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October 31, 2019

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

Re: PJM Interconnection, L.L.C., Docket No. ER20-262-000
[30-Day Comment Period Requested]

Dear Secretary Bose:

In accordance with PJM Open Access Transmission Tariff, Schedule 12 ("Tariff" or "Schedule 12")[1] and Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., Schedule 6, section 1.6 ("Operating Agreement" or "Schedule 6"), and pursuant to section 205 of the Federal Power Act,[2] PJM Interconnection, L.L.C. ("PJM") hereby submits amendments to the Tariff, Schedule 12-Appendix A to incorporate cost responsibility assignments for 21 baseline upgrades in the recent update to the Regional Transmission Expansion Plan ("RTEP") approved by the PJM Board of Managers ("PJM Board") on October 1, 2019.[3] PJM requests that the revised Tariff sections become effective on January 29, 2020, **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 ("RAA").

[2] 16 U.S.C, section 824d.

[3] Of the 21 baseline upgrades approved by the PJM Board on October 1, 2019, 19 baseline upgrades are incorporated in the update to the RTEP as new baseline upgrades.

I. DESCRIPTION OF FILING

A. Description of the PJM Board Approved Updated RTEP Upgrades

On October 1, 2019, the PJM Board approved changes to the RTEP, which included approximately $ 266 million in additional baseline transmission enhancements and expansions. With these approvals, the PJM Board has authorized a total of more than $ 39 billion in investments since 2000.

B. Schedule 12 Requirements to Designate Cost Responsibility Assignments

This filing represents PJM's fiftieth filing of cost responsibility assignments for new RTEP baseline upgrades since the Federal Energy Regulatory Commission ("Commission") directed such filings under Schedule 12. Pursuant to 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.[4] Similarly, 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 Schedule 12-Appendix A, and in a report filed with the Commission, the "Responsible Customers" that will be subject to charges related to transmission enhancements and expansions included in the RTEP.[5]

Schedule 12 further provides that customers designated to be responsible for assignments of cost responsibility 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.[6]

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[4] *See* Tariff, Schedule 12, section (b)(viii) (PJM "shall designate in the Schedule 12-Appendix A . . . the cost responsibility assignments determined pursuant to this Schedule 12").

[5] *Id.*; *See also* Operating Agreement, Schedule 6, section 1.6.

[6] *See* Tariff, Schedule 12, section (b)(viii).

C. Description of Proposed Amendments to Schedule 12-Appendix A

On March 22, 2013, the Commission accepted revisions to Schedule 12 modifying the cost allocation methodologies for transmission projects included in the RTEP.[7] These revisions were filed by the PJM Transmission Owners in compliance with Order No. 1000 and revised the methodologies for allocating cost responsibility for all RTEP transmission expansions, including reliability and economic projects, replacement projects, and high voltage direct current transmission projects. These revisions only apply to the cost allocations for projects included in the RTEP on a prospective basis and do not disturb the cost allocations for projects previously included in the RTEP. Therefore, the cost responsibility assignments for RTEP projects approved after the March 22 Order are segregated in a separate appendix from the previously-approved cost responsibility assignments for RTEP upgrades. Going forward, cost responsibility assignments for all new RTEP projects are located in Schedule 12-Appendix A.

On August 30, 2019, the Commission issued an Order on Remand[8] rejecting the PJM Transmission Owners revisions to add to the Schedule 12, a new section (b)(xv) which assigned 100 percent of cost responsibility for projects included in the PJM RTEP solely to address a PJM Transmission Owner's Form No. 715 planning criteria to the transmission zone of the Transmission Owner who filed such criteria ("2015 PJM Transmission Owner Tariff Revision"). On September 27, 2019, the PJM Transmission Owners submitted in compliance with the Order on Remand a filing revising Schedule 12 to remove section (b)(xv) from the Tariff, Schedule 12. Consistent with the Order on Remand, the PJM Transmission Owners requested such revision be

[7] *PJM Interconnection, L.L.C., et al.*, 142 FERC ¶ 61,214 at PP 411, 448 (2013) ("March 22 Order").

[8] *PJM Interconnection, L.L.C.*, 168 FERC ¶ 61,133 (Aug. 30, 2019) ("August 30 Order on Remand").

made effective on May 25, 2015.[9] Seventeen of the projects approved by the PJM Board on October 1, 2019, were identified as needed to address Form No. 715 criteria.[10] Accordingly, as described in more detail below, PJM has assigned cost responsibility for those projects as reliability projects.[11]

As required by Schedule 12, PJM hereby submits amendments to Schedule 12-Appendix A to include the new cost responsibility assignments for RTEP upgrades approved by the PJM Board on October 1, 2019.[12] The revised Tariff sections containing new language, including new cost responsibility assignments, are reflected in redline and clean format in Attachments B and C, respectively, to this transmittal letter.[13]

1. Assignment of Cost Responsibility for Regional Facilities

The new transmission enhancements or expansions included in this most recent update to the RTEP approved by the PJM Board on October 1, 2019, are not Regional Facilities.[14] Thus, PJM does not include any cost responsibility assignments for such facilities in Schedule 12-Appendix A with this filing.

[9] *Appalachian Power Co.*, Schedule 12 Compliance Filing, Docket No. ER15-1387-006 at 3 (Sept. 27, 2019) ("September 27 Filing").

[10] The following seventeen enhancements and expansions approved by the PJM Board on October 1, 2019 addressing Form No. 715 criteria include: b3119.1, b3119.2, b3119.3, b3121, b3122, b3130, b3130.1 through b3130.10 and b3210.

[11] August 30 Order on Remand at P 4.

[12] *See* Tariff, Schedule 12, section (b)(viii).

[13] 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.

[14] 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 as defined in PJM Tariff, Schedule 12, section (b)(i).

2. Assignments of Cost Responsibility for Lower Voltage Facilities Needed for Reliability

a. Cost Responsibility Assignments that Address Transmission Enhancements Costing More than $5 Million and Require DFAX Analysis

Consistent with the 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").[15] Four (4) enhancements or expansions[16] included in this filing, approved by the PJM Board on October 1, 2019, are Lower Voltage Facilities required to address reliability needs for which PJM applied the solution-based DFAX analysis described in the Tariff, Schedule 12, section (b)(iii).

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

By order dated August 26, 2016,[17] the Commission accepted, subject to condition, PJM's April 1, 2016 filing exempting from PJM's competitive proposal window process, except under certain circumstances, reliability violations on transmission facilities operating below 200 kV.[18] In its September 26, 2016 compliance filing, PJM, as authorized by the PJM Transmission Owners acting through the Consolidated Transmission Owners Agreement, proposed to amend Schedule 12 to include a new Tariff, Schedule 12, section (b)(xvi), to provide that solutions for

[15] *See* Tariff, Schedule 12, section (b)(ii)(A) ("If the Lower Voltage Facility is a Reliability Project, [PJM] shall use the DFAX analysis described in section (b)(iii) of this Schedule 12 . . . .").

[16] The Lower Voltage Facilities include: b2996.1, b2996.2, b3121 and b3122. It is important to note that b2996.1 and b2996.2 are not new projects. They are new sub-IDs to b2996 and are being allocated consistent with b2996, which was previously included in Schedule 12-Appendix A.

[17] *PJM Interconnection, L.L.C.*, 156 FERC ¶ 61,132 (Aug. 26, 2016) ("August 26 Order").

[18] *PJM Interconnection, L.L.C.*, Revisions to PJM Operating Agreement, Schedule 6, Section 1.5 (Lower Voltage Facilities Threshold), Docket No. ER16-1335-000 (April 1, 2016).

reliability violations on a facility operating at or below 200 kV not included in a competitive proposal window pursuant to Schedule 6, section 1.5.8(c) will be allocated 100 percent to the zone in which the transmission facilities are located. On February 2, 2017, the Commission accepted, effective August 26, 2016, the proposed revisions to both the Tariff, Schedule 12 and the PJM Operating Agreement, Schedule 6.

Consistent with Tariff, Schedule 12, section (b)(xvi), PJM proposes revisions to Schedule 12-Appendix A to include cost responsibility assignments 100 percent to the zone in which the facilities are to be located for fifteen (15) reliability enhancements to address reliability violations on transmission facilities operating at or below 200 kV that were not included in a competitive proposal window.[19]

c. Cost Responsibility Assignments that Address Transmission Enhancements Costing Less than $5 Million

Schedule 12, section (b)(vi) provides that, notwithstanding 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 Schedule 12, section (b)(vi), PJM proposes revisions to Schedule 12-Appendix A to include cost responsibility assignments for two (2) enhancements or expansions needed for reliability.[20] Therefore, consistent with Schedule 12, section (b)(vi), cost

[19] The following upgrades are transmission facilities operating at or below 200 kV that were not included in a competitive proposal window: b3119.1, b3119.2, b3119.3, b3130, b3130.1, b3130.2, b3130.3, b3130.4, b3130.5, b3130.6, b3130.7, b3130.8, b3130.9, b3130.10 and b3210.

[20] The Lower Voltage Facilities allocated pursuant to Schedule 12, section (b)(vi) include the following reliability upgrade: b3127 and 3128.

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.

D. Cost Responsibility Assignment Summary

For informational purposes, PJM also includes as Attachment A to this transmittal letter a Cost Responsibility Assignment Summary for the enhancements or expansions approved by the PJM Board on October 1, 2019. 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

The Tariff, Schedule 12 section (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 30 days from the date of this filing, *i.e.*, December 2, 2019.[21] To accommodate such a comment date, PJM requests an effective date of January 29, 2020 (90 days from the date of this filing) for all revised Tariff sections submitted in this docket.[22]

[21] Since November 30, 2019 falls on a Saturday, comments are due on Monday, December 2, 2019. *See* 18 C.F.R. § 385.2007(a)(2) (2019).

