

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

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September 6, 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. ER24-2990-000 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 baseline upgrades in the recent update to the Regional Transmission Expansion Plan ("RTEP") approved by the PJM Board of Managers ("PJM Board") on August 7, 2024.³ PJM requests that the revised Tariff sections become effective on December 5, 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 On August 7, 2024, the PJM Board approved: (i) twenty-seven (27) PJM reliability criteria expansions and enhancements totaling approximately \$447.51 million; (ii) scope and cost changes to four (4) existing RTEP baseline projects resulting in a net increase of approximately \$194 million; and (iii) cancellation of existing approved RTEP baseline projects resulting in a net decrease of approximately \$23.45 million. The PJM Board's approval of these projects yields an overall RTEP net increase of approximately \$618.06 million to resolve baseline criteria violations. *See* PJM Interconnection, L.L.C., Transmission Expansion Advisory Committee (TEAC) Recommendations to the PJM Board (August 2024) https://pim.com/-/media/committees-groups/committees/teac/2024/20240806/20240806-pjm-board-whitepaper-august-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 August 7, 2024. The revised Tariff sections containing new language, including new cost

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).

responsibility assignments, are reflected in redline and clean format in Attachments B and C, respectively, to this filing.⁸

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: (i) eleven (11) new transmission enhancements or expansions needed for reliability that are Regional Facilities or Necessary Lower Voltage Facilities,⁹ and (ii) four (4) scope changes to existing transmission enhancements or expansions needed for reliability that are Regional Facilities or Necessary Lower Voltage Facilities, included in the most recent update to the RTEP approved by the PJM Board on August 7, 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

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.

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 b3800.53, b3800.128, b3800.129, b3800.375, b3812.1, b3812.2, b3812.3, b3812.4, b3847.1, b3847.2, b3847.3, b3850.1, b3850.2, b3850.3, and b3852.2.

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).

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 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

¹³ See Tariff, Schedule 12(b)(i)(A).

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 Update Filing).

group of transmission facilities. 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, as determined by a power flow analysis.¹⁵

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 August 7, 2024, the PJM Board approved eleven (11) 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),

¹⁵ See Tariff, Schedule 12(b)(iii).

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 b3811.1, b3811.2, b3811.3, b3851.1, b3851.2, b3851.3, b3851.4, b3852.1, b3855.1, b3855.2, and b3855.3.

PJM proposes revisions to Tariff, Schedule 12-Appendix A to include cost responsibility assignments for three (3) 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 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 that Address 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 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 two (2) circuit breakers.¹⁹ 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.

¹⁸ The enhancements and expansions allocated pursuant to Tariff, Schedule 12, section (b)(vi) include the following: b3848.1, b3848.2, and b3849.1.

¹⁹ The enhancements and expansions allocated pursuant to Tariff, Schedule 12, section (b)(iv)(B) include the following: b3853.1 and b3854.1.

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 August 7, 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 October 7, 2024, 30 days from the date of this filing.²⁰ To accommodate such a comment date, PJM requests an effective date of December 5, 2024 (90 days from the date of this filing) for all revised Tariff sections submitted in this docket.²¹

²⁰ Thirty days from today's date is Sunday, October 6, 2024. PJM requests that the Commission establish the comment deadline on the next business day, which is Monday, October 7, 2024. *See* 18 C.F.R. § 385.2007(a)(2) (2024).

²¹ 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. ER22-1397-000 (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. ER22-135-000 (Oct. 20, 2021) (same); *PJM Interconnection, L.L.C.*, Errata Notice of Extending Comment Period, Docket No. ER22-12774-000 (Sept. 2, 2021) (same).

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 and (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@pjm.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 Commission's regulations,²² 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 Region²³ alerting them

²² See 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3) (2022).

²³ PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

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 December 5, 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

Attachment A

Cost Responsibility Assignment Summary Sheets

- Overview of Reliability Problem
 - O Criteria Violation: 2022 Window 3
 - O Contingency: 2022 Window 3
 - O Criteria Test: 2022 Window 3
- Overview of Reliability Solution
 - Description of Upgrade: Construct a double-circuit 500 kV line from the existing TMI Peach Bottom 500 kV right-of-way to the proposed Chanceford switchyard, approximately 1.0 miles in length
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$12.59M
 - O Construction Responsibility: PPL
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
APS	9,568	1.82%	99.99%	13.37%
BGE	6,307	-1.57%	0.01%	0.00%
DPL	3,765	-1.32%	0.01%	0.00%
Dominion	28,705	3.41%	99.99%	75.27%
ME	3,077	-0.63%	0.01%	0.00%
PECO	8,568	-1.10%	0.01%	0.00%
PEPCO	6,213	2.38%	99.99%	11.36%

- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - O Contingency: 2022 Window 3
 - Criteria Test: 2022 Window 3
- Overview of Reliability Solution
 - Description of Upgrade: Construct new Woodside Goose Creek 500 kV line for approximately 15 miles on single circuit monopole structures within the Doubs – Goose Creek Corridor. (FE Portion)
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$13.20M
 - Construction Responsibility: APS
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
APS	9,568	1.91%	100.00%	9.26%
BGE	6,307	2.28%	100.00%	7.30%
Dominion	28,705	4.96%	100.00%	72.31%
PEPCO	6,213	3.53%	100.00%	11.13%

- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - o Contingency: 2022 Window 3
 - o Criteria Test: 2022 Window 3
- Overview of Reliability Solution
 - Description of Upgrade: Construct 500 kV line from existing structure MVF1-101 on the Doubs Millville 138 kV line around Doubs substation and into the entrance of the Doubs Goose Creek corridor. (Approximately 2 miles)
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$115.30M
 - Construction Responsibility: APS
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
APS	9,568	1.91%	100.00%	9.26%
BGE	6,307	2.28%	100.00%	7.30%
Dominion	28,705	4.96%	100.00%	72.31%
PEPCO	6,213	3.53%	100.00%	11.13%

- Overview of Reliability Problem
 - Criteria Violation: 2022 Window 3
 - Contingency: 2022 Window 3
 - o Criteria Test: 2022 Window 3
- Overview of Reliability Solution
 - Description of Upgrade: Construct new Woodside Goose Creek 500 kV line for approximately 3 miles on single circuit monopole structures within the Doubs – Goose Creek corridor. (Dominion Portion)
 - o Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$15.60M
 - Construction Responsibility: Dominion
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
APS	9,568	1.91%	100.00%	9.26%
BGE	6,307	2.28%	100.00%	7.30%
Dominion	28,705	4.96%	100.00%	72.31%
PEPCO	6,213	3.53%	100.00%	11.13%

- Overview of Reliability Problem
 - o Criteria Violation: The Haumesser Road West DeKalb Tap Enridge-DeKalb Tap 138 kV line is overloaded
 - Contingency: Multiple contingencies
 - Criteria Test: 2028 Winter Generator Deliverability
- Overview of Reliability Solution
 - o Description of Upgrade: Expand Haumesser Road 138 kV substation as a 4 circuit breaker ring bus.
 - Required Upgrade In-Service Date: 12/01/2028
 - Estimated Upgrade Cost: \$15.91M
 - Construction Responsibility: ComEd
- Cost Allocation
 - No transmission zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to ComEd.

- Overview of Reliability Problem
 - o Criteria Violation: The Haumesser Road West DeKalb Tap Enridge-DeKalb Tap 138 kV line is overloaded
 - o Contingency: Multiple contingencies
 - Criteria Test: 2028 Winter Generator Deliverability
- Overview of Reliability Solution
 - o Description of Upgrade: Add one 138 kV circuit breaker at H-452 to complete a three circuit breaker ring bus.
 - Required Upgrade In-Service Date: 12/01/2028
 - Estimated Upgrade Cost: \$1.98M
 - Construction Responsibility: ComEd
- Cost Allocation
 - No transmission zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to ComEd.

- Overview of Reliability Problem
 - o Criteria Violation: The Haumesser Road West DeKalb Tap Enridge-DeKalb Tap 138 kV line is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: 2028 Winter Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Rebuild 3 miles of 138 kV Line 11323 from Haumesser Road to the H-452 tap with double circuit towers. Cut the H-452 tap over to the 2nd circuit from Haumesser Road. Both circuits to use twisted pair 556 ACSR Parakeet conductor.
 - Required Upgrade In-Service Date: 12/01/2028
 - Estimated Upgrade Cost: \$10.22M
 - Construction Responsibility: ComEd
- Cost Allocation
 - No transmission zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to ComEd.

- Overview of Reliability Problem
 - Criteria Violation: The Elwood Goodings Grove 345 kV double circuit is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: 2028 Summer Generator Deliverability
- Overview of Reliability Solution
 - o Description of Upgrade: Reconductor 345 kV Line 11620 and 11622 from Elwood to Goodings Grove.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$56.18M
 - Construction Responsibility: ComEd
- 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 100% to ComEd based on solution-based DFAX. Only ComEd transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: The Elwood Goodings Grove 345 kV double circuit is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: 2028 Summer Generator Deliverability
- Overview of Reliability Solution
 - o Description of Upgrade: Upgrade Goodings Grove 345 kV circuit breakers, disconnects, and associated equipment.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$5.16M
 - Construction Responsibility: ComEd
- 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 100% to ComEd based on solution-based DFAX. Only ComEd transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: The Elwood Goodings Grove 345 kV double circuit is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: 2028 Summer Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Upgrade station conductor at Elwood 345 kV.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.50M
 - Construction Responsibility: ComEd
- 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 100% to ComEd based on solution-based DFAX. Only ComEd transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: The Elwood Goodings Grove 345 kV double circuit is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: 2028 Summer Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Adjust reclosing cycle on for Goodings Grove 345 kV circuit breaker '116 9806' to eliminate the reclosing de-rating.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.00M
 - Construction Responsibility: ComEd
- 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 100% to ComEd based on solution-based DFAX. Only ComEd transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: Voltage and transfer scenarios identified by PJM in real-time operations
 - Contingency: N/A
 - Criteria Test: Operational Performance
 - Overview of Reliability Solution
 - o Description of Upgrade: Add a 765 kV breaker at Baker station for the reactor on the Broadford 765 kV line.
 - Required Upgrade In-Service Date: 06/01/2024
 - Estimated Upgrade Cost: \$23.36M
 - Construction Responsibility: AEP
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
AEP	25,566	-1.10%	100.00%	70.68%
DAYTON	3,280	1.46%	0.00%	0.00%
DEOK	5,204	1.28%	0.00%	0.00%
EKPC	2,063	-1.56%	100.00%	8.12%
PEPCO	6,213	-1.35%	100.00%	21.20%

- Overview of Reliability Problem
 - Criteria Violation: Voltage and transfer scenarios identified by PJM in real-time operations.
 - o Contingency: N/A
 - o Criteria Test: Operational Performance
 - Overview of Reliability Solution
 - Description of Upgrade: Add two 765 kV breakers to the reactors at Broadford station on the Baker and Jacksons Ferry 765 kV lines.
 - Required Upgrade In-Service Date: 06/01/2024
 - Estimated Upgrade Cost: \$29.05M
 - Construction Responsibility: AEP
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
AEP	25,566	1.06%	99.81%	36.98%
BGE	6,307	1.07%	99.81%	9.18%
DAYTON	3,280	-1.46%	0.19%	0.04%
DEOK	5,204	-2.43%	0.19%	0.10%
Dominion	28,705	1.04%	99.81%	40.81%
EKPC	2,063	-3.12%	0.19%	0.05%
OVEC	95	-2.45%	0.19%	0.00%
PEPCO	6,213	1.52%	99.81%	12.84%

- Overview of Reliability Problem
 - Criteria Violation: Voltage and transfer scenarios identified by PJM in real-time operations.
 - Contingency: N/A
 - Criteria Test: Operational Performance
 - Overview of Reliability Solution
 - o Description of Upgrade: Add a 765 kV breaker to the reactor at Jefferson station on the Greentown 765 kV line.
 - Required Upgrade In-Service Date: 06/01/2024
 - Estimated Upgrade Cost: \$8.53M
 - o Construction Responsibility: AEP
- 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) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
AEP	25,566	1.27%	64.88%	64.50%
DEOK	5,204	2.62%	64.88%	27.02%
EKPC	2,063	1.48%	64.88%	6.06%
OVEC	95	12.86%	64.88%	2.42%

- Overview of Reliability Problem
 - Criteria Violation: East Rutherford 69 kV breakers 11K, 13K, 14K, 15K, 16K, 17K and 18K are overdutied.
 - o Contingency: N/A
 - Criteria Test: PSEG FERC Form 715 Criteria
 - Overview of Reliability Solution
 - Description of Upgrade: Open East Rutherford 69 kV tie breaker (26K)
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.00M
 - Construction Responsibility: PSEG
- Cost Allocation

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 $_{\odot}$ $\,$ $\,$ The cost for this baseline upgrade is allocated 100% to PSEG.

- Overview of Reliability Problem
 - o Criteria Violation: East Rutherford 69 kV breakers 11K, 13K, 14K, 15K, 16K, 17K and 18K are overdutied.
 - Contingency: N/A
 - Criteria Test: PSEG FERC Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: Move line U-775 (East Rutherford to Hasbrouck Heights) currently on section 2 to section 7 of the ring bus.
 - o Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$2.14M
 - Construction Responsibility: PSEG
- Cost Allocation
 - The cost for this baseline upgrade is allocated 100% to PSEG.

- Overview of Reliability Problem
 - Criteria Violation: Fair Lawn 69kV breakers, 11K, 15K, 21K, 25K, 31K, 35K, 41K, 43K, and 45K are overdutied.
 - Contingency: N-1-1
 - o Criteria Test: PSEG FERC Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: Perform all necessary engineering design and evaluation to increase Fairlawn 69 kV GIS from 50 kA to 55 kA.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$1.49M
 - Construction Responsibility: PSEG
- Cost Allocation
 - The cost for this baseline upgrade is allocated 100% to PSEG.

- Overview of Reliability Problem
 - Criteria Violation: End of Life
 - Contingency: Loss of 500 kV Line #588 from Fentress to Yadkin
 - Criteria Test: Dominion FERC Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: Rebuild approximately 13.51 miles of 500 kV Line #588 from structure 588/184 inside Yadkin substation to structure 588/254 outside of Fentress substation.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$78.60M
 - Construction Responsibility: Dominion
- 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 100% to Dominion based on solution-based DFAX. Only Dominion transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: End of Life
 - o Contingency: Loss of 500 kV Line No. 588 from Fentress to Yadkin
 - Criteria Test: Dominion FERC Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: Line No. 588 terminal equipment at Yadkin substation will be upgraded to a rating of 5000A. Since the new 500 kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.96M
 - Construction Responsibility: Dominion
- 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 100% to Dominion based on solution-based DFAX. Only Dominion transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: End of Life
 - o Contingency: Loss of 500 kV Line No. 588 from Fentress to Yadkin
 - Criteria Test: Dominion FERC Form 715 Criteria
- Overview of Reliability Solution
 - Description of Upgrade: At Fentress substation, since the new 500 kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated.
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.14M
 - Construction Responsibility: Dominion
- 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 100% to Dominion based on solution-based DFAX. Only Dominion transmission zone has greater than 1% distribution factor.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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%

- Overview of Reliability Problem
 - Criteria Violation: Allen R. P. Mone 345 kV line is overloaded
 - Contingency: N-1
 - o Criteria Test: Winter Generator Deliverability
 - Overview of Reliability Solution
 - Description of Upgrade: Rebuild Allen R.P. Mone 345 kV line (18.6 miles).
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$49.88M
 - o Construction Responsibility: AEP
- Cost Allocation

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 $_{\odot}$ $\,$ $\,$ The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
AEP	25,566	0.46%	0.72%	0.71%
DAYTON	3,280	-1.75%	99.28%	99.28%
OVEC	95	1.21%	0.72%	0.01%

- Overview of Reliability Problem
 - Criteria Violation: R. P. Mone Maddox Creek 345 kV line is overloaded
 - Contingency: Multiple contingencies
 - o Criteria Test: Summer/Winter Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Rebuild R.P. Mone Maddox Creek 345 kV line (9.4 miles).
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$39.03M
 - Construction Responsibility: AEP
- Cost Allocation
 - $_{\odot}$ $\,$ $\,$ The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
AEP	25,566	0.89%	99.31%	78.50%
DAYTON	3,280	1.90%	99.31%	21.50%

- Overview of Reliability Problem
 - Criteria Violation: Maddox Creek E. Lima 345 kV line overload
 - Contingency: N-2
 - o Criteria Test: Summer Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Replace 345 kV breakers 'B1' and 'B' at Maddox Creek station.
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$1.80M
 - Construction Responsibility: AEP
- Cost Allocation
 - $_{\odot}$ $\,$ $\,$ The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
AEP	25,566	-1.04%	99.81%	80.97%
DAYTON	3,280	-1.91%	99.81%	19.03%

- Overview of Reliability Problem
 - Criteria Violation: Maddox Creek E. Lima 345 kV line overload
 - Contingency: N-2
 - o Criteria Test: Summer Generator Deliverability
- Overview of Reliability Solution
 - Description of Upgrade: Replace two 345 kV breakers 'M' and 'M2' at East Lima station.
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$1.76M
 - Construction Responsibility: AEP
- Cost Allocation
 - $_{\odot}$ $\,$ $\,$ The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
AEP	25,566	-1.04%	99.81%	80.97%
DAYTON	3,280	-1.91%	99.81%	19.03%

- Overview of Reliability Problem
 - Criteria Violation: Overloads on the following lines: Genoa Westar 138 kV line, Maliszewski Polaris 138 kV line, Genoa Sping Road 138 kV line, Polaris Westar 138 kV line, Maliszewski transformer 765/138 kV transformer, Maliszewski 138 kV series reactor bypass, Morse Spring Road 138 kV line, the Marysville Hyatt 345 kV line, the Hyatt Vassell 345 kV line, the Hyatt Maliszewski No. 2 138 kV line, and the Genoa Maliszewski No. 2 138 kV line
 - Contingency: Multiple contingencies
 - o Criteria Test: Summer/Winter Generator Deliverability, Summer/Winter N-1-1
- Overview of Reliability Solution
 - Description of Upgrade: Connect and energize a second 765/345 kV bank at Vassell 765 kV station.
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$30.83M
 - o Construction Responsibility: AEP
- Cost Allocation
 - The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
AEP	25,566	4.82%	100.00%	88.81%
DAYTON	3,280	2.63%	100.00%	6.22%
DEOK	5,204	1.30%	100.00%	4.89%
OVEC	95	1.18%	100.00%	0.08%

- Overview of Reliability Problem
 - Criteria Violation: Marysville Maliszewski 765 kV line is overload
 - Contingency: N-2
 - Criteria Test: Summer Generator Deliverability
 - Overview of Reliability Solution
 - Description of Upgrade: Replace 765 kV breaker D at Maliszewski station.
 - Required Upgrade In-Service Date: 06/01/2027
 - Estimated Upgrade Cost: \$2.90M
 - Construction Responsibility: AEP
- 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.

Transmission Zone	Peak Load (MW) for 2024	Load Ratio Allocation (%) for 2024
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 Direction	DFAX Allocation
AEP	25,566	5.07%	99.98%	68.04%
ATSI	11,828	1.55%	99.98%	9.61%
DAYTON	3,280	1.12%	99.98%	1.92%
DL	2,702	2.36%	99.98%	3.35%
Dominion	28,705	1.13%	99.98%	17.06%
EKPC	2,063	-1.66%	0.02%	0.02%
OVEC	95	-2.90%	0.02%	0.00%

Baseline Upgrade b3853.1

- Overview of Reliability Problem
 - o Criteria Violation: Ladysmith CT 230 kV circuit breakers SX1272 and SX3472 are overdutied
 - o Contingency: N/A
 - Criteria Test: Short Circuit
 - Overview of Reliability Solution
 - Description of Upgrade: Replace over duty Ladysmith CT 230 kV circuit breakers SX1272 and SX3472 with an interrupting rating of 63 kA
 - Required Upgrade In-Service Date: 06/01/2025
 - Estimated Upgrade Cost: \$1.25M
 - Construction Responsibility: Dominion
- Cost Allocation

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

Baseline Upgrade b3854.1

- Overview of Reliability Problem
 - o Criteria Violation: Carson 230 kV circuit breakers 200272 and 24972-3 are overdutied
 - o Contingency: N/A
 - Criteria Test: Short Circuit
- Overview of Reliability Solution
 - Description of Upgrade: Replace over duty Carson 230 kV circuit breakers 200272 and 24972-3 with an interrupting rating of 63 kA
 - Required Upgrade In-Service Date: 06/01/2025
 - Estimated Upgrade Cost: \$1.25M
 - Construction Responsibility: Dominion
- Cost Allocation
 - The cost for this baseline upgrade is allocated 100% to Dominion.

Baseline Upgrade b3855.1

- Overview of Reliability Problem
 - o Criteria Violation: Four 69 kV lines in Cedar Grove and Jackson area of Northern New Jersey are overloaded
 - Contingency: Multiple contingencies
 - Criteria Test: Summer N-1-1 Thermal
- Overview of Reliability Solution
 - Description of Upgrade: Build 4 miles new 230 kV XLPE Circuit using (345 kV rated 5000kcmil cable) from Jackson Road 230 kV station to Cedar Grove 230 kV station
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$77.15M
 - Construction Responsibility: PSEG
- Cost Allocation
 - The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
PSEG	9,685	0.59%	100.00%	95.85%
RE	419	0.59%	100.00%	4.15%

Baseline Upgrade b3855.2

- Overview of Reliability Problem
 - o Criteria Violation: Four 69 kV lines in Cedar Grove and Jackson area of Northern New Jersey are overloaded
 - Contingency: Multiple contingencies
 - Criteria Test: Summer N-1-1 Thermal
- Overview of Reliability Solution
 - Description of Upgrade: Expand a new 230 kV bay at the existing Cedar Grove station with one line position by adding two 230 kV circuit breakers and associated disconnect switches
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$6.61M
 - Construction Responsibility: PSEG
- Cost Allocation
 - The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
PSEG	9,685	0.59%	100.00%	95.85%
RE	419	0.59%	100.00%	4.15%

Baseline Upgrade b3855.3

- Overview of Reliability Problem
 - o Criteria Violation: Four 69 kV lines in Cedar Grove and Jackson area of Northern New Jersey are overloaded
 - Contingency: Multiple contingencies
 - Criteria Test: Summer N-1-1 Thermal
- Overview of Reliability Solution
 - Description of Upgrade: Replace the existing HPFF termination structure with a new XLPE termination structure to connect to spare GIS bay position at Jackson 230 kV station
 - Required Upgrade In-Service Date: 06/01/2028
 - Estimated Upgrade Cost: \$0.82M
 - Construction Responsibility: PSEG
- Cost Allocation
 - The cost for this baseline upgrade is allocated by solution-based DFAX as below.

Transmission Zone	Planned Load (MW)	DFAX	%Flow Direction	DFAX Allocation
PSEG	9,685	0.59%	100.00%	95.85%
RE	419	0.59%	100.00%	4.15%

Attachment B

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

(Marked / Redline Format)

SCHEDULE 12 – APPENDIX A

(9) **PPL Electric Utilities Corporation**

Required Tra	ansmission Enhancements	Annual Revenue Requirem	ent Responsible Customer(s)
b1813.12	Replace the Blooming Grove 230 kV breaker 'Peckville'		PPL (100%)
b2223	Rebuild and reconductor 2.6 miles of the Sunbury - Dauphin 69 kV circuit		PPL (100%)
b2224	Add a 2nd 150 MVA 230/69 kV transformer at Springfield		PPL (100%)
b2237	150 MVAR shunt reactor at Alburtis 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: PPL (100%)
b2238	100 MVAR shunt reactor at Elimsport 230 kV		PPL (100%)

Required '	Transmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
b2269	Rebuild approximately 23.7 miles of the Susquehanna - Jenkins 230 kV circuit. This replaces a temporary SPS that is already planned to mitigate the violation until this solution is implemented		PPL (100%)
b2282	Rebuild the Siegfried- Frackville 230 kV line		PPL (100%)
b2406.1	Rebuild Stanton- Providence 69 kV 2&3 9.5 miles with 795 SCSR		PPL (100%)
b2406.2	Reconductor 7 miles of the Lackawanna - Providence 69 kV #1 and #2 with 795 ACSR		PPL (100%)
b2406.3	Rebuild SUB2 Tap 1 (Lackawanna - Scranton 1) 69 kV 1.5 miles 556 ACSR		PPL (100%)
b2406.4	Rebuild SUB2 Tap 2 (Lackawanna - Scranton 1) 69 kV 1.6 miles 556 ACSR		PPL (100%)
b2406.5	Create Providence - Scranton 69 kV #1 and #2, 3.5 miles with 795 ACSR		PPL (100%)
b2406.6	Rebuild Providence 69 kV switchyard		PPL (100%)
b2406.7	Install 2 - 10.8 MVAR capacitors at EYNO 69 kV		PPL (100%)
b2406.8	Rebuild Stanton 230 kV yard		PPL (100%)

Required	Transmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
b2446	Replace wave trap and protective relays at Montour		PPL (100%)
b2447	Replace wave trap and protective relays at Montour		PPL (100%)
b2448	Install a 2nd Sunbury 900 MVA 500-230 kV transformer and associated equipment		PPL (100%)
b2552.2	Reconductor the North Meshoppen - Oxbow – Lackawanna 230 kV circuit and upgrade terminal equipment (PPL portion)		PENELEC (98.86%) / PPL (1.14%)
b2574	Replace the Sunbury 230 kV 'MONTOUR NORT' breaker with a 63 kA breaker		PPL (100%)
b2690	Reconductor two spans of the Graceton – Safe Harbor 230 kV transmission line. Includes termination point upgrades		PPL (100%)
b2691	Reconductor three spans limiting Brunner Island – Yorkana 230 kV line, add 2 breakers to Brunner Island switchyard, upgrade associated terminal equipment		PPL (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required '	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2716	Add a 200 MVAR shunt reactor at Lackawanna 500 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: PPL (100%)
b2754.1	Install 7 miles of optical ground wire (OPGW) between Gilbert and Springfield 230 kV substations	PPL (100%)
b2754.4	Use ~ 40 route miles of existing fibers on PPL 230 kV system to establish direct fiber circuits	PPL (100%)
b2754.5	Upgrade relaying at Martins Creek 230 kV	PPL (100%)
b2756	Install 2% reactors at Martins Creek 230 kV	PPL (100%)
b2813	Expand existing Lycoming 69 kV yard to double bus double breaker arrangement	PPL (100%)

Required '	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2824	Reconfigure/Expand the Lackawanna 500 kV substation by adding a third bay with three breakers	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: PPL (100%)
b2838	Build a new 230/69 kV substation by tapping the Montour – Susquehanna 230 kV double circuits and Berwick – Hunlock & Berwick – Colombia 69 kV circuits	PPL (100%)
b2979	Replace Martins Creek 230 kV circuit breakers with 80 kA rating	PPL (100%)
b3221	Replace terminal equipment (bus conductor) on the 230 kV side of the Steel City 500/230 kV Transformer #1	PPL (100%)
b3222	Install one (1) 7.2 MVAR fixed cap bank on the Lock Haven – Reno 69 kV line and one (1) 7.2 MVAR fixed cap bank on the Lock Haven – Flemington 69 kV line near the Flemington 69/12 kV substation	PPL (100%)

Required '	Required Transmission Enhancements Annual Revenue Requirement Responsible Customer		
b3664	Replace the limiting 230 kV T2 transformer leads, bay conductor and bus conductor with double bundle 1590 ACSR at the Juniata station; Replace the limiting 1200 A MODs on the bus tie breaker with 3000 A MODs		PPL (100%)
b3698	Reconductor the 14.2 miles of the existing Juniata –Cumberland 230 kV line with 1272 ACSS/TW HS285 "Pheasant" conductor		AEC (4.17%) / BGE (13.18%) / DEOK (1.22%) / Dominion (3.25%) / DPL (9.14%) / ECP** (0.11%) / EKPC (0.22%) / HTP*** (0.20%) /JCPL (1.15%) / ME (27.02%) / NEPTUNE* (0.64%) / PECO (18.88%) / PEPCO (4.68%) / PSEG (16.14%)
b3715.1	Install a new 300 MVA 230/115 kV transformer at the existing PPL Williams Grove substation		ME (100%)
b3715.2	Construct a new approximately 3.4 miles 115 kV single circuit transmission line from Williams Grove to Allen substation		ME (100%)

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	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3774	Upgrade terminal equipment at Brunner Island station on Brunner Island – Yorkana 230 kV line	PPL (100%)
b3800.1	Build a New Otter Creek 500 kV (Collinsville) switching station with two bay three breaker configuration	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	ransmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3800.3	New Otter Creek (Collinsville) to Doubs 500 kV Line (Otter Creek 500 kV - MD Border). Rebuild and expand existing approximately 12 miles of Otter Creek - Conastone 230 kV line to become a double- circuit 500 and 230 kV lines	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)
<u>b3800.53</u>	<u>Construct a double-</u> <u>circuit 500 kV line from</u> <u>the existing TMI -</u> <u>Peach Bottom 500 kV</u> <u>right-of-way to the</u> <u>proposed Chanceford</u> <u>switchyard,</u> <u>approximately 1.0 miles</u> <u>in length</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%) / Dominion (13.89%) / DPL (2.55%) / 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 (13.37%) / Dominion (75.27%) / PEPCO (11.36%)

SCHEDULE 12 – APPENDIX A

(12) Public Service Electric and Gas Company

Required Tr		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 Requiremen	nt Responsible Customer(s)
b2276	Eliminate the Sewaren 138 kV bus by installing a new 230 kV bay at Sewaren 230 kV		PSEG (95.85%) / RE (4.15%)
b2276.1	Convert the two 138 kV circuits from Sewaren – Metuchen to 230 kV circuits including Lafayette and Woodbridge substation		PSEG (95.85%) / RE (4.15%)
b2276.2	Reconfigure the Metuchen 230 kV station to accommodate the two converted circuits		PSEG (95.85%) / RE (4.15%)
b2290	Replace disconnect switches at Kilmer, Lake Nilson and Greenbrook 230 kV substations on the Raritian River - Middlesex (I-1023) circuit		PSEG (100%)
b2291	Replace circuit switcher at Lake Nelson 230 kV substation on the Raritian River - Middlesex (W- 1037) circuit		PSEG (100%)
b2295	Replace the Salem 500 kV breaker 10X with 63 kA breaker		PSEG (100%)
b2421	Install all 69 kV lines to interconnect Plainfield, Greenbrook, and Bridgewater stations and establish the 69 kV network		PSEG (100%)
b2421.1	Install two 18 MVAR capacitors at Plainfield and S. Second St substation		PSEG (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirer	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: PSEG (95.85%) / RE (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 Tra	ansmission Enhancements Ann	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		
02430.30	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		
02130.70	and any associated		
	substation upgrades		PSEG (95.85%) / RE (4.15%)
			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%) /
	Relocate the overhead		DEOK (3.21%) / DL (1.59%) /
	portion of Linden - North		DPL (2.55%) / Dominion
b2436.81	Ave "T" 138 kV circuit to		(13.89%) / EKPC (2.35%) /
02150.01	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%) /
			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 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
	Convert the Bayway -	(3.21%) / DL (1.59%) / DPL
	Linden "Z" 138 kV circuit	(2.55%) / Dominion (13.89%) /
b2436.83	to 345 kV and any	EKPC (2.35%) / JCPL (3.59%) /
02430.03	associated substation	ME (1.81%) / NEPTUNE*
	upgrades	(0.42%) / OVEC (0.06%) /
	upgrades	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%)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%) /
		APS (5.82%) / ATSI (7.49%) /
		BGE (4.01%) / ComEd (14.06%)
	Convert the Bayway – Linden "W" 138 kV circuit to 345 kV and any	/ Dayton (2.03%) / DEOK
		(3.21%) / DL (1.59%) / DPL
		(2.55%) / Dominion (13.89%) /
b2436.84		EKPC (2.35%) / JCPL (3.59%) /
	associated substation	ME (1.81%) / NEPTUNE*
	upgrades	(0.42%) / OVEC (0.06%) /
	10	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 Requireme	ent Responsible Customer(s)
b2436.85	Convert the Bayway – Linden "M" 138 kV circuit to 345 kV and any associated substation upgrades	J	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / 3GE (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	J	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / 3GE (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%)

		(Responsible Customer(s)
	New Bergen 345/230 kV	
b2437.10	transformer and any	
02737.10	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bergen 345/138 kV	
b2437.11	transformer #1 and any	
02437.11	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayway 345/138 kV	
b2437.20	transformer #1 and any	
02437.20	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayway 345/138 kV	
b2437.21	transformer #2 and any	
02437.21	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Linden 345/230 kV	
b2437.30	transformer and any	
02437.30	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayonne 345/69 kV	
b2437.33	transformer and any	
02437.33	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
1,7420	Install two reactors at	
b2438	Tosco 230 kV	PSEG (100%)
	Replace the Tosco 138 kV	· · · · · · · · · · · · · · · · · · ·
b2439	breaker 'CB1/2 (CBT)'	
	with 63 kA	PSEG (100%)
1.0.47.4	Rebuild Athenia 138 kV to	
b2474	80 kA	PSEG (100%)
	Install a 100 MVAR 230	
b2589	kV shunt reactor at Mercer	
	station	PSEG (100%)
	Install two 75 MVAR 230	
b2590	kV capacitors at Sewaren	
	station	PSEG (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	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%)
	Add a new 500 kV bay at Hope Creek (Expansion of Hope Creek 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%) /
b2633.4		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%)

Required Tra	ansmission Enhancements Ann	nual Revenue Requirement Responsible Customer(s)
		AEC (8.01%) / BGE (1.94%) /
	Add a new 500/230 kV	DPL (12.99%) / JCPL (13.85%)
b2633.5	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%) / PENELEC
	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%)

Required II		ai Revenue Requirement Responsible Customer(s)
	Implement changes to the	
b2633.91	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	
02033.92	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%) 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 Ennancements Annual Revenue Requirement Responsible Customer	ission Enhancements Annual Revenue Requirement Responsible Custome	r(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)

PECO
8.89%) /
,
PECO
5.75%)/
PECO
1.78%)/
ŕ
llocations
TUNE*
0.19%) /
(0.76%)
TUNE*
.72%) /
(3.25%)
TUNE*
5.38%)/
(0.14%)
TUNE*
8.69%) /
(1.98%)

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Required I		al Revenue Requirement	t Responsible Customer(s)
	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		
b2837.1	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		
1.0007.0	(Trenton - Burlington) 138		
b2837.2	kV circuits to 230 kV		
	circuits (Yardville - Ward		NEPTUNE* (8.84%) / PSEG
	Ave K)		(87.38%) / RE (3.78%)
	Convert the N-1340 and T-		
b2837.3	1372/D-1330 (Brunswick -		
	Trenton) 138 kV circuits to		
	230 kV circuits (Brunswick		NEPTUNE* (8.24%) / PSEG
	- Devils Brook)		(87.95%) / RE (3.81%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
b2837.4	(Trenton - Burlington) 138		
02037.4	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		
b2837.5	(Trenton - Burlington) 138		
	kV circuits to 230 kV		
	circuits (Bustleton -		NEPTUNE* (5.95%) / PSEG
	Burlington Y)		(90.15%) / RE (3.90%)
b2837.6	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
	(Trenton - Burlington) 138		
02037.0	kV circuits to 230 kV		
	circuits (Trenton - Yardville		NEPTUNE* (12.83%) / PSEG
	F)		(83.55%) / RE (3.62%)
* NT	Regional Transmission System		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
1 2027 7	(Trenton - Burlington) 138		
b2837.7	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		
1 2027 0	(Trenton - Burlington) 138		
b2837.8	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		
1 2027 0	(Trenton - Burlington) 138		
b2837.9	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		
b2837.10	(Trenton - Burlington) 138		
62837.10	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		
1.0027.11	(Trenton - Burlington) 138		
b2837.11	kV circuits to 230 kV		
	circuits (Bustleton -		NEPTUNE* (5.54%) / PSEG
	Burlington Z)		(90.54%) / RE (3.92%)
b2870	Build new 138/26 kV		
	Newark GIS station in a		
	building (layout #1A)		
	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%)
* NT	Regional Transmission System		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

I		
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)

Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	Convert Runnemede's		
	straight bus to a ring bus		
b2935.3	and construct a 69 kV line		
	from Hilltop to Runnemede		
	69 kV		PSEG (95.85%) / RE (4.15%)
	Wreck and rebuild the VFT		
10055	– Warinanco – Aldene 230		
b2955	kV circuit with paired		
	conductor		PSEG (95.85%) / RE (4.15%)
	Replace existing cable on		
1.00.00	Cedar Grove - Jackson Rd.		
b2956	with 5000 kcmil XLPE		
	cable		PSEG (95.85%) / RE (4.15%)
	Construct a 230/69 kV		
	station at Hillsdale		
b2982	Substation and tie to		
02902	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		
02902.1	transformer at Hillsdale		PSEG (95.85%) / RE (4.15%)
	Construct a 69 kV network		
	between Paramus, Dumont,		
b2982.2	and Hillsdale Substation		
02902.2	using existing 69 kV		
	circuits		PSEG (95.85%) / RE (4.15%)
	Convert Kuller Road to a		
b2983			
	69/13 kV station		PSEG (95.85%) / RE (4.15%)
1.0000.1	Install 69 kV ring bus and		
b2983.1	two (2) 69/13 kV		
ļ	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%)
b2986	Replace the existing		
	Roseland – Branchburg –		
	Pleasant Valley 230 kV		
	corridor with new structures		See sub-IDs for cost allocations

Boseland-Branchburg 230 kV corridor rebuild (Roseland-Readington)PSEG (95.85%) / RE (4.15%)b2986.12Roseland-Branchburg 230 kV corridor rebuild (Readington - Branchburg)JCPL (58.66%) / PSEG (39.62%) / RE (1.72%)b2986.21Branchburg-Pleasant Valley 230 kV corridor rebuild (Branchburg - East Flemington)NEPTUNE* (0.37%) / PECO (98.94%) / PSEG (0.66%) / RE (0.03%)b2986.22Branchburg-Pleasant Valley 230 kV corridor rebuild (Branchburg - East Flemington)NEPTUNE* (5.83%) / PECO (83.73%) / PSEG (10.01%) / RE (0.43%)b2986.23Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley)NEPTUNE* (5.83%) / PECO (83.73%) / PSEG (10.01%) / RE (0.43%)b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - 230 kV corridor rebuild (He PSEG portion of Rocktown)JCPL (26.89%) / NEPTUNE* (4.81%) / PECO (6.02%) / PSEG (56.66%) / RE (2.46%)b3003Construct a 230/69 kV station at MaywoodPSEG (95.85%) / RE (4.15%)b3003.1Maywood to accommodate new constructionPSEG (95.85%) / RE (4.15%)b3003.2Extend Maywood 230 kV bus and install one (1) 230/69 kV transformer at MaywoodPSEG (95.85%) / RE (4.15%)b3003.3Install one (1) 230/69 kV transformer at MaywoodPSEG (95.85%) / RE (4.15%)	Required In		iai Revenue Requirement	Responsible Customer(s)
		Roseland-Branchburg 230		
$\begin{array}{c c} \mbox{Reschard-Branchburg 230} \\ \mbox{kV corridor rebuild} \\ \mbox{(Readington - Branchburg)} \\ \mbox{Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Bast Flemington)} \\ \mbox{(Bast rebuington - Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Bast rebuington - Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Bast rebuington - Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Bast rebuington - Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Pleasant Valley - Re (0.43\%) / PECO (8.88\%) / RE (0.43\%) \\ \mbox{Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(Pleasant Valley - Rocktown) } \\ \mbox{PsEG (56.96\%) / RE (2.46\%) \\ \mbox{Branchburg-Pleasant Valley} \\ \mbox{230 kV corridor rebuild} \\ \mbox{(the PSEG portion of Re (4.40\%) / PECO (6.02\%) / Re (2.32\%) \\ \mbox{Bastor at Maywood } \\ \mbox{Bastor at Maywood } \\ \mbox{Bastor at Maywood 230 kV \\ \mbox{bastor at Maywood 230 kV \\ \mbox{bus and install one (1) 230} \\ \mbox{kV breaker } \\ PSEG (95.85\%) / RE (4.15\%) \\ \mbox{PSEG (95.85\%) / RE (4.15\%) \\ \mbox{Bastor at Maywood 230 kV \\ \mbox{bus and install one (1) 230/69 kV \\ \mbox{bus and install one (1)$	b2986.11			
$ b2986.12 \\ b2986.21 \\ b2986.21 \\ b2986.21 \\ b2986.21 \\ b2986.21 \\ b2986.21 \\ b2986.22 \\ b2986.23 \\ b2986.23 \\ b2986.23 \\ b2986.24 \\ b2986.23 \\ b2986.24 \\ b29$				PSEG (95.85%) / RE (4.15%)
		Ũ		
b2986.21	b2986.12	kV corridor rebuild		JCPL (58.66%) / PSEG
b2986.21		(Readington - Branchburg)		(39.62%) / RE (1.72%)
	12096 21	230 kV corridor rebuild		NEPTUNE* (0.37%) / PECO
b2986.22Branchburg-Pleasant Valley 230 kV corridor rebuild (East Flemington - Pleasant Valley)NEPTUNE* (5.83%) / PECO (83.73%) / PSEG (10.01%) / RE (0.43%)b2986.23Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown)JCPL (26.89%) / NEPTUNE* (4.81%) / PECO (8.88%) / PSEG (56.96%) / RE (2.46%)b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown)JCPL (33.60%) / NEPTUNE* (4.40%) / PECO (6.02%) / PSEG (56.96%) / RE (2.46%)b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (the PSEG portion of Rocktown - Buckingham)JCPL (33.60%) / NEPTUNE* (4.40%) / PECO (6.02%) / PSEG (53.66%) / RE (2.32%)b3003Construct a 230/69 kV station at MaywoodPSEG (95.85%) / RE (4.15%)b3003.1Purchase properties at Maywood to accommodate new constructionPSEG (95.85%) / RE (4.15%)b3003.2Extend Maywood 230 kV bus and install one (1) 230 kV breakerPSEG (95.85%) / RE (4.15%)b3003.3Install one (1) 230/69 kVPSEG (95.85%) / RE (4.15%)	02980.21	(Branchburg - East		(98.94%) / PSEG (0.66%) / RE
b2986.22 b2986.22 b2986.23 b2986.23 b2986.23 b2986.23 b2986.24 b3003 b3003 b3003 b3003 b3003 b3003.1 b3003.1 b3003.2 b3003.2 b3003.2 b3003.2 b3003.3 b3003.4 b3003.4 b3003.4 b3003.5 b3003.5 b3003.5 b3003.5 b3003.5 b3003		Flemington)		(0.03%)
		Branchburg-Pleasant Valley		
b2986.22(East Flemington - Pleasant Valley)(83.73%) / PSEG (10.01%) / RE (0.43%)b2986.23Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown)JCPL (26.89%) / NEPTUNE* (4.81%) / PECO (8.88%) / PSEG (56.96%) / RE (2.46%)b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (the PSEG portion of Rocktown - Buckingham)JCPL (33.60%) / NEPTUNE* (4.40%) / PECO (6.02%) / PSEG (53.66%) / RE (2.32%)b3003Construct a 230/69 kV station at MaywoodPSEG (95.85%) / RE (4.15%)b3003.1Maywood to accommodate new constructionPSEG (95.85%) / RE (4.15%)b3003.2Extend Maywood 230 kV bus and install one (1) 230 kV breakerPSEG (95.85%) / RE (4.15%)b3003.3Install one (1) 230/69 kVPSEG (95.85%) / RE (4.15%)	1,209(,22	230 kV corridor rebuild		NEPTUNE* (5.83%) / PECO
Valley)RE (0.43%)b2986.23Branchburg-Pleasant Valley 230 kV corridor rebuild (Pleasant Valley - Rocktown)JCPL (26.89%) / NEPTUNE* (4.81%) / PECO (8.88%) / PSEG (56.96%) / RE (2.46%)b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (the PSEG portion of Rocktown - Buckingham)JCPL (33.60%) / NEPTUNE* (4.40%) / PECO (6.02%) / PSEG (53.66%) / RE (2.32%)b3003Construct a 230/69 kV station at MaywoodPSEG (95.85%) / RE (4.15%)b3003.1Purchase properties at Maywood to accommodate new constructionPSEG (95.85%) / RE (4.15%)b3003.2Extend Maywood 230 kV bus and install one (1) 230 kV breakerPSEG (95.85%) / RE (4.15%)b3003.3Install one (1) 230/69 kVPSEG (95.85%) / RE (4.15%)	62986.22	(East Flemington - Pleasant		
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b2986.24Branchburg-Pleasant Valley 230 kV corridor rebuild (the PSEG portion of Rocktown - Buckingham)JCPL (33.60%) / NEPTUNE* (4.40%) / PECO (6.02%) / PSEG (53.66%) / RE (2.32%)b3003Construct a 230/69 kV station at MaywoodPSEG (95.85%) / RE (4.15%)b3003.1Purchase properties at new constructionPSEG (95.85%) / RE (4.15%)b3003.2Extend Maywood 230 kV bus and install one (1) 230 kV breakerPSEG (95.85%) / RE (4.15%)b3003.3Install one (1) 230/69 kV	62986.23	(Pleasant Valley -		(4.81%) / PECO (8.88%) /
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Extend Maywood 230 kV b3003.2 Extend Maywood 230 kV bus and install one (1) 230 PSEG (95.85%) / RE (4.15%) b3003.3 Install one (1) 230/69 kV				DSEG(05.85%) / DE(4.15%)
b3003.2 bus and install one (1) 230 PSEG (95.85%) / RE (4.15%) kV breaker PSEG (95.85%) / RE (4.15%) b3003.3 Install one (1) 230/69 kV				1 SEG (95.8576)7 KE (4.1576)
kV breaker PSEG (95.85%) / RE (4.15%) b3003.3 Install one (1) 230/69 kV	h2002.2			
b3003.3 Install one (1) 230/69 kV	03003.2			DSEC(05.850/)/DE(4.150/)
03003.3				FSEU (93.8370) / KE (4.1370)
transformer at Maywood PSEG (95.85%) / RE (4.15%)	b3003.3			
		•		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)

Required II	ansmission Enhancements Annual Revenue Requirement	Responsible Customer(s)
	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,	
1 2025 2	Springfield Road, McCarter,	
b3025.3	Federal Square, and the two	
	new stations (Vauxhall &	
	19th Ave)	PSEG (95.85%) / RE (4.15%)
	Construct a third 69 kV	
1.0500	supply line from Penns Neck	
b3703	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	
00701	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	1515 (10070)
b3705	Athenia Transformer No.	
03703	220-1	PSEG (95.85%) / RE (4.15%)
	Replace Fair Lawn 230/138	1 5EG (75.6576)7 KE (4.1576)
b3706	kV transformer No. 220-1	
	with an existing O&M	
		PSEG(100%)
	system spare at Burlington Construct a third 69 kV	PSEG (100%)
b3716	supply line from Totowa	
	substation to the customer's	$\mathbf{D}\mathbf{C}\mathbf{C}$ (1000/)
	substation	PSEG (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		I	
	Replace the two existing		
	1200A Bergen 138 kV circuit		
	switchers with two 138 kV		
	disconnect switches to		
b3719	achieve a minimum summer		
	normal device rating of 298		
	MVA and a minimum		
	summer emergency rating of		
	454 MVA		PSEG (100%)
	Convert existing Medford 69		
	kV straight bus to seven-		
	breaker ring bus, construct a		
b3757	new 230/69 kV transformer		
03757	at Cox's Corner station and a		
	new 69 kV line from Cox's		
	Corner station to Medford		
	station		PSEG (100%)
	Replace existing Waldwick		
	230 kV 50 MVAR fixed		
b3794.1	shunt reactor with a 230 kV		
	150 MVAR variable shunt		
	reactor		PSEG (100%)
	Replace existing Waldwick		
b3794.2	345 kV 100 MVAR fixed		
	shunt reactor with a 345 kV		
	150 MVAR variable shunt		
	reactor		PSEG (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

<u>b3848.1</u>	Open East Rutherford 69 kV tie breaker (26K)	<u>PSEG (100%)</u>
<u>b3848.2</u>	Move line U-775 (East Rutherford to Hasbrouck Heights) currently on section 2 to section 7 of the ring bus	<u>PSEG (100%)</u>
<u>b3849.1</u>	Perform all necessary engineering design and evaluation to increase Fairlawn 69 kV GIS from 50 kA to 55 kA	<u>PSEG (100%)</u>

Public Service Electric and Gas Company (cont.)

