR		
b3154	46 kV capacitor at the		
	Logan substation		PENELEC (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Ttequirea I		dai ite vende itequitement	
	Replace the existing No. 2		
	cap bank breaker at		
b3231	Huntingdon substation with		
	a new breaker with higher		
	interrupting capability		PENELEC (100%)
	Replace the existing		
	Williamsburg, ALH		
	(Hollidaysburg) and bus		
b3232	section breaker at the		
	Altoona substation with a		
	new breaker with higher		
	interrupting capability		PENELEC (100%)
	Install one (1) 34 MVAR		
	115 kV shunt reactor and		
1 2 2 2 2	breaker. Install one (1) 115		
63233	kV circuit breaker to expand		
	the substation to a 4-breaker		
	ring bus		PENELEC (100%)
	Install two (2) 46 kV 6.12		
b3237	MVAR capacitors effective		
	at Mt. Union		PENELEC (100%)
	Construct a new breaker-		
	and-a-half substation near		
	Tiffany substation. All		
	transmission assets and lines		
	will be relocated to the new		
b3245	substation. The two (2)		
	distribution transformers		
	will be fed via two (2)		
	dedicated 115 kV feeds to		
	the existing Tiffany		
	substation		PENELEC (100%)
	Install a second 125 MVAR		
	345 kV shunt reactor and		
	associated equipment at		
b3306	Pierce Brook substation.		
	Install a 345 kV breaker on		
	the high side of the $345/230$		
	kV transformer #1		PENELEC (100%)
			121(2220 (100/0)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required	1 Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
1			1000001010101(0)

	Replace several pieces of	
12665	1033.5 AAC substation	
	conductor at East Towanda	
03003	230 kV station on East	
	Towanda - Canyon 230 kV	
	line	PENELEC (100%)
	Install dual reactors and	
b3666	expand existing ring bus at	
	Marshall 230 kV substation	PENELEC (100%)
	Install second 230/115 kV	
b3667	transformer at Pierce Brook	
	substation	PENELEC (100%)
	Rebuild 2.5 miles of East	
	Towanda-North Meshoppen	
	115 kV line with 1113	
b3672	ACSS conductor using	
05072	single circuit construction.	
	Upgrade all terminal	
	equipment to the rating of	
	1113 ACSS	PENELEC (100%)
	Replace the relay panels at	
b3673	Bethlehem 33 46 kV	
	substation on the Cambria	
	Prison line	PENELEC (100%)
	Replace the Shawville	
	230/115/1/.2 KV	
	transformer with a new	
1.2700	Snawville 230/115 KV	
03/08	facilities Deplace the plant's	
	No. 2D $115/17.2 \text{ kV}$	
	transformer with a larger	
	230/17.2 kV transformer	PENELEC (100%)
	Ungrade Seward terminal	
	equipment of Seward –	
b3750	Blairsville 115 kV line to	
	increase the line rating such	
	that the transmission line	
	conductor is the limiting	
	component	PENELEC (100%)
	component	

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s))
	Annual Revenue Requirement		2

		<u>+</u>	1
	Rebuild 6.4 miles of		
1 2751	Roxbury – Shade Gap 115		
	kV line from Roxbury to the		
03/31	AE1-071 115 kV ring bus		
	with single circuit 115 kV		
	construction		PENELEC (100%)
	Rebuild 7.2 miles of the		
	Shade Gap – AE1-071 115		
b3752	kV line section of the		
	Roxbury – Shade Gap 115		
	kV line		PENELEC (100%)
	Replace the Tyrone North		
	115 /46 kV transformer with		
	a new standard 75 MVA top		
b3753	rated bank and upgrade the		
	entire terminal to minimum		
	100 MVA capability for		
	both SN and SE rating		PENELEC (100%)
	Construct a new three		
	breaker ring bus to tie into		
b3754	the Warrior Ridge -		
	Belleville 46 kV D line and		
	the 1LK line at Maclane Tap		PENELEC (100%)
	Purchase one 80 MVAR 345		
1.2765	kV spare reactor, to be		
03/03	located at the Mainesburg		
	345 kV station		PENELEC (100%)
	Cut and remove the 345 kV		
	and 230 kV generator lead		
	lines at Homer City station.		
	Install new station service		
b3783	supply, separate AC station		
	service, separate protection		
	and controls schemes, and		
	review and adjust relay		
	protection settings		PENELEC (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Rebuild the North	
	Meshoppen - Mehoopany	
	No. 1 115 kV line with 795	
b3791.0	ACSR 26/7 STR conductor.	
	Upgrade terminal equipment	
	to exceed transmission line	
	ratings	PENELEC (100%)
	Rebuild the North	
	Meshoppen - Mehoopany	
	No. 2 115 kV line using 795	
b3792.0	ACSR 26/7 STR conductor,	
	and upgrade terminal	
	equipment to exceed the	
	transmission line rating	PENELEC (100%)

SCHEDULE 12 – APPENDIX A

(8) **PECO Energy Company**

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Replace Waneeta 138 kV		• · · · · · · · · · · · · · · · · · · ·
b2130	breaker '15' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		, , , , , , , , , , , , , , , , , , ,
b2131	breaker '35' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		
b2132	breaker '875' with 63 kA		
	rated breaker		PECO (100%)
	Replace Waneeta 138 kV		
b2133	breaker '895' with 63 kA		
	rated breaker		PECO (100%)
	Plymouth Meeting 230 kV		
b2134	breaker '115' with 63 kA		
	rated breaker		PECO (100%)
62222	Install a second Eddystone		
UZZZZ	230/138 kV transformer		PECO (100%)
	Replace the Eddystone 138		
b2222.1	kV #205 breaker with 63		
	kA breaker		PECO (100%)
	Increase Rating of		
b2222.2	Eddystone #415 138 kV		
	Breaker		PECO (100%)
12226	50 MVAR reactor at		
02230	Buckingham 230 kV		PECO (100%)
	Replace Whitpain 230 kV		
b2527	breaker '155' with 80 kA		
	breaker		PECO (100%)
	Replace Whitpain 230 kV		
b2528	breaker '525' with 80 kA		
	breaker		PECO (100%)
	Replace Whitpain 230 kV		
b2529	breaker '175' with 80 kA		
	breaker		PECO (100%)
	Replace terminal		
	equipment inside		
b2549	Chichester substation on		
	the 220-36 (Chichester –		
	Eddystone) 230 kV line		PECO (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2550	Replace terminal equipment inside Nottingham substation on the 220-05 (Nottingham – Daleville- Bradford) 230 kV line		PECO (100%)
b2551	Replace terminal equipment inside Llanerch substation on the 130-45 (Eddystone to Llanerch) 138 kV line		PECO (100%)
b2572	Replace the Peach Bottom 500 kV '#225' breaker with a 63 kA breaker		PECO (100%)
b2694	Increase ratings of Peach Bottom 500/230 kV transformer to 1479 MVA normal/1839 MVA emergency		AEC (3.97%)/ AEP (5.77%)/ APS (4.27%)/ ATSI (6.15%)/ BGE (1.63%)/ ComEd (0.72%)/ Dayton (1.06%)/ DEOK (1.97%)/ DL (2.25%)/ Dominion (0.35%)/ DPL (14.29%)/ ECP** (0.69%)/ EKPC (0.39%)/ HTP*** (0.96%)/ JCPL (6.84%) MetEd (3.28%)/ NEPTUNE* (2.14%)/ PECO (16.42%)/ PENELEC (3.94%)/ PPL (8.32%)/ PSEG (14.13%)/ RE (0.44%)
b2752.2	Tie in new Furnace Run substation to Peach Bottom – TMI 500 kV		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2752.3	Upgrade terminal equipment and required relay communication at Peach Bottom 500 kV: on the Beach Bottom – TMI 500 kV circuit		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)

*Neptune Regional Transmission System, LLC ** East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP
			(14.29%) / APS (5.82%) /
			ATSI (7.49%) / BGE
			(4.01%) / ComEd (14.06%) /
			Dayton (2.03%) / DEOK
	Ungrade substation		(3.21%) / DL (1.59%) / DPL
	equipment at Peach Bottom 500 kV to increase facility rating to 2826 MVA normal and 3525 MVA emergency		(2.55%) / Dominion
			(13.89%) / EKPC (2.35%) /
b2766.2			JCPL (3.59%) / ME (1.81%)
			/ NEPTUNE* (0.42%) /
			OVEC (0.06%) / PECO
			(5.11%) / PENELEC
			(1.73%) / PEPCO (3.68%) /
			PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEC (11.03%)BGE
			(37.40%) / DPL (22.91%) /
			PEPCO (28.66%)

Required T	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Reconductor the Emilie -		
h2774	Falls 138 kV line, and		
02774	replace station cable and		
	relay		PECO (100%)
1.0775	Reconductor the Falls -		
02773	U.S. Steel 138 kV line		PECO (100%)
	Replace the Waneeta		
b2850	230 kV "285" with 63 kA		
	breaker		PECO (100%)
	Replace the Chichester		
b2852	230 kV "195" with 63 kA		
	breaker		PECO (100%)
	Replace the North		
b2854	Philadelphia 230 kV "CS		
	775" with 63 kA breaker		PECO (100%)
	Replace the North		
b2855	Philadelphia 230 kV "CS		
	885" with 63 kA breaker		PECO (100%)
	Replace the Parrish		
b2856	230 kV "CS 715" with 63		
	kA breaker		PECO (100%)
	Replace the Parrish		
b2857	230 kV "CS 825" with 63		
	kA breaker		PECO (100%)
	Replace the Parrish 230		
b2858	kV "CS 935" with 63 kA		
	breaker		PECO (100%)
4	Replace the Plymouth		
b2859	Meeting 230 kV "215"		
	with 63 kA breaker		PECO (100%)
b2860	Replace the Plymouth		
	Meeting 230 kV "235"		
	with 63 kA breaker		PECO (100%)
1.00.01	Replace the Plymouth		
b2861	Meeting 230 kV "325"		
	with 63 kA breaker		PECO (100%)
1.00.00	Replace the Grays Ferry		
b2862	230 KV "/05" with 63 kA		
	breaker		PECO (100%)

Required T	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Replace the Grays Ferry 230		
b2863	kV "985" with 63 kA		
	breaker		PECO (100%)
	Replace the Grays Ferry 230		, í
b2864	kV "775" with 63 kA		
	breaker		PECO (100%)
	Replace the China Tap 230		, , , , , , , , , , , , , , , , , , ,
b2923	kV 'CS 15' breaker with a		
	63 kA breaker		PECO (100%)
	Replace the Emilie 230 kV		
b2924	'CS 15' breaker with 63 kA		
	breaker		PECO (100%)
	Replace the Emilie 230 kV		
b2925	'CS 25' breaker with 63 kA		
	breaker		PECO (100%)
	Replace the Chichester 230		, í
b2926	kV '215' breaker with 63		
	kA breaker		PECO (100%)
	Replace the Plymouth		
b2927	Meeting 230 kV '125'		
	breaker with 63 kA breaker		PECO (100%)
	Replace the 230 kV CB		
	#225 at Linwood Substation		
1,2005	(PECO) with a double		
02983	circuit breaker (back to back		
	circuit breakers in one		
	device)		PECO (100%)
	Peach Bottom – Furnace		
b3041	Run 500 kV terminal		
	equipment		PECO (100%)
	Replace the Whitpain 230		
b3120	kV breaker "125" with a 63		
	kA breaker		PECO (100%)
	Move 2 MVA load from the		
	Roxborough to Bala		
b3138	substation. Adjust the tap		
	setting on the Master 138/69		
	kV transformer #2		PECO (100%)
	Upgrade the Richmond 69		
b3146	kV breaker "140" with 40		
	kA breaker		PECO (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Replace station conductor		
	and metering inside		
	Whitpain and Plymouth		
b3697	230 kV substations to		
	increase the ratings of the		
	Whitpain – Plymouth 230		
	kV line		PECO (100%)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP (14.29%)
			/ APS (5.82%) / ATSI (7.49%)
			/ BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
			DEOK (3.21%) / DL (1.59%) /
			DPL (2.55%) / Dominion
			(13.89%) / EKPC (2.35%) /
	Penlace 1 meters and hus		JCPL (3.59%) / ME (1.81%) /
	work inside Peach Bottom		NEPTUNE* (0.42%) / OVEC
h2728 2	substation on the 500 kV		(0.06%) / PECO (5.11%) /
03720.2	Line 5012 (Constend		PENELEC (1.73%) / PEPCO
	Parch Pottom)		(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			APS (3.94%) / ATSI (0.03%) /
			BGE (20.78%) / DL (0.01%) /
			DPL (0.02%) / Dominion
			(31.75%) / JCPL (6.99%) /
			NEPTUNE* (0.80%) / PECO
			(0.98%) / PEPCO (17.52%) /
			PPL (2.69%) / PSEG (13.93%)
			/ RE (0.56%)

Required Tr	ransmission Enhancements Annual	Revenue Requirement Responsible Customer(s)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) / APS
		(5.82%) / ATSI (7.49%) / BGE (4.01%) /
		ComEd (14.06%) / Dayton (2.03%) /
		DEOK (3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) / EKPC
	Deeph Dottom North up and deg	(2.35%) / JCPL (3.59%) / ME (1.81%) /
	500 kV substation work Add 3v	NEPTUNE* (0.42%) / OVEC (0.06%) /
b3780.1	500 kV substation work. Add 3x	PECO (5.11%) / PENELEC (1.73%) /
	brooker and a half have	PEPCO (3.68%) / PPL (4.43%) / PSEG
	breaker-and-a-main bay	(5.99%) / RE (0.24%)
		DFAX Allocation:
		ATSI (0.02%) / BGE (28.40%) /
		Dominion (33.36%) / DPL (0.02%) /
		JCPL (6.36%) / NEPTUNE* (0.73%) /
		PECO (0.01%) / PEPCO (17.90%) /
		PSEG (12.69%) / RE (0.51%)
		Load-Ratio Share Allocation:
	Peach Bottom to Graceton (PECO) new 500 kV transmission line. New rating: 4503 MVA SN/5022 MVA SE	AEC (1.65%) / AEP (14.29%) / APS
		(5.82%) / ATSI (7.49%) / BGE (4.01%) /
		ComEd (14.06%) / Dayton (2.03%) /
		DEOK (3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) / EKPC
		(2.35%) / JCPL (3.59%) / ME (1.81%) /
		NEPTUNE* (0.42%) / OVEC (0.06%) /
b3780.2		PECO (5.11%) / PENELEC (1.73%) /
		PEPCO (3.68%) / PPL (4.43%) / PSEG
		(5.99%) / RE (0.24%)
		DFAX Allocation:
		ATSI (0.02%) / BGE (28.40%) /
		Dominion (33.36%) / DPL (0.02%) /
		JCPL (6.36%) / NEPTUNE* (0.73%) /
		PECO (0.01%) / PEPCO (17.90%) /
		PSEG (12.69%) / RE (0.51%)
	West Cooper substation work	
	includes 3 breaker ring, 500/230	
1.0.0.0.0	kV transformer, control house,	
b3780.3	substation build, and reconfigure	
	Cooper distribution station feed.	
	New transformer rating: 1559	
	MVA SN/ 1940 MVA SE	DPL (41.52%) / PECO (58.48%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Reconfigure Cooper		
	transmission feeds by		
	establishing new Cooper		
b3780.14	- North Delta 230 kV line		
	and rerouting existing		
	transmissions lines by		DPL (38.25%) / PECO
	Cooper		(61.75%)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP (14.29%)
			/ APS (5.82%) / ATSI (7.49%)
			/ BGE (4.01%) / ComEd
	Cut-in 5012 Peach		(14.06%) / Dayton (2.03%) /
	Bottom - Conastone 500		DEOK (3.21%) / DL (1.59%) /
	kV line into North Delta		DPL (2.55%) / Dominion
	500/230 kV substation by		(13.89%) / EKPC (2.35%) /
	rebuilding 5012 between		JCPL (3.59%) / ME (1.81%) /
b3780.15	new terminal at Peach		NEPTUNE* (0.42%) / OVEC
	Bottom South and North		(0.06%) / PECO (5.11%) /
	Delta on single circuit		PENELEC (1.73%) / PEPCO
	structures and		(3.68%) / PPL (4.43%) / PSEG
	terminating at North		(5.99%) / RE (0.24%)
	Delta		
			DFAX Allocation:
			AEC (11.03%) / BGE
			(37.40%) / DPL (22.90%) /
			PECO (0.00%) / PEPCO
			(28.67%)

Required Transmis	ssion Enhancements	Annual Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP (14.29%)
			/ APS (5.82%) / ATSI (7.49%)
			/ BGE (4.01%) / ComEd
Page	onfigure Deach		(14.06%) / Dayton (2.03%) /
Bott	om North and South		DEOK (3.21%) / DL (1.59%) /
Dott	s to allow for		DPL (2.55%) / Dominion
term	ination of 500 kV		(13.89%) / EKPC (2.35%) /
lines	from Peach Bottom		JCPL (3.59%) / ME (1.81%) /
b3800.52 to N	orth Delta North		NEPTUNE* (0.42%) / OVEC
Delt	a 500 kV termination		(0.06%) / PECO (5.11%) /
for t	he new Peach		PENELEC (1.73%) / PEPCO
Bott	om - North Delta		(3.68%) / PPL (4.43%) / PSEG
500	kV line		(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEC (11.03%) / BGE
			(37.40%) / DPL (22.90%) /
			PECO(0.00%) / PEPCO
			(28.67%)
Kepl	lacement of relays at		
Mac	dade, Printz, and		
Ivior in or	ton stations to		
Incre	ease rating limits of		
b3844.1	nmont Lino		
equi	pillent. Line		
prote	ection relays will be		
upgi	dard relevanged		
stand	as the PECO system		PECO(100%)
	a second 128 kV		FECO (10078)
Auu	ker next to		
b3845.1 Nott	ringham 895 CB to		
elim	ingte stuck breaker		
CIIII			

SCHEDULE 12 – APPENDIX A

(12) Public Service Electric and Gas Company

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2218	Rebuild 4 miles of overhead line from Edison - Meadow Rd - Metuchen (Q 1317)		PSEG (100%)
b2239	50 MVAR reactor at Saddlebrook 230 kV		PSEG (100%)
b2240	50 MVAR reactor at Athenia 230 kV		PSEG (100%)
b2241	50 MVAR reactor at Bergen 230 kV		PSEG (100%)
b2242	50 MVAR reactor at Hudson 230 kV		PSEG (100%)
b2243	Two 50 MVAR reactors at Stanley Terrace 230 kV		PSEG (100%)
b2244	50 MVAR reactor at West Orange 230 kV		PSEG (100%)
b2245	50 MVAR reactor at Aldene 230 kV		PSEG (100%)
b2246	150 MVAR reactor at Camden 230 kV		PSEG (100%)
b2247	150 MVAR reactor at Gloucester 230 kV		PSEG (100%)
b2248	50 MVAR reactor at Clarksville 230 kV		PSEG (100%)
b2249	50 MVAR reactor at Hinchmans 230 kV		PSEG (100%)
b2250	50 MVAR reactor at Beaverbrook 230 kV		PSEG (100%)
b2251	50 MVAR reactor at Cox's Corner 230 kV		PSEG (100%)

The Annual Revenue Requirement for all Public Service Electric and Gas Company Projects (Required Transmission Enhancements) in this Section 12 shall be as specified in Attachment 7 of Attachment H-10A and under the procedures detailed in Attachment H-10B.

Required Tr	ansmission Enhancements	Annual Revenue Requirement	t Responsible Customer(s)
	Eliminate the Sewaren 138		
b2276	kV bus by installing a new		
	230 kV bay at Sewaren		
	230 kV		PSEG (95.85%) / RE (4.15%)
	Convert the two 138 kV		
	circuits from Sewaren –		
62276 1	Metuchen to 230 kV		
02270.1	circuits including		
	Lafayette and Woodbridge		
	substation		PSEG (95.85%) / RE (4.15%)
	Reconfigure the Metuchen		
622762	230 kV station to		
02270.2	accommodate the two		
	converted circuits		PSEG (95.85%) / RE (4.15%)
	Replace disconnect		
	switches at Kilmer, Lake		
h2290	Nilson and Greenbrook		
02290	230 kV substations on the		
	Raritian River - Middlesex		
	(I-1023) circuit		PSEG (100%)
	Replace circuit switcher at		
	Lake Nelson 230 kV		
b2291	substation on the Raritian		
	River - Middlesex (W-		
	1037) circuit		PSEG (100%)
	Replace the Salem 500 kV		
b2295	breaker 10X with 63 kA		
	breaker		PSEG (100%)
	Install all 69 kV lines to		
	interconnect Plainfield,		
b2421	Greenbrook, and		
02121	Bridgewater stations and		
	establish the 69 kV		
	network		PSEG (100%)
	Install two 18 MVAR		
b2421.1	capacitors at Plainfield		
	and S. Second St		
	substation		PSEG (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirem	nent Responsible Customer(s)
b2421.2	Install a second four (4) breaker 69 kV ring bus at Bridgewater Switching Station		PSEG (100%)
b2436.10	Convert the Bergen – Marion 138 kV path to double circuit 345 kV and associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEC (95.85%) / PE (4.15%)
b2436.21	Convert the Marion - Bayonne "L" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)		
b2436.22	Convert the Marion - Bayonne "C" 138 kV circuit to 345 kV and any associated substation upgrades	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.33	Construct a new Bayway – Bayonne 345 kV circuit and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2436.34	Construct a new North Ave – Bayonne 345 kV circuit and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
b2436 50	Construct a new North		
	Ave - Airport 345 kV		
02450.50	circuit and any associated		
	substation upgrades		PSEG (95.85%) / RE (4.15%)
	Relocate the underground		
	portion of North Ave -		
	Linden "T" 138 kV circuit		
b2436.60	to Bayway, convert it to		
	345 kV, and any		
	associated substation		
	upgrades		PSEG (95.85%) / RE (4.15%)
	Construct a new Airport -		
b2436.70	Bayway 345 KV circuit		
	and any associated		$\mathbf{D} \subseteq (05, 950/) / \mathbf{D} \subseteq (4, 150/)$
	substation upgrades		PSEG (95.85%) / RE (4.15%)
			Load-Kallo Share Allocation: A = C (1.65%) / A = D (14.20%)
			AEC (1.0370) / AEF (14.2970) / ADS (5.820%) / ATSI (7.400%)
			/ AFS (5.6270) / AFSI (7.4970) / BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
	Relocate the overhead		DEOK (3.21%) / DL (1.59%) /
	portion of Linden - North		DPL (2.55%) / Dominion
	Ave "T" 138 kV circuit to		(13.89%) / EKPC $(2.35%)$ /
b2436.81	Bayway, convert it to 345		JCPL (3.59%) / ME (1.81%) /
	kV, and any associated		NEPTUNE* (0.42%) / OVEC
	substation upgrades		(0.06%) / PECO (5.11%) /
	18		PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
b2436.83	Convert the Bayway - Linden "Z" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.84	Convert the Bayway – Linden "W" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
b2436.85	Convert the Bayway – Linden "M" 138 kV circuit to 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)
			DFAX Allocation: PSEG (95.85%) / RE (4.15%)
b2436.90	Relocate Farragut - Hudson "B" and "C" 345 kV circuits to Marion 345 kV and any associated substation upgrades		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: PSEG (100%)
b2436.91	Relocate the Hudson 2 generation to inject into the 345 kV at Marion and any associated upgrades		PSEG (100%)