[22] *See, e.g., PJM Interconnection, L.L.C., Errata* Notice of Extending Comment Period, Docket Nos. ER06-456-018, *et al*. (Dec. 2, 2008) (granting extension of time for filing protests or comments to accommodate Schedule 12 of the PJM Tariff); *PJM Interconnection, L.L.C., Errata* Notice Extending Comment Date, Docket No. ER08-229-000 (Nov. 30, 2007) (same); *PJM Interconnection, L.L.C.*, Notice Extending Comment Date, Docket No. ER07-1186- 000 (July 31, 2007) (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 (in clean form).

IV. CORRESPONDENCE AND COMMUNICATIONS

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

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V. SERVICE

PJM has served a copy of this filing on all PJM Members and on the affected state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,[23] PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx 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

[23] *See* 18 C.F.R. sections 35.2(e) and 385.201(f)(3) (2019).

the PJM Region[24] alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within twenty-four hours of the filing. Also, a copy of this filing will be available on the Commission's eLibrary website located at the following link: http:/www.ferc.gov/docs-filing/elibrary.asp in accordance with the Commission's regulations and Order No. 714.

Respectfully submitted,

By: _____

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[24] PJM already maintains, updates, and regularly uses electronic mailing lists for all PJM Members and affected state commissions.

Attachment A

Cost Responsibility Assignment Summary Sheets

Baseline Upgrade b3119.1

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - North Portland, Trinity, Berne, South Berne, Monroe and S. Decatur drop below 0.92 PU
  - Contingency: Loss of Bluff Point – Portland 69kV and Adams – Berne 69kV lines
  - Criteria test: AEP Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Rebuild the Jay – Pennville 138 kV line as double circuit 138/69 kV. Build a new 9.8 mile single circuit 69 kV line from near Pennville station to North Portland station
  - Required Upgrade In-Service Date: June 01, 2022
  - Estimated Upgrade Cost: $ 38.10 M
  - Construction Responsibility: AEP
- Cost Allocation
  - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP

Baseline Upgrade b3119.2

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - North Portland, Trinity, Berne, South Berne, Monroe and S. Decatur drop below 0.92 PU
  - Contingency: Loss of Bluff Point – Portland 69kV and Adams – Berne 69kV lines
  - Criteria test: AEP Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Install three (3) 69 kV breakers to create the “U” string and add a low side breaker on the Jay transformer 2
  - Required Upgrade In-Service Date: June 01, 2022
  - Estimated Upgrade Cost: $ 3.40 M
  - Construction Responsibility: AEP
- Cost Allocation
  - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP

Baseline Upgrade b3119.3

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - North Portland, Trinity, Berne, South Berne, Monroe and S. Decatur drop below 0.92 PU
  - Contingency: Loss of Bluff Point – Portland 69kV and Adams – Berne 69kV lines
  - Criteria test: AEP Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Install two (2) 69 kV breakers at North Portland station to complete the ring and allow for the new line
  - Required Upgrade In-Service Date: June 01, 2022
  - Estimated Upgrade Cost: $ 1.90 M
  - Construction Responsibility: AEP
- Cost Allocation
  - The driver for this upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP

Baseline Upgrade b3121

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Loss of Line #254 results in thermal overloads in accordance with P1, P2, P4, P6 and P7 criteria violations.
  - Contingency: Loss of 230 kV Line #254
  - Criteria test: Dominion FERC 715 Criteria
- Overview of Reliability Solution
  - Description of Upgrade: 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
  - Required Upgrade In-Service Date: June 01, 2019
  - Estimated Upgrade Cost: $ 27.00 M
  - Construction Responsibility: Dominion
- Cost Allocation
  - No zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to Dominion

Baseline Upgrade b3122

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - With Lines #2181 and #2058 removed from service, N-1 loss of Line #218 Everetts – Greensville (Duke Energy Progress) overloads Line #123 Battleboro – Rocky Mount (Duke Energy Progress) (NERC Category P1 – Single Contingency).
  - Contingency: Loss of 230kV Line #2058 and Line #2181
  - Criteria test: Dominion FERC 715 Criteria
- Overview of Reliability Solution
  - Description of Upgrade: 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
  - Required Upgrade In-Service Date: June 01, 2019
  - Estimated Upgrade Cost: $ 13.00 M
  - Construction Responsibility: Dominion
- Cost Allocation
  - No zone has greater than 1% distribution factor. The cost for this baseline upgrade is allocated 100% to Dominion

Baseline Upgrade b3127

- Overview of Reliability Problem
  - Criteria Violation:
  - Contingency:
  - Criteria test: Generator Deactivation

- Overview of Reliability Solution
  - Description of Upgrade: At Bay Shore 138 kV station: Install new switchyard power supply to separate from existing generating station power service, separate all communications circuits, and construct a new station access road
  - Required Upgrade In-Service Date: December 31, 2021
  - Estimated Upgrade Cost: $ 1.50 M
  - Construction Responsibility: ATSI
- Cost Allocation
  - The cost for this baseline upgrade is allocated 100% to ATSI

Baseline Upgrade b3128

- Overview of Reliability Problem
  - Criteria Violation:
  - Contingency:
  - Criteria test: Generator Deactivation

- Overview of Reliability Solution
  - Description of Upgrade: Relocate 34.5 kV lines from generating station roof R. Paul Smith 138 kV station
  - Required Upgrade In-Service Date: December 31, 2021
  - Estimated Upgrade Cost: $ 0.40 M
  - Construction Responsibility: APS
- Cost Allocation
  - The cost for this baseline upgrade is allocated 100% to APS

Baseline Upgrade b3130

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: First Energy Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct seven new 34.5 kV circuits on existing pole lines (total of 53.5 miles), rebuild/reconductor two 34.5 kV circuits (total of 5.5 miles) and install a second 115/34.5 kV transformer (Werner)
  - Required Upgrade In-Service Date: June 01, 2016 (this upgrade replaces a previously approved project and the criteria violation has existed since Jun 01, 2016)
  - Estimated Upgrade Cost: $ 175.00 M
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.1

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Oceanview to Allenhurst 34.5 kV (4 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.2

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Atlantic to Red Bank 34.5 kV (12 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.3

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Freneau to Taylor Lane 34.5 kV (6.5 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.4

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Keyport to Belford 34.5 kV (6 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.5

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Red Bank to Belford 34.5 kV (5 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.6

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Werner to Clark Street (7 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.7

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Construct a new 34.5 kV circuit from Atlantic to Freneau (13 miles)
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.8

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Rebuild/reconductor the Atlantic - Camp Woods Switch Point (3.5 miles) 34.5 kV circuit
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.9

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Rebuild/reconductor the Allenhurst - Elberon (2 miles) 34.5 kV circuit
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3130.10

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Potential local voltage collapse on the 34.5 kV system
  - Contingency: Loss of the Atlantic - Red Bank S1033 and T2020 230 kV lines
  - Criteria test: FE Planning Criteria
- Overview of Reliability Solution
  - Description of Upgrade: Install 2nd 115/34.5 kV transformer at Werner substation
  - Required Upgrade In-Service Date: June 01, 2016
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b3130
  - Construction Responsibility: JCPL
- Cost Allocation
  - Baseline upgrades b3130 through b3130.10 constitute a single reliability project. The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to JCPL

Baseline Upgrade b3210

- Overview of Reliability Problem
  - Criteria Violation: FERC Form 715 Criteria Violation - Overload of the Beatty-Galloway 69 kV line
  - Contingency: loss of the Trabue 138/69 kV transformer No.3 or Nautilus – Trabue 69 kV circuit
  - Criteria test: N-1-0
- Overview of Reliability Solution
  - Description of Upgrade: Replace approx. 0.7 mile Beatty - Galloway 69 kV line with 4000 kcmil XLPE cable
  - Required Upgrade In-Service Date: June 01, 2023
  - Estimated Upgrade Cost: $ 5.30 M
  - Construction Responsibility: AEP
- Cost Allocation
  - The driver for the upgrade is less than 200 kV. The cost for this baseline upgrade is allocated 100% to AEP

Baseline Upgrade b2996.1

- Overview of Reliability Problem
  - Criteria Violation: To serve additional load
  - Contingency: Multiple 138 kV thermal and voltage contingencies
  - Criteria test: Generator Deliverability, N-1 Thermal and Voltage

- Overview of Reliability Solution
  - Description of Upgrade: 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 from Waldo Run substation. Construct an 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
  - Required Upgrade In-Service Date: June 01, 2019
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b2996 which is currently in Schedule 12 – Appendix A.
  - Construction Responsibility: APS
- Cost Allocation
  - The cost for this baseline upgrade is allocated 100% to APS consistent with the allocation of upgrade b2996 which is currently in Schedule 12 – Appendix A

Baseline Upgrade b2996.2

- Overview of Reliability Problem
  - Criteria Violation: To serve additional load
  - Contingency: Multiple 138 kV thermal and voltage contingencies
  - Criteria test: Generator Deliverability, N-1 Thermal and Voltage

- Overview of Reliability Solution
  - Description of Upgrade: Loop the Belmont - Harrison 500 kV line into and out of the new Flint Run 500 kV substation (less than 1 mile). Replace primary relaying and carrier sets on Belmont and Harrison 500 kV remote end substations
  - Required Upgrade In-Service Date: June 01, 2019
  - Estimated Upgrade Cost: The cost estimate for this upgrade is included in the cost estimate for upgrade b2996 which is currently in Schedule 12 – Appendix A.
  - Construction Responsibility: APS
- Cost Allocation
  - The cost for this baseline upgrade is allocated 100% to APS consistent with the allocation of upgrade b2996 which is currently in Schedule 12 – Appendix A

Attachment B

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

(Marked / Redline Format)