Required Tr	ansmission Enhancements Annua	<u>l Revenue Requirement</u>	<u>Responsible Customer(s)</u>
<u>b3855.1</u>	Build 4 miles new 230 kV XLPE Circuit using (345 kV rated 5000kcmil cable) from Jackson Road 230 kV station to Cedar Grove 230 kV station		PSEG (95.85%) / RE (4.15%)
<u>b3855.2</u>	Expand a new 230 kV bay at the existing Cedar Grove station with one line position by adding two 230 kV circuit breakers and associated disconnect switches		<u>PSEG (95.85%) / RE (4.15%)</u>
<u>b3855.3</u>	Replace the existing HPFF termination structure with a new XLPE termination structure to connect to spare GIS bay position at Jackson 230 kV station		<u>PSEG (95.85%) / RE (4.15%)</u>

SCHEDULE 12 – APPENDIX A

Required Tra	nsmission Enhancements Annual Reven	ue 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	
02174.0	substation	APS (100%)
b2174.9	Replace primary relay at	
02174.9	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	
	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	
	from the generating station	
	building to new control	
	building	APS (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2216	Willow Island: Install a new 138 kV cross bus at Belmont Substation and reconnect and reconfigure the 138 kV lines to facilitat removal of the equipment a Willow Island switching station	e	APS (100%)
b2235	130 MVAR reactor at Monocacy 230 kV		APS (100%)
b2260	Install a 32.4 MVAR capacitor at Bartonville		APS (100%)
b2261	Install a 33 MVAR capacitor at Damascus		APS (100%)
b2267	Replace 1000 Cu substation conductor and 1200 amp wave trap at Marlowe	1	APS (100%)
b2268	Reconductor 6.8 miles of 138kV 336 ACSR with 336 ACSS from Double Toll Gate to Riverton	5	APS (100%)
b2299	Reconductor from Collins Ferry - West Run 138 kV with 556 ACSS		APS (100%)
b2300	Reconductor from Lake Lynn - West Run 138 kV		APS (100%)
b2341	Install 39.6 MVAR Capacitor at Shaffers Corne 138 kV Substation	er	APS (100%)
b2342	Construct a new 138 kV switching station (Shuman Hill substation), which is next the Mobley 138 kV substation and install a 31.7 MVAR capacitor	7	APS (100%)
b2343	Install a 31.7 MVAR capacitor at West Union 13 kV substation	8	APS (100%)

Required Tr	ansmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
b2362	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		<u> </u>
	transformer at Squab		
	Hollow 230 kV substation.		
10264	Loop the Forest - Elko 230		
b2364	kV line into Squab Hollow.		
	Loop the Brookville - Elko		
	138 kV line into Squab		
	Hollow		APS (100%)
	Install a 44 MVAR 138 kV		<u>_</u>
b2412	capacitor at the Hempfield		
	138 kV substation		APS (100%)
	Install breaker and a half		<u>_</u>
	138 kV substation (Waldo		
	Run) with 4 breakers to		
1 2 4 2 2 1	accommodate service to		
b2433.1	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		
1.2422.2	capacitors at the new		
b2433.3	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%)

Replace the Oak Grove 138 kV breaker 'OG1' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakersAPS (100%)Be2427KV breaker 'OG2' with 63 kA breakersAPS (100%)Be2428Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakersAPS (100%)b2429Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)Be2429Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)b2429Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)Be2430Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakersAPS (100%)Replace the Cab Grove 138 kV breaker 'C9-KISKI VLY' with 63kAAPS (100%)Replace the Ringgold 138 kV breaker 'C9-KISKI VLY' with 63kAAPS (100%)Replace the Ringgold 138 kV breaker 'RCM1' with 40kA breakersAPS (100%)B2472Replace the Ringgold 138 kV breaker 'MCM1' with 40kA breakersAPS (100%)B2475 b2475Construct a new line between Oak Mound 138 kV substation and Waldo Run 138 kV substationAPS (100%)B2475.1Construct a new line between Oak Mound 138 kV substation (Shuman Hill substation (Shuman Hill subst	Required Tr	ansmission Enhancements Annual Re	evenue Requirement Responsible Customer(s)
kA breakersAPS (100%)b2427Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakersAPS (100%)B2428Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)B2429Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)B2430Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)B2431Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakersAPS (100%)B2432Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA rated breakerAPS (100%)B2432Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA rated breakerAPS (100%)B2433Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA rated breakerAPS (100%)B2432Replace the Ringold 138 kV breaker 'RCM1' with 40kA breakersAPS (100%)B2473Replace the Ringold 138 kV substation and Waldo Run 138 kV substationAPS (100%)B2475Construct a new line between Oak Mound 138 kV substation (Shuman Hill substation (Sh		Replace the Oak Grove 138	
Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakersAPS (100%)B2428Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 b2430Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakersAPS (100%)Replace the Cak Grove 138 kV breaker 'RC1' with a 40 kA rated breakerAPS (100%)Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA areadersAPS (100%)Replace the Ringgold 138 kV breaker 'RCM1' with 40kA breakersAPS (100%)Replace the Ringgold 138 kV breaker '#4 XMFR' with 40kA breakersAPS (100%)b2473 b2473Construct a new line between Oak Mound 138 kV substation and Waldo Run 138 kV substationAPS (100%)b2545.1Substation (Shuman Hill substation (Shum	b2426	kV breaker 'OG1' with 63	
b2427 kV breaker 'OG2' with 63 APS (100%) Replace the Oak Grove 138 KV breaker 'OG3' with 63 APS (100%) b2428 kV breaker 'OG3' with 63 APS (100%) Replace the Oak Grove 138 APS (100%) b2429 kV breaker 'OG4' with 63 APS (100%) Replace the Oak Grove 138 APS (100%) b2430 kV breaker 'OG5' with 63 APS (100%) Replace the Oak Grove 138 APS (100%) B2430 kV breaker 'OG6' with 63 APS (100%) Replace the Ridgeley 138 APS (100%) b2431 kV breaker 'CG1' with a40 APS (100%) Replace the Ridgeley 138 APS (100%) b2432 kV breaker 'RC1' with a 40 APS (100%) Replace the Ridgeley 138 KV breaker 'C9-KISKI VLY' With 63kA b2440 breaker 'C9-KISKI VLY' With 63kA APS (100%) b2472 kV breaker 'RCM1' with 40kA breakers APS (100%) b2473 kV breaker 'MA XMFR' with 40kA breakers APS (100%) b2475 Construct a new line between Oak Mound 138 APS (100%) b2475 Construct a new 138 kV substation APS (100%) b2545.1 substation (Shuman Hill substation) APS (100%)		kA breakers	APS (100%)
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$ b2430 kV breaker 'OG5' with 63 \\ kA breakers \\ Replace the Oak Grove 138 \\ kV breaker 'OG6' with 63 \\ kA breakers \\ APS (100\%) \\ \hline \\ $		Replace the Oak Grove 138	
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kV substation and Waldo APS (100%) Run 138 kV substation APS (100%) Construct a new 138 kV substation (Shuman Hill b2545.1 substation) connected to the Fairview –Willow Island Fairview – Willow Island	b2475	between Oak Mound 138	
Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island		kV substation and Waldo	
Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island		Run 138 kV substation	APS (100%)
substation (Shuman Hillb2545.1substation) connected to theFairview –Willow Island			
b2545.1 substation) connected to the Fairview –Willow Island			
Fairview – Willow Island	b2545.1		
		,	
			APS (100%)

Required T	ransmission Enhancements An	nual Revenue Requirement	Responsible Customer(s)
	Install a ring bus station with fi	ve	
b2545.2	active positions and two 52.8		
02343.2	MVAR capacitors with 0.941 n	ηΗ	
	reactors		APS (100%)
b2545.3	Install a +90/-30 MVAR SVC		
02343.3	protected by a 138 kV breaker		APS (100%)
b2545.4	Remove the 31.7 MVAR capac	itor	
02343.4	bank at Mobley 138 kV		APS (100%)
	Install a 51.8 MVAR (rated) 13	8 kV	
b2546	capacitor at Nyswaner 138 kV		
	substation		APS (100%)
b2547.1	Construct a new 138 kV six bre	aker	
02347.1	ring bus Hillman substation		APS (100%)
b2547.2	Loop Smith- Imperial 138 kV li		
02347.2	into the new Hillman substatior		APS (100%)
b2547.3	Install +125/-75 MVAR SVC a	t	
02347.3	Hillman substation		APS (100%)
b2547.4	Install two 31.7 MVAR 138 kV	r	
02347.4	capacitors		APS (100%)
	Eliminate clearance de-rate on		
	Wylie Ridge – Smith 138 kV li		
b2548	and upgrade terminals at Smith		
	kV, new line ratings 294 MVA		
	(Rate A)/350 MVA (Rate B)		APS (100%)
b2612.1	Relocate All Dam 6 138 kV line	e and	
02012.1	the 138 kV line to AE units 1&	2	APS (100%)
	Install 138 kV, 3000A bus-tie		
b2612.2	breaker in the open bus-tie posi		
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%)
b2666	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 Tr	ansmission Enhancements	Annual Revenue Requireme	nt 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		
b2666.14	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		
02072	and adjust relay settings		
	accordingly		APS (100%)
		A	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%)
b2689.3	Upgrade terminal equipment		
	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%)
b2700	Remove existing Black Oak		
02700	SPS		APS (100%)
			AEP (6.46%) / APS (8.74%) /
	Reconfigure the Ringgold		BGE (19.74%) / ComEd
b2743.6	230 kV substation to double		(2.16%) / Dayton (0.59%) /
	bus double breaker scheme		DEOK (1.02%) / DL (0.01%) /
			Dominion (39.95%) / EKPC
			(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)
b2965	Reconductor the Charleroi – Allenport 138 kV line with 954 ACSR conductor.		
	Replace breaker risers at Charleroi and Allenport		APS (37.15%) / DL (62.85%)
b2966	Reconductor the Yukon – Smithton – Shepler Hill Jct 138 kV line with 795 ACSS conductor. Replace Line Disconnect Switch at Yukon		APS (100%)
b2966.1	Reconductor the Yukon - Smithton - Shepler Hill Jct 138 kV line and replace terminal equipment as necessary to achieve required rating		APS (100%)
b2967	Convert the existing 6 wire Butler - Shanor Manor - Krendale 138 kV line into two separate 138 kV lines. New lines will be Butler - Keisters and Butler - Shanor Manor - Krendale 138 kV		APS (100%)
b2970	Ringgold – Catoctin Solution		APS (100%)
b2970.1	Install two new 230 kV positions at Ringgold for 230/138 kV transformers		APS (100%)
b2970.2	Install new 230 kV position for Ringgold – Catoctin 230 kV line		APS (100%)
b2970.3	Install one new 230 kV breaker at Catoctin substation		APS (100%)
b2970.4	Install new 230/138 kV transformer at Catoctin substation. Convert Ringgold – Catoctin 138 kV line to 230 kV operation		APS (100%)

Required Tr	ansmission Enhancements Anr	ual Revenue Requirement	Responsible Customer(s)
b2970.5	Convert Garfield 138/12.5 kV		
02970.3	substation to 230/12.5 kV		APS (100%)
h2006	Construct new Flint Run 500/138		See sub-IDs for cost
b2996	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		
100001	from Waldo Run substation.		
b2996.1	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		
100000	breakers (Rider 50 and #1/4		
b2996.3	transformer breaker) at Glen Falls		
	with 63 kA 3000A units		APS (100%)

Required T	Transmission Enhancements A	nnual 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		
b3006	transformers with three		
03000	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		
b3007.1	new conductor will be 636		
05007.1	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%)

Required 11a	Institussion Enhancements Annual	Cevenue Requirement	Responsible Customer(s)
	Upgrade terminal equipment		
b3011.3	at Yukon to increase rating on		
0001110	Yukon to Route 51 #1 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
b3011.4	at Yukon to increase rating on		
05011.4	Yukon to Route 51 #2 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
b3011.5	at Yukon to increase rating on		
05011.5	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		
b3012.1	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		
b3012.3	existing line, and construct		
03012.3	1.5 miles of a new line to the		
	reconductored portion. Install		
	a new line terminal at APS		
	Route 51 substation		DL (100%)

Institussion Enhancements Annual	Revenue Requirement	Responsible Customer(s)
Reconductor Vasco Tap to		
0 1		
4.4 miles. The new conductor		
will be 336 ACSS replacing		
the existing 336 ACSR		
conductor		APS (100%)
Reconductor Elrama to		
Mitchell 138 kV line – AP		
portion. 4.2 miles total. 2x		
795 ACSS/TW 20/7		DL (100%)
Upgrade terminal equipment		
at Mitchell for Mitchell –		
Elrama 138 kV line		APS (100%)
Upgrade substation		
disconnect leads at William		
138 kV substation		APS (100%)
Ronceverte cap bank and		
terminal upgrades		APS (100%)
Install a 138 kV capacitor		
(29.7 MVAR effective) at		
West Winchester 138 kV		APS (100%)
Upgrade line relaying at Piney		
Fork and Bethel Park for		
Piney For – Elrama 138 kV		
line and Bethel Park – Elrama		
138 kV		APS (100%)
	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 Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7 Upgrade terminal equipment at Mitchell for Mitchell – Elrama 138 kV line Upgrade substation disconnect leads at William 138 kV substation Ronceverte cap bank and terminal upgrades Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV Upgrade line relaying at Piney Fork and Bethel Park for Piney For – Elrama 138 kV line and Bethel Park – Elrama	Edgewater Tap 138 kV line. 4.4 miles. The new conductor will be 336 ACSS replacing the existing 336 ACSR conductor Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7 Upgrade terminal equipment at Mitchell for Mitchell – Elrama 138 kV line Upgrade substation disconnect leads at William 138 kV substation Ronceverte cap bank and terminal upgrades Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV Upgrade line relaying at Piney Fork and Bethel Park for Piney For – Elrama 138 kV line and Bethel Park – Elrama

required fit	uisinission Linducententes Annual	reevenue reequirement	
	Reconductor the Yukon –		
	Westraver 138 kV line (2.8		
b3068	miles), replace the line drops		
	and relays at Yukon 138 kV		
	and replace switches at		
	Westraver 138 kV bus		APS (100%)
	Reconductor the Westraver –		
	Route 51 138 kV line (5.63		
b3069	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		
b3071	miles) and replace relays at		
	Yukon 138 kV bus		APS (100%)
	Reconductor the Yukon –		
b3072	Route 51 #3 138 kV line (8		
03072	miles) and replace relays at		
	Yukon 138 kV bus		APS (100%)
b3074	Reconductor the 138 kV bus		
03074	at Armstrong substation		APS (100%)
	Replace the 500/138 kV		
b3075	transformer breaker and		
03073	reconductor 138 kV bus at		
	Cabot substation		APS (100%)
	Reconductor the Edgewater –		
b3076	Loyalhanna 138 kV line (0.67		
	mile)		APS (100%)
1.2070	Replace the Wylie Ridge		ATSI (72.30%) / DL
b3079	500/345 kV transformer #7		(27.70%)
	Reconductor the 138 kV bus		· · · · · · · · · · · · · · · · · · ·
1,2002	at Butler and reconductor the		
b3083	138 kV bus and replace line		
	trap at Karns City		APS (100%)

Required Tra	Insmission Enhancements Annual Revenue Requirement	Responsible Customer(s)
	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%)
b3214.2	Reconductor the Smithton – Shepler	
03214.2	Hill Jct 138 kV Line	APS (4.74%) / DL (95.26%)
	At Enon substation install a second	
b3230	138 kV, 28.8 MVAR nameplate,	
03230	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	
b3242	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 -	
b3318	Butler 138 kV line with an upgraded	
03318	circuit breaker at Butler 138 kV	
	station	APS (100%)
	Reconductor the Charleroi - Union	
b3325	138 kV line and upgrade terminal	
03525	equipment at Charleroi 138 kV	
	station	APS (100%)

		 (-)
	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	
00701	kV substations	APS (100%)
	Reconductor AA2-161 to	
b3710	Yukon 138 kV Lines #1 and #2	
	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%)

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b3761 Install 138 kV breaker on the Ridgway 138/46 kV #2	
b3761 Ridgway 138/46 kV #2	
Transformer AP	PS (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 AF	PS (100%)
Install 33 MVAR switched	
capacitor, 138 kV breaker,	
b3773 and associated relaying at	
McConnellsburg 138 kV	
substation AF	PS (100%)
Adjust relay settings at	
b3782 Riverton substation on the	
Riverton-Bethel Tap 138 kV	
line AF	PS (100%)

Required Tr	ansmission Enhancements An	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
	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%) /
b3796.0	phase transformers and an	NEPTUNE* (0.42%) / OVEC
03790.0	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)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
		Load Datia Shave

		Load-Ratio Share
<u>b3800.128</u>	<u>Construct new Woodside</u> <u>– Goose Creek 500 kV</u> <u>line for approximately 15</u> <u>miles on single circuit</u> <u>monopole structures</u> <u>within the Doubs – Goose</u> <u>Creek Corridor. (FE</u> <u>Portion)</u>	Allocation: <u>AEC (1.65%) / AEP (14.29%)</u> <u>/ APS (5.82%) / ATSI (7.49%)</u> <u>/ BGE (4.01%) / ComEd</u> (14.06%) / Dayton (2.03%) / <u>DEOK (3.21%) / DL (1.59%) /</u> <u>DPL (2.55%) / Dominion</u> (13.89%) / EKPC (2.35%) / <u>JCPL (3.59%) / ME (1.81%) /</u> <u>NEPTUNE* (0.42%) / OVEC</u> (0.06%) / PECO (5.11%) / <u>PENELEC (1.73%) / PEPCO</u> (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)
		DFAX Allocation: APS (9.26%) / BGE (7.30%) / Dominion (72.31%) / PEPCO (11.13%) Load-Ratio Share
<u>b3800.129</u>	Construct 500 kV line from existing structure MVF1-101 on the Doubs – Millville 138 kV line around Doubs substation and into the entrance of the Doubs – Goose Creek corridor. (Approximately 2 miles)	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 (9.26%) / BGE (7.30%) / Dominion (72.31%) / PEPCO (11.13%)

SCHEDULE 12 – APPENDIX A

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

Required T	ransmission 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		
b2366	138 kV line 0112, Kickapoo		
02300	Creek - LaSalle County		
	138kV line		ComEd (100%)
	Install a 138 kV Red Blue		
b2415	bus tie with underground		
02415	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		
02117	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		
	on the Sawyer - Crawford		$C = E_1(1000/)$
	138 kV Blue line (L1324)		ComEd (100%)
1.2465	Replace the Skokie 138 kV		
b2465	breaker '88 L8809' with a		
	63 kA breaker		ComEd (100%)
1.2466	Replace the Skokie 138 kV		
b2466	breaker '88 L8810' with		$C_{2} = E_{1}^{1} (1000/)$
	63kA breaker		ComEd (100%)
10467	Replace the Skokie 138 kV		
b2467	breaker '88 L11416' with		
	63 kA breaker		ComEd (100%)

BeakReplace the Skokie 138 kVComEd (100%)b2468breaker '88 L8803' with 63kA breakerComEd (100%)Replace the Des Plaines 138 kV breaker '46 11702' with 63 kA breakerComEd (100%)b2469kV breaker '46 11702' with 63 kA breakerComEd (100%)b2561Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon substationComEd (100%)
63kA breakerComEd (100%)Replace the Des Plaines 138Replace the Des Plaines 138b2469kV breaker '46 11702' withComEd (100%)63 kA breakerComEd (100%)Install a new 345 kV circuitbreaker 5-7 at Elwoodb2561breaker 5-7 at ElwoodComEd (100%)Remove 2.0 miles of woodcomEd (100%)b2562Remove 2.0 miles of woodb2562erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
Replace the Des Plaines 138 kV breaker '46 11702' with 63 kA breakerComEd (100%)Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2469kV breaker '46 11702' with 63 kA breakerComEd (100%)Install a new 345 kV circuitInstall a new 345 kV circuitb2561breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
63 kA breakerComEd (100%)Install a new 345 kV circuitbreaker 5-7 at Elwoodb2561breaker 5-7 at ElwoodComEd (100%)Remove 2.0 miles of woodComEd (100%)poles on 138 kV line 17105,erect new steel structures,and install new 1113 kcmilACSR conductor fromRoscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2561breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlemb2613Replace relays at Mazon
substationComEd (100%)b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562 and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlem comEd (100%) b2613 Replace relays at Mazon
and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlem b2613 Replace relays at Mazon
Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
h2613 Replace relays at Mazon
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 Requirement 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	ment 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%)

1		
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 111Electric Junction to eleven (11) cycles for fault on 345/138 kVTransformer 81, and to thirteen (13) cycles for faults on 138 kVLine #11106, 138 kV Line #11102 and 345/138 kVTransformer 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	ransmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
			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%) /
	Rebuild 12.7 miles of 345 kV		DEOK (5.35%) / Dominion
	double circuit extending from		(20.09%) / DPL (1.73%) /
b3775.4	Crete to E. Frankfort with twin		DL (2.11%) / ECP**
	bundled 1277 ACAR conductor		(0.17%)/ EKPC (1.73%) /
	buildled 12/7 ACAK conductor		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%)
			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
	Replace E. Frankfort 345 kV		(20.09%) / DPL (1.73%) /
b3775.5	circuit breaker "9-14" with		DL (2.11%) / ECP**
	3150A SF6 circuit breaker		(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		
breakers to Cherry Valley		
substation		ComEd (100%)
· · · ·		
		<u>ComEd (100%)</u>
		<u>ComEd (100%)</u>
Rebuild 3 miles of 138 kV		
Line 11323 from Haumesser		
Road to the H-452 tap with		
double circuit towers. Cut the		
H-452 tap over to the 2nd		
circuit from Haumesser Road.		
Both circuits to use twisted		
pair 556 ACSR Parakeet		
<u>conductor</u>		<u>ComEd (100%)</u>
		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>
		(14.06%) / Dayton (2.03%) /
		DEOK (3.21%) / DL (1.59%) /
Papanductor 345 kW Lina		DPL (2.55%) / Dominion
		<u>(13.89%) / EKPC (2.35%) /</u>
		JCPL (3.59%) / ME (1.81%) /
to Goodings Grove		<u>NEPTUNE* (0.42%) / OVEC</u>
		<u>(0.06%) / PECO (5.11%) /</u>
		PENELEC (1.73%) / PEPCO
		(3.68%) / PPL (4.43%) / PSEG
		<u>(5.99%) / RE (0.24%)</u>
		DFAX Allocation:
		<u>ComEd (100%)</u>
	Expand Haumesser Road 138 kV substation as a 4 circuit breaker ring bus Add one 138 kV circuit breaker at H-452 to complete a three circuit breaker ring bus Rebuild 3 miles of 138 kV Line 11323 from Haumesser Road to the H-452 tap with double circuit towers. Cut the H-452 tap over to the 2nd circuit from Haumesser Road. Both circuits to use twisted pair 556 ACSR Parakeet	Expand Haumesser Road 138 kV substation as a 4 circuit breaker ring busAdd one 138 kV circuit breaker at H-452 to complete a three circuit breaker ring busRebuild 3 miles of 138 kV Line 11323 from Haumesser Road to the H-452 tap with double circuit towers. Cut the H-452 tap over to the 2nd circuit from Haumesser Road. Both circuits to use twisted pair 556 ACSR Parakeet conductorReconductor 345 kV Line 11620 and 11622 from Elwood

<u>(cont.)</u> Description 1 Te	·····	Deres Deres ()
<u>b3812.2</u>	ansmission Enhancements Annual Upgrade Goodings Grove 345	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%) / PEPCC (3.68%) / PPL (4.43%) / PSE (5.99%) / RE (0.24%) DFAX Allocation: ComEd (100%)
<u>b3812.3</u>	Upgrade station conductor at Elwood 345 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%) / PEPCC (3.68%) / PPL (4.43%) / PSE (5.99%) / RE (0.24%) DFAX Allocation: ComEd (100%)

b3812.4 Adjust reclosing cycle on for Goodings Grove 345 kV circuit breaker '116 9806' to eliminate the reclosing de- rating / APS (5.82%) / ATSI (7.499) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) DEOK (3.21%) / DL (1.59%) DEOK (3.21%) / DEOK (3.21\%) /	Required Tra	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
DFAX Allocation: ComEd (100%)	<u>b3812.4</u>	Goodings Grove 345 kV circuit breaker '116 9806' to eliminate the reclosing de-	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%) / PSEC (5.99%) / RE (0.24%)

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

Required II	ansimission Linnancements Anni		
	Add a 345 kV breaker at		
	Marysville station and a 0.1		
b1570.4	mile 345 kV line extension		
01370.4	from Marysville to the new		
	345/69 kV Dayton		
	transformer		AEP (100%)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			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:
			(14.06%) / Dayton (2.03%) /
	Cloverdale: install 6-765		
	kV breakers, incremental		
	work for 2 additional	JCPL (3.59%) / ME (1.81%) NEPTUNE* (0.42%) / OVE (0.06%) / PECO (5.11%) /	
b1660.1	breakers, reconfigure and		
0100011	relocate miscellaneous		× ,
	facilities, establish 500 kV		
	station and 500 kV tie with		× ,
	765 kV station		
			AEP (37.66%) / BGE (26.21%)
			/ Dayton (0.01%) / DEOK
			(0.02%) / EKPC (0.01%) /
			PEPCO (36.09%)
	Designal Transmission System	II.C.	

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%) / DPL (2.55%) / Dayton (1.3.89%) / EKPC (2.35%) / DPL (2.55%) / OWENION (13.89%) / EKPC (2.35%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PECO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b1797.1Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSJCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.66%) / PECO (5.11%) / PENELEC (1.73%) / PECO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2055Upgrade relay at Brues stationAEP (0.06%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / DEOC (26.79%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR reactor at Dequine 345 kVAEP (100%)	Required Tra	insmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
$b1797.1 \begin{array}{c} APS (5.82\%) / ATSI (7.49\%) / \\ BGE (4.01\%) / ComEd \\ (14.06\%) / Dayton (2.03\%) / \\ DECK (3.21\%) / DL (1.59\%) / \\ DPL (2.55\%) / Dominion \\ (13.89\%) / EKPC (2.35\%) / \\ DPL (2.55\%) / Dominion \\ (13.89\%) / EKPC (2.35\%) / \\ DEPTUNE* (0.42\%) / OVEC \\ (0.06\%) / PECO (5.11\%) / \\ PENELEC (1.73\%) / PEPCO \\ (3.68\%) / PPL (4.43\%) / PSEG \\ (5.99\%) / RE (0.24\%) \\ \hline DFAX Allocation: \\ AEP (0.06\%) / BGE (19.46\%) / \\ Dayton (0.02\%) / DEOK \\ (0.04\%) / Dominion (53.61\%) / \\ EKPC (0.02\%) / PEPCO \\ (26.79\%) \\ \hline \\ b2055 Upgrade relay at Brues \\ station \\ b2122.3 the Howard on \\ the Howard - Brookside \\ 138 kV line to achieve \\ ratings of 255/291 (SN/SE) \\ \hline \\ b2122.4 \\ Howard - Brookside 138 \\ kV line \\ \hline \\ b2122.4 \\ Install a 300 MVAR \\ \hline \end{array}$				Load-Ratio Share Allocation:
$b1797.1 \begin{array}{ c c c c c c c c c c c c c c c c c c c$				AEC (1.65%) / AEP (14.29%) /
$b1797.1 \begin{array}{ c c c c c c c c c c c c c c c c c c c$				APS (5.82%) / ATSI (7.49%) /
b1797.1DEOK (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%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2055Upgrade relay at Brues stationDFAX Allocation: AEP (100%) / DEOK (0.04%) / DeOK (0.04%) / DEOC (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)				BGE (4.01%) / ComEd
b1797.1 Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b2055$ Upgrade relay at Brues station $AEP (100\%)$ $B2122.3$ Reconductor the AEP Perform a sag study on the Howard - Brookside 138 kV line $AEP (100\%)$ $AEP (100\%)$ $AEP (100\%)$				(14.06%) / Dayton (2.03%) /
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				DEOK (3.21%) / DL (1.59%) /
b1797.1Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSJCPL (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%)b2055Upgrade relay at Brues stationAEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)				DPL (2.55%) / Dominion
b1797.1portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSNEPTUNE* $(0.42\%) / OVEC$ $(0.06\%) / PECO (5.11\%) /PENELEC (1.73\%) / PEPCO(3.68\%) / PPL (4.43\%) / PSEG(5.99\%) / RE (0.24\%)BFAX Allocation:AEP (0.06\%) / BEC (19.46\%) /Dayton (0.02\%) / DEOK(0.04\%) / Dominion (53.61\%) /EKPC (0.02\%) / PEPCO(26.79\%)b2055Upgrade relay at Bruesstationb2122.3Upgrade terminalequipment at Howard onthe Howard - Brookside138 kV line to achieveratings of 252/291 (SN/SE)b2122.4Perform a sag study on theHoward - Brookside 138kV lineb2122.4Install a 300 MVAR$				(13.89%) / EKPC (2.35%) /
b1/9/.1Lexington 500 kV line with 2-1780 ACSS $(0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)DFAX Allocation:AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationb2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineb2122.4Install a 300 MVAR$		Reconductor the AEP		JCPL (3.59%) / ME (1.81%) /
Lexington 500 kV line with 2-1780 ACSS $(0.06\%) / PECO (5.11\%) / PENELEC (1.73\%) / PEPCO (3.68\%) / PPL (4.43\%) / PSEG (5.99\%) / RE (0.24\%)DFAX Allocation:AEP (0.06%) / BGE (19.46\%) / Dayton (0.02\%) / DEOK (0.04\%) / Dominion (53.61\%) / EKPC (0.02\%) / PEPCO (26.79\%)b2055Upgrade relay at Brues stationAEP (100\%)b2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)$	b1707 1	portion of the Cloverdale -		NEPTUNE* (0.42%) / OVEC
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	01/9/.1	Lexington 500 kV line with		(0.06%) / PECO (5.11%) /
b2055Upgrade relay at Brues stationDFAX Allocation: AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)		2-1780 ACSS		
DFAX Allocation: AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationb2055Upgrade relay at Brues stationb2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineb2122.4Install a 300 MVAR				(3.68%) / PPL (4.43%) / PSEG
AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				
b2055Upgrade relay at Brues stationDayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)				DFAX Allocation:
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b2055Upgrade relay at Brues stationEKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				
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b2055Upgrade relay at Brues stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				EKPC (0.02%) / PEPCO
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Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR		138 kV line to achieve		
b2122.4Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR		ratings of 252/291 (SN/SE)		AEP (100%)
kV line AEP (100%) b2229 Install a 300 MVAR		6 1		
h2229 Install a 300 MVAR	b2122.4			
67779		kV line		AEP (100%)
reactor at Dequine 345 kV AEP (100%)	62220	Install a 300 MVAR		
	02229	reactor at Dequine 345 kV		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annu	al 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%) /
	Replace existing 150		DEOK (3.21%) / DL (1.59%) /
	MVAR reactor at Amos 765		DPL (2.55%) / Dominion
b2230	kV substation on Amos - N.		(13.89%) / EKPC (2.35%) /
02250	Proctorville - Hanging Rock		JCPL (3.59%) / ME (1.81%) /
	with 300 MVAR reactor		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%)
	Install 765 kV reactor		
b2231	breaker at Dumont 765 kV		
_	substation on the Dumont -		
	Wilton Center line		AEP (100%)
	Install 765 kV reactor		
1 0 0 0 0	breaker at Marysville 765		
b2232	kV substation on the		
	Marysville - Maliszewski		AED (1000/)
	line Change transformer ten		AEP (100%)
b2233	Change transformer tap settings for the Baker		
02255	765/345 kV transformer		A = D (1000/)
	Loop the North Muskingum		AEP (100%)
b2252	- Crooksville 138 kV line		
	into AEP's Philo 138 kV		
	station which lies		
	approximately 0.4 miles		
	from the line		AEP (100%)
<u> </u>	Pagional Transmission System		ALI (10070)

required II		rice , en ac recequirement	
	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		
b2258	to 138 kV standards. The		
	line will be strung with		
	1033 ACSR		AEP (100%)
	Install a new 138/69 kV		· · · · · · · · · · · · · · · · · · ·
	transformer at George		
1 22 50	Washington 138/69 kV		
b2259	substation to provide		
	support to the 69 kV system		
	in the area		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Hansinission Enhancements Annual Revenue Requirement Respe			
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%)

requirea ir	ansmission Ennancements Annu	ai revenue requirement	
	Establish a new 138/12 kV		
b2344.1	station, transfer and		
	consolidate load from its		
_	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		
b2344.3	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		
0201011	miles)		AEP (100%)
	Rebuild the 34.5 kV lines		
	between Keeler - Sister		
b2345.2	Lakes and Glenwood tap		
	switch to 69 kV (~12 miles)		AEP (100%)
L			

		(c) venue requirement responsible educimen(s)
	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%)
	а	

b2376	Replace the Turner 138 kV 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 breaker 'CC1'	AEP (100%)
b2409	Install two 56.4 MVAR capacitor banks at the Melmore 138 kV station in Ohio	AEP (100%)
b2410	Convert Hogan Mullin 34.5 kV line to 138 kV, establish 138 kV line between Jones Creek and Strawton, rebuild existing Mullin Elwood 34.5 kV and terminate line into Strawton station, retire Mullin station	AEP (100%)
b2411	Rebuild the 3/0 ACSR portion of the Hadley - Kroemer Tap 69 kV line utilizing 795 ACSR conductor	AEP (100%)
b2423	Install a 300 MVAR shunt reactor at AEP's Wyoming 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 (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

requirea II		ai nevenue negunement	
	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		
b2449	line between Meadow Lake		
02449	and Reynolds 345 kV		
	stations		AEP (100%)
	Add two 138 kV circuit		· · · ·
b2462	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		
b2501.3	into Yager 138 kV by		
02301.3	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		
b2501.4	between Irish Run 69 kV		
	Switch and Bowerstown 69		
	kV Switch		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	ansinission Ennancements Annual Revenue Requirement	
	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	
b2502.2	138 kV	AEP (100%)
	Rebuild/convert Freebyrd-	X
b2502.3	South Cadiz 69 kV circuit	
	to 138 kV	AEP (100%)
1 2 5 0 2 4	Upgrade South Cadiz to 138	``````````````````````````````````````
b2502.4	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	
	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	
02000	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2534	breaker 'U' with 80 kA	
02337	breaker	AEP (100%)
	Replace the Sporn 138 kV	
b2535	breaker 'O' with 80 kA	
02333	breaker	AEP (100%)
L	UIUUKUI	ALI (10070)

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	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		
b2555	kV and string the vacant		
	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		
b2556	maximum operating		
02550	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		
b2581	of the Corner – Washington 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%)

Required II	ansmission Enhancements Annual	Revenue Requirement	
	Construct a new 69 kV line		
	approximately 2.5 miles from		
b2591	Colfax to Drewry's. Construct		
02371	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 –		
1.2504	Bridge Street 69 kV Line with		
b2594	1033 ACSR overhead		
	conductor		AEP (100%)
	Rebuild 7.82 mile Elkhorn		
b2595.1	City – Haysi S.S 69 kV line		
02393.1	utilizing 1033 ACSR built to		
	138 kV standards		AEP (100%)
	Rebuild 5.18 mile Moss –		
b2595.2	Haysi SS 69 kV line utilizing		
62595.2	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%)
	•		

Required II		iai Revenue Requirement	Responsible Customer(s)
	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		
b2598	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%)
1-2600	Rebuild Fremont – Pound		
b2600	line as 138 kV		AEP (100%)
1.2(01	Fremont Station		
b2601	Improvements		AEP (100%)
	Replace MOAB towards		``````
b2601.1	Beaver Creek with 138 kV		
	breaker		AEP (100%)
	Replace MOAB towards		``````````````````````````````````````
b2601.2	Clinch River with 138 kV		
	breaker		AEP (100%)
10(01.2	Replace 138 kV Breaker A		``````````````````````````````````````
b2601.3	with new bus-tie breaker		AEP (100%)
	Re-use Breaker A as high		
b2601.4	side protection on		
	transformer #1		AEP (100%)
			. /

reequirea m		te venue reequirement	
b2601.5	Install two (2) circuit switchers		
	on high side of transformers # 2		
	and 3 at Fremont Station		AEP (100%)
b2602.1	Install 138 kV breaker E2 at		
02002.1	North Proctorville		AEP (100%)
	Construct 2.5 Miles of 138 kV		
b2602.2	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		
02005	-		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		
02007	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.)