b2437.10	New Bergen 345/230 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.11	New Bergen 345/138 kV transformer #1 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.20	New Bayway 345/138 kV transformer #1 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.21	New Bayway 345/138 kV transformer #2 and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.30	New Linden 345/230 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2437.33	New Bayonne 345/69 kV transformer and any associated substation upgrades	PSEG (95.85%) / RE (4.15%)
b2438	Install two reactors at Tosco 230 kV	PSEG (100%)
b2439	Replace the Tosco 138 kV breaker 'CB1/2 (CBT)' with 63 kA	PSEG (100%)
b2474	Rebuild Athenia 138 kV to 80 kA	PSEG (100%)
b2589	Install a 100 MVAR 230 kV shunt reactor at Mercer station	PSEG (100%)
b2590	Install two 75 MVAR 230 kV capacitors at Sewaren station	PSEG (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)				
		Load-Ratio Share Allocation:		
	Install an SVC at New Freedom 500 kV substation	AEC (1.65%) / AEP (14.29%) /		
		APS (5.82%) / ATSI (7.49%) /		
		BGE (4.01%) / ComEd (14.06%)		
		/ Dayton (2.03%) / DEOK		
		(3.21%) / DL (1.59%) / DPL		
		(2.55%) / Dominion (13.89%) /		
		EKPC (2.35%) / JCPL (3.59%) /		
b2633.3		ME (1.81%) / NEPTUNE*		
		(0.42%) / OVEC (0.06%) /		
		PECO (5.11%) / PENELEC		
		(1.73%) / PEPCO (3.68%) / PPL		
		(4.43%) / PSEG (5.99%) / RE		
		(0.24%)		
		DFAX Allocation:		
		AEC (0.01%) / DPL (99.98%) /		
		JCPL (0.01%)		
		Load-Ratio Share Allocation:		
	Add a new 500 kV bay at Hope Creek (Expansion of Hope Creek substation)	AEC (1.65%) / AEP (14.29%) /		
b2633.4		APS (5.82%) / ATSI (7.49%) /		
		BGE (4.01%) / ComEd (14.06%)		
		/ Dayton (2.03%) / DEOK		
		(3.21%) / DL (1.59%) / DPL		
		(2.55%) / Dominion (13.89%) /		
		EKPC (2.35%) / JCPL (3.59%) /		
		ME (1.81%) / NEPTUNE*		
		(0.42%) / OVEC (0.06%) / DEC		
		$\frac{PECO(5.11\%)}{PENELEC}$		
		(1.73%) / PEPCO $(3.68%)$ / PPL		
		(4.43%) / PSEG (5.99%) / RE		
		(0.24%)		
		DFAX Allocation:		
		AEC (8.01%) / BGE (1.94%) /		
		DPL (12.99%) / JCPL (13.85%)		
		/ ME (5.88%) / NEPIUNE*		
		(3.45%) / PECO (1/.62%) / PPL		
		(14.85%) / PSEG (20.79%) / RE		
		(0.62%)		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)				
			AEC (8.01%) / BGE (1.94%) /	
	Add a new 500/230 kV		DPL (12.99%) / JCPL (13.85%)	
1-26225	autotransformer at Hope		/ ME (5.88%) / NEPTUNE*	
02035.5	Creek and a new Hope		(3.45%) / PECO (17.62%) / PPL	
	Creek 230 kV substation		(14.85%) / PSEG (20.79%) / RE	
			(0.62%)	
			Load-Ratio Share Allocation:	
			AEC (1.65%) / AEP (14.29%) /	
			APS (5.82%) / ATSI (7.49%) /	
			BGE (4.01%) / ComEd (14.06%)	
	Implement high speed		/ Dayton (2.03%) / DEOK	
	relaying utilizing OPGW		(3.21%) / DL (1.59%) / DPL	
	on Salem – Orchard 500		(2.55%) / Dominion (13.89%) /	
	kV, Hope Creek – New		EKPC (2.35%) / JCPL (3.59%) /	
b2633.8	Freedom 500 kV, New		ME (1.81%) / NEPTUNE*	
	Freedom - Salem 500 kV,		(0.42%) / OVEC (0.06%) /	
	Hope Creek – Salem 500		PECO (5.11%) / PENELÉC	
	kV, and New Freedom –		(1.73%) / PEPCO (3.68%) / PPL	
	Orchard 500 kV lines		(4.43%) / PSEG (5.99%) / RE	
			(0.24%)	
			DFAX Allocation:	
			AEC (0.01%) / DPL (99.98%) /	
			JCPL (0.01%)	

b2633.91	Implement changes to the tap settings for the two	
	Salem units' step up	AEC (0.01%) / DPL (99.98%) /
	transformers	JCPL (0.01%)
	Implement changes to the	
b2633.92	tap settings for the Hope	
	Creek unit's step up	AEC (0.01%) / DPL (99.98%) /
	transformers	JCPL (0.01%)
b2702	Install a 350 MVAR reactor at Roseland 500 kV	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation:
b2703	Install a 100 MVAR reactor at Bergen 230 kV	PSEG (100%)
b2704	Install a 150 MVAR reactor at Essex 230 kV	PSEG (100%)
b2705	Install a 200 MVAR reactor (variable) at Bergen 345 kV	PSEG (100%)
b2706	Install a 200 MVAR reactor (variable) at Bayway 345 kV	PSEG (100%)
b2707	Install a 100 MVAR reactor at Bayonne 345 kV	PSEG (100%)

b2712	Replace the Bergen 138 kV	
	40P breaker with 80 kA	PSEG (100%)
b2713	Replace the Bergen 138 kV '90P' breaker with 80 kA breaker	PSEG (100%)
b2722	Reconductor the 1 mile Bergen – Bergen GT 138 kV circuit (B-1302)	PSEG (100%)
b2755	Build a third 345 kV source into Newark Airport	PSEG (95.85%) / RE (4.15%)
b2810.1	Install second 230/69 kV transformer at Cedar Grove	PSEG (95.85%) / RE (4.15%)
b2810.2	Build a new 69 kV circuit from Cedar Grove to Great Notch	PSEG (95.85%) / RE (4.15%)
b2811	Build 69 kV circuit from Locust Street to Delair	PSEG (95.85%) / RE (4.15%)
b2812	Construct River Road to Tonnelle Avenue 69kV Circuit	PSEG (95.85%) / RE (4.15%)
b2825.1	Install 2X50 MVAR shunt reactors at Kearny 230 kV substation	PSEG (100%)
b2825.2	Increase the size of the Hudson 230 kV, 2X50 MVAR shunt reactors to 2X100 MVAR	PSEG (100%)
b2825.3	Install 2X100 MVAR shunt reactors at Bayway 345 kV substation	PSEG (100%)
b2825.4	Install 2X100 MVAR shunt reactors at Linden 345 kV substation	PSEG (100%)
b2835	Convert the R-1318 and Q1317 (Edison – Metuchen) 138 kV circuits to one 230 kV circuit	See sub-IDs for cost allocations

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)
Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Conver the R-1318 and Q-		
	1317 (Edison – Metuchen)		
b2835.1	138 kV circuits to one 230		AEC (14.94%) / PECO
	kV circuit (Brunswick –		(44.49%) / PSEG (38.89%) /
	Meadow Road)		RE (1.68%)
	Convert the R-1318 and Q-		
	1317 (Edison - Metuchen)		
b2835.2	138 kV circuits to one 230		AEC (13.15%) / PECO
	kV circuit (Meadow Road -		(39.12%) / PSEG (45.75%) /
	Pierson Ave)		RE (1.98%)
	Convert the R-1318 and Q-		
	1317 (Edison - Metuchen)		
b2835.3	138 kV circuits to one 230		AEC (11.57%) / PECO
	kV circuit (Pierson Ave -		(34.41%) / PSEG (51.78%) /
	Metuchen)		RE (2.24%)
	Convert the N-1340 and T-		
12026	1372/D-1330 (Brunswick -		
02850	Trenton) 138 kV circuits to		
	230 kV circuits		See sub-IDs for cost allocations
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.1	Trenton) 138 kV circuits to		AEC (8.23%) / NEPTUNE*
	230 kV circuits (Brunswick		(43.36%) / PECO (30.19%) /
	- Hunterglen)		PSEG (17.46%) / RE (0.76%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.2	Trenton) 138 kV circuits to		AEC (2.14%) / NEPTUNE*
	230 kV circuits (Hunterglen		(11.80%) / PECO (7.72%) /
	- Trenton)		PSEG (75.09%) / RE (3.25%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.3	Trenton) 138 kV circuits to		AEC (6.98%) / NEPTUNE*
	230 kV circuits (Brunswick		(64.26%) / PECO (25.38%) /
	- Devils Brook)		PSEG (3.24%) / RE (0.14%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2836.4	Trenton) 138 kV circuits to		AEC (5.13%) / NEPTUNE*
b2835.1 b2835.2 b2835.3 b2836 b2836.1 b2836.2 b2836.2 b2836.3	230 kV circuits (Devils		(28.43%) / PECO (18.69%) /
	Brook - Trenton)		PSEG (45.77%) / RE (1.98%)

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b2837	Convert the F-1358/Z1326 and K1363/Y-1325 (Trenton – Burlington) 138 kV circuits to 230 kV circuits	See sub-IDs for cost allocations
b2837.1	Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138 kV circuits to 230 kV circuits (Trenton - Yardville K)	NEPTUNE* (10.75%) / PSEG (85.55%) / RE (3.70%)
b2837.2	Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138 kV circuits to 230 kV circuits (Yardville - Ward Ave K)	NEPTUNE* (8.84%) / PSEG (87.38%) / RE (3.78%)
b2837.3	Convert the N-1340 and T- 1372/D-1330 (Brunswick - Trenton) 138 kV circuits to 230 kV circuits (Brunswick - Devils Brook)	NEPTUNE* (8.24%) / PSEG (87.95%) / RE (3.81%)
b2837.4	Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138 kV circuits to 230 kV circuits (Crosswicks - Bustleton Y)	NEPTUNE* (6.96%) / PSEG (89.18%) / RE (3.86%)
b2837.5	Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138 kV circuits to 230 kV circuits (Bustleton - Burlington Y)	NEPTUNE* (5.95%) / PSEG (90.15%) / RE (3.90%)
b2837.6	Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138 kV circuits to 230 kV circuits (Trenton - Yardville F)	NEPTUNE* (12.83%) / PSEG (83.55%) / RE (3.62%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Convert the F-1358/Z-1326 and K-1363/Y-1325 (Trenton - Burlington) 138	
and K-1363/Y-1325 (Trenton - Burlington) 138	
1 2027 7 (Trenton - Burlington) 138	
kV circuits to 230 kV	
circuits (Yardville - Ward NEPTUNE* (9.98%) / PS	EG
Ave F) (86.29%) / RE (3.73%)	
Convert the F-1358/Z-1326	
and K-1363/Y-1325	
h2827 g (Trenton - Burlington) 138	
kV circuits to 230 kV	
circuits (Ward Ave - NEPTUNE* (9.98%) / PS	EG
Crosswicks Z) (86.29%) / RE (3.73%)	
Convert the F-1358/Z-1326	
and K-1363/Y-1325	
h2827.0 (Trenton - Burlington) 138	
kV circuits to 230 kV	
circuits (Crosswicks - NEPTUNE* (8.01%) / PS	EG
Williams Z) (88.18%) / RE (3.81%)	
Convert the F-1358/Z-1326	
and K-1363/Y-1325	
h2827 10 (Trenton - Burlington) 138	
kV circuits to 230 kV	
circuits (Williams - NEPTUNE* (7.16%) / PS	EG
Bustleton Z) (88.99%) / RE (3.85%)	
Convert the F-1358/Z-1326	
and K-1363/Y-1325	
L2827 11 (Trenton - Burlington) 138	
kV circuits to 230 kV	
circuits (Bustleton - NEPTUNE* (5.54%) / PS	EG
Burlington Z) (90.54%) / RE (3.92%)	
Build new 138/26 kV	
Newark GIS station in a	
building (layout #1A)	
b2870 located adjacent to the	
existing Newark Switch and	
demolish the existing	
Newark Switch PSEG (100%)	
Third Source for	
b2933 Springfield Rd. and Stanley	
Terrace StationsPSEG (95.85%) / RE (4.15)	%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required III		an revenue requirement	
b2933.1	Construct a 230/69 kV station at Springfield		PSEG (95.85%) / RE (4.15%)
b2933.2	Construct a 230/69 kV station at Stanley Terrace		PSEG (95.85%) / RE (4.15%)
b2933.31	Construct a 69 kV network between Front Street, Springfield and Stanley Terrace (Front Street - Springfield)		PSEG (95.85%) / RE (4.15%)
b2933.32	Construct a 69 kV network between Front Street, Springfield and Stanley Terrace (Springfield – Stanley Terrace)		PSEG (95.85%) / RE (4.15%)
b2934	Build a new 69 kV line between Hasbrouck Heights and Carlstadt		PSEG (95.85%) / RE (4.15%)
b2935	Third Supply for Runnemede 69 kV and Woodbury 69 kV		PSEG (95.85%) / RE (4.15%)
b2935.1	Build a new 230/69 kV switching substation at Hilltop utilizing the PSE&G property and the K-2237 230 kV line		PSEG (95.85%) / RE (4.15%)
b2935.2	Build a new line between Hilltop and Woodbury 69 kV providing the 3rd supply		PSEG (95.85%) / RE (4.15%)

		1	1 ()
1 2025 2	Convert Runnemede's straight bus to a ring bus		
62935.3	and construct a 69 kV line		
	from Hilltop to Runnemede		
	69 KV		PSEG (95.85%) / RE (4.15%)
	Wreck and rebuild the VFT		
b2955	– Warinanco – Aldene 230		
	kV circuit with paired		
	conductor		PSEG (95.85%) / RE (4.15%)
	Replace existing cable on		
b2956	Cedar Grove - Jackson Rd.		
	with 5000 kcmil XLPE		
	cable		PSEG (95.85%) / RE (4.15%)
	Construct a 230/69 kV		
	station at Hillsdale		
b2982	Substation and tie to		
	Paramus and Dumont at		
	69 kV		PSEG (95.85%) / RE (4.15%)
	Install a 69 kV ring bus and		
b2982.1	one (1) 230/69 kV		
	transformer at Hillsdale		PSEG (95.85%) / RE (4.15%)
	Construct a 69 kV network		
	between Paramus, Dumont,		
62982.2	and Hillsdale Substation		
	using existing 69 kV		
	circuits		PSEG (95.85%) / RE (4.15%)
h2983	Convert Kuller Road to a		
02905	69/13 kV station		PSEG (95.85%) / RE (4.15%)
	Install 69 kV ring bus and		
b2983.1	two (2) 69/13 kV		
	transformers at Kuller Road		PSEG (95.85%) / RE (4.15%)
	Construct a 69 kV network		
	between Kuller Road,		
b2983.2	Passaic, Paterson, and		
	Harvey (new Clifton area		
	switching station)		PSEG (95.85%) / RE (4.15%)
	Replace the existing		
h2006	Roseland – Branchburg –		
02980	Pleasant Valley 230 kV		
	corridor with new structures		See sub-IDs for cost allocations

Required II		i Revenue Requirement	
	Roseland-Branchburg 230		
b2986.11	kV corridor rebuild		
	(Roseland - Readington)		PSEG (95.85%) / RE (4.15%)
	Roseland-Branchburg 230		
b2986.12	kV corridor rebuild		JCPL (58.66%) / PSEG
	(Readington - Branchburg)		(39.62%) / RE (1.72%)
	Branchburg-Pleasant Valley		
1 2007 21	230 kV corridor rebuild		NEPTUNE* (0.37%) / PECO
62986.21	(Branchburg - East		(98.94%) / PSEG (0.66%) / RE
	Flemington)		(0.03%)
	Branchburg-Pleasant Valley		
1 000 (00	230 kV corridor rebuild		NEPTUNE* (5.83%) / PECO
62986.22	(East Flemington - Pleasant		(83.73%) / PSEG (10.01%) /
	b2986.11 kV corridor rebuild (Roseland - Readington) Roseland-Branchburg 230 kV corridor rebuild (Readington - Branchburg) b2986.12 kV corridor rebuild (Readington - Branchburg) b2986.21 Branchburg-Pleasant Valley 230 kV corridor rebuild (Branchburg - East Flemington) b2986.22 Branchburg-Pleasant Valley 230 kV corridor rebuild (East Flemington - Pleasant Valley) b2986.23 Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown) b2986.24 Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown) b2986.24 Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown) b3003 Construct a 230/69 kV station at Maywood b3003.1 Purchase properties at Maywood to accommodate new construction b3003.2 Extend Maywood 230 kV bus and install one (1) 230 kV baselow	RE (0.43%)	
	Branchburg-Pleasant Valley		
1 000 (00	230 kV corridor rebuild		JCPL (26.89%) / NEPTUNE*
62986.23	(Pleasant Valley -		(4.81%) / PECO (8.88%) /
b2986.23	Rocktown)		PSEG (56.96%) / RE (2.46%)
	Branchburg-Pleasant Valley		
1000004	230 kV corridor rebuild		JCPL (33.60%) / NEPTUNE*
62986.24	(the PSEG portion of		(4.40%) / PECO (6.02%) /
	Rocktown - Buckingham)	y y y t y y ,	PSEG (53.66%) / RE (2.32%)
	Construct a 230/69 kV		
b3003	station at Maywood		DSEC(05.85%) / DE(1.15%)
	Durchase properties at		1 SEG (95.8576)7 KE (4.1576)
h2002 1	Maywood to accommodate		
03003.1	nay construction		DSEC(05.85%) / DE(1.15%)
	Extend Maxwood 220 kV		PSEG (93.8376) / KE (4.1376)
h2002.2	bug and install and (1) 220		
63003.2	bus and instant one (1) 250		DSEC(05.950/)/DE(4.150/)
	k v oreaker		rseu (93.83%) / KE (4.13%)
b3003.3	Install one (1) $230/69 \text{ kV}$		
	transformer at Maywood		PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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b3003.4	Install Maywood 69 kV ring bus	PSEG (95.85%) / RE (4.15%)
b3003.5	Construct a 69 kV network between Spring Valley Road, Hasbrouck Heights, and Maywood	PSEG (95.85%) / RE (4.15%)
b3004	Construct a 230/69/13 kV station by tapping the Mercer – Kuser Rd 230 kV circuit	PSEG (95.85%) / RE (4.15%)
b3004.1	Install a new Clinton 230 kV ring bus with one (1) 230/69 kV transformer Mercer - Kuser Rd 230 kV circuit	PSEG (95.85%) / RE (4.15%)
b3004.2	Expand existing 69 kV ring bus at Clinton Ave with two (2) additional 69 kV breakers	PSEG (95.85%) / RE (4.15%)
b3004.3	Install two (2) 69/13 kV transformers at Clinton Ave	PSEG (95.85%) / RE (4.15%)
b3004.4	Install 18 MVAR capacitor bank at Clinton Ave 69 kV	PSEG (95.85%) / RE (4.15%)
b3025	Construct two (2) new 69/13 kV stations in the Doremus area and relocate the Doremus load to the new stations	PSEG (95.85%) / RE (4.15%)

Install a new 69/13 kV b3025.1 station (Vauxhall) with a ring bus configuration PSEG (95.85%) / RE (4.15%) Install a new 69/13 kV station (19th Avc) with a ring bus configuration PSEG (95.85%) / RE (4.15%) Construct a 69 kV network between Stanley Terrace, Springfield Road, McCarter, Federal Square, and the two new stations (Vauxhall & 19th Ave) PSEG (95.85%) / RE (4.15%) Construct a third 69 kV supply line from Penns Neck substation to West Windsor substation Replace the Lawrence switching station 230/69 kV Transformer No. 220-4 and its associated circuit switchers with a new larger capacity transformer with load tap changer (LTC) and new dead tank circuit barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot barrot complete the bay within the Lawrence 230 kV switchyard barrot complete the bay within the Lawrence 230 kV switchyard barrot barrot complete the bay within the Lawrence 230 kV switchyard barrot barrot complete the bay within the Lawrence 230 kV switchyard barrot complete the bay within the Lawrence 230 kV switchyard barrot complete the barrot complete the barrot barrot complete the barrot barrot barrot complete the barrot barrot barrot construct a third 69 kV symply line from Totowa barrot barrot construct a third 69 kV supply line from Totowa	Required II		The vehicle Requirement	Responsione Customer(s)
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gas insulated breaker, associated disconnects, overhead bus and other necessary equipment to complete the bay within the Lawrence 230 kV switchyardPSEG (100%)b3705Replace existing 230/138 kV Athenia Transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1PSEG (100%)b3706Construct a third 69 kV supply line from TotowaPSEG (100%)		breaker. Install a new 230 kV		
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overhead bus and other necessary equipment to complete the bay within the Lawrence 230 kV switchyardPSEG (100%)b3705Replace existing 230/138 kV Athenia Transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)		associated disconnects.		
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complete the bay within the Lawrence 230 kV switchyardPSEG (100%)b3705Replace existing 230/138 kV Athenia Transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)		necessary equipment to		
Lawrence 230 kV switchyardPSEG (100%)b3705Replace existing 230/138 kV Athenia Transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)		complete the bay within the		
b3705Replace existing 230/138 kV Athenia Transformer No. 220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)		Lawrence 230 kV switchvard		PSEG (100%)
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220-1PSEG (95.85%) / RE (4.15%)b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)	b3705	Athenia Transformer No.		
b3706Replace Fair Lawn 230/138 kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)b3716Construct a third 69 kV supply line from TotowaPSEG (100%)		220-1		PSEG (95.85%) / RE (4.15%)
b3706kV transformer No. 220-1 with an existing O&M system spare at BurlingtonPSEG (100%)Construct a third 69 kV supply line from TotowaPSEG (100%)		Replace Fair Lawn 230/138		
b3706 with an existing O&M system spare at Burlington PSEG (100%) Construct a third 69 kV supply line from Totowa	1.0.00	kV transformer No. 220-1		
system spare at Burlington PSEG (100%) Construct a third 69 kV supply line from Totowa	b3706	with an existing O&M		
Construct a third 69 kV supply line from Totowa		system spare at Burlington		PSEG (100%)
b3716 supply line from Totowa		Construct a third 69 kV		
	1.051.5	supply line from Totowa		
substation to the customer's	b3716	substation to the customer's		
substation PSEG (100%)		substation		PSEG (100%)

		110000000000000000000000000000000000000	
b3719	Replace the two existing 1200A Bergen 138 kV circuit switchers with two 138 kV disconnect switches to achieve a minimum summer normal device rating of 298 MVA and a minimum		
	summer emergency rating of 454 MVA		PSEG (100%)
b3757	Convert existing Medford 69 kV straight bus to seven- breaker ring bus, construct a new 230/69 kV transformer at Cox's Corner station and a new 69 kV line from Cox's Corner station to Medford station		PSEG (100%)
b3794.1	Replace existing Waldwick 230 kV 50 MVAR fixed shunt reactor with a 230 kV 150 MVAR variable shunt reactor		PSEG (100%)
b3794.2	Replace existing Waldwick 345 kV 100 MVAR fixed shunt reactor with a 345 kV 150 MVAR variable shunt reactor		PSEG (100%)

SCHEDULE 12 – APPENDIX A

Required Tra	nsmission Enhancements Ar	nnual Revenue Requirement	Responsible Customer(s)
	Reconductor 0.33 miles of		
	the Parkersburg - Belpre		
b2117	line and upgrade		
	Parkersburg terminal		
	equipment		APS (100%)
b2118	Add 44 MVAR Cap at New		
02110	Martinsville		APS (100%)
b2120	Six-Wire Lake Lynn -		
02120	Lardin 138 kV circuits		APS (100%)
	Replace Weirton 138 kV		
b2142	breaker "Wylie Ridge 210"		
	with 63 kA breaker		APS (100%)
	Replace Weirton 138 kV		
b2143	breaker "Wylie Ridge 216"		
	with 63 kA breaker		APS (100%)
b2174.8	Replace relays at Mitchell		
02171.0	substation		APS (100%)
b2174.9	Replace primary relay at		
0217113	Piney Fork substation		APS (100%)
	Perform relay setting		
b2174.10	changes at Bethel Park		
	substation		APS (100%)
	Armstrong Substation:		
1 2 2 1 2	Relocate 138 kV controls		
62213	from the generating station		
	building to new control		A DC (1000/)
	building		APS (100%)
	Albright Substation: Install		
	a new control building in		
1.221.4	the switchyard and relocate		
02214	controls and SCADA		
	equipment from the		
	generating station building		ADC(1000/)
	Diversille Switching		APS (100%)
	Station: Delegate controls		
	station: Relocate controls		
b2215	from the generating station		
	huilding to new control		
	building		ADS (1000/)
	ounding		AL2 (100%)

Required Tr	ransmission Enhancements A	annual Revenue Requirement	Responsible Customer(s)
	Willow Island: Install a new		
	138 kV cross bus at		
	Belmont Substation and		
h2216	reconnect and reconfigure		
02210	the 138 kV lines to facilitate		
	removal of the equipment at		
	Willow Island switching		
	station		APS (100%)
h2225	130 MVAR reactor at		
02235	Monocacy 230 kV		APS (100%)
b2260	Install a 32.4 MVAR		
02200	capacitor at Bartonville		APS (100%)
h2261	Install a 33 MVAR		
02201	capacitor at Damascus	Annual Revenue Requirement /	APS (100%)
	Replace 1000 Cu substation		
b2267	conductor and 1200 amp		
	wave trap at Marlowe		APS (100%)
	Reconductor 6.8 miles of		
h2268	138kV 336 ACSR with 336		
02200	ACSS from Double Toll		
	Gate to Riverton		APS (100%)
	Reconductor from Collins		
b2299	Ferry - West Run 138 kV		
	with 556 ACSS		APS (100%)
b2300	Reconductor from Lake		
02500	Lynn - West Run 138 kV		APS (100%)
	Install 39.6 MVAR		
b2341	Capacitor at Shaffers Corner		
	138 kV Substation		APS (100%)
	Construct a new 138 kV		
b2342	switching station (Shuman		
	Hill substation), which is		
	next the Mobley 138 kV		
	substation and install a 31.7		
	MVAR capacitor	+	APS (100%)
1.00.10	Install a 31.7 MVAR		
b2343	capacitor at West Union 138		
	kV substation		APS (100%)