SCHEDULE 12 – APPENDIX A

(4) Jersey Central Power & Light Company

Required Transmission Enhancements	Annual Revenue Requirement		Responsible Customer(s)
b2234	260 MVAR reactor at West Wharton 230 kV		JCPL (100%)
b2270	Advance Raritan River - Replace G1047E breaker at the 230kV Substation		JCPL (100%)
b2271	Advance Raritan River - Replace G1047F breaker at the 230kV Substation		JCPL (100%)
b2272	Advance Raritan River - Replace T1034E breaker at the 230kV Substation		JCPL (100%)
b2273	Advance Raritan River - Replace T1034F breaker at the 230kV Substation		JCPL (100%)
b2274	Advance Raritan River - Replace I1023E breaker at the 230kV Substation		JCPL (100%)
b2275	Advance Raritan River - Replace I1023F breaker at the 230kV Substation		JCPL (100%)
b2289	Freneau Substation - upgrade 2.5 inch pipe to bundled 1590 ACSR conductor at the K1025 230 kV Line Terminal		JCPL (100%)
b2292	Replace the Whippany 230 kV breaker B1 (CAP) with 63kA breaker		JCPL (100%)
b2357	Replace the East Windsor 230 kV breaker 'E1' with 63kA breaker		JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2495	Replace transformer leads on the Glen Gardner 230/34.5 kV #1 transformer		JCPL (100%)
b2496	Replace Franklin 115/34.5 kV transformer #2 with 90 MVA transformer		JCPL (100%)
b2497	Reconductor 0.9 miles of the Captive Plastics to Morris Park 34.5 kV circuit (397ACSR) with 556 ACSR		JCPL (100%)
b2498	Extend 5.8 miles of 34.5 kV circuit from North Branch substation to Lebanon substation with 397 ACSR and install 34.5 kV breaker at Lebanon substation		JCPL (100%)
b2500	Upgrade terminal equipment at Monroe on the Englishtown to Monroe (H34) 34.5 kV circuit		JCPL (100%)
b2570	Upgrade limiting terminal facilities at Feneau, Parlin, and Williams substations		JCPL (100%)
b2571	Upgrade the limiting terminal facilities at both Jackson and North Hanover		JCPL (100%)
b2586	Upgrade the V74 34.5 kV transmission line between Allenhurst and Elberon Substations		JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2633.6	Implement high speed relaying utilizing OPGW on Deans – East Windsor 500 kV		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)
b2633.6.1	Implement high speed relaying utilizing OPGW on East Windsor - New Freedom 500 kV		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2676	Install one (1) 72 MVAR fast switched capacitor at the Englishtown 230 kV substation	JCPL (100%)
b2708	Replace the Oceanview 230/34.5 kV transformer #1	JCPL (100%)
b2709	Replace the Deep Run 230/34.5 kV transformer #1	JCPL (100%)
b2754.2	Install 5 miles of optical ground wire (OPGW) between Gilbert and Springfield 230 kV substations	JCPL (100%)
b2754.3	Install 7 miles of all-dielectric self-supporting (ADSS) fiber optic cable between Morris Park and Northwood 230 kV substations	JCPL (100%)
b2754.6	Upgrade relaying at Morris Park 230 kV	JCPL (100%)
b2754.7	Upgrade relaying at Gilbert 230 kV	JCPL (100%)
b2809	Install a bypass switch at Mount Pleasant 34.5 kV substation to allow the Mount Pleasant substation load to be removed from the N14 line and transfer to O769 line	JCPL (100%)
b3023	Replace West Wharton 115 kV breakers ‘G943A’ and ‘G943B’ with 40kA breakers	JCPL (100%)
b3042	Replace substation conductor at Raritan River 230 kV substation on the Kilmer line terminal	JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3130	Construct seven new 34.5 kV circuits on existing pole lines (total of 53.5 miles), rebuild/reconductor two 34.5 kV circuits (total of 5.5 miles) and install a second 115/34.5 kV transformer (Werner)		JCPL (100%)
b3130.1	Construct a new 34.5 kV circuit from Oceanview to Allenhurst 34.5 kV (4 miles)		JCPL (100%)
b3130.2	Construct a new 34.5 kV circuit from Atlantic to Red Bank 34.5 kV (12 miles)		JCPL (100%)
b3130.3	Construct a new 34.5 kV circuit from Freneau to Taylor Lane 34.5 kV (6.5 miles)		JCPL (100%)
b3130.4	Construct a new 34.5 kV circuit from Keyport to Belford 34.5 kV (6 miles)		JCPL (100%)
b3130.5	Construct a new 34.5 kV circuit from Red Bank to Belford 34.5 kV (5 miles)		JCPL (100%)
b3130.6	Construct a new 34.5 kV circuit from Werner to Clark Street (7 miles)		JCPL (100%)
b3130.7	Construct a new 34.5 kV circuit from Atlantic to Freneau (13 miles)		JCPL (100%)
b3130.8	Rebuild/reconductor the Atlantic – Camp Woods Switch Point (3.5 miles) 34.5 kV circuit		JCPL (100%)
b3130.9	Rebuild/reconductor the Allenhurst – Elberon (2 miles) 34.5 kV circuit		JCPL (100%)
b3130.10	Install 2nd 115/34.5 kV transformer at Werner		JCPL (100%)

	substation		

SCHEDULE 12 – APPENDIX A

(14) Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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 facilitate removal of the equipment at Willow Island switching station		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		APS (100%)
b2268	Reconductor 6.8 miles of 138kV 336 ACSR with 336 ACSS from Double Toll Gate to Riverton		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 Corner 138 kV Substation		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		APS (100%)
b2343	Install a 31.7 MVAR capacitor at West Union 138 kV substation		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2362	Install a 250 MVAR SVC at Squab Hollow 230 kV		APS (100%)
b2362.1	Install a 230 kV breaker at Squab Hollow 230 kV substation		APS (100%)
b2363	Convert the Shingletown 230 kV bus into a 6 breaker ring bus		APS (100%)
b2364	Install a new 230/138 kV transformer at Squab Hollow 230 kV substation. Loop the Forest - Elko 230 kV line into Squab Hollow. Loop the Brookville - Elko 138 kV line into Squab Hollow		APS (100%)
b2412	Install a 44 MVAR 138 kV capacitor at the Hempfield 138 kV substation		APS (100%)
b2433.1	Install breaker and a half 138 kV substation (Waldo Run) with 4 breakers to accommodate service to MarkWest Sherwood Facility including metering which is cut into Glen Falls Lamberton 138 kV line		APS (100%)
b2433.2	Install a 70 MVAR SVC at the new WaldoRun 138 kV substation		APS (100%)
b2433.3	Install two 31.7 MVAR capacitors at the new WaldoRun 138 kV substation		APS (100%)
b2424	Replace the Weirton 138 kV breaker 'WYLIE RID210' with 63 kA breakers		APS (100%)
b2425	Replace the Weirton 138 kV breaker 'WYLIE RID216' with 63 kA breakers		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2426	Replace the Oak Grove 138 kV breaker 'OG1' with 63 kA breakers		APS (100%)
b2427	Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakers		APS (100%)
b2428	Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakers		APS (100%)
b2429	Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakers		APS (100%)
b2430	Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakers		APS (100%)
b2431	Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakers		APS (100%)
b2432	Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA rated breaker		APS (100%)
b2440	Replace the Cabot 138kV breaker 'C9-KISKI VLY' with 63kA		APS (100%)
b2472	Replace the Ringgold 138 kV breaker ‘RCM1’ with 40kA breakers		APS (100%)
b2473	Replace the Ringgold 138 kV breaker ‘#4 XMFR’ with 40kA breakers		APS (100%)
b2475	Construct a new line between Oak Mound 138 kV substation and Waldo Run 138 kV substation		APS (100%)
b2545.1	Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island (84) 138 kV line		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2545.2	Install a ring bus station with five active positions and two 52.8 MVAR capacitors with 0.941 mH 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 capacitor bank at Mobley 138 kV		APS (100%)
b2546	Install a 51.8 MVAR (rated) 138 kV capacitor at Nyswaner 138 kV substation		APS (100%)
b2547.1	Construct a new 138 kV six breaker ring bus Hillman substation		APS (100%)
b2547.2	Loop Smith- Imperial 138 kV line into the new Hillman substation		APS (100%)
b2547.3	Install +125/-75 MVAR SVC at Hillman substation		APS (100%)
b2547.4	Install two 31.7 MVAR 138 kV capacitors		APS (100%)
b2548	Eliminate clearance de-rate on Wylie Ridge – Smith 138 kV line 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 and the 138 kV line to AE units 1&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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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%)
b2666.3	Replace Yukon 138 kV breaker "Y-18(CHARL2)" with an 80 kA breaker		APS (100%)
b2666.4	Replace Yukon 138 kV breaker "Y-19(CHARL2)" with an 80 kA breaker		APS (100%)
b2666.5	Replace Yukon 138 kV breaker "Y-4(4B-2BUS)" with an 80 kA breaker		APS (100%)
b2666.6	Replace Yukon 138 kV breaker "Y-5(LAYTON)" with an 80 kA breaker		APS (100%)
b2666.7	Replace Yukon 138 kV breaker "Y-8(HUNTING)" with an 80 kA breaker		APS (100%)
b2666.8	Replace Yukon 138 kV breaker "Y-9(SPRINGD)" with an 80 kA breaker		APS (100%)
b2666.9	Replace Yukon 138 kV breaker "Y-10(CHRL-SP)" with an 80 kA breaker		APS (100%)
b2666.10	Replace Yukon 138 kV 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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2666.12	Replace Yukon 138 kV 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%)
b2666.14	Replace Yukon 138 kV breaker "Y-22(SHEPHJT)" with an 80 kA breaker		APS (100%)
b2672	Change CT Ratio at Seneca Caverns from 120/1 to 160/1 and adjust relay settings accordingly		APS (100%)
b2688.3	Carroll Substation: Replace the Germantown 138 kV wave trap, upgrade the bus conductor and adjust CT ratios		AEP (12.91%) / APS (19.04%) / ATSI (1.24%) / ComEd (0.35%) / Dayton (1.45%) / DEOK (2.30%) / DL (1.11%) / Dominion (44.85%) / EKPC (0.78%) / PEPCO (15.85%) / RECO (0.12%)
b2689.3	Upgrade terminal equipment at structure 27A		APS (100%)
b2696	Upgrade 138 kV substation equipment at Butler, Shanor Manor and Krendale 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	Reconfigure the Ringgold 230 kV substation to double bus double breaker scheme		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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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		DL (100%)
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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2970.5	*Convert Garfield 138/12.5 kV substation to 230/12.5 kV*		*APS (100%)*
b2996	Construct new Flint Run 500/138 kV substation		See sub-IDs for cost allocations
b2996.1	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 from Waldo Run substation. ~~Replace primary relaying and carrier sets on Belmont and Harrison 500 kV Remote End substations.~~ 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%)
b2996.2	Loop the Belmont – Harrison 500 kV line into and out of the new Flint Run 500 kV substation (less than 1 mile). Replace primary relaying and carrier sets on Belmont and Harrison 500 kV remote end substations		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3005	Reconductor 3.1 mile 556 ACSR portion of Cabot to Butler 138 kV with 556 ACSS and upgrade terminal equipment. 3.1 miles of line will be reconductored for this project. The total length of the line is 7.75 miles		APS (100%)
b3006	Replace four Yukon 500/138 kV transformers with three transformers with higher rating and reconfigure 500 kV bus		APS (52.84%) / DL (47.16%)
b3007.1	Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment - AP portion. 4.8 miles total. The new conductor will be 636 ACSS replacing the existing 636 ACSR conductor. At Social Hall, meters, relays, bus conductor, a wave trap, circuit breaker and disconnects will be replaced		APS (100%)
b3010	Replace terminal equipment at Keystone and Cabot 500 kV buses. At Keystone, bus tubing and conductor, a wave trap, and meter will be replaced. At Cabot, a wave trap and bus conductor will be replaced		APS (100%)
b3011.1	Construct new Route 51 substation and connect 10 138 kV lines to new substation		DL (100%)
b3011.2	Upgrade terminal equipment at Yukon to increase rating on Yukon to Charleroi #2 138 kV line (New Yukon to Route 51 #4 138 kV line)		DL (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements	*Annual Revenue Requirement*		*Responsible Customer(s)*
b3013	Reconductor Vasco Tap to Edgewater Tap 138 kV line. 4.4 miles. The new conductor will be 336 ACSS replacing the existing 336 ACSR conductor		APS (100%)
b3015.6	Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7		DL (100%)
b3028	Upgrade substation disconnect leads at William 138 kV substation		APS (100%)
b3051.1	Ronceverte cap bank and terminal upgrades		APS (100%)
b3052	Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3128	Relocate 34.5 kV lines from generating station roof R. Paul Smith 138 kV station	APS (100%)