	Remove approximately 11.32	•	
b2604.1			
	miles of the 69 kV line		
	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		
b2604.3	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		
120044	Wheelersburg 138 kV circuit		
b2604.4	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		, , ,
1.2004 5	PoP switch outside of Texas		
b2604.5	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%)
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Kammer – George Washington 69 kV circuit and George Washington – Moundsville ckt #1, designed for 138 kV. Upgrade limiting equipment at remote ends and at tap stationsAEP (100%)b26006Convert Bane – Hammondsville from 23 kV to 69 kV operationAEP (100%)b26007Pine Gap Relay Limit IncreaseAEP (100%)b2608Richlands Relay UpgradeAEP (100%)b2609Thorofare – Goff Run – Powell Mountain 138 kVAEP (100%)b2610Rebuild Pax Branch – Scaraboro as 138 kVAEP (100%)b2611Skin Fork Area ImprovementsAEP (100%)b2611.1Skin Fork Area ImprovementsAEP (100%)b2611.2Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kVAEP (100%)b2611.2Replace metering BCT onAEP (100%)	Required II	ansinission enhancements Annual Rever	lue Requirement	Responsible Customer(s)
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BuildAEP (100%)b2610Rebuild Pax Branch - Scaraboro as 138 kVAEP (100%)b2611Skin Fork Area ImprovementsAEP (100%)b2611.1Skin Fork Area ImprovementsAEP (100%)b2611.1Skin Fork and other componentsAEP (100%)b2611.2Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)b2611.2Replace metering BCT onAEP (100%)	h2600			
b2610Rebuild Pax Branch – Scaraboro as 138 kVAEP (100%)b2611Skin Fork Area ImprovementsAEP (100%)b2611.1Skin Fork Area ImprovementsAEP (100%)b2611.1Skin Fork and other componentsAEP (100%)b2611.2Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)B2611.2Replace metering BCT onAEP (100%)	02009			A = D (1009/)
b2610Scaraboro as 138 kVAEP (100%)b2611Skin Fork Area ImprovementsAEP (100%)b2611.1New 138/46 kV station near Skin Fork and other componentsAEP (100%)b2611.2Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)b2611.2Replace metering BCT onAEP (100%)				AEP (100%)
b2611Skin Fork Area ImprovementsAEP (100%)New 138/46 kV station nearNew 138/46 kV station nearb2611.1Skin Fork and other componentsAEP (100%)Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)Replace metering BCT onAEP (100%)	b2610			
AEP (100%)New 138/46 kV station nearb2611.1Skin Fork and other componentsConstruct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineb2611.2Replace metering BCT on		Scaraboro as 138 KV		AEP (100%)
New 138/46 kV station nearAEP (100%)b2611.1Skin Fork and other componentsAEP (100%)Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)Replace metering BCT onAEP (100%)	b2611	Skin Fork Area Improvements		
b2611.1Skin Fork and other componentsAEP (100%)Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV lineAEP (100%)Replace metering BCT onAEP (100%)		-		AEP (100%)
componentsAEP (100%)Construct 3.2 miles of 1033ACSR double circuit fromb2611.2new Station to cut intoSundial-Baileysville 138 kVlineAEP (100%)Replace metering BCT on				
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	b2611.1			
ACSR double circuit from b2611.2 new Station to cut into Sundial-Baileysville 138 kV line AEP (100%) Replace metering BCT on				AEP (100%)
b2611.2 new Station to cut into Sundial-Baileysville 138 kV line Replace metering BCT on				
Sundial-Baileysville 138 kV AEP (100%) line AEP (100%)				
line AEP (100%) Replace metering BCT on Image: Comparison of the second	b2611.2	new Station to cut into		
Replace metering BCT on		Sundial-Baileysville 138 kV		
		line		AEP (100%)
Tanners Creek CB T2 with a	b2634.1			
		Tanners Creek CB T2 with a		
slip over CT with higher		slip over CT with higher		
b2634.1 thermal rating in order to		thermal rating in order to		
remove 1193 MVA limit on		remove 1193 MVA limit on		
facility (Miami Fort-Tanners		facility (Miami Fort-Tanners		
Creek 345 kV line) AEP (100%)		Creek 345 kV line)		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1100[001000 11	ansinission Emilancements - Annual Revenue Requirement	
b2643	Replace the Darrah 138 kV breaker 'L' with 40 kA	
02013	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	Annual Revenue Requirement	Responsible Customer(s)
b2687.1	Install a +/- 450 MVAR SVC at Jacksons Ferry 7 kV substation	65	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

b2687.2AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DFU (2.05%) / DL (1.59%) / DPL (2.55%) / DOINION (13.89%) / EKPC (2.35%) / JCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENCELC (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%)	Required Tr	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
b2687.2Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV lineAPS (5.82%) / ATSI (7.49%) / BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DPL (2.05%) / DD (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 addressedAPP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville = East DanvilleAEP (100%)				Load-Ratio Share Allocation:
b2687.2BGE (4.01%) / ComEd (14.06%) / Dayton (2.03%) / DEOK (3.21%) / DL (1.59%) / DPL (2.55%) / DDL (1.59%) / DPL (2.55%) / DDL (1.59%) / DPL (2.55%) / DCL (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%)				AEC (1.65%) / AEP (14.29%) /
b2687.2Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford - Jacksons Ferry 765 kV line(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%) / 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%)				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 lineDEOK (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 DanvilleAEP (100%)				BGE (4.01%) / ComEd
b2687.2Install a 300 MVAR shuft line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV lineDPL (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%) / PEPOO (3.68%) / PIL (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%)				(14.06%) / Dayton (2.03%) /
b2687.2line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV lineDPL (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 – East DanvilleAEP (100%)		Install a 200 MVAD 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 addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville – East DanvilleAEP (100%)				DPL (2.55%) / Dominion
Broadford – 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 DanvilleAEP (100%)	62687.2			(13.89%) / EKPC (2.35%) /
765 kV lineNEPTONE* (0.42%)/OVEC (0.06%)/PEC0 (5.11%)/ PENELEC (1.73%)/PECO (3.68%)/PPL (4.43%)/PSEG (5.99%)/RE (0.24%)0DFAX Allocation: AEP (100%)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 addressedb2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville	02007.2			JCPL (3.59%) / ME (1.81%) /
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 (0.06%) / PECO (S.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 DanvilleAEP (100%)		•		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 addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville = East DanvilleAEP (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 addressedAEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville = East DanvilleAEP (100%)				
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 addressedDFAX Allocation: AEP (100%)b2697.2Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East DanvilleAEP (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 DanvilleAEP (100%)				(5.99%) / RE (0.24%)
b2697.1 Mitigate violations identified by sag study to operate Fieldale-Thornton- Franklin 138 kV overhead line conductor at its max. operating temperature. 6 operating temperature. 6 potential line crossings to be addressed Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville Danville				DFAX Allocation:
b2697.1identified 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%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville				AEP (100%)
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		0		
b2697.1Franklin 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				
b2697.1 line conductor at its max. operating temperature. 6 potential line crossings to be addressed Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville		1		
Ine 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	b2697 1			
b2697.2 potential line crossings to be addressed AEP (100%) Barbon Constraint AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville AEP (100%)	02077.1	line conductor at its max.		
be addressedAEP (100%)Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East DanvilleImage: Comparison of the capacity		1 0 1		
b2697.2 Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville				
b2697.2 at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville				AEP (100%)
b2697.2 Danville substations to improve thermal capacity of Danville – East Danville				
b2697.2 improve thermal capacity of Danville – East Danville	b2697.2			
Improve thermal capacity of Danville – East Danville				
138 kV circuit AFP (100%)				
		138 kV circuit		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

ansmission Enhancements Annual Revenue Requirem	nent Responsible Customer(s)
Replace relays at AEP's	
Cloverdale and Jackson's	
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	
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	
Racer station. Estimated	
approx. 3.2 miles of 1234	
ACSS/TW Yukon and	
OPGW	AEP (100%)
Install 1-138 kV CB at Blue	
Racer to terminate new	
Herlan circuit	AEP (100%)
Rebuild/upgrade line	
between Glencoe and	
Willow Grove Switch 69 kV	AEP (100%)
Build approximately 11.5	
miles of 34.5 kV line with	
556.5 ACSR 26/7 Dove	
conductor on wood poles	
from Flushing station to	
Smyrna station	AEP (100%)
Replace the South Canton	
138 kV breakers 'K', 'J',	
'J1', and 'J2' with 80 kA	
breakers	AEP (100%)
	Replace relays at AEP'sCloverdale and Jackson'sFerry substations to improvethe thermal capacity ofCloverdale – Jackson's Ferry765 kV lineConstruct Herlan station asbreaker and a halfconfiguration with 9-138 kVCB's on 4 strings and with 2-28.8 MVAR capacitor banksConstruct new 138 kV linefrom Herlan station to BlueRacer station. Estimatedapprox. 3.2 miles of 1234ACSS/TW Yukon andOPGWInstall 1-138 kV CB at BlueRacer to terminate newHerlan circuitRebuild/upgrade linebetween Glencoe andWillow Grove Switch 69 kVBuild approximately 11.5miles of 34.5 kV line with556.5 ACSR 26/7 Doveconductor on wood polesfrom Flushing station toSmyrna stationReplace the South Canton138 kV breakers 'K', 'J','J1', and 'J2' with 80 kA

Convert the Sunnyside – 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	
b2750.1 replace it with the greenfield	
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	
b2753.1 breaker and a half yard in	
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	
b2753.2 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	
b2753.3	circuit positions previously	
	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	
b2753.7	FirstEnergy 138 kV line	
02133.1	corridor, near "Point A". Tie	
	George Washington –	
	Moundsville 69 kV circuit to	
	George Washington – West	
	Bellaire 69 kV circuit	AEP (100%)
b2753.8	Rebuild existing 69 kV line	
	as double circuit from	
	George Washington – Dilles	
	Bottom 138 kV. One circuit	
02733.8	will cut into Dilles Bottom	
	138 kV initially and the other	
	will go past with future plans	
	to cut in	AEP (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
	Perform a Sag Study of the		
b2760	Saltville – Tazewell 138 kV		
02700	line to increase the thermal		
	rating of the line		AEP (100%)
	Perform a Sag Study of the		
b2761.2	Hazard – Wooten 161 kV line		
02/01.2	to increase the thermal rating		
	of the line		AEP (100%)
	Rebuild the Hazard – Wooton		
b2761.3	161 kV line utilizing 795 26/7		
02/01.5	ACSR conductor (300 MVA		
	rating)		AEP (100%)
	Perform a Sag Study of Nagel		
b2762	– West Kingsport 138 kV line		
02/02	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		
b2779.1	station, Campbell Road,		
02779.1	tapping into the Grabill –		
	South Hicksville138 kV line		AEP (100%)
b2779.2	Reconstruct sections of the		
	Butler-N.Hicksville and		
	Auburn-Butler 69 kV circuits		
02119.2	as 138 kV double circuit and		
	extend 138 kV from		
	Campbell Road station		AEP (100%)

P (100%)
P (100%)
P (100%)
P (100%)
P (100%)
P (100%)

required II	ansimission Linancements Annua	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 Tr	ansmission Enhancements	Annual Revenue Requiren	nent Responsible Customer(s)
	Install a 3 MVAR, 34.5 kV		
b2790	cap bank at Caldwell		
	substation		AEP (100%)
b2791	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%)
b2791.4	New 138/69 kV protection at		
02791.1	existing Chatfield transformer		AEP (100%)
	Replace the Elliott		
	transformer with a 130 MVA		
b2792	unit, reconductor 0.42 miles		
	of the Elliott – Ohio		
	University 69 kV line with		
	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 Annua	al Revenue Requirement Responsible Customer(s)
b2793	Energize the spare Fremont Center 138/69 kV 130 MVA transformer #3. Reduces overloaded facilities to 46% loading	AEP (100%)
b2794	Construct new 138/69/34 kV station and 1-34 kV circuit (designed for 69 kV) from new station to Decliff station, approximately 4 miles, with 556 ACSR conductor (51 MVA rating)	AEP (100%)
b2795	Install a 34.5 kV 4.8 MVAR capacitor bank at Killbuck 34.5 kV station	AEP (100%)
b2796	Rebuild the Malvern - Oneida Switch 69 kV line section with 795 ACSR (1.8 miles, 125 MVA rating, 55% loading)	AEP (100%)
b2797	Rebuild the Ohio Central - Conesville 69 kV line section (11.8 miles) with 795 ACSR conductor (128 MVA rating, 57% loading). Replace the 50 MVA Ohio Central 138/69 kV XFMR with a 90 MVA unit	AEP (100%)
b2798	Install a 14.4 MVAR capacitor bank at West Hicksville station. Replace ground switch/MOAB at West Hicksville with a circuit switcher	AEP (100%)
b2799	Rebuild Valley - Almena, Almena - Hartford, Riverside - South Haven 69 kV lines. New line exit at Valley Station. New transformers at Almena and Hartford	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requiremen	t 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		
02799.1	(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		
b2799.2	to Hartford 69 kV line using		
02799.2	795 ACSR conductor (90		
	MVA rating)		AEP (100%)
	Rebuild 3.8 miles of		
b2799.3	Riverside – South Haven 69		
02799.5	kV line using 795 ACSR		
	conductor (90 MVA rating)		AEP (100%)
	At Valley station, add new		
	138 kV line exit with a 3000		
b2799.4	A 40 kA breaker for the new		
0_7777	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		
	3000 A 40 kA breaker and		
	establish a new 138 kV line		
	exit towards Valley		AEP (100%)
	At Hartford station, install a		
b2799.6	second 90 MVA 138/69 kV		
	transformer with a circuit		
	switcher and 3000 A 40 kA		AED (1009/)
	low side breaker		AEP (100%)

Required Transmission Enhancements		Annual Revenue Requirer	ment 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		
b2821	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%)

reequirea II		
	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 –	
b2832	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	
b2833	circuit with 2-954 ACSS	DFAX Allocation:
	Cardinal conductor	AEP (75.78%) / Dayton (24.22%)
	Reconductor and string open	
1 0 0 0 4	position and sixwire 6.2 miles	
b2834	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%)
b2878	Upgrade the Clifty Creek	
	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 Requiremen	nt Responsible Customer(s)
	Rebuild ~1.7 miles of the		
	Dunn Hollow – London 46		
b2881	kV line section utilizing 795		
02001	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		
b2882.1	(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		
b2883	kV line section		
02003	(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		
	end of the Boone Dam –		
	Holston 138 kV		
	interconnection as normally		
	open preemptively for the loss		A ED (1009/)
	of the existing Nagel		AEP (100%)
b2885	New delivery point for City		
	of Jackson	l l	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	t 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		\$ 7
b2885.3	a new three breaker ring bus		
	(Heppner)		AEP (100%)
	Install 90 MVA 138/69 kV		
	transformer, new transformer		
1.2000	high and low side 3000 A 40		
b2886	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		
1.0007	to different bays at Morse		
b2887	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%)
1,0000 1	Remove and retire the Poston		
b2888.1	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 A	Annual Revenue Requirement	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 a new three-way switch. Retire the Poston - Trimble 69 kV line		AEP (100%)
b2889	Expand Cliffview station		AEP (100%)
b2889.1	Cliffview Station: Establish 138 kV bus. Install two 138/69 kV XFRs (130 MVA), six 138 kV CBs (40 kA 3000 A) and four 69 kV CBs (40 kA 3000 A)		AEP (100%)
b2889.2	Byllesby – Wythe 69 kV: Retire all 13.77 miles (1/0 CU) of this circuit (~4 miles currently in national forest)		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		AEP (100%)
b2889.4	Cliffview Line: Tap the existing Pipers Gap – Jubal Early 138 kV line section. Construct double circuit in/out (~2 miles) to newly established 138 kV bus, utilizing 795 26/7 ACSR conductor		AEP (100%)

Required T		Annual Revenue Requirer	nent Responsible Customer(s)
	Rebuild 23.55 miles of the East		
	Cambridge – Smyrna 34.5 kV		
b2890.1	circuit with 795 ACSR		
	conductor (128 MVA rating)		
	and convert to 69 kV		AEP (100%)
	East Cambridge: Install a 2000		
b2890.2	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		
	phase switch		AEP (100%)
b2890.4	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 138/69		
	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		
	designed to 138 kV standards		
	but operated at 69 kV		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Pigeon River Station: Replace existing MOAB Sw. 'W' with a new 69 kV 3000 A 40 kA		
b2936.2	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 Requireme	nt 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 Tra	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 Transmission Enhancements		Annual Revenue Requirer	nent Responsible Customer(s)
	Rebuild West Melrose –		
b3086.3	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		
b3086.4	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 Requirem	nent Responsible Customer(s)
	Rebuild Lakin – Racine Tap		
b3095	69 kV line section (9.2 miles)		
03093	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		
b3101	(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 Requirement	Responsible Customer(s)
b3103.1	Install a 138/69 kV transformer at Royerton station. Install a 69 kV bus with one 69 kV breaker toward Bosman station. Rebuild the 138 kV portion into a ring bus configuration built for future breaker and a half with four 138 kV breakers		AEP (100%)
b3103.2	Rebuild the Bosman/Strawboard station in the clear across the road to move it out of the flood plain and bring it up to 69 kV standards		AEP (100%)
b3103.3	Retire 138 kV breaker L at Delaware station and re- purpose 138 kV breaker M for the Jay line		AEP (100%)
b3103.4	Retire all 34.5 kV equipment at Hartford City station. Re- purpose breaker M for the Bosman line 69 kV exit		AEP (100%)
b3103.5	Rebuild the 138 kV portion of Jay station as a 6 breaker, breaker and a half station re- using the existing breakers "A", "B", and "G." Rebuild 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 Requirem	nent 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%)
b3103.7	Build a new 69 kV line from		
03103.7	Armstrong Cork – Jay station		AEP (100%)
	Rebuild the 34.5 kV		
	Delaware – Bosman line as		
b3103.8	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		
05104	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%)
1.0100	Rebuild 5.2 miles Bethel –		
b3109	Sawmill 138 kV line		
	including ADSS		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requireme	nt 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		
b3116	associated protective		
05110	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		
b3119.1	138/69 kV. Build a new 9.8		
03117.1	mile single circuit 69 kV line		
	from near Pennville station to		
	North Portland station		AEP (100%)

Required 7	Transmission Enhancements	Annual Revenue Requireme	nt Responsible Customer(s)
	Install three (3) 69 kV breakers		
b3119.2	to create the "U" string and add		
0.5117.2	a low side breaker on the Jay		
	transformer 2		AEP (100%)
	Install two (2) 69 kV breakers at		
b3119.3	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		
b3131	kV stations, replace line relays		
00101	and wavetrap on the East Lima -		
	Haviland 138 kV facility		AEP (100%)
	Rebuild approximately 12.3		
	miles of remaining Lark		
b3131.1	conductor on the double circuit		
0010111	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%)
1.0100	Rebuild the Garden Creek –		
b3139	Whetstone 69 kV line (approx. 4		
	miles)		AEP (100%)
1.01.40	Rebuild the Whetstone – Knox		
b3140	Creek 69 kV line (approx. 3.1		
	miles)		AEP (100%)

Required Tr	ansmission Enhancements A	nnual Revenue Requirement Responsible Custor	mer(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		
0011010	SCADA-controlled motor-		
	operated air-breaker switch	AEP (100%)
	Remote end work and		
b3148.4	associated equipment at Scarbro		
	station	AEP (100%	
1.01.10.5	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. 1 mile double		
	circuit 138 kV extension from		
	the Aviation – Ellison Road 138		
	kV line to remove the load from $d_{12} = (0.15)^{11}$		`
	the 69 kV line	AEP (100%)

Required Tra	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	
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 Tra	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Rebuild Columbia station in		
	the clear as a 138/69 kV		
	station with two (2) 138/69		
b3151.11	kV transformers and 4-		
05151.11	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		
	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		
	(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		AED (1000/)
	Tap line		AEP (100%)
b3160.3	Retire the approx.4.6 miles		
	Lakehead 69 kV Tap		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ement Responsible Customer(s)
	Build new 138/69 kV drop		
	down station to feed Lakehead with a 138 kV		
b3160.4	breaker, 138 kV switcher,		
03100.4	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 '	Transmission Enhancements	Annual Revenue Requ	irement	Responsible Customer(s)
Required 7	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 from Joshua Falls – Riverville (approx. 10 miles) and Riverville – Gladstone (approx. 5 miles). Install required station upgrades at	Annual Revenue Requ	<u>irement</u>	Responsible Customer(s)
	Joshua Falls, Riverville and Gladstone stations to accommodate the new 138 kV circuits. Rebuild Reusen – Monroe 69 kV (approx. 4			
	miles)			AEP (100%)
b3209	Rebuild the 10.5 mile Berne – South Decatur 69 kV line using 556 ACSR			AEP (100%)
b3210	Replace approx. 0.7 mile Beatty – Galloway 69 kV line with 4000 kcmil XLPE cable			AEP (100%)
b3220	Install 14.4 MVAR capacitor bank at Whitewood 138 kV			AEP (100%)

Required Transmission Enhancements		Annual Revenue Requirer	ment Responsible Customer(s)
b3243	Replace risers at the Bass		
00210	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%)

Install a 3000A 40 kA 138 kV breaker on the high side of 138/69 kV transformer #5 at the Millbrook Park station. The transformer and associated bus protection will be upgraded accordinglyAEP (100%)b3253Upgrade 795 AAC risers at the Sand Hill 138 kV station towards Cricket Switch with 1272 AACAEP (100%)b3256Upgrade 500 MCM Cu risers at Tidd 138 kV station towards Wheeling Steel; replace with 1272 AAC conductorAEP (100%)b3257Replace two spans of 336.4 26/7 ACSR on the Twin Branch – AM General #2 34.5 kV circuitAEP (100%)b3258Install a 3000A 63 kA 138 kV breaker on the high side of 138/69 kV transformer #2 at Wagenhals station. The transformer and associated bus protection will be upgraded accordinglyAEP (100%)b3259At West Millersburg station, replace the 138 kV MOAB on the West Millersburg – Wooster 138 kV line with a 3000A 40 kA breakerAEP (100%)b3259At West Millersburg – Wooster 138 kV line with a 3000A 40 kA breaker "R1" at Tanners Creek 345 kV.AEP (100%)b3261Install Transient Recovery Voltage capacitor to increase the transform form 50 kA to 63 kAAEP (100%)	Required 7	Fransmission Enhancements	Annual Revenue Requir	ement Responsible Customer(s)
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b3261 Install Transient Recovery Voltage capacitor to increase		10		
Voltage capacitor to increase	b3261			
•	05201	-		
		the rating from 50 kA to 63 kA		AEP (100%)

Required 7	Fransmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3269	At West New Philadelphia station, add a high side 138 kV breaker on the 138/69 kV Transformer #2 along with a 138 kV breaker on the line towards Newcomerstown		AEP (100%)
b3270	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 138/34.5 kV transformer at 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%)
b3270.1	Replace Dragoon 34.5 kV breakers "B", "C", and "D" with 40 kA breakers		AEP (100%)
b3271	Install a 138 kV circuit breaker at Fremont station on the line towards Fremont Center and install a 9.6 MVAR 69 kV capacitor bank at Bloom Road station		AEP (100%)
b3272	Install two 138 kV circuit switchers on the high side of 138/34.5 kV Transformers #1 and #2 at Rockhill station		AEP (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requi	irement Responsible Customer(s)
	Rebuild and convert the existing 17.6 miles East		
b3273.1	Leipsic – New Liberty 34.5		
05275.1	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		
b3273.4	additional line position at		
	New Liberty 138 kV		
	station. Install line relaying		
	potential devices and retire		
	the 34.5 kV breaker 'F'		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	t 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		
b3275.3	Carbon Tap switch 69 kV		
05275.5	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 Require	ement 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		
b3276.2	Lancaster Junction and		
05270.2	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 Require	ment 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 Requirement	Responsible Customer(s)
b3282.1	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 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		Responsible Customer(s)
	line		AEP (100%)
b3282.2	Install a 138 kV 40 kA circuit breaker at North Proctorville station		AEP (100%)
b3282.3	Install a 138 kV 40 kA circuit breaker at East Huntington station		AEP (100%)
b3282.4	Convert the existing 34/12 kV 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		
b3285	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		
b3289.2	switcher on 138/69/34.5 kV		
05207.2	T1 at Huntington Court		
	station		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Build 9.4 miles of single		
b3290.1	circuit 69 kV line from		
03290.1	Roselms to near East		
	Ottoville 69 kV switch		AEP (100%)
	Rebuild 7.5 miles of double		
	circuit 69 kV line between		
b3290.2	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		
b3290.3	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		
b3290.4	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%)
b3291	Replace the Russ St. 34.5 kV		
03291	switch		AEP (100%)
	Replace existing 69 kV		
b3292	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		
b3293	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		
b3294	circuit breaker "C" at Walnut		
	Avenue station		AEP (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3295	Grundy 34.5 kV: Install a 34.5 kV 9.6 MVAR cap bank	AEP (100%)
b3296	Rebuild the overloaded portion of the Concord – Whitaker 34.5 kV line (1.13 miles). Rebuild is double circuit and will utilize 795 ACSR conductor	AEP (100%)
b3297.1	Rebuild 4.23 miles of 69 kV line between Sawmill and Lazelle station, using 795 ACSR 26/7 conductor	AEP (100%)
b3297.2	Rebuild 1.94 miles of 69 kV line between Westerville and Genoa stations, using 795 ACSR 26/7 conductor	AEP (100%)
b3297.3	Replace risers and switchers at Lazelle, Westerville, and Genoa 69 kV stations. Upgrade associated relaying accordingly	AEP (100%)
b3298	Rebuild 0.8 mile of double circuit 69 kV line between South Toronto and West Toronto. Replace 219 ACSR with 556 ACSR	AEP (100%)
b3298.1	Replace the 69 kV breaker D at South Toronto station with 40 kA breaker	AEP (100%)
b3299	Rebuild 0.2 mile of the West End Fostoria - Lumberjack Switch 69 kV line with 556 ACSR (Dove) conductors. Replace jumpers on West End Fostoria line at Lumberjack Switch	

Required Transmission Enhancements		Annual Revenue Requirement	t 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%)
b3309	Rebuild 1.75 miles of the Greenlawn – East Tiffin line section of the Carothers – Greenlawn 69 kV circuit containing 133 ACSR conductor with 556 ACSR conductor. Upgrade relaying as required		AEP (100%)
b3310.1	Rebuild 10.5 miles of the Howard – Willard 69 kV line utilizing 556 ACSR conductor		AEP (100%)
b3310.2	Upgrade relaying at Howard 69 kV station		AEP (100%)
b3310.3	Upgrade relaying at Willard 69 kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirem	ent Responsible Customer(s)
b3312	Rebuild approximately 4 miles of existing 69 kV line between West Mount Vernon and Mount Vernon stations. 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 Requireme	ent Responsible Customer(s)
	Replace the two (2) Kenny		
	138 kV breakers, "102" (SC-		
b3338	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		
b3343	kV line between Albion -		
05515	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		
b3344.2	at Riverport 138 kV station		
00011.2	due to the line cut in at West		
	Kingsport station		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requiren	nent 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%)
b3345.2	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		
b3347.1	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)

		1	
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)

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Replace Bellefonte 69 kV		
place. The new 69 kV breakers to		AEP (100%)
be rated at 3000 A 40 kA		ALI (10070)
Upgrade remote end relaying at		
Point Pleasant, Coalton and		
South Point 69 kV substations		AEP (100%)
Replace the 69 kV in-line		
switches at Monterey 69 kV		
substation		AEP (100%)
Replace circuit breakers '42' and		
'43' at Bexley station with 3000		
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		
with 1200 A, 25 kA 34.5 kV		
breakers, slab, control cables and		AEP (100%)
jumpers		
West End Fostoria station with		
		AEP (100%)
slab, control cables and jumpers		ALI (10070)
Replace circuit breakers 'C', 'E,'		
and 'L' at Natrium station with		
3000 A, 40 kA 69 kV breakers,		AEP (100%)
slab, control cables and jumpers		ALI (10070)
	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 Upgrade remote end relaying at Point Pleasant, Coalton and South Point 69 kV substations Replace the 69 kV in-line switches at Monterey 69 kV substation Replace circuit breakers '42' and '43' at Bexley station with 3000 A, 40 kA 69 kV breakers (operated at 40 kV), slab, control cables and jumpers Replace circuit breakers 'A' and 'B' at South Side Lima station with 1200 A, 25 kA 34.5 kV breakers, slab, control cables and jumpers Replace circuit breaker 'H' at West End Fostoria station with 3000 A, 40 kA 69 kV breaker, slab, control cables and jumpers Replace circuit breaker 'C', 'E,' and 'L' at Natrium station with 3000 A, 40 kA 69 kV breakers,	Replace Bellefonte 69 kVbreakers C, G, I, Z, AB and JJ inplace. The new 69 kV breakers tobe rated at 3000 A 40 kAUpgrade remote end relaying atPoint Pleasant, Coalton andSouth Point 69 kV substationsReplace the 69 kV in-lineswitches at Monterey 69 kVsubstationReplace circuit breakers '42' and'43' at Bexley station with 3000A, 40 kA 69 kV breakers(operated at 40 kV), slab, controlcables and jumpersReplace circuit breakers 'A' and'B' at South Side Lima stationwith 1200 A, 25 kA 34.5 kVbreakers, slab, control cables andjumpersReplace circuit breaker 'H' atWest End Fostoria station with3000 A, 40 kA 69 kV breaker,slab, control cables and jumpersReplace circuit breakers 'C', 'E,'and 'L' at Natrium station with3000 A, 40 kA 69 kV breakers,

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1.00.00	Install a 69 kV 11.5 MVAR capacitor	•	
b3358	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)

1.0 - 0.6.4	Establish 69 kV bus and new 69 kV	
b3736.1	line Circuit Breaker at Dorton	AEP (100%)
	substation	71EI (10070)
	At Breaks substation, reuse 72 kV	
b3736.2	breaker A as the new 69 kV line	
	breaker	AEP (100%)
	Rebuild approximately 16.7 miles	
b3736.3	Dorton – Breaks 46 kV line to 69 kV	
0070010	line	AEP (100%)
	Retire approximately 17.2 miles	
b3736.4	Cedar Creek – Elwood 46 kV line	A = D (1000/)
		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	
	with a new substation. Install a new	
b3736.7	0.25 mile double circuit extension to	
	New Draffin substation	AEP (100%)
1,2726.9	Remote end work at Jenkins	
b3736.8	substation	
		AEP (100%)
	Provide transition fiber to Dorton,	
b3736.9	Breaks, Poor Bottom, Jenkins and	
	New Draffin 69 kV substations	AEP (100%)
12726 10	Honmy Class envitable station stations	
b3736.10	Henry Clay switch station retirement	AEP (100%)
b3736.11	Cedar Creek substation work	
		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required I	ransmission 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)

Required I	ransmission Enhancements Annual Re	evenue 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		
	connect to AES's line portion of		
b3766.1	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		
b3766.2	138 kV line with the conductor		
	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		
b3766.3	new station construction,		
	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)

		Reliability Driver:
		AEP (12.38%) / ComEd
		(87.62%)
		Market Efficiency
		Driver:
		AEC (0.87%) / AEP
		(24.07%) / APS (3.95%) /
	Borform and study mitigation work on	ATSI (11.04%) / BGE
	Perform sag study mitigation work on	(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%) /
b3775.6		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%) / 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%)
		0
		AEP (12.38%) / ComEd (87.62%)
	Upgrade the limiting	AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver:
	Upgrade the limiting element at Stillwell	AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS
b3775 11	element at Stillwell substation to increase the	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	element at Stillwell substation to increase the rating of the Stillwell –	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	element at Stillwell substation to increase the	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	element at Stillwell substation to increase the rating of the Stillwell –	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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%) /

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 I	ransmission Enhancements Annual Re	evenue Requirement	Responsible Customer(s)
105041	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		
	phase CCVT stand, which will be		
b3787.1	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 -		
			A = D(1000/)
	Princess 69 kV line section		AEP (100%)
	Replace AEP owned station		
b3788.1	takeoff riser and breaker BB		
00700.1	risers at OVEC owned Kyger		
	Creek station		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	ransmission Enhancements Annual Re	evenue Requirement	Responsible Customer(s)
	Replace the overdutied Olive 345		
	kV circuit breaker "D" with a		
b3790.0	5000A 63 kA circuit breaker.		
03790.0	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		
05057.1	Huntington station with new 69		
	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		
b3843.1	of the Ohio University - West		
05045.1	Clark 69 kV line, approximately		
	0.65 miles		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

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

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		Load-Ratio Share Allocation:
		<u>AEC (1.65%) / AEP (14.29%) / APS</u>
		(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
	Add a 765 kV breaker at	(2.35%) / JCPL (3.59%) / ME (1.81%) /
<u>b3847.1</u>	Baker station for the reactor	<u>NEPTUNE* (0.42%) / OVEC (0.06%) /</u>
	on the Broadford 765 kV line	PECO (5.11%) / PENELEC (1.73%) /
		<u>PEPCO (3.68%) / PPL (4.43%) / PSEG</u>
		<u>(5.99%) / RE (0.24%)</u>
		DFAX Allocation:
		<u>AEP (70.68%) / EKPC (8.12%)/</u>
		<u>PEPCO (21.20%)</u>
		Load-Ratio Share Allocation:
		<u>AEC (1.65%) / AEP (14.29%) / APS</u>
		(5.82%) / ATSI (7.49%) / BGE (4.01%)
		/ ComEd (14.06%) / Dayton (2.03%) /
		<u>DEOK (3.21%) / DL (1.59%) / DPL</u>
		(2.55%) / Dominion (13.89%) / EKPC
	Add two 765 kV breakers to	(2.35%) / JCPL (3.59%) / ME (1.81%) /
	the reactors at Broadford	<u>NEPTUNE* (0.42%) / OVEC (0.06%) /</u>
<u>b3847.2</u>	station on the Baker and	<u>PECO (5.11%) / PENELEC (1.73%) /</u>
	Jacksons Ferry 765 kV lines	<u>PEPCO (3.68%) / PPL (4.43%) / PSEG</u>
	Jacksons Perry 705 KV miles	<u>(5.99%) / RE (0.24%)</u>
		DFAX Allocation:
		<u>AEP (36.98%) / BGE (9.18%) / Dayton</u>
		(0.04%) / DEOK (0.10%) / Dominion
		<u>(40.81%) / EKPC (0.05%) / PEPCO</u>
		<u>(12.84%)</u>

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

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		Load-Ratio Share Allocation:
		<u>AEC (1.65%) / AEP (14.29%) / APS</u>
		(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
	Add a 765 kV breaker to the	(2.35%) / JCPL (3.59%) / ME (1.81%) /
<u>b3847.3</u>	reactor at Jefferson station on	<u>NEPTUNE* (0.42%) / OVEC (0.06%) /</u>
	the Greentown 765 kV line	<u>PECO (5.11%) / PENELEC (1.73%) /</u>
		<u>PEPCO (3.68%) / PPL (4.43%) / PSEG</u>
		<u>(5.99%) / RE (0.24%)</u>
		DFAX Allocation:
		<u>AEP (64.50%) / DEOK (27.02%) /</u>
		<u>EKPC (6.06%) / OVEC (2.42%)</u>

AEP Service Corporation on behalf of its Affiliate Companies: AEP Appalachian Transmission Company, Inc.; 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.)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)			
<u>b3851.1</u>	Rebuild Allen – R.P. Mone		<u>AEP (0.71%) / Dayton (99.28%) /</u>
0505111	<u>345 kV line (18.6 miles)</u>		<u>OVEC (0.01%)</u>
	Rebuild R.P. Mone –		
b3851.2	Maddox Creek 345 kV line		
	(9.4 miles)		AEP (78.50%) / Dayton (21.50%)
	Replace 345 kV breakers 'B1'		
b3851.3	and 'B' at Maddox Creek		
	station		AEP (80.97%) / Dayton (19.03%)
	Replace two 345 kV breakers		
<u>b3851.4</u>	'M' and 'M2' at East Lima		
	station		AEP (80.97%) / Dayton (19.03%)
	Connect and energize a		
<u>b3852.1</u>	second 765/345 kV bank at		AEP (88.81%) / Dayton (6.22%) /
	Vassell 765 kV station		DEOK (4.89%) / OVEC (0.08%)
			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%) /
1 20 52 2	Replace 765 kV breaker D at		NEPTUNE* (0.42%) / OVEC (0.06%) /
<u>b3852.2</u>	Maliszewski station		PECO (5.11%) / PENELEC (1.73%) /
			PEPCO (3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			AEP (68.04%) / ATSI (9.61%) / Dayton
			(1.92%) / DL (3.35%) / Dominion
			(17.06%) / EKPC (0.02%)
VII (Decional Transmission System	II.C	

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

SCHEDULE 12 – APPENDIX A

(20) Virginia Electric and Power Company

Required T	ransmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
	Replace Loudoun 230 kV	-	
b1698.7	breaker '203052' with 63 kA		
	rating		Dominion (100%)
	Replace the Idylwood 230 kV		
b1696.1	'25112' breaker with 50 kA		
	breaker		Dominion (100%)
	Replace the Idylwood 230 kV		, <i>í</i>
b1696.2	'209712' breaker with 50 kA		
	breaker		Dominion (100%)
	Remove the Carolina 22 SPS		, , , , , , , , , , , , , , , , , , ,
	to include relay logic changes,		
1.1702.1	minor control wiring, relay		
b1793.1	resets and SCADA		
	programming upon		
	completion of project		Dominion (100%)
	Additional Temporary SPS at		
b2281	Bath County		D^{-1} (1000()
	5		Dominion (100%)
	Reconductor 211 feet of 545.5		
	ACAR conductor on 59 Line		
b2350	Elmont - Greenwood DP 115		
02550	kV to achieve a summer		
	emergency rating of 906 amps		D · · · (1000/)
	or greater		Dominion (100%)
	Install a 230 kV 54 MVAR		
b2358	capacitor bank on the 2016		
02000	line at Harmony Village		D :: (1000()
	Substation		Dominion (100%)
	Wreck and rebuild		
	approximately 1.3 miles of		
b2359	existing 230 kV line between		
	Cochran Mill - X4-039		\mathbf{D} = $(1000/)$
	Switching Station		Dominion (100%)
	Build a new 39 mile 230 kV		
b2360	transmission line from Dooms		
02500	- Lexington on existing right-		D^{-1} (1000/)
	of-way		Dominion (100%)
	Construct 230 kV OH line		
	along existing Line #2035		
1.00(1	corridor, approx. 2.4 miles		
b2361	from Idylwood - Dulles Toll		
	Road (DTR) and 2.1 miles on		
	new right-of-way along DTR		$\mathbf{D}_{\mathbf{r}}$
	to new Scott's Run Substation		Dominion (100%)

Required		Revenue Requirement Responsible Customer(s)
b2368	Replace the Brambleton 230 kV breaker '209502' with 63 kA breaker	Dominion (100%)
b2369	Replace the Brambleton 230 kV breaker '213702' with 63 kA breaker	Dominion (100%)
b2370	Replace the Brambleton 230 kV breaker 'H302' with 63 kA breaker	Dominion (100%)
b2373	Build a 2nd Loudoun - Brambleton 500 kV line within the existing ROW. The Loudoun - Brambleton 230 kV line will be relocated as an underbuild on the new 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: APS (52.14%) / Dominion (20.63%) / PEPCO (27.23%)
b2397	Replace the Beaumeade 230 kV breaker '2079T2116' with 63 kA	Dominion (100%)
b2398	Replace the Beaumeade 230 kV breaker '2079T2130' with 63 kA	Dominion (100%)
b2399	Replace the Beaumeade 230 kV breaker '208192' with 63 kA	Dominion (100%)
b2400	Replace the Beaumeade 230 kV breaker '209592' with 63 kA	Dominion (100%)
b2401	Replace the Beaumeade 230 kV breaker '211692' with 63 kA	Dominion (100%)
b2402	Replace the Beaumeade 230 kV breaker '227T2130' with 63 kA	Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

The Annual Revenue Requirement for all Virginia Electric and Power Company projects in this Section 20 shall be as specified in Attachment 7 to Appendix A of Attachment H-16A and under the procedures detailed in Attachment H-16B.

Required I		Annual Revenue Requirement	Responsible Customer(s)
b2403	Replace the Beaumeade 230 kV breaker '274T2130' with 63 kA		Dominion (100%)
b2404	Replace the Beaumeade 230 kV breaker '227T2095' with 63 kA		Dominion (100%)
b2405	Replace the Pleasant view 230 kV breaker '203T274' with 63 kA		Dominion (100%)
b2443	Construct new underground 230 kV line from Glebe to Station C, rebuild Glebe Substation, construct 230 kV high side bus at Station C with option to install 800 MVA PAR		Dominion (97.11%) / ME (0.18%) / PEPCO (2.71%)
b2443.1	Replace the Idylwood 230 kV breaker '203512' with 50 kA		Dominion (100%)
b2443.2	Replace the Ox 230 kV breaker '206342' with 63 kA breaker		Dominion (100%)
b2443.3	Glebe – Station C PAR		DFAX Allocation: Dominion (22.57%) / PEPCO (77.43%)
b2443.6	Install a second 500/230 kV transformer at Possum Point substation and replace bus work and associated equipment as needed		Dominion (100%)
b2443.7	Replace 19 63 kA 230 kV breakers with 19 80 kA 230 kV breakers		Dominion (100%)
b2457	Replace 24 115 kV wood h-frames with 230 kV Dominion pole H-frame structures on the Clubhouse – Purdy 115 kV line		Dominion (100%)
b2458.1	Replace 12 wood H-frame structures with steel H- frame structures and install shunts on all conductor splices on Carolina – Woodland 115 kV		Dominion (100%)

Required T	ransmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
b2458.2	Upgrade all line switches and substation components at Carolina 115 kV to meet or exceed new conductor rating of 174 MVA		Dominion (100%)
b2458.3	Replace 14 wood H-frame structures on Carolina – Woodland 115 kV		Dominion (100%)
b2458.4	Replace 2.5 miles of static wire on Carolina – Woodland 115 kV		Dominion (100%)
b2458.5	Replace 4.5 miles of conductor between Carolina 115 kV and Jackson DP 115 kV with min. 300 MVA summer STE rating; Replace 8 wood H-frame structures located between Carolina and Jackson DP with steel H-frames		Dominion (100%)
b2460.1	Replace Hanover 230 kV substation line switches with 3000A switches		Dominion (100%)
b2460.2	Replace wave traps at Four River 230 kV and Elmont 230 kV substations with 3000A wave traps		Dominion (100%)
b2461	wave traps Wreck and rebuild existing Remington CT – Warrenton 230 kV (approx. 12 miles) as a double-circuit 230 kV line		Dominion (100%)
b2461.1	Construct a new 230 kV line approximately 6 miles from NOVEC's Wheeler Substation a new 230 kV switching station in Vint Hill area		Dominion (100%)
b2461.2	Convert NOVEC's Gainesville – Wheeler line (approximately 6 miles) to 230 kV		Dominion (100%)
b2461.3	Complete a Vint Hill – Wheeler – Loudoun 230 kV networked line		Dominion (100%)

Required T	ransmission Enhancements Annua	al 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%) /
	Replace Midlothian 500 kV		DEOK (3.21%) / DL (1.59%) /
	breaker 563T576 and motor		DPL (2.55%) / Dominion
	operated switches with 3		(13.89%) / EKPC $(2.35%)$ /
b2471	breaker 500 kV ring bus. Terminate Lines # 563 Carson		
	– Midlothian, #576		JCPL (3.59%) / ME (1.81%) /
	Midlothian –North Anna,		NEPTUNE* (0.42%) / OVEC
	Transformer #2 in new ring		(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			Dominion (100%)
	Rebuild 115 kV Line #32		
	from Halifax-South Boston (6		
1.0504	miles) for min. of 240 MVA		
b2504	and transfer Welco tap to Line #32. Moving Welco to Line		
	#32 requires disabling auto-		
	sectionalizing scheme		Dominion (100%)
	Install structures in river to		
	remove the 115 kV #65 line		
b2505	(Whitestone-Harmony Village		
	115 kV) from bridge and		D_{1} (1000/)
	improve reliability of the line		Dominion (100%)
1-2542	Replace the Loudoun 500 kV 'H2T502' breaker with a 50		
b2542	kA breaker		Dominion (100%)
	Replace the Loudoun 500 kV		
b2543	'H2T584' breaker with a 50		
02010	kA breaker		Dominion (100%)
	Reconductor wave trap at		· · · · ·
b2565	Carver Substation with a		
	2000A wave trap		Dominion (100%)
	Reconductor 1.14 miles of		
b2566	existing line between ACCA		
	and Hermitage and upgrade associated terminal equipment		Dominion (100%)
*\T	Regional Transmission System		

Required T	ransmission Enhancements A	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%) /
	Rebuild the Elmont –		JCPL (3.59%) / ME (1.81%) /
b2582	Cunningham 500 kV line		NEPTUNE* (0.42%) / OVEC
	8		(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			APS (6.21%) / BGE (4.78%) /
			Dominion (81.73%) / PEPCO
			(7.28%)
	Install 500 kV breaker at		(7.2878)
10502	Ox Substation to remove		
b2583	Ox Tx#1 from H1T561		
	breaker failure outage		Dominion (100%)
	Relocate the Bremo load		
	(transformer #5) to #2028 (Bremo-Charlottesville		
b2584	230 kV) line and		
02001	Cartersville distribution		
	station to #2027 (Bremo-		
	Midlothian 230 kV) line		Dominion (100%)
	Reconductor 7.63 miles of existing line between		
b2585	Cranes and Stafford,		
02303	upgrade associated line		
	switches at Stafford		PEPCO (100%)
	Wreck and rebuild the		
	Chesapeake – Deep Creek		
	– Bowers Hill – Hodges Ferry 115 kV line;		
b2620	minimum rating 239		
	MVA normal/emergency,		
	275 MVA load dump		
	rating		Dominion (100%)
*Nontuna	Regional Transmission Syst	am IIC	

Required I		nnual Revenue Requirement	Responsible Customer(s)
b2622	Rebuild Line #47 between Kings Dominion 115 kV and Fredericksburg 115 kV to current standards with summer emergency rating		
b2623	of 353 MVA at 115 kV Rebuild Line #4 between Bremo and Structure 8474 (4.5 miles) to current standards with a summer emergency rating of 261 MVA at 115 kV		Dominion (100%) Dominion (100%)
b2624	Rebuild 115 kV Lines #18 and #145 between Possum Point Generating Station and NOVEC's Smoketown DP (approx. 8.35 miles) to current 230 kV standards with a normal continuous summer rating of 524 MVA at 115 kV		Dominion (100%)
b2625	MVA at 115 kV Rebuild 115 kV Line #48 between Thole Street and Structure 48/71 to current standard. The remaining line to Sewells Point is 2007 vintage. Rebuild 115 kV Line #107 line, Sewells Point to Oakwood, between structure 107/17 and 107/56 to current standard		Dominion (100%)
b2626	Rebuild 115 kV Line #34 between Skiffes Creek and Yorktown and the double circuit portion of 115 kV Line #61 to current standards with a summer emergency rating of 353 MVA at 115 kV		Dominion (100%)
b2627	Rebuild 115 kV Line #1 between Crewe 115 kV and Fort Pickett DP 115 kV (12.2 miles) to current standards with summer emergency rating of 261 MVA at 115 kV		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required I	ransmission Enhancements Annual Revenue Requireme	ent Responsible Customer(s)
	Rebuild 115 kV Line #82	
	Everetts – Voice of America	
b2628	(20.8 miles) to current	
02028	standards with a summer	
	emergency rating of 261	
	MVA at 115 kV	Dominion (100%)
	Rebuild the 115 kV Lines	
	#27 and #67 lines from	
	Greenwich 115 kV to Burton	
b2629	115 kV Structure 27/280 to	
	current standard with a	
	summer emergency rating of	
	262 MVA at 115 kV	Dominion (100%)
	Install circuit switchers on	
	Gravel Neck Power Station	
b2630	GSU units #4 and #5. Install	
02030	two 230 kV CCVT's on	
	Lines #2407 and #2408 for	
	loss of source sensing	Dominion (100%)
	Install three 230 kV bus	
	breakers and 230 kV, 100	
	MVAR Variable Shunt	
	Reactor at Dahlgren to	
b2636	provide line protection	
	during maintenance, remove	
	the operational hazard and	
	provide voltage reduction	
	during light load conditions	Dominion (100%)
	Rebuild Boydton Plank Rd –	
	Kerr Dam 115 kV Line #38	
b2647	(8.3 miles) to current	
02047	standards with summer	
	emergency rating of 353	
	MVA at 115 kV	Dominion (100%)
	Rebuild Carolina – Kerr	
	Dam 115 kV Line #90 (38.7	
b2648	miles) to current standards	
	with summer emergency	
	rating of 353 MVA 115 kV	Dominion (100%)
	Rebuild Clubhouse –	
	Carolina 115 kV Line #130	
b2649	(17.8 miles) to current	
02019	standards with summer	
	emergency rating of 353	$\mathbf{D}_{\mathrm{exc}}$ (1000/)
	MVA at 115 kV	Dominion (100%)