Required Tr	ransmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
1-2262	Install a 250 MVAR SVC at		
02302	Squab Hollow 230 kV		APS (100%)
	Install a 230 kV breaker at		
b2362.1	Squab Hollow 230 kV		
	substation		APS (100%)
	Convert the Shingletown		· · ·
b2363	230 kV bus into a 6 breaker		
	ring bus		APS (100%)
	Install a new 230/138 kV		
	transformer at Squab		
	Hollow 230 kV substation.		
1-2261	Loop the Forest - Elko 230		
02304	kV line into Squab Hollow.		
	Loop the Brookville - Elko		
	138 kV line into Squab		
	Hollow		APS (100%)
	Install a 44 MVAR 138 kV		
b2412	capacitor at the Hempfield		
	138 kV substation		APS (100%)
	Install breaker and a half		
	138 kV substation (Waldo		
	Run) with 4 breakers to		
b2/33-1	accommodate service to		
02455.1	MarkWest Sherwood		
	Facility including metering		
	which is cut into Glen Falls		
	Lamberton 138 kV line		APS (100%)
	Install a 70 MVAR SVC at		
b2433.2	the new WaldoRun 138 kV		
	substation		APS (100%)
	Install two 31.7 MVAR		
h2/33 3	capacitors at the new		
02433.3	WaldoRun 138 kV		
	substation		APS (100%)
	Replace the Weirton 138 kV		
b2424	breaker 'WYLIE RID210'		
	with 63 kA breakers		APS (100%)
	Replace the Weirton 138 kV		
b2425	breaker 'WYLIE RID216'		
	with 63 kA breakers		APS (100%)

Required Tr	ransmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
	Replace the Oak Grove 138		
b2426	kV breaker 'OG1' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2427	kV breaker 'OG2' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2428	kV breaker 'OG3' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2429	kV breaker 'OG4' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		<u>_</u>
b2430	kV breaker 'OG5' with 63		
	kA breakers		APS (100%)
	Replace the Oak Grove 138		\$ 7 F
b2431	kV breaker 'OG6' with 63		
	kA breakers		APS (100%)
	Replace the Ridgeley 138		<u> </u>
b2432	kV breaker 'RC1' with a 40		
	kA rated breaker		APS (100%)
	Replace the Cabot 138kV		
b2440	breaker 'C9-KISKI VLY'		
	with 63kA		APS (100%)
	Replace the Ringgold 138		
b2472	kV breaker 'RCM1' with		
	40kA breakers		APS (100%)
	Replace the Ringgold 138		
b2473	kV breaker '#4 XMFR' with		
	40kA breakers		APS (100%)
	Construct a new line		
h2475	between Oak Mound 138		
02475	kV substation and Waldo		
	Run 138 kV substation		APS (100%)
	Construct a new 138 kV		
	substation (Shuman Hill		
b2545.1	substation) connected to the		
	Fairview – Willow Island		
	(84) 138 kV line		APS (100%)

Required T	ransmission Enhancements Annual R	evenue Requirement	Responsible Customer(s)
	Install a ring bus station with five		
1-2545-2	active positions and two 52.8		
02343.2	MVAR capacitors with 0.941 mH		
	reactors		APS (100%)
h2515 2	Install a +90/-30 MVAR SVC		
02343.5	protected by a 138 kV breaker		APS (100%)
h25151	Remove the 31.7 MVAR capacitor		
02343.4	bank at Mobley 138 kV		APS (100%)
	Install a 51.8 MVAR (rated) 138 kV		
b2546	capacitor at Nyswaner 138 kV		
	substation		APS (100%)
h2517 1	Construct a new 138 kV six breaker		
02347.1	ring bus Hillman substation		APS (100%)
h2517 2	Loop Smith- Imperial 138 kV line		
02347.2	into the new Hillman substation		APS (100%)
h2517 2	Install +125/-75 MVAR SVC at		
02347.3	Hillman substation		APS (100%)
h25171	Install two 31.7 MVAR 138 kV		
02347.4	capacitors		APS (100%)
	Eliminate clearance de-rate on		
	Wylie Ridge – Smith 138 kV line		
b2548	and upgrade terminals at Smith 138		
	kV, new line ratings 294 MVA		
	(Rate A)/350 MVA (Rate B)		APS (100%)
h2612 1	Relocate All Dam 6 138 kV line and		
02012.1	the 138 kV line to AE units 1&2		APS (100%)
	Install 138 kV, 3000A bus-tie		
h2612.2	breaker in the open bus-tie position		
02012.2	next to the Shaffers corner 138 kV		
	line		APS (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Install a 6-pole manual		
b2612.3	switch, foundation, control		
	cable, and all associated		
	facilities		APS (100%)
1-2666	Yukon 138 kV Breaker		
02000	Replacement		APS (100%)
	Replace Yukon 138 kV		
b2666.1	breaker "Y-11(CHARL1)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.2	breaker "Y-13(BETHEL)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.3	breaker "Y-18(CHARL2)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.4	breaker "Y-19(CHARL2)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.5	breaker "Y-4(4B-2BUS)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.6	breaker "Y-5(LAYTON)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.7	breaker "Y-8(HUNTING)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.8	breaker "Y-9(SPRINGD)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.9	breaker "Y-10(CHRL-SP)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.10	breaker "Y-12(1-1BUS)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.11	breaker "Y-14(4-1BUS)"		
	with an 80 kA breaker		APS (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Replace Yukon 138 kV		
b2666.12	breaker "Y-2(1B-BETHE)"		
	with an 80 kA breaker	APS (100%)	
	Replace Yukon 138 kV		
b2666.13	breaker "Y-21(SHEPJ)"		
	with an 80 kA breaker	APS (100%)	
	Replace Yukon 138 kV		
h2666 14	breaker		
02000.14	"Y-22(SHEPHJT)" with an		
	80 kA breaker	APS (100%)	
	Change CT Ratio at Seneca		
b2672	Caverns from 120/1 to 160/1		
	and adjust relay settings		
	accordingly	APS (100%)	
		AEP (12.91%) / APS (19.04%)	
	Carroll Substation: Replace	/ ATSI (1.24%) / ComEd	
	the Germantown 138 kV	(0.35%) / Dayton (1.45%) /	
b2688.3	wave trap, upgrade the bus	DEOK (2.30%) / DL (1.11%) /	
	conductor and adjust CT	Dominion (44.85%) / EKPC	
	ratios	(0.78%) / PEPCO (15.85%) /	
		RECO (0.12%)	
h2680.2	Upgrade terminal equipment		
02089.5	at structure 27A	APS (100%)	
	Upgrade 138 kV substation		
	equipment at Butler, Shanor		
	Manor and Krendale		
b2696	substations. New rating of		
	line will be 353 MVA		
	summer normal/422 MVA		
	emergency	APS (100%)	
h2700	Remove existing Black Oak		
02700	SPS	APS (100%)	
		AEP (6.46%) / APS (8.74%) /	
	Reconfigure the Dinggold	BGE (19.74%) / ComEd	
h27126	220 kV substation to double	(2.16%) / Dayton (0.59%) /	
02/43.0	230 KV substation to double	DEOK (1.02%) / DL (0.01%) /	
	bus double bleaker scheme	Dominion (39.95%) / EKPC	
		(0.45%) / PEPCO (20.88%)	

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2743.6.1	Replace the two Ringgold 230/138 kV transformers		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2743.7	Rebuild/Reconductor the Ringgold – Catoctin 138 kV circuit and upgrade terminal equipment on both ends		AEP (6.46%) / APS (8.74%) / BGE (19.74%) / ComEd (2.16%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.95%) / EKPC (0.45%) / PEPCO (20.88%)
b2747.1	Relocate the FirstEnergy Pratts 138 kV terminal CVTs at Gordonsville substation to allow for the installation of a new motor operated switch being installed by Dominion		APS (100%)
b2763	Replace the breaker risers and wave trap at Bredinville 138 kV substation on the Cabrey Junction 138 kV terminal		APS (100%)
b2764	Upgrade Fairview 138 kV breaker risers and disconnect leads; Replace 500 CU breaker risers and 556 ACSR disconnect leads with 795 ACSR		APS (100%)
b2964.1	Replace terminal equipment at Pruntytown and Glen Falls 138 kV station		APS (100%)
b2964.2	Reconductor approximately 8.3 miles of the McAlpin - White Hall Junction 138 kV circuit		APS (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Reconductor the Charleroi –		- · · ·
	Allenport 138 kV line with		
b2965	954 ACSR conductor.		
	Replace breaker risers at		APS (37.15%) / DL
	Charleroi and Allenport		(62.85%)
	Reconductor the Yukon –		
	Smithton – Shepler Hill Jct		
b2966	138 kV line with 795 ACSS		
	conductor. Replace Line		
	Disconnect Switch at Yukon		APS (100%)
	Reconductor the Yukon -		
	Smithton - Shepler Hill Jct		
1-2066-1	138 kV line and replace		
02900.1	terminal equipment as		
	necessary to achieve		
	required rating		APS (100%)
	Convert the existing 6 wire		
	Butler - Shanor Manor -		
	Krendale 138 kV line into		
b2967	two separate 138 kV lines.		
	New lines will be Butler -		
	Keisters and Butler - Shanor		
	Manor - Krendale 138 kV		APS (100%)
h2070	Ringgold – Catoctin		
02970	Solution		APS (100%)
	Install two new 230 kV		
b2970.1	positions at Ringgold for		
	230/138 kV transformers		APS (100%)
	Install new 230 kV position		
b2970.2	for Ringgold – Catoctin 230		
	kV line		APS (100%)
	Install one new 230 kV		
b2970.3	breaker at Catoctin		
	substation		APS (100%)
	Install new 230/138 kV		
	transformer at Catoctin		
b2970.4	substation. Convert		
	Ringgold – Catoctin 138 kV		
	line to 230 kV operation		APS (100%)

Required Tr	ansmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
b2970.5	Convert Garfield 138/12.5 kV		
	substation to 230/12.5 kV		APS (100%)
1.0000	Construct new Flint Run 500/138		See sub-IDs for cost
62996	kV substation		allocations
	Construct a new 500/138 kV		
	substation as a 4-breaker ring bus		
	with expansion plans for double-		
	breaker-double-bus on the 500		
	kV bus and breaker-and-a-half on		
	the 138 kV bus to provide EHV		
	source to the Marcellus shale		
	load growth area. Projected load		
	growth of additional 160 MVA to		
	current plan of 280 MVA, for a		
	total load of 440 MVA served		
h2006 1	from Waldo Run substation.		
02990.1	Construct additional 3-breaker		
	string at Waldo Run 138 kV bus.		
	Relocate the Sherwood #2 line		
	terminal to the new string.		
	Construct two single circuit Flint		
	Run - Waldo Run 138 kV lines		
	using 795 ACSR (approximately		
	3 miles). After terminal		
	relocation on new 3-breaker		
	string at Waldo Run, terminate		
	new Flint Run 138 kV lines onto		
	the two open terminals		APS (100%)
	Loop the Belmont – Harrison 500		
	kV line into and out of the new		
	Flint Run 500 kV substation (less		
b2996.2	than 1 mile). Replace primary		
	relaying and carrier sets on		
	Belmont and Harrison 500 kV		
	remote end substations		APS (100%)
	Upgrade two (2) existing 138 kV		
h2996 3	breakers (Rider 50 and #1/4		
02990.5	transformer breaker) at Glen Falls		
	with 63 kA 3000A units		APS (100%)

Required T	Transmission Enhancements An	nual Revenue Requirement	Responsible Customer(s)
	Reconductor 3.1 mile 556 ACSR portion of Cabot to Butler 138		
	kV with 556 ACSS and upgrade		
b3005	terminal equipment, 3.1 miles of		
	line will be reconductored for		
	this project. The total length of		
	the line is 7.75 miles		APS (100%)
	Replace four Yukon 500/138 kV		
1 2000	transformers with three		
63006	transformers with higher rating		APS (63.21%) / DL
	and reconfigure 500 kV bus		(36.79%)
	Reconductor the Blairsville East		
	to Social Hall 138 kV line and		
	upgrade terminal equipment -		
	AP portion. 4.8 miles total. The		
h2007 1	new conductor will be 636		
03007.1	ACSS replacing the existing 636		
	ACSR conductor. At Social Hall,		
	meters, relays, bus conductor, a		
	wave trap, circuit breaker and		
	disconnects will be replaced		APS (100%)
	Replace terminal equipment at		
	Keystone and Cabot 500 kV		
	buses. At Keystone, bus tubing		
b3010	and conductor, a wave trap, and		
	meter will be replaced. At Cabot,		
	a wave trap and bus conductor		
	will be replaced		APS (100%)
	Construct new Route 51		
b3011.1	substation and connect 10 138		
	kV lines to new substation		DL (100%)
	Upgrade terminal equipment at		
	Yukon to increase rating on		
b3011.2	Yukon to Charleroi #2 138 kV		
	line (New Yukon to Route 51 #4		APS (22.82%) / DL
	138 kV line)		(77.18%)

		1 1	
	Upgrade terminal equipment		
h2011.2	at Yukon to increase rating on		
03011.5	Yukon to Route 51 #1 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
1.2011.4	at Yukon to increase rating on		
03011.4	Yukon to Route 51 #2 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
1-2011 5	at Yukon to increase rating on		
03011.3	Yukon to Route 51 #3 138 kV		APS (22.82%) / DL
	line		(77.18%)
	Upgrade remote end relays for		
b3011.6	Yukon – Allenport – Iron		
	Bridge 138 kV line		DL (100%)
	Construct two new 138 kV		
	ties with the single structure		
	from APS's new substation to		
h2012 1	Duquesne's new substation.		
03012.1	The estimated line length is		
	approximately 4.7 miles. The		
	line is planned to use multiple		ATSI (38.21%) / DL
	ACSS conductors per phase		(61.79%)
	Construct a new Elrama –		
	Route 51 138 kV No.3 line:		
	reconductor 4.7 miles of the		
1,2012.2	existing line, and construct		
03012.5	1.5 miles of a new line to the		
	reconductored portion. Install		
	a new line terminal at APS		
	Route 51 substation		DL (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3013	Reconductor Vasco Tap to Edgewater Tap 138 kV line. 4.4 miles. The new conductor will be 336 ACSS replacing the existing 336 ACSR conductor		APS (100%)
b3015.6	Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7		DL (100%)
b3015.8	Upgrade terminal equipment at Mitchell for Mitchell – Elrama 138 kV line		APS (100%)
b3028	Upgrade substation disconnect leads at William 138 kV substation		APS (100%)
b3051.1	Ronceverte cap bank and terminal upgrades		APS (100%)
b3052	Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV		APS (100%)
b3064.3	Upgrade line relaying at Piney Fork and Bethel Park for Piney For – Elrama 138 kV line and Bethel Park – Elrama 138 kV		APS (100%)

		1 1	
b3068	Reconductor the Yukon – Westraver 138 kV line (2.8 miles), replace the line drops and relays at Yukon 138 kV and replace switches at Westraver 138 kV bus		APS (100%)
b3069	Reconductor the Westraver – Route 51 138 kV line (5.63 miles) and replace line switches at Westraver 138 kV bus		APS (100%)
b3070	Reconductor the Yukon – Route 51 #1 138 kV line (8 miles), replace the line drops, relays and line disconnect switch at Yukon 138 kV bus		APS (100%)
b3071	Reconductor the Yukon – Route 51 #2 138 kV line (8 miles) and replace relays at Yukon 138 kV bus		APS (100%)
b3072	Reconductor the Yukon – Route 51 #3 138 kV line (8 miles) and replace relays at Yukon 138 kV bus		APS (100%)
b3074	Reconductor the 138 kV bus at Armstrong substation		APS (100%)
b3075	Replace the 500/138 kV transformer breaker and reconductor 138 kV bus at Cabot substation		APS (100%)
b3076	Reconductor the Edgewater – Loyalhanna 138 kV line (0.67 mile)		APS (100%)
b3079	Replace the Wylie Ridge 500/345 kV transformer #7		ATSI (72.30%) / DL (27.70%)
b3083	Reconductor the 138 kV bus at Butler and reconductor the 138 kV bus and replace line trap at Karns City		APS (100%)

	Relocate 34.5 kV lines from	1
h2120	concreting station roof P Daul	
03128	Smith 128 kV station	ADS(1009/)
	Simul 138 KV station	APS (100%)
	Reconductor the Yukon – Smithton S_{1} – 1 – U_{1} – U_{2} – U_{2} – U_{2}	
1 2 2 1 4 1	– Shepler Hill Jct 138 kV Line.	
63214.1	Upgrade terminal equipment at	
	Yukon and replace line relaying at	APS (12.21%) / DL
	Mitchell and Charleroi	(87.79%)
b3214.2	Reconductor the Smithton – Shepler	
	Hill Jct 138 kV Line	APS (4.74%) / DL (95.26%)
	At Enon substation install a second	
b3230	138 kV, 28.8 MVAR nameplate,	
05250	capacitor and the associated 138 kV	
	capacitor switcher	APS (100%)
	Upgrade Cherry Run and Morgan	
b3240	terminals to make the transmission	
	line the limiting component	APS (100%)
	Install 138 kV, 36 MVAR capacitor	
	and a 5 uF reactor protected by a	
	138 kV capacitor switcher. Install a	
b3241	breaker on the 138 kV Junction	
	terminal. Install a 138 kV 3.5 uF	
	reactor on the existing Hardy 138	
	kV capacitor	APS (100%)
	Reconfigure Stonewall 138 kV	
	substation from its current	
1.22.42	configuration to a six-breaker,	
03242	breaker-and-a-half layout and add	
	two (2) 36 MVAR capacitors with	
	capacitor switchers	APS (100%)
	Reconductor the Shanor Manor -	
1 22 1 0	Butler 138 kV line with an upgraded	
63318	circuit breaker at Butler 138 kV	
	station	APS (100%)
	Reconductor the Charleroi - Union	
1 2 2 2 5	138 kV line and upgrade terminal	
b3325	equipment at Charleroi 138 kV	
	station	APS (100%)
L		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		II	
	Upgrade the Shingletown #82		
	230/46 kV Transformer circuit		
	by installing a 230 kV breaker		
	and disconnect switches,		
b3681	removing existing 230 kV		
	switches, replacing 46 kV		
	disconnect switches, replacing		
	limiting substation conductor,		
	and installing/replacing relays		APS (100%)
	Reconductor the existing 556.5		
	ACSR line segments on the		
	Messick Road – Ridgeley 138		
	kV line with 954 45/7 ACSR to		
b3683	achieve 308/376 MVA SN/SE		
	and 349/445 MVA WN/WE		
	ratings. Replace the remote end		
	equipment for the line. The total		
	length of the line is 5.02 miles		APS (100%)
	Replace terminal equipment at		
b3701	French's Mill and Junction 138		
	kV substations		APS (100%)
	Reconductor AA2-161 to		
b3710	Yukon 138 kV Lines #1 and #2		
b3683 b3701 b3710 b3717.1 b3738	with 954 ACSS conductor		APS (100%)
	Install a series reactor on		
b3717.1	Cheswick - Springdale 138 kV		APS (1.93%) / DL
	line		(98.07%)
	Replace limiting terminal		
b3738	equipment on Charleroi – Dry		
	Run 138 kV line		APS (100%)
	Replace limiting terminal		
b3739	equipment on Dry Run –		
	Mitchell 138 kV line		APS (100%)
	Replace limiting terminal		
b3740	equipment on Glen Falls –		
	Bridgeport 138 kV line		APS (100%)
	Replace limiting terminal		
b3741	equipment on Yukon -		
	Charleroi #1 138 kV line		APS (100%)

	D 1 1 1 1	
	Replace limiting terminal	
b3742	equipment on Yukon - Charleroi	
	#2 138 kV line	APS (100%)
	At Bedington substation:	
	Replace substation conductor.	
	wave trap Current Transformers	
	(CT's) and ungrade relaying	
	At Charry Pup substation:	
	At Chefry Kun substation.	
b3743	Replace substation conductor,	
	wave trap, CT's, disconnect	
	switches, circuit breaker and	
	upgrade relaying	
	At Marlowe substation: Replace	
	substation conductor, wave trap,	
	CT's and upgrade relaying	APS (100%)
	Replace one span of 1272 ACSR	
	from Krendale substation to	
	structure 35	
	(approximately 630 feet)	
	Replace one span of 1272 ACSR	
	from Shanor Manor to structure	
	21 (approximately 148 feet)	
	21 (approximately 148 feet)	
b3744	Keplace 12/2 ACSR fisers at	
	Krendale and Shanor Manor	
	substations	
	Replace 1272 ACSR substation	
	conductor at Krendale substation	
	Replace relaying at Krendale	
	substation	
	Revise relay settings at Butler	
	and Shanor Manor substations	APS (100%)
	Install redundant relaying at	
b3745	Carbon Center 230 kV	
00710	substation	APS (100%)
	Install redundant relaying at	
h3746	Meadow Brook 500 kV	
03740	substation	ADS (100%)
	Justall and underst releasing at	AFS (10070)
b3747	Install redundant relaying at	
	Bedington 500 kV substation	APS (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Install 138 kV breaker on the	
b3761	Ridgway 138/46 kV #2	
	Transformer	APS (100%)
	Reconductor 27.3 miles of	
	the Messick Road – Morgan	
	138 kV line from 556 ACSR	
	to 954 ACSR. At Messick	
	Road substation, replace 138	
b3772	kV wave trap, circuit	
	breaker, CT's, disconnect	
	switch, and substation	
	conductor and upgrade	
	relaying. At Morgan	
	substation, upgrade relaying	APS (100%)
	Install 33 MVAR switched	
	capacitor, 138 kV breaker,	
b3773	and associated relaying at	
	McConnellsburg 138 kV	
	substation	APS (100%)
	Adjust relay settings at	
1,2792	Riverton substation on the	
03/82	Riverton-Bethel Tap 138 kV	
	line	APS (100%)

Required II	ansinission enhancements A	linual Revenue Requireme	in Responsible Customer(s)
			Load-Ratio Share
			Allocation:
			AEC (1.65%) / AEP (14.29%)
			/ APS (5.82%) / ATSI (7.49%)
			/ BGE (4.01%) / ComEd
	Replace the Belmont		(14.06%) / Dayton (2.03%) /
	765/500 kV transformer		DEOK (3.21%) / DL (1.59%) /
	No. 5 with a new		DPL (2.55%) / Dominion
	transformer bank		(13.89%) / EKPC (2.35%) /
	consisting of three single-		JCPL (3.59%) / ME (1.81%) /
h2706.0	phase transformers and an		NEPTUNE* (0.42%) / OVEC
03/90.0	additional single phase		(0.06%) / PECO (5.11%) /
	spare transformer. The		PENELEC (1.73%) / PEPCO
	project will also replace		(3.68%) / PPL (4.43%) / PSEG
	500 kV disconnect		(5.99%) / RE (0.24%)
	switches at the Belmont		
	substation		DFAX Allocation:
			AEP (0.28%) / APS (0.15%) /
			Dayton (0.10%) / DEOK
			(0.18%) / DL (6.57%) /
			Dominion (92.68%) / EKPC
			(0.04%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

SCHEDULE 12 – APPENDIX A

(15) Commonwealth Edison Company and Commonwealth Edison Company of Indiana, Inc.