SCHEDULE 12 – APPENDIX A

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b1570.4	*Add a 345 kV breaker at Marysville station and a 0.1 mile 345 kV line extension from Marysville to the new 345/69 kV Dayton transformer*		*AEP (100%)*
b1660.1	Cloverdale: install 6-765 kV breakers, incremental work for 2 additional breakers, reconfigure and relocate miscellaneous facilities, establish 500 kV station and 500 kV tie with 765 kV station		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: ATSI (24.65%) / Dayton (8.85%) / DEOK (19.91%) / Dominion (41.38%) / EKPC (5.21%)

*Neptune Regional Transmission System, LLC

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b1797.1	Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: ATSI (5.74%) / Dayton (1.97%) / DEOK (4.40%) / Dominion (9.97%) / EKPC (1.12%) / PEPCO (76.80%)
b2055	Upgrade relay at Brues station		AEP (100%)
b2122.3	Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)		AEP (100%)
b2122.4	Perform a sag study on the Howard - Brookside 138 kV line		AEP (100%)
b2229	Install a 300 MVAR reactor at Dequine 345 kV		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2230	Replace existing 150 MVAR reactor at Amos 765 kV substation on Amos - N. Proctorville - Hanging Rock with 300 MVAR reactor		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** AEP (100%)
b2231	Install 765 kV reactor breaker at Dumont 765 kV substation on the Dumont - Wilton Center line		AEP (100%)
b2232	Install 765 kV reactor breaker at Marysville 765 kV substation on the Marysville - Maliszewski line		AEP (100%)
b2233	Change transformer tap settings for the Baker 765/345 kV transformer		AEP (100%)
b2252	Loop the North Muskingum - Crooksville 138 kV line into AEP's Philo 138 kV station which lies approximately 0.4 miles from the line		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement		Responsible Customer(s)
b2253	Install an 86.4 MVAR capacitor bank at Gorsuch 138 kV station in Ohio		AEP (100%)
b2254	Rebuild approximately 4.9 miles of Corner - Degussa 138 kV line in Ohio		AEP (100%)
b2255	Rebuild approximately 2.8 miles of Maliszewski - Polaris 138 kV line in Ohio		AEP (100%)
b2256	Upgrade approximately 36 miles of 138 kV through path facilities between Harrison 138 kV station and Ross 138 kV station in Ohio		AEP (100%)
b2257	Rebuild the Pokagon - Corey 69 kV line as a double circuit 138 kV line with one side at 69 kV and the other side as an express circuit between Pokagon and Corey stations		AEP (100%)
b2258	Rebuild 1.41 miles of #2 CU 46 kV line between Tams Mountain - Slab Fork to 138 kV standards. The line will be strung with 1033 ACSR		AEP (100%)
b2259	Install a new 138/69 kV transformer at George Washington 138/69 kV substation to provide support to the 69 kV system in the area		AEP (100%)
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%)

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2287	Loop in the Meadow Lake - Olive 345 kV circuit into Reynolds 765/345 kV station		AEP (100%)
b2344.1	Establish a new 138/12 kV station, transfer and consolidate load from its Nicholsville and Marcellus 34.5 kV stations at this new station		AEP (100%)
b2344.2	Tap the Hydramatic – Valley 138 kV circuit (~ structure 415), build a new 138 kV line (~3.75 miles) to this new station		AEP (100%)
b2344.3	From this station, construct a new 138 kV line (~1.95 miles) to REA's Marcellus station		AEP (100%)
b2344.4	From REA's Marcellus station construct new 138 kV line (~2.35 miles) to a tap point on Valley – Hydramatic 138 kV ckt (~structure 434)		AEP (100%)
b2344.5	Retire sections of the 138 kV line in between structure 415 and 434 (~ 2.65 miles)		AEP (100%)
b2344.6	Retire AEP's Marcellus 34.5/12 kV and Nicholsville 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%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2345.2	Rebuild the 34.5 kV lines between Keeler - Sister Lakes and Glenwood tap switch to 69 kV (~12 miles)		AEP (100%)
b2345.3	Implement in - out at Keeler and Sister Lakes 34.5 kV stations		AEP (100%)
b2345.4	Retire Glenwood tap switch and construct a new Rothadew station. These new lines will continue to operate at 34.5 kV		AEP (100%)
b2346	Perform a sag study for Howard - North Bellville - Millwood 138 kV line including terminal equipment upgrades		AEP (100%)
b2347	Replace the North Delphos 600A switch. Rebuild approximately 18.7 miles of 138 kV line North Delphos - S073. Reconductor the line and replace the existing tower structures		AEP (100%)
b2348	Construct a new 138 kV line from Richlands Station to intersect with the Hales Branch - Grassy Creek 138 kV circuit		AEP (100%)
b2374	Change the existing CT ratios of the existing equipment along Bearskin - Smith Mountain 138kV circuit		AEP (100%)
b2375	Change the existing CT ratios of the existing equipment along East Danville-Banister 138kV circuit		AEP (100%)

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

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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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2444	Willow - Eureka 138 kV line: Reconductor 0.26 mile of 4/0 CU with 336 ACSS	AEP (100%)
b2445	Complete a sag study of Tidd - Mahans Lake 138 kV line	AEP (100%)
b2449	Rebuild the 7-mile 345 kV line between Meadow Lake and Reynolds 345 kV stations	AEP (100%)
b2462	Add two 138 kV circuit breakers at Fremont station to fix tower contingency '408_2'	AEP (100%)
b2501	Construct a new 138/69 kV Yager station by tapping 2-138 kV FE circuits (Nottingham-Cloverdale, Nottingham-Harmon)	AEP (100%)
b2501.2	Build a new 138 kV line from new Yager station to Azalea station	AEP (100%)
b2501.3	Close the 138 kV loop back into Yager 138 kV by converting part of local 69 kV facilities to 138 kV	AEP (100%)
b2501.4	Build 2 new 69 kV exits to reinforce 69 kV facilities and upgrade conductor between Irish Run 69 kV Switch and Bowerstown 69 kV Switch	AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2502.1	Construct new 138 kV switching station Nottingham tapping 6-138 kV FE circuits (Holloway-Brookside, Holloway-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 138 kV		AEP (100%)
b2502.3	Rebuild/convert Freebyrd-South Cadiz 69 kV circuit to 138 kV		AEP (100%)
b2502.4	Upgrade South Cadiz to 138 kV breaker and a half		AEP (100%)
b2530	Replace the Sporn 138 kV breaker 'G1' with 80kA breaker		AEP (100%)
b2531	Replace the Sporn 138 kV breaker 'D' with 80kA breaker		AEP (100%)
b2532	Replace the Sporn 138 kV breaker 'O1' with 80kA breaker		AEP (100%)
b2533	Replace the Sporn 138 kV breaker 'P2' with 80kA breaker		AEP (100%)
b2534	Replace the Sporn 138 kV breaker 'U' with 80kA breaker		AEP (100%)
b2535	Replace the Sporn 138 kV breaker 'O' with 80 kA breaker		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2536	Replace the Sporn 138 kV breaker 'O2' with 80 kA breaker		AEP (100%)
b2537	Replace the Robinson Park 138 kV breakers A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, and F1 with 63 kA breakers		AEP (100%)
b2555	Reconductor 0.5 miles Tiltonsville – Windsor 138 kV and string the vacant side of the 4.5 mile section using 556 ACSR in a six wire configuration		AEP (100%)
b2556	Install two 138 kV prop structures to increase the maximum operating temperature of the Clinch River- Clinch Field 138 kV line		AEP (100%)
b2581	Temporary operating procedure for delay of upgrade b1464. Open the Corner 138 kV circuit breaker 86 for an overload 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%)