Required T		ual Revenue Requirement	Responsible Customer(s)
b2649.1	Rebuild of 1.7 mile tap to Metcalf and Belfield DP (MEC) due to poor condition. The existing summer rating of the tap is 48 MVA and existing conductor is 4/0 ACSR on wood H-frames. The proposed new rating is 176 MVA using 636 ACSR conductor		Dominion (100%)
b2649.2	Rebuild of 4.1 mile tap to Brinks DP (MEC) due to wood poles built in 1962. The existing summer rating of the tap is 48 MVA and existing conductor is 4/0 ACSR and 393.6 ACSR on wood H-frames. The proposed new rating is 176 MVA using 636 ACSR conductor		Dominion (100%)
b2650	Rebuild Twittys Creek – Pamplin 115 kV Line #154 (17.8 miles) to current standards with summer emergency rating of 353 MVA at 115 kV		Dominion (100%)

Required Tra		ual Revenue Requirement	Responsible Customer(s)
b2651	Rebuild Buggs Island – Plywood 115 kV Line #127 (25.8 miles) to current standards with summer emergency rating of 353 MVA at 115 kV. The line should be rebuilt for 230 kV and operated at 115 kV		Dominion (100%)
b2652	Rebuild Greatbridge – Hickory 115 kV Line #16 and Greatbridge – Chesapeake E.C. to current standard with summer emergency rating of 353 MVA at 115 kV		Dominion (100%)
b2653.1	Build 20 mile 115 kV line from Pantego to Trowbridge with summer emergency rating of 353 MVA		Dominion (100%)
b2653.2	Install 115 kV four-breaker ring bus at Pantego		Dominion (100%)
b2653.3	Install 115 kV breaker at Trowbridge		Dominion (100%)
b2654.1	Build 15 mile 115 kV line from Scotland Neck to S Justice Branch with summer emergency rating of 353 MVA. New line will be routed to allow HEMC to convert Dawson's Crossroads RP from 34.5 kV to 115 kV		Dominion (100%)
b2654.2	Install 115 kV three-breaker ring bus at S Justice Branch		Dominion (100%)
b2654.3	Install 115 kV breaker at Scotland Neck		Dominion (100%)
b2654.3	Install a 2nd 224 MVA 230/115 kV transformer at Hathaway		Dominion (100%)

Required Tra	ansmission Enhancements Annual Reve	nue Requirement	Responsible Customer(s)
b2665	Rebuild the Cunningham – Dooms 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: APS (10.07%) / BGE (6.58%) / Dominion (72.51%) / PEPCO (10.84%)
b2686	Pratts Area Improvement		Dominion (100%)
b2686.1	Build a 230 kV line from Remington Substation to Gordonsville Substation utilizing existing ROW		Dominion (100%)
b2686.2	Install a 3rd 230/115 kV transformer at Gordonsville Substation		Dominion (100%)
b2686.3	Upgrade Line 2088 between Gordonsville Substation and Louisa CT Station		Dominion (100%)
b2686.4	Replace the Remington CT 230 kV breaker "2114T2155" with a 63 kA breaker		Dominion (100%)
b2686.11	Upgrading sections of the Gordonsville – Somerset 115 kV circuit		Dominion (100%)
b2686.12	Upgrading sections of the Somerset – Doubleday 115 kV circuit		Dominion (100%)
b2686.13	Upgrading sections of the Orange – Somerset 115 kV circuit		Dominion (100%)
b2686.14	Upgrading sections of the Mitchell – Mt. Run 115 kV circuit		Dominion (100%)
*Neptune	Regional Tran	smission	System, LLC

Required Tr	ransmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2717.1	De-energize Davis – Rosslyn #179 and #180 69 kV lines	Dominion (100%)
b2717.2	Remove splicing and stop joints in manholes	Dominion (100%)
b2717.3	Evacuate and dispose of insulating fluid from various reservoirs and cables	Dominion (100%)
b2717.4	Remove all cable along the approx. 2.5 mile route, swab and cap-off conduits for future use, leave existing communication fiber in place	Dominion (100%)
b2719.1	Expand Perth substation and add a 115 kV four breaker ring	Dominion (100%)
b2719.2	Extend the Hickory Grove DP tap 0.28 miles to Perth and terminate it at Perth	Dominion (100%)
b2719.3	Split Line #31 at Perth and terminate it into the new ring bus with 2 breakers separating each of the line terminals to prevent a breaker failure from taking out both 115 kV lines	Dominion (100%)
b2720	Replace the Loudoun 500 kV 'H1T569' breakers with 50 kA breaker	Dominion (100%)
b2729	Optimal Capacitors Configuration: New 175 MVAR capacitor at Brambleton, new 175 MVAR capacitor at Ashburn, new 300 MVAR capacitor at Shelhorm, new 150 MVAR capacitor at Liberty	AEC (1.96%) / BGE (14.37%) / Dominion (35.11%) / DPL (3.76%) / ECP** (0.29%) / HTP*** (0.34%) / JCPL (3.31%) / ME (2.51%) / NEPTUNE* (0.63%) / PECO (6.26%) / PEPCO (20.23%) / PPL (3.94%) / PSEG (7.29%)

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

***Hudson Transmission Partners, LLC

Required Tra	ansmission 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
1.0744	Rebuild the Carson – Rogers		(13.89%) / EKPC (2.35%) /
b2744	Rd 500 kV circuit		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:
			Dominion (100.00%)
	Rebuild 21.32 miles of		
b2745	existing line between Chesterfield – Lakeside		
	230 kV		Dominion (100%)
	Rebuild Line #137 Ridge Rd		
b2746.1	– Kerr Dam 115 kV, 8.0		
02710.1	miles, for 346 MVA summer		Dominion (100%)
	emergency rating Rebuild Line #1009 Ridge Rd		Dominion (10076)
107460	- Chase City 115 kV , 9.5		
b2746.2	miles, for 346 MVA summer		
	emergency rating Install a second 4.8 MVAR		Dominion (100%)
	Install a second 4.8 MVAR		
b2746.3	capacitor bank on the 13.8 kV bus of each transformer at		
	Ridge Rd		Dominion (100%)
	Install a Motor Operated		``````````````````````````````````````
10747	Switch and SCADA control		
b2747	between Dominion's Gordonsville 115 kV bus and		
	FirstEnergy's 115 kV line		Dominion (100%)
Ψ ΝΙ (Γ	Pagional Transmission System I	LC	

reequirea m	ansmission Ennancements Annual	Revenue Requirement	Responsible Customer(s)
b2757	Install a +/-125 MVAr Statcom at Colington 230 kV		Dominion (100%)
b2758	Rebuild Line #549 Dooms – Valley 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: Dominion (100%)
b2759	Rebuild Line #550 Mt. Storm – Valley 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:
			APS (40.03%) / DL (3.91%) / Dominion (49.41%) / EKPC (6.65%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b2800	The 7 mile section from Dozier to Thompsons Corner of line #120 will be rebuilt to current standards using 768.2 ACSS conductor with a summer emergency rating of 346 MVA at 115 kV. Line is proposed to be rebuilt on single circuit steel monopole structure		Dominion (100%)
b2801	Lines #76 and #79 will be rebuilt to current standard using 768.2 ACSS conductor with a summer emergency rating of 346 MVA at 115 kV. Proposed structure for rebuild is double circuit steel monopole structure		Dominion (100%)
b2802	Rebuild Line #171 from Chase City – Boydton Plank Road tap by removing end- of-life facilities and installing 9.4 miles of new conductor. The conductor used will be at current standards with a summer emergency rating of 393 MVA at 115 kV		Dominion (100%)
b2815	Build a new Pinewood 115 kV switching station at the tap serving North Doswell DP with a 115 kV four breaker ring bus		Dominion (100%)
b2842	Update the nameplate for Mount Storm 500 kV "57272" to be 50 kA breaker		Dominion (100%)
b2843	Replace the Mount Storm 500 kV "G2TY" with 50 kA breaker		Dominion (100%)
b2844	Replace the Mount Storm 500 kV "G2TZ" with 50 kA breaker		Dominion (100%)

Required T	ransmission Enhancements Annua	l Revenue Requirement	Responsible Customer(s)
b2845	Update the nameplate for Mount Storm 500 kV "G3TSX1" to be 50 kA		$D_{emining}(1000/)$
	breaker		Dominion (100%)
b2846	Update the nameplate for Mount Storm 500 kV "SX172" to be 50 kA breaker		Dominion (100%)
b2847	Update the nameplate for Mount Storm 500 kV "Y72" to be 50 kA breaker		Dominion (100%)
b2848	Replace the Mount Storm 500 kV "Z72" with 50 kA breaker		Dominion (100%)
b2871	Rebuild 230 kV line #247 from Swamp to Suffolk (31 miles) to current standards with a summer emergency rating of 1047 MVA at 230 kV		Dominion (100%)
b2876	Rebuild line #101 from Mackeys – Creswell 115 kV, 14 miles, with double circuit structures. Install one circuit with provisions for a second circuit. The conductor used will be at current standards with a summer emergency rating of 262 MVA at 115 kV		Dominion (100%)
b2877	Rebuild line #112 from Fudge Hollow – Lowmoor 138 kV (5.16 miles) to current standards with a summer emergency rating of 314 MVA at 138 kV		Dominion (100%)
b2899	Rebuild 230 kV line #231 to current standard with a summer emergency rating of 1046 MVA. Proposed conductor is 2-636 ACSR		Dominion (100%)
b2900	Build a new 230/115 kV switching station connecting to 230 kV network line #2014 (Earleys – Everetts). Provide a 115 kV source from the new station to serve Windsor DP		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b2922	Rebuild 8 of 11 miles of 230 kV lines #211 and #228 to current standard with a summer emergency rating of 1046 MVA for rebuilt section. Proposed conductor is 2-636 ACSR		Dominion (100%)
b2928	Rebuild four structures of 500 kV line #567 from Chickahominy to Surry using galvanized steel and replace the river crossing conductor with 3-1534 ACSR. This will increase the line #567 line rating from 1954 MVA to 2600 MVA		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%)
	D 1 110001111 10144		DFAX Allocation: Dominion (100%)
b2929	Rebuild 230 kV line #2144 from Winfall to Swamp (4.3 miles) to current standards with a standard conductor (bundled 636 ACSR) having a summer emergency rating of 1047 MVA at 230 kV		Dominion (100%)
b2960	Replace fixed series capacitors on 500 kV Line #547 at Lexington and on 500 kV Line #548 at Valley		See sub-IDs for cost allocations

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annua	l 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%) /
	Replace fixed series capacitors on 500 kV Line #547 at Lexington		DPL (2.55%) / Dominion
		Line	(13.89%) / EKPC (2.35%) /
b2960.1			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:
			DEOK (7.57%) / Dominion
			(88.85%) / EKPC (3.58%)

Required Tra	ansmission 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
	Damlaga fixed series		(13.89%) / EKPC (2.35%) /
b2960.2	Replace fixed series capacitors on 500 kV Line		JCPL (3.59%) / ME (1.81%) /
02700.2	#548 at Valley		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:
			DEOK (6.54%) / Dominion
	Debuild annowing taly?		(91.29%) / EKPC (2.17%)
	Rebuild approximately 3 miles of Line #205 & Line		
b2961	#2003 from Chesterfield to		
	Locks & Poe respectively		Dominion (100%)
	Split Line #227 (Brambleton		
b2962	– Beaumeade 230 kV) and		
02902	terminate into existing		$\mathbf{D}_{\mathrm{exc}}$
	Belmont substation Replace the Beaumeade 230		Dominion (100%)
b2962.1	kV breaker "274T2081" with		
02702.1	63 kA breaker		Dominion (100%)
	Replace the NIVO 230 kV breaker "2116T2130" with 63		``````````````````````````````````````
b2962.2	breaker "2116T2130" with 63		
	kA breaker		Dominion (100%)
	Reconductor the Woodbridge to Occoquan 230 kV line		
	segment of Line #2001 with		
b2963	1047 MVA conductor and		
	replace line terminal		
	equipment at Possum Point,		$\mathbf{D}_{\mathbf{r}}$
*N (D	Woodbridge, and Occoquan Regional Transmission System I		Dominion (100%)

Required Tr	ransmission Enhancements Ann	ual 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%) /
	Install 2-125 MVAR		DEOK (3.21%) / DL (1.59%) /
	STATCOMs at Rawlings		DPL (2.55%) / Dominion
b2978	and 1-125 MVAR		(13.89%) / EKPC (2.35%) /
02970	STATCOM at Clover 500		JCPL (3.59%) / ME (1.81%) /
	kV substations		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:
	D 1 111151XI: #42		Dominion (100%)
	Rebuild 115 kV Line #43 between Staunton and		
	Harrisonburg (22.8 miles)		
b2980	to current standards with a		
	summer emergency rating		
	of 261 MVA at 115 kV		Dominion (100%)
	Rebuild 115 kV Line #29		
	segment between		
	Fredericksburg and Aquia		
	Harbor to current 230 kV		
	standards (operating at 115		
b2981	kV) utilizing steel H-frame		
	structures with 2-636		
	ACSR to provide a normal		
	continuous summer rating		
	of 524 MVA at 115 kV		
*NI	(1047 MVA at 230 kV)		Dominion (100%)

Required Tr		Revenue Requirement	Responsible Customer(s)
b2989	ansmission Enhancements Annual Install a second 230/115 kV Transformer (224 MVA) approximately 1 mile north of Bremo and tie 230 kV Line #2028 (Bremo – Charlottesville) and 115 kV Line #91 (Bremo - Sherwood) together. A three breaker 230 kV ring bus will split Line #2028 into two lines and Line #91 will also be split into two lines with a new three breaker 115 kV ring bus. Install a temporary 230/115 kV transformer at	Revenue Requirement	Responsible Customer(s)
b2990	Bremo substation for the interim until the new substation is complete Chesterfield to Basin 230 kV line – Replace 0.14 miles of 1109 ACAR with a conductor which will increase the line rating to approximately 706 MVA		Dominion (100%) Dominion (100%)
b2991	Chaparral to Locks 230 kV line – Replace breaker lead		Dominion (100%)
b2994	Acquire land and build a new switching station (Skippers) at the tap serving Brink DP with a 115 kV four breaker ring to split Line #130 and terminate the end points		Dominion (100%)
b3018	Rebuild Line #49 between New Road and Middleburg substations with single circuit steel structures to current 115 kV standards with a minimum summer emergency rating of 261 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annua	l Revenue Requirement	Responsible Customer(s)
b3019	Rebuild 500 kV Line #552 Bristers to Chancellor – 21.6 miles long		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: Dominion (100.00%)
b3019.1	Update the nameplate for Morrisville 500 kV breaker "H1T594" to be 50 kA		Dominion (100%)
b3019.2	Update the nameplate for Morrisville 500 kV breaker "H1T545" to be 50 kA		Dominion (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement Responsible Customer(s)
		Load-Ratio Share Allocation:
		AEC (1.65%) / AEP (14.29%)
		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:
		(14.06%) / Dayton (2.03%) /
	Rebuild 500 kV Line #574	
b3020	Ladysmith to Elmont -26.2	
	miles long	
		APS (16.36%) / DEOK
		(11.61%) / Dominion (51.27%)
		/ EKPC (5.30%) / PEPCO
		(15.46%)
		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
	Rebuild 500 kV Line #581	(13.89%) / EKPC (2.35%) /
b3021	Ladysmith to Chancellor –	JCPL (3.59%) / ME (1.81%) /
	15.2 miles long	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:
	Reconductor Line #274	Dominion (100.00%)
	(Pleasant View – Ashburn –	
b3026	Beaumeade 230 kV) with a	
03020	minimum rating of 1200	
	MVA. Also upgrade terminal	Dominion (100%)
<u>+</u>	equipment	

Required In		Revenue Requirement	Responsible Customer(s)
b3027.1	Add a 2nd 500/230 kV 840 MVA transformer at Dominion's Ladysmith substation		Dominion (100%)
b3027.2	Reconductor 230 kV Line #2089 between Ladysmith and Ladysmith CT substations to increase the line rating from 1047 MVA to 1225 MVA		Dominion (100%)
b3027.3	Replace the Ladysmith 500 kV breaker "H1T581" with 50 kA breaker		Dominion (100%)
b3027.4	Update the nameplate for Ladysmith 500 kV breaker "H1T575" to be 50 kA breaker		Dominion (100%)
b3027.5	Update the nameplate for Ladysmith 500 kV breaker "568T574" (will be renumbered as "H2T568") to be 50 kA breaker		Dominion (100%)
b3055	Install spare 230/69 kV transformer at Davis substation		Dominion (100%)
b3056	Partial rebuild 230 kV Line #2113 Waller to Lightfoot		Dominion (100%)
b3057	Rebuild 230 kV Lines #2154 and #19 Waller to Skiffes Creek		Dominion (100%)
b3058	Partial rebuild of 230 kV Lines #265, #200 and #2051		Dominion (100%)
b3059	Rebuild 230 kV Line #2173 Loudoun to Elklick		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
	Rebuild 4.6 mile Elklick – Bull Run 230 kV Line #295 and the		
b3060	portion (3.85 miles) of the Clifton – Walney 230 kV Line #265 which shares structures		
	with Line #295 Rebuild 4.75 mile section of		Dominion (100%)
	Line #26 between Lexington		
b3088	and Rockbridge with a		
	minimum summer emergency		5
	rating of 261 MVA		Dominion (100%)
	Rebuild 230 kV Line #224 between Lanexa and Northern		
	Neck utilizing double circuit		
	structures to current 230 kV		
b3089	standards. Only one circuit is to		
	be installed on the structures		
	with this project with a minimum summer emergency		
	rating of 1047 MVA		Dominion (100%)
	Convert the overhead portion		
	(approx. 1500 feet) of 230 kV		
b3090	Lines #248 & #2023 to underground and convert Glebe		
	substation to gas insulated		
	substation		Dominion (100%)
	Rebuild 230 kV line No.2063		
	(Clifton – Ox) and part of 230		
	kV line No.2164 (Clifton – Keene Mill) with double circuit		
b3096	steel structures using double		
	circuit conductor at current 230		
	kV northern Virginia standards		
	with a minimum rating of 1200 MVA		Dominion (100%)
	Rebuild 4 miles of 115 kV Line		
	#86 between Chesterfield and		
b3097	Centralia to current standards		
	with a minimum summer		Dominion (100%)
	emergency rating of 393 MVA Rebuild 9.8 miles of 115 kV		
	Line #141 between Balcony		
	Falls and Skimmer and 3.8		
b3098	miles of 115 kV Line #28		
	between Balcony Falls and Cushaw to current standards		
	with a minimum rating of 261		
	MVA		Dominion (100%)

Ttequirea IIt	ansimission ennancements Annual Rev	venue Requirement	Responsible Customer(s)
b3098.1	Rebuild Balcony Falls 115 kV substation		Dominion (100%)
b3110.1	Rebuild Line #2008 between Loudoun to Dulles Junction using single circuit conductor at current 230 kV northern Virginia standards with minimum summer ratings of 1200 MVA. Cut and loop Line #265 (Clifton – Sully) into Bull Run substation. Add three (3) 230 kV breakers at Bull Run to accommodate the new line and upgrade the substation		Dominion (100%)
b3110.2	Replace the Bull Run 230 kV breakers "200T244" and "200T295" with 50 kA breakers		Dominion (100%)
b3110.3	Replace the Clifton 230 kV breakers "201182" and "XT2011" with 63 kA breakers		Dominion (100%)
b3113	Rebuild approximately 1 mile of 115 kV Lines #72 and #53 to current standards with a minimum summer emergency rating of 393 MVA. The resulting summer emergency rating of Line #72 segment from Brown Boveri to Bellwood is 180 MVA. There is no change to Line #53 ratings		Dominion (100%)
b3114	Rebuild the 18.6 mile section of 115 kV Line #81 which includes 1.7 miles of double circuit Line #81 and 230 kV Line #2056. This segment of Line #81 will be rebuilt to current standards with a minimum rating of 261 MVA. Line #2056 rating will not change		Dominion (100%)
b3121	Rebuild Clubhouse – Lakeview 230 kV Line #254 with single- circuit wood pole equivalent structures at the current 230 kV standard with a minimum rating of 1047 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annual Revenue	e Requirement	Responsible Customer(s)
b3122	Rebuild Hathaway – Rocky Mount (Duke Energy Progress) 230 kV Line #2181 and Line #2058 with double circuit steel structures using double circuit conductor at current 230 kV standards with a minimum rating of 1047 MVA		Dominion (100%)
b3161.1	Split Chesterfield-Plaza 115 kV Line No. 72 by rebuilding the Brown Boveri tap line as double circuit loop in-and-out of the Brown Boveri Breaker station		Dominion (100%)
b3161.2	Install a 115 kV breaker at the Brown Boveri Breaker station. Site expansion is required to accommodate the new layout		Dominion (100%)
b3162	Acquire land and build a new 230 kV switching station (Stevensburg) with a 224 MVA, 230/115 kV transformer. Gordonsville-Remington 230 kV Line No. 2199 will be cut and connected to the new station. Remington-Mt. Run 115 kV Line No.70 and Mt. Run-Oak Green 115 kV Line No. 2 will also be cut and connected to the new station		Dominion (100%)
b3211	Rebuild the 1.3 mile section of 500 kV Line No. 569 (Loudoun – Morrisville) with single-circuit 500 kV structures at the current 500 kV standard. This will increase the rating of the line to 3424 MVA		Dominion (100%)
b3213	Install 2nd Chickahominy 500/230 kV transformer		Dominion (100%)
b3213.1	Replace the eight (8) Chickahominy 230 kV breakers with 63 kA breakers: "SC122", "205022", "209122", 210222-2", "28722", "H222", "21922" and "287T2129"		Dominion (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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Required II		r Revenue Requirement	Responsible Customer(s)
	Install a second 230 kV circuit with a minimum summer emergency rating of		
	1047 MVA between Lanexa		
	and Northern Next		
1 2 2 2 2 1	substations. The second		
b3223.1	circuit will utilize the vacant		
	arms on the double-circuit		
	structures that are being installed on Line #224		
	(Lanexa – Northern Next) as		
	part of the End-of-Life		
	rebuild project (b3089)		Dominion (100%)
	Expand the Northern Neck		
1.000.0	terminal from a 230 kV, 4-		
b3223.2	breaker ring bus to a 6-		
b3223.1 b3223.2 b3223.3 b3246.1 b3246.2	breaker ring bus		Dominion (100%)
	Expand the Lanexa terminal		<u>`````````````````````````````````````</u>
h3223 3	from a 6-breaker ring bus to a		
05225.5	breaker-and-a-half		
	arrangement		Dominion (100%)
	Convert 115 kV Line #172		
	Liberty – Lomar and 115 kV		
	Line #197 Cannon Branch –		
	Lomar to 230 kV to provide a new 230 kV source between		
	Cannon Branch and Liberty.		
	The majority of 115 kV Line		
	#172 Liberty – Lomar and		
b3246 1	Line #197 Cannon Branch –		
05240.1	Lomar is adequate for 230 kV		
	operation. Rebuild 0.36 mile		
	segment between the Lomar		
	and Cannon Branch junction.		
	Lines will have a summer		
	rating of		
	1047MVA/1047MVA		
	(SN/SE)		Dominion (100%)
	Perform substation work for		
1.2246.2	the 115 kV to 230 kV line		
03246.2	conversion at Liberty,		
	Wellington, Godwin, Pioneer, Sandlot and Cannon Branch		Dominion (100%)
	Sanutor and Califion Dialich		

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3246.3	Extend 230 kV Line #2011 Cannon Branch – Clifton to Winters Branch by removing the existing Line #2011 termination at Cannon Branch and extending the line to Brickyard creating 230 kV Line #2011 Brickyard - Clifton. Extend a new 230 kV line between Brickyard and Winters Branch with a summer rating of 1572MVA/1572MVA (SN/SE)		Dominion (100%)
b3246.4	Perform substation work at Cannon Branch, Brickyard and Winters Branch for the 230 kV Line #2011 Cannon Branch – Clifton extension		Dominion (100%)
b3246.5	Replace the Gainesville 230 kV 40 kA breaker "216192" with a 50 kA breaker		Dominion (100%)
b3247	Replace 13 towers with galvanized steel towers on Doubs – Goose Creek 500 kV. Reconductor 3 mile section with three (3) 1351.5 ACSR 45/7. Upgrade line terminal equipment at Goose Creek substation to support the 500 kV line rebuild		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%)
	Pagional Transmission System I		DFAX Allocation: Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ir	ansmission Enhancements Annua	i Kevenue Kequirement	Responsible Customer(s)
b3262	Install a second 115 kV 33.67 MVAR cap bank at Harrisonburg substation along with a 115 kV breaker		Dominion (100%)
b3263	Cut existing 115 kV Line #5 between Bremo and Cunningham substations and loop in and out of Fork Union substation		Dominion (100%)
b3264	Install 40 kA breaker at Stuarts Draft 115 kV station and sectionalize the Doom to Dupont-Waynesboro 115 kV Line #117 into two 115 kV lines		Dominion (100%)
b3268	Build a switching station at the junction of 115 kV line #39 and 115 kV line #91 with a 115 kV capacitor bank. The switching station will be built with 230 kV structures but will operate at 115 kV		Dominion (100%)
b3300	Reconductor 230 kV Line #2172 from Brambleton to Evergreen Mills along with upgrading the line leads at Brambleton to achieve a summer emergency rating of 1574 MVA		Dominion (100%)

Required Tr	ransmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3301	Reconductor 230 kV Line #2210 from Brambleton to Evergreen Mills along with upgrading the line leads at Brambleton to achieve a summer emergency rating of 1574 MVA		Dominion (100%)
b3302	Reconductor 230 kV Line #2213 from Cabin Run to Yardley Ridge along with upgrading the line leads at Yardley to achieve a summer emergency rating of 1574 MVA		Dominion (100%)
b3303.1	Extend a new single circuit 230 kV Line #9250 from Farmwell substation to Nimbus substation		Dominion (100%)
b3303.2	Remove Beaumeade 230 kV Line #2152 line switch		Dominion (100%)
b3304	Midlothian area improvements for 300 MW load drop relief		Dominion (100%)
b3304.1	Cut 230 kV Line #2066 at Trabue junction		Dominion (100%)
b3304.2	Reconductor idle 230 kV Line #242 (radial from Midlothian to Trabue junction) to allow a minimum summer rating of 1047 MVA and connect to the section of 230 kV Line #2066 between Trabue junction and Winterpock, re-number 230 kV Line #242 structures to Line #2066		Dominion (100%)
b3304.3	Use the section of idle 115 kV Line #153, between Midlothian and Trabue junction to connect to the section of (former) 230 kV Line #2066 between Trabue junction and Trabue to create new Midlothian – Trabue lines with new line numbers #2218 and #2219		Dominion (100%)
b3304.4	Create new line terminations at Midlothian for the new Midlothian – Trabue 230 kV lines		Dominion (100%)

Required Tr	ransmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
	Rebuild 12.4 miles of 115 kV		
	line from Earleys to Kelford		
	with a summer emergency		
b3684	rating of 262 MVA. Replace		
03084	structures as needed to support		
	the new conductor. Upgrade		
	breaker switch 13668 at		
	Earleys from 1200 A to 2000 A		Dominion (100%)
	Install a 33 MVAR cap bank at		
	Cloud 115 kV bus along with a		
b3685	115 kV breaker. Add 115 kV		
	circuit breaker for 115 kV Line		\mathbf{D} $(1000/)$
	#38		Dominion (100%)
	Purchase land close to the		
	bifurcation point of 115 kV		
	Line #4 (where the line is split		
	into two sections) and build a		
	new 115 kV switching station called Duncan Store. The new		
b3686	switching station will require		
	space for an ultimate		
	transmission interconnection		
	consisting of a 115 kV six-		
	breaker ring bus (with three		
	breakers installed initially)		Dominion (100%)
	Rebuild approximately 15.1		
	miles line segment between		
	Bristers and Minnieville D.P.		
	with 2-768 ACSS and 4000 A		
	supporting equipment from		
	Bristers to Ox to allow for		
b3687	future 230 kV capability of 115		
03087	kV Line #183. The continuous		
	summer normal rating will be		
	523 MVA for line Ox –		
	Minnieville. The continuous		
	summer normal rating will be		
	786 MVA for Minnieville –		$\mathbf{D}_{\text{ominion}}(100\%)$
	Bristers line		Dominion (100%)
	Reconductor approximately 24.42 miles of 230 kV Line		
	#2114 Remington CT– Elk		
	Run – Gainesville to achieve a		
	summer rating of 1574 MVA		
b3689.1	by fully reconductoring the line		
	and upgrading the wave trap		
	and substation conductor at		
	Remington CT and Gainesville		
	230 kV stations		Dominion (100%)
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Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)			
b3689.2	Replace 230 kV breakers SC102, H302, H402 and 218302 at Brambleton substation with 4000A 80 kA breakers and associated equipment including breaker leads as necessary to address breaker duty issues identified in short circuit analysis		Dominion (100%)
b3690	Reconductor approximately 1.07 miles of 230 kV Line #2008 segment from Cub Run to Walney to achieve a summer rating of 1574 MVA. Replace line switch 200826 with a 4000A switch		Dominion (100%)
b3691	Reconductor approximately 1.4 miles of 230 kV Line #2141 from Lakeview to Carolina to achieve a summer rating of 1047 MVA		Dominion (100%)
b3692	Rebuild approximately 27.7 miles of 500 kV transmission line from Elmont to Chickahominy with current 500 kV standards construction practices to achieve a summer rating of 4330 MVA		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: Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ransmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3693	Expand substation and install approximately 294 MVAR cap bank at 500 kV Lexington substation along with a 500 kV breaker. Adjust the tap positions associated with the two 230/69 kV transformers at Harrisonburg to neutral position and lock them		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: Dominion (100%)
b3694.1	Convert 115 kV Line #29 Aquia Harbour to Possum Point to 230 kV (Extended Line #2104) and swap Line #2104 and converted Line #29 at Aquia Harbour backbone termination. Upgrade terminal equipment at Possum Point to terminate converted Line #29 (now extended line #2104). (Line #29 from Fredericksburg to Aquia Harbour is being rebuilt under baseline b2981 to 230 kV standards) Regional Transmission System, LL		Dominion (100%)

Required Tr	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3694.2	Upgrade Aquia Harbour terminal equipment to not limit 230 kV Line #9281 conductor rating		Dominion (100%)
b3694.3	Upgrade Fredericksburg terminal equipment by rearranging 230 kV bus configuration to terminate converted Line #29 (now becoming 9281). The project will add a new breaker at the 230 kV bay and reconfigure line termination of 230 kV Line #2157, #2090 and #2083		Dominion (100%)
b3694.4	Reconductor/rebuild approximately 7.6 miles of 230 kV Line #2104 Cranes Corner – Stafford to achieve a summer rating of 1047 MVA. Reconductor/rebuild approximately 0.34 miles of 230 kV Line #2104 Stafford – Aquia Harbour to achieve a summer rating of 1047 MVA. Upgrade terminal equipment at Cranes Corner to not limit the new conductor rating		Dominion (100%)
b3694.5	Upgrade wave trap and line leads at 230 kV Line #2090 Ladysmith CT terminal to achieve 4000A rating		Dominion (100%)

Required Tr	ansmission Enhancements Annual Rev	enue Requirement	Responsible Customer(s)
b3694.6	Upgrade Fuller Road substation to feed Quantico substation via 115 kV radial line. Install four- breaker ring bus and break 230 kV Line #252 into two new lines: 1) Line #252 between Aquia Harbour and Fuller Road and 2) Line #9282 between Fuller Road and Possum Point. Install a 230/115 kV transformer which will serve Quantico substation		Dominion (100%)
b3694.7	Energize in-service spare 500/230 kV Carson Transformer #1		Dominion (100%)
b3694.8	Partial wreck and rebuild 10.34 miles of 230 kV Line #249 Carson – Locks to achieve a minimum summer emergency rating of 1047 MVA. Upgrade terminal equipment at Carson and Locks stations to not limit the new conductor rating		Dominion (100%)
b3694.9	Wreck and rebuild 5.4 miles of 115 kV Line #100 Locks – Harrowgate to achieve a minimum summer emergency rating of 393 MVA. Upgrade terminal equipment at Locks and Harrowgate stations to not limit the new conductor rating and perform Line #100 Chesterfield terminal relay work		Dominion (100%)
b3694.10	Reconductor approximately 2.9 miles of 230 kV Line #211 Chesterfield – Hopewell to achieve a minimum summer emergency rating of 1046 MVA		Dominion (100%)
b3694.11	Reconductor approximately 2.9 miles of 230 kV Line #228 Chesterfield – Hopewell to achieve a minimum summer emergency rating of 1046 MVA		Dominion (100%)
b3694.12	Upgrade equipment at Chesterfield 230 kV substation to not limit ratings on Line #211 and #228		Dominion (100%)

Required Ir	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3694.13	Upgrade equipment at Hopewell 230 kV substation to not limit ratings on Line #211 and #228		Dominion (100%)
b3702	Install one 13.5 Ohm series reactor to control the power flow on the 230 kV Line #2054 from Charlottesville substation to Proffit Rd. 230 kV line		AEC (1.59%) / APS (8.85%) / ATSI (5.54%) / BGE (10.79%) / ComEd (1.86%) / Dayton (0.21%) / DEOK (1.16%) / Dominion (18.99%) / DPL (3.68%) / DL (1.16%) / ECP** (0.27%) / HTP*** (0.22%) / JCPL (4.53%) / ME (1.73%) / NEPTUNE* (0.68%) / PECO (6.95%) / PENELEC (4.75%) / PEPCO (9.69%) / PPL (9.78%) / PSEG (7.28%) / RE (0.29%)
b3707.1	Reconductor approximately 0.57 mile of 115 kV Line #1021 from Harmony Village to Greys Point with 768 ACSS to achieve a summer emergency rating of 237 MVA. The current conductor is 477 ACSR		Dominion (100%)
b3707.2	Reconductor approximately 0.97 mile of 115 kV Line #65 from Rappahannock to White Stone with 768 ACSS to achieve a summer emergency rating of 237 MVA. The current conductor is 477 ACSR		Dominion (100%)
b3759	Reconductor approximately 10.5 miles of 115 kV Line #23 segment from Oak Ridge to AC2-079 Tap to minimum emergency ratings of 393 MVA Summer / 412 MVA Winter		Dominion (100%)

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 Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3779	Cut existing 230 kV line #2183 and extend from Poland Road substation to Evergreen Mills substation. Approximately 0.59 miles of new line will be built from the cut-in to the Evergreen Mills substation. Cut and extend the existing 230 kV line #2183 creating a new line #2210 from Brambleton substation to be terminated at Evergreen Mills substation. Approximately 0.59 miles of new line will be built from the cut-in to the Evergreen Mills substation		Dominion (100%)
b3800.118	Line work for terminating Doubs to Bismark line into Woodside 500 kV substation (DOM Portion)		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (21.09%) / BGE (6.55%) / Dominion (64.94%) / PEPCO (7.42%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.120	Aspen substation work to terminate the new NextEra 500 kV line. Include Aspen 500 kV substation portion build		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)
b3800.200	Build a new 500 kV line from Aspen - Golden on 500/230 kV double circuit structures with substation upgrades at Aspen and Golden. New conductor to have a minimum summer normal rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.201	Install two 500/230 kV transformer at Golden substation		Dominion (100%)
b3800.202	Install one 500/230 kV transformer at Aspen substation		Dominion (86.28%) / PEPCO (13.72%)

Required In	insmission Ennancements Annual F	Cevenue Requirement	Responsible Customer(s)
b3800.203	Install a second 500/230 kV 1440 MVA transformer at		
	Mars substation		Dominion (100%)
b3800.204	Reconductor 0.5 mile section of 230 kV line No. 2150 Golden - Paragon Park Circuit 1 to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.205	Reconductor 0.5 mile section of 230 kV line No. 2081 Golden - Paragon Park Circuit 2 to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.206	Upgrade Paragon Park substation line conductors to 4000A continuous current rating for 230 kV lines No. 2081 and No. 2150		Dominion (100%)
b3800.207	Reconductor 230 kV line No. 2207 Paragon Park – BECO to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.208	Upgrade Paragon Park substation conductor and line leads to 4000A continuous current rating for 230 kV line No. 2207		Dominion (100%)
b3800.209	Upgrade BECO substation equipment to 4000A continuous current rating for 230 kV line No.2207		Dominion (100%)
b3800.210	Build a new 230 kV line from Mars - Lockridge on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Mars and Lockridge substations		Dominion (100%)
b3800.211	Build a new 230 kV line from Lockridge - Golden on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Lockridge substations		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual l	Revenue Requirement	Responsible Customer(s)
b3800.212	Build a new 500 kV line from Mars - Golden on 500/230 kV double circuit structures with substation upgrades at Golden and Mars. New conductor to have a minimum summer normal rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.96%) / Dominion (0.04%)
b3800.213	Cut 500 kV line No. 558 Brambleton - Goose Creek into Aspen substation. Upgrade 500 kV terminal equipment at Aspen and Goose Creek to 5000A continuous rating current. At Goose Creek, replace circuit breakers 59582 and 55882, and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.39%) / Dominion (0.61%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.214	Build a new 500 kV line from Aspen - Goose Creek to achieve a summer rating of 4357 MVA. Install new 500 kV terminal equipment at Aspen		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.39%) / Dominion
b3800.215	Cut 230 kV line No. 2150 Sterling Park - Paragon Park Circuit 1 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2150 to 4000A continuous current rating		(0.61%) Dominion (100%)
b3800.216	Cut 230 kV line No. 2081 Sterling Park - Paragon Park Circuit 2 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2081 to 4000A continuous current rating		Dominion (100%)
b3800.217	Build a new 230 kV line from Aspen - Sycolin Creek on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek substations		Dominion (86.28%) / PEPCO (13.72%)

Required Tra	ansmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3800.218	Build a new 230 kV line from Sycolin Creek - Golden on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek substations		Dominion (100%)
b3800.219	Replace seven overdutied 230 kV breakers at Beaumeade substation with 80 kA breakers		Dominion (100%)
b3800.220	Replace four overdutied 230 kV breakers at BECO substation with 80 kA breakers		Dominion (100%)
b3800.221	Replace four overdutied 230 kV breakers at Belmont substation with 80 kA breakers		Dominion (100%)
b3800.222	Replace one overdutied 230 kV breaker at Discovery substation with 80 kA breaker		Dominion (100%)
b3800.223	Replace one overdutied 230 kV breaker at Pleasant View substation with 80 kA breaker		Dominion (100%)
b3800.224	Replace two overdutied 230 kV breakers at Shellhorn substation with 80 kA breakers		Dominion (100%)
b3800.225	Change 500 kV line No. 558 destination at Brambleton to Aspen substation and upgrade line protection relays		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (5.20%) / DL (0.46%) / Dominion (91.40%) / ME (0.59%) / PEPCO (2.35%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual R	Revenue Requirement	Responsible Customer(s)
b3800.226	Change 230 kV lines No. 2081 and No. 2150 at Paragon Park substation destination to Golden substation and upgrade line protection relays		Dominion (100%)
b3800.227	Change 230 kV lines No. 2081 and No. 2150 at Sterling Park substation destination to Golden substation and upgrade line protection relays		Dominion (100%)
b3800.228	Reconductor 1.47 miles of 230 kV lines No. 2081 and No. 2150 from Sterling Park to Golden substation. Upgrade terminal equipment at Sterling Park to 4000A continuous current		Dominion (100%)
b3800.229	Reconductor 0.67 miles of 230 kV lines No. 2194 and No. 9231 from Davis Drive to Sterling Park substation. Terminal equipment at remote end substations will be installed or upgraded to 4000A continuous current rating to support new conductor ratings		Dominion (100%)
b3800.230	Reset relays at Breezy Knoll for the revised current rating of 230 kV line No. 2098 Pleasant View - Hamilton		Dominion (100%)
b3800.231	Reset relays at Dry Mill for the revised current rating of 230 kV line No. 2098 Pleasant View - Hamilton		Dominion (100%)
b3800.232	Reset relays at Hamilton for the revised current rating of 230 kV line No. 2098 Pleasant View - Hamilton		Dominion (100%)
b3800.233	Upgrade equipment to 4000A continuous current rating at Pleasant View substation in support of 230 kV line No. 2098 wreck and rebuild. Replace circuit breakers 274T2098 & 2098T2180 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 4000A rating		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra		Revenue Requirement	Responsible Customer(s)
b3800.234	Wreck and rebuild approximately one mile of 230 kV line No. 2098 between Pleasant View and structure 2098/9, where line No. 2098 turns towards Hamilton substation		Dominion (100%)
b3800.235	Replace five overdutied 230 kV breakers at Loudoun substation with 80 kA breakers		Dominion (100%)
b3800.236	Replace two overdutied 230 kV breakers at Ox substation with 63 kA breakers		Dominion (100%)
b3800.237	Replace two overdutied 230 kV breakers at Pleasant View substation with 63 kA breakers		Dominion (100%)
b3800.238	Upgrade equipment to 4000A continuous current rating at Pleasant View substation in support of 230 kV line No. 203 rebuild. Replace circuit breakers 203T274 & L3T203 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 4000A rating		APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)
b3800.239	Wreck and rebuild 230 kV line No. 203 between Pleasant View and structure 203/15 using double circuit 500/230 kV structures. The 500 kV line is from Aspen - Doubs		APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.240	Build a new 500 kV line from Aspen - Doubs using double circuit 500/230 kV structures. The 230 kV line is from Pleasant View - structure 203/15. Install terminal equipment at Aspen for a 5000A line to Doubs. This includes GIS breakers, GIS-to- AIS transition equipment, and metering CCVTs and CTs for the tie line		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (0.09%) / Dominion (99.89%) / PEPCO (0.02%)
b3800.241	Rebuild 500 kV line No. 514 from Goose Creek - Doubs using 500/230 kV double circuit structures. The new double circuit towers will accommodate 230 kV line No. 2098 between Pleasant View substation and structure 2098/9. Upgrade equipment at Goose Creek to 5000A continuous current rating in support of line No. 514 wreck and rebuild. Replace circuit breakers 514T595 & 51482 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (0.08%) / Dominion (99.90%) / PEPCO (0.02%)
b3800.242	Upgrading switches 20366M and 20369M and line leads to 4000A continuous current rating of 230 kV line No. 203 at Edwards Ferry substation		APS (11.45%) / BGE (14.14%) / Dominion (42.82%) / PEPCO (31.59%)

Required Tra	Insmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.300	Rebuild 230 kV line No. 2135 Hollymeade Junction – Cash's Corner using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project)		Dominion (100%)
b3800.301	Rebuild 230 kV line No. 2135 Cash's Corner - Gordonsville using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project)		Dominion (100%)
b3800.302	Upgrade Cash's Corner switches 213576 and 213579 and line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.303	Upgrade Gordonsville substation line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.304	Upgrade Hollymeade substation switch 213549 and line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.305	Install one 230 kV 300 MVAR STATCOM and associated equipment at Beaumeade 230 kV substation		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3800.306	Install one 500 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Morrisville substation. This addition will require a control house expansion to accommodate for two new panels		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.307	Install one 500 kV, 300 MVAR STATCOM and associated equipment at Mars substation		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.308	Install one 230 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Mars substation		Dominion (100%)
b3800.309	Install one 230 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Wishing Star substation		Dominion (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3800.310	Install one 500 kV, 293.8 MVAR Shunt Capacitor Bank & associated equipment at Wishing Star substation		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
b3800.311	Rebuild 500 kV line No. 545 Bristers - Morrisville as a single circuit monopole line to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA		DFAX Allocation: Dominion (100%) Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (91.07%) / PEPCO (8.93%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.312	Rebuild 500 kV line No. 569 Loudoun - Morrisville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (11.72%) / Dominion (88.28%)
b3800.313	Rebuild approximately 10.29 miles 500 kV line segment of line No. 535 (Meadow Brook to Loudoun) to accommodate the new 500 kV line in the existing ROW		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO (8.29%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.314	Rebuild approximately 4.83 miles of 500 kV line No. 546 Mosby - Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV line No. 546		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
			DFAX Allocation: APS (41.98%) / Dominion (34.03%) / PEPCO (23.99%)
b3800.315	Rebuild approximately 4.59 miles of 500 kV line No. 590 Mosby - Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV line No. 590		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (41.98%) / Dominion (34.03%) / PEPCO (23.99%)
b3800.316	Rebuild approximately 6.17 miles of 230 kV line No. 2030 Gainesville - Mint Springs to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA Regional Transmission System, LI		Dominion (100%)