Required T	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Remove Byron SPS upon		
b2141.1	completion of Byron -		
	Wayne 345 kV		ComEd (100%)
	Replace 138 kV bus tie 1-2		
	circuit breaker, station		
b2365	conductor, relays, and a		
	wave trap at TSS 55		
	Hegewisch substation		ComEd (100%)
	Reconductor 1.4 miles of		
12266	138 kV line 0112, Kickapoo		
02300	Creek - LaSalle County		
	138kV line		ComEd (100%)
	Install a 138 kV Red Blue		
h2/15	bus tie with underground		
02413	cable and a line 15913 CB		
	at Highland Park		ComEd (100%)
	Reconductor 0.125 miles of		
b2416	the East Frankfort - Mokena		
	138 kV line L6604		ComEd (100%)
	Replace Ridgeland 138 kV		
b2417	bus tie CB and underground		
02417	cable at TSS 192 Ridgeland		
	138 kV substation		ComEd (100%)
	Reconductor 7.5 miles of		
b2418	Waukegan - Gurnee 138 kV		
	line L1607		ComEd (100%)
	Reconductor 0.33 miles of		
b2419	138 kV underground cable		
02119	on the Sawyer - Crawford		
	138 kV Blue line (L1324)		ComEd (100%)
	Replace the Skokie 138 kV		
b2465	breaker '88 L8809' with a		
	63 kA breaker		ComEd (100%)
	Replace the Skokie 138 kV		
b2466	breaker '88 L8810' with		
	63kA breaker		ComEd (100%)
	Replace the Skokie 138 kV		
b2467	breaker '88 L11416' with		
	63 kA breaker		ComEd (100%)

Required I		Annual Revenue Require	inchi Responsible Customer(s)
	Replace the Skokie 138 kV		
b2468	breaker '88 L8803' with		
	63kA breaker		ComEd (100%)
	Replace the Des Plaines 138		
b2469	kV breaker '46 11702' with		
	63 kA breaker		ComEd (100%)
	Install a new 345 kV circuit		
b2561	breaker 5-7 at Elwood		
	substation		ComEd (100%)
	Remove 2.0 miles of wood		
	poles on 138 kV line 17105,		
h2562	erect new steel structures,		
02302	and install new 1113 kcmil		
	ACSR conductor from		
	Roscoe Bert to Harlem		ComEd (100%)
10(12	Replace relays at Mazon		
02015	substation		ComEd (100%)
			AEC (0.18%) / AEP
			(18.68%) / APS (5.86%) /
			ATSI (7.85%) / BGE
			(3.32%) / ComEd (38.21%) /
			Dayton (2.76%) / DEOK
			(4.13%) / DL (2.23%) /
	Replace station equipment		Dominion (5.15%) / DPL
b2692.1	at Nelson, ESS H-471 and		(1.97%) / EKPC (1.36%) /
	Quad Cities		HTP (0.05%) / JCPL
			(0.52%) / MetED (0.04%) /
			Neptune (0.04%) / PECO
			(1.08%) / PENELEC
			(1.25%) / PEPCO (3.56%) /
			PPL (0.45%) / PSEG
			(1.17%) / RECO (0.14%)

Required T	ransmission Enhancements	Annual Revenue Requir	ement Responsible Customer(s)
b2692.2	Upgrade conductor ratings of Cordova – Nelson, Quad Cities – ESS H-471 and ESS H-471 – Nelson 345 kV lines and mitigating sag limitations		AEC (0.18%) / AEP (18.68%) / APS (5.86%) / ATSI (7.85%) / BGE (3.32%) / ComEd (38.21%) / Dayton (2.76%) / DEOK (4.13%) / DL (2.23%) / Dominion (5.15%) / DPL (1.97%) / EKPC (1.36%) / HTP (0.05%) / JCPL (0.52%) / MetED (0.04%) / Neptune (0.04%) / PECO (1.08%) / PENELEC (1.25%) / PEPCO (3.56%) / PPL (0.45%) / PSEG (1.17%) / RECO (0.14%)
b2693	Replace L7815 B phase line trap at Wayne substation		ComEd (100%)
b2699.1	Replace 5 Powerton 345 kV CB's with 2 cycle IPO breakers, install one new 345 kV CB; swap line 0302 and line 0303 bus positions; reconfigure Powerton 345 kV bus as single ring configuration		ComEd (100%)
b2699.2	Remove SPS logic at Powerton that trips generators or sectionalizes bus under normal conditions; minimal SPS logic will remain		ComEd (100%)
b2721	Goodings Grove – Balance Station Load (swap bus positions for 345 kV lines 1312 & 11620 and 345 kV lines 11604 & 11622) and replace 138 kV bus tie 2-3		ComEd (100%)

Required T	ransmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
b2728	Mitigate sag limitations on Loretto – Wilton Center 345 kV Line and replace station conductor at Wilton Center		ATSI (3.43%) / AEP (3.34%) / ComEd (92.02%) / DLCO (1.21%)
b2732.1	Cut-in of line 93505 Tazewell – Kendall 345 kV line into Dresden		ComEd (100%)
b2732.2	Raise towers to remove the sag limitations on Pontiac – Loretto 345 kV line		ComEd (100%)
b2751	Rebuild/Resag the H440 - H440 Tap 138 kV line 16914-2 (Hays Road - SW 1403 138 kV)		ComEd (100%)
b2930	Upgrade capacity on E. Frankfort – University Park 345 kV		ComEd (100%)
b2931	Upgrade substation equipment at Pontiac Midpoint station to increase capacity on Pontiac – Brokaw 345 kV line		ComEd (100%)
b2941	Build an indoor new Elk Grove 138 kV GIS substation at the point where Rolling Meadows & Schaumburg tap off from the main lines, between Landmeier and Busse. The four 345 kV circuits in the ROW will be diverted into Gas Insulated Bus (GIB) and go through the basement of the building to provide clearance for the above ground portion of the building		ComEd (100%)
b2959	Install a new 138 kV circuit 18702 from Schauff Road to Rock Falls and install a fourth breaker and a half run at Schauff Road		ComEd (100%)

b2995	Remove Davis Creek RAS	ComEd (100%)
b2997	Remove University Park North RAS	ComEd (100%)
b2998	Install a 120 MVAR 345 kV shunt inductor at Powerton (the 345 kV yard already contains an empty bus position on the ring we only need a switching breaker for the inductor)	ComEd (100%)
b2999	Rebuild the 12.36 mile Schauff Road to Nelson tap 138 kV line L15508	ComEd (100%)
b3049	Replace 345 kV breaker at Joliet substation	ComEd (100%)
b3111	Install high-speed backup clearing scheme on the E. Frankfort – Matteson 138 kV line (L6603)	ComEd (100%)
b3147	Modify 138 kV blue bus total clearing times at TSS 111 Electric Junction to eleven (11) cycles for fault on 345/138 kV Transformer 81, and to thirteen (13) cycles for faults on 138 kV Line #11106, 138 kV Line #11102 and 345/138 kV Transformer 82	ComEd (100%)
b3317	Modify backup relay clearing times at the 138 kV STA16 Waukegan station	ComEd (100%)
b3677	Rebuild a 13 mile section of 138 kV line between LaSalle and Mazon stations with 1113 ACSR or higher rated conductor	ComEd (100%)
b3711	Install 345 kV bus tie 5-20 circuit breaker in the ring at Dresden station in series with existing bus tie 5-6	ComEd (100%)

Required Tra	ansmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
b3760	At Powerton substation, replace most limiting facility 800A wave trap with 2000A wave trap on the Powerton – Towerline 138 kV line terminal		AEC (0.93%) / AEP (13.17%) / APS (5.41%) / ATSI (6.91%) / BGE (3.21%) / Dayton (1.80%) / DEOK (2.68%) / DL (1.38%) / Dominion (10.80%) / DPL (1.92%) / ECP (0.14%) / EKPC (1.40%) / HTP (0.12%) / JCPL (2.22%) / ME (1.68%) / Neptune (0.50%) / OVEC (0.02%) / PECO (4.06%) / PENELEC (2.17%) / PEPCO (3.37%) / PPL (3.41%) / PSEG (4.18%) / RE (0.14%) / MISO (28.38%)
b3775.3	Rebuild ComEd's section of 345 kV double circuit in IL from St. John to Crete (5 miles) with twin bundled 1277 ACAR conductor		Reliability Driver: ComEd (62.41%) / Dayton (37.59%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

*Neptune Regional Transmission System, LLC

**East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

Required T	Transmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
			Reliability Driver:
			ComEd (100%)
b3775.4	Rebuild 12.7 miles of 345 kV double circuit extending from Crete to E. Frankfort with twin bundled 1277 ACAR conductor		Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)
b3775.5	Replace E. Frankfort 345 kV circuit breaker "9-14" with 3150A SF6 circuit breaker		(3.93%) / RE (0.14%) Reliability Driver: ComEd (100%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

	Add three 345 kV circuit	
b3810.0	breakers to Cherry Valley	
	substation	ComEd (100%)
SCHEDULE 12 – APPENDIX A

(17) American Electric Power Service Corporation on behalf of its affiliate companies: AEP Appalachian Transmission Company, Inc.; AEP Indiana Michigan Transmission Company, Inc.; AEP Ohio Transmission Company, Inc.; AEP West Virginia Transmission Company, Inc.; Appalachian Power Company; Indiana Michigan Power Company; Kingsport Power Company; Ohio Power Company and Wheeling Power Company

	-	1	
b1570.4	Add a 345 kV breaker at Marysville station and a 0.1 mile 345 kV line extension from Marysville to the new 345/69 kV Dayton transformer		AEP (100%)
b1660.1	Cloverdale: install 6-765 kV breakers, incremental work for 2 additional breakers, reconfigure and relocate miscellaneous facilities, establish 500 kV station and 500 kV tie with 765 kV station		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEP (37.66%) / BGE (26.21%) / Dayton (0.01%) / DEOK (0.02%) / EKPC (0.01%) / PEPCO (36.09%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ira	insmission Enhancements Annu	ial Revenue Requirement	Responsible Customer(s)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
			DEOK (3.21%) / DL (1.59%) /
			DPL (2.55%) / Dominion
			(13.89%) / EKPC (2.35%) /
	Reconductor the AEP		JCPL (3.59%) / ME (1.81%) /
b1707 1	portion of the Cloverdale -		NEPTUNE* (0.42%) / OVEC
01/9/.1	Lexington 500 kV line with		(0.06%) / PECO (5.11%) /
	2-1780 ACSS		PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEP (0.06%) / BGE (19.46%) /
			Dayton (0.02%) / DEOK
			(0.04%) / Dominion (53.61%) /
			EKPC (0.02%) / PEPCO
			(26.79%)
h2055	Upgrade relay at Brues		
02033	station		AEP (100%)
	Upgrade terminal		
	equipment at Howard on		
b2122.3	the Howard - Brookside		
	138 kV line to achieve		
	ratings of 252/291 (SN/SE)		AEP (100%)
	Perform a sag study on the		
b2122.4	Howard - Brookside 138		
	kV line		AEP (100%)
h2220	Install a 300 MVAR		
02229	reactor at Dequine 345 kV		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required II	ansmission enhancements Anin	iai Kevenue Kequiremeni	Responsible Customer(s)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
			(14.06%) / Dayton (2.03%) /
	Replace existing 150		DEOK (3.21%) / DL (1.59%) /
	MVAR reactor at Amos 765		DPL (2.55%) / Dominion
h2230	kV substation on Amos - N		(13.89%) / EKPC (2.35%) /
02230	Proctorville - Hanging Rock		JCPL (3.59%) / ME (1.81%) /
	with 300 MVAR reactor		NEPTUNE* (0.42%) / OVEC
	with 500 Wiv Mic reactor		(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEP (100%)
	Install 765 kV reactor		
h2231	breaker at Dumont 765 kV		
02231	substation on the Dumont -		
	Wilton Center line		AEP (100%)
	Install 765 kV reactor		
	breaker at Marysville 765		
b2232	kV substation on the		
	Marysville - Maliszewski		
	line		AEP (100%)
	Change transformer tap		
b2233	settings for the Baker		
	765/345 kV transformer		AEP (100%)
	Loop the North Muskingum		
	- Crooksville 138 kV line		
h2252	into AEP's Philo 138 kV		
02232	station which lies		
	approximately 0.4 miles		
	from the line		AEP (100%)

Paguirad Transmission Enhancements Annual Payanua Paguirament Passansible Customer(s)

	Install an 86.4 MVAR	
b2253	capacitor bank at Gorsuch	
	138 kV station in Ohio	AEP (100%)
	Rebuild approximately 4.9	
b2254	miles of Corner - Degussa	
	138 kV line in Ohio	AEP (100%)
	Rebuild approximately 2.8	
b2255	miles of Maliszewski -	
	Polaris 138 kV line in Ohio	AEP (100%)
	Upgrade approximately 36	
	miles of 138 kV through	
b2256	path facilities between	
	Harrison 138 kV station and	
	Ross 138 kV station in Ohio	AEP (100%)
	Rebuild the Pokagon -	
	Corey 69 kV line as a	
	double circuit 138 kV line	
b2257	with one side at 69 kV and	
	the other side as an express	
	circuit between Pokagon	
	and Corey stations	AEP (100%)
	Rebuild 1.41 miles of #2	
	CU 46 kV line between	
1,2250	Tams Mountain - Slab Fork	
02238	to 138 kV standards. The	
	line will be strung with	
	1033 ACSR	AEP (100%)
	Install a new 138/69 kV	
	transformer at George	
12250	Washington 138/69 kV	
02239	substation to provide	
	support to the 69 kV system	
	in the area	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Itequilea II		au revenue requiement	
b2286	Rebuild 4.7 miles of		
	Muskingum River - Wolf		
	Creek 138 kV line and		
	remove the 138/138 kV		
	transformer at Wolf Creek		
	Station		AEP (100%)
b2287	Loop in the Meadow Lake -		
	Olive 345 kV circuit into		
	Reynolds 765/345 kV		
	station		AEP (100%)

	Establish a new 138/12 kV	
10244.1	station, transfer and	
	consolidate load from its	
62344.1	Nicholsville and Marcellus	
	34.5 kV stations at this new	
	station	AEP (100%)
	Tap the Hydramatic –	
	Valley 138 kV circuit (~	
b2344.2	structure 415), build a new	
	138 kV line (~3.75 miles) to	
	this new station	AEP (100%)
	From this station, construct	
h22112	a new 138 kV line (~1.95	
02344.3	miles) to REA's Marcellus	
	station	AEP (100%)
	From REA's Marcellus	
	station construct new 138	
b2344.4	kV line (~2.35 miles) to a	
02344.4	tap point on Valley –	
	Hydramatic 138 kV ckt	
	(~structure 434)	AEP (100%)
	Retire sections of the 138	
b2344.5	kV line in between structure	
	415 and 434 (~ 2.65 miles)	AEP (100%)
	Retire AEP's Marcellus	
	34.5/12 kV and Nicholsville	
b2344.6	34.5/12 kV stations and also	
	the Marcellus – Valley 34.5	
	kV line	AEP (100%)
	Construct a new 69 kV line	
b2345.1	from Hartford to Keeler (~8	
	miles)	AEP (100%)
	Rebuild the 34.5 kV lines	
h2345 2	between Keeler - Sister	
02343.2	Lakes and Glenwood tap	
	switch to 69 kV (~12 miles)	AEP (100%)

	Implement in - out at Keeler	
b2345.3	and Sister Lakes 34.5 kV	
	stations	AEP (100%)
	Retire Glenwood tap switch	
1.2245.4	and construct a new	
02345.4	Rotnadew station. These	
	new lines will continue to	A ED (1000/)
	Operate at 34.5 KV	AEP (100%)
	Perform a sag study for	
12246	Millwood 128 kV line	
02340	including terminal	
	aguinment ungrades	A ED (100%)
	Peplace the North Delphos	$\operatorname{AEF}(10076)$
	600A switch Rebuild	
	approximately 18.7 miles of	
h2347	138 kV line North Delphos	
02317	- S073 Reconductor the	
	line and replace the existing	
	tower structures	AEP (100%)
	Construct a new 138 kV	
	line from Richlands Station	
b2348	to intersect with the Hales	
	Branch - Grassy Creek 138	
	kV circuit	AEP (100%)
	Change the existing CT	
	ratios of the existing	
b2374	equipment along Bearskin -	
	Smith Mountain 138kV	
	circuit	AEP (100%)
	Change the existing CT	
	ratios of the existing	
b2375	equipment along East	
	Danville-Banister 138kV	
	circuit	AEP (100%)

h2276	Replace the Turner 138 kV	
02570	breaker 'D'	AEP (100%)
b2377	Replace the North Newark 138 kV breaker 'P'	AEP (100%)
b2378	Replace the Sporn 345 kV breaker 'DD'	AEP (100%)
b2379	Replace the Sporn 345 kV breaker 'DD2'	AEP (100%)
b2380	Replace the Muskingum 345 kV breaker 'SE'	AEP (100%)
b2381	Replace the East Lima 138 kV breaker 'E1'	AEP (100%)
b2382	Replace the Delco 138 kV breaker 'R'	AEP (100%)
b2383	Replace the Sporn 345 kV breaker 'AA2'	AEP (100%)
b2384	Replace the Sporn 345 kV breaker 'CC'	AEP (100%)
b2385	Replace the Sporn 345 kV breaker 'CC2'	AEP (100%)
b2386	Replace the Astor 138 kV breaker '102'	AEP (100%)
b2387	Replace the Muskingum 345 kV breaker 'SH'	AEP (100%)
b2388	Replace the Muskingum 345 kV breaker 'SI'	AEP (100%)
b2389	Replace the Hyatt 138 kV breaker '105N'	AEP (100%)
b2390	Replace the Muskingum 345 kV breaker 'SG'	AEP (100%)
b2391	Replace the Hyatt 138 kV breaker '101C'	AEP (100%)
b2392	Replace the Hyatt 138 kV breaker '104N'	AEP (100%)
b2393	Replace the Hyatt 138 kV breaker '104S'	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2394	Replace the Sporn 345 kV	
02371	breaker 'CC1'	AEP (100%)
	Install two 56.4 MVAR	
h2400	capacitor banks at the	
02407	Melmore 138 kV station in	
	Ohio	AEP (100%)
	Convert Hogan Mullin 34.5	
	kV line to 138 kV, establish	
	138 kV line between Jones	
h2410	Creek and Strawton, rebuild	
02410	existing Mullin Elwood	
	34.5 kV and terminate line	
	into Strawton station, retire	
	Mullin station	AEP (100%)
	Rebuild the 3/0 ACSR	
	portion of the Hadley -	
b2411	Kroemer Tap 69 kV line	
	utilizing 795 ACSR	
	conductor	AEP (100%)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd (14.06%)
		/ Dayton (2.03%) / DEOK
		(3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) /
1-2422	Install a 500 W VAR shuft	EKPC (2.35%) / JCPL (3.59%) /
02425	765 by station	ME (1.81%) / NEPTUNE*
	703 KV station	(0.42%) / OVEC (0.06%) /
		PECO (5.11%) / PENELEC
		(1.73%) / PEPCO (3.68%) / PPL
		(4.43%) / PSEG (5.99%) / RE
		(0.24%)
		DFAX Allocation:
		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Willow - Eureka 138 kV	
b2444	line: Reconductor 0.26 mile	
	of 4/0 CU with 336 ACSS	AEP (100%)
	Complete a sag study of	· · · · · ·
b2445	Tidd - Mahans Lake 138 kV	
	line	AEP (100%)
	Rebuild the 7-mile 345 kV	
1 2 4 4 0	line between Meadow Lake	
62449	and Reynolds 345 kV	
	stations	AEP (100%)
	Add two 138 kV circuit	· · · · · ·
1-2462	breakers at Fremont station	
62462	to fix tower contingency	
	·408_2'	AEP (100%)
	Construct a new 138/69 kV	
	Yager station by tapping 2-	
b2501	138 kV FE circuits	
	(Nottingham-Cloverdale,	
	Nottingham-Harmon)	AEP (100%)
	Build a new 138 kV line	
b2501.2	from new Yager station to	
	Azalea station	AEP (100%)
	Close the 138 kV loop back	
h2501.2	into Yager 138 kV by	
02301.5	converting part of local 69	
	kV facilities to 138 kV	AEP (100%)
	Build 2 new 69 kV exits to	
	reinforce 69 kV facilities	
h2501 4	and upgrade conductor	
02301.4	between Irish Run 69 kV	
	Switch and Bowerstown 69	
	kV Switch	AEP (100%)

	Construct new 138 kV	
	switching station	
	Nottingham tapping 6-138	
	kV FE circuits (Holloway-	
	Brookside, Holloway-	
b2502.1	Harmon #1 and #2,	
	Holloway-Reeds,	
	Holloway-New Stacy,	
	Holloway-Cloverdale). Exit	
	a 138 kV circuit from new	
	station to Freebyrd station	AEP (100%)
1-2502.2	Convert Freebyrd 69 kV to	
62502.2	138 kV	AEP (100%)
	Rebuild/convert Freebyrd-	
b2502.3	South Cadiz 69 kV circuit	
	to 138 kV	AEP (100%)
h2502 4	Upgrade South Cadiz to 138	
02302.4	kV breaker and a half	AEP (100%)
	Replace the Sporn 138 kV	
b2530	breaker 'G1' with 80 kA	
	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2531	breaker 'D' with 80 kA	
b2502.2 b2502.3 b2502.4 b2530 b2531 b2532 b2533 b2533	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2532	breaker 'O1' with 80 kA	
	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2533	breaker 'P2' with 80 kA	
	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2534	breaker 'U' with 80 kA	
	breaker	 AEP (100%)
	Replace the Sporn 138 kV	
b2535	breaker 'O' with 80 kA	
	breaker	AEP (100%)

	Replace the Sporn 138 kV	
b2536	breaker 'O2' with 80 kA	
	breaker	AEP (100%)
	Replace the Robinson Park	
	138 kV breakers A1, A2,	
b2537	B1, B2, C1, C2, D1, D2,	
	E1, E2, and F1 with 63 kA	
	breakers	AEP (100%)
	Reconductor 0.5 miles	
	Tiltonsville – Windsor 138	
1 2 5 5 5	kV and string the vacant	
02000	side of the 4.5 mile section	
	using 556 ACSR in a six	
	wire configuration	AEP (100%)
	Install two 138 kV prop	
	structures to increase the	
1.2550	maximum operating	
02556	temperature of the Clinch	
	River- Clinch Field 138 kV	
	line	AEP (100%)
	Temporary operating	
	procedure for delay of	
	upgrade b1464. Open the	
	Corner 138 kV circuit	
	breaker 86 for an overload	
h2581	of the Corner – Washington	
02381	MP 138 kV line. The tower	
	contingency loss of	
	Belmont – Trissler 138 kV	
	and Belmont – Edgelawn	
	138 kV should be added to	
	Operational contingency	AEP (100%)

	Construct a new 69 kV line approximately 2.5 miles from	
1 2501	Colfax to Drewry's. Construct	
62591	a new Drewry's station and	
	install a new circuit breaker at	
	Colfax station.	AEP (100%)
	Rebuild existing East	
	Coshocton – North Coshocton	
	double circuit line which	
b2592	contains Newcomerstown – N.	
	Coshocton 34.5 kV Circuit	
	and Coshocton – North	
	Coshocton 69 kV circuit	AEP (100%)
	Rebuild existing West Bellaire	
	– Glencoe 69 kV line with 138	
b2593	kV & 69 kV circuits and	
	install 138/69 kV transformer	
	at Glencoe Switch	AEP (100%)
	Rebuild 1.0 mile of Brantley –	
h2594	Bridge Street 69 kV Line with	
02374	1033 ACSR overhead	
	conductor	AEP (100%)
	Rebuild 7.82 mile Elkhorn	
b2595 1	City – Haysi S.S 69 kV line	
02375.1	utilizing 1033 ACSR built to	
	138 kV standards	AEP (100%)
	Rebuild 5.18 mile Moss –	
h2595.2	Haysi SS 69 kV line utilizing	
02375.2	1033 ACSR built to 138 kV	
	standards	AEP (100%)
	Move load from the 34.5 kV	
	bus to the 138 kV bus by	
b2596	installing a new 138/12 kV XF	
	at New Carlisle station in	
	Indiana	AEP (100%)

	Rebuild approximately 1		
	mi. section of Dragoon-		
	Virgil Street 34.5 kV line		
	between Dragoon and		
b2597	Dodge Tap switch and		
	replace Dodge switch		
	MOAB to increase thermal		
	capability of Dragoon-		
	Dodge Tap branch		AEP (100%)
	Rebuild approximately 1		
	mile section of the Kline-		
	Virgil Street 34.5 kV line		
h2508	between Kline and Virgil		
02398	Street tap. Replace MOAB		
	switches at Beiger, risers at		
	Kline, switches and bus at		
	Virgil Street		AEP (100%)
	Rebuild approximately 0.1		
b2599	miles of 69 kV line between		
	Albion and Albion tap		AEP (100%)
b2600	Rebuild Fremont – Pound		
02000	 Rebuild approximately 1 mi. section of Dragoon- Virgil Street 34.5 kV line between Dragoon and replace Dodge ap switch and replace Dodge switch MOAB to increase thermal capability of Dragoon- Dodge Tap branch Rebuild approximately 1 mile section of the Kline- Virgil Street 34.5 kV line between Kline and Virgil Street tap. Replace MOAB switches at Beiger, risers at Kline, switches and bus at Virgil Street Rebuild approximately 0.1 miles of 69 kV line between Albion and Albion tap Rebuild Fremont – Pound line as 138 kV Fremont Station Improvements Replace MOAB towards D1.1 Beaver Creek with 138 kV breaker D1.2 Clinch River with 138 kV breaker D1.3 Replace 138 kV Breaker A with new bus-tie breaker 	AEP (100%)	
h2601	Fremont Station		
02001	reconict approximately 1 mi. section of Dragoon- Virgil Street 34.5 kV line between Dragoon and 597 Dodge Tap switch and replace Dodge switch MOAB to increase thermal capability of Dragoon- Dodge Tap branch Rebuild approximately 1 mile section of the Kline- Virgil Street 34.5 kV line between Kline and Virgil Street tap. Replace MOAB switches at Beiger, risers at Kline, switches and bus at Virgil Street Rebuild approximately 0.1 miles of 69 kV line between Albion and Albion tap 500 Rebuild Fremont – Pound line as 138 kV 501 Fremont Station Improvements 601 Replace MOAB towards 611.1 Beaver Creek with 138 kV breaker 612.2 Clinch River with 138 kV breaker 613.3 Replace 138 kV Breaker A with new bus-tie breaker 61.3 Replace 138 kV Breaker A with new bus-tie breaker 61.4 8		AEP (100%)
b2599 b2600 b2601 b2601.1	Replace MOAB towards		
b2601.1	Beaver Creek with 138 kV		
b2598 b2599 b2600 b2601 b2601.1 b2601.2	breaker		AEP (100%)
	Replace MOAB towards		
b2601.2	Clinch River with 138 kV		
	breaker		AEP (100%)
h2601 2	Replace 138 kV Breaker A		
02001.5	with new bus-tie breaker		AEP (100%)
	Re-use Breaker A as high		
b2601.4	side protection on		
	transformer #1		AEP (100%)