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2591	Construct a new 69 kV line approximately 2.5 miles from Colfax to Drewry's. Construct a new Drewry's station and install a new circuit breaker at Colfax station.		AEP (100%)
b2592	Rebuild existing East Coshocton – North Coshocton double circuit line which contains Newcomerstown – N. Coshocton 34.5 kV Circuit and Coshocton – North Coshocton 69 kV circuit		AEP (100%)
b2593	Rebuild existing West Bellaire – Glencoe 69 kV line with 138 kV & 69 kV circuits and install 138/69 kV transformer at Glencoe Switch		AEP (100%)
b2594	Rebuild 1.0 mile of Brantley – Bridge Street 69 kV Line with 1033 ACSR overhead conductor		AEP (100%)
b2595.1	Rebuild 7.82 mile Elkhorn City – Haysi S.S 69 kV line utilizing 1033 ACSR built to 138 kV standards		AEP (100%)
b2595.2	Rebuild 5.18 mile Moss – Haysi SS 69 kV line utilizing 1033 ACSR built to 138 kV standards		AEP (100%)
b2596	Move load from the 34.5 kV bus to the 138 kV bus by installing a new 138/12 kV XF at New Carlisle station in Indiana		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2597	Rebuild approximately 1 mi. section of Dragoon-Virgil Street 34.5 kV line between Dragoon and Dodge Tap switch and replace Dodge switch MOAB to increase thermal capability of Dragoon-Dodge Tap branch		AEP (100%)
b2598	Rebuild approximately 1 mile section of the Kline-Virgil Street 34.5 kV line between Kline and Virgil Street tap. Replace MOAB switches at Beiger, risers at Kline, switches and bus at Virgil Street.		AEP (100%)
b2599	Rebuild approximately 0.1 miles of 69 kV line between Albion and Albion tap		AEP (100%)
b2600	Rebuild Fremont – Pound line as 138 kV		AEP (100%)
b2601	Fremont Station Improvements		AEP (100%)
b2601.1	Replace MOAB towards Beaver Creek with 138 kV breaker		AEP (100%)
b2601.2	Replace MOAB towards Clinch River with 138 kV breaker		AEP (100%)
b2601.3	Replace 138 kV Breaker A with new bus-tie breaker		AEP (100%)
b2601.4	Re-use Breaker A as high side protection on transformer #1		AEP (100%)
b2601.5	Install two (2) circuit switchers on high side of transformers # 2 and 3 at Fremont Station		AEP (100%)

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

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2605	Rebuild and reconductor Kammer – George Washington 69 kV circuit and George Washington – Moundsville ckt #1, designed for 138kV. Upgrade limiting equipment at remote ends and at tap stations		AEP (100%)
b2606	Convert Bane – Hammondsville from 23 kV to 69 kV operation		AEP (100%)
b2607	Pine Gap Relay Limit Increase		AEP (100%)
b2608	Richlands Relay Upgrade		AEP (100%)
b2609	Thorofare – Goff Run – Powell Mountain 138 kV Build		AEP (100%)
b2610	Rebuild Pax Branch – Scaraboro as 138 kV		AEP (100%)
b2611	Skin Fork Area Improvements		AEP (100%)
b2611.1	New 138/46 kV station near Skin Fork and other components		AEP (100%)
b2611.2	Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV line		AEP (100%)
b2634.1	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%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2643	Replace the Darrah 138 kV breaker 'L' with 40kA 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 (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%)

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

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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2687.2	Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV line		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** AEP (100%)
b2697.1	Mitigate 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 addressed.		AEP (100%)
b2697.2	Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuit		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2698	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%)
b2701.1	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%)
b2701.2	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%)
2701.3	Install 1-138 kV CB at Blue Racer to terminate new Herlan circuit		AEP (100%)
b2714	Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kV		AEP (100%)
b2715	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%)
b2727	Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80kA breakers		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2731	Convert the Sunnyside – East Sparta – Malvern 23 kV sub-transmission network to 69 kV. The lines are already built to 69 kV standards	AEP (100%)
b2733	Replace South Canton 138 kV breakers 'L' and 'L2' with 80 kA rated breakers	AEP (100%)
b2750.1	Retire Betsy Layne 138/69/43 kV station and replace it with the greenfield Stanville station about a half mile north of the existing Betsy Layne station	AEP (100%)
b2750.2	Relocate the Betsy Layne capacitor bank to the Stanville 69 kV bus and increase the size to 14.4 MVAR	AEP (100%)
b2753.1	Replace existing George Washington station 138 kV yard with GIS 138 kV breaker and a half yard in existing station footprint. Install 138 kV revenue metering for new IPP connection	AEP (100%)
b2753.2	Replace Dilles Bottom 69/4 kV Distribution station as breaker and a half 138 kV yard design including AEP Distribution facilities but initial configuration will constitute a 3 breaker ring bus	AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2753.3	Connect two 138 kV 6-wired circuits from "Point A" (currently de-energized and owned by FirstEnergy) in circuit positions previously designated Burger #1 & Burger #2 138 kV. Install interconnection settlement metering on both circuits exiting Holloway	AEP (100%)
b2753.6	Build double circuit 138 kV line from Dilles Bottom to "Point A". Tie each new AEP circuit in with a 6-wired line at Point A. This will create a Dilles Bottom – Holloway 138 kV circuit and a George Washington – Holloway 138 kV circuit	AEP (100%)
b2753.7	Retire line sections (Dilles Bottom – Bellaire and Moundsville – Dilles Bottom 69 kV lines) south of FirstEnergy 138 kV line 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 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 Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2760	Perform a Sag Study of the Saltville – Tazewell 138 kV line to increase the thermal rating of the line		AEP (100%)
b2761.1	Replace the Hazard 161/138 kV transformer		AEP (100%)
b2761.2	Perform a Sag Study of the Hazard – Wooten 161 kV line to increase the thermal rating of the line		AEP (100%)
b2761.3	Rebuild the Hazard – Wooton 161 kV line utilizing 795 26/7 ACSR conductor (300 MVA rating)		AEP (100%)
b2762	Perform a Sag Study of Nagel – West Kingsport 138 kV line to increase the thermal rating of the line		AEP (100%)
b2776	Reconductor the entire Dequine – Meadow Lake 345 kV circuit #2		AEP (100%)
b2777	Reconductor the entire Dequine – Eugene 345 kV circuit #1		AEP (100%)
b2779.1	Construct a new 138 kV station, Campbell Road, 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 as 138 kV double circuit and extend 138 kV from Campbell Road station		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2779.3	Construct a new 345/138 kV SDI Wilmington Station which will be sourced from Collingwood 345 kV and serve the SDI load at 345 kV and 138 kV, respectively	AEP (100%)
b2779.4	Loop 138 kV circuits in-out of the new SDI Wilmington 138 kV station resulting in a direct circuit to Auburn 138 kV and an indirect circuit to Auburn and Rob Park via Dunton Lake, and a circuit to Campbell Road; Reconductor 138 kV line section between Dunton Lake – SDI Wilmington	AEP (100%)
b2779.5	Expand Auburn 138 kV bus	AEP (100%)
b2787	Reconductor 0.53 miles (14 spans) of the Kaiser Jct. - Air Force Jct. Sw section of the Kaiser - Heath 69 kV circuit/line with 336 ACSR to match the rest of the circuit (73 MVA rating, 78% loading)	AEP (100%)
b2788	Install a new 3-way 69 kV line switch to provide service to AEP's Barnesville distribution station. Remove a portion of the #1 copper T-Line from the 69 kV through-path	AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2789	Rebuild the Brues - Glendale Heights 69 kV line section (5 miles) with 795 ACSR (128 MVA rating, 43% loading)		AEP (100%)
b2790	Install a 3 MVAR, 34.5 kV cap bank at Caldwell substation		AEP (100%)
b2791	Rebuild Tiffin – Howard, new transformer at Chatfield		AEP (100%)
b2791.1	Rebuild portions of the East Tiffin - Howard 69 kV line from East Tiffin to West Rockaway Switch (0.8 miles) using 795 ACSR Drake conductor (129 MVA rating, 50% loading)		AEP (100%)
b2791.2	Rebuild Tiffin - Howard 69 kV line from St. Stephen's Switch to Hinesville (14.7 miles) using 795 ACSR Drake conductor (90 MVA rating, non-conductor limited, 38% loading)		AEP (100%)
b2791.3	New 138/69 kV transformer with 138/69 kV protection at Chatfield		AEP (100%)
b2791.4	New 138/69 kV protection at existing Chatfield transformer		AEP (100%)
b2792	Replace the Elliott transformer with a 130 MVA 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%)