Required Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.317	Rebuild approximately 1.58 miles of 230 kV line No. 2030 Mint Springs - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.318	Rebuild approximately 4.2 miles of 230 kV line No. 2045 Loudoun - North Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.319	Rebuild approximately 0.88 miles of 230 kV line No. 2045 North Star - Brambleton to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.320	Rebuild approximately 1.22 miles of 230 kV line No. 2227 Brambleton - Racefield to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.321	Rebuild approximately 3.69 miles of 230 kV line No. 2094 Racefield - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.322	Rebuild approximately 9.16 miles of 230 kV line No. 2101 Bristers - Nokesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.323	Rebuild approximately 2.89 miles of 230 kV line No. 2101 Nokesville - Vint Hill TP to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.324	Rebuild approximately 0.33 miles of 230 kV line No. 2101 Vint Hill TP - Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.325	Rebuild approximately 3.32 miles of 230 kV line No. 2114 Rollins Ford - Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.326	Rebuild approximately 10.09 miles of 230 kV line No. 2114 Vint Hill - Elk Run to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.327	Rebuild approximately 4.43 miles of 230 kV line No. 2140 Heathcote - Catharpin to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.328	Rebuild approximately 2.88 miles of 230 kV line No. 2140 Catharpin - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.329	Rebuild approximately 0.25 miles of 230 kV line No. 2151 Railroad DP - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.330	Rebuild approximately 4.14 miles of 230 kV line No. 2163 Vint Hill - Liberty to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3800.331	Rebuild approximately 0.48 miles of 230 kV line No. 2176 Heathcote - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.332	Rebuild approximately 1.11 miles of 230 kV line No. 2222 Rollins Ford - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.333	Rebuild approximately 1.65 miles of 115 kV line No. 183 Bristers - Ox to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.334	Replace four overdutied 230 kV breakers at Loudoun Substation with 80 kA breakers		Dominion (100%)
b3800.335	Replace one overdutied 500 kV breaker at Ox Substation with a 63 kA breaker		Dominion (100%)
b3800.336	Upgrade and install equipment		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (91.07%) / PEPCO (8.93%)

Dequired Transmission Enhancements Annual Devenue Dequirement Desponsible Customer(s)

Required Tra	Insmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.337	Upgrade and install equipment at Brambleton substation to support the new conductor termination. All terminal equipment for 230 kV lines No. 2045 and No. 2094 to be rated for 4000A continuous current rating		Dominion (100%)
b3800.338	Revise relay settings at Dawkins Branch 230 kV station		Dominion (100%)
b3800.339	Upgrade and install equipment at Gainesville 230 kV substation to support the new conductor termination. All terminal equipment for 230 kV line No. 2030 to be rated for 4000A continuous current rating		Dominion (100%)
b3800.340	Revise relay settings at Heathcote 230 kV station		Dominion (100%)
b3800.341	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2094 Loudoun - Racefield to be rated for 4000A continuous current rating		Dominion (100%)
b3800.342	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2045 Loudoun - North Star to be rated for 4000A continuous current rating		Dominion (100%)
b3800.343	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2030 Loudoun - Mint Springs to be rated for 4000A continuous current rating		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.344	Upgrade and install equipment at Loudoun substation to support the new conductor 5000A rating for 500 kV line No. 569 Loudoun - Morrisville		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (11.72%) / Dominion (88.28%)
b3800.345	Revise relay settings at 230 kV Mint Springs station		Dominion (100%)
b3800.346	Upgrade and install equipment at Morrisville substation to support the new 500 kV conductor termination. All terminal equipment to be rated for 5000A for 500 kV line No. 545 and No. 569. Upgrade 500 kV bus 2 to 5000A		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (11.72%) / Dominion (88.28%)
b3800.347	Revise relay settings at North Star 230 kV station		Dominion (100%)

b3800.348	Revise relay settings at Racefield 230 kV station	Dominion (100%)
b3800.349	Revise relay settings at Railroad 230 kV station	Dominion (100%)
b3800.350	Install terminal equipment at Vint Hill 500 kV substation to support a 5000A line to 500 kV Morrisville substation. Update relay settings for 230 kV lines No. 2101, No. 2163, and 500 kV line No. 535	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.79%) / Dominion (90.21%)
b3800.351	Update relay settings at Vint Hill for 230 kV line No. 2101 Vint Hill - Bristers	Dominion (100%)
b3800.352	Update relay settings at Vint Hill for 230 kV line No. 2163 Vint Hill - Liberty	Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3800.353	Update relay settings at Vint Hill for 500 kV line No. 535 Vint Hill - Loudoun		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation:
			APS (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO (8.29%) Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%)
b3800.354	Install terminal equipment at Wishing Star 500 kV substation to support a 5000A line to Vint Hill. Update relay settings for 500 kV lines No. 546 and No. 590		/ BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
b3800.355	Revise relay settings at Youngs Branch 230 kV station		DFAX Allocation: APS (21.45%) / Dominion (78.55%) Dominion (100%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.356	Build a new 500 kV line from Vint Hill to Wishing Star. The line will be supported on single circuit monopoles. New conductor to have a summer rating of 4357 MVA. Line length is approximately 16.59 miles		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation:
			APS (21.45%) / Dominion (78.55%)
b3800.357	Build a new 500 kV line from Morrisville to Vint Hill. New conductor to have a summer rating of 4357 MVA. Line length is approximately 19.71 miles		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.79%) / Dominion (90.21%)
b3800.358	Replace single unit Locks 230/115 kV 168 MVA transformer TX No.7 with new single unit transformer with a rating of 224 MVA. Lead lines at the 115 kV level will be upgraded to 2000A Regional Transmission System, LI		Dominion (100%)

No. 2090 Ladysmith CT - Summit D.P. segment as a double circuit 230 kV line to achieve a summer rating of 1573 MVA. Only one circuit will be wired at this stage. Upgrade circuit breaker leads, switches and line leads at Ladysmith CT to 4000ADominion (100%)B3800.360Rebuild 230 kV line No. 2054 Charlottsville - Proffit DP using double-circuit capable 500/230 kV poles. (The 500 kV circuit will not be wired as part of this project)Dominion (100%)B3800.360Rebuild 230 kV line No. 2034 Charlottsville - Hydraulic Rod - Barracks Road - Crozet- DomisDominion (100%)B3800.361Rebuild 230 kV line No. 291 segment from Charlottsville - Barracks RoadDominion (100%)B3800.363Rebuild 230 kV line No. 291 segment from Charlottsville - Barracks RoadDominion (100%)B3800.364Rebuild 230 kV line No. 291 segment from Barracks Road - CrozetDominion (100%)B3800.365Rebuild 230 kV line No. 291 segment Crozet - DomsDominion (100%)B3800.366Rebuild 230 kV line No. 291 segment Crozet - DomsDominion (100%)B3800.367Rebuild 230 kV line No. 291 segment Crozet - DomsDominion (100%)B3800.366Proffit DP substation Relay revision for 230 kV line No. 2054 Charlottsville - HollymeadeDominion (100%)B3800.367Proffit DP substation Relay revision for 230 kV line No. 2054 Charlottsville - HollymeadeDominion (100%)B3800.367Proffit DP substation Relay revision for 230 kV line No. 233 and No. 291Dominion (100%)B3800.367Proffit DP substation relay rest to accommodate the rebuilt ine 230 kV	Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
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		kV lines No. 233 and No. 291		Dominion (100%)

Required Tra		Revenue Requirement	Responsible Customer(s)
b3800.370	Charlottesville 230 kV substation terminal equipment upgrade for 230 kV lines No. 233 and No. 291 rebuild		Dominion (100%)
b3800.371	Upgrade Hydraulic Road substation equipment for 230 kV line No. 233 and No. 291 rebuild		Dominion (100%)
b3800.372	Dooms substation terminal equipment upgrade for 230 kV line No. 233 and No. 291 rebuild		Dominion (100%)
b3800.373	Wreck and rebuild approximately 7.14 miles of 230 kV line No. 256 from St. Johns to structure 256/108 to achieve a summer rating of 1573 MVA. Line switch 25666 at St. Johns to be upgraded to 4000A		Dominion (100%)
b3800.374	Reconductor approximately 5.30 miles of 230 kV line No. 256 from Ladysmith CT to structure 256/107 to achieve a summer rating of 1573 MVA. Terminal equipment at remote end substations will be upgraded to 4000A		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements A	Annual Revenue Requirement	Responsible Customer(s)
b3800.375	Construct new Woodside Goose Creek 500 kV line approximately 3 miles on single circuit monopole structures within the Doul Goose Creek corridor. (Dominion Portion)	for	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%) / PSEC (5.99%) / RE (0.24%) DFAX Allocation: (APS 9.26%) / BGE (7.30%) / Dominion (72.31%) / PEPCO (11.13%)

Required II2	ansinission Enhancements Annual I	Revenue Requirement	Responsible Cusioner(s)
1.2200.401	Replace Ashburn 230 kV breaker SC432 with a breaker		
b3800.401	rated 63 kA		Dominion (100%)
1.0000.400	Replace Beaumeade 230 kV		
b3800.402	breaker 227T2152 with a breaker rated 80 kA		Dominion (100%)
	Replace BECO 230 kV		
b3800.403	breakers 215012 and H12T2150 with breakers rated		
	63 kA		Dominion (100%)
1 2000 404	Replace Belmont 230 kV breaker 227T2180 with a		
b3800.404	breaker rated 80 kA		Dominion (100%)
	Replace Brambleton 230 kV		
b3800.405	breakers 20102, 20602, 204502, 209402, 201T2045,		
00000.100	206T2094 with breakers rated		5
	80 kA		Dominion (100%)
b3800.406	Replace Gainesville 230 kV breaker 216192 with a breaker		
05000.400	rated 80 kA		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required IIa	ansmission Enhancements Annual Rev	venue Requirement	Responsible Customer(s)
b3800.407	Replace Loudoun 230 kV breakers 204552, 217352 with breakers rated 80 kA		Dominion (100%)
b3800.408	Replace Ox 230 kV breakers 22042, 24342, 24842, 220T2063, 243T2097, 248T2013, H342 with breakers rated 80 kA		Dominion (100%)
b3800.409	Replace Paragon Park 230 kV breakers 208132, 215032, 2081T2206, 2150T2207 with breakers rated 80 kA		Dominion (100%)
b3800.410	Replace Reston 230 kV breaker 264T2015 with a breaker rated 63 kA		Dominion (100%)
b3800.411	Replace Stonewater 230 kV breakers 20662-1, 20662-2, 217862-1, 217862-2 with breakers rated 80 kA		Dominion (100%)
b3800.412	Replace Waxpool 230 kV breakers 214922-5, 214922-6, 216622-5, 216622-6 with breakers rated 63 kA		Dominion (100%)
<u>b3850.1</u>	Rebuild approximately 13.51 miles of 500 kV Line #588 from structure 588/184 inside Yadkin substation to structure 588/254 outside of Fentress 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: Dominion (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)

		Load-Ratio Share Allocation:
$\frac{\underline{b3850.2}}{\underline{b3850.2}}$	ne No. 588 terminal uipment at Yadkin substation Il be upgraded to a rating of 00A. Since the new 500 kV e will be using fiber, the we trap will be removed and be line protection scheme will updated	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: Dominion (100%)
b3850.3 b3850.3 be r pro upc	Fentress substation, since onew 500 kV line will be ing fiber, the wave trap will removed and the line otection scheme will be dated	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: Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

<u>b3853.1</u>	Replace over duty Ladysmith CT 230 kV circuit breakersSX1272 and SX3472 with an interrupting rating of 63 kA	<u>Dominion (100%)</u>
<u>b3854.1</u>	Replace over duty Carson 230 kV circuit breakers 200272 and 24972-3 with an interrupting rating of 63 kA	<u>Dominion (100%)</u>

Attachment C

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

(Clean Format)

SCHEDULE 12 – APPENDIX A

(9) **PPL Electric Utilities Corporation**

Required Tra	ansmission Enhancements	Annual Revenue Requirem	ent Responsible Customer(s)
b1813.12	Replace the Blooming Grove 230 kV breaker 'Peckville'		PPL (100%)
b2223	Rebuild and reconductor 2.6 miles of the Sunbury - Dauphin 69 kV circuit		PPL (100%)
b2224	Add a 2nd 150 MVA 230/69 kV transformer at Springfield		PPL (100%)
b2237	150 MVAR shunt reactor at Alburtis 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: PPL (100%)
b2238	100 MVAR shunt reactor at Elimsport 230 kV		PPL (100%)

PPL Electric Utilities Corporation (cont.)

Required '	Transmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
b2269	Rebuild approximately 23.7 miles of the Susquehanna - Jenkins 230 kV circuit. This replaces a temporary SPS that is already planned to mitigate the violation until this solution is implemented		PPL (100%)
b2282	Rebuild the Siegfried- Frackville 230 kV line		PPL (100%)
b2406.1	Rebuild Stanton- Providence 69 kV 2&3 9.5 miles with 795 SCSR		PPL (100%)
b2406.2	Reconductor 7 miles of the Lackawanna - Providence 69 kV #1 and #2 with 795 ACSR		PPL (100%)
b2406.3	Rebuild SUB2 Tap 1 (Lackawanna - Scranton 1) 69 kV 1.5 miles 556 ACSR		PPL (100%)
b2406.4	Rebuild SUB2 Tap 2 (Lackawanna - Scranton 1) 69 kV 1.6 miles 556 ACSR		PPL (100%)
b2406.5	Create Providence - Scranton 69 kV #1 and #2, 3.5 miles with 795 ACSR		PPL (100%)
b2406.6	Rebuild Providence 69 kV switchyard		PPL (100%)
b2406.7	Install 2 - 10.8 MVAR capacitors at EYNO 69 kV		PPL (100%)
b2406.8	Rebuild Stanton 230 kV yard		PPL (100%)

Required	Transmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
b2446	Replace wave trap and protective relays at Montour		PPL (100%)
b2447	Replace wave trap and protective relays at Montour		PPL (100%)
b2448	Install a 2nd Sunbury 900 MVA 500-230 kV transformer and associated equipment		PPL (100%)
b2552.2	Reconductor the North Meshoppen - Oxbow – Lackawanna 230 kV circuit and upgrade terminal equipment (PPL portion)		PENELEC (98.86%) / PPL (1.14%)
b2574	Replace the Sunbury 230 kV 'MONTOUR NORT' breaker with a 63 kA breaker		PPL (100%)
b2690	Reconductor two spans of the Graceton – Safe Harbor 230 kV transmission line. Includes termination point upgrades		PPL (100%)
b2691	Reconductor three spans limiting Brunner Island – Yorkana 230 kV line, add 2 breakers to Brunner Island switchyard, upgrade associated terminal equipment		PPL (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required '	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2716	Add a 200 MVAR shunt reactor at Lackawanna 500 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: PPL (100%)
b2754.1	Install 7 miles of optical ground wire (OPGW) between Gilbert and Springfield 230 kV substations	PPL (100%)
b2754.4	Use ~ 40 route miles of existing fibers on PPL 230 kV system to establish direct fiber circuits	PPL (100%)
b2754.5	Upgrade relaying at Martins Creek 230 kV	PPL (100%)
b2756	Install 2% reactors at Martins Creek 230 kV	PPL (100%)
b2813	Expand existing Lycoming 69 kV yard to double bus double breaker arrangement	PPL (100%)

Required '	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2824	Reconfigure/Expand the Lackawanna 500 kV substation by adding a third bay with three breakers	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: PPL (100%)
b2838	Build a new 230/69 kV substation by tapping the Montour – Susquehanna 230 kV double circuits and Berwick – Hunlock & Berwick – Colombia 69 kV circuits	PPL (100%)
b2979	Replace Martins Creek 230 kV circuit breakers with 80 kA rating	PPL (100%)
b3221	Replace terminal equipment (bus conductor) on the 230 kV side of the Steel City 500/230 kV Transformer #1	PPL (100%)
b3222	Install one (1) 7.2 MVAR fixed cap bank on the Lock Haven – Reno 69 kV line and one (1) 7.2 MVAR fixed cap bank on the Lock Haven – Flemington 69 kV line near the Flemington 69/12 kV substation	PPL (100%)

Required 7	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3664	Replace the limiting 230 kV T2 transformer leads, bay conductor and bus conductor with double bundle 1590 ACSR at the Juniata station; Replace the limiting 1200 A MODs on the bus tie breaker with 3000 A MODs	PPL (100%)
b3698	Reconductor the 14.2 miles of the existing Juniata –Cumberland 230 kV line with 1272 ACSS/TW HS285 "Pheasant" conductor	AEC (4.17%) / BGE (13.18%) / DEOK (1.22%) / Dominion (3.25%) / DPL (9.14%) / ECP** (0.11%) / EKPC (0.22%) / HTP*** (0.20%) /JCPL (1.15%) / ME (27.02%) / NEPTUNE* (0.64%) / PECO (18.88%) / PEPCO (4.68%) / PSEG (16.14%)
b3715.1	Install a new 300 MVA 230/115 kV transformer at the existing PPL Williams Grove substation	ME (100%)
b3715.2	Construct a new approximately 3.4 miles 115 kV single circuit transmission line from Williams Grove to Allen substation	ME (100%)

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

***Hudson Transmission Partners, LLC

Required	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3774	Upgrade terminal equipment at Brunner Island station on Brunner Island – Yorkana 230 kV line	PPL (100%)
b3800.1	Build a New Otter Creek 500 kV (Collinsville) switching station with two bay three breaker configuration	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	ransmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b3800.3	New Otter Creek (Collinsville) to Doubs 500 kV Line (Otter Creek 500 kV - MD Border). Rebuild and expand existing approximately 12 miles of Otter Creek - Conastone 230 kV line to become a double- circuit 500 and 230 kV lines	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) /
b3800.53	Construct a double- circuit 500 kV line from the existing TMI - Peach Bottom 500 kV right-of-way to the proposed Chanceford switchyard, approximately 1.0 miles in length	PEPCO (10.59%) / PPL (0.22%) 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%) / Dominion (13.89%) / DPL (2.55%) / 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 (13.37%) / Dominion (75.27%) / PEPCO (11.36%)

SCHEDULE 12 – APPENDIX A

(12) Public Service Electric and Gas Company

Required Tr		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 Requiremen	nt Responsible Customer(s)
b2276	Eliminate the Sewaren 138 kV bus by installing a new 230 kV bay at Sewaren 230 kV		PSEG (95.85%) / RE (4.15%)
b2276.1	Convert the two 138 kV circuits from Sewaren – Metuchen to 230 kV circuits including Lafayette and Woodbridge substation		PSEG (95.85%) / RE (4.15%)
b2276.2	Reconfigure the Metuchen 230 kV station to accommodate the two converted circuits		PSEG (95.85%) / RE (4.15%)
b2290	Replace disconnect switches at Kilmer, Lake Nilson and Greenbrook 230 kV substations on the Raritian River - Middlesex (I-1023) circuit		PSEG (100%)
b2291	Replace circuit switcher at Lake Nelson 230 kV substation on the Raritian River - Middlesex (W- 1037) circuit		PSEG (100%)
b2295	Replace the Salem 500 kV breaker 10X with 63 kA breaker		PSEG (100%)
b2421	Install all 69 kV lines to interconnect Plainfield, Greenbrook, and Bridgewater stations and establish the 69 kV network		PSEG (100%)
b2421.1	Install two 18 MVAR capacitors at Plainfield 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	AEC APS BGE /1 (3.1 (2.5) EKP M (0 PE (1.73 (4.4	d-Ratio Share Allocation: C (1.65%) / AEP (14.29%) / S (5.82%) / ATSI (7.49%) / (4.01%) / ComEd (14.06%) Dayton (2.03%) / DEOK 21%) / DL (1.59%) / DPL 5%) / Dominion (13.89%) / C (2.35%) / JCPL (3.59%) / E (1.81%) / NEPTUNE* 0.42%) / OVEC (0.06%) / ECO (5.11%) / PENELEC 3%) / PEPCO (3.68%) / PPL 43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: EG (95.85%) / RE (4.15%)
b2436.21	Convert the Marion - Bayonne "L" 138 kV circuit to 345 kV and any associated substation upgrades	Loa AEC APS BGE /1 (3.3 (2.5) EKP M (0 PE (1.73 (4.4	d-Ratio Share Allocation: C (1.65%) / AEP (14.29%) / S (5.82%) / ATSI (7.49%) / (4.01%) / ComEd (14.06%) Dayton (2.03%) / DEOK 21%) / DL (1.59%) / DPL 5%) / Dominion (13.89%) / C (2.35%) / JCPL (3.59%) / E (1.81%) / NEPTUNE* 0.42%) / OVEC (0.06%) / ECO (5.11%) / PENELEC 5%) / PEPCO (3.68%) / PPL 43%) / PSEG (5.99%) / RE (0.24%) DFAX Allocation: EG (95.85%) / RE (4.15%)

Required Tra	ansmission Enhancements Ann	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)
b2436.50	Construct a new North		
	Ave - Airport 345 kV		
02430.30	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		
02130.70	and any associated		
	substation upgrades		PSEG (95.85%) / RE (4.15%)
			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%) /
	Relocate the overhead		DEOK (3.21%) / DL (1.59%) /
	portion of Linden - North		DPL (2.55%) / Dominion
b2436.81	Ave "T" 138 kV circuit to		(13.89%) / EKPC (2.35%) /
02150.01	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%) /
			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 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
	Convert the Bayway -	(3.21%) / DL (1.59%) / DPL
	Linden "Z" 138 kV circuit	(2.55%) / Dominion (13.89%) /
b2436.83	to 345 kV and any	EKPC (2.35%) / JCPL (3.59%) /
02430.03	associated substation	ME (1.81%) / NEPTUNE*
	upgrades	(0.42%) / OVEC (0.06%) /
	upgrades	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%)
	Convert the Bayway – Linden "W" 138 kV circuit to 345 kV and any associated 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%) /
b2436.84		EKPC (2.35%) / JCPL (3.59%) /
		ME (1.81%) / NEPTUNE*
	upgrades	(0.42%) / OVEC (0.06%) /
	10	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 Requireme	ent Responsible Customer(s)
b2436.85	Convert the Bayway – Linden "M" 138 kV circuit to 345 kV and any associated substation upgrades	J	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / 3GE (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	J	Load-Ratio Share Allocation: AEC (1.65%) / AEP (14.29%) / APS (5.82%) / ATSI (7.49%) / 3GE (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%)

		(Responsible Customer(s)
	New Bergen 345/230 kV	
b2437.10	transformer and any	
	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bergen 345/138 kV	
b2437.11	transformer #1 and any	
02437.11	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayway 345/138 kV	
b2437.20	transformer #1 and any	
02437.20	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayway 345/138 kV	
b2437.21	transformer #2 and any	
02437.21	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Linden 345/230 kV	
b2437.30	transformer and any	
02437.30	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
	New Bayonne 345/69 kV	
b2437.33	transformer and any	
02437.33	associated substation	
	upgrades	PSEG (95.85%) / RE (4.15%)
1,7420	Install two reactors at	
b2438	Tosco 230 kV	PSEG (100%)
	Replace the Tosco 138 kV	· · · · /
b2439	breaker 'CB1/2 (CBT)'	
	with 63 kA	PSEG (100%)
1.0.47.4	Rebuild Athenia 138 kV to	
b2474	80 kA	PSEG (100%)
	Install a 100 MVAR 230	
b2589	kV shunt reactor at Mercer	
	station	PSEG (100%)
	Install two 75 MVAR 230	
b2590	kV capacitors at Sewaren	
02370	station	PSEG (100%)
		

Required Tr	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%)
	Add a new 500 kV bay at Hope Creek (Expansion of	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%) /
b2633.4		PECO (5.11%) / PENELEC
	Hope Creek substation)	(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%)

Required Tra	ansmission Enhancements Ann	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 (0.62%)
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%)

Required II		ai Revenue Requirement Responsible Customer(s)
	Implement changes to the	
b2633.91	tap settings for the two	
0200000	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	
02033.92	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%) 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 Ennancements Annual Revenue Requirement Responsible Customer	ission Enhancements Annual Revenue Requirement Responsible Custome	r(s)
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requirea m		enue Requirement Responsible Customer(s)
b2712	Replace the Bergen 138 kV '40P'breaker with 80 kA	
	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 Tra	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-		<u>`````````````````````````````````````</u>
	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-		, , , , , , , , , , , , , , , , , , ,
b2836	1372/D-1330 (Brunswick -		
62836	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-		
b2836.3	1372/D-1330 (Brunswick -		
	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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Required I		ial Revenue Requirement	t Responsible Customer(s)
	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		
b2837.1	(Trenton - Burlington) 138		
02057.1	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		
b2837.2	(Trenton - Burlington) 138		
02037.2	kV circuits to 230 kV		
	circuits (Yardville - Ward		NEPTUNE* (8.84%) / PSEG
	Ave K)		(87.38%) / RE (3.78%)
	Convert the N-1340 and T-		
	1372/D-1330 (Brunswick -		
b2837.3	Trenton) 138 kV circuits to		
	230 kV circuits (Brunswick		NEPTUNE* (8.24%) / PSEG
	- Devils Brook)		(87.95%) / RE (3.81%)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
b2837.4	(Trenton - Burlington) 138		
02057.1	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		
b2837.5	(Trenton - Burlington) 138		
	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		
b2837.6	(Trenton - Burlington) 138		
02037.0	kV circuits to 230 kV		
	circuits (Trenton - Yardville		NEPTUNE* (12.83%) / PSEG
	F)		(83.55%) / RE (3.62%)
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Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ti	ansmission Enhancements Annu	ual Revenue Requirement	Responsible Customer(s)
	Convert the F-1358/Z-1326		
	and K-1363/Y-1325		
1 2027 7	(Trenton - Burlington) 138		
b2837.7	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		
1 2027 0	(Trenton - Burlington) 138		
b2837.8	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		
1 2027 0	(Trenton - Burlington) 138		
b2837.9	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		
1 2027 10	(Trenton - Burlington) 138		
b2837.10	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		
1.0007.11	(Trenton - Burlington) 138		
b2837.11	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%)
* NI	Regional Transmission System	LLC	

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ir	ansmission Enhancements Anr	ual 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 IT	ansmission Enhancements Annual Revenue Re	equirement Responsible Customer(s)
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

Required Tra	ansmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
	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		
b2986.21	230 kV corridor rebuild		NEPTUNE* (0.37%) / PECO
02980.21	(Branchburg - East		(98.94%) / PSEG (0.66%) / RE
	Flemington)		(0.03%)
	Branchburg-Pleasant Valley		
b2986.22	230 kV corridor rebuild		NEPTUNE* (5.83%) / PECO
02980.22	(East Flemington - Pleasant		(83.73%) / PSEG (10.01%) /
	Valley)		RE (0.43%)
	Branchburg-Pleasant Valley		
b2986.23	230 kV corridor rebuild		JCPL (26.89%) / NEPTUNE*
02980.23	(Pleasant Valley -		(4.81%) / PECO (8.88%) /
	Rocktown)		PSEG (56.96%) / RE (2.46%)
	Branchburg-Pleasant Valley		
b2986.24	230 kV corridor rebuild		JCPL (33.60%) / NEPTUNE*
02960.24	(the PSEG portion of		(4.40%) / PECO (6.02%) /
	Rocktown - Buckingham)		PSEG (53.66%) / RE (2.32%)
1 2002	Construct a 230/69 kV		
b3003	station at Maywood		PSEG (95.85%) / RE (4.15%)
	Purchase properties at		
b3003.1	Maywood to accommodate		
0000011	new construction		PSEG (95.85%) / RE (4.15%)
	Extend Maywood 230 kV		
b3003.2	bus and install one (1) 230		
00000.2	kV breaker		PSEG (95.85%) / RE (4.15%)
	Install one (1) 230/69 kV		
b3003.3	transformer at Maywood		DSEC (05 950/) / DE (4 150/)
* \ \			PSEG (95.85%) / RE (4.15%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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	Annual Annual Annual Annual	
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 Tr	ansmission Enhancements Annual Revenue Requirement	t Responsible Customer(s)
	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,	
b3025.3	Springfield Road, McCarter,	
03023.3	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%)
b3705	Replace existing 230/138 kV	
	Athenia Transformer No.	
	220-1	PSEG (95.85%) / RE (4.15%)
	Replace Fair Lawn 230/138	
b3706	kV transformer No. 220-1	
	with an existing O&M	
	system spare at Burlington	PSEG (100%)
	Construct a third 69 kV	
b3716	supply line from Totowa	
00/10	substation to the customer's	
	substation	PSEG (100%)

	ansinission ennancements Annua	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%)
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%)

b3848.1	Open East Rutherford 69 kV tie breaker (26K)		PSEG (100%)	
b3848.2	Move line U-775 (East Rutherford to Hasbrouck Heights) currently on section 2 to section 7 of the ring bus		PSEG (100%)	
b3849.1	Perform all necessary engineering design and evaluation to increase Fairlawn 69 kV GIS from 50 kA to 55 kA		PSEG (100%)	

Require	d Transmissior	Enhancements	Annual Revenue Rec	quirement Res	ponsible Customer(s)

Required The	ansinission ennancements Annua	i Revenue Requirement	Responsible Customer(s)
	Build 4 miles new 230 kV		
	XLPE Circuit using (345 kV		
b3855.1	rated 5000kcmil cable) from		
03833.1	Jackson Road 230 kV station		
	to Cedar Grove 230 kV		
	station		PSEG (95.85%) / RE (4.15%)
	Expand a new 230 kV bay at		
	the existing Cedar Grove		
b3855.2	station with one line position		
03833.2	by adding two 230 kV circuit		
	breakers and associated		
	disconnect switches		PSEG (95.85%) / RE (4.15%)
	Replace the existing HPFF		
	termination structure with a		
b3855.3	new XLPE termination		
	structure to connect to spare		
	GIS bay position at Jackson		
	230 kV station		PSEG (95.85%) / RE (4.15%)

SCHEDULE 12 – APPENDIX A

Required Tra	nsmission Enhancements Annual Reven	ue 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	
02174.0	substation	APS (100%)
b2174.9	Replace primary relay at	
02174.9	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	
	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	Annual Revenue Requirement	Responsible Customer(s)
b2216	Willow Island: Install a new 138 kV cross bus at Belmont Substation and reconnect and reconfigure the 138 kV lines to facilitat removal of the equipment a Willow Island switching station	e	APS (100%)
b2235	130 MVAR reactor at Monocacy 230 kV		APS (100%)
b2260	Install a 32.4 MVAR capacitor at Bartonville		APS (100%)
b2261	Install a 33 MVAR capacitor at Damascus		APS (100%)
b2267	Replace 1000 Cu substation conductor and 1200 amp wave trap at Marlowe	1	APS (100%)
b2268	Reconductor 6.8 miles of 138kV 336 ACSR with 336 ACSS from Double Toll Gate to Riverton	5	APS (100%)
b2299	Reconductor from Collins Ferry - West Run 138 kV with 556 ACSS		APS (100%)
b2300	Reconductor from Lake Lynn - West Run 138 kV		APS (100%)
b2341	Install 39.6 MVAR Capacitor at Shaffers Corne 138 kV Substation	er	APS (100%)
b2342	Construct a new 138 kV switching station (Shuman Hill substation), which is next the Mobley 138 kV substation and install a 31.7 MVAR capacitor	7	APS (100%)
b2343	Install a 31.7 MVAR capacitor at West Union 13 kV substation	8	APS (100%)

Required Tr	ansmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
b2362	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		<u> </u>
	transformer at Squab		
	Hollow 230 kV substation.		
10264	Loop the Forest - Elko 230		
b2364	kV line into Squab Hollow.		
	Loop the Brookville - Elko		
	138 kV line into Squab		
	Hollow		APS (100%)
	Install a 44 MVAR 138 kV		<u>_</u>
b2412	capacitor at the Hempfield		
	138 kV substation		APS (100%)
	Install breaker and a half		<u>_</u>
	138 kV substation (Waldo		
	Run) with 4 breakers to		
1 2 4 2 2 1	accommodate service to		
b2433.1	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		
1.2422.2	capacitors at the new		
b2433.3	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%)

Replace the Oak Grove 138 kV breaker 'OG1' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakersAPS (100%)Be2427KV breaker 'OG2' with 63 kA breakersAPS (100%)Be2428Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakersAPS (100%)b2429Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)Be2429Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakersAPS (100%)b2429Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakersAPS (100%)Be2430Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakersAPS (100%)Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakersAPS (100%)Replace the Cab Grove 138 kV breaker 'C9-KISKI VLY' with 63kAAPS (100%)Replace the Ringgold 138 kV breaker 'C9-KISKI VLY' with 63kAAPS (100%)Replace the Ringgold 138 kV breaker 'RCM1' with 40kA breakersAPS (100%)B2472Replace the Ringgold 138 kV breaker 'MCM1' with 40kA breakersAPS (100%)B2475 b2475Construct a new line between Oak Mound 138 kV substation and Waldo Run 138 kV substationAPS (100%)B2475.1Construct a new line between Oak Mound 138 kV substation (Shuman Hill substation (Shuman Hill subst	Required Tr	ansmission Enhancements Annual Re	evenue Requirement Responsible Customer(s)
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$ b2430 kV breaker 'OG5' with 63 \\ kA breakers \\ Replace the Oak Grove 138 \\ kV breaker 'OG6' with 63 \\ kA breakers \\ APS (100\%) \\ \hline \\ $		Replace the Oak Grove 138	
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Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island	62475	kV substation and Waldo	
Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island		Run 138 kV substation	APS (100%)
substation (Shuman Hillb2545.1substation) connected to theFairview –Willow Island			
b2545.1 substation) connected to the Fairview –Willow Island			
Fairview – Willow Island	b2545.1		
		,	
			APS (100%)

Required T	ransmission Enhancements An	nual Revenue Requirement	Responsible Customer(s)
b2545.2	Install a ring bus station with fi	/e	
	active positions and two 52.8		
	MVAR capacitors with 0.941 m	Η	
	reactors		APS (100%)
b2545.3	Install a +90/-30 MVAR SVC		
	protected by a 138 kV breaker		APS (100%)
b2545.4	Remove the 31.7 MVAR capacity	itor	
	bank at Mobley 138 kV		APS (100%)
b2546	Install a 51.8 MVAR (rated) 13	8 kV	
	capacitor at Nyswaner 138 kV		
	substation		APS (100%)
b2547.1	Construct a new 138 kV six bre	aker	
02347.1	ring bus Hillman substation		APS (100%)
b2547.2	Loop Smith- Imperial 138 kV li		
02347.2	into the new Hillman substation		APS (100%)
b2547.3	Install +125/-75 MVAR SVC at	t l	
02347.3	Hillman substation		APS (100%)
b2547.4	Install two 31.7 MVAR 138 kV		
02347.4	capacitors		APS (100%)
	Eliminate clearance de-rate on		
	Wylie Ridge – Smith 138 kV lin		
b2548	and upgrade terminals at Smith	138	
	kV, new line ratings 294 MVA		
	(Rate A)/350 MVA (Rate B)		APS (100%)
b2612.1	Relocate All Dam 6 138 kV line	e and	
	the 138 kV line to AE units 1&2	2	APS (100%)
b2612.2	Install 138 kV, 3000A bus-tie		
	breaker in the open bus-tie position		
	next to the Shaffers corner 138	kV	
	line		APS (100%)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2612.3	Install a 6-pole manual		
	switch, foundation, control		
	cable, and all associated		
	facilities		APS (100%)
b2666	Yukon 138 kV Breaker		
	Replacement		APS (100%)
b2666.1	Replace Yukon 138 kV		
	breaker "Y-11(CHARL1)"		
	with an 80 kA breaker		APS (100%)
b2666.2	Replace Yukon 138 kV		
	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%)
b2666.11	Replace Yukon 138 kV		
	breaker "Y-14(4-1BUS)"		
	with an 80 kA breaker		APS (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	nt Responsible Customer(s)
	Replace Yukon 138 kV		
b2666.12	breaker "Y-2(1B-BETHE)"		
	with an 80 kA breaker		APS (100%)
b2666.13	Replace Yukon 138 kV		
	breaker "Y-21(SHEPJ)"		
	with an 80 kA breaker		APS (100%)
	Replace Yukon 138 kV		
b2666.14	breaker		
02000.11	"Y-22(SHEPHJT)" with an		
	80 kA breaker		APS (100%)
	Change CT Ratio at Seneca		
b2672	Caverns from 120/1 to 160/1		
02072	and adjust relay settings		
	accordingly		APS (100%)
		A	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%)
b2689.3	Upgrade terminal equipment		
02007.0	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%)
b2700	Remove existing Black Oak		
	SPS		APS (100%)
b2743.6			AEP (6.46%) / APS (8.74%) /
	Reconfigure the Ringgold		BGE (19.74%) / ComEd
	230 kV substation to double		(2.16%) / Dayton (0.59%) /
	bus double breaker scheme		DEOK (1.02%) / DL (0.01%) /
			Dominion (39.95%) / EKPC
			(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		
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%)
b2970	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 Ani	nual Revenue Requirement	Responsible Customer(s)
b2970.5	Convert Garfield 138/12.5 kV		
02770.5	substation to 230/12.5 kV		APS (100%)
b2996	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		
b2996.1	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		
b2996.3	breakers (Rider 50 and #1/4		
02990.5	transformer breaker) at Glen Falls		
	with 63 kA 3000A units		APS (100%)

Required T	ransmission Enhancements Ar	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		
b3006	transformers with three		
03000	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		
b3007.1	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%)

	IISTIISSION ETIMAICEMENTS ATTITUALI	te ventae reequirentent	Responsible Customer(s)
	Upgrade terminal equipment		
b3011.3	at Yukon to increase rating on		
05011.5	Yukon to Route 51 #1 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
b3011.4	at Yukon to increase rating on		
05011.4	Yukon to Route 51 #2 138 kV		
	line		DL (100%)
	Upgrade terminal equipment		
b3011.5	at Yukon to increase rating on		
05011.5	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		
b3012.1	Duquesne's new substation.		
05012.1	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		
b3012.3	existing line, and construct		
05012.5	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)

Required 11a	IISTIISSION Enhancements Annuar	Revenue Requirement	Responsible Customer(s)
	Reconductor Vasco Tap to Edgewater Tap 138 kV line.		
	4.4 miles. The new conductor		
b3013	will be 336 ACSS replacing		
	the existing 336 ACSR		
	conductor		APS (100%)
	Reconductor Elrama to		
b3015.6	Mitchell 138 kV line – AP		
03013.0	portion. 4.2 miles total. 2x		
	795 ACSS/TW 20/7		DL (100%)
	Upgrade terminal equipment		
b3015.8	at Mitchell for Mitchell –		
	Elrama 138 kV line		APS (100%)
	Upgrade substation		
b3028	disconnect leads at William		
	138 kV substation		APS (100%)
b3051.1	Ronceverte cap bank and		
	terminal upgrades		APS (100%)
1.0.0	Install a 138 kV capacitor		
b3052	(29.7 MVAR effective) at		
	West Winchester 138 kV		APS (100%)
	Upgrade line relaying at Piney		
120(4.2	Fork and Bethel Park for		
b3064.3	Piney For – Elrama 138 kV		
	line and Bethel Park – Elrama		A DC (1000/)
	138 kV		APS (100%)

Required The	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
	Reconductor the Yukon –		
	Westraver 138 kV line (2.8		
b3068	miles), replace the line drops		
05000	and relays at Yukon 138 kV		
	and replace switches at		
	Westraver 138 kV bus		APS (100%)
	Reconductor the Westraver –		
	Route 51 138 kV line (5.63		
b3069	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 –		
1.0.0=1	Route 51 #2 138 kV line (8		
b3071	miles) and replace relays at		
	Yukon 138 kV bus		APS (100%)
	Reconductor the Yukon –		
1 2 0 7 2	Route 51 #3 138 kV line (8		
b3072	miles) and replace relays at		
	Yukon 138 kV bus		APS (100%)
1.0074	Reconductor the 138 kV bus		
b3074	at Armstrong substation		APS (100%)
	Replace the 500/138 kV		
1.0.0=5	transformer breaker and		
b3075	reconductor 138 kV bus at		
	Cabot substation		APS (100%)
	Reconductor the Edgewater –		
b3076	Loyalhanna 138 kV line (0.67		
	mile)		APS (100%)
1.0.00	Replace the Wylie Ridge		ATSI (72.30%) / DL
b3079	500/345 kV transformer #7		(27.70%)
	Reconductor the 138 kV bus		(=,,,,,,,)
1.0000	at Butler and reconductor the		
b3083	138 kV bus and replace line		
	trap at Karns City		APS (100%)
L	I I J	1	

Required II	ansmission Enhancements Annual Revenue Requirem	tent Responsible Customer(s)
	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	
b3214.2	Hill Jct 138 kV Line	APS (4.74%) / DL (95.26%)
	At Enon substation install a second	
1.0000	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	
00210	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	
03241	terminal. Install a 138 kV 3.5 uF	
	reactor on the existing Hardy 138	ADS(1009/)
	kV capacitor	APS (100%)
	Reconfigure Stonewall 138 kV	
	substation from its current	
b3242	configuration to a six-breaker,	
	breaker-and-a-half layout and add	
	two (2) 36 MVAR capacitors with	
	capacitor switchers	APS (100%)
	Reconductor the Shanor Manor -	
b3318	Butler 138 kV line with an upgraded	
00010	circuit breaker at Butler 138 kV	
	station	APS (100%)
	Reconductor the Charleroi - Union	
b3325	138 kV line and upgrade terminal	
05525	equipment at Charleroi 138 kV	
	station	APS (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required In		evenue Requirement	Responsible Customer(s)
	Upgrade the Shingletown #82 230/46 kV Transformer circuit		
	by installing a 230 kV breaker		
1.2(01	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		
	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%)

Required Tra	insmission Enhancements Annual Re	venue Requirement	Responsible C	usiomer(s)
	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,			
b3743	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)			
	Replace 1272 ACSR risers at			
b3744	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%)
1.2747	Install redundant relaying at			<u>_</u>
b3747	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	
b3782	Riverton substation on the	
05702	Riverton-Bethel Tap 138 kV	
	line	APS (100%)

Required Ir	ansmission Enhancements An	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
	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%) /
b3796.0	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)

Required Tra	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%) /		
	Construct new Woodside	DEOK (3.21%) / DL (1.59%) /		
	– Goose Creek 500 kV	DPL (2.55%) / Dominion		
	line for approximately 15	(13.89%) / EKPC (2.35%) /		
1 2000 120	miles on single circuit	JCPL (3.59%) / ME (1.81%) /		
b3800.128	monopole structures	NEPTUNE* (0.42%) / OVEC		
	within the Doubs – Goose	(0.06%) / PECO (5.11%) /		
	Creek Corridor. (FE	PENELEC (1.73%) / PEPCO		
	Portion)	(3.68%) / PPL (4.43%) / PSEG		
		(5.99%) / RE (0.24%)		
		DFAX Allocation:		
		APS (9.26%) / BGE (7.30%) /		
		Dominion (72.31%) / PEPCO		
		(11.13%)		
		Load-Ratio Share		
	Construct 500 kV line from existing structure MVF1-101 on the Doubs – Millville 138 kV line	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%) /		
1,2000,120		JCPL (3.59%) / ME (1.81%) /		
b3800.129	around Doubs substation	NEPTUNE* (0.42%) / OVEC		
	and into the entrance of	(0.06%) / PECO (5.11%) /		
	the Doubs – Goose Creek	PENELEC (1.73%) / PEPCO		
	corridor. (Approximately	(3.68%) / PPL (4.43%) / PSEG		
	2 miles)	(5.99%) / RE (0.24%)		
		DFAX Allocation:		
		APS (9.26%) / BGE (7.30%) /		
		Dominion (72.31%) / PEPCO		
	aional Transmission System	(11.13%)		

jirad Transmission Enhancements Annual Devenue Deguirement Desponsible Customer(s) р

SCHEDULE 12 – APPENDIX A

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

Required T	ransmission 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		
b2366	138 kV line 0112, Kickapoo		
02300	Creek - LaSalle County		
	138kV line		ComEd (100%)
	Install a 138 kV Red Blue		
b2415	bus tie with underground		
02415	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		
02117	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		
	on the Sawyer - Crawford		$C = E_1(1000/)$
	138 kV Blue line (L1324)		ComEd (100%)
1.2465	Replace the Skokie 138 kV		
b2465	breaker '88 L8809' with a		
	63 kA breaker		ComEd (100%)
1.2466	Replace the Skokie 138 kV		
b2466	breaker '88 L8810' with		$C_{2} = E_{1}^{1} (1000/)$
	63kA breaker		ComEd (100%)
10467	Replace the Skokie 138 kV		
b2467	breaker '88 L11416' with		
	63 kA breaker		ComEd (100%)