	Install two (2) circuit switchers	
b2601 5	on high side of transformers $#2$	
02001.0	and 3 at Fremont Station	AEP (100%)
	Install 138 kV breaker F2 at	
b2602.1	North Proctorville	AEP (100%)
	Construct 2.5 Miles of 138 kV	
	1033 ACSR from East	
b2602.2	Huntington to Darrah 138 kV	
	substations	AEP (100%)
	Install breaker on new line exit	
b2602.3	at Darrah towards East	
0200210	Huntington	AEP (100%)
	Install 138 kV breaker on new	
b2602.4	line at East Huntington towards	
	Darrah	AEP (100%)
	Install 138 kV breaker at East	
b2602.5	Huntington towards North	
	Proctorville	AEP (100%)
h2602	Roona Aras Improvements	
02003	Boolie Area Improvements	AEP (100%)
	Purchase approximately a	
b2603-1	200X300 station site near	
02005.1	Slaughter Creek 46 kV station	
	(Wilbur Station)	AEP (100%)
	Install 3 138 kV circuit	
b2603.2	breakers, Cabin Creek to	
	Hernshaw 138 kV circuit	AEP (100%)
	Construct 1 mi. of double	
	circuit 138 kV line on Wilbur –	
	Boone 46 kV line with 1590	
b2603 3	ACSS 54/19 conductor @ 482	
02005.5	Degree design temp. and 1-159	
	12/7 ACSR and one 86	
	Sq.MM. 0.646" OPGW Static	
	wires	AEP (100%)
b2604	Bellefonte Transformer	
	Addition	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

AEP Service Corporation on behalf of its Affiliate Companies: AEP Indiana Michigan Transmission Company, AEP Ohio Transmission Company, AEP West Virginia Transmission Company, Appalachian Power Company, Indiana Michigan Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company (cont.)

b2604.1miles of the 69 kV line between Millbrook Park and Franklin FurnaceAEP (100%)At Millbrook Park station, add a new 138/69 kV Transformer #2 (90 MVA) with 3000 A 40 kA breakersAEP (100%)b2604.2on the high and low side. Replace the 600 A MOAB switch and ad a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)b2604.3Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.4Replace the Wheelersburg 69 kV station with a new 138/12 kV station (Sadiq switch)AEP (100%)b2604.5Replace the Wheelersburg 69 kV station with a new 138/12 kV station with a 3000 A Jake P (100%)AEP (100%)		Remove approximately 11.32	
between Millbrook Park and Franklin Furnace AEP (100%) At Millbrook Park station, add a new 138/69 kV Transformer #2 (90 MVA) with 3000 A 40 kA breakers on the high and low side. Replace the 600 A MOAB switch and add a 3000 A circuit switcher on the high side of Transformer #1 AEP (100%) Replace the 600 A MOAB switch and add a 3000 A circuit switcher on the high side of Transformer #1 AEP (100%) Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV station AEP (100%) b2604.4 Tie Cottrell switch into the Millbrook Park and East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA) AEP (100%) b2604.5 Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadig switch and a 2000 A 138 kV MOAB facing Althea AEP (100%)	b2604_1	miles of the 69 kV line	
Franklin FurnaceAEP (100%)At Millbrook Park station, add a new 138/69 kV Transformer #2 (90 MVA) with 3000 A 40 kA breakers on the high and low side. Replace the 600 A MOAB switch and ad a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)b2604.2Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.3Tie Cottrell switch into the Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Install a new 2000 A 3-way POP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.5Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	02007.1	between Millbrook Park and	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		Franklin Furnace	AEP (100%)
b2604.2 = b2604.2 b2604.3 b2604.4 b2604.5 b2604.5 b2604.5 b2604.5 b2604.5 b2604.5 b2604.5 b2604.5 b2604.4 b2604.4 b2604.4 b2604.4 b2604.5 b2604.5 b2604.5 b2604.6 b2		At Millbrook Park station,	
b2604.2Transformer #2 (90 MVA) with 3000 A 40 kA breakers on the high and low side. Replace the 600 A MOAB switch and add a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)Tie Cottrell switch into the Millbrook Park - East 		add a new 138/69 kV	
b2604.2with 3000 A 40 kA breakers on the high and low side. Replace the 600 A MOAB switch and ad a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadig switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Swetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Transformer #2 (90 MVA)	
b2604.2on the high and low side. Replace the 600 A MOAB switch and add a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)Tie Cottrell switch into the Millbrook Park - East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)AEP (100%)Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		with 3000 A 40 kA breakers	
Replace the 600 A MOAB switch and add a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park - East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way POP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.2	on the high and low side.	
switch and add a 3000 A circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Replace the 600 A MOAB	
circuit switcher on the high side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		switch and add a 3000 A	
side of Transformer #1AEP (100%)Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)AEP (100%)b2604.6Win a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		circuit switcher on the high	
Replace Sciotoville 69 kV station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)Tie Cottrell switch into the Millbrook Park – EastAEP (100%)b2604.4Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		side of Transformer #1	AEP (100%)
b2604.3station with a new 138/12 kV in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Replace Sciotoville 69 kV	
b2604.3in-out station (Cottrell) with 2000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		station with a new 138/12 kV	
b2004.32000 A line MOABs facing Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)AEP (100%)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.3	in-out station (Cottrell) with	
Millbrook Park and East Wheelersburg 138 kV stationAEP (100%)Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)AEP (100%)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.3	2000 A line MOABs facing	
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b2604.4Tie Cottrell switch into the Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Wheelersburg 138 kV station	AEP (100%)
b2604.4Millbrook Park – East Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way POP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Tie Cottrell switch into the	
b2604.4Wheelersburg 138 kV circuit by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way POP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Millbrook Park – East	
b2004.4by constructing 0.50 mile of line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way POP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)b2604.6Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.4	Wheelersburg 138 kV circuit	
line using 795 ACSR 26/7 Drake (SE 359 MVA)AEP (100%)Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)AEP (100%)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	02004.4	by constructing 0.50 mile of	
Drake (SE 359 MVA)AEP (100%)b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		line using 795 ACSR 26/7	
b2604.5Install a new 2000 A 3-way PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum) with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Drake (SE 359 MVA)	AEP (100%)
b2604.5PoP switch outside of Texas Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)KV in-out station (Sweetgum)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Install a new 2000 A 3-way	
b2004.3Eastern 138 kV substation (Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)kV in-out station (Sweetgum)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.5	PoP switch outside of Texas	
(Sadiq switch)AEP (100%)Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)kVb2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	02004.5	Eastern 138 kV substation	
Replace the Wheelersburg 69 kV station with a new 138/12 kV in-out station (Sweetgum)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		(Sadiq switch)	AEP (100%)
kV station with a new 138/12 kV in-out station (Sweetgum)b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		Replace the Wheelersburg 69	
kV in-out station (Sweetgum)b2604.6with a 3000 A 40 kA breakerfacing Sadiq switch and a2000 A 138 kV MOABfacing AltheaAEP (100%)		kV station with a new 138/12	
b2604.6with a 3000 A 40 kA breaker facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)		kV in-out station (Sweetgum)	
facing Sadiq switch and a 2000 A 138 kV MOAB facing AltheaAEP (100%)	b2604.6	with a 3000 A 40 kA breaker	
2000 A 138 kV MOAB facing AltheaAEP (100%)		facing Sadiq switch and a	
facing Althea AEP (100%)		2000 A 138 kV MOAB	
		facing Althea	AEP (100%)

	Build approximately 1.4	
	miles of new 138 kV line	
	using 795 ACSR 26/7	
b2604.7	Drake (SE 359 MVA)	
	between the new Sadiq	
	switch and the new	
	Sweetgum 138 kV station	AEP (100%)
1-2604.9	Remove the existing 69 kV	
build approximately 1.4miles of new 138 kV lineusing 795 ACSR 26/7b2604.7Drake (SE 359 MVA)between the new Sadiqswitch and the newSweetgum 138 kV stationb2604.8Remove the existing 69 kVHayport Road switchRebuild approximately 2.3miles along existing Right- Of-Way from Sweetgum to the Hayport Road switch 69 kV location as 138 kV single circuit and rebuild approximately 2.0 miles from the Hayport Road switch to Althea 69 kV with double circuit 138 kV construction, one side operated at 69 kV to continue service to K.O. Wheelersburg, using 795 ACSR 26/7 Drake (SE 359 MVA)b2604.10b2604.10A 40 kA circuit breaker and the 69 kV side will be a	AEP (100%)	
	Rebuild approximately 2.3	
	miles along existing Right-	
	Of-Way from Sweetgum to	
	the Hayport Road switch 69	
	kV location as 138 kV	
	single circuit and rebuild	
	approximately 2.0 miles	
1.2(04.0	from the Hayport Road	
62604.9	switch to Althea 69 kV with	
	double circuit 138 kV	
	construction, one side	
	operated at 69 kV to	
	continue service to K.O.	
	Wheelersburg, using 795	
	ACSR 26/7 Drake (SE 359	
	MVA)	AEP (100%)
	Build a new station (Althea)	
	with a 138/69 kV, 90 MVA	
	transformer. The 138 kV	
12604 10	side will have a single 2000	
02004.10	A 40 kA circuit breaker and	
	the 69 kV side will be a	
	2000 A 40 kA three breaker	
	ring bus	AEP (100%)
	Remote end work at	
b2604.11	Hanging Rock, East	
02004.11	Wheelersburg and North	
	Haverhill 138 kV	AEP (100%)

1		I	
	Rebuild and reconductor Kammer – George		
	Washington 69 kV circuit and		
12(05	George Washington –		
62605	Moundsville ckt #1, designed		
	for 138 kV. Upgrade limiting		
	equipment at remote ends and		
	at tap stations		AEP (100%)
4	Convert Bane –		
b2606	Hammondsville from 23 kV to		
	69 kV operation		AEP (100%)
b2607	Pine Gap Relay Limit Increase		AEP (100%)
1.2.000			
62608	Richlands Relay Upgrade		AEP (100%)
	Thorofare – Goff Run –		
b2609	Powell Mountain 138 kV		
	Build		AEP (100%)
b2610	Rebuild Pax Branch –		
02010	Scaraboro as 138 kV		AEP (100%)
b2611	Skin Fork Area Improvements		AED (100%)
	New 138/46 kV station near		ALI (10070)
b2611.1	Skin Fork and other		
0201111	components		AEP (100%)
	Construct 3.2 miles of 1033		
	ACSR double circuit from		
b2611.2	new Station to cut into		
	Sundial-Baileysville 138 kV		
	line		AEP (100%)
	Replace metering BCT on		
	Tanners Creek CB T2 with a		
10(24.1	slip over CT with higher		
b2634.1	thermal rating in order to		
	remove 1195 MVA limit on		
	Tachity (Miami Fort-Tanners		AED (1000/)
	Creek 343 KV line)		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		1	1
b2643	Replace the Darrah 138 kV breaker 'L' with 40 kA		
	rated breaker		AEP (100%)
b2645	Ohio Central 138 kV Loop		AEP (100%)
b2667	Replace the Muskingum 138 kV bus # 1 and 2		AEP (100%)
b2668	Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductor		AEP (98.19%) / OVEC (1.81%)
b2668.1	Replace the bus/risers at Dequine 345 kV station		AEP (100%)
b2669	Install a second 345/138 kV transformer at Desoto		AEP (100%)
b2670	Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)		AEP (100%)
b2671	Replace/upgrade/add terminal equipment at Bradley, Mullensville, Pinnacle Creek, Itmann, and Tams Mountain 138 kV substations. Sag study on Mullens – Wyoming and Mullens – Tams Mt. 138 kV circuits		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd
		(14.06%) / Dayton (2.03%) /
		DEOK (3.21%) / DL (1.59%) /
	Lestalla + (-450) MVAD	DPL (2.55%) / Dominion
b2687.1	SVC at Laskage Formy 765	(13.89%) / EKPC (2.35%) /
	SVC at Jackson's Ferry 705	JCPL (3.59%) / ME (1.81%) /
	KV Substation	NEPTUNE* (0.42%) / OVEC
		(0.06%) / PECO (5.11%) /
		PENELEC (1.73%) / PEPCO
		(3.68%) / PPL (4.43%) / PSEG
		(5.99%) / RE (0.24%)
		DFAX Allocation:
		AEP (100%)

b2687.2Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford - Jacksons Ferry 765 kV lineLoad-Ratio Share Allocation: AEC (1.65%) / AFS (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / DDH (2.55%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville - East DanvilleAEP (100%)	Required IT	ansmission Enhancements Annu	iai Revenue Requirement	Responsible Customer(s)
b2687.2AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville - East Danville 138 kV circuitAEP (100%)				Load-Ratio Share Allocation:
b2687.2APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PEC (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville - East DanvilleAEP (100%)				AEC (1.65%) / AEP (14.29%) /
b2687.2BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PEC (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville = Last Danville 138 kV circuitAEP (100%)				APS (5.82%) / ATSI (7.49%) /
b2687.2Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV lineDEL (2.55%) / DDL (1.59%) / DPL (2.55%) / DDL (2.55%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville - East Danville 138 kV circuitAEP (100%)				BGE (4.01%) / ComEd
b2687.2Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV lineDECK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)				(14.06%) / Dayton (2.03%) /
b2687.2DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville = East Danville 138 kV circuitAEP (100%)		Install a 300 MVAP shunt		DEOK (3.21%) / DL (1.59%) /
b2687.2Broadford end of the Broadford – Jacksons Ferry 765 kV line(13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedMEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		line reactor on the		DPL (2.55%) / Dominion
b2007/2Broadford – Jacksons Ferry 765 kV lineJCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville – East Danville 138 kV circuitAEP (100%)	h2687.2	Broadford end of the		(13.89%) / EKPC (2.35%) /
blockloadJackson's FerryNEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)	02007.2	Broadford – Jacksons Ferry		JCPL (3.59%) / ME (1.81%) /
b2697.1 b2697.2 b27.2		765 kV line		NEPTUNE* (0.42%) / OVEC
b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedMitigate violations (AEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)				(0.06%) / PECO (5.11%) /
b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedMEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)				PENELEC (1.73%) / PEPCO
b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)				(3.68%) / PPL (4.43%) / PSEG
b2697.1Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)				(5.99%) / RE (0.24%)
Image: box of the second sec				DFAX Allocation:
Mitigate violationsMitigate violationsidentified by sag study tooperate Fieldale-Thornton-operate Fieldale-Thornton-Franklin 138 kV overheadline conductor at its max.operating temperature. 6potential line crossings tobe addressedbe addressedAEP (100%)Barville substations toimprove thermal capacity ofDanville – East DanvilleAEP (100%)				AEP (100%)
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b2697.1operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		identified by sag study to		
b2697.1Franklin 138 kV overhead line conductor at its max. operating temperature. 6 potential line crossings to be addressedAEP (100%)AEP (100%)Beplace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		operate Fieldale-Thornton-		
b2697.1 line conductor at its max. operating temperature. 6 potential line crossings to be addressed AEP (100%) Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuit	b2607 1	Franklin 138 kV overhead		
operating temperature. 6 potential line crossings to be addressedAEP (100%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)	02077.1	line conductor at its max.		
potential line crossings to be addressedAEP (100%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		operating temperature. 6		
be addressedAEP (100%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		potential line crossings to		
Beglace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		be addressed		AEP (100%)
b2697.2at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		Replace terminal equipment		
b2697.2Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuitAEP (100%)		at AEP's Danville and East		
b2097.2 improve thermal capacity of Danville – East Danville 138 kV circuit AEP (100%)	h2607.2	Danville substations to		
Danville – East Danville138 kV circuitAEP (100%)	02097.2	improve thermal capacity of		
138 kV circuit AEP (100%)		Danville – East Danville		
		138 kV circuit		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

· •	Deplace relays at AED's	
	Classendala and Jackson's	
	Cloverdale and Jackson's	
b2698	Ferry substations to improve	
	the thermal capacity of	
	Cloverdale – Jackson's Ferry	
	765 kV line	AEP (100%)
	Construct Herlan station as	
	breaker and a half	
b2701.1	configuration with 9-138 kV	
	CB's on 4 strings and with 2-	
	28.8 MVAR capacitor banks	AEP (100%)
	Construct new 138 kV line	
	from Herlan station to Blue	
1.2701.2	Racer station. Estimated	
62/01.2	approx. 3.2 miles of 1234	
	ACSS/TW Yukon and	
	OPGW	AEP (100%)
	Install 1-138 kV CB at Blue	
b2701.3	Racer to terminate new	
02701.3	Herlan circuit	AEP (100%)
	Rebuild/upgrade line	
b2714	between Glencoe and	
b2701.1 b2701.2 b2701.3 b2714 b2715 b2727	Willow Grove Switch 69 kV	AEP (100%)
	Build approximately 11.5	
	miles of 34.5 kV line with	
10717	556.5 ACSR 26/7 Dove	
b2715	conductor on wood poles	
	from Flushing station to	
	Smyrna station	AEP (100%)
<u> </u>	Replace the South Canton	(20070)
	138 kV breakers 'K', 'J'	
b2727	'11' and '12' with 80 kA	
	breakers	AEP (100%)
	orounois	

Convert the Sunnyside – East Sparta – Malvern 23 kV	
East Sparta – Malvern 23 kV	
b2731 sub-transmission network to	
69 kV. The lines are already	
built to 69 kV standards AEP (100%)
Replace South Canton 138	
b2733 kV breakers 'L' and 'L2'	
with 80 kA rated breakers AEP (100%)
Retire Betsy Layne	
138/69/43 kV station and	
replace it with the greenfield	
52/30.1 Stanville station about a half	
mile north of the existing	
Betsy Layne station AEP (100%)
Relocate the Betsy Layne	
capacitor bank to the	
b2750.2 Stanville 69 kV bus and	
increase the size to 14.4	
MVAR AEP (100%)
Replace existing George	
Washington station 138 kV	
yard with GIS 138 kV	
breaker and a half yard in	
b2/33.1 existing station footprint.	
Install 138 kV revenue	
metering for new IPP	
connection AEP (100%)
Replace Dilles Bottom 69/4	
kV Distribution station as	
breaker and a half 138 kV	
yard design including AEP	
Distribution facilities but	
initial configuration will	
constitute a 3 breaker ring	
bus AEP (100%)

	Connect two 138 kV 6-wired	
	circuits from "Point A"	
	(currently de-energized and	
	owned by FirstEnergy) in	
h2752.2	circuit positions previously	
02755.5	designated Burger #1 &	
	Burger #2 138 kV. Install	
	interconnection settlement	
	metering on both circuits	
	exiting Holloway	AEP (100%)
	Build double circuit 138 kV	
	line from Dilles Bottom to	
	"Point A". Tie each new	
	AEP circuit in with a 6-wired	
b2753.6	line at Point A. This will	
	create a Dilles Bottom –	
	Holloway 138 kV circuit and	
	a George Washington –	
	Holloway 138 kV circuit	AEP (100%)
	Retire line sections (Dilles	
	Bottom – Bellaire and	
	Moundsville – Dilles Bottom	
	69 kV lines) south of	
b27537	FirstEnergy 138 kV line	
02755.7	corridor, near "Point A". Tie	
	George Washington –	
	Moundsville 69 kV circuit to	
	George Washington – West	
	Bellaire 69 kV circuit	AEP (100%)
	Rebuild existing 69 kV line	
	as double circuit from	
	George Washington – Dilles	
b2753.8	Bottom 138 kV. One circuit	
0270010	will cut into Dilles Bottom	
	138 kV initially and the other	
	will go past with future plans	
	to cut in	AEP (100%)

		1
	Perform a Sag Study of the	
h2760	Saltville – Tazewell 138 kV	
02700	line to increase the thermal	
	rating of the line	AEP (100%)
	Perform a Sag Study of the	
h2761 2	Hazard – Wooten 161 kV line	
02/01.2	to increase the thermal rating	
	of the line	AEP (100%)
	Rebuild the Hazard – Wooton	
h2761 2	161 kV line utilizing 795 26/7	
02701.5	ACSR conductor (300 MVA	
	rating)	AEP (100%)
	Perform a Sag Study of Nagel	
12762	– West Kingsport 138 kV line	
02702	to increase the thermal rating	
	of the line	AEP (100%)
	Reconductor the entire	
b2776	Dequine – Meadow Lake 345	
	kV circuit #2	AEP (98.19%) / OVEC (1.81%)
	Reconductor the entire	
b2777	Dequine – Eugene 345 kV	
	circuit #1	AEP (100%)
	Construct a new 138 kV	
h2770 1	station, Campbell Road,	
02779.1	tapping into the Grabill –	
	South Hicksville138 kV line	AEP (100%)
	Reconstruct sections of the	
	Butler-N.Hicksville and	
h2770.2	Auburn-Butler 69 kV circuits	
02779.2	as 138 kV double circuit and	
	extend 138 kV from	
	Campbell Road station	AEP (100%)

1 2770 2	Construct a new 345/138 kV	
	SDI Wilmington Station	
	which will be sourced from	
02779.3	Collingwood 345 kV and	
	serve the SDI load at 345 kV	
	and 138 kV, respectively	AEP (100%)
	Loop 138 kV circuits in-out	
	of the new SDI Wilmington	
	138 kV station resulting in a	
	direct circuit to Auburn 138	
	kV and an indirect circuit to	
b2779.4	Auburn and Rob Park via	
	Dunton Lake, and a circuit to	
	Campbell Road; Reconductor	
	138 kV line section between	
	Dunton Lake – SDI	
	Wilmington	AEP (100%)
h2770 5	Expand Auburn 128 kV bus	
02779.5	Expand Auburn 158 KV bus	AEP (100%)
	Construct a 345 kV ring bus	
h2770.6	at Dunton Lake to serve Steel	
02779.0	Dynamics, Inc. (SDI) load at	
	345 kV via two (2) circuits	AEP (100%)
h2770 7	Retire Collingwood 345 kV	
02779.7	station	AEP (100%)
	Reconductor 0.53 miles (14	
	spans) of the Kaiser Jct Air	
	Force Jct. Sw section of the	
1,2797	Kaiser - Heath 69 kV	
02/8/	circuit/line with 336 ACSR to	
	match the rest of the circuit	
	(73 MVA rating, 78%	
	loading)	AEP (100%)

Required II		i Revenue Requirement	Responsible Customer(s)
	Install a new 3-way 69 kV		
	line switch to provide service		
	to AEP's Barnesville		
b2788	distribution station. Remove a		
	portion of the #1 copper T-		
	Line from the 69 kV through-		
	path		AEP (100%)
	Rebuild the Brues - Glendale		
b2789	Heights 69 kV line section (5		
	miles) with 795 ACSR (128		
	MVA rating, 43% loading)		AEP (100%)

Required Ir	ansmission Enhancements	Annual Revenue Requirer	nent Responsible Customer(s)
	Install a 3 MVAR, 34.5 kV		
b2790	cap bank at Caldwell		
	substation		AEP (100%)
h 2701	Rebuild Tiffin – Howard, new		
02/91	transformer at Chatfield		AEP (100%)
	Rebuild portions of the East		
	Tiffin - Howard 69 kV line		
	from East Tiffin to West		
b2791.1	Rockaway Switch (0.8 miles)		
	using 795 ACSR Drake		
	conductor (129 MVA rating,		
	50% loading)		AEP (100%)
	Rebuild Tiffin - Howard 69		
	kV line from St. Stephen's		
	Switch to Hinesville (14.7		
b2791.2	miles) using 795 ACSR		
	Drake conductor (90 MVA		
	rating, non-conductor limited,		
	38% loading)		AEP (100%)
	New 138/69 kV transformer		
b2791.3	with 138/69 kV protection at		
	Chatfield		AEP (100%)
b2701 /	New 138/69 kV protection at		
02/91.4	existing Chatfield transformer		AEP (100%)
	Replace the Elliott		
	transformer with a 130 MVA		
	unit, reconductor 0.42 miles		
	of the Elliott – Ohio		
h2702	University 69 kV line with		
62792	556 ACSR to match the rest		
	of the line conductor (102		
	MVA rating, 73% loading)		
	and rebuild 4 miles of the		
	Clark Street – Strouds R		AEP (100%)