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Required Transmission Enhancements		Annual 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2799.1	Rebuild 12 miles of Valley – Almena 69 kV line as a double circuit 138/69 kV line using 795 ACSR conductor (360 MVA rating) to introduce a new 138 kV source into the 69 kV load pocket around Almena station		AEP (100%)
b2799.2	Rebuild 3.2 miles of Almena to Hartford 69 kV line using 795 ACSR conductor (90 MVA rating)		AEP (100%)
b2799.3	Rebuild 3.8 miles of Riverside – South Haven 69 kV line using 795 ACSR conductor (90 MVA rating)		AEP (100%)
b2799.4	At Valley station, add new 138 kV line exit with a 3000 A 40 kA breaker for the new 138 kV line to Almena and replace CB D with a 3000 A 40 kA breaker		AEP (100%)
b2799.5	At Almena station, install a 90 MVA 138/69 kV transformer with low side 3000 A 40 kA breaker and establish a new 138 kV line exit towards Valley		AEP (100%)
b2799.6	At Hartford station, install a second 90 MVA 138/69 kV transformer with a circuit switcher and 3000 A 40 kA low side breaker		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2817	Replace Delaware 138 kV breaker 'P' with a 40 kA breaker		AEP (100%)
b2818	Replace West Huntington 138 kV breaker 'F' with a 40 kA breaker		AEP (100%)
b2819	Replace Madison 138 kV breaker 'V' with a 63 kA breaker		AEP (100%)
b2820	Replace Sterling 138 kV breaker 'G' with a 40 kA breaker		AEP (100%)
b2821	Replace Morse 138 kV breakers '103', '104', '105', and '106' with 63 kA breakers		AEP (100%)
b2822	Replace Clinton 138 kV breakers '105' and '107' with 63 kA breakers		AEP (100%)
b2826.1	Install 300 MVAR reactor at Ohio Central 345 kV substation		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2826.2	Install 300 MVAR reactor at West Bellaire 345 kV substation		AEP (100%)
b2831.1	Upgrade the Tanner Creek – Miami Fort 345 kV circuit (AEP portion)		**DFAX Allocation:** Dayton (34.34%) / DEOK (56.45%) / EKPC (9.21%)
b2832	Six wire the Kyger Creek – Sporn 345 kV circuits #1 and #2 and convert them to one circuit		AEP (100%)
b2833	Reconductor the Maddox Creek – East Lima 345 kV circuit with 2-954 ACSS Cardinal conductor		**DFAX Allocation:** Dayton (100%)
b2834	Reconductor and string open position and sixwire 6.2 miles of the Chemical – Capitol Hill 138 kV circuit		AEP (100%)
b2872	Replace the South Canton 138 kV breaker 'K2' with a 80 kA breaker		AEP (100%)
b2873	Replace the South Canton 138 kV breaker "M" with a 80 kA breaker		AEP (100%)
b2874	Replace the South Canton 138 kV breaker "M2" with a 80 kA breaker		AEP (100%)
b2878	Upgrade the Clifty Creek 345 kV risers		AEP (100%)
b2880	Rebuild approximately 4.77 miles of the Cannonsburg – South Neal 69 kV line section utilizing 795 ACSR conductor (90 MVA rating)		AEP (100%)

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Required Transmission 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 limited)		AEP (100%)
b2882	Rebuild Reusens - Peakland Switch 69 kV line. Replace Peakland Switch		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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2885.1	Install a new Ironman Switch to serve a new delivery point requested by the City of Jackson for a load increase request		AEP (100%)
b2885.2	Install a new 138/69 kV station (Rhodes) to serve as a third source to the area to help relieve overloads caused by the customer load increase		AEP (100%)
b2885.3	Replace Coalton Switch with a new three breaker ring bus (Heppner)		AEP (100%)
b2886	Install 90 MVA 138/69 kV transformer, new transformer high and low side 3000 A 40 kA CBs, and a 138 kV 40 kA bus tie breaker at West End Fostoria		AEP (100%)
b2887	Add 2-138 kV CB's and relocate 2-138 kV circuit exits to different bays at Morse Road. Eliminate 3 terminal line by terminating Genoa - Morse circuit at Morse Road		AEP (100%)
b2888	Retire Poston substation. Install new Lemaster substation		AEP (100%)
b2888.1	Remove and retire the Poston 138 kV station		AEP (100%)
b2888.2	Install a new greenfield station, Lemaster 138 kV Station, in the clear		AEP (100%)

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Required Transmission 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)		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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2890.1	Rebuild 23.55 miles of the East Cambridge – Smyrna 34.5 kV circuit with 795 ACSR conductor (128 MVA rating) and convert to 69 kV		AEP (100%)
b2890.2	East Cambridge: Install a 2000 A 69 kV 40 kA circuit breaker for the East Cambridge – Smyrna 69 kV circuit		AEP (100%)
b2890.3	Old Washington: Install 69 kV 2000 A two way phase over phase switch		AEP (100%)
b2890.4	Install 69 kV 2000 A two way phase over phase switch		AEP (100%)
b2891	Rebuild the Midland Switch to East Findlay 34.5 kV line (3.31 miles) with 795 ACSR (63 MVA rating) to match other conductor in the area		AEP (100%)
b2892	Install new 138/12 kV transformer with high side circuit switcher at Leon and a new 138 kV line exit towards 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%)
b2936.1	Rebuild approximately 6.7 miles of 69 kV line between Mottville and Pigeon River using 795 ACSR conductor (129 MVA rating). New construction will be designed to 138 kV standards but operated at 69 kV		AEP (100%)

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Required Transmission 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2988	Replace the Twin Branch 345 kV breaker "JM" with 63 kA breaker and associated substation works including switches, bus leads, control cable and new DICM		AEP (100%)
b2993	Rebuild the Torrey – South Gambrinus Switch – Gambrinus Road 69 kV line section (1.3 miles) with 1033 ACSR 'Curlew' conductor and steel poles		AEP (100%)
b3000	Replace South Canton 138 kV breaker 'N' with an 80kA breaker		AEP (100%)
b3001	Replace South Canton 138 kV breaker 'N1' with an 80kA breaker		AEP (100%)
b3002	Replace South Canton 138 kV breaker 'N2' with an 80kA breaker		AEP (100%)
b3036	Rebuild 15.4 miles of double circuit North Delphos – Rockhill 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%)

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Required Transmission 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3086.3	Rebuild West Melrose – Whirlpool 34 kV line Str's 55–80 (1 mile), utilizing 795 26/7 ACSR conductor		AEP (100%)
b3086.4	North Findlay station: Install a 138 kV 3000A 63kA line breaker and low side 34.5 kV 2000A 40kA breaker, high side 138 kV circuit switcher on T1		AEP (100%)
b3086.5	Ebersole station: Install second 90 MVA 138/69/34 kV transformer. Install two low side (69 kV) 2000A 40kA breakers for T1 and T2		AEP (100%)
b3087.1	Construct a new greenfield station to the west (approx. 1.5 miles) of the existing Fords Branch Station in the new Kentucky Enterprise Industrial Park. This station will consist of six 3000A 40kA 138 kV breakers laid out in a ring arrangement, two 30 MVA 138/34.5 kV transformers, and two 30 MVA 138/12 kV transformers. The existing Fords Branch Station will be retired		AEP (100%)
b3087.2	Construct approximately 5 miles of new double circuit 138 kV line in order to loop the new Kewanee station into the existing Beaver Creek – Cedar Creek 138 kV circuit		AEP (100%)

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

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3087.3	Remote end work will be required at Cedar Creek Station		AEP (100%)
b3095	Rebuild Lakin – Racine Tap 69 kV line section (9.2 miles) to 69 kV standards, utilizing 795 26/7 ACSR conductor		AEP (100%)
b3099	*Install a 138 kV 3000A 40 kA circuit switcher on the high side of the existing 138/34.5 kV transformer No.5 at Holston station*		*AEP (100%)*
b3100	*Replace the 138 kV MOAB switcher "YY" with a new 138 kV circuit switcher on the high side of Chemical transformer No.6*		*AEP (100%)*
b3101	*Rebuild the 1/0 Cu. conductor sections (approx. 1.5 miles) of the Fort Robinson – Moccasin Gap 69 kV line section (approx. 5 miles) utilizing 556 ACSR conductor and upgrade existing relay trip limit (WN/WE: 63 MVA, line limited by remaining conductor sections)*		*AEP (100%)*
b3102	*Replace existing 50 MVA 138/69 kV transformers #1 and #2 (both 1957 vintage) at Fremont station with new 130 MVA 138/69 kV transformers*		*AEP (100%)*

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

Required Transmission 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%)*

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

Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3103.6	*Rebuild the 69 kV Hartford City – Armstrong Cork line but instead of terminating it into Armstrong Cork, terminate it into Jay station*		*AEP (100%)*
b3103.7	*Build a new 69 kV line from Armstrong Cork – Jay station*		*AEP (100%)*
b3103.8	*Rebuild the 34.5 kV Delaware – Bosman line as the 69 kV Royerton – Strawboard line. Retire the line section from Royerton to Delaware stations*		*AEP (100%)*
b3104	*Perform a sag study on the Polaris – Westerville 138 kV line (approx. 3.6 miles) to increase the summer emergency rating to 310 MVA*		*AEP (100%)*
b3105	*Rebuild the Delaware – Hyatt 138 kV line (approx. 4.3 miles) along with replacing conductors at both Hyatt and Delaware substations*		*AEP (100%)*
b3106	*Perform a sag study (6.8 miles of line) to increase the SE rating to 310 MVA. Note that results from the sag study could cover a wide range of outcomes, from no work required to a complete rebuild*		*AEP (100%)*
b3109	*Rebuild 5.2 miles Bethel – Sawmill 138 kV line including ADSS*		*AEP (100%)*

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

Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3112	*Construct a single circuit 138 kV line (approx. 3.5 miles) from Amlin to Dublin using 1033 ACSR Curlew (296 MVA SN), convert Dublin station into a ring configuration, and re-terminating the Britton UG cable to Dublin station*		*AEP (100%)*
b3116	*Replace existing Mullens 138/46 kV 30 MVA transformer No.4 and associated protective equipment with a new 138/46 kV 90 MVA transformer and associated protective equipment*		*AEP (100%)*
b3118.1	*Expand existing Chadwick station and install a second 138/69 kV transformer at a new 138 kV bus tied into the Bellefonte – Grangston 138 kV circuit. The 69 kV bus will be reconfigured into a ring bus arrangement to tie the new transformer into the existing 69 kV via installation of four 3000A 63 kA 69 kV circuit breakers*		*AEP (100%)*
b3118.2	*Perform 138 kV remote end work at Grangston station*		*AEP (100%)*
b3118.3	*Perform 138 kV remote end work at Bellefonte station*		*AEP (100%)*
b3118.4	*Relocate the Chadwick – Leach 69 kV circuit within Chadwick station*		*AEP (100%)*