BeakReplace the Skokie 138 kVComEd (100%)b2468breaker '88 L8803' with 63kA breakerComEd (100%)Replace the Des Plaines 138 kV breaker '46 11702' with 63 kA breakerComEd (100%)b2469kV breaker '46 11702' with 63 kA breakerComEd (100%)b2561Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon substationComEd (100%)
63kA breakerComEd (100%)Replace the Des Plaines 138Replace the Des Plaines 138b2469kV breaker '46 11702' withComEd (100%)63 kA breakerComEd (100%)Install a new 345 kV circuitbreaker 5-7 at Elwoodb2561breaker 5-7 at ElwoodComEd (100%)Remove 2.0 miles of woodcomEd (100%)b2562Remove 2.0 miles of woodb2562erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
Replace the Des Plaines 138 kV breaker '46 11702' with 63 kA breakerComEd (100%)Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2469kV breaker '46 11702' with 63 kA breakerComEd (100%)Install a new 345 kV circuitInstall a new 345 kV circuitb2561breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
63 kA breakerComEd (100%)Install a new 345 kV circuitbreaker 5-7 at Elwoodb2561breaker 5-7 at ElwoodComEd (100%)Remove 2.0 miles of woodComEd (100%)poles on 138 kV line 17105,erect new steel structures,and install new 1113 kcmilACSR conductor fromRoscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
Install a new 345 kV circuit breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2561breaker 5-7 at Elwood substationComEd (100%)Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlemb2613Replace relays at Mazon
substationComEd (100%)b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at MazonComEd (100%)
b2562Remove 2.0 miles of wood poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562poles on 138 kV line 17105, erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562erect new steel structures, and install new 1113 kcmil ACSR conductor from Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
b2562 and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlem comEd (100%) b2613 Replace relays at Mazon
and install new 1113 kcmil ACSR conductor from Roscoe Bert to Harlem b2613 Replace relays at Mazon
Roscoe Bert to HarlemComEd (100%)b2613Replace relays at Mazon
h2613 Replace relays at Mazon
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 Requirement 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	ment Responsible Customer(s)
	Mitigate sag limitations on		•
b2728	Loretto – Wilton Center 345		ATSI (3.43%) / AEP (3.34%) /
02720	kV Line and replace station		ComEd (92.02%) / DLCO
	conductor at Wilton Center		(1.21%)
	Cut-in of line 93505		
b2732.1	Tazewell – Kendall 345 kV		
	line into Dresden		ComEd (100%)
	Raise towers to remove the		
b2732.2	sag limitations on Pontiac –		
	Loretto 345 kV line		ComEd (100%)
	Rebuild/Resag the H440 -		
b2751	H440 Tap 138 kV line		
02751	16914-2 (Hays Road - SW		
	1403 138 kV)		ComEd (100%)
	Upgrade capacity on E.		
b2930	Frankfort – University Park		
	345 kV		ComEd (100%)
	Upgrade substation		
	equipment at Pontiac		
b2931	Midpoint station to increase		
	capacity on Pontiac –		
	Brokaw 345 kV line		ComEd (100%)
	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		
b2941	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%)
	Install a new 138 kV circuit		
	18702 from Schauff Road to		
b2959	Rock Falls and install a		
	fourth breaker and a half run		
	at Schauff Road		ComEd (100%)

b2995	Remove Davis Creek RAS	ComEd (1000/)
		ComEd (100%)
b2997	Remove University Park North	
	RAS	ComEd (100%)
	Install a 120 MVAR 345 kV	
	shunt inductor at Powerton (the	
b2998	345 kV yard already contains an	
02770	empty bus position on the ring we	
	only need a switching breaker for	
	the inductor)	ComEd (100%)
	Rebuild the 12.36 mile Schauff	
b2999	Road to Nelson tap 138 kV line	
	L15508	ComEd (100%)
b3049	Replace 345 kV breaker at Joliet	
03049	substation	ComEd (100%)
	Install high-speed backup	
1 2 1 1 1	clearing scheme on the E.	
b3111	Frankfort – Matteson 138 kV line	
	(L6603)	ComEd (100%)
	Modify 138 kV blue bus total	
	clearing times at TSS 111	
	Electric Junction to eleven (11)	
	cycles for fault on 345/138 kV	
b3147	Transformer 81, and to thirteen	
00117	(13) cycles for faults on 138 kV	
	Line #11106, 138 kV Line	
	#11102 and 345/138 kV	
	Transformer 82	ComEd (100%)
	Modify backup relay clearing	
b3317	times at the 138 kV STA16	
05517	Waukegan station	ComEd (100%)
<u> </u>	Rebuild a 13 mile section of 138	
	kV line between LaSalle and	
b3677	Mazon stations with 1113 ACSR	
	or higher rated conductor	ComEd (100%)
	Install 345 kV bus tie 5-20 circuit	
b3711	breaker in the ring at Dresden	
	station in series with existing bus	$C_{0} = E_{1}^{1} (1000/)$
	tie 5-6	ComEd (100%)

Required Tr	ansmission Enhancements Anr	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	ransmission Enhancements Ann	ual Revenue Requirement	Responsible Customer(s)
			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%) /
	Rebuild 12.7 miles of 345 kV		DEOK (5.35%) / Dominion
	double circuit extending from		(20.09%) / DPL (1.73%) /
b3775.4	Crete to E. Frankfort with twin		DL (2.11%) / ECP**
	bundled 1277 ACAR conductor		(0.17%)/ EKPC (1.73%) /
	buildled 12// ACAR collddetol		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%)
	Replace E. Frankfort 345 kV circuit breaker "9-14" with		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%) /
b3775.5			DL (2.11%) / ECP**
	3150A SF6 circuit breaker		(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 Tr	ansmission Enhancements A	nnual Revenue Requirement	Responsible Customer(s)
	Add three 345 kV circuit		
b3810.0	breakers to Cherry Valley		
	substation		ComEd (100%)
	Expand Haumesser Road 138		
b3811.1	kV substation as a 4 circuit		
	breaker ring bus		ComEd (100%)
	Add one 138 kV circuit		
b3811.2	breaker at H-452 to complete a		
	three circuit breaker ring bus		ComEd (100%)
	Rebuild 3 miles of 138 kV		
	Line 11323 from Haumesser		
	Road to the H-452 tap with		
	double circuit towers. Cut the		
b3811.3	H-452 tap over to the 2nd		
	circuit from Haumesser Road.		
	Both circuits to use twisted		
	pair 556 ACSR Parakeet		
	conductor		ComEd (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%) /
	Reconductor 345 kV Line		DPL (2.55%) / Dominion
b3812.1	11620 and 11622 from Elwood		(13.89%) / EKPC (2.35%) /
05012.1	to Goodings Grove		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%)
			DEAV Allegation
			DFAX Allocation:
			ComEd (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements An	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%) /
	Upgrade Goodings Grove 345	DPL (2.55%) / Dominion
b3812.2	kV circuit breakers,	(13.89%) / EKPC (2.35%) /
03812.2	disconnects, and associated	JCPL (3.59%) / ME (1.81%) /
	equipment	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:
		ComEd (100%)
		Load-Ratio Share
	Upgrade station conductor at Elwood 345 kV	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
b3812.3		(13.89%) / EKPC (2.35%) /
03812.3		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:
		ComEd (100%)

Required Tr	ansmission Enhancements A	Annual Revenue Requirement	t Responsible Customer(s)
b3812.4	Adjust reclosing cycle on for Goodings Grove 345 kV circuit breaker '116 9806' to eliminate the reclosing de- rating		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: 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

Required II	ansimission Linnancements Anni		
	Add a 345 kV breaker at		
	Marysville station and a 0.1		
b1570.4	mile 345 kV line extension		
01370.4	from Marysville to the new		
	345/69 kV Dayton		
	transformer		AEP (100%)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (14.29%) /
			APS (5.82%) / ATSI (7.49%) /
			BGE (4.01%) / ComEd
	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		(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%) /
b1660.1			NEPTUNE* (0.42%) / OVEC
0100011			(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
	765 kV station		(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%)
	Designal Transmission System	IIG	

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%) / DPL (2.55%) / Dayton (1.3.89%) / EKPC (2.35%) / DPL (2.55%) / OWENION (13.89%) / EKPC (2.35%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.06%) / PECO (5.11%) / PENELEC (1.73%) / PECO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b1797.1Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSJCPL (3.59%) / ME (1.81%) / NEPTUNE* (0.42%) / OVEC (0.66%) / PECO (5.11%) / PENELEC (1.73%) / PECO (3.68%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2055Upgrade relay at Brues stationAEP (0.06%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / DEOK (0.04%) / Deominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR reactor at Dequine 345 kVAEP (100%)	Required Tra	insmission Enhancements Annu	al Revenue Requirement	Responsible Customer(s)
$b1797.1 \begin{array}{c} APS (5.82\%) / ATSI (7.49\%) / \\ BGE (4.01\%) / ComEd \\ (14.06\%) / Dayton (2.03\%) / \\ DECK (3.21\%) / DL (1.59\%) / \\ DPL (2.55\%) / Dominion \\ (13.89\%) / EKPC (2.35\%) / \\ DPL (2.55\%) / Dominion \\ (13.89\%) / EKPC (2.35\%) / \\ DEPTUNE* (0.42\%) / OVEC \\ (0.06\%) / PECO (5.11\%) / \\ PENELEC (1.73\%) / PEPCO \\ (3.68\%) / PPL (4.43\%) / PSEG \\ (5.99\%) / RE (0.24\%) \\ \hline DFAX Allocation: \\ AEP (0.06\%) / BGE (19.46\%) / \\ Dayton (0.02\%) / DEOK \\ (0.04\%) / Dominion (53.61\%) / \\ EKPC (0.02\%) / PEPCO \\ (26.79\%) \\ \hline \\ b2055 Upgrade relay at Brues \\ station & AEP (100\%) \\ \hline \\ b2122.3 the Howard - Brookside \\ 138 kV line to achieve \\ ratings of 255/291 (SN/SE) & AEP (100\%) \\ \hline \\ b2122.4 Howard - Brookside 138 \\ kV line & AEP (100\%) \\ \hline \\ b2229 Install a 300 MVAR \\ \hline \end{array}$				Load-Ratio Share Allocation:
$b1797.1 \begin{array}{ c c c c c c c c c c c c c c c c c c c$				AEC (1.65%) / AEP (14.29%) /
$b1797.1 \begin{array}{ c c c c c c c c c c c c c c c c c c c$				APS (5.82%) / ATSI (7.49%) /
b1797.1DEOK (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%) / PL (4.43%) / PSEG (5.99%) / RE (0.24%)b2055Upgrade relay at Brues stationDFAX Allocation: AEP (100%) / DEOK (0.04%) / DeOK (0.04%) / DEOC (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)				BGE (4.01%) / ComEd
b1797.1 Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b1797.1$ Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS $b2055$ Upgrade relay at Brues station $AEP (100\%)$ $B2122.3$ Reconductor the AEP Perform a sag study on the Howard - Brookside 138 kV line $AEP (100\%)$ $AEP (100\%)$ $AEP (100\%)$				(14.06%) / Dayton (2.03%) /
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				DEOK (3.21%) / DL (1.59%) /
b1797.1Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSJCPL (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%)b2055Upgrade relay at Brues stationAEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)				DPL (2.55%) / Dominion
b1797.1portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSSNEPTUNE* $(0.42\%) / OVEC$ $(0.06\%) / PECO (5.11\%) /PENELEC (1.73\%) / PEPCO(3.68\%) / PPL (4.43\%) / PSEG(5.99\%) / RE (0.24\%)BFAX Allocation:AEP (0.06\%) / BEC (19.46\%) /Dayton (0.02\%) / DEOK(0.04\%) / Dominion (53.61\%) /EKPC (0.02\%) / PEPCO(26.79\%)b2055Upgrade relay at Bruesstationb2122.3Upgrade terminalequipment at Howard onthe Howard - Brookside138 kV line to achieveratings of 252/291 (SN/SE)b2122.4Perform a sag study on theHoward - Brookside 138kV lineb2122.4Install a 300 MVAR$				(13.89%) / EKPC (2.35%) /
b1/9/.1Lexington 500 kV line with 2-1780 ACSS $(0.06%) / PECO (5.11%) / PENELEC (1.73%) / PEPCO (3.68%) / PPL (4.43%) / PSEG (5.99%) / RE (0.24%)DFAX Allocation:AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationb2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineb2122.4Install a 300 MVAR$		Reconductor the AEP		JCPL (3.59%) / ME (1.81%) /
Lexington 500 kV line with 2-1780 ACSS $(0.06\%) / PECO (5.11\%) / PENELEC (1.73\%) / PEPCO (3.68\%) / PPL (4.43\%) / PSEG (5.99\%) / RE (0.24\%)DFAX Allocation:AEP (0.06%) / BGE (19.46\%) / Dayton (0.02\%) / DEOK (0.04\%) / Dominion (53.61\%) / EKPC (0.02\%) / PEPCO (26.79\%)b2055Upgrade relay at Brues stationAEP (100\%)b2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)$	b1707 1	portion of the Cloverdale -		NEPTUNE* (0.42%) / OVEC
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	01/9/.1	Lexington 500 kV line with		(0.06%) / PECO (5.11%) /
b2055Upgrade relay at Brues stationDFAX Allocation: AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2055Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)		2-1780 ACSS		
DFAX Allocation: AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationb2055Upgrade relay at Brues stationb2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineb2122.4Install a 300 MVAR				(3.68%) / PPL (4.43%) / PSEG
AEP (0.06%) / BGE (19.46%) / Dayton (0.02%) / DEOK (0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				
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b2055Upgrade relay at Brues station(0.04%) / Dominion (53.61%) / EKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)b2122.3Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				AEP (0.06%) / BGE (19.46%) /
b2055Upgrade relay at Brues stationEKPC (0.02%) / PEPCO (26.79%)b2055Upgrade relay at Brues stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				
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b2055Upgrade relay at Brues stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)				EKPC (0.02%) / PEPCO
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stationAEP (100%)Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)Perform a sag study on the b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVARAEP (100%)	b2055	10		
b2122.3equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2122.4Install a 300 MVARAEP (100%)	02033			AEP (100%)
b2122.3the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)Perform a sag study on the b2122.4Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVARAEP (100%)		Upgrade terminal		
138 kV line to achieve ratings of 252/291 (SN/SE)AEP (100%)Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVARAEP (100%)		1 1 1		
ratings of 252/291 (SN/SE)AEP (100%)Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVARAEP (100%)	b2122.3	the Howard - Brookside		
Perform a sag study on the Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR		138 kV line to achieve		
b2122.4Howard - Brookside 138 kV lineAEP (100%)b2229Install a 300 MVAR		ratings of 252/291 (SN/SE)		AEP (100%)
kV line AEP (100%) b2229 Install a 300 MVAR	b2122.4	6 1		
h2229 Install a 300 MVAR				
67779		kV line		AEP (100%)
reactor at Dequine 345 kV AEP (100%)	b2229	Install a 300 MVAR		
		reactor at Dequine 345 kV		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annu	al 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%) /
	Replace existing 150		DEOK (3.21%) / DL (1.59%) /
	MVAR reactor at Amos 765		DPL (2.55%) / Dominion
b2230	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 AK 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		
b2231	breaker at Dumont 765 kV		
02251	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		
b2252	into AEP's Philo 138 kV		
	station which lies		
	approximately 0.4 miles		
	from the line		AEP (100%)

Paguirad Transmission Enhancements Annual Payanua Paguirament Passansible Customer(s)

		I	1 ()
1 0 0 5 0	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		
0220 (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		
	Tams Mountain - Slab Fork		
b2258	to 138 kV standards. The		
	line will be strung with		
	1033 ACSR		A ED (1000/)
	Install a new 138/69 kV		AEP (100%)
	transformer at George		
b2259	Washington 138/69 kV		
02209	substation to provide		
	support to the 69 kV system		
	in the area		AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required II	ansmission enhancements Anno	lai Revenue Requirement	Responsible Customer(s)
	Rebuild 4.7 miles of		
	Muskingum River - Wolf		
b2286	Creek 138 kV line and		
02280	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%)

requirea ir	ansinission Ennancements Annu	ai revenue requirement	
	Establish a new 138/12 kV		
	station, transfer and		
b2344.1	consolidate load from its		
_	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		
b2344.3	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%)
b2345.1	Construct a new 69 kV line		
	from Hartford to Keeler (~8		
	miles)		AEP (100%)
	Rebuild the 34.5 kV lines		
	between Keeler - Sister		
b2345.2	Lakes and Glenwood tap		
	switch to 69 kV (\sim 12 miles)		AEP (100%)
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		L L	
1-2245 2	Implement in - out at Keeler and Sister Lakes 34.5 kV		
b2345.3			
ļ	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%)
	ļ		

b2376	Replace the Turner 138 kV 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 breaker 'CC1'	AEP (100%)
b2409	Install two 56.4 MVAR capacitor banks at the Melmore 138 kV station in Ohio	AEP (100%)
b2410	Convert Hogan Mullin 34.5 kV line to 138 kV, establish 138 kV line between Jones Creek and Strawton, rebuild existing Mullin Elwood 34.5 kV and terminate line into Strawton station, retire Mullin station	AEP (100%)
b2411	Rebuild the 3/0 ACSR portion of the Hadley - Kroemer Tap 69 kV line utilizing 795 ACSR conductor	AEP (100%)
b2423	Install a 300 MVAR shunt reactor at AEP's Wyoming 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 (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

		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		
b2449	line between Meadow Lake		
02449	and Reynolds 345 kV		
	stations		AEP (100%)
	Add two 138 kV circuit		, , , , , , , , , , , , , , , , , , ,
1.24(2	breakers at Fremont station		
b2462	to fix tower contingency		
	·408 2'		AEP (100%)
	Construct a new 138/69 kV		X Z
	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		
1 2 5 0 1 2	into Yager 138 kV by		
b2501.3	converting part of local 69		
	kV facilities to 138 kV		AEP (100%)
	Build 2 new 69 kV exits to		
	reinforce 69 kV facilities		
1.0501.4	and upgrade conductor		
b2501.4	between Irish Run 69 kV		
	Switch and Bowerstown 69		
	kV Switch		AEP (100%)
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rtequirea II	ansmission Ennancements Annual Revenue Requ	lirement 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%)
b2502.2	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	
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	
	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%)

(100%)
(100%)
(100%)
(10070)
(100%)
· · ·
(100%)
(10070)
(100%)

Required II	ansinission Ennancements Annual Revenue	Coquitement	
	Construct a new 69 kV line		
	approximately 2.5 miles from		
b2591	Colfax to Drewry's. Construct		
02371	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 –		
b2594	Bridge Street 69 kV Line with		
02394	1033 ACSR overhead		
	conductor		AEP (100%)
	Rebuild 7.82 mile Elkhorn		
b2595.1	City – Haysi S.S 69 kV line		
02393.1	utilizing 1033 ACSR built to		
	138 kV standards		AEP (100%)
	Rebuild 5.18 mile Moss –		
1,2505.2	Haysi SS 69 kV line utilizing		
b2595.2	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%)
	· · ·		

		an rectonde requirement	Responsible Customer(s)
	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-		
ļ	Dodge Tap branch		AEP (100%)
	Rebuild approximately 1		
	mile section of the Kline-		
	Virgil Street 34.5 kV line		
b2598	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	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%)
	Replace MOAB towards		· · · · ·
b2601.2	Clinch River with 138 kV		
	breaker		AEP (100%)
1.2(01.2	Replace 138 kV Breaker A		, <i>, , , , , , , , , , , , , , , , , , </i>
b2601.3	with new bus-tie breaker		AEP (100%)
	Re-use Breaker A as high		
b2601.4	side protection on		
	transformer #1		AEP (100%)
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Required II	ansmission Enhancements Annual N	evenue requirement	
b2601.5	Install two (2) circuit switchers on high side of transformers # 2		
	and 3 at Fremont Station		AEP (100%)
b2602.1	Install 138 kV breaker E2 at North Proctorville		AEP (100%)
b2602.2	Construct 2.5 Miles of 138 kV 1033 ACSR from East Huntington to Darrah 138 kV substations		AEP (100%)
b2602.3	Install breaker on new line exit at Darrah towards East Huntington		AEP (100%)
b2602.4	Install 138 kV breaker on new line at East Huntington towards Darrah		AEP (100%)
b2602.5	Install 138 kV breaker at East Huntington towards North Proctorville		AEP (100%)
b2603	Boone Area Improvements		AEP (100%)
b2603.1	Purchase approximately a 200X300 station site near Slaughter Creek 46 kV station (Wilbur Station)		AEP (100%)
b2603.2	Install 3 138 kV circuit breakers, Cabin Creek to Hernshaw 138 kV circuit		AEP (100%)
b2603.3	Construct 1 mi. of double circuit 138 kV line on Wilbur – Boone 46 kV line with 1590 ACSS 54/19 conductor @ 482 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.)

miles of the 69 kV line	
b2604.1 between Millbrook Park and	
Franklin Furnace AE	EP (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 AE	EP (100%)
Replace Sciotoville 69 kV	
station with a new 138/12 kV	
b2604.3 in-out station (Cottrell) with	
^{62004.3} 2000 A line MOABs facing	
Millbrook Park and East	
Wheelersburg 138 kV station AE	EP (100%)
Tie Cottrell switch into the	
Millbrook Park – East	
b2604.4 Wheelersburg 138 kV circuit	
by constructing 0.50 mile of	
line using 795 ACSR 26/7	
Drake (SE 359 MVA) AE	EP (100%)
Install a new 2000 A 3-way	
b2604.5 PoP switch outside of Texas	
Eastern 138 kV substation	
	EP (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 AE	EP (100%)

Required III		lai Revenue Requirement	Responsible Customer(s)
	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%)
b2604.8	Remove the existing 69 kV		
02004.8	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		
b2604.9	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		
1.0(04.10	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		· · · · · · · · · · · · · · · · · · ·
1000411	Hanging Rock, East		
b2604.11	Wheelersburg and North		
	Haverhill 138 kV		AEP (100%)
L	1		\/

	Kevenue Kequiteriterit	Responsible Customer(s)
Rebuild and reconductor		
Kammer – George		
Washington 69 kV circuit and		
1 1		AEP (100%)
*		
		AEP (100%)
Pine Gap Relay Limit Increase		AEP (100%)
		AEI (10070)
Richlands Relay Upgrade		A = D (1009/)
The set former of a ff Description		AEP (100%)
		AEP (100%)
Scaraboro as 138 kV		AEP (100%)
Skin Fork Area Improvements		
-		AEP (100%)
Skin Fork and other		
components		AEP (100%)
ACSR double circuit from		
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		
thermal rating in order to		
remove 1193 MVA limit on		
facility (Miami Fort-Tanners		
Creek 345 kV line)		AEP (100%)
	Rebuild and reconductor Kammer – George Washington 69 kV circuit and George Washington – Moundsville ckt #1, designed for 138 kV. Upgrade limiting equipment at remote ends and at tap stations Convert Bane – Hammondsville from 23 kV to 69 kV operation Pine Gap Relay Limit Increase Richlands Relay Upgrade Thorofare – Goff Run – Powell Mountain 138 kV Build Rebuild Pax Branch – Scaraboro as 138 kV Skin Fork Area Improvements New 138/46 kV station near Skin Fork and other components Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV line Replace metering BCT on Tanners Creek CB T2 with a slip over CT with higher thermal rating in order to remove 1193 MVA limit on facility (Miami Fort-Tanners	Rebuild and reconductor Kammer – George Washington 69 kV circuit and George Washington – Moundsville ckt #1, designed for 138 kV. Upgrade limiting equipment at remote ends and at tap stations Convert Bane – Harmondsville from 23 kV to 69 kV operation Pine Gap Relay Limit Increase Richlands Relay Upgrade Thorofare – Goff Run – Powell Mountain 138 kV Build Rebuild Pax Branch – Scaraboro as 138 kV Skin Fork Area Improvements New 138/46 kV station near Skin Fork and other components Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV line Replace metering BCT on Tanners Creek CB T2 with a slip over CT with higher thermal rating in order to remove 1193 MVA limit on facility (Miami Fort-Tanners

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	required II	ansinission Emilancements - Annual Revenue Requirem	
rated breakerAEP (100%)b2645Ohio Central 138 kV LoopAEP (100%)b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)b2667Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden - Lebanon 138 kV circuit)AEP (100%)	10000		
b2645Ohio Central 138 kV LoopAEP (100%)b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)b2667Reconductor Dequine to Meadow Lake 345 kVAEP (100%)b2668circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden - Lebanon 138 kV circuit)AEP (100%)	b2643	breaker 'L' with 40 kA	
b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)B2668Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (98.19%) / OVEC (1.81%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden - Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	L	rated breaker	AEP (100%)
b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)b2667Replace the Muskingum 138 kV bus # 1 and 2AEP (100%)B2668Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (98.19%) / OVEC (1.81%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden - Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	b2645	Ohio Central 138 kV Loop	
$ \begin{array}{ c c c c c c c c } \hline b2667 & 138 \text{ kV bus \# 1 and 2} & AEP (100\%) \\ \hline Reconductor Dequine to \\ Meadow Lake 345 kV \\ b2668 & circuit \#1 utilizing dual 954 \\ ACSR 54/7 cardinal \\ conductor & AEP (98.19\%) / OVEC (1.81\%) \\ \hline b2668.1 & Replace the bus/risers at \\ Dequine 345 kV station & AEP (100\%) \\ \hline b2669 & Install a second 345/138 kV \\ transformer at Desoto & AEP (100\%) \\ \hline b2670 & Replace switch at Elk \\ 6arden 138 kV substation \\ (on the Elk Garden - \\ Lebanon 138 kV circuit) & AEP (100\%) \\ \hline \end{array} $			AEP (100%)
Image: 138 kV bus # 1 and 2AEP (100%)Reconductor Dequine to Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	b2667	Replace the Muskingum	
b2668Meadow Lake 345 kV circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)	02007	138 kV bus # 1 and 2	AEP (100%)
b2668circuit #1 utilizing dual 954 ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)		1	
ACSR 54/7 cardinal conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)		Meadow Lake 345 kV	
conductorAEP (98.19%) / OVEC (1.81%)b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	b2668	circuit #1 utilizing dual 954	
b2668.1Replace the bus/risers at Dequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)		ACSR 54/7 cardinal	
b2668.1 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%) Replace/upgrade/add Replace/upgrade/add AEP (100%)		conductor	AEP (98.19%) / OVEC (1.81%)
bequine 345 kV stationAEP (100%)b2669Install a second 345/138 kV transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	1-2669-1	Replace the bus/risers at	
b2669transformer at DesotoAEP (100%)b2670Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit)AEP (100%)Replace/upgrade/addAEP (100%)	02008.1	Dequine 345 kV station	AEP (100%)
transformer at Desoto AEP (100%) b2670 Replace switch at Elk Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit) AEP (100%) Replace/upgrade/add AEP (100%)	h2660	Install a second 345/138 kV	
b2670 Garden 138 kV substation (on the Elk Garden – Lebanon 138 kV circuit) AEP (100%) Replace/upgrade/add AEP (100%)	02009	transformer at Desoto	AEP (100%)
b2670 (on the Elk Garden – Lebanon 138 kV circuit) AEP (100%) Replace/upgrade/add AEP (100%)		Replace switch at Elk	
Image: Construction of the Elk Garden – Lebanon 138 kV circuit) AEP (100%) Replace/upgrade/add AEP (100%)	h2670	Garden 138 kV substation	
Replace/upgrade/add	02070	(on the Elk Garden –	
		Lebanon 138 kV circuit)	AEP (100%)
to the second seco		Replace/upgrade/add	
terminal equipment at		terminal equipment at	
Bradley, Mullensville,	b2671	Bradley, Mullensville,	
Pinnacle Creek, Itmann, and		-	
b2671 Tams Mountain 138 kV		Tams Mountain 138 kV	
substations. Sag study on		substations. Sag study on	
Mullens – Wyoming and			
Mullens – Tams Mt. 138 kV			
circuits AEP (100%)			AEP (100%)

Required Transmission Enhancements Annual 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%)
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*Neptune Regional Transmission System, LLC

Required Tr	ansmission Enhancements Annu	al 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%) /
	Install a 300 MVAR shunt		DEOK (3.21%) / DL (1.59%) /
	line reactor on the		DPL (2.55%) / Dominion
b2687.2	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		
b2697.2	Danville substations to		
02077.2	improve thermal capacity of		
	Danville – East Danville		
	138 kV circuit		AEP (100%)
*NIantara I	Pegional Transmission System		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

*Neptune Regional Transmission System, LLC

Replace relays at AEP's Cloverdale and Jackson's Ferry substations to improve the thermal capacity of Cloverdale – Jackson's Ferry 765 kV lineAEP (100%)2000Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)2011Construct Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)2011Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)2011Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)2011Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)2012Replace the South Canton 138 kV brackers 'K', 'J', 'J1', and 'J2' with 80 kA breakersAEP (100%)	Itequilea II	ansimission Ennancements Annua	a nevenue negarement	
b2698Ferry substations to improve the thermal capacity of Cloverdale – Jackson's Ferry 765 kV lineAEP (100%)Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)b2701.1Construct Herlan station to Blue from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.2Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2701.3Racer to terminate new Herlan circuitAEP (100%)b2714Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2715Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		1 2		
b2098the thermal capacity of Cloverdale – Jackson's Ferry 765 kV lineAEP (100%)Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)b2701.1configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)b2701.2Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2701.4Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715S56.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2717Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)				
the thermal capacity of Cloverdale – Jackson's Ferry 765 kV lineAEP (100%)2011.1Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)28.8 MVAR capacitor banksAEP (100%)Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.2Install 1-138 kV CB at Blue Herlan circuitAEP (100%)b2701.3Racer to terminate new Herlan circuitAEP (100%)b2714Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715S56.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'JI', and 'J2' with 80 kAAEP (100%)	b2698	• 1		
765 kV lineAEP (100%)b2701.1Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)b2701.2Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2711.4Racer to terminate new Herlan circuitAEP (100%)b2712Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727I38 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)	02070			
Construct Herlan station as breaker and a half configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)b2701.2Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2714Bebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'JI', and 'J2' with 80 kAAEP (100%)				
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b2701.1configuration with 9-138 kV CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)28.8 MVAR capacitor banksAEP (100%)b2701.2Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2714Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		Construct Herlan station as		
CB's on 4 strings and with 2- 28.8 MVAR capacitor banksAEP (100%)28.8 MVAR capacitor banksAEP (100%)Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2714Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)				
28.8 MVAR capacitor banksAEP (100%)28.8 MVAR capacitor banksAEP (100%)Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2714Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)	b2701.1	configuration with 9-138 kV		
b2701.2Construct new 138 kV line from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2711.3Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		CB's on 4 strings and with 2-		
b2701.2from Herlan station to Blue Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2714Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		28.8 MVAR capacitor banks		AEP (100%)
b2701.2Racer station. Estimated approx. 3.2 miles of 1234 ACSS/TW Yukon and OPGWAEP (100%)b2701.3Install 1-138 kV CB at Blue Racer to terminate new Herlan circuitAEP (100%)b2701.4Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kVAEP (100%)b2714Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2715Replace the South Canton 138 kV breakers 'K', 'J', 'JI', and 'J2' with 80 kAAEP (100%)		Construct new 138 kV line		
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Herlan circuitAEP (100%)Rebuild/upgrade lineb2714Rebuild/upgrade linebetween Glencoe andWillow Grove Switch 69 kVAEP (100%)Build approximately 11.5miles of 34.5 kV line with556.5 ACSR 26/7 Doveconductor on wood polesfrom Flushing station toSmyrna stationAEP (100%)b2727138 kV breakers 'K', 'J','J1', and 'J2' with 80 kA		Install 1-138 kV CB at Blue		
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b2714between Glencoe and Willow Grove Switch 69 kVAEP (100%)Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2715Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		Herlan circuit		AEP (100%)
Willow Grove Switch 69 kVAEP (100%)Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		Rebuild/upgrade line		
b2715Build approximately 11.5 miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)	b2714	between Glencoe and		
b2715miles of 34.5 kV line with 556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		Willow Grove Switch 69 kV		AEP (100%)
b2715556.5 ACSR 26/7 Dove conductor on wood poles from Flushing station to Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kAAEP (100%)		Build approximately 11.5		
b2715 conductor on wood poles from Flushing station to Smyrna station Smyrna station AEP (100%) b2727 Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kA		miles of 34.5 kV line with		
b2727 Conductor on wood poles from Flushing station to Smyrna station AEP (100%) Beplace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kA AEP (100%)	h2715	556.5 ACSR 26/7 Dove		
Smyrna stationAEP (100%)b2727Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kA	02/13	conductor on wood poles		
b2727 Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kA		from Flushing station to		
b2727 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80 kA		Smyrna station		AEP (100%)
^{62/27} 'J1', and 'J2' with 80 kA		Replace the South Canton		
$J1^{\prime}$, and $J2^{\prime}$ with 80 kA	h2727	138 kV breakers 'K', 'J',		
breakers AEP (100%)	02727	'J1', and 'J2' with 80 kA		
		breakers		AEP (100%)

Required III	ansmission Enhancements Annua	a Revenue Requirement	Responsible Customer(s)
	Convert the Sunnyside –		
	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		
h2750 1	replace it with the greenfield		
02/30.1	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		
h2752 1	breaker and a half yard in		
02735.1	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		
h2752 2	yard design including AEP		
02/35.2	Distribution facilities but		
	initial configuration will		
	constitute a 3 breaker ring		
	bus		AEP (100%)
b2750.1 b2750.2 b2753.1 b2753.2	Stanville station about a half mile north of the existing Betsy Layne station Relocate the Betsy Layne capacitor bank to the Stanville 69 kV bus and increase the size to 14.4 MVAR 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 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		AEP (100%)

		<u>_</u>	(-)
	Connect two 138 kV 6-wired		
	circuits from "Point A"		
	(currently de-energized and		
	owned by FirstEnergy) in		
b2753.3	circuit positions previously		
	designated Burger #1 &		
	Burger #2 138 kV. Install interconnection settlement		
	metering on both circuits		AED (1000/)
	exiting Holloway		AEP (100%)
	Build double circuit 138 kV		
	line from Dilles Bottom to		
	"Point A". Tie each new		
b2753.6	AEP circuit in with a 6-wired line at Point A. This will		
02/33.0	create a Dilles Bottom –		
	Holloway 138 kV circuit and a George Washington –		
	Holloway 138 kV circuit		AEP (100%)
	Retire line sections (Dilles		ALI (10070)
	Bottom – Bellaire and		
	Moundsville – Dilles Bottom		
	69 kV lines south of		
	FirstEnergy 138 kV line		
b2753.7	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		
10752.0	Bottom 138 kV. One circuit		
b2753.8	will cut into Dilles Bottom		
	138 kV initially and the other		
	will go past with future plans		
	to cut in		AEP (100%)
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Required III	ansinission Enhancements Annual Revenue Requirement	
	Perform a Sag Study of the	
b2760	Saltville – Tazewell 138 kV	
02700	line to increase the thermal	
	rating of the line	AEP (100%)
	Perform a Sag Study of the	
b2761.2	Hazard – Wooten 161 kV line	
02701.2	to increase the thermal rating	
	of the line	AEP (100%)
	Rebuild the Hazard – Wooton	
1.07(1.2	161 kV line utilizing 795 26/7	
b2761.3	ACSR conductor (300 MVA	
	rating)	AEP (100%)
	Perform a Sag Study of Nagel	
b2762	– 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	
b2779.1	station, Campbell Road,	
02//9.1	tapping into the Grabill –	
	South Hicksville138 kV line	AEP (100%)
	Reconstruct sections of the	
	Butler-N.Hicksville and	
1,2770.2	Auburn-Butler 69 kV circuits	
b2779.2	as 138 kV double circuit and	
	extend 138 kV from	
	Campbell Road station	AEP (100%)

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	Construct a new 345/138 kV SDI Wilmington Station		
b2779.3	which will be sourced from		
02779.5	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		
1.0000	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		A = D (1000/)
	Winnington		AEP (100%)
b2779.5	Expand Auburn 138 kV bus		AEP (100%)
	Construct a 345 kV ring bus		
b2779.6	at Dunton Lake to serve Steel		
02779.0	Dynamics, Inc. (SDI) load at		
	345 kV via two (2) circuits		AEP (100%)
b2779.7	Retire Collingwood 345 kV		
0211).1	station		AEP (100%)
	Reconductor 0.53 miles (14		
	spans) of the Kaiser Jct Air		
	Force Jct. Sw section of the		
b2787	Kaiser - Heath 69 kV		
02/07	circuit/line with 336 ACSR to		
	match the rest of the circuit		
	(73 MVA rating, 78%		
	loading)		AEP (100%)

Required II	ansmission Ennancements Annual	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 Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)	
	Install a 3 MVAR, 34.5 kV		
b2790	cap bank at Caldwell		
	substation	AEP (100%)	
b2791	Rebuild Tiffin – Howard, new		
02771	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%)	
b2791.4	New 138/69 kV protection at		
02791.4	existing Chatfield transformer	AEP (100%)	
	Replace the Elliott		
	transformer with a 130 MVA		
	unit, reconductor 0.42 miles		
	of the Elliott – Ohio		
b2792	University 69 kV line with		
02/92	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	ransmission Enhancements Annu	al Revenue Requirement Responsible Customer(s)
b2793	Energize the spare Fremont Center 138/69 kV 130 MVA transformer #3. Reduces overloaded facilities to 46% loading	AEP (100%)
b2794	Construct new 138/69/34 kV station and 1-34 kV circuit (designed for 69 kV) from new station to Decliff station, approximately 4 miles, with 556 ACSR conductor (51 MVA rating)	AEP (100%)
b2795	Install a 34.5 kV 4.8 MVAR capacitor bank at Killbuck 34.5 kV station	AEP (100%)
b2796	Rebuild the Malvern - Oneida Switch 69 kV line section with 795 ACSR (1.8 miles, 125 MVA rating, 55% loading)	AEP (100%)
b2797	Rebuild the Ohio Central - Conesville 69 kV line section (11.8 miles) with 795 ACSR conductor (128 MVA rating, 57% loading). Replace the 50 MVA Ohio Central 138/69 kV XFMR with a 90 MVA unit	AEP (100%)
b2798	Install a 14.4 MVAR capacitor bank at West Hicksville station. Replace ground switch/MOAB at West Hicksville with a circuit switcher	AEP (100%)
b2799	Rebuild Valley - Almena, Almena - Hartford, Riverside - South Haven 69 kV lines. New line exit at Valley Station. New transformers at Almena and Hartford	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requiren	nent 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		
02799.1	(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		
b2799.2	to Hartford 69 kV line using		
02799.2	795 ACSR conductor (90		
	MVA rating)		AEP (100%)
	Rebuild 3.8 miles of		
b2799.3	Riverside – South Haven 69		
02799.5	kV line using 795 ACSR		
	conductor (90 MVA rating)		AEP (100%)
	At Valley station, add new		
	138 kV line exit with a 3000		
b2799.4	A 40 kA breaker for the new		
02799.1	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 Tr	ansmission Enhancements	Annual Revenue Require	ment 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		
b2821	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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b2826.2	Install 300 MVAR reactor at		
	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 –		
b2832	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		
b2833	circuit with 2-954 ACSS		DFAX Allocation:
	Cardinal conductor		AEP (75.78%) / Dayton (24.22%)
	Reconductor and string open		
1 0 0 0 4	position and sixwire 6.2 miles		
b2834	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%)
b2878	Upgrade the Clifty Creek		
	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)
b2881	Rebuild ~1.7 miles of the Dunn Hollow – London 46 kV line section utilizing 795 26/7 ACSR conductor (58 MVA rating, non-conductor	
b2882	limited) Rebuild Reusens - Peakland Switch 69 kV line. Replace Peakland Switch	AEP (100%) AEP (100%)
b2882.1	Rebuild the Reusens - Peakland Switch 69 kV line (approximately 0.8 miles) 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%)
b2883	Rebuild the Craneco – Pardee – Three Forks – Skin Fork 46 kV line section (approximately 7.2 miles) utilizing 795 26/7 ACSR conductor (108 MVA rating)	AEP (100%)
b2884	Install a second transformer at Nagel station, comprised of 3 single phase 250 MVA 500/138 kV transformers. Presently, TVA operates their end of the Boone Dam – Holston 138 kV interconnection as normally open preemptively for the loss of the existing Nagel	AEP (100%)
b2885	New delivery point for City of Jackson	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirem	ent 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		
b2886	high and low side 3000 A 40		
	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		
b2887	to different bays at Morse		
	Road. Eliminate 3 terminal		
	line by terminating Genoa -		
	Morse circuit at Morse Road		AEP (100%)
1 2000	Retire Poston substation.		
b2888	Install new Lemaster		A ED (1000/)
	substation		AEP (100%)
b2888.1	Remove and retire the Poston		
	138 kV station		AEP (100%)
1 2000 2	Install a new greenfield		
b2888.2	station, Lemaster 138 kV		AED (1009/)
	Station, in the clear		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	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 a new three-way switch. Retire the Poston - Trimble 69 kV line		AEP (100%)
b2889	Expand Cliffview station		AEP (100%)
b2889.1	Cliffview Station: Establish 138 kV bus. Install two 138/69 kV XFRs (130 MVA), six 138 kV CBs (40 kA 3000 A) and four 69 kV CBs (40 kA 3000 A)		AEP (100%)
b2889.2	Byllesby – Wythe 69 kV: Retire all 13.77 miles (1/0 CU) of this circuit (~4 miles currently in national forest)	2	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		AEP (100%)
b2889.4	Cliffview Line: Tap the existing Pipers Gap – Jubal Early 138 kV line section. Construct double 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		
	Cambridge – Smyrna 34.5 kV		
b2890.1	circuit with 795 ACSR		
	conductor (128 MVA rating)		
	and convert to 69 kV		AEP (100%)
	East Cambridge: Install a 2000		
b2890.2	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		
	phase switch		AEP (100%)
1 2000 4	Install 69 kV 2000 A two way		· · · · ·
b2890.4	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 Requirement	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%)
	Replace South Canton 138 kV		
b3000	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 Tra	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
-	Rebuild existing Ripley –		
	Ravenswood 69 kV circuit		
b3040.2	(~9 miles) to 69 kV standards,		
	utilizing 795 26/7 ACSR		
	conductor		AEP (100%)
	Install new 3-way phase over		
b3040.3	phase switch at Sarah Lane		
05040.5	station to replace the retired		
	switch at Cottageville		AEP (100%)
	Install new 138/12 kV 20		
	MVA transformer at Polymer		
b3040.4	station to transfer load from		
05010.1	Mill Run station to help		
	address overload on the 69		
	kV network		AEP (100%)
b3040.5	Retire Mill Run station		A E D (1000/)
	Install 28.8 MVAR cap bank		AEP (100%)
b3040.6	at South Buffalo station		AEP (100%)
	Adjust CT tap ratio at		AEI (10070)
b3051.2	Ronceverte 138 kV		AEP (100%)
	Reconductor Kammer –		AEF (10078)
	George Washington 138 kV		
b3085	line (approx. 0.08 mile).		
03003	Replace the wave trap at		
	Kammer 138 kV		AEP (100%)
	Rebuild New Liberty –		
	Findlay 34 kV line Str's 1–37		
b3086.1	(1.5 miles), utilizing 795 26/7		
	ACSR conductor		AEP (100%)
	Rebuild New Liberty – North		
100060	Baltimore 34 kV line Str's 1-		
b3086.2	11 (0.5 mile), utilizing 795		
	26/7 ACSR conductor		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Rebuild West Melrose –		
b3086.3	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		
b3086.4	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	ment Responsible Customer(s)
	Rebuild Lakin – Racine Tap		
b3095	69 kV line section (9.2 miles)		
03093	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		
b3101	(approx. 5 miles) utilizing		
05101	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 Requireme	ent 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-		
05105.1	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		
	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 Requiremen	t 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%)
b3103.7	Build a new 69 kV line from		
03103.7	Armstrong Cork – Jay station		AEP (100%)
	Rebuild the 34.5 kV		
	Delaware – Bosman line as		
b3103.8	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		
05104	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		
1	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%)
1 2 1 0 0	Rebuild 5.2 miles Bethel –		
b3109	Sawmill 138 kV line		
	including ADSS		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requireme	ent 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		
b3116	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		
b3119.1	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 T	Transmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
	Install three (3) 69 kV breakers	
b3119.2	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	
b3119.3	North Portland station to	
03119.5	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	
b3131	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	
b3131.1	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	Annual Revenue Requirement	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 2 1 4 0 1	minimum rate of 120 MVA.		
b3148.1	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		
03148.3	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		
03130	circuit 138 kV extension from		
	the Aviation – Ellison Road 138		
	kV line to remove the load from		
	the 69 kV line		AEP (100%)

	ansmission EnhancementsAnnual RevenueRebuild the 30 mile Gateway –	Requirement Responsible Customer(s)
b3151.1	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	AED (1009/)
		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%)
121510	Remove 34.5 kV circuit	
b3151.9	breaker "AD" at Wallen station	AEP (100%)
b3151.10	Rebuild the 2.5 miles of the Columbia – Gateway 69 kV	
	line	AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirem	ent 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" & "K" and 138 kV breaker "D"		AEP (100%)
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 Requirement	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%)
b3160.5	Rebuild the approx. 1.2 miles Buchanan South 69 kV Radial Tap using 795 ACSR (Aluminum Conductor Steel Reinforced)		AEP (100%)
b3160.6	Rebuild the approx.8.4 miles 69 kV Pletcher – Buchanan Hydro line as the approx. 9 miles Pletcher – Buchanan South 69 kV line using 795 ACSR (Aluminum Conductor Steel Reinforced)		AEP (100%)
b3160.7	Install a PoP (Point-of- Presence) switch at Buchanan South station with 2 line MOABs (Motor-Operated Air Break)		AEP (100%)