Annual Devenue Requirements Annual Devenue Requirement Devenue ible Customer(s) P

Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Energize the spare Fremont Center		
12702	138/69 kV 130 MVA transformer		
02793	#3. Reduces overloaded facilities to		
	46% loading		AEP (100%)
	Construct new 138/69/34 kV		
	station and 1-34 kV circuit		
h2704	(designed for 69 kV) from new		
02/94	station to Decliff station,		
	approximately 4 miles, with 556		
	ACSR conductor (51 MVA rating)		AEP (100%)
	Install a 34.5 kV 4.8 MVAR		
b2795	capacitor bank at Killbuck 34.5 kV		
	station		AEP (100%)
	Rebuild the Malvern - Oneida		
h2706	Switch 69 kV line section with 795		
02790	ACSR (1.8 miles, 125 MVA rating,		
	55% loading)		AEP (100%)
	Rebuild the Ohio Central -		
	Conesville 69 kV line section (11.8		
	miles) with 795 ACSR conductor		
b2797	(128 MVA rating, 57% loading).		
	Replace the 50 MVA Ohio Central		
	138/69 kV XFMR with a 90 MVA		
	unit		AEP (100%)
	Install a 14.4 MVAR capacitor		
	bank at West Hicksville station.		
b2798	Replace ground switch/MOAB at		
	West Hicksville with a circuit		
	switcher		AEP (100%)
	Rebuild Valley - Almena, Almena -		
	Hartford, Riverside - South Haven		
b2799	69 kV lines. New line exit at		
	Valley Station. New transformers		
	at Almena and Hartford		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Rebuild 12 miles of Valley –		
h2700 1	Almena 69 kV line as a		
	double circuit 138/69 kV line		
	using 795 ACSR conductor		
02777.1	(360 MVA rating) to		
	introduce a new 138 kV		
	source into the 69 kV load		
	pocket around Almena station		AEP (100%)
	Rebuild 3.2 miles of Almena		
h2700.2	to Hartford 69 kV line using		
02799.2	795 ACSR conductor (90		
	MVA rating)		AEP (100%)
	Rebuild 3.8 miles of		
h27993	Riverside – South Haven 69		
02777.5	kV line using 795 ACSR		
	conductor (90 MVA rating)		AEP (100%)
	At Valley station, add new		
	138 kV line exit with a 3000		
b27994	A 40 kA breaker for the new		
02777.4	138 kV line to Almena and		
	replace CB D with a 3000 A		
	40 kA breaker		AEP (100%)
	At Almena station, install a		
	90 MVA 138/69 kV		
b2799.5	transformer with low side		
02799.5	3000 A 40 kA breaker and		
	establish a new 138 kV line		
	exit towards Valley		AEP (100%)
	At Hartford station, install a		
	second 90 MVA 138/69 kV		
b2799.6	transformer with a circuit		
	switcher and 3000 A 40 kA		
	low side breaker		AEP (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Replace Delaware 138 kV		
b2817	breaker 'P' with a 40 kA		
	breaker		AEP (100%)
	Replace West Huntington 138		
b2818	kV breaker 'F' with a 40 kA		
	breaker		AEP (100%)
	Replace Madison 138 kV		
b2819	breaker 'V' with a 63 kA		
	breaker		AEP (100%)
	Replace Sterling 138 kV		
b2820	breaker 'G' with a 40 kA		
	breaker		AEP (100%)
	Replace Morse 138 kV		
12021	breakers '103', '104', '105',		
02021	and '106' with 63 kA		
	breakers		AEP (100%)
	Replace Clinton 138 kV		
b2822	breakers '105' and '107' with		
	63 kA breakers		AEP (100%)
	Install 300 MVAR reactor at		
b2826.1	Ohio Central 345 kV		
	substation		AEP (100%)

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	Install 300 MVAR reactor at	
b2826.2	West Bellaire 345 kV	
	substation	AEP (100%)
	Upgrade the Tanner Creek –	DFAX Allocation:
b2831.1	Miami Fort 345 kV circuit	AEP (24.63%) / Dayton (38.63%)
	(AEP portion)	/ DEOK (36.74%)
	Six wire the Kyger Creek –	
h2832	Sporn 345 kV circuits #1 and	
02832	#2 and convert them to one	
	circuit	AEP (100%)
	Reconductor the Maddox	
h2833	Creek – East Lima 345 kV	
02855	circuit with 2-954 ACSS	DFAX Allocation:
	Cardinal conductor	AEP (75.78%) / Dayton (24.22%)
	Reconductor and string open	
h2834	position and sixwire 6.2 miles	
02054	of the Chemical – Capitol Hill	
	138 kV circuit	AEP (100%)
	Replace the South Canton 138	
b2872	kV breaker 'K2' with a 80 kA	
	breaker	AEP (100%)
	Replace the South Canton 138	
b2873	kV breaker "M" with a 80 kA	
	breaker	AEP (100%)
	Replace the South Canton 138	
b2874	kV breaker "M2" with a 80	
	kA breaker	AEP (100%)
h2878	Upgrade the Clifty Creek	
02070	345 kV risers	AEP (100%)
	Rebuild approximately 4.77	
	miles of the Cannonsburg –	
b2880	South Neal 69 kV line section	
	utilizing 795 ACSR	
	conductor (90 MVA rating)	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Rebuild ~1.7 miles of the		
b2881	Dunn Hollow – London 46		
	kV line section utilizing 795		
	26/7 ACSR conductor (58		
	MVA rating, non-conductor		
	limited)		AEP (100%)
	Rebuild Reusens - Peakland		
b2882	Switch 69 kV line. Replace		
	Peakland Switch		AEP (100%)
	Rebuild the Reusens -		
	Peakland Switch 69 kV line		
h2882 1	(approximately 0.8 miles)		
02002.1	utilizing 795 ACSR		
	conductor (86 MVA rating,		
	non-conductor limited)		AEP (100%)
b2882.2	Replace existing Peakland S.S		
	with new 3 way switch phase		
	over phase structure		AEP (100%)
	Rebuild the Craneco – Pardee		
	– Three Forks – Skin Fork 46		
h2883	kV line section		
02005	(approximately 7.2 miles)		
	utilizing 795 26/7 ACSR		
	conductor (108 MVA rating)		AEP (100%)
	Install a second transformer at		
	Nagel station, comprised of 3		
	single phase 250 MVA		
	500/138 kV transformers.		
b2884	Presently, TVA operates their		
02001	end of the Boone Dam –		
	Holston 138 kV		
	interconnection as normally		
	open preemptively for the loss		
	of the existing Nagel		AEP (100%)
h2885	New delivery point for City		
02003	of Jackson		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Install a new Ironman Switch		
	to serve a new delivery point		
b2885.1	requested by the City of		
	Jackson for a load increase		
	request		AEP (100%)
	Install a new 138/69 kV		
	station (Rhodes) to serve as a		
b2885.2	third source to the area to help		
	relieve overloads caused by		
	the customer load increase		AEP (100%)
	Replace Coalton Switch with		
b2885.3	a new three breaker ring bus		
	(Heppner)		AEP (100%)
	Install 90 MVA 138/69 kV		
	transformer, new transformer		
47006	high and low side 3000 A 40		
02000	kA CBs, and a 138 kV 40 kA		
	bus tie breaker at West End		
	Fostoria		AEP (100%)
	Add 2-138 kV CB's and		
	relocate 2-138 kV circuit exits		
h2887	to different bays at Morse		
02007	Road. Eliminate 3 terminal		
	line by terminating Genoa -		
	Morse circuit at Morse Road		AEP (100%)
	Retire Poston substation.		
b2888	Install new Lemaster		
	substation		AEP (100%)
62000 1	Remove and retire the Poston		
02000.1	138 kV station		AEP (100%)
	Install a new greenfield		
b2888.2	station, Lemaster 138 kV		
	Station, in the clear		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	t Responsible Customer(s)
b2888.3	Relocate the Trimble 69 kV AEP Ohio radial delivery point to 138 kV, to be served off of the Poston – Strouds Run – Crooksville 138 kV circuit via new three-way switch. Retire th	ane	
	Poston - Trimble 69 kV line		AEP (100%)
b2889	Expand Cliffview station		AEP (100%)
b2889.1	Cliffview Station: Establish 13 kV bus. Install two 138/69 kV XFRs (130 MVA), six 138 kV CBs (40 kA 3000 A) and four 6 kV CBs (40 kA 3000 A)	8 59	AEP (100%)
b2889.2	Byllesby – Wythe 69 kV: Reti all 13.77 miles (1/0 CU) of this circuit (~4 miles currently in national forest)	re	AEP (100%)
b2889.3	Galax – Wythe 69 kV: Retire 13.53 miles (1/0 CU section) of line from Lee Highway down to Byllesby. This section is currently double circuited with Byllesby – Wythe 69 kV. Terminate the southern 3/0 ACSR section into the newly opened position at Byllesby	f	AEP (100%)
b2889.4	Cliffview Line: Tap the existir Pipers Gap – Jubal Early 138 k line section. Construct double circuit in/out (~2 miles) to newly established 138 kV bus, utilizing 795 26/7 ACSR conductor	vg V	AEP (100%)

Required T	ransmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
	Rebuild 23.55 miles of the East		
b2890.1	Cambridge – Smyrna 34.5 kV		
	circuit with 795 ACSR		
	conductor (128 MVA rating)		
	and convert to 69 kV		AEP (100%)
	East Cambridge: Install a 2000		
h2800.2	A 69 kV 40 kA circuit breaker		
02090.2	for the East Cambridge –		
	Smyrna 69 kV circuit		AEP (100%)
	Old Washington: Install 69 kV		
b2890.3	2000 A two way phase over		
	phase switch		AEP (100%)
h2800 1	Install 69 kV 2000 A two way		
62890.4	phase over phase switch		AEP (100%)
	Rebuild the Midland Switch to		
	East Findlay 34.5 kV line (3.31		
b2891	miles) with 795 ACSR (63		
	MVA rating) to match other		
	conductor in the area		AEP (100%)
	Install new 138/12 kV		
	transformer with high side		
	circuit switcher at Leon and a		
	new 138 kV line exit towards		
b2892	Ripley. Establish 138 kV at the		
	Ripley station with a new 138/69)	
	kV 130 MVA transformer and		
	move the distribution load to		
	138 kV service		AEP (100%)
	Rebuild approximately 6.7 miles	;	
	of 69 kV line between Mottville		
	and Pigeon River using 795		
b2936.1	ACSR conductor (129 MVA		
	rating). New construction will be	e	
	designed to 138 kV standards		
	but operated at 69 kV		AEP (100%)
Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
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	Pigeon River Station: Replace		
	2 new 69 kV 3000 40 k		
h2936.2	breaker and upgrade existing		
02)30.2	relays towards HMD station.		
	Replace CB H with a 3000 A		
	40 kA breaker		AEP (100%)
	Replace the existing 636		````````````````````````````````
1-2027	ACSR 138 kV bus at		
02937	Fletchers Ridge with a larger		
	954 ACSR conductor		AEP (100%)
	Perform a sag mitigations on		
	the Broadford – Wolf Hills		
b2938	138 kV circuit to allow the		
	line to operate to a higher		
	maximum temperature		AEP (100%)
	Cut George Washington –		
b2958.1	Tidd 138 kV circuit into Sand		
	Hill and reconfigure Brues &		
	Warton Hill line entrances		AEP (100%)
	Add 2 138 kV 3000 A 40 kA		
b2958.2	breakers, disconnect switches,		
	and update relaying at Sand		AED (1000/)
	Hill station		AEP (100%)
12068	terminal aquinmant at Tannar		
02908	Creek station		A E D (100%)
	Replace terminal equipment		AEI (10070)
h2969	on Maddox Creek - Fast		
02707	Lima 345 kV circuit		AFP (100%)
	Ungrade terminal equipment		
	at Tanners Creek 345 kV		
b2976	station. Upgrade 345 kV bus		
	and risers at Tanners Creek		
	for the Dearborn circuit		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Replace the Twin Branch 345		
	kV breaker "JM" with 63 kA		
62088	breaker and associated		
02900	substation works including		
	switches, bus leads, control		
	cable and new DICM		AEP (100%)
	Rebuild the Torrey – South		
	Gambrinus Switch –		
h2003	Gambrinus Road 69 kV line		
02993	section (1.3 miles) with 1033		
	ACSR 'Curlew' conductor		
	and steel poles		AEP (100%)
b3000	Replace South Canton 138 kV		
	breaker 'N' with an 80 kA		
	breaker		AEP (100%)
	Replace South Canton 138 kV		
b3001	breaker 'N1' with an 80 kA		
	breaker		AEP (100%)
	Replace South Canton 138 kV		
b3002	breaker 'N2' with an 80 kA		
	breaker		AEP (100%)
	Rebuild 15.6 miles of		
b3036	Haviland - North Delphos 138		
	kV line		AEP (100%)
h3037	Upgrades at the Natrium		
03037	substation		AEP (100%)
1,2020	Reconductor the Capitol Hill		
03038	– Coco 138 kV line section		AEP (100%)
1 2020	Line swaps at Muskingum		
63039	138 kV station		AEP (100%)
	Rebuild Ravenswood –		,
	Racine tap 69 kV line section		
b3040.1	(~15 miles) to 69 kV		
	standards, utilizing 795 26/7		
	ACSR conductor		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3040.2	Rebuild existing Ripley – Ravenswood 69 kV circuit (~9 miles) to 69 kV standards, utilizing 795 26/7 ACSR conductor		AEP (100%)
b3040.3	Install new 3-way phase over phase switch at Sarah Lane station to replace the retired switch at Cottageville		AEP (100%)
b3040.4	Install new 138/12 kV 20 MVA transformer at Polymer station to transfer load from Mill Run station to help address overload on the 69 kV network		AEP (100%)
b3040.5	Retire Mill Run station		AEP (100%)
b3040.6	Install 28.8 MVAR cap bank at South Buffalo station		AEP (100%)
b3051.2	Adjust CT tap ratio at Ronceverte 138 kV		AEP (100%)
b3085	Reconductor Kammer – George Washington 138 kV line (approx. 0.08 mile). Replace the wave trap at Kammer 138 kV		AEP (100%)
b3086.1	Rebuild New Liberty – Findlay 34 kV line Str's 1–37 (1.5 miles), utilizing 795 26/7 ACSR conductor		AEP (100%)
b3086.2	Rebuild New Liberty – North Baltimore 34 kV line Str's 1- 11 (0.5 mile), utilizing 795 26/7 ACSR conductor		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirem	nent Responsible Customer(s)
1.2096.2	Rebuild West Melrose –		
	Whirlpool 34 kV line Str's		
03080.3	55–80 (1 mile), utilizing 795		
	26/7 ACSR conductor		AEP (100%)
	North Findlay station: Install		
	a 138 kV 3000A 63kA line		
h2086 1	breaker and low side 34.5 kV		
03080.4	2000A 40 kA breaker, high		
	side 138 kV circuit switcher		
	on T1		AEP (100%)
	Ebersole station: Install		
	second 90 MVA 138/69/34		
b3086.5	kV transformer. Install two		
	low side (69 kV) 2000A 40		
	kA breakers for T1 and T2		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirer	ment Responsible Customer(s)
	Rebuild Lakin – Racine Tap		
b3095	69 kV line section (9.2 miles)		
	to 69 kV standards, utilizing		
	795 26/7 ACSR conductor		AEP (100%)
	Install a 138 kV 3000A 40 kA		
	circuit switcher on the high		
b3099	side of the existing 138/34.5		
	kV transformer No.5 at		
	Holston station		AEP (100%)
	Replace the 138 kV MOAB		
	switcher "YY" with a new		
b3100	138 kV circuit switcher on the		
	high side of Chemical		
	transformer No.6		AEP (100%)
	Rebuild the 1/0 Cu. conductor		
	sections (approx. 1.5 miles) of		
	the Fort Robinson – Moccasin		
	Gap 69 kV line section		
h2101	(approx. 5 miles) utilizing		
03101	556 ACSR conductor and		
	upgrade existing relay trip		
	limit (WN/WE: 63 MVA, line		
	limited by remaining		
	conductor sections)		AEP (100%)
	Replace existing 50 MVA		
	138/69 kV transformers #1		
b3102	and #2 (both 1957 vintage) at		
	Fremont station with new 130		
	MVA 138/69 kV transformers		AEP (100%)

Required T	ransmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Install a 138/69 kV		
	transformer at Royerton		
	station. Install a 69 kV bus		
	with one 69 kV breaker		
b3103.1	toward Bosman station.		
03103.1	Rebuild the 138 kV portion		
	into a ring bus configuration		
	built for future breaker and a		
	half with four 138 kV		
	breakers		AEP (100%)
	Rebuild the		
	Bosman/Strawboard station in		
b3103.2	the clear across the road to		
03103.2	move it out of the flood plain		
	and bring it up to 69 kV		
	standards		AEP (100%)
	Retire 138 kV breaker L at		
b3103 3	Delaware station and re-		
05105.5	purpose 138 kV breaker M		
	for the Jay line		AEP (100%)
	Retire all 34.5 kV equipment		
b3103.4	at Hartford City station. Re-		
05105.4	purpose breaker M for the		
	Bosman line 69 kV exit		AEP (100%)
	Rebuild the 138 kV portion of		
	Jay station as a 6 breaker,		
	breaker and a half station re-		
	using the existing breakers		
b3103 5	"A", "B", and "G." Rebuild		
05105.5	the 69 kV portion of this		
	station as a 6 breaker ring bus		
	re-using the 2 existing 69 kV		
	breakers. Install a new 138/69		
	kV transformer		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Rebuild the 69 kV Hartford		
b3103.6	City – Armstrong Cork line		
	but instead of terminating it		
	into Armstrong Cork,		
	terminate it into Jay station		AEP (100%)
h2102 7	Build a new 69 kV line from		
03105.7	Armstrong Cork – Jay station		AEP (100%)
	Rebuild the 34.5 kV		
	Delaware – Bosman line as		
12102 0	the 69 kV Royerton –		
03103.8	Strawboard line. Retire the		
	line section from Royerton to		
	Delaware stations		AEP (100%)
	Perform a sag study on the		
	Polaris – Westerville 138 kV		
b3104	line (approx. 3.6 miles) to		
03104	increase the summer		
	emergency rating to 310		
	MVA		AEP (100%)
	Rebuild the Delaware – Hyatt		
	138 kV line (approx. 4.3		
b3105	miles) along with replacing		
	conductors at both Hyatt and		
	Delaware substations		AEP (100%)
	Perform a sag study (6.8		
	miles of line) to increase the		
	SE rating to 310 MVA. Note		
b3106	that results from the sag study		
	could cover a wide range of		
	outcomes, from no work		
	required to a complete rebuild		AEP (100%)
	Rebuild 5.2 miles Bethel –		
b3109	Sawmill 138 kV line		
	including ADSS		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requir	rement	Responsible Customer(s)
	Construct a single circuit 138			
	kV line (approx. 3.5 miles)			
	from Amlin to Dublin using			
	1033 ACSR Curlew (296			
b3112	MVA SN), convert Dublin			
	station into a ring			
	configuration, and re-			
	terminating the Britton UG			
	cable to Dublin station			AEP (100%)
	Replace existing Mullens			
	138/46 kV 30 MVA			
	transformer No.4 and			
1.2116	associated protective			
03110	equipment with a new 138/46			
	kV 90 MVA transformer and			
	associated protective			
	equipment			AEP (100%)
	Rebuild the Jay – Pennville			
	138 kV line as double circuit			
1.2110.1	138/69 kV. Build a new 9.8			
03119.1	mile single circuit 69 kV line			
	from near Pennville station to			
	North Portland station			AEP (100%)

Required	ransmission Enhancements	Annual Revenue Requirem	nent Responsible Customer(s)
	Install three (3) 69 kV breakers		
h2110.2	to create the "U" string and add		
03119.2	a low side breaker on the Jay		
	transformer 2		AEP (100%)
	Install two (2) 69 kV breakers at		
h31103	North Portland station to		
05117.5	complete the ring and allow for		
	the new line		AEP (100%)
	At Conesville 138 kV station:		
	Remove line leads to generating		
	units, transfer plant AC service		
b3129	to existing station service feeds		
	in Conesville 345/138 kV yard,		
	and separate and reconfigure		
	protection schemes		AEP (100%)
	At East Lima and Haviland 138		
h 2121	kV stations, replace line relays		
03131	and wavetrap on the East Lima -		
	Haviland 138 kV facility		AEP (100%)
	Rebuild approximately 12.3		
	miles of remaining Lark		
1.2121.1	conductor on the double circuit		
03131.1	line between Haviland and East		
	Lima with 1033 54/7 ACSR		
	conductor		AEP (100%)
	Rebuild 3.11 miles of the		<u> </u>
b3132	LaPorte Junction - New Buffalo		
	69 kV line with 795 ACSR		AEP (100%)
	Rebuild the Garden Creek –		
b3139	Whetstone 69 kV line (approx. 4		
	miles)		AEP (100%)
	Rebuild the Whetstone – Knox		
b3140	Creek 69 kV line (approx. 3.1		
	miles)		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Ar	nnual Revenue Requirement	t Responsible Customer(s)
	Rebuild the Knox Creek – Coal		
b3141	Creek 69 kV line (approx. 2.9		
	miles)		AEP (100%)
	Rebuild the 46 kV Bradley –		
	Scarbro line to 96 kV standards		
	using 795 ACSR to achieve a		
b3148-1	minimum rate of 120 MVA.		
03140.1	Rebuild the new line adjacent to		
	the existing one leaving the old		
	line in service until the work is		
	completed		AEP (100%)
	Bradley remote end station		
b3148.2	work, replace 46 kV bus, install		
	new 12 MVAR capacitor bank		AEP (100%)
	Replace the existing switch at		
b3148 3	Sun substation with a 2-way		
05110.5	SCADA-controlled motor-		
	operated air-breaker switch		AEP (100%)
	Remote end work and		
b3148.4	associated equipment at Scarbro		
	station		AEP (100%)
	Retire Mt. Hope station and		
b3148.5	transfer load to existing Sun		
	station		AEP (100%)
1 2 1 4 2	Rebuild the 2.3 mile Decatur –		
b3149	South Decatur 69 kV line using		
	556 ACSR		AEP (100%)
	Rebuild Ferguson 69/12 kV		
	station in the clear as the $138/12$		
	kV Bear station and connect it		
b3150	to an approx. I mile double		
	circuit 138 kV extension from		
	the Aviation – Ellison Road 138		
	kV line to remove the load from		
	the 69 kV line		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Rebuild the 30 mile Gateway –		
b3151.1	Wallen 34.5 kV circuit as the		
	27 mile Gateway – Wallen 69		
	kV line		AEP (100%)
1	Retire approx. 3 miles of the		
63151.2	Columbia – Whitley 34.5 kV		
	line		AEP (100%)
	At Gateway station, remove all		
1 2 1 5 1 2	34.5 kV equipment and install		
63151.3	one (1) 69 kV circuit breaker		
	for the new Whitley line		
	entrance		AEP (100%)
1 2 1 5 1 4	Rebuild Whitley as a 69 kV		
63151.4	station with two (2) lines and (1)		
	one (1) bus the circuit breaker		AEP (100%)
121515	Replace the Union 34.5 kV		
03151.5	switch with a 69 KV switch		A = D (1000/)
	Structure Deplete the Fel Diver 24.5 hV		AEP (100%)
1-2151 (Replace the Eel River 34.5 KV		
03131.0	switch with a 69 k v switch		A E D (1000/)
	structure		AEP (100%)
b3151.7	Install a 69 KV Bobay switch at		A E D (1000/)
			AEP (100%)
	Replace the Carroll and		
	with the 60 kV Snamen station		
h2151 0	Support station will have two		
03131.8	Shapper station will have two (2) line singuit breaking one (1)		
	(2) fine circuit breakers, one (1)		
	14 4 MVAP can bank		A EP (100%)
	Domovo 24.5 kV siravit		ALI (10070)
b3151.9	hronkor "AD" at Wallon station		A = D (1009/)
	Dicaker AD at watten station		AEP (10070)
h2151 10	Columbia Cotoway 60 kW		
03131.10	line		A FP (100%)
	IIIC		ALE (10070)