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

Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3118.5	*Terminate the Bellefonte – Grangston 138 kV circuit to the Chadwick 138 kV bus*		*AEP (100%)*
b3118.6	*Chadwick – Tri-State #2 138 kV circuit will be reconfigured within the station to terminate into the newly established 138 kV bus #2 at Chadwick due to construability aspects*		*AEP (100%)*
b3118.7	*Reconductor Chadwick – Leach and Chadwick – England Hill 69 kV lines with 795 ACSS conductor. Perform a LiDAR survey and a sag study to confirm that the reconductored circuits would maintain acceptable clearances*		*AEP (100%)*
b3118.8	*Replace the 20 kA 69 kV circuit breaker 'F' at South Neal station with a new 3000A 40 kA 69 kV circuit breaker. Replace line risers towards Leach station*		*AEP (100%)*
b3118.9	*Rebuild 336 ACSR portion of Leach – Miller S.S 69 kV line section (approx. 0.3 mile) with 795 ACSS conductor*		*AEP (100%)*
b3118.10	*Replace 69 kV line risers (towards Chadwick) at Leach station*		*AEP (100%)*
b3119.1	Rebuild the Jay – Pennville 138 kV line as double circuit 138/69 kV. Build a new 9.8 mile single circuit 69 kV line from near Pennville station to North Portland station		AEP (100%)

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

Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3119.2	Install three (3) 69 kV breakers to create the "U" string and add a low side breaker on the Jay transformer 2		AEP (100%)
b3119.3	Install two (2) 69 kV breakers at North Portland station to complete the ring and allow for the new line		AEP (100%)
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%)

SCHEDULE 12 – APPENDIX A

(20) Virginia Electric and Power Company

Required Transmission Enhancements	Annual Revenue Requirement		Responsible Customer(s)
b1698.7	Replace Loudoun 230 kV breaker '203052' with 63kA rating		Dominion (100%)
b1696.1	Replace the Idylwood 230 kV '25112' breaker with 50kA breaker		Dominion (100%)
b1696.2	Replace the Idylwood 230 kV '209712' breaker with 50kA breaker		Dominion (100%)
b1793.1	Remove the Carolina 22 SPS to include relay logic changes, minor control wiring, relay resets and SCADA programming upon completion of project		Dominion (100%)
b2281	Additional Temporary SPS at Bath County		Dominion (100%)
b2350	Reconductor 211 feet of 545.5 ACAR conductor on 59 Line Elmont - Greenwood DP 115 kV to achieve a summer emergency rating of 906 amps or greater		Dominion (100%)
b2358	Install a 230 kV 54 MVAR capacitor bank on the 2016 line at Harmony Village Substation		Dominion (100%)
b2359	Wreck and rebuild approximately 1.3 miles of existing 230 kV line between Cochran Mill - X4-039 Switching Station		Dominion (100%)
b2360	Build a new 39 mile 230 kV transmission line from Dooms - Lexington on existing right-of-way		Dominion (100%)
b2361	Construct 230 kV OH line along existing Line #2035 corridor, approx. 2.4 miles from Idylwood - Dulles Toll Road (DTR) and 2.1 miles on new right-of-way along DTR to new Scott's Run Substation		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2368	Replace the Brambleton 230 kV breaker '209502' with 63kA breaker		Dominion (100%)
b2369	Replace the Brambleton 230 kV breaker '213702' with 63kA breaker		Dominion (100%)
b2370	Replace the Brambleton 230 kV breaker 'H302' with 63kA 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** Dominion (100%)
b2397	Replace the Beaumeade 230 kV breaker '2079T2116' with 63kA		Dominion (100%)
b2398	Replace the Beaumeade 230 kV breaker '2079T2130' with 63kA		Dominion (100%)
b2399	Replace the Beaumeade 230 kV breaker '208192' with 63kA		Dominion (100%)
b2400	Replace the Beaumeade 230 kV breaker '209592' with 63kA		Dominion (100%)
b2401	Replace the Beaumeade 230 kV breaker '211692' with 63kA		Dominion (100%)
b2402	Replace the Beaumeade 230 kV breaker '227T2130' with 63kA		Dominion (100%)
b2403	Replace the Beaumeade 230 kV breaker '274T2130' with 63kA		Dominion (100%)

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.

*Neptune Regional Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2404	Replace the Beaumeade 230 kV breaker '227T2095' with 63kA		Dominion (100%)
b2405	Replace the Pleasant view 230 kV breaker '203T274' with 63kA		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 50kA		Dominion (100%)
b2443.2	Replace the Ox 230 kV breaker '206342' with 63kA 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 63kA 230 kV breakers with 19 80kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	Annual 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	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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **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 50kA breaker		Dominion (100%)
b2543	Replace the Loudoun 500 kV 'H2T584' breaker with a 50kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2582	Rebuild the Elmont – Cunningham 500 kV line		Dominion (100%)
b2583	Install 500 kV breaker at Ox Substation to remove Ox Tx#1 from H1T561 breaker failure outage.		Dominion (100%)
b2584	Relocate the Bremo load (transformer #5) to #2028 (Bremo-Charlottesville 230 kV) line and Cartersville distribution station to #2027 (Bremo-Midlothian 230 kV) line		Dominion (100%)
b2585	Reconductor 7.63 miles of existing line between Cranes and Stafford, upgrade associated line switches at Stafford		**DFAX Allocation:** PEPCO (100%)
b2620	Wreck and rebuild the Chesapeake – Deep Creek – Bowers Hill – Hodges Ferry 115 kV line; minimum rating 239 MVA normal/emergency, 275 MVA load dump rating		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

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

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2665	Rebuild the Cunningham – Dooms 500 kV line		Dominion (100%)
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 Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission 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 50kA 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 (1.97%) / BGE (14.46%) / Dominion (35.33%) / DPL (3.78%) / JCPL (3.33%) / ME (2.53%) / Neptune (0.63%) / PECO (6.30%) / PEPCO (20.36%) / PPL (3.97%) / PSEG (7.34%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2744	Rebuild the Carson – Rogers Rd 500 kV circuit		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** Dominion (100%)
b2745	Rebuild 21.32 miles of existing line between Chesterfield – Lakeside 230 kV		Dominion (100%)
b2746.1	Rebuild Line #137 Ridge Rd – Kerr Dam 115 kV, 8.0 miles, for 346 MVA summer emergency rating		Dominion (100%)
b2746.2	Rebuild Line #1009 Ridge Rd – Chase City 115 kV, 9.5 miles, for 346 MVA summer emergency rating		Dominion (100%)
b2746.3	Install a second 4.8 MVAR capacitor bank on the 13.8 kV bus of each transformer at Ridge Rd		Dominion (100%)
b2747	Install a Motor Operated Switch and SCADA control between Dominion's Gordonsville 115 kV bus and FirstEnergy's 115 kV line		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2757	Install a +/-125 MVAr Statcom at Colington 230 kV		Dominion (100%)
b2758	Rebuild Line #549 Dooms – Valley 500kV		Dominion (100%)
b2759	Rebuild Line #550 Mt. Storm – Valley 500kV		Dominion (100%)
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 115kV		Dominion (100%)
b2815	Build a new Pinewood 115kV switching station at the tap serving North Doswell DP with a 115kV four breaker ring bus		Dominion (100%)
b2842	Update the nameplate for Mount Storm 500 kV "57272" to be 50kA breaker		Dominion (100%)
b2843	Replace the Mount Storm 500 kV "G2TY" with 50kA breaker		Dominion (100%)
b2844	Replace the Mount Storm 500 kV "G2TZ" with 50kA breaker		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2845	Update the nameplate for Mount Storm 500 kV "G3TSX1" to be 50kA breaker		Dominion (100%)
b2846	Update the nameplate for Mount Storm 500 kV "SX172" to be 50kA breaker		Dominion (100%)
b2847	Update the nameplate for Mount Storm 500 kV "Y72" to be 50kA breaker		Dominion (100%)
b2848	Replace the Mount Storm 500 kV "Z72" with 50kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission 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		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		Dominion (100%)
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 63kA breaker		Dominion (100%)
b2962.2	Replace the NIVO 230 kV breaker “2116T2130” with 63kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **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%)

*Neptune Regional Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission 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%)
b3019	Rebuild 500 kV Line #552 Bristers to Chancellor – 21.6 miles long		Dominion (100%)
b3019.1	Update the nameplate for Morrisville 500 kV breaker “H1T594” to be 50kA		Dominion (100%)
b3019.2	Update the nameplate for Morrisville 500 kV breaker “H1T545” to be 50kA		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3020	Rebuild 500 kV Line #574 Ladysmith to Elmont – 26.2 miles long		Dominion (100%)
b3021	Rebuild 500 kV Line #581 Ladysmith to Chancellor – 15.2 miles long		Dominion (100%)
b3026	Reconductor Line #274 (Pleasant View – Ashburn – Beaumeade 230 kV) with a minimum rating of 1200 MVA. Also upgrade terminal equipment		Dominion (100%)
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 50kA breaker		Dominion (100%)
b3027.4	Update the nameplate for Ladysmith 500 kV breaker "H1T575" to be 50kA breaker		Dominion (100%)
b3027.5	Update the nameplate for Ladysmith 500 kV breaker "568T574" (will be renumbered as "H2T568") to be 50kA 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%)

Virginia Electric and Power Company (cont.)

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

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	*Annual Revenue Requirement*	*Responsible Customer(s)*
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%)*
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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	Annual Revenue 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%)

SCHEDULE 12 – APPENDIX A

(23) American Transmission Systems, Inc.