Required '	Transmission Enhancements	Annual Revenue Requ	uirement	Responsible Customer(s)
b3208	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 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%)
b3209	Rebuild the 10.5 mile Berne – South Decatur 69 kV line using 556 ACSR			AEP (100%)
b3210	Replace approx. 0.7 mile Beatty – Galloway 69 kV line with 4000 kcmil XLPE cable			AEP (100%)
b3220	Install 14.4 MVAR capacitor bank at Whitewood 138 kV			AEP (100%)

Required Transmission Enhancements		Annual Revenue Requireme	ent Responsible Customer(s)
b3243	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 –		
b3249	Melmore 138 kV line		
03249	(approximately 10 miles) to		
	1033 ACSR conductor		AEP (100%)

Required T	Transmission Enhancements	Annual Revenue Requir	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		
00200	towards Cricket Switch with		
	1272 AAC		AEP (100%)
	Upgrade 500 MCM Cu risers at		
b3256	Tidd 138 kV station towards		
	Wheeling Steel; replace with		AED (1000/)
	1272 AAC conductor		AEP (100%)
	Replace two spans of 336.4 26/7 ACSR on the Twin		
b3257	Branch – AM General #2 34.5		
	kV circuit		AEP (100%)
	Install a 3000A 63 kA 138 kV		AEI (10076)
	breaker on the high side of		
	138/69 kV transformer #2 at		
b3258	Wagenhals station. The		
05250	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	Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	At West New Philadelphia		
	station, add a high side 138		
b3269	kV breaker on the 138/69 kV		
03207	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		
b3270	138/34.5 kV transformer at		
00270	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%)
1 2270 1	Replace Dragoon 34.5 kV		
b3270.1	breakers "B", "C", and "D"		A ED (1000/)
	with 40 kA breakers		AEP (100%)
	Install a 138 kV circuit		
	breaker at Fremont station on		
b3271	the line towards Fremont		
	Center and install a 9.6		
	MVAR 69 kV capacitor bank		A = D (1000/)
	at Bloom Road station		AEP (100%)
	Install two 138 kV circuit		
b3272	switchers on the high side of		
	138/34.5 kV Transformers #1		A = D (1000/2)
	and #2 at Rockhill station		AEP (100%)

Required Tr	ransmission Enhancements	Annual Revenue Requ	irement 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		
b3273.4	additional line position at		
0.0270.1	New Liberty 138 kV		
	station. Install line relaying		
	potential devices and retire		
	the 34.5 kV breaker 'F'		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent 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		
b3275.3	Carbon Tap switch 69 kV		
03275.5	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 Require	ement 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		
05270.1	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		
b3276.2	Lancaster Junction and		
0.5270.2	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 Requirement	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 Requiremen	t 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		
b3285	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		
b3289.2	switcher on 138/69/34.5 kV		
00207.2	T1 at Huntington Court		
	station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
	Build 9.4 miles of single		
b3290.1	circuit 69 kV line from		
03290.1	Roselms to near East		
	Ottoville 69 kV switch		AEP (100%)
	Rebuild 7.5 miles of double		
	circuit 69 kV line between		
b3290.2	East Ottoville switch and		
03270.2	Kalida station (combining		
	with the new Roselms to		
	Kalida 69 kV circuit)		AEP (100%)
	At Roselms switch, install a		
b3290.3	new three way 69 kV, 1200 A		
05270.5	phase-over-phase switch,		
	with sectionalizing capability		AEP (100%)
	At Kalida 69 kV station,		
	terminate the new line from		
b3290.4	Roselms switch. Move the CS		
05270.4	XT2 from high side of T2 to		
	the high side of T1. Remove		
	existing T2 transformer		AEP (100%)
b3291	Replace the Russ St. 34.5 kV		
05271	switch		AEP (100%)
	Replace existing 69 kV		
b3292	capacitor bank at Stuart		
05272	station with a 17.2 MVAR		
	capacitor bank		AEP (100%)
	Replace 2/0 Cu entrance span		
	conductor on the South Upper		
b3293	Sandusky 69 kV line and 4/0		
05275	Cu Risers/Bus conductors on		
	the Forest line at Upper		
	Sandusky 69 kV station		AEP (100%)
	Replace existing 69 kV		
b3294	disconnect switches for		
03274	circuit breaker "C" at Walnut		
	Avenue station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3295	Grundy 34.5 kV: Install a 34.5 kV 9.6 MVAR cap bank		AEP (100%)
b3296	Rebuild the overloaded portion of the Concord – Whitaker 34.5 kV line (1.13 miles). Rebuild is double circuit and will utilize 795 ACSR conductor		AEP (100%)
b3297.1	Rebuild 4.23 miles of 69 kV line between Sawmill and Lazelle station, using 795 ACSR 26/7 conductor		AEP (100%)
b3297.2	Rebuild 1.94 miles of 69 kV line between Westerville and Genoa stations, using 795 ACSR 26/7 conductor		AEP (100%)
b3297.3	Replace risers and switchers at Lazelle, Westerville, and Genoa 69 kV stations. Upgrade associated relaying accordingly		AEP (100%)
b3298	Rebuild 0.8 mile of double circuit 69 kV line between South Toronto and West Toronto. Replace 219 ACSR with 556 ACSR		AEP (100%)
b3298.1	Replace the 69 kV breaker D at South Toronto station with 40 kA breaker		AEP (100%)
b3299	Rebuild 0.2 mile of the West End Fostoria - Lumberjack Switch 69 kV line with 556 ACSR (Dove) conductors. Replace jumpers on West End Fostoria line at Lumberjack Switch		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requireme	ent Responsible Customer(s)
	Reconductor and rebuild 1		
b3308	span of T-line on the Fort		
05508	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 –		
b3309	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%)
b3310.2	Upgrade relaying at Howard		
05510.2	69 kV station		AEP (100%)
1 2210 2	Upgrade relaying at Willard		
b3310.3	69 kV station		AEP (100%)

Required Tr	ansmission Enhancements	Annual Revenue Require	ment Responsible Customer(s)
b3312	Rebuild approximately 4 miles of existing 69 kV line between West Mount Vernon and Mount Vernon stations. 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 Requirer	ment Responsible Customer(s)
b3338	Replace the two (2) Kenny 138 kV breakers, "102" (SC- 3) and "106" (SC-4), each with a 3000 A, 63 kA interrupting breaker		AEP (100%)
b3339	Replace the one (1) Canal 138 kV breaker "3" with 3000 A, 63 kA breaker		AEP (100%)
b3342	Replace the 2156 ACSR and 2874 ACSR bus and risers with 2-bundled 2156 ACSR at Muskingum River 345 kV station to address loading issues on Muskingum - Waterford 345 kV line		AEP (100%)
b3343	Rebuild approximately 0.3 miles of the overloaded 69 kV line between Albion - Philips Switch and Philips Switch - Brimfield Switch with 556 ACSR conductor		AEP (100%)
b3344.1	Install two (2) 138 kV circuit breakers in the M and N strings in the breaker-and-a half configuration in West Kingsport station 138 kV yard to allow the Clinch River - Moreland Dr. 138 kV to cut in the West Kingsport station		AEP (100%)
b3344.2	Upgrade remote end relaying at Riverport 138 kV station due to the line cut in at West Kingsport station		AEP (100%)

Required Tra	ansmission Enhancements	Annual Revenue Requirement	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%)
b3345.2	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		
b3347.1	miles of 69 kV line between		
05547.1	Bancroft and Milton stations		
	with 556 ACSR conductor		AEP (100%)
	Replace the jumpers around		
b3347.2	Hurrican switch with 556		
	ACSR		AEP (100%)

		I	
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)

		1	
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)

BasisReplace 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 kAAEP (100%)Upgrade remote end relaying at b3350.2Upgrade remote end relaying at Point Pleasant, Coalton and South Point 69 kV substationsAEP (100%)BasisReplace the 69 kV in-line substationAEP (100%)BasisReplace circuit breakers '42' and '43' at Bexley station with 3000 cables and jumpersAEP (100%)BasisReplace circuit breakers '42' and '43' at Bexley station with 3000 cables and jumpersAEP (100%)BasisReplace circuit breakers 'A' and 'B' at South Side Lima station yumpersAEP (100%)BasisReplace circuit breakers 'A' and 'B' at South Side Lima station yumpersAEP (100%)BasisReplace circuit breakers 'C', TE,' and 'L' at Natrium station with 3000 A, 40 kA 69 kV breakers, slab, control cables and jumpersAEP (100%)BasisReplace circuit breakers 'C', 'E,' and 'L' at Natrium station with 3000 A, 40 kA 69 kV breakers, slab, control cables and jumpersAEP (100%)	Required II	ansmission Ennancements Annual Re	venue Requirement	
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b3357 and 'L' at Natrium station with 3000 A, 40 kA 69 kV breakers, AFP (100%)		slab, control cables and jumpers		AEF (10076)
b3357 3000 A, 40 kA 69 kV breakers, AFP (100%)		Replace circuit breakers 'C', 'E,'		
$3000 \text{ A}, 40 \text{ kA } 69 \text{ kV}$ breakers, $\Delta \text{FP} (100\%)$	h2257	and 'L' at Natrium station with		
slab, control cables and jumpers AEP (100%)	05557	3000 A, 40 kA 69 kV breakers,		AED (1000/)
		slab, control cables and jumpers		ALP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Install a CO INV 11.5 MIVAD aspectar	
b3358	Install a 69 kV 11.5 MVAR capacitor at Biers Run 69 kV station	
	at Biers Run 69 k v station	AEP (100%)
	Rebuild approximately 2.3 miles of	
b3359	the existing North Van Wert Sw. –	
03337	Van Wert 69 kV line utilizing 556	
	ACSR conductor	AEP (100%)
	Rebuild approximately 3.1 miles of	
	the overloaded conductor on the	
b3362	existing Oertels Corner – North	
	Portsmouth 69 kV line utilizing 556	
	ACSR	AEP (100%)
	Replace 40 kV breaker J at McComb	
b3731	138 kV station with a new 3000A 40	AEP (100%)
	kA breaker	
b3732	Install a 6 MVAR, 34.5 kV cap bank	
00702	at Morgan Run station	AEP (100%)
	Rebuild the 1.8 mile 69 kV line	
b3733	between Summerhill and Willow	
00700	Grove Switch. Replace 4/0 ACSR	AEP (100%)
	conductor with 556 ACSR	
1.0-0.4	Install a 7.7 MVAR, 69 kV cap bank	
b3734	at both Otway station and Rosemount	AEP (100%)
	station	
	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;	
b3735	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	AEP (100%)
	circuit breaker on line exit towards	
	South Abingdon station for standard	
	bus sectionalizing	

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

1 272 (1	Establish 69 kV bus and new 69 kV	
b3736.1	line Circuit Breaker at Dorton	AEP (100%)
	substation	
	At Breaks substation, reuse 72 kV	
b3736.2	breaker A as the new 69 kV line	AEP (100%)
	breaker	
	Rebuild approximately 16.7 miles	
b3736.3	Dorton – Breaks 46 kV line to 69 kV	A = D (1000/)
	line	AEP (100%)
107064	Retire approximately 17.2 miles	
b3736.4	Cedar Creek – Elwood 46 kV line	AEP (100%)
	Retire approximately 6.2 miles	
b3736.5	Henry Clay – Elwood 46 kV line	
03750.5	section	AEP (100%)
	Retire Henry Clay 46 kV substation	ALI (10070)
	and replace with Poor Bottom 69 kV	
b3736.6	station. Install a new 0.7 mile double	
05/50.0		AED (1000/)
	circuit extension to Poor Bottom 69	AEP (100%)
	kV station	
	Retire Draffin substation and replace	
b3736.7	with a new substation. Install a new	
	0.25 mile double circuit extension to	AEP (100%)
	New Draffin substation	
	Remote end work at Jenkins	
b3736.8	substation	
		AEP (100%)
	Provide transition fiber to Dorton,	
b3736.9	Breaks, Poor Bottom, Jenkins and	
	New Draffin 69 kV substations	AEP (100%)
1 272 (10		
b3736.10	Henry Clay switch station retirement	AEP (100%)
1070(11		
b3736.11	Cedar Creek substation work	AEP (100%)
I		

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

	Turismission Emuleements 7 undurite vende 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 kV	1	
	line: Build approximately 0.19		
	miles of 138 kV line to the		
	Indiana/ Ohio State line to		
	connect to AES's line portion of		
b3766.1	the Hayes – New Westville 138		
	kV line with the conductor size		AEP (100%)
	795 ACSR26/7 Drake. This sub-		ALI (10070)
	ID includes the cost of line		
	construction and Right of Way		
	(ROW)		
	Hayes – Hodgin 138 kV line:		
	Build approximately 0.05 mile of		
b3766.2	138 kV line with the conductor		
05700.2	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		
b3766.3	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)

Required I	Talisinission Linnancements Annual Revent	Responsible Customer(s)
b3775.6	Perform sag study mitigation work on 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)	Responsible Customer(s) 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%) / JCPL (1.98%) / ME (1.63%) / NEPTUNE* (0.43%) / OVEC (0.07%) / PECO
		NEPTUNE* (0.43%) /

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

Required I	ransmission Ennancements Anr	nual Revenue Requirement Responsible Customer(s)
		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%)
		AEP (12.38%) / ComEd (87.62%)
	Upgrade the limiting	AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver:
	Upgrade the limiting element at Stillwell	AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS
h2775 11	10 0	AEP (12.38%) / ComEd (87.62%) Market Efficiency Driver: AEC (0.87%) / AEP (24.07%) / APS (3.95%) / ATSI (11.04%) / BGE
b3775.11	element at Stillwell	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	element at Stillwell substation to increase the	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	element at Stillwell substation to increase the rating of the Stillwell –	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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	element at Stillwell substation to increase the rating of the Stillwell – Dumont 345 kV line to	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%) /

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	
b3787.1	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	AEP (100%)
	Replace AEP owned station	
b3788.1	takeoff riser and breaker BB	
03700.1	risers at OVEC owned Kyger	
	Creek station	AEP (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

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Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	equired Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)			
b3847.1	Add a 765 kV breaker at Baker station for the reactor on the Broadford 765 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: AEP (70.68%) / EKPC (8.12%)/ PEPCO (21.20%) L and Patia Share Allocation:		
b3847.2	Add two 765 kV breakers to the reactors at Broadford station on the Baker and Jacksons Ferry 765 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: AEP (36.98%) / BGE (9.18%) / Dayton (0.04%) / DEOK (0.10%) / Dominion (40.81%) / EKPC (0.05%) / PEPCO (12.84%)		

promission Enhancementa Annual Davenue Decuirement Desponsible Customer(a) -

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
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		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
	Add a 765 kV breaker to the	(2.35%) / JCPL (3.59%) / ME (1.81%) /
b3847.3	reactor at Jefferson station on	NEPTUNE* (0.42%) / OVEC (0.06%) /
	the Greentown 765 kV line	PECO (5.11%) / PENELEC (1.73%) /
		PEPCO (3.68%) / PPL (4.43%) / PSEG
		(5.99%) / RE (0.24%)
		DFAX Allocation:
		AEP (64.50%) / DEOK (27.02%) /
		EKPC (6.06%) / OVEC (2.42%)

Required I	ransmission Enhancements Annu	al Revenue Requirement Responsible Customer(s)
b3851.1	Rebuild Allen – R.P. Mone	AEP (0.71%) / Dayton (99.28%) /
05051.1	345 kV line (18.6 miles)	OVEC (0.01%)
	Rebuild R.P. Mone –	
b3851.2	Maddox Creek 345 kV line	
	(9.4 miles)	AEP (78.50%) / Dayton (21.50%)
	Replace 345 kV breakers 'B1'	
b3851.3	and 'B' at Maddox Creek	
	station	AEP (80.97%) / Dayton (19.03%)
	Replace two 345 kV breakers	
b3851.4	'M' and 'M2' at East Lima	
	station	AEP (80.97%) / Dayton (19.03%)
	Connect and energize a	
b3852.1	second 765/345 kV bank at	AEP (88.81%) / Dayton (6.22%) /
	Vassell 765 kV station	DEOK (4.89%) / OVEC (0.08%)
		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%) /
b3852.2	Replace 765 kV breaker D at	NEPTUNE* (0.42%) / OVEC (0.06%) /
03832.2	Maliszewski station	PECO (5.11%) / PENELEC (1.73%) /
		PEPCO (3.68%) / PPL (4.43%) / PSEG
		(5.99%) / RE (0.24%)
		DFAX Allocation:
		AEP (68.04%) / ATSI (9.61%) / Dayton
		(1.92%) / DL (3.35%) / Dominion
		(17.06%) / EKPC (0.02%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

SCHEDULE 12 – APPENDIX A

(20) Virginia Electric and Power Company

Required T	ransmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
	Replace Loudoun 230 kV		
b1698.7	breaker '203052' with 63 kA		
	rating		Dominion (100%)
	Replace the Idylwood 230 kV		
b1696.1	'25112' breaker with 50 kA		
	breaker		Dominion (100%)
	Replace the Idylwood 230 kV		, <i>í</i>
b1696.2	'209712' breaker with 50 kA		
	breaker		Dominion (100%)
	Remove the Carolina 22 SPS		, , , , , , , , , , , , , , , , , , ,
	to include relay logic changes,		
1.1702.1	minor control wiring, relay		
b1793.1	resets and SCADA		
	programming upon		
	completion of project		Dominion (100%)
	Additional Temporary SPS at		
b2281	Bath County		D^{-1} (1000()
	5		Dominion (100%)
	Reconductor 211 feet of 545.5		
	ACAR conductor on 59 Line		
b2350	Elmont - Greenwood DP 115		
02550	kV to achieve a summer		
	emergency rating of 906 amps		D · · · (1000/)
	or greater		Dominion (100%)
	Install a 230 kV 54 MVAR		
b2358	capacitor bank on the 2016		
02000	line at Harmony Village		D :: (1000()
	Substation		Dominion (100%)
	Wreck and rebuild		
	approximately 1.3 miles of		
b2359	existing 230 kV line between		
	Cochran Mill - X4-039		\mathbf{D} = $(1000/)$
	Switching Station		Dominion (100%)
	Build a new 39 mile 230 kV		
b2360	transmission line from Dooms		
	- Lexington on existing right-		D^{-1} (1000/)
	of-way		Dominion (100%)
	Construct 230 kV OH line		
	along existing Line #2035		
1.00(1	corridor, approx. 2.4 miles		
b2361	from Idylwood - Dulles Toll		
	Road (DTR) and 2.1 miles on		
	new right-of-way along DTR		$\mathbf{D}_{\mathbf{r}}$
	to new Scott's Run Substation		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required I	Talishiission Enhancements Annual	Revenue Requirement Responsible Customer(s)
b2368	Replace the Brambleton 230 kV breaker '209502' with 63 kA breaker	Dominion (100%)
b2369	Replace the Brambleton 230 kV breaker '213702' with 63 kA breaker	Dominion (100%)
b2370	Replace the Brambleton 230 kV breaker 'H302' with 63 kA breaker	Dominion (100%)
b2373	Build a 2nd Loudoun - Brambleton 500 kV line within the existing ROW. The Loudoun - Brambleton 230 kV line will be relocated as an underbuild on the new 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: APS (52.14%) / Dominion (20.63%) / PEPCO (27.23%)
b2397	Replace the Beaumeade 230 kV breaker '2079T2116' with 63 kA	Dominion (100%)
b2398	Replace the Beaumeade 230 kV breaker '2079T2130' with 63 kA	Dominion (100%)
b2399	Replace the Beaumeade 230 kV breaker '208192' with 63 kA	Dominion (100%)
b2400	Replace the Beaumeade 230 kV breaker '209592' with 63 kA	Dominion (100%)
b2401	Replace the Beaumeade 230 kV breaker '211692' with 63 kA	Dominion (100%)
b2402	Replace the Beaumeade 230 kV breaker '227T2130' with 63 kA	Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

The Annual Revenue Requirement for all Virginia Electric and Power Company projects in this Section 20 shall be as specified in Attachment 7 to Appendix A of Attachment H-16A and under the procedures detailed in Attachment H-16B.

Required T		nnual Revenue Requirement	Responsible Customer(s)
	Replace the Beaumeade		
b2403	230 kV breaker		
	'274T2130' with 63 kA		Dominion (100%)
	Replace the Beaumeade		
b2404	230 kV breaker		
	'227T2095' with 63 kA		Dominion (100%)
	Replace the Pleasant view		
b2405	230 kV breaker '203T274'		
	with 63 kA		Dominion (100%)
	Construct new		
	underground 230 kV line		
	from Glebe to Station C,		
b2443	rebuild Glebe Substation, construct 230 kV high		
	side bus at Station C with		
	option to install 800 MVA		Dominion (97.11%) / ME
	PAR		(0.18%) / PEPCO (2.71%)
	Replace the Idylwood 230		
b2443.1	kV breaker '203512' with		
02.1011	50 kA		Dominion (100%)
	Replace the Ox 230 kV		
b2443.2	breaker '206342' with 63		
	kA breaker		Dominion (100%)
10440.0			DFAX Allocation:
b2443.3	Glebe – Station C PAR		Dominion (22.57%) / PEPCO
			(77.43%)
	Install a second 500/230		(7711870)
	kV transformer at Possum		
10442 6	Point substation and		
b2443.6	replace bus work and		
	associated equipment as		
	needed		Dominion (100%)
	Replace 19 63 kA 230 kV		
b2443.7	breakers with 19 80 kA		
	230 kV breakers		Dominion (100%)
	Replace 24 115 kV wood		
	h-frames with 230 kV		
b2457	Dominion pole H-frame structures on the		
	Clubhouse – Purdy 115		
	kV line		Dominion (100%)
	Replace 12 wood H-frame		
	structures with steel H-		
	frame structures and		
b2458.1	install shunts on all		
	conductor splices on		
	Carolina – Woodland 115		
	kV		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T		Annual Revenue Requirement	Responsible Customer(s)
	Upgrade all line switches		
	and substation		
b2458.2	components at Carolina		
02450.2	115 kV to meet or exceed		
	new conductor rating of		
	174 MVA		Dominion (100%)
	Replace 14 wood H-frame		
b2458.3	structures on Carolina –		
	Woodland 115 kV		Dominion (100%)
	Replace 2.5 miles of static		
b2458.4	wire on Carolina –		$\mathbf{D}_{\mathrm{env}}$
	Woodland 115 kV		Dominion (100%)
	Replace 4.5 miles of		
	conductor between		
	Carolina 115 kV and		
	Jackson DP 115 kV with		
b2458.5	min. 300 MVA summer		
	STE rating; Replace 8 wood H-frame structures		
	located between Carolina		
	and Jackson DP with steel		
	H-frames		Dominion (100%)
	Replace Hanover 230 kV		
b2460.1	substation line switches		
02400.1	with 3000A switches		Dominion (100%)
	Replace wave traps at		
	Four River 230 kV and		
b2460.2	Elmont 230 kV		
	substations with 3000A		
	wave traps		Dominion (100%)
	Wreck and rebuild		
	existing Remington CT –		
b2461	Warrenton 230 kV		
	(approx. 12 miles) as a		
	double-circuit 230 kV line		Dominion (100%)
	Construct a new 230 kV		
	line approximately 6 miles		
b2461.1	from NOVEC's Wheeler		
02401.1	Substation a new 230 kV		
	switching station in Vint		\mathbf{D} amining (1000/)
	Hill area		Dominion (100%)
b2461.2	Convert NOVEC's		
	Gainesville – Wheeler line		
	(approximately 6 miles) to		Dominion (100%)
	230 kV		Dominion (100%)
h2461 2	Complete a Vint Hill – Wheeler – Loudoun 230		
b2461.3	kV networked line		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required T	ransmission Enhancements Annua	al Revenue Requirement	Responsible Customer(s)
b2471	Replace Midlothian 500 kV breaker 563T576 and motor operated switches with 3 breaker 500 kV ring bus. Terminate Lines # 563 Carson – Midlothian, #576 Midlothian –North Anna, Transformer #2 in new ring		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: Dominion (100%)
b2504	Rebuild 115 kV Line #32 from Halifax-South Boston (6 miles) for min. of 240 MVA and transfer Welco tap to Line #32. Moving Welco to Line #32 requires disabling auto- sectionalizing scheme		Dominion (100%)
b2505	Install structures in river to remove the 115 kV #65 line (Whitestone-Harmony Village 115 kV) from bridge and improve reliability of the line		Dominion (100%)
b2542	Replace the Loudoun 500 kV 'H2T502' breaker with a 50 kA breaker		Dominion (100%)
b2543	Replace the Loudoun 500 kV 'H2T584' breaker with a 50 kA breaker		Dominion (100%)
b2565	Reconductor wave trap at Carver Substation with a 2000A wave trap		Dominion (100%)
b2566	Reconductor 1.14 miles of existing line between ACCA and Hermitage and upgrade associated terminal equipment		Dominion (100%)

Required T	Transmission Enhancements A	nnual 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%) /
	Rebuild the Elmont –		JCPL (3.59%) / ME (1.81%) /
b2582	Cunningham 500 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:
			APS (6.21%) / BGE (4.78%) /
			Dominion (81.73%) / PEPCO
	Install 500 kV breaker at		(7.28%)
	Ox Substation to remove		
b2583	Ox Tx#1 from H1T561		
	breaker failure outage		Dominion (100%)
	Relocate the Bremo load		
	(transformer #5) to #2028		
b2584	(Bremo-Charlottesville 230 kV) line and		
02364	Cartersville distribution		
	station to #2027 (Bremo-		
	Midlothian 230 kV) line		Dominion (100%)
	Reconductor 7.63 miles of		
1 2595	existing line between Cranes and Stafford,		
b2585	upgrade associated line		
	switches at Stafford		PEPCO (100%)
	Wreck and rebuild the		
	Chesapeake – Deep Creek		
	– Bowers Hill – Hodges		
b2620	Ferry 115 kV line;		
	minimum rating 239 MVA normal/emergency,		
	275 MVA load dump		
	rating		Dominion (100%)
*Nontuno			

Required I		nnual Revenue Requirement	Responsible Customer(s)
b2622	Rebuild Line #47 between Kings Dominion 115 kV and Fredericksburg 115 kV to current standards with summer emergency rating of 353 MVA at 115 kV		Dominion (100%)
b2623	Rebuild Line #4 between Bremo and Structure 8474 (4.5 miles) to current standards with a summer emergency rating of 261 MVA at 115 kV		Dominion (100%)
b2624	Rebuild 115 kV Lines #18 and #145 between Possum Point Generating Station and NOVEC's Smoketown DP (approx. 8.35 miles) to current 230 kV standards with a normal continuous summer rating of 524 MVA at 115 kV		Dominion (100%)
b2625	Rebuild 115 kV Line #48 between Thole Street and Structure 48/71 to current standard. The remaining line to Sewells Point is 2007 vintage. Rebuild 115 kV Line #107 line, Sewells Point to Oakwood, between structure 107/17 and 107/56 to current standard		Dominion (100%)
b2626	Rebuild 115 kV Line #34 between Skiffes Creek and Yorktown and the double circuit portion of 115 kV Line #61 to current standards with a summer emergency rating of 353 MVA at 115 kV		Dominion (100%)
b2627	Rebuild 115 kV Line #1 between Crewe 115 kV and Fort Pickett DP 115 kV (12.2 miles) to current standards with summer emergency rating of 261 MVA at 115 kV		Dominion (100%)

Required I		enue Requirement Responsible Customer(s)
	Rebuild 115 kV Line #82	
1	Everetts – Voice of America	
	(20.8 miles) to current	
b2628	standards with a summer	
	emergency rating of 261	
	MVA at 115 kV	Dominion (100%)
-	Rebuild the 115 kV Lines	Dominion (10070)
	#27 and #67 lines from	
	Greenwich 115 kV to Burton	
1.0(00)		
b2629	115 kV Structure 27/280 to	
	current standard with a	
	summer emergency rating of	
	262 MVA at 115 kV	Dominion (100%)
	Install circuit switchers on	
	Gravel Neck Power Station	
b2630	GSU units #4 and #5. Install	
02030	two 230 kV CCVT's on	
	Lines #2407 and #2408 for	
	loss of source sensing	Dominion (100%)
	Install three 230 kV bus	
	breakers and 230 kV, 100	
	MVAR Variable Shunt	
	Reactor at Dahlgren to	
b2636	provide line protection	
02050	during maintenance, remove	
	the operational hazard and	
	provide voltage reduction	
	during light load conditions	Dominion (100%)
-	Rebuild Boydton Plank Rd –	Dominion (10070)
	Kerr Dam 115 kV Line #38	
b2647	(8.3 miles) to current	
	standards with summer	
	emergency rating of 353	
	MVA at 115 kV	Dominion (100%)
	Rebuild Carolina – Kerr	
	Dam 115 kV Line #90 (38.7	
b2648	miles) to current standards	
	with summer emergency	
	rating of 353 MVA 115 kV	Dominion (100%)
	Rebuild Clubhouse –	
	Carolina 115 kV Line #130	
1.0(40	(17.8 miles) to current	
b2649	standards with summer	
	emergency rating of 353	
	MVA at 115 kV	Dominion (100%)
L	-	

Required I		al Revenue Requirement	Responsible Customer(s)
b2649.1	Rebuild of 1.7 mile tap to Metcalf and Belfield DP (MEC) due to poor condition. The existing summer rating of the tap is 48 MVA and existing conductor is 4/0 ACSR on wood H-frames. The proposed new rating is 176 MVA using 636 ACSR conductor		Dominion (100%)
b2649.2	Rebuild of 4.1 mile tap to Brinks DP (MEC) due to wood poles built in 1962. The existing summer rating of the tap is 48 MVA and existing conductor is 4/0 ACSR and 393.6 ACSR on wood H-frames. The proposed new rating is 176 MVA using 636 ACSR conductor		Dominion (100%)
b2650	Rebuild Twittys Creek – Pamplin 115 kV Line #154 (17.8 miles) to current standards with summer emergency rating of 353 MVA at 115 kV		Dominion (100%)

Required Tra		nual Revenue Requirement	Responsible Customer(s)
b2651	Rebuild Buggs Island – Plywood 115 kV Line #127 (25.8 miles) to current standards with summer emergency rating of 353 MVA at 115 kV. The line should be rebuilt for 230 kV and operated at 115 kV		Dominion (100%)
b2652	Rebuild Greatbridge – Hickory 115 kV Line #16 and Greatbridge – Chesapeake E.C. to current standard with summer emergency rating of 353 MVA at 115 kV		Dominion (100%)
b2653.1	Build 20 mile 115 kV line from Pantego to Trowbridge with summer emergency rating of 353 MVA		Dominion (100%)
b2653.2	Install 115 kV four-breaker ring bus at Pantego		Dominion (100%)
b2653.3	Install 115 kV breaker at Trowbridge		Dominion (100%)
b2654.1	Build 15 mile 115 kV line from Scotland Neck to S Justice Branch with summer emergency rating of 353 MVA. New line will be routed to allow HEMC to convert Dawson's Crossroads RP from 34.5 kV to 115 kV		Dominion (100%)
b2654.2	Install 115 kV three-breake ring bus at S Justice Branch		Dominion (100%)
b2654.3	Install 115 kV breaker at Scotland Neck		Dominion (100%)
b2654.3	Install a 2nd 224 MVA 230/115 kV transformer at Hathaway		Dominion (100%)

Required Tr	ansmission Enhancements Annual Reve	nue Requirement	Responsible Customer(s)
b2665	Rebuild the Cunningham – Dooms 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: APS (10.07%) / BGE (6.58%) / Dominion (72.51%) / PEPCO (10.84%)
b2686	Pratts Area Improvement		Dominion (100%)
b2686.1	Build a 230 kV line from Remington Substation to Gordonsville Substation utilizing existing ROW Install a 3rd 230/115 kV		Dominion (100%)
b2686.2	transformer at Gordonsville Substation		Dominion (100%)
b2686.3	Upgrade Line 2088 between Gordonsville Substation and Louisa CT Station		Dominion (100%)
b2686.4	Replace the Remington CT 230 kV breaker "2114T2155" with a 63 kA breaker		Dominion (100%)
b2686.11	Upgrading sections of the Gordonsville – Somerset 115 kV circuit		Dominion (100%)
b2686.12	Upgrading sections of the Somerset – Doubleday 115 kV circuit		Dominion (100%)
b2686.13	Upgrading sections of the Orange – Somerset 115 kV circuit		Dominion (100%)
b2686.14	Upgrading sections of the Mitchell – Mt. Run 115 kV circuit		Dominion (100%)

Required Tr	ansmission Enhancements	Annual Revenue Requirement Responsible Customer(s)
b2717.1	De-energize Davis – Rosslyn #179 and #180 69 kV lines	Dominion (100%)
b2717.2	Remove splicing and stop joints in manholes	Dominion (100%)
b2717.3	Evacuate and dispose of insulating fluid from various reservoirs and cables	Dominion (100%)
b2717.4	Remove all cable along the approx. 2.5 mile route, swab and cap-off conduits for future use, leave existing communication fiber in place	Dominion (100%)
b2719.1	Expand Perth substation and add a 115 kV four breaker ring	Dominion (100%)
b2719.2	Extend the Hickory Grove DP tap 0.28 miles to Perth and terminate it at Perth	Dominion (100%)
b2719.3	Split Line #31 at Perth and terminate it into the new ring bus with 2 breakers separating each of the line terminals to prevent a breaker failure from taking out both 115 kV lines	Dominion (100%)
b2720	Replace the Loudoun 500 kV 'H1T569' breakers with 50 kA breaker	Dominion (100%)
b2729	Optimal Capacitors Configuration: New 175 MVAR capacitor at Brambleton, new 175 MVAR capacitor at Ashburn, new 300 MVAR capacitor at Shelhorm, new 150 MVAR capacitor at Liberty	AEC (1.96%) / BGE (14.37%) / Dominion (35.11%) / DPL (3.76%) / ECP** (0.29%) / HTP*** (0.34%) / JCPL (3.31%) / ME (2.51%) / NEPTUNE* (0.63%) / PECO (6.26%) / PEPCO (20.23%) / PPL (3.94%) / PSEG (7.29%)

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 Tra	ansmission 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
10744	Rebuild the Carson – Rogers		(13.89%) / EKPC (2.35%) /
b2744	Rd 500 kV circuit		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:
			Dominion (100.00%)
	Rebuild 21.32 miles of		
b2745	existing line between Chesterfield – Lakeside		
	230 kV		Dominion (100%)
	Rebuild Line #137 Ridge Rd		
b2746.1	– Kerr Dam 115 kV. 8.0		
02/40.1	miles, for 346 MVA summer		
	emergency rating		Dominion (100%)
	Rebuild Line #1009 Ridge Rd – Chase City 115 kV, 9.5		
b2746.2	miles, for 346 MVA summer		
			Dominion (100%)
	emergency rating Install a second 4.8 MVAR		
b2746.3	capacitor bank on the 13.8 kV		
02,1010	bus of each transformer at Ridge Rd		Dominion (100%)
	Install a Motor Operated		
	Switch and SCADA control		
b2747	between Dominion's		
	Gordonsville 115 kV bus and		$D_{amining}$ (100%)
	FirstEnergy's 115 kV line		Dominion (100%)

b2757	Install a +/-125 MVAr Statcom at Colington 230 kV	Dominion (100%)
b2758	Rebuild Line #549 Dooms – Valley 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: Dominion (100%)
b2759	Rebuild Line #550 Mt. Storm – Valley 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: APS (40.03%) / DL (3.91%) / Dominion (49.41%) / EKPC (6.65%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annual	l Revenue Requirement	Responsible Customer(s)
b2800	The 7 mile section from Dozier to Thompsons Corner of line #120 will be rebuilt to current standards using 768.2 ACSS conductor with a summer emergency rating of 346 MVA at 115 kV. Line is proposed to be rebuilt on single circuit steel monopole structure		Dominion (100%)
b2801	Lines #76 and #79 will be rebuilt to current standard using 768.2 ACSS conductor with a summer emergency rating of 346 MVA at 115 kV. Proposed structure for rebuild is double circuit steel monopole structure		Dominion (100%)
b2802	Rebuild Line #171 from Chase City – Boydton Plank Road tap by removing end- of-life facilities and installing 9.4 miles of new conductor. The conductor used will be at current standards with a summer emergency rating of 393 MVA at 115 kV		Dominion (100%)
b2815	Build a new Pinewood 115 kV switching station at the tap serving North Doswell DP with a 115 kV four breaker ring bus		Dominion (100%)
b2842	Update the nameplate for Mount Storm 500 kV "57272" to be 50 kA breaker		Dominion (100%)
b2843	Replace the Mount Storm 500 kV "G2TY" with 50 kA breaker		Dominion (100%)
b2844	Replace the Mount Storm 500 kV "G2TZ" with 50 kA breaker		Dominion (100%)

Required In	ansmission Enhancements Annual	l Revenue Requirement	Responsible Customer(s)
b2845	Update the nameplate for Mount Storm 500 kV "G3TSX1" to be 50 kA		Demining (1000/)
	breaker		Dominion (100%)
b2846	Update the nameplate for Mount Storm 500 kV "SX172" to be 50 kA breaker		Dominion (100%)
b2847	Update the nameplate for Mount Storm 500 kV "Y72" to be 50 kA breaker		Dominion (100%)
b2848	Replace the Mount Storm 500 kV "Z72" with 50 kA breaker		Dominion (100%)
b2871	Rebuild 230 kV line #247 from Swamp to Suffolk (31 miles) to current standards with a summer emergency rating of 1047 MVA at 230 kV		Dominion (100%)
b2876	Rebuild line #101 from Mackeys – Creswell 115 kV, 14 miles, with double circuit structures. Install one circuit with provisions for a second circuit. The conductor used will be at current standards with a summer emergency rating of 262 MVA at 115 kV		Dominion (100%)
b2877	Rebuild line #112 from Fudge Hollow – Lowmoor 138 kV (5.16 miles) to current standards with a summer emergency rating of 314 MVA at 138 kV		Dominion (100%)
b2899	Rebuild 230 kV line #231 to current standard with a summer emergency rating of 1046 MVA. Proposed conductor is 2-636 ACSR		Dominion (100%)
b2900	Build a new 230/115 kV switching station connecting to 230 kV network line #2014 (Earleys – Everetts). Provide a 115 kV source from the new station to serve Windsor DP		Dominion (100%)

Required Ir		Revenue Requirement	Responsible Customer(s)
b2922	Rebuild 8 of 11 miles of 230 kV lines #211 and #228 to current standard with a summer emergency rating of 1046 MVA for rebuilt section. Proposed conductor is 2-636 ACSR		Dominion (100%)
b2928	Rebuild four structures of 500 kV line #567 from Chickahominy to Surry using galvanized steel and replace the river crossing conductor with 3-1534 ACSR. This will increase the line #567 line rating from 1954 MVA to 2600 MVA		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:
	Rebuild 230 kV line #2144		Dominion (100%)
b2929	from Winfall to Swamp (4.3 miles) to current standards with a standard conductor (bundled 636 ACSR) having a summer emergency rating of 1047 MVA at 230 kV		Dominion (100%)
b2960	Replace fixed series capacitors on 500 kV Line #547 at Lexington and on 500 kV Line #548 at Valley		See sub-IDs for cost allocations

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Transmission Enhancements Annual Revenue Requirement	Responsible Customer(s)
b2960.1 Replace fixed series capacitors on 500 kV Line #547 at Lexington	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: DEOK (7.57%) / Dominion (88.85%) / EKPC (3.58%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b2960.2	Replace fixed series capacitors on 500 kV Line #548 at Valley		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: DEOK (6.54%) / Dominion (91.29%) / EKPC (2.17%)
b2961	Rebuild approximately 3 miles of Line #205 & Line #2003 from Chesterfield to Locks & Poe respectively		Dominion (100%)
b2962	Split Line #227 (Brambleton – Beaumeade 230 kV) and terminate into existing Belmont substation		Dominion (100%)
b2962.1	Replace the Beaumeade 230 kV breaker "274T2081" with 63 kA breaker		Dominion (100%)
b2962.2	Replace the NIVO 230 kV breaker "2116T2130" with 63 kA breaker		Dominion (100%)
b2963	Reconductor the Woodbridge to Occoquan 230 kV line segment of Line #2001 with 1047 MVA conductor and replace line terminal equipment at Possum Point, Woodbridge, and Occoquan		Dominion (100%)

Required Tr	ransmission Enhancements Ann	nual Revenue Requirement	Responsible Customer(s)
b2978	Install 2-125 MVAR STATCOMs at Rawlings and 1-125 MVAR STATCOM at Clover 500 kV substations		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: Dominion (100%)
b2980	Rebuild 115 kV Line #43 between Staunton and Harrisonburg (22.8 miles) to current standards with a summer emergency rating of 261 MVA at 115 kV		Dominion (100%)
b2981	Rebuild 115 kV Line #29 segment between Fredericksburg and Aquia Harbor to current 230 kV standards (operating at 115 kV) utilizing steel H-frame structures with 2-636 ACSR to provide a normal continuous summer rating of 524 MVA at 115 kV (1047 MVA at 230 kV)		Dominion (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b2989	Install a second 230/115 kV Transformer (224 MVA) approximately 1 mile north of Bremo and tie 230 kV Line #2028 (Bremo – Charlottesville) and 115 kV Line #91 (Bremo - Sherwood) together. A three breaker 230 kV ring bus will split Line #2028 into two lines and Line #91 will also be split into two lines with a new three breaker 115 kV ring bus. Install a temporary 230/115 kV transformer at Bremo substation for the interim until the new substation is complete		Dominion (100%)
b2990	Chesterfield to Basin 230 kV line – Replace 0.14 miles of 1109 ACAR with a conductor which will increase the line rating to approximately 706 MVA		Dominion (100%)
b2991	Chaparral to Locks 230 kV line – Replace breaker lead		Dominion (100%)
b2994	Acquire land and build a new switching station (Skippers) at the tap serving Brink DP with a 115 kV four breaker ring to split Line #130 and terminate the end points		Dominion (100%)
b3018	Rebuild Line #49 between New Road and Middleburg substations with single circuit steel structures to current 115 kV standards with a minimum summer emergency rating of 261 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annua	l Revenue Requirement	Responsible Customer(s)
b3019	Rebuild 500 kV Line #552 Bristers to Chancellor – 21.6 miles long		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: Dominion (100.00%)
b3019.1	Update the nameplate for Morrisville 500 kV breaker "H1T594" to be 50 kA		Dominion (100%)
b3019.2	Update the nameplate for Morrisville 500 kV breaker "H1T545" to be 50 kA		Dominion (100%)

Required Tr	ansmission 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 (2.35%) /
	Rebuild 500 kV Line #574		JCPL (3.59%) / ME (1.81%) /
b3020	Ladysmith to Elmont – 26.2		NEPTUNE* (0.42%) / OVEC
	miles long		(0.06%) / PECO (5.11%) /
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
			APS (16.36%) / DEOK
			(11.61%) / Dominion (51.27%)
			/ EKPC (5.30%) / PEPCO
			(15.46%)
	Rebuild 500 kV Line #581 Ladysmith to Chancellor – 15.2 miles long		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
b3021			(13.89%) / EKPC (2.35%) /
03021			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:
			Dominion (100.00%)
	Reconductor Line #274		
	(Pleasant View – Ashburn – Beaumeade 230 kV) with a		
b3026	minimum rating of 1200		
	MVA. Also upgrade terminal		
	equipment		Dominion (100%)