Required Tra	ansmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
b3151.11	Rebuild Columbia station in the clear as a 138/69 kV station with two (2) 138/69 kV transformers and 4- breaker ring buses on the high and low side. Station will reuse 69 kV breakers "J" &		A ED (1009/)
b3151.12	Rebuild the 13 miles of the Columbia – Richland 69 kV line		AEP (100%)
b3151.13	Rebuild the 0.5 mile Whitley – Columbia City No.1 line as 69 kV		AEP (100%)
b3151.14	Rebuild the 0.5 mile Whitley – Columbia City No.2 line as 69 kV		AEP (100%)
b3151.15	Rebuild the 0.6 mile double circuit section of the Rob Park – South Hicksville / Rob Park – Diebold Road as 69 kV		AEP (100%)
b3160.1	Construct an approx. 2.4 miles double circuit 138 kV extension using 1033 ACSR (Aluminum Conductor Steel Reinforced) to connect Lake Head to the 138 kV network		AEP (100%)
b3160.2	Retire the approx.2.5 miles 34.5 kV Niles – Simplicity Tap line		AEP (100%)
b3160.3	Retire the approx.4.6 miles Lakehead 69 kV Tap		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requir	rement Responsible Customer(s)
	Build new 138/69 kV drop		
	down station to feed		
	Lakehead with a 138 kV		
b3160.4	breaker, 138 kV switcher,		
	138/69 kV transformer and a		
	138 kV Motor-Operated Air		
	Break		AEP (100%)
	Rebuild the approx. 1.2 miles		
	Buchanan South 69 kV		
b3160.5	Radial Tap using 795 ACSR		
	(Aluminum Conductor Steel		
	Reinforced)		AEP (100%)
	Rebuild the approx.8.4 miles		
	69 kV Pletcher – Buchanan		
	Hydro line as the approx. 9		
b3160.6	miles Pletcher – Buchanan		
	South 69 kV line using 795		
	ACSR (Aluminum Conductor		
	Steel Reinforced)		AEP (100%)
	Install a PoP (Point-of-		
	Presence) switch at Buchanan		
b3160.7	South station with 2 line		
	MOABs (Motor-Operated Air		
	Break)		AEP (100%)

Required 7	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Retire approximately 38		
	miles of the 44 mile Clifford		
	– Scottsville 46 kV circuit.		
	Build new 138 kV "in and		
	out" to two new distribution		
	stations to serve the load		
	formerly served by Phoenix,		
	Shipman, Schuyler (AEP),		
	and Rockfish stations.		
	Construct new 138 kV lines		
b3208	from Joshua Falls – Riverville		
	(approx. 10 miles) and		
	Riverville – Gladstone		
	(approx. 5 miles). Install		
	required station upgrades at		
	Joshua Falls, Riverville and		
	Gladstone stations to		
	accommodate the new 138		
	kV circuits. Rebuild Reusen –		
	Monroe 69 kV (approx. 4		
	miles)		AEP (100%)
	Rebuild the 10.5 mile Berne –		
b3209	South Decatur 69 kV line		
	using 556 ACSR		AEP (100%)
	Replace approx. 0.7 mile		
b3210	Beatty – Galloway 69 kV line		
	with 4000 kcmil XLPE cable		AEP (100%)
b3220	Install 14.4 MVAR capacitor		
03220	bank at Whitewood 138 kV		AEP (100%)

Required Transmission Enhancements		Annual Revenue Require	ment Responsible Customer(s)
b3243	Replace risers at the Bass		
	34.5 kV station		AEP (100%)
	Rebuild approximately 9		
b3244	miles of the Robinson Park –		
	Harlan 69 kV line		AEP (100%)
	Install a low side 69 kV		
b3248	circuit breaker at the Albion		
	138/69 kV transformer #1		AEP (100%)
	Rebuild the Chatfield –		
b3249	Melmore 138 kV line		
	(approximately 10 miles) to		
	1033 ACSR conductor		AEP (100%)

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Required 7	Transmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Install a 3000A 40 kA 138 kV		
	breaker on the high side of		
	138/69 kV transformer #5 at		
b3253	the Millbrook Park station. The		
	transformer and associated bus		
	protection will be upgraded		
	accordingly		AEP (100%)
	Upgrade 795 AAC risers at the		
b3255	Sand Hill 138 kV station		
	towards Cricket Switch with		
	12/2 AAC		AEP (100%)
	Upgrade 500 MCM Cu risers at		
b3256	11dd 138 KV station towards		
	1272 A A C conductor		AED (1000/)
	Poplace two spans of 236.4		AEF (10076)
	26/7 ACSP on the Twin		
b3257	Branch AM General #2 34 5		
	kV circuit		AFP (100%)
	Install a 3000A 63 kA 138 kV		
	breaker on the high side of		
	138/69 kV transformer #2 at		
b3258	Wagenhals station. The		
	transformer and associated bus		
	protection will be upgraded		
	accordingly		AEP (100%)
	At West Millersburg station,		· · · · · ·
	replace the 138 kV MOAB on		
b3259	the West Millersburg –		
	Wooster 138 kV line with a		
	3000A 40 kA breaker		AEP (100%)
	Upgrade circuit breaker "R1"		
	at Tanners Creek 345 kV.		
b3261	Install Transient Recovery		
	Voltage capacitor to increase		//
	the rating from 50 kA to 63 kA		AEP (100%)

Required 7	Fransmission Enhancements	Annual Revenue Requir	rement Responsible Customer(s)
	At West New Philadelphia		
	station, add a high side 138		
h2260	kV breaker on the 138/69 kV		
03209	Transformer #2 along with a		
	138 kV breaker on the line		
	towards Newcomerstown		AEP (100%)
	Install 1.7 miles of 795 ACSR		
	138 kV conductor along the		
	other side of Dragoon Tap		
	138 kV line, which is		
	currently double circuit tower		
	with one position open.		
	Additionally, install a second		
h3270	138/34.5 kV transformer at		
05270	Dragoon, install a high side		
	circuit switcher on the current		
	transformer at the Dragoon		
	Station, and install two (2)		
	138 kV line breakers on the		
	Dragoon – Jackson 138 kV		
	and Dragoon – Twin Branch		
	138 kV lines		AEP (100%)
	Replace Dragoon 34.5 kV		
b3270.1	breakers "B", "C", and "D"		
	with 40 kA breakers		AEP (100%)
	Install a 138 kV circuit		
	breaker at Fremont station on		
b3271	the line towards Fremont		
05271	Center and install a 9.6		
	MVAR 69 kV capacitor bank		
	at Bloom Road station		AEP (100%)
	Install two 138 kV circuit		
h3272	switchers on the high side of		
03272	138/34.5 kV Transformers #1		
	and #2 at Rockhill station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Rebuild and convert the		
	existing 17.6 miles East		
b3273.1	Leipsic – New Liberty 34.5		
	kV circuit to 138 kV using		
	795 ACSR		AEP (100%)
	Convert the existing 34.5		
	kV equipment to 138 kV		
	and expand the existing		
	McComb station to the		
	north and east to allow for		
b3273.2	new equipment to be		
	installed. Install two (2)		
	new 138 kV box bays to		
	allow for line positions and		
	two (2) new 138/12 kV		
	transformers		AEP (100%)
	Expand the existing East		
	Leipsic 138 kV station to		
	the north to allow for		
	another 138 kV line exit to		
	be installed. The new line		
	exit will involve installing		
b3273.3	a new 138 kV circuit		
	breaker, disconnect		
	switches and the addition		
	of a new dead end structure		
	along with the extension of		
	the existing 138 kV bus		
	work		AEP (100%)
	Add one (1) 138 kV circuit		
	breaker and disconnect		
	switches in order to add an		
1.00-0.4	additional line position at		
63273.4	New Liberty 138 kV		
	station. Install line relaving		
	potential devices and retire		
	the 34.5 kV breaker 'F'		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requir	rement Responsible Customer(s)
	Rebuild approximately 8.9		
	miles of 69 kV line between		
b3274	Newcomerstown and Salt		
	Fork Switch with 556 ACSR		
	conductor		AEP (100%)
	Rebuild the Kammer Station		
b3275.1	– Cresaps Switch 69 kV line,		
	approximately 0.5 mile		AEP (100%)
	Rebuild the Cresaps Switch –		
b3275.2	McElroy Station 69 kV,		
	approximately 0.67 mile		AEP (100%)
	Replace a single span of 4/0		
	ACSR from Moundsville -		
	Natrium structure 93L to		
1.2075.2	Carbon Tap switch 69 kV		
63275.3	located between the		
	Colombia Carbon and Conner		
	Run stations. Remainder of		
	the line is 336 ACSR		AEP (100%)
	Rebuild from Colombia		
	Carbon to Columbia Carbon		
	Tap structure 93N 69 kV,		
	approximately 0.72 mile. The		
b3275.4	remainder of the line between		
	Colombia Carbon Tap		
	structure 93N and Natrium		
	station is 336 ACSR and will		
	remain		AEP (100%)
	Replace the Cresaps 69 kV 3-		
	Way Phase-Over-Phase		
b3275.5	switch and structure with a		
	new 1200A 3-Way switch		
	and steel pole		AEP (100%)
	Replace 477 MCM Alum bus		
b3275.6	and risers at McElroy 69 kV		
	station		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	nt Responsible Customer(s)
	Replace Natrium 138 kV bus existing between CB-BT1 and along the 138 kV Main		
b3275.7	Bus #1 dropping to CBH1 from the 500 MCM		
	conductors to a 1272 KCM		
	dead end clamp and strain		
	insulators		AEP (100%)
	Rebuild the 2/0 Copper		
	section of the Lancaster –		
100564	approximately 2.9 miles of		
b3276.1	the 3.2 miles total length with		
	556 ACSR conductor. The		
	remaining section has a 336		
	ACSR conductor		AEP (100%)
	Rebuild the 1/0 Copper		
	Lancaster Junction and		
b3276.2	Ralston station 69 kV,		
	approximately 2.3 miles of		
	the 3.1 miles total length		AEP (100%)
	Rebuild the 2/0 Copper		
	portion of the line between		
b3276.3	East Lancaster Tap and		
	Lancaster 69 kV,		
	approximately 0.81 mile		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)	
b3278.1	Replace H.S. MOAB switches on the high side of the 138/69/34.5 kV transformer T1 with a H.S. circuit switcher at Saltville station		AEP (100%)
b3278.2	Replace existing 138/69/34.5 kV transformer T2 with a new 130 MVA 138/69/13 kV transformer at Meadowview station		AEP (100%)
b3279	Install a new 138 kV, 21.6 MVAR cap bank and circuit switcher at Apple Grove station		AEP (100%)
b3280	Rebuild the existing Cabin Creek – Kelly Creek 46 kV line (to Structure 366-44), approximately 4.4 miles. This section is double circuit with the existing Cabin Creek – London 46 kV line so a double circuit rebuild would be required		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
	Install a second 138 kV		
	circuit utilizing 795 ACSR		
	conductor on the open		
	position of the existing		
	double circuit towers from		
	East Huntington – North		
	Proctorville. Remove the		
b3282.1	existing 34.5 kV line from		
	East Huntington – North		
	Chesapeake and rebuild this		
	section to 138 kV served		
	from a new PoP switch off		
	the new East Huntington –		
	North Proctorville 138 kV #2		
	line		AEP (100%)
	Install a 138 kV 40 kA circuit		
b3282.2	breaker at North Proctorville		
	station		AEP (100%)
	Install a 138 kV 40 kA circuit		
b3282.3	breaker at East Huntington		
	station		AEP (100%)
	Convert the existing 34/12 kV		
b3282.4	North Chesapeake to a 138/12		
	kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Rebuild approximately 5.44		
b3284	miles of 69 kV line from		
	Lock Lane to Point Pleasant		AEP (100%)
	Replace the Meigs 69 kV 4/0		
	Cu station riser towards		
	Gavin and rebuild the section		
	of the Meigs – Hemlock 69		
h3285	kV circuit from Meigs to		
03283	approximately Structure #40		
	(about 4 miles) replacing the		
	line conductor 4/0 ACSR		
	with the line conductor size		
	556.5 ACSR		AEP (100%)
	Reconductor the first 3 spans		
	from Merrimac station to		
	Structure 464-3 of 3/0 ACSR		
b3286	conductor utilizing 336		
	ACSR on the existing		
	Merrimac – Midway 69 kV		
	circuit		AEP (100%)
	Upgrade 69 kV risers at		
b3287	Moundsville station towards		
	George Washington		AEP (100%)
	Install high-side circuit		
b3289.1	switcher on 138/69/12 kV T5		
	at Roanoke station		AEP (100%)
	Install high-side circuit		
63780 2	switcher on 138/69/34.5 kV		
63289.2	T1 at Huntington Court		
	station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
	Build 9.4 miles of single	
b3200 1	circuit 69 kV line from	
03270.1	Roselms to near East	
	Ottoville 69 kV switch	AEP (100%)
	Rebuild 7.5 miles of double	
	circuit 69 kV line between	
h3200.2	East Ottoville switch and	
03290.2	Kalida station (combining	
	with the new Roselms to	
	Kalida 69 kV circuit)	AEP (100%)
	At Roselms switch, install a	
h2200.2	new three way 69 kV, 1200 A	
03290.3	phase-over-phase switch,	
	with sectionalizing capability	AEP (100%)
	At Kalida 69 kV station,	
	terminate the new line from	
h2200 4	Roselms switch. Move the CS	
03290.4	XT2 from high side of T2 to	
	the high side of T1. Remove	
	existing T2 transformer	AEP (100%)
h2201	Replace the Russ St. 34.5 kV	
03291	switch	AEP (100%)
	Replace existing 69 kV	
1,2202	capacitor bank at Stuart	
03292	station with a 17.2 MVAR	
	capacitor bank	AEP (100%)
	Replace 2/0 Cu entrance span	
	conductor on the South Upper	
1,2202	Sandusky 69 kV line and 4/0	
03293	Cu Risers/Bus conductors on	
	the Forest line at Upper	
	Sandusky 69 kV station	AEP (100%)
	Replace existing 69 kV	
h2204	disconnect switches for	
63294	circuit breaker "C" at Walnut	
	Avenue station	AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
h2205	Grundy 34.5 kV: Install a		
03293	34.5 kV 9.6 MVAR cap bank		AEP (100%)
	Rebuild the overloaded		
	portion of the Concord –		
12206	Whitaker 34.5 kV line (1.13		
03290	miles). Rebuild is double		
	circuit and will utilize 795		
	ACSR conductor		AEP (100%)
	Rebuild 4.23 miles of 69 kV		
h2207 1	line between Sawmill and		
03297.1	Lazelle station, using 795		
	ACSR 26/7 conductor		AEP (100%)
	Rebuild 1.94 miles of 69 kV		
h2207.2	line between Westerville and		
03297.2	Genoa stations, using 795		
	ACSR 26/7 conductor		AEP (100%)
	Replace risers and switchers		
	at Lazelle, Westerville, and		
b3297.3	Genoa 69 kV stations.		
	Upgrade associated relaying		
	accordingly		AEP (100%)
	Rebuild 0.8 mile of double		
	circuit 69 kV line between		
b3298	South Toronto and West		
	Toronto. Replace 219 ACSR		
	with 556 ACSR		AEP (100%)
	Replace the 69 kV breaker D		
b3298.1	at South Toronto station with		
	40 kA breaker		AEP (100%)
	Rebuild 0.2 mile of the West		
	End Fostoria - Lumberjack		
	Switch 69 kV line with 556		
b3299	ACSR (Dove) conductors.		
	Replace jumpers on West End		
	Fostoria line at Lumberjack		
	Switch		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
b3308	Reconductor and rebuild 1		
	span of T-line on the Fort		
	Steuben – Sunset Blvd 69 kV		
	branch with 556 ACSR		AEP (100%)
	Rebuild 1.75 miles of the		
	Greenlawn – East Tiffin line		
	section of the Carothers –		
b3300	Greenlawn 69 kV circuit		
03309	containing 133 ACSR		
	conductor with 556 ACSR		
	conductor. Upgrade relaying		
	as required		AEP (100%)
	Rebuild 10.5 miles of the		
b3310.1	Howard – Willard 69 kV line		
03310.1	utilizing 556 ACSR		
	conductor		AEP (100%)
h2210.2	Upgrade relaying at Howard		
03310.2	69 kV station		AEP (100%)
h2210.2	Upgrade relaying at Willard		
03310.3	69 kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	nt Responsible Customer(s)
	Rebuild approximately 4 miles of existing 69 kV line between West Mount Vernon and Mount Vernon stations.		
b3312	Replace the existing 138/69 kV transformer at West Mount Vernon with a larger 90 MVA unit along with existing 69 kV breaker 'C'		AEP (100%)
b3313	Add 40 kA circuit breakers on the low and high side of the East Lima 138/69 kV transformer		AEP (100%)
b3314.1	Install a new 138/69 kV 130 MVA transformer and associated protection at Elliot station		AEP (100%)
b3314.2	Perform work at Strouds Run station to retire 138/69/13 kV 33.6 MVA Transformer #1 and install a dedicated 138/13 KV distribution transformer		AEP (100%)
b3315	Upgrade relaying on Mark Center – South Hicksville 69 kV line and replace Mark Center cap bank with a 7.7 MVAR unit		AEP (100%)
b3320	Replace the CT at Don Marquis 345 kV station		AEP (100%)
b3336	Rebuild 6 miles Benton Harbor - Riverside 138 kV double circuit extension		AEP (100%)
b3337	Replace the one (1) Hyatt 138 kV breaker "AB1" (101N) with 3000 A, 63 kA interrupting breaker		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Re	sponsible Customer(s)
	Replace the two (2) Kenny		
b3338	138 kV breakers, "102" (SC-		
	3) and "106" (SC-4), each		
	with a 3000 A, 63 kA		
	interrupting breaker		AEP (100%)
	Replace the one (1) Canal		
b3339	138 kV breaker "3" with		
	3000 A, 63 kA breaker		AEP (100%)
	Replace the 2156 ACSR and		
	2874 ACSR bus and risers		
	with 2-bundled 2156 ACSR		
b3342	at Muskingum River 345 kV		
	station to address loading		
	issues on Muskingum -		
	Waterford 345 kV line		AEP (100%)
	Rebuild approximately 0.3		
	miles of the overloaded 69		
b33/13	kV line between Albion -		
03343	Philips Switch and Philips		
	Switch - Brimfield Switch		
	with 556 ACSR conductor		AEP (100%)
	Install two (2) 138 kV circuit		
	breakers in the M and N		
	strings in the breaker-and-a		
	half configuration in West		
b3344.1	Kingsport station 138 kV		
	yard to allow the Clinch		
	River - Moreland Dr. 138 kV		
	to cut in the West Kingsport		
	station		AEP (100%)
	Upgrade remote end relaying		
h3344.2	at Riverport 138 kV station		
03344.2	due to the line cut in at West		
	Kingsport station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
	Rebuild approximately 4.2		
b3345.1	miles of overloaded sections		
	of the 69 kV line between Salt		
	Fork switch and Leatherwood		
	switch with 556 ACSR		AEP (100%)
h3345 2	Update relay settings at		
03343.2	Broom Road station		AEP (100%)
	Rebuild approximately 3.5		
	miles of overloaded 69 kV		
	line between North Delphos –		
	East Delphos – Elida Road		
	switch station. This includes		
	approximately 1.1 miles of		
	double circuit line that makes		
	up a portion of the North		
b3346.1	Delphos – South Delphos 69		
	kV line and the North Delphos		
	– East Delphos 69 kV line.		
	Approximately 2.4 miles of		
	single circuit line will also be		
	rebuilt between the double		
	circuit portion to East Delphos		
	station and from East Delphos		
	to Elida Road switch station		AEP (100%)
	Replace the line entrance		
	spans at South Delphos station		
b3346.2	to eliminate the overloaded		
	4/0 Copper and 4/0 ACSR		
	conductor		AEP (100%)
	Rebuild approximately 20		
b33/17 1	miles of 69 kV line between		
03347.1	Bancroft and Milton stations		
	with 556 ACSR conductor		AEP (100%)
	Replace the jumpers around		
b3347.2	Hurrican switch with 556		
	ACSR		AEP (100%)

b3347.3	Replace the jumpers around	
	Teays switch with 556 ACSR	AEP (100%)
b3347.4	Update relay settings at Winfield station to coordinate with remote ends on line	
	rebuild	AEP (100%)
b3347.5	Update relay settings at Bancroft station to coordinate with remote ends on line rebuild	AEP (100%)
b3347.6	Update relay settings at Milton station to coordinate with remote ends on line rebuild	AEP (100%)
b3347.7	Update relay settings at Putnam Village station to coordinate with remote ends on line rebuild	AEP (100%)
b3348.1	Construct a 138 kV single bus station (Tin Branch) consisting of a 138 kV box bay with a distribution transformer and 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Sprigg stations), and distribution will have one 12 kV feed. Install two 138 kV circuit breakers on the line exits. Install 138 kV circuit switcher for the new transformer	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3348.2	Construct a new 138/46/12 kV Argyle station to replace Dehue 46 kV station. Install a 138 kV ring bus using a breaker-and-a-half configuration, with an autotransformer with a 46 kV feed and a distribution transformer with a 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Wyoming stations). There will also be a 46 kV feed from this station to Becco station. Distribution will have two 12 kV feeds. Retire Dehue 46 kV station in its entirety	AEP (100%)
b3348.3	Bring the Logan – Sprigg #2 138 kV circuit in and out of Tin Branch station by constructing approximately 1.75 miles of new overhead double circuit 138 kV line. Double circuit T3 series lattice towers will be used along with 795,000 cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD, and one shield wire will be optical ground wire (OPGW)	AEP (100%)
b3348.4	Logan-Wyoming No. 1 circuit in and out of the proposed Argyle 46 kV station. Double circuit T3 series lattice towers will be used along with 795,000 cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD, and one shield wire will be OPGW	AEP (100%)
b3348.5	Rebuild approximately 10 miles of 46 kV line between Becco and the new Argyle 46 kV substation. Retire approximately 16 miles of 46 kV line between the new Argyle substation and Chauncey station	AEP (100%)
b3348.6	Adjust relay settings due to new line terminations and retirements at Logan, Wyoming, Sprigg, Becco and Chauncey stations	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1000		
b3350.1	Replace Bellefonte 69 kV breakers C, G, I, Z, AB and JJ in place. The new 69 kV breakers to	
	be rated at 3000 A 40 kA	AEP (100%)
	Upgrade remote end relaying at	
b3350.2	Point Pleasant, Coalton and	
	South Point 69 kV substations	AEP (100%)
	Replace the 69 kV in-line	
b3351	switches at Monterey 69 kV	
	substation	AEP (100%)
	Replace circuit breakers '42' and	
	'43' at Bexley station with 3000	
b3354	A, 40 kA 69 kV breakers	
	(operated at 40 kV), slab, control	AEP (100%)
	cables and jumpers	
	Replace circuit breakers 'A' and	
	'B' at South Side Lima station	
b3355	with 1200 A, 25 kA 34.5 kV	
	breakers, slab, control cables and	AEP (100%)
	jumpers	
	Replace circuit breaker 'H' at	
b3356	West End Fostoria station with	
05550	3000 A, 40 kA 69 kV breaker,	AFP (100%)
	slab, control cables and jumpers	
	Replace circuit breakers 'C', 'E,'	
b3357	and 'L' at Natrium station with	
03337	3000 A, 40 kA 69 kV breakers,	AFP (100%)
	slab, control cables and jumpers	