Required II	ansinission Ennancements Annual K	evenue Requirement	Responsible Customer(s)
b3027.1	Add a 2nd 500/230 kV 840 MVA transformer at Dominion's Ladysmith substation		Dominion (100%)
b3027.2	Reconductor 230 kV Line #2089 between Ladysmith and Ladysmith CT substations to increase the line rating from 1047 MVA to 1225 MVA		Dominion (100%)
b3027.3	Replace the Ladysmith 500 kV breaker "H1T581" with 50 kA breaker		Dominion (100%)
b3027.4	Update the nameplate for Ladysmith 500 kV breaker "H1T575" to be 50 kA breaker		Dominion (100%)
b3027.5	Update the nameplate for Ladysmith 500 kV breaker "568T574" (will be renumbered as "H2T568") to be 50 kA breaker		Dominion (100%)
b3055	Install spare 230/69 kV transformer at Davis substation		Dominion (100%)
b3056	Partial rebuild 230 kV Line #2113 Waller to Lightfoot		Dominion (100%)
b3057	Rebuild 230 kV Lines #2154 and #19 Waller to Skiffes Creek		Dominion (100%)
b3058	Partial rebuild of 230 kV Lines #265, #200 and #2051		Dominion (100%)
b3059	Rebuild 230 kV Line #2173 Loudoun to Elklick		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tr	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
	Rebuild 4.6 mile Elklick – Bull Run 230 kV Line #295 and the		
	portion (3.85 miles) of the		
b3060	Clifton – Walney 230 kV Line		
	#265 which shares structures		
	with Line #295		Dominion (100%)
	Rebuild 4.75 mile section of		
	Line #26 between Lexington		
b3088	and Rockbridge with a		
	minimum summer emergency		\mathbf{D} $(1000/)$
	rating of 261 MVA		Dominion (100%)
	Rebuild 230 kV Line #224		
	between Lanexa and Northern		
	Neck utilizing double circuit structures to current 230 kV		
b3089	standards. Only one circuit is to		
03007	be installed on the structures		
	with this project with a		
	minimum summer emergency		
	rating of 1047 MVA		Dominion (100%)
	Convert the overhead portion		
	(approx. 1500 feet) of 230 kV		
b3090	Lines #248 & #2023 to		
	underground and convert Glebe		
	substation to gas insulated substation		Dominion (100%)
	Rebuild 230 kV line No.2063		
	(Clifton – Ox) and part of 230		
	kV line No.2164 (Clifton –		
	Keene Mill) with double circuit		
b3096	steel structures using double		
	circuit conductor at current 230		
	kV northern Virginia standards		
	with a minimum rating of 1200 MVA		Dominion (100%)
	Rebuild 4 miles of 115 kV Line		Dominion (100%)
	#86 between Chesterfield and		
b3097	Centralia to current standards		
	with a minimum summer		
	emergency rating of 393 MVA		Dominion (100%)
	Rebuild 9.8 miles of 115 kV		
	Line #141 between Balcony		
	Falls and Skimmer and 3.8		
b3098	miles of 115 kV Line #28		
	between Balcony Falls and Cushaw to current standards		
	with a minimum rating of 261		
	MVA		Dominion (100%)
L		l	

b3098.1	Rebuild Balcony Falls 115 kV substation	Dominion (100%)
b3110.1	Rebuild Line #2008 between Loudoun to Dulles Junction using single circuit conductor at current 230 kV northern Virginia standards with minimum summer ratings of 1200 MVA. Cut and loop Line #265 (Clifton – Sully) into Bull Run substation. Add three (3) 230 kV breakers at Bull Run to accommodate the new line and upgrade the substation	Dominion (100%)
b3110.2	Replace the Bull Run 230 kV breakers "200T244" and "200T295" with 50 kA breakers	Dominion (100%)
b3110.3	Replace the Clifton 230 kV breakers "201182" and "XT2011" with 63 kA breakers	Dominion (100%)
b3113	Rebuild approximately 1 mile of 115 kV Lines #72 and #53 to current standards with a minimum summer emergency rating of 393 MVA. The resulting summer emergency rating of Line #72 segment from Brown Boveri to Bellwood is 180 MVA. There is no change to Line #53 ratings	Dominion (100%)
b3114	Rebuild the 18.6 mile section of 115 kV Line #81 which includes 1.7 miles of double circuit Line #81 and 230 kV Line #2056. This segment of Line #81 will be rebuilt to current standards with a minimum rating of 261 MVA. Line #2056 rating will not change	Dominion (100%)
b3121	Rebuild Clubhouse – Lakeview 230 kV Line #254 with single- circuit wood pole equivalent structures at the current 230 kV standard with a minimum rating of 1047 MVA	Dominion (100%)

Required Tr	ansmission Enhancements Annual Revenue	e Requirement	Responsible Customer(s)
b3122	Rebuild Hathaway – Rocky Mount (Duke Energy Progress) 230 kV Line #2181 and Line #2058 with double circuit steel structures using double circuit conductor at current 230 kV standards with a minimum rating of 1047 MVA		Dominion (100%)
b3161.1	Split Chesterfield-Plaza 115 kV Line No. 72 by rebuilding the Brown Boveri tap line as double circuit loop in-and-out of the Brown Boveri Breaker station		Dominion (100%)
b3161.2	Install a 115 kV breaker at the Brown Boveri Breaker station. Site expansion is required to accommodate the new layout		Dominion (100%)
b3162	Acquire land and build a new 230 kV switching station (Stevensburg) with a 224 MVA, 230/115 kV transformer. Gordonsville-Remington 230 kV Line No. 2199 will be cut and connected to the new station. Remington-Mt. Run 115 kV Line No.70 and Mt. Run-Oak Green 115 kV Line No. 2 will also be cut and connected to the new station		Dominion (100%)
b3211	Rebuild the 1.3 mile section of 500 kV Line No. 569 (Loudoun – Morrisville) with single-circuit 500 kV structures at the current 500 kV standard. This will increase the rating of the line to 3424 MVA		Dominion (100%)
b3213	Install 2nd Chickahominy 500/230 kV transformer		Dominion (100%)
b3213.1	Replace the eight (8) Chickahominy 230 kV breakers with 63 kA breakers: "SC122", "205022", "209122", 210222-2", "28722", "H222", "21922" and "287T2129"		Dominion (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3223.1	Install a second 230 kV circuit with a minimum summer emergency rating of 1047 MVA between Lanexa and Northern Next substations. The second circuit will utilize the vacant arms on the double-circuit structures that are being installed on Line #224 (Lanexa – Northern Next) as part of the End-of-Life rebuild project (b3089)		Dominion (100%)
b3223.2	Expand the Northern Neck terminal from a 230 kV, 4- breaker ring bus to a 6- breaker ring bus		Dominion (100%)
b3223.3	Expand the Lanexa terminal from a 6-breaker ring bus to a breaker-and-a-half arrangement		Dominion (100%)
b3246.1	Convert 115 kV Line #172 Liberty – Lomar and 115 kV Line #197 Cannon Branch – Lomar to 230 kV to provide a new 230 kV source between Cannon Branch and Liberty. The majority of 115 kV Line #172 Liberty – Lomar and Line #197 Cannon Branch – Lomar is adequate for 230 kV operation. Rebuild 0.36 mile segment between the Lomar and Cannon Branch junction. Lines will have a summer rating of 1047MVA/1047MVA (SN/SE)		Dominion (100%)
	(SN/SE) Perform substation work for		Dominion (100%)
b3246.2	the 115 kV to 230 kV line conversion at Liberty, Wellington, Godwin, Pioneer, Sandlot and Cannon Branch		Dominion (100%)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3246.3	Extend 230 kV Line #2011 Cannon Branch – Clifton to Winters Branch by removing the existing Line #2011 termination at Cannon Branch and extending the line to Brickyard creating 230 kV Line #2011 Brickyard - Clifton. Extend a new 230 kV line between Brickyard and Winters Branch with a summer rating of 1572MVA/1572MVA (SN/SE)		Dominion (100%)
b3246.4	Perform substation work at Cannon Branch, Brickyard and Winters Branch for the 230 kV Line #2011 Cannon Branch – Clifton extension		Dominion (100%)
b3246.5	Replace the Gainesville 230 kV 40 kA breaker "216192" with a 50 kA breaker		Dominion (100%)
b3247	Replace 13 towers with galvanized steel towers on Doubs – Goose Creek 500 kV. Reconductor 3 mile section with three (3) 1351.5 ACSR 45/7. Upgrade line terminal equipment at Goose Creek substation to support the 500 kV line rebuild		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%)
	Pagional Transmission System I		DFAX Allocation: Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ir		Revenue Requirement	Responsible Customer(s)
b3262	Install a second 115 kV 33.67 MVAR cap bank at Harrisonburg substation along with a 115 kV breaker		Dominion (100%)
b3263	Cut existing 115 kV Line #5 between Bremo and Cunningham substations and loop in and out of Fork Union substation		Dominion (100%)
b3264	Install 40 kA breaker at Stuarts Draft 115 kV station and sectionalize the Doom to Dupont-Waynesboro 115 kV Line #117 into two 115 kV lines		Dominion (100%)
b3268	Build a switching station at the junction of 115 kV line #39 and 115 kV line #91 with a 115 kV capacitor bank. The switching station will be built with 230 kV structures but will operate at 115 kV		Dominion (100%)
b3300	Reconductor 230 kV Line #2172 from Brambleton to Evergreen Mills along with upgrading the line leads at Brambleton to achieve a summer emergency rating of 1574 MVA		Dominion (100%)

Required Tr	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3301	Reconductor 230 kV Line #2210 from Brambleton to Evergreen Mills along with upgrading the line leads at Brambleton to achieve a summer emergency rating of 1574 MVA		Dominion (100%)
b3302	Reconductor 230 kV Line #2213 from Cabin Run to Yardley Ridge along with upgrading the line leads at Yardley to achieve a summer emergency rating of 1574 MVA		Dominion (100%)
b3303.1	Extend a new single circuit 230 kV Line #9250 from Farmwell substation to Nimbus substation		Dominion (100%)
b3303.2	Remove Beaumeade 230 kV Line #2152 line switch		Dominion (100%)
b3304	Midlothian area improvements for 300 MW load drop relief		Dominion (100%)
b3304.1	Cut 230 kV Line #2066 at Trabue junction		Dominion (100%)
b3304.2	Reconductor idle 230 kV Line #242 (radial from Midlothian to Trabue junction) to allow a minimum summer rating of 1047 MVA and connect to the section of 230 kV Line #2066 between Trabue junction and Winterpock, re-number 230 kV Line #242 structures to Line #2066		Dominion (100%)
b3304.3	Use the section of idle 115 kV Line #153, between Midlothian and Trabue junction to connect to the section of (former) 230 kV Line #2066 between Trabue junction and Trabue to create new Midlothian – Trabue lines with new line numbers #2218 and #2219		Dominion (100%)
b3304.4	Create new line terminations at Midlothian for the new Midlothian – Trabue 230 kV lines		Dominion (100%)

Required Tr	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
	Rebuild 12.4 miles of 115 kV	•	
	line from Earleys to Kelford		
	with a summer emergency		
12004	rating of 262 MVA. Replace		
b3684	structures as needed to support		
	the new conductor. Upgrade		
	breaker switch 13668 at		
	Earleys from 1200 A to 2000 A		Dominion (100%)
	Install a 33 MVAR cap bank at		
	Cloud 115 kV bus along with a		
b3685	115 kV breaker. Add 115 kV		
05005	circuit breaker for 115 kV Line		
	#38		Dominion (100%)
	Purchase land close to the		
	bifurcation point of 115 kV		
	Line #4 (where the line is split		
	into two sections) and build a		
	new 115 kV switching station		
	called Duncan Store. The new		
b3686	switching station will require		
	space for an ultimate		
	transmission interconnection		
	consisting of a 115 kV six-		
	breaker ring bus (with three		
	breakers installed initially)		Dominion (100%)
	Rebuild approximately 15.1		
	miles line segment between		
	Bristers and Minnieville D.P.		
	with 2-768 ACSS and 4000 A		
	supporting equipment from		
	Bristers to Ox to allow for		
	future 230 kV capability of 115		
b3687	kV Line #183. The continuous		
	summer normal rating will be		
	523 MVA for line Ox –		
	Minnieville. The continuous		
	summer normal rating will be		
	786 MVA for Minnieville –		
	Bristers line		Dominion (100%)
	Reconductor approximately		
	24.42 miles of 230 kV Line		
	#2114 Remington CT– Elk		
	Run – Gainesville to achieve a		
100001	summer rating of 1574 MVA		
b3689.1	by fully reconductoring the line		
	and upgrading the wave trap		
	and substation conductor at		
	Remington CT and Gainesville		
	230 kV stations		Dominion (100%)
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Required Tr	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3689.2	Replace 230 kV breakers SC102, H302, H402 and 218302 at Brambleton substation with 4000A 80 kA breakers and associated equipment including breaker leads as necessary to address breaker duty issues identified in short circuit analysis		Dominion (100%)
b3690	Reconductor approximately 1.07 miles of 230 kV Line #2008 segment from Cub Run to Walney to achieve a summer rating of 1574 MVA. Replace line switch 200826 with a 4000A switch		Dominion (100%)
b3691	Reconductor approximately 1.4 miles of 230 kV Line #2141 from Lakeview to Carolina to achieve a summer rating of 1047 MVA		Dominion (100%)
b3692	Rebuild approximately 27.7 miles of 500 kV transmission line from Elmont to Chickahominy with current 500 kV standards construction practices to achieve a summer rating of 4330 MVA		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%) / DD (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: Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Expand substation and install	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%) /
b3693 b3693 b3693 b3693 b3693 b3693 b3693 b3693 b53693 breaker. Adjust the tap positions associated with the two 230/69 kV transformers at Harrisonburg to neutral position and lock them	DEOR (3.21%) / DE (1.35%) / 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:
Convert 115 kV Line #29 Aquia Harbour to Possum Point to 230 kV (Extended Line #2104) and swap Line #2104 and converted Line #29 at Aquia Harbour backbone termination. Upgrade terminal equipment at Possum Point to terminate converted Line #29 (now extended line #2104). (Line #29 from Fredericksburg to Aquia Harbour is being rebuilt under baseline b2981 to 230 kV standards)*Neptune Regional Transmission System, LLC	Dominion (100%)

Required T	ransmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3694.2	Upgrade Aquia Harbour terminal equipment to not limit 230 kV Line #9281 conductor rating		Dominion (100%)
b3694.3	Upgrade Fredericksburg terminal equipment by rearranging 230 kV bus configuration to terminate converted Line #29 (now becoming 9281). The project will add a new breaker at the 230 kV bay and reconfigure line termination of 230 kV Line #2157, #2090 and #2083		Dominion (100%)
b3694.4	Reconductor/rebuild approximately 7.6 miles of 230 kV Line #2104 Cranes Corner – Stafford to achieve a summer rating of 1047 MVA. Reconductor/rebuild approximately 0.34 miles of 230 kV Line #2104 Stafford – Aquia Harbour to achieve a summer rating of 1047 MVA. Upgrade terminal equipment at Cranes Corner to not limit the new conductor rating		Dominion (100%)
b3694.5	Upgrade wave trap and line leads at 230 kV Line #2090 Ladysmith CT terminal to achieve 4000A rating		Dominion (100%)

Required Tr	ansmission Enhancements Annual Re	venue Requirement	Responsible Customer(s)
	Upgrade Fuller Road substation		
	to feed Quantico substation via		
	115 kV radial line. Install four-		
	breaker ring bus and break 230		
	kV Line #252 into two new lines:		
b3694.6	1) Line #252 between Aquia		
	Harbour and Fuller Road and 2)		
	Line #9282 between Fuller Road		
	and Possum Point. Install a		
	230/115 kV transformer which		
	will serve Quantico substation		Dominion (100%)
	Energize in-service spare		
b3694.7	500/230 kV Carson Transformer		
	#1		Dominion (100%)
	Partial wreck and rebuild 10.34		
	miles of 230 kV Line #249		
	Carson – Locks to achieve a		
b3694.8	minimum summer emergency		
03094.8	rating of 1047 MVA. Upgrade		
	terminal equipment at Carson		
	and Locks stations to not limit		
	the new conductor rating		Dominion (100%)
	Wreck and rebuild 5.4 miles of		
	115 kV Line #100 Locks –		
	Harrowgate to achieve a		
	minimum summer emergency		
b3694.9	rating of 393 MVA. Upgrade		
0507117	terminal equipment at Locks and		
	Harrowgate stations to not limit		
	the new conductor rating and		
	perform Line #100 Chesterfield		$\mathbf{D}_{\mathrm{exc}}$
	terminal relay work		Dominion (100%)
	Reconductor approximately 2.9		
12004.10	miles of 230 kV Line #211		
b3694.10	Chesterfield – Hopewell to		
	achieve a minimum summer		$\mathbf{D}_{\text{eminion}}(1009/)$
	emergency rating of 1046 MVA		Dominion (100%)
	Reconductor approximately 2.9 miles of 230 kV Line #228		
h2604 11			
b3694.11	Chesterfield – Hopewell to achieve a minimum summer		
	emergency rating of 1046 MVA		Dominion (100%)
	Upgrade equipment at		
	Chesterfield 230 kV substation to		
b3694.12	not limit ratings on Line #211		
	and #228		Dominion (100%)

Required II		Revenue Requirement	Responsible Customer(s)
b3694.13	Upgrade equipment at Hopewell 230 kV substation to not limit ratings on Line #211 and #228		Dominion (100%)
b3702	Install one 13.5 Ohm series reactor to control the power flow on the 230 kV Line #2054 from Charlottesville substation to Proffit Rd. 230 kV line		AEC (1.59%) / APS (8.85%) / ATSI (5.54%) / BGE (10.79%) / ComEd (1.86%) / Dayton (0.21%) / DEOK (1.16%) / Dominion (18.99%) / DPL (3.68%) / DL (1.16%) / ECP** (0.27%) / HTP*** (0.22%) / JCPL (4.53%) / ME (1.73%) / NEPTUNE* (0.68%) / PECO (6.95%) / PENELEC (4.75%) / PEPCO (9.69%) / PPL (9.78%) / PSEG (7.28%) / RE (0.29%)
b3707.1	Reconductor approximately 0.57 mile of 115 kV Line #1021 from Harmony Village to Greys Point with 768 ACSS to achieve a summer emergency rating of 237 MVA. The current conductor is 477 ACSR		Dominion (100%)
b3707.2	Reconductor approximately 0.97 mile of 115 kV Line #65 from Rappahannock to White Stone with 768 ACSS to achieve a summer emergency rating of 237 MVA. The current conductor is 477 ACSR		Dominion (100%)
b3759	Reconductor approximately 10.5 miles of 115 kV Line #23 segment from Oak Ridge to AC2-079 Tap to minimum emergency ratings of 393 MVA Summer / 412 MVA Winter		Dominion (100%)

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 Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3779	Cut existing 230 kV line #2183 and extend from Poland Road substation to Evergreen Mills substation. Approximately 0.59 miles of new line will be built from the cut-in to the Evergreen Mills substation. Cut and extend the existing 230 kV line #2183 creating a new line #2210 from Brambleton substation to be terminated at Evergreen Mills substation. Approximately 0.59 miles of new line will be built from the cut-in to the Evergreen Mills substation		Dominion (100%)
b3800.118	Line work for terminating Doubs to Bismark line into Woodside 500 kV substation (DOM Portion)		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (21.09%) / BGE (6.55%) / Dominion (64.94%) / PEPCO (7.42%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.120	Aspen substation work to terminate the new NextEra 500 kV line. Include Aspen 500 kV substation portion build		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)
b3800.200	Build a new 500 kV line from Aspen - Golden on 500/230 kV double circuit structures with substation upgrades at Aspen and Golden. New conductor to have a minimum summer normal rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.201	Install two 500/230 kV transformer at Golden substation		Dominion (100%)
b3800.202	Install one 500/230 kV transformer at Aspen substation		Dominion (86.28%) / PEPCO (13.72%)

Required In	ansinission ennancements Annual F	te venue reequitement	Responsible Customer(s)
b3800.203	Install a second 500/230 kV 1440 MVA transformer at		
	Mars substation		Dominion (100%)
b3800.204	Reconductor 0.5 mile section of 230 kV line No. 2150 Golden - Paragon Park Circuit 1 to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.205	Reconductor 0.5 mile section of 230 kV line No. 2081 Golden - Paragon Park Circuit 2 to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.206	Upgrade Paragon Park substation line conductors to 4000A continuous current rating for 230 kV lines No. 2081 and No. 2150		Dominion (100%)
b3800.207	Reconductor 230 kV line No. 2207 Paragon Park – BECO to achieve a summer rating of 1573 MVA		Dominion (100%)
b3800.208	Upgrade Paragon Park substation conductor and line leads to 4000A continuous current rating for 230 kV line No. 2207		Dominion (100%)
b3800.209	Upgrade BECO substation equipment to 4000A continuous current rating for 230 kV line No.2207		Dominion (100%)
b3800.210	Build a new 230 kV line from Mars - Lockridge on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Mars and Lockridge substations		Dominion (100%)
b3800.211	Build a new 230 kV line from Lockridge - Golden on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Lockridge substations		Dominion (100%)

Required Tra	ansmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3800.212	Build a new 500 kV line from Mars - Golden on 500/230 kV double circuit structures with substation upgrades at Golden and Mars. New conductor to have a minimum summer normal rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.96%) / Dominion (0.04%)
b3800.213	Cut 500 kV line No. 558 Brambleton - Goose Creek into Aspen substation. Upgrade 500 kV terminal equipment at Aspen and Goose Creek to 5000A continuous rating current. At Goose Creek, replace circuit breakers 59582 and 55882, and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.39%) / Dominion (0.61%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.214	Build a new 500 kV line from Aspen - Goose Creek to achieve a summer rating of 4357 MVA. Install new 500 kV terminal equipment at Aspen		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.39%) / Dominion (0.61%)
b3800.215	Cut 230 kV line No. 2150 Sterling Park - Paragon Park Circuit 1 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2150 to 4000A continuous current rating		(0.61%) Dominion (100%)
b3800.216	Cut 230 kV line No. 2081 Sterling Park - Paragon Park Circuit 2 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2081 to 4000A continuous current rating		Dominion (100%)
b3800.217	Build a new 230 kV line from Aspen - Sycolin Creek on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek substations		Dominion (86.28%) / PEPCO (13.72%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
	Build a new 230 kV line from		
	Sycolin Creek - Golden on		
	500/230 kV double circuit		
b3800.218	structures to achieve a summer		
	rating of 1573 MVA. Install		
	230 kV equipment at Golden		
	and Sycolin Creek substations		Dominion (100%)
	Replace seven overdutied 230		
b3800.219	kV breakers at Beaumeade		
	substation with 80 kA breakers		Dominion (100%)
	Replace four overdutied 230		
b3800.220	kV breakers at BECO		
	substation with 80 kA breakers		Dominion (100%)
	Replace four overdutied 230		
b3800.221	kV breakers at Belmont		
	substation with 80 kA breakers		Dominion (100%)
	Replace one overdutied 230 kV		
b3800.222	breaker at Discovery substation		
	with 80 kA breaker		Dominion (100%)
	Replace one overdutied 230 kV		
b3800.223	breaker at Pleasant View		
	substation with 80 kA breaker		Dominion (100%)
1 2000 201	Replace two overdutied 230		
b3800.224	kV breakers at Shellhorn		$D_{\text{remining}}(1000/)$
	substation with 80 kA breakers		Dominion (100%)
			Load-Ratio Share Allocation:
			AEC (1.65%) / AEP (13.68%)
			/ APS (5.76%) / ATSI (8.04%)
			/ BGE (4.11%) / ComEd
			(13.39%) / Dayton (2.12%) /
			· · · · · · · · · · · · · · · · · · ·
			DEOK (3.25%) / DL (1.71%) /
			Dominion (13.32%) / DPL
			(2.60%) / EKPC (1.89%) /
	Change 500 kV line No. 558		JCPL (3.86%) / ME (1.90%) /
b3800.225	destination at Brambleton to		NEPTUNE* (0.42%) / OVEC
05000.225	Aspen substation and upgrade		(0.08%) / PECO (5.40%) /
	line protection relays		
			PENELEC (1.78%) / PEPCO
			(3.67%) / PPL (4.72%) / PSEG
			(6.39%) / RE (0.26%)
			DFAX Allocation:
			APS (5.20%) / DL (0.46%) /
			Dominion (91.40%) / ME
			(0.59%) / PEPCO (2.35%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	Insmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
	Change 230 kV lines No. 2081		
	and No. 2150 at Paragon Park		
b3800.226	substation destination to		
	Golden substation and upgrade		
			Dominion (100%)
	line protection relays Change 230 kV lines No. 2081		
	and No. 2150 at Sterling Park		
b3800.227	substation destination to		
	Golden substation and upgrade		
	line protection relays		Dominion (100%)
	Reconductor 1.47 miles of 230		
	kV lines No. 2081 and No.		
	2150 from Sterling Park to		
b3800.228	Golden substation. Upgrade		
	terminal equipment at Sterling		
	Park to 4000Å continuous		
	current		Dominion (100%)
	Reconductor 0.67 miles of 230		
	kV lines No. 2194 and No.		
	9231 from Davis Drive to		
	Sterling Park substation.		
b3800.229	Terminal equipment at remote		
	end substations will be		
	installed or upgraded to 4000A		
	continuous current rating to		
	support new conductor ratings		Dominion (100%)
	Reset relays at Breezy Knoll		
b3800.230	for the revised current rating of		
03000.230	230 kV line No. 2098 Pleasant		
	View - Hamilton		Dominion (100%)
	Reset relays at Dry Mill for the		
b3800.231	revised current rating of 230		
00000.201	kV line No. 2098 Pleasant		$D^{-1} (1000/)$
	View - Hamilton		Dominion (100%)
	Reset relays at Hamilton for		
b3800.232	the revised current rating of 230 kV line No. 2098 Pleasant		
			Dominion (1000/)
	View - Hamilton		Dominion (100%)
	Upgrade equipment to 4000A		
	continuous current rating at Pleasant View substation in		
	support of 230 kV line No. 2098 wreck and rebuild.		
b3800.233	Replace circuit breakers		
03800.233	274T2098 & 2098T2180 and		
	associated disconnect switches,		
	breaker leads, bus, and line		
	risers to accommodate 4000A		
	rating		Dominion (100%)
L	Tuung	1	

Required Tra		Revenue Requirement	Responsible Customer(s)
b3800.234	Wreck and rebuild approximately one mile of 230 kV line No. 2098 between Pleasant View and structure 2098/9, where line No. 2098		
	turns towards Hamilton substation Replace five overdutied 230		Dominion (100%)
b3800.235	kV breakers at Loudoun substation with 80 kA breakers		Dominion (100%)
b3800.236	Replace two overdutied 230 kV breakers at Ox substation with 63 kA breakers		Dominion (100%)
b3800.237	Replace two overdutied 230 kV breakers at Pleasant View substation with 63 kA breakers		Dominion (100%)
b3800.238	Upgrade equipment to 4000A continuous current rating at Pleasant View substation in support of 230 kV line No. 203 rebuild. Replace circuit breakers 203T274 & L3T203 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 4000A rating		APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)
b3800.239	Wreck and rebuild 230 kV line No. 203 between Pleasant View and structure 203/15 using double circuit 500/230 kV structures. The 500 kV line is from Aspen - Doubs		APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.240	Build a new 500 kV line from Aspen - Doubs using double circuit 500/230 kV structures. The 230 kV line is from Pleasant View - structure 203/15. Install terminal equipment at Aspen for a 5000A line to Doubs. This includes GIS breakers, GIS-to- AIS transition equipment, and metering CCVTs and CTs for the tie line		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (0.09%) / Dominion (99.89%) / PEPCO (0.02%)
b3800.241	Rebuild 500 kV line No. 514 from Goose Creek - Doubs using 500/230 kV double circuit structures. The new double circuit towers will accommodate 230 kV line No. 2098 between Pleasant View substation and structure 2098/9. Upgrade equipment at Goose Creek to 5000A continuous current rating in support of line No. 514 wreck and rebuild. Replace circuit breakers 514T595 & 51482 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (0.08%) / Dominion (99.90%) / PEPCO (0.02%)
b3800.242	Upgrading switches 20366M and 20369M and line leads to 4000A continuous current rating of 230 kV line No. 203 at Edwards Ferry substation		APS (11.45%) / BGE (14.14%) / Dominion (42.82%) / PEPCO (31.59%)

Required Tra	Insmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.300	Rebuild 230 kV line No. 2135 Hollymeade Junction – Cash's Corner using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project)		Dominion (100%)
b3800.301	Rebuild 230 kV line No. 2135 Cash's Corner - Gordonsville using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project)		Dominion (100%)
b3800.302	Upgrade Cash's Corner switches 213576 and 213579 and line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.303	Upgrade Gordonsville substation line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.304	Upgrade Hollymeade substation switch 213549 and line leads to 4000A continuous current rating of 230 kV line No. 2135		Dominion (100%)
b3800.305	Install one 230 kV 300 MVAR STATCOM and associated equipment at Beaumeade 230 kV substation		Dominion (100%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.306	Install one 500 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Morrisville substation. This addition will require a control house expansion to accommodate for two new panels		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.307	Install one 500 kV, 300 MVAR STATCOM and associated equipment at Mars substation		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (100%)
b3800.308	Install one 230 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Mars substation		Dominion (100%)
b3800.309	Install one 230 kV, 150 MVAR Shunt Capacitor Bank and associated equipment at Wishing Star substation		Dominion (100%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.310	Install one 500 kV, 293.8 MVAR Shunt Capacitor Bank & associated equipment at Wishing Star substation		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
			DFAX Allocation: Dominion (100%) Load-Ratio Share Allocation:
b3800.311	Rebuild 500 kV line No. 545 Bristers - Morrisville as a single circuit monopole line to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA		AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (91.07%) / PEPCO (8.93%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.312	Rebuild 500 kV line No. 569 Loudoun - Morrisville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
b3800.313	Rebuild approximately 10.29 miles 500 kV line segment of line No. 535 (Meadow Brook to Loudoun) to accommodate the new 500 kV line in the existing ROW		DFAX Allocation: APS (11.72%) / Dominion (88.28%) Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO (8.29%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.314	Rebuild approximately 4.83 miles of 500 kV line No. 546 Mosby - Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV line No. 546		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation:
			APS (41.98%) / Dominion (34.03%) / PEPCO (23.99%)
b3800.315	Rebuild approximately 4.59 miles of 500 kV line No. 590 Mosby - Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV line No. 590		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (41.98%) / Dominion (34.03%) / PEPCO (23.99%)
b3800.316	Rebuild approximately 6.17 miles of 230 kV line No. 2030 Gainesville - Mint Springs to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA	G	Dominion (100%)

Required Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.317	Rebuild approximately 1.58 miles of 230 kV line No. 2030 Mint Springs - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.318	Rebuild approximately 4.2 miles of 230 kV line No. 2045 Loudoun - North Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.319	Rebuild approximately 0.88 miles of 230 kV line No. 2045 North Star - Brambleton to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.320	Rebuild approximately 1.22 miles of 230 kV line No. 2227 Brambleton - Racefield to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.321	Rebuild approximately 3.69 miles of 230 kV line No. 2094 Racefield - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.322	Rebuild approximately 9.16 miles of 230 kV line No. 2101 Bristers - Nokesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.323	Rebuild approximately 2.89 miles of 230 kV line No. 2101 Nokesville - Vint Hill TP to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)

Required Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
b3800.324	Rebuild approximately 0.33 miles of 230 kV line No. 2101 Vint Hill TP - Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.325	Rebuild approximately 3.32 miles of 230 kV line No. 2114 Rollins Ford - Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.326	Rebuild approximately 10.09 miles of 230 kV line No. 2114 Vint Hill - Elk Run to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.327	Rebuild approximately 4.43 miles of 230 kV line No. 2140 Heathcote - Catharpin to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.328	Rebuild approximately 2.88 miles of 230 kV line No. 2140 Catharpin - Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.329	Rebuild approximately 0.25 miles of 230 kV line No. 2151 Railroad DP - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
b3800.330	Rebuild approximately 4.14 miles of 230 kV line No. 2163 Vint Hill - Liberty to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)

ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
Rebuild approximately 0.48 miles of 230 kV line No. 2176 Heathcote - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
Rebuild approximately 1.11 miles of 230 kV line No. 2222 Rollins Ford - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
Rebuild approximately 1.65 miles of 115 kV line No. 183 Bristers - Ox to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA		Dominion (100%)
kV breakers at Loudoun Substation with 80 kA breakers		Dominion (100%)
Replace one overdutied 500 kV breaker at Ox Substation with a 63 kA breaker		Dominion (100%)
Upgrade and install equipment at Bristers substation to support the new conductor 5000A rating for 500 kV line No. 545		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: Dominion (91.07%) / PEPCO (8.93%)
	Rebuild approximately 0.48 miles of 230 kV line No. 2176 Heathcote - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA Rebuild approximately 1.11 miles of 230 kV line No. 2222 Rollins Ford - Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA Rebuild approximately 1.65 miles of 115 kV line No. 183 Bristers - Ox to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA Replace four overdutied 230 kV breakers at Loudoun Substation with 80 kA breakers Replace one overdutied 500 kV breaker at Ox Substation with a 63 kA breaker	miles of 230 kV line No. 2176Heathcote - Gainesville toaccommodate the new 500 kVline in the existing ROW. Newconductor to have a summerrating of 1573 MVARebuild approximately 1.11miles of 230 kV line No. 2222Rollins Ford - Gainesville toaccommodate the new 500 kVline in the existing ROW. Newconductor to have a summerrating of 1573 MVARebuild approximately 1.65miles of 115 kV line No. 183Bristers - Ox to accommodatethe new 500 kV line in theexisting ROW. New conductorto have a summer rating of1573 MVAReplace four overdutied 230kV breakers at LoudounSubstation with 80 kA breakersReplace one overdutied 500 kVbreaker at Ox Substation with a63 kA breakerUpgrade and install equipmentat Bristers substation to supportthe new conductor 5000A

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Ira	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
	Upgrade and install equipment at Brambleton substation to		
b3800.337	support the new conductor termination. All terminal equipment for 230 kV lines No. 2045 and No. 2094 to be rated for 4000A continuous		
	current rating		Dominion (100%)
b3800.338	Revise relay settings at Dawkins Branch 230 kV station		Dominion (100%)
b3800.339	Upgrade and install equipment at Gainesville 230 kV substation to support the new conductor termination. All terminal equipment for 230 kV line No. 2030 to be rated for 4000A continuous current rating		Dominion (100%)
b3800.340	Revise relay settings at Heathcote 230 kV station		Dominion (100%)
b3800.341	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2094 Loudoun - Racefield to be rated for 4000A continuous current rating		Dominion (100%)
b3800.342	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2045 Loudoun - North Star to be rated for 4000A continuous current rating		Dominion (100%)
b3800.343	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2030 Loudoun - Mint Springs to be rated for 4000A continuous current rating		Dominion (100%)

Required Tra	ansmission Enhancements Annual I	Revenue Requirement	Responsible Customer(s)
b3800.344	Upgrade and install equipment at Loudoun substation to support the new conductor 5000A rating for 500 kV line No. 569 Loudoun - Morrisville		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (11.72%) / Dominion (88.28%)
b3800.345	Revise relay settings at 230 kV Mint Springs station		Dominion (100%)
b3800.346	Upgrade and install equipment at Morrisville substation to support the new 500 kV conductor termination. All terminal equipment to be rated for 5000A for 500 kV line No. 545 and No. 569. Upgrade 500 kV bus 2 to 5000A		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (11.72%) / Dominion (88.28%)
b3800.347	Revise relay settings at North Star 230 kV station		Dominion (100%)

		Cevenue Requirement	Responsible Customer(s)
b3800.348	Revise relay settings at Racefield 230 kV station		Dominion (100%)
b3800.349	Revise relay settings at Railroad 230 kV station		Dominion (100%)
b3800.350	Install terminal equipment at Vint Hill 500 kV substation to support a 5000A line to 500 kV Morrisville substation. Update relay settings for 230 kV lines No. 2101, No. 2163, and 500 kV line No. 535		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.79%) / Dominion (90.21%)
b3800.351	Update relay settings at Vint Hill for 230 kV line No. 2101 Vint Hill - Bristers		Dominion (100%)
b3800.352	Update relay settings at Vint Hill for 230 kV line No. 2163 Vint Hill - Liberty		Dominion (100%)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3800.353	Update relay settings at Vint Hill for 500 kV line No. 535 Vint Hill - Loudoun		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO
b3800.354	Install terminal equipment at Wishing Star 500 kV substation to support a 5000A line to Vint Hill. Update relay settings for 500 kV lines No. 546 and No. 590		(8.29%) Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (21.45%) / Dominion (78.55%)
b3800.355	Revise relay settings at Youngs Branch 230 kV station		Dominion (100%)

Required Tra	ansmission Enhancements Annual H	Revenue Requirement	Responsible Customer(s)
b3800.356	Build a new 500 kV line from Vint Hill to Wishing Star. The line will be supported on single circuit monopoles. New conductor to have a summer rating of 4357 MVA. Line length is approximately 16.59 miles		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%)
			DFAX Allocation: APS (21.45%) / Dominion (78.55%)
b3800.357	Build a new 500 kV line from Morrisville to Vint Hill. New conductor to have a summer rating of 4357 MVA. Line length is approximately 19.71 miles		Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE* (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (9.79%) / Dominion
b3800.358	Replace single unit Locks 230/115 kV 168 MVA transformer TX No.7 with new single unit transformer with a rating of 224 MVA. Lead lines at the 115 kV level will be upgraded to 2000A		(90.21%) Dominion (100%)

Required Tra	ansmission Enhancements Annual F	Revenue Requirement	Responsible Customer(s)
	Wreck and rebuild 230 kV line No. 2090 Ladysmith CT - Summit D.P. segment as a double circuit 230 kV line to		
b3800.359	achieve a summer rating of 1573 MVA. Only one circuit		
	will be wired at this stage. Upgrade circuit breaker leads, switches and line leads at Ladysmith CT to 4000A		Dominion (100%)
	Rebuild 230 kV line No. 2054		
b3800.360	Charlottesville - Proffit DP using double-circuit capable		
03800.300	500/230 kV poles. (The 500 kV circuit will not be wired as		
	kV circuit will not be wired as part of this project) Rebuild 230 kV line No. 233		Dominion (100%)
b3800.361	Charlottesville - Hydraulic Road - Barracks Road - Crozet-		
	Dooms		Dominion (100%)
b3800.362	Rebuild 230 kV line No. 291 segment from Charlottesville - Barracks Road		Dominion (100%)
b3800.363	Rebuild 230 kV line No. 291 segment from Barracks Road - Crozet		Dominion (100%)
b3800.364	Rebuild 230 kV line No. 291 segment Crozet - Dooms		Dominion (100%)
b3800.365	Hollymeade substation Relay Revision for 230 kV line No. 2054 Charlottesville - Hollymeade		Dominion (100%)
b3800.366	Upgrade the terminal equipment at 230 kV Charlottesville station to 4000A for 230 kV line No.		
	2054 (Charlottesville - Hollymeade)		Dominion (100%)
b3800.367	Proffit DP substation Relay revision for 230 kV line No. 2054 Charlottesville -		
	Hollymeade		Dominion (100%)
b3800.368	Barracks Road substation relay reset to accommodate the rebuilt line 230 kV lines No.		
	233 and No. 291		Dominion (100%)
b3800.369	Crozet substation relay reset to accommodate the rebuilt 230		
	kV lines No. 233 and No. 291		Dominion (100%)

Required Tra		Revenue Requirement	Responsible Customer(s)
b3800.370	Charlottesville 230 kV substation terminal equipment upgrade for 230 kV lines No.		
	233 and No. 291 rebuild		Dominion (100%)
b3800.371	Upgrade Hydraulic Road substation equipment for 230 kV line No. 233 and No. 291 rebuild		Dominion (100%)
b3800.372	Dooms substation terminal equipment upgrade for 230 kV line No. 233 and No. 291 rebuild		Dominion (100%)
b3800.373	Wreck and rebuild approximately 7.14 miles of 230 kV line No. 256 from St. Johns to structure 256/108 to achieve a summer rating of 1573 MVA. Line switch 25666 at St. Johns to be upgraded to 4000A		Dominion (100%)
b3800.374	Reconductor approximately 5.30 miles of 230 kV line No. 256 from Ladysmith CT to structure 256/107 to achieve a summer rating of 1573 MVA. Terminal equipment at remote end substations will be upgraded to 4000A		Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Tra	ansmission Enhancements Annual	Revenue Requirement	Responsible Customer(s)
b3800.375	Construct new Woodside – Goose Creek 500 kV line for approximately 3 miles on single circuit monopole structures within the Doubs – Goose Creek corridor. (Dominion Portion)		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 9.26%) / BGE (7.30%) / Dominion (72.31%) / PEPCO (11.13%)

Institussion Enhancements Annual r	Revenue Requirement	Responsible Customer(s)
Replace Ashburn 230 kV breaker SC432 with a breaker		
rated 63 kA		Dominion (100%)
breaker rated 80 kA		Dominion (100%)
Replace BECO 230 kV		
63 kA		Dominion (100%)
Replace Belmont 230 kV		
		Dominion (100%)
204502, 209402, 201T2045,		
		Dominion (100%)
Replace Gainesville 230 kV		
rated 80 kA		Dominion (100%)
	Replace Ashburn 230 kV breaker SC432 with a breaker rated 63 kA Replace Beaumeade 230 kV breaker 227T2152 with a breaker rated 80 kA Replace BECO 230 kV breakers 215012 and H12T2150 with breakers rated 63 kA Replace Belmont 230 kV breaker 227T2180 with a breaker rated 80 kA Replace Brambleton 230 kV breakers 20102, 20602, 204502, 209402, 201T2045, 206T2094 with breakers rated 80 kA Replace Gainesville 230 kV breaker 216192 with a breaker	breaker SC432 with a breaker rated 63 kA Replace Beaumeade 230 kV breaker 227T2152 with a breaker rated 80 kA Replace BECO 230 kV breakers 215012 and H12T2150 with breakers rated 63 kA Replace Belmont 230 kV breaker 227T2180 with a breaker rated 80 kA Replace Brambleton 230 kV breakers 20102, 20602, 204502, 209402, 201T2045, 206T2094 with breakers rated 80 kA Replace Gainesville 230 kV breaker 216192 with a breaker

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Inc		Revenue Requirement	Responsible Customer(s)
	Replace Loudoun 230 kV		
b3800.407	breakers 204552, 217352 with		
	breakers rated 80 kA		Dominion (100%)
	Replace Ox 230 kV breakers		
	22042, 24342, 24842,		
b3800.408	220T2063, 243T2097,		
	248T2013, H342 with breakers		
	rated 80 kA		Dominion (100%)
	Replace Paragon Park 230 kV		
b3800.409	breakers 208132, 215032,		
03000.407	2081T2206, 2150T2207 with		
	breakers rated 80 kA		Dominion (100%)
	Replace Reston 230 kV		
b3800.410	breaker 264T2015 with a		
	breaker rated 63 kA		Dominion (100%)
	Replace Stonewater 230 kV		
b3800.411	breakers 20662-1, 20662-2,		
00000.111	217862-1, 217862-2 with		
	breakers rated 80 kA		Dominion (100%)
	Replace Waxpool 230 kV		
b3800.412	breakers 214922-5, 214922-6,		
	216622-5, 216622-6 with		\mathbf{D} amining (1000/)
	breakers rated 63 kA		Dominion (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%) /
	Rebuild approximately 13.51		DPL (2.55%) / Dominion
	miles of 500 kV Line #588		(13.89%) / EKPC (2.35%) /
b3850.1	from structure 588/184 inside		JCPL (3.59%) / ME (1.81%) /
	Yadkin substation to structure 588/254 outside of Fentress		NEPTUNE* (0.42%) / OVEC
	substation		(0.06%) / PECO (5.11%) /
	substation		
			PENELEC (1.73%) / PEPCO
			(3.68%) / PPL (4.43%) / PSEG
			(5.99%) / RE (0.24%)
			DFAX Allocation:
*NI			Dominion (100%)

Required Transmission Enhancements Annual Revenue Requirement Responsible Customer(s)

Required Transmission Enhancements Annual Revenue Requirement			Responsible Customer(s)
b3850.2	Line No. 588 terminal equipment at Yadkin substation will be upgraded to a rating of 5000A. Since the new 500 kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated		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: Dominion (100%)
b3850.3	At Fentress substation, since the new 500 kV line will be using fiber, the wave trap will be removed and the line protection scheme will be updated		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: Dominion (100%)

Required Hanshinssion Enhancements Annual Revenue Requirement			Responsible Cusionici(s)
b3853.1	Replace over duty Ladysmith CT 230 kV circuit breakers SX1272 and SX3472 with an interrupting rating of 63 kA		Dominion (100%)
b3854.1	Replace over duty Carson 230 kV circuit breakers 200272 and 24972-3 with an interrupting rating of 63 kA		Dominion (100%)