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3358	Install a 69 kV 11.5 MVAR capacitor at Biers Run 69 kV station	AEP (100%)
b3359	Rebuild approximately 2.3 miles of the existing North Van Wert Sw. – Van Wert 69 kV line utilizing 556 ACSR conductor	AEP (100%)
b3362	Rebuild approximately 3.1 miles of the overloaded conductor on the existing Oertels Corner – North Portsmouth 69 kV line utilizing 556 ACSR	AEP (100%)
b3731	Replace 40 kV breaker J at McComb 138 kV station with a new 3000A 40 kA breaker	AEP (100%)
b3732	Install a 6 MVAR, 34.5 kV cap bank at Morgan Run station	AEP (100%)
b3733	Rebuild the 1.8 mile 69 kV line between Summerhill and Willow Grove Switch. Replace 4/0 ACSR conductor with 556 ACSR	AEP (100%)
b3734	Install a 7.7 MVAR, 69 kV cap bank at both Otway station and Rosemount station	AEP (100%)
b3735	Terminate the existing Broadford – Wolf Hills #1 138 kV line into Abingdon 138 kV Station. This line currently bypasses the existing Abingdon 138 kV station; Install two new 138 kV circuit breakers on each new line exit towards Broadford and towards Wolf Hills #1 station; Install one new 138 kV circuit breaker on line exit towards South Abingdon station for standard bus sectionalizing	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Establish 69 kV bus and new 69 kV	
b3736.1	line Circuit Breaker at Dorton	A = D (1000%)
	substation	ALF (10070)
	At Breaks substation, reuse 72 kV	
b3736.2	breaker A as the new 69 kV line	A FP (100%)
	breaker	ALI (10070)
	Rebuild approximately 16.7 miles	
b3736.3	Dorton – Breaks 46 kV line to 69 kV	A ED (100%)
	line	ALF (10070)
h2726 1	Retire approximately 17.2 miles	
03/30.4	Cedar Creek – Elwood 46 kV line	AEP (100%)
	Retire approximately 6.2 miles	
b3736.5	Henry Clay – Elwood 46 kV line	
	section	AEP (100%)
	Retire Henry Clay 46 kV substation	
	and replace with Poor Bottom 69 kV	
b3736.6	station. Install a new 0.7 mile double	
	circuit extension to Poor Bottom 69	AEP (100%)
	kV station	
	Retire Draffin substation and replace	
h27267	with a new substation. Install a new	
03730.7	0.25 mile double circuit extension to	A = D (1000/)
	New Draffin substation	AEP (100%)
	Pomoto and work at Ionking	
b3736.8	substation	
	substation	AEP (100%)
	Provide transition fiber to Dorton,	
b3736.9	Breaks, Poor Bottom, Jenkins and	
	New Draffin 69 kV substations	AEP (100%)
h2726 10	Honmy Clay gyvitch station ratingment	
03/30.10	Them's Clay Switch Station Tethement	 AEP (100%)
h2726 11	Coder Crook substation work	
03/30.11		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b3736.12	Breaks substation 46 kV equipment retirement	AEP (100%)
b3736.13	Retire Pike 29 switch station and Rob Fork switch station	AEP (100%)
b3736.14	Serve Pike 29 and Rob Fork substation customers from nearby 34 kV distribution sources	AEP (100%)
b3736.15	Poor Bottom 69 kV substation install	AEP (100%)
b3736.16	Henry Clay 46 kV substation retirement	AEP (100%)
b3736.17	New Draffin 69 kV substation install	AEP (100%)
b3736.18	Draffin 46 kV substation retirement	AEP (100%)
b3763	Replace the Jug Street 138 kV breakers M, N, BC, BD, BE, BF, D, H, J, L, BG, BH, BJ, BK with 80 KA breakers	AEP (100%)
b3764	Replace the Hyatt 138 kV breakers AB1 and AD1 with 63 kA breakers	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Hayes – New Westville 138 kV	
	line: Build approximately 0.19	
	miles of 138 kV line to the	
	Indiana/ Ohio State line to	
b3766.1	connect to AES's line portion of	
	the Hayes – New Westville 138	
	kV line with the conductor size	AFP (100%)
	795 ACSR26/7 Drake. This sub-	MEI (10070)
	ID includes the cost of line	
	construction and Right of Way	
	(ROW)	
	Hayes – Hodgin 138 kV line:	
	Build approximately 0.05 mile of	
h3766 2	138 kV line with the conductor	
03700.2	size 795 ACSR26/7 Drake. This	
	sub-ID includes the line	AEP (100%)
	construction, ROW, and fiber	
	Hayes 138 kV: Build a new 4-	
	138 kV circuit breaker ring bus.	
	This sub-ID includes the cost of	
h3766 3	new station construction,	
05700.5	property purchase, metering,	
	station fiber and the College	AEP (100%)
	Corner – Randolph 138 kV line	
	connection	

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)
1		1	
			Reliability Driver:
			AEP (12.38%) / ComEd
			(87.62%)
			Market Efficiency
			Driver:
			AEC (0.87%) / AEP
			(24.07%) / APS (3.95%) /
	Perform sag study mitigation work on		ATSI (11.04%) / BGE
	the Dumont Stillwell		(4.30%) / Dayton (3.52%)
	345 kV line (remove a center-pivot irrigation system from under the line, allowing for the normal and emergency ratings of the line to increase)		/ DEOK (5.35%) /
h2775 6			Dominion (20.09%) / DPL
03773.0			(1.73%) / DL (2.11%) /
			ECP** (0.17%)/ EKPC
		(1.73%) / HTP***	
			(0.07%) / JCPL (1.98%) /
			ME (1.63%) /
			NEPTUNE* (0.43%) /
			OVEC (0.07%) / PECO
			(3.59%) / PENELEC
			(1.68%) / PEPCO (3.91%)
			/ PPL (3.64%) / PSEG
			(3.93%) / RE (0.14%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

		Reliability Driver: AEP (12.38%) / Dayton (87.62%)
b3775.7	Upgrade the limiting element at Stillwell or Dumont substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG (3.93%) / RE (0.14%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

		• • •
		Reliability Driver:
		AEP (100%)
		Market Efficiency Driver:
		AEC (0.87%) / AEP (24.07%) / APS
	Perform a sag study on the	(3.95%) / ATSI (11.04%) / BGE
	Olive – University Park 345	(4.30%) / Dayton (3.52%) / DEOK
	kV line to increase the	(5.35%) / Dominion (20.09%) / DPL
b3775.10	operating temperature to	(1.73%) / DL (2.11%) / ECP**
	225 F. Remediation work	(0.17%)/ EKPC (1.73%) / HTP***
	includes two tower	(0.07%) / JCPL (1.98%) / ME
	replacements on the line.	(1.63%) / NEPTUNE* (0.43%) /
		OVEC (0.07%) / PECO (3.59%) /
		PENELEC (1.68%) / PEPCO
		(3.91%) / PPL (3.64%) / PSEG
		(3.93%) / RE (0.14%)
		Reliability Driver:
		Reliability Driver: AEP (12.38%) / ComEd (87.62%)
		Reliability Driver:AEP (12.38%) / ComEd (87.62%)Market Efficiency Driver:
		Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS
	Upgrade the limiting	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE
	Upgrade the limiting element at Stillwell	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK
b3775 11	Upgrade the limiting element at Stillwell substation to increase the	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell –	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP**
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%)/ EKPC (1.73%) / HTP***
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME
Ъ3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) /
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) /
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO
b3775.11	Upgrade the limiting element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to match conductor rating	Reliability Driver: AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE (4.30%) / Dayton (3.52%) / DEOK (5.35%) / Dominion (20.09%) / DPL (1.73%) / DL (2.11%) / ECP** (0.17%) / EKPC (1.73%) / HTP*** (0.07%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO (3.59%) / PENELEC (1.68%) / PEPCO (3.91%) / PPL (3.64%) / PSEG

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC **East Coast Power, L.L.C.

***Hudson Transmission Partners, LLC

	Replace 138 kV breaker 5 at	
b3784.1	Canal Street station with a new	
	3000A 63 kA breaker	AEP (100%)
	Replace existing 3000 A wave	
	trap at Mountaineer 765 kV, on	
b3785.1	the Belmont - Mountaineer 765	
	kV line, with a new 5000 A wave	
	trap	AEP (100%)
	Rebuild approximately 4.5 miles	
	of 69 kV line between Abert and	
b3786.1	Reusens 69 kV substations.	
	Update line settings at Reusens	
	and Skimmer 69 kV substations	AEP (100%)
	Install a Capacitor Voltage	
	Transformer (CCVT) on 3 phase	
	stand and remove the single	
	phase existing CCVT on the 69	
	kV Coalton to Bellefonte line	
	exit. The existing CCVT is	
	mounted to lattice on a single	
h2797 1	phase CCVT stand, which will be	
03707.1	replaced with the 3 phase CCVT	
	stand. The line riser between line	
	disconnect and line take off is	
	being replaced. This remote end	
	work changes the most limiting	
	series element (MLSE) of the	
	line section between Coalton -	
	Princess 69 kV line section	AEP (100%)
	Replace AEP owned station	
b3788 1	takeoff riser and breaker BB	
05/00.1	risers at OVEC owned Kyger	
	Creek station	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		1	1
	Replace the overdutied Olive 345		
	kV circuit breaker "D" with a		
b3790.0	5000A 63 kA circuit breaker.		
00,1000	Reuse existing cables and a		
	splice box to support the circuit		
	breaker install		AEP (100%)
	Rebuild approximately 1.7 miles		
b3836.1	of line on the Chemical -		
	Washington Street 46 kV circuit		AEP (100%)
	Replace existing 34.5 kV, 25 kA		
b3837 1	circuit breaker B at West		
03037.1	Huntington station with new 69		
b3838.1	kV, 40 kA circuit breaker		AEP (100%)
	Replace breaker A and B at		
b3838.1	Timken station with 40 kA		
	breakers		AEP (100%)
	Replace 69 kV breaker C at		
b3839.1	Haviland station with a new		
	3000A 40 kA breaker		AEP (100%)
	Replace Structures 382-66 and		
	382-63 on Darrah - East		
	Huntington 34.5 kV line to		
	bypass 24th Street station. Retire		
b3840.1	structures 1 through 5 on Twenty		
	Fourth Street 34.5 kV extension.		
	Retire 24th Street Station.		
	Remove conductors from BASF		
	Tap to BASF		AEP (100%)
	Rebuild the underground portion		
1.2012 1	of the Ohio University - West		
03843.1	Clark 69 kV line, approximately		
	0.65 miles		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

SCHEDULE 12 – APPENDIX A

(23) American Transmission Systems, Inc.

Required'	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2019.2	Terminate Burger – Longview 138 kV, Burger – Brookside 138 kV, Burger – Cloverdale 138 kV #1, and Burger – Harmon 138 kV #2 into Holloway substation; Loop Burger – Harmon #1 138 kV and Burger – Knox 138 kV into Holloway substation		ATSI (100%)
b2019.3	Reconfigure Burger 138 kV substation to accommodate two 138 kV line exits and generation facilities		ATSI (100%)
b2019.4	Remove both Burger 138 kV substations (East and West 138 kV buses) and all 138 kV lines on the property		ATSI (100%)
b2019.5	Terminate and de- energize the 138 kV lines on the last structure before the Burger Plant property		ATSI (100%)
b2122.1	Reconductor the ATSI portion of the Howard – Brookside 138 kV line		ATSI (100%)
b2122.2	Upgrade terminal equipment at Brookside on the Howard – Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)		ATSI (100%)
b2188	Revise the reclosing for the Bluebell 138 kV breaker '301-B-94'		ATSI (100%)
b2192	Replace the Longview 138 kV breaker '651-B- 32'		ATSI (100%)
b2193	Replace the Lowellville 138 kV breaker '1-10-B 4'		ATSI (100%)

Required	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2195	Replace the Roberts 138 kV breaker '601-B-60'		ATSI (100%)
b2196	Replace the Sammis 138 kV breaker '780-B-76'		ATSI (100%)
b2262	New Castle Generating Station – Relocate 138 kV, 69 kV, and 23 kV controls from the generating station building to new control building		ATSI (100%)
b2263	Niles Generation Station – Relocate 138 kV and 23 kV controls from the generation station building to new control building		ATSI (100%)
b2265	Ashtabula Generating Station – Relocate 138 kV controls from the generating station building to new control building		ATSI (100%)
b2284	Increase the design operating temperature on the Cloverdale – Barberton 138 kV line		ATSI (100%)
b2285	Increase the design operating temperature on the Cloverdale – Star 138 kV line		ATSI (100%)
b2301	Reconductor 0.7 miles of 605 ACSR conductor on the Beaver Black River 138 kV line		ATSI (100%)
b2301.1	Wave trap and line drop replacement at Beaver (312/380 MVA SN/SE)		ATSI (100%)
b2349	Replace the East Springfield 138 kV breaker 211-B-63 with 40 kA		ATSI (100%)
b2367	Replace the East Akron 138 kV breaker 36-B-46 with 40 kA		ATSI (100%)

b2413	Replace a relay at McDowell 138 kV substation	ATSI (100%)
b2434	Build a new London – Tangy 138 kV line	ATSI (100%)
b2435	Build a new East Springfield – London #2 138 kV line	ATSI (15.61%) / Dayton (84.39%)
b2459	Install +260/-150 MVAR SVC at Lake Shore	ATSI (100%)
b2492	Replace the Beaver 138 kV breaker '426-B-2' with 63 kA breaker	ATSI (100%)
b2493	Replace the Hoytdale 138 kV breaker '83-B-30' with 63 kA breaker	ATSI (100%)
b2557	At Avon substation, replace the existing 345/138 kV 448 MVA #92 transformer with a 560 MVA unit	ATSI (100%)
b2558	Close normally open switch A 13404 to create a Richland J Bus – Richland K Bus 138 kV line	ATSI (100%)
b2559	Reconductor the Black River – Lorain 138 kV line and upgrade Black River and Lorain substation terminal end equipment	ATSI (100%)
b2560	Construct a second 138 kV line between West Fremont and Hayes substation on open tower position of the West Fremont –Groton –Hayes 138 kV line	ATSI (100%)
b2616	Addition of 4th 345/138 kV transformer at Harding	ATSI (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		1 1 1	
b2673	Rebuild the existing double circuit tower line section from Beaver substation to		
	miles	l l l l l l l l l l l l l l l l l l l	ATSI (100%)
b2674	Rebuild the 6.6 miles of Evergreen to Ivanhoe 138 kV circuit with 477 ACSS conductor		ATSI (100%)
b2675	Install 26.4 MVAR capacitor and associated terminal equipment at Lincoln Park 138 kV substation		ATSI (100%)
b2725	Build new 345/138 kV Lake Avenue substation w/ breaker and a half high side (2 strings), 2-345/138 kV transformers and breaker and a half (2 strings) low side (138 kV). Substation will tie Avon – Beaver 345 kV #1/#2 and Black River – Johnson #1/#2 lines		ATSI (100%)
b2725.1	Replace the Murray 138 kV breaker '453-B-4' with 40 kA breaker		ATSI (100%)
b2742	Replace the Hoytdale 138 kV '83-B-26' and '83-B-30' breakers with 63 kA breakers		ATSI (100%)
b2753.4	Double capacity for 6 wire "Burger-Cloverdale No. 2" 138 kV line and connect at Holloway and "Point A"		ATSI (100%)
b2753.5	Double capacity for 6 wire "Burger-Longview" 138 kV line and connect at Holloway and "Point A"	A	ATSI (100%)
b2778	Add 2nd 345/138 kV transformer at Chamberlin substation	A	ATSI (100%)
b2780	Replace Bruce Mansfield 345 kV breaker 'B57' with an 80 kA breaker, and associated gang-operated disconnect switches D56 and D58		ATSI (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2869	Replace the Crossland 138 kV breaker "B-16" with a 40 kA breaker	ATSI (100%)
b2875	Relocate the Richland to Ridgeville 138 kV line from Richland J bus to K, extend the K bus and install a new breaker	ATSI (100%)
b2896	Rebuild/Reconductor the Black River – Lorain 138 kV circuit	ATSI (100%)
b2897	Reconductor the Avon – Lorain 138 kV section and upgrade line drop at Avon	ATSI (100%)
b2898	Reconductor the Beaver – Black River 138 kV with 954 Kcmil ACSS conductor and upgrade terminal equipment on both stations	ATSI (100%)
b2942.1	Install a 100 MVAR 345 kV shunt reactor at Hayes substation	ATSI (100%)
b2942.2	Install a 200 MVAR 345 kV shunt reactor at Bayshore substation	ATSI (100%)
b2972	Reconductor limiting span of Lallendorf – Monroe 345 kV	MISO (11.00%) / AEP (5.38%) / APS (4.27%) / ATSI (66.48%) / Dayton (2.71%) / Dominion (5.31%) / DL (4.85%)
b3031	Transfer load off of the Leroy Center - Mayfield Q2 138 kV line by reconfiguring the Pawnee substation primary source, via the existing switches, from the Leroy Center - Mayfield Q2 138 kV line to the Leroy Center - Mayfield Q1 138 kV line	ATSI (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required '	Transmission Enhancements	Annual Revenue Requiremen	t Responsible Customer(s)
b3032	Greenfield - NASA 138 kV terminal upgrades: NASA substation, Greenfield exit: Revise CT tap on breaker B22 and adjust line relay settings; Greenfield substation, NASA exit: Revise CT tap on breaker B1 and adjust line relay settings; replace 336.4 ACSR line drop with 1033.5 AL		ATSI (100%)
b3033	Ottawa – Lakeview 138 kV reconductor and substation upgrades		ATSI (100%)
b3034	Lakeview – Greenfield 138 kV reconductor and substation upgrades		ATSI (100%).
b3066	Reconductor the Cranberry – Jackson 138 kV line (2.1 miles), reconductor 138 kV bus at Cranberry bus and replace 138 kV line switches at Jackson bus		ATSI (100%)
b3067	Reconductor the Jackson – Maple 138 kV line (4.7 miles), replace line switches at Jackson 138 kV and replace the line traps and relays at Maple 138 kV bus		ATSI (100%)
b3080	Reconductor the 138 kV bus at Seneca		ATSI (100%)
b3081	Replace the 138 kV breaker and reconductor the 138 kV bus at Krendale		ATSI (100%)

Required '	Transmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	At Sammis 345 kV station:		
	Install a new control		
	building in the switchyard,		
	construct a new station		
	access road, install new		
b3123	switchyard power supply to		
05125	separate from existing		
	generating station power		
	service, separate all		
	communications circuits,		
	and separate an protection		ATSI (100%)
	Separate matering station		A151 (10070)
	power and communication		
b3124	at Bruce Mansfield 345 kV		
	station		ATSI (100%)
	At Bay Shore 138 kV		
	station: Install new		
	switchvard power supply to		
	separate from existing		
b3127	generating station power		
	service, separate all		
	communications circuits,		
	and construct a new station		
	access road		ATSI (100%)
	Reconductor the 8.4 mile		
	section of the Leroy Center		
1 2 1 5 2	– Mayfield QI line		
63152	between Leroy Center and		
	rating of at logst 160 MVA		
	/ 102 MVA (SN/SE)		ATSI (100%)
	Extend both the east and		1101(10070)
	west 138 kV buses at Pine		
	substation, and install one		
b3234	(1) 138 kV breaker.		
00201	associated disconnect		
	switches, and one (1) 100		
	MVAR reactor		ATSI (100%)
	Extend 138 kV bus work to		
	the west of Tangy		
h3235	substation for the addition		
05255	of the 100 MVAR reactor		
	bay and one (1) $138 \text{ kV } 40$		A TOL (1000/)
	KA circuit breaker		A151 (100%)
	Extend the Broadview 138		
12226	now brookers and		
05230	associated equipment and		
	install a 75 MVAR reactor		ATSI (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Replace the existing		
b3260	breaker 501-B-251 with a		
	new 69 kV breaker with a		
	higher (40 kA)		
	interrupting capability		ATSI (100%)
	Replace the existing East		
	Akron 138 kV breaker 'B-		
	22' with 3000A		
b3277	continuous, 40 kA		
	momentary current		
	interrupting rating circuit		
	breaker		ATSI (100%)
	Install a second 345/138		
	kV transformer at Hayes,		
	448 MVA nameplate		
	rating. Add one 345 kV		
	circuit breaker (3000A) to		
	provide transformer high-		
	side connection between		
	breaker B-18 and the new		
	breaker. Connect the new		
h2282	transformer low side to		
03282	the 138 kV bus. Add one		
	138 kV circuit breaker		
	(3000A) at Hayes 138 kV		
	substation between B-42		
	and the new breaker.		
	Relocate the existing 138		
	kV No. 1 capacitor bank		
	between B-42 and the new		
	breaker. Protection per		
	First Energy standard		ATSI (100%)

Required	Transmission Enhancements	Annual Revenue Requirement	nt Responsible Customer(s)
	Expand Galion 138 kV		
b3678	substation, Install 100		
	MVAR reactor, associated		
	breaker and relaying		ATSI (100%)
b3679	Replace West Fremont		
	138/69 kV Transformer #2		
	with a transformer having		
	additional high-side taps		ATSI (100%)
	Replace limiting substation		
	conductors on Ashtabula		
h2680	138 kV exit to make		
03080	transmission line conductor		
	the limiting element at		
	Sanborn 138 station		ATSI (100%)
	Disconnect and remove five		
	138 kV bus tie lines and		
	associated equipment from		
	the Avon Lake Substation to		
	the plant (800-B Bank, 8-		
	AV-T Generator, 5-AV-T,		
	6-AV-T, and 7-AV-T).		
	Disconnect and remove one		
	345 kV bus tie line and		
	associated equipment from		
	the Avon substation to the		
b3713	plant (Unit 9). Adjust relay		
	settings at Avon Lake, Avon		
	and Avondale substations.		
	Removal/rerouting of fiber		
	to the plant and install new		
	fiber between the 345 kV		
	and 138 kV yards for the		
	Q4-AV-BUS relaying.		
	Remove SCADA RTU,		
	communications and		
	associated equipment from		
	plant.		ATSI (100%)

Required Transmission Enhancements		Annual Revenue Requirement Responsible Customer(s)	
	Replace four 345 kV		
	disconnect switches (D74,		
	D92, D93, & D116) with		
	3000 A disconnect switches		
	at Beaver station. Replace		
	dual 954 45/7 ACSR		
	SCCIR conductors between		
	5" pipe and WT with new,		
	which meets or exceeds		
	ratings of SN: 1542 MVA,		
	SSTE: 1878 MVA at		
b3714	Beaver station. Replace		
	3000 SAC TL drop and		
	3000 SAC SCCIR between		
	954 ACSR and 5" bus with		
	new, which meets or		
	exceeds ratings of SN: 1542		
	MVA, SSTE: 1878 MVA at		
	Beaver station. Upgrade		
	BDD relays at breaker B-88		
	and B-115 at Beaver station.		
	Relay settings changes at		
	Hayes station.		ATSI (100%)
	Rebuild the 69 kV Abbe –		
	Johnson #2 Line		
	(approximately 4.9 miles)		
	with 556 kcmil ACSR		
	conductor. Replace three		
	disconnect switches (A17,		
b3720	D15 & D16) and line drops		
	and revise relay settings at		
	Abbe. Replace one		
	disconnect switch (A159)		
	and line drops and revise		
	relay settings at Johnson.		
	Replace two MOAB		
	disconnect switches (A4 &		
	A5), one disconnect switch		
	(D9), and line drops at		
	Redman		ATSI (100%)

Required '	Transmission Enhancements	Annual Revenue Requiremen	nt Responsible Customer(s)
b3721	Rebuild and reconductor the Avery – Hayes 138 kV line (approximately 6.5 miles) with 795 kcmil 26/7 ACSR		ATSI (100%)
b3777	Disconnect and remove three 345 kV breakers, foundations and associated equipment from Sammis 345 kV substation. Remove nine 345 kV Capacitor voltage transformers. Remove two 345 kV disconnect switches. Install new 345 kV bus work and foundations. Install new fencing. Remove and adjust relaying at Sammis 345 kV substation		ATSI (100%)
b3789.0	A 69 kV, 60 MVAR shunt reactor will be installed at the Salt Springs substation. The reactor terminal will be connected to the existing 69 kV bus, and an independent-pole operation, 1200A circuit breaker will be installed for reactor switching		ATSI (100%)

SCHEDULE 12 – APPENDIX A

(28) Transource, LLC

Required Tra	nsmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2743.1	Tap the Conemaugh – Hunterstown 500 kV line & create new Rice 500 kV & 230 kV stations. Install two 500/230 kV transformers operated together Build new 230 kV		Responsible Customer(s) AEP (6.46%) / APS (8.73%) / BGE (19.73%) / ComEd (2.16%) / ConEd (0.06%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.92%) / EKPC (0.45%) / PEPCO (20.87%) AEP (6.46%) / APS (8.73%) / BGE (19.73%) /
b2743.5	double circuit line between Rice and Ringgold 230 kV, operated as a single circuit		ComEd (2.16%) / ConEd (0.06%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.92%) / EKPC (0.45%) / PEPCO (20.87%)
b2752.1	Tap the Peachbottom – TMI 500 kV line & create new Furnace Run 500 kV & 230 kV stations. Install two 500/230 kV transformers, operated together		AEP (6.46%) / APS (8.73%) / BGE (19.73%) / ComEd (2.16%) / ConEd (0.06%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.92%) / EKPC (0.45%) / PEPCO (20.87%)
b2752.5	Build new 230 kV double circuit line between Furnace Run and Conastone 230 kV, operated as a single circuit		AEP (6.46%) / APS (8.73%) / BGE (19.73%) / ComEd (2.16%) / ConEd (0.06%) / Dayton (0.59%) / DEOK (1.02%) / DL (0.01%) / Dominion (39.92%) / EKPC (0.45%) / PEPCO (20.87%)
b3780.16	North Delta 230 kV termination for new Cooper - North Delta 230 kV line (Transource Scope)		DPL (38.25%) / PECO (61.75%)

Transource, LLC (cont.)

Required Tra	nsmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3780.17	Cut-in 5012 Peach Bottom - Conastone 500 kV line into North Delta 500/230 kV substation by rebuilding 5012 between new terminal at Peach Bottom South and North Delta on single circuit structures and terminating at North Delta (Transource Scope)		Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / Dominion (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: AEC (11.03%) / BGE (37.40%) / DPL (22.90%) / PECO (0.00%) / PEPCO (28.67%)

*Neptune Regional Transmission System, LLC

SCHEDULE 12 – APPENDIX A

(29) Ohio Valley Electric Corporation

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2943	Perform a LIDAR study on		
	the Cliffy Creek –		
	Dearborn 345 kV line to		OVEC (100%)
	increase the Summer		
	Emergency rating above		
	1023 MVA		
b3788.2	Replace OVEC owned		
	breaker AA risers, bus		
	work, and breaker AA		OVEC (100%)
	disconnect switches at		
	OVEC owned Kyger		
	Creek station		