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3032	Greenfield - NASA 138 kV terminal upgrades: NASA substation, Greenfield exit: Revise CT tap on breaker B22 and adjust line relay settings; Greenfield substation, NASA exit: Revise CT tap on breaker B1 and adjust line relay settings; replace 336.4 ACSR line drop with 1033.5 AL		ATSI (100%)
b3033	Ottawa – Lakeview 138 kV reconductor and substation upgrades		ATSI (100%)
b3034	Lakeview – Greenfield 138 kV reconductor and substation upgrades		ATSI (100%).
b3066	Reconductor the Cranberry – Jackson 138 kV line (2.1 miles), reconductor 138 kV bus at Cranberry bus and replace 138 kV line switches at Jackson bus		ATSI (100%)
b3067	Reconductor the Jackson – Maple 138 kV line (4.7 miles), replace line switches at Jackson 138 kV and replace the line traps and relays at Maple 138 kV bus		ATSI (100%)
b3080	Reconductor the 138 kV bus at Seneca		ATSI (100%)
b3081	Replace the 138 kV breaker and reconductor the 138 kV bus at Krendale		ATSI (100%)
b3127	At Bay Shore 138 kV station: Install new switchyard power supply to separate from existing generating station power service, separate all communications circuits, and construct a new station access road		ATSI (100%)

Attachment C

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

(Clean Format)

SCHEDULE 12 – APPENDIX A

(4) Jersey Central Power & Light Company

Required Transmission Enhancements	Annual Revenue Requirement		Responsible Customer(s)
b2234	260 MVAR reactor at West Wharton 230 kV		JCPL (100%)
b2270	Advance Raritan River - Replace G1047E breaker at the 230kV Substation		JCPL (100%)
b2271	Advance Raritan River - Replace G1047F breaker at the 230kV Substation		JCPL (100%)
b2272	Advance Raritan River - Replace T1034E breaker at the 230kV Substation		JCPL (100%)
b2273	Advance Raritan River - Replace T1034F breaker at the 230kV Substation		JCPL (100%)
b2274	Advance Raritan River - Replace I1023E breaker at the 230kV Substation		JCPL (100%)
b2275	Advance Raritan River - Replace I1023F breaker at the 230kV Substation		JCPL (100%)
b2289	Freneau Substation - upgrade 2.5 inch pipe to bundled 1590 ACSR conductor at the K1025 230 kV Line Terminal		JCPL (100%)
b2292	Replace the Whippany 230 kV breaker B1 (CAP) with 63kA breaker		JCPL (100%)
b2357	Replace the East Windsor 230 kV breaker 'E1' with 63kA breaker		JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2495	Replace transformer leads on the Glen Gardner 230/34.5 kV #1 transformer		JCPL (100%)
b2496	Replace Franklin 115/34.5 kV transformer #2 with 90 MVA transformer		JCPL (100%)
b2497	Reconductor 0.9 miles of the Captive Plastics to Morris Park 34.5 kV circuit (397ACSR) with 556 ACSR		JCPL (100%)
b2498	Extend 5.8 miles of 34.5 kV circuit from North Branch substation to Lebanon substation with 397 ACSR and install 34.5 kV breaker at Lebanon substation		JCPL (100%)
b2500	Upgrade terminal equipment at Monroe on the Englishtown to Monroe (H34) 34.5 kV circuit		JCPL (100%)
b2570	Upgrade limiting terminal facilities at Feneau, Parlin, and Williams substations		JCPL (100%)
b2571	Upgrade the limiting terminal facilities at both Jackson and North Hanover		JCPL (100%)
b2586	Upgrade the V74 34.5 kV transmission line between Allenhurst and Elberon Substations		JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2633.6	Implement high speed relaying utilizing OPGW on Deans – East Windsor 500 kV		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)
b2633.6.1	Implement high speed relaying utilizing OPGW on East Windsor - New Freedom 500 kV		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2676	Install one (1) 72 MVAR fast switched capacitor at the Englishtown 230 kV substation		JCPL (100%)
b2708	Replace the Oceanview 230/34.5 kV transformer #1		JCPL (100%)
b2709	Replace the Deep Run 230/34.5 kV transformer #1		JCPL (100%)
b2754.2	Install 5 miles of optical ground wire (OPGW) between Gilbert and Springfield 230 kV substations		JCPL (100%)
b2754.3	Install 7 miles of all-dielectric self-supporting (ADSS) fiber optic cable between Morris Park and Northwood 230 kV substations		JCPL (100%)
b2754.6	Upgrade relaying at Morris Park 230 kV		JCPL (100%)
b2754.7	Upgrade relaying at Gilbert 230 kV		JCPL (100%)
b2809	Install a bypass switch at Mount Pleasant 34.5 kV substation to allow the Mount Pleasant substation load to be removed from the N14 line and transfer to O769 line		JCPL (100%)
b3023	Replace West Wharton 115 kV breakers ‘G943A’ and ‘G943B’ with 40kA breakers		JCPL (100%)
b3042	Replace substation conductor at Raritan River 230 kV substation on the Kilmer line terminal		JCPL (100%)

Jersey Central Power & Light Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3130	Construct seven new 34.5 kV circuits on existing pole lines (total of 53.5 miles), rebuild/reconductor two 34.5 kV circuits (total of 5.5 miles) and install a second 115/34.5 kV transformer (Werner)		JCPL (100%)
b3130.1	Construct a new 34.5 kV circuit from Oceanview to Allenhurst 34.5 kV (4 miles)		JCPL (100%)
b3130.2	Construct a new 34.5 kV circuit from Atlantic to Red Bank 34.5 kV (12 miles)		JCPL (100%)
b3130.3	Construct a new 34.5 kV circuit from Freneau to Taylor Lane 34.5 kV (6.5 miles)		JCPL (100%)
b3130.4	Construct a new 34.5 kV circuit from Keyport to Belford 34.5 kV (6 miles)		JCPL (100%)
b3130.5	Construct a new 34.5 kV circuit from Red Bank to Belford 34.5 kV (5 miles)		JCPL (100%)
b3130.6	Construct a new 34.5 kV circuit from Werner to Clark Street (7 miles)		JCPL (100%)
b3130.7	Construct a new 34.5 kV circuit from Atlantic to Freneau (13 miles)		JCPL (100%)
b3130.8	Rebuild/reconductor the Atlantic – Camp Woods Switch Point (3.5 miles) 34.5 kV circuit		JCPL (100%)
b3130.9	Rebuild/reconductor the Allenhurst – Elberon (2 miles) 34.5 kV circuit		JCPL (100%)
b3130.10	Install 2nd 115/34.5 kV transformer at Werner substation		JCPL (100%)

SCHEDULE 12 – APPENDIX A

(14) Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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 facilitate removal of the equipment at Willow Island switching station		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		APS (100%)
b2268	Reconductor 6.8 miles of 138kV 336 ACSR with 336 ACSS from Double Toll Gate to Riverton		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 Corner 138 kV Substation		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		APS (100%)
b2343	Install a 31.7 MVAR capacitor at West Union 138 kV substation		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2362	Install a 250 MVAR SVC at Squab Hollow 230 kV		APS (100%)
b2362.1	Install a 230 kV breaker at Squab Hollow 230 kV substation		APS (100%)
b2363	Convert the Shingletown 230 kV bus into a 6 breaker ring bus		APS (100%)
b2364	Install a new 230/138 kV transformer at Squab Hollow 230 kV substation. Loop the Forest - Elko 230 kV line into Squab Hollow. Loop the Brookville - Elko 138 kV line into Squab Hollow		APS (100%)
b2412	Install a 44 MVAR 138 kV capacitor at the Hempfield 138 kV substation		APS (100%)
b2433.1	Install breaker and a half 138 kV substation (Waldo Run) with 4 breakers to accommodate service to MarkWest Sherwood Facility including metering which is cut into Glen Falls Lamberton 138 kV line		APS (100%)
b2433.2	Install a 70 MVAR SVC at the new WaldoRun 138 kV substation		APS (100%)
b2433.3	Install two 31.7 MVAR capacitors at the new WaldoRun 138 kV substation		APS (100%)
b2424	Replace the Weirton 138 kV breaker 'WYLIE RID210' with 63 kA breakers		APS (100%)
b2425	Replace the Weirton 138 kV breaker 'WYLIE RID216' with 63 kA breakers		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2426	Replace the Oak Grove 138 kV breaker 'OG1' with 63 kA breakers		APS (100%)
b2427	Replace the Oak Grove 138 kV breaker 'OG2' with 63 kA breakers		APS (100%)
b2428	Replace the Oak Grove 138 kV breaker 'OG3' with 63 kA breakers		APS (100%)
b2429	Replace the Oak Grove 138 kV breaker 'OG4' with 63 kA breakers		APS (100%)
b2430	Replace the Oak Grove 138 kV breaker 'OG5' with 63 kA breakers		APS (100%)
b2431	Replace the Oak Grove 138 kV breaker 'OG6' with 63 kA breakers		APS (100%)
b2432	Replace the Ridgeley 138 kV breaker 'RC1' with a 40 kA rated breaker		APS (100%)
b2440	Replace the Cabot 138kV breaker 'C9-KISKI VLY' with 63kA		APS (100%)
b2472	Replace the Ringgold 138 kV breaker ‘RCM1’ with 40kA breakers		APS (100%)
b2473	Replace the Ringgold 138 kV breaker ‘#4 XMFR’ with 40kA breakers		APS (100%)
b2475	Construct a new line between Oak Mound 138 kV substation and Waldo Run 138 kV substation		APS (100%)
b2545.1	Construct a new 138 kV substation (Shuman Hill substation) connected to the Fairview –Willow Island (84) 138 kV line		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2545.2	Install a ring bus station with five active positions and two 52.8 MVAR capacitors with 0.941 mH 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 capacitor bank at Mobley 138 kV		APS (100%)
b2546	Install a 51.8 MVAR (rated) 138 kV capacitor at Nyswaner 138 kV substation		APS (100%)
b2547.1	Construct a new 138 kV six breaker ring bus Hillman substation		APS (100%)
b2547.2	Loop Smith- Imperial 138 kV line into the new Hillman substation		APS (100%)
b2547.3	Install +125/-75 MVAR SVC at Hillman substation		APS (100%)
b2547.4	Install two 31.7 MVAR 138 kV capacitors		APS (100%)
b2548	Eliminate clearance de-rate on Wylie Ridge – Smith 138 kV line 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 and the 138 kV line to AE units 1&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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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%)
b2666.3	Replace Yukon 138 kV breaker "Y-18(CHARL2)" with an 80 kA breaker		APS (100%)
b2666.4	Replace Yukon 138 kV breaker "Y-19(CHARL2)" with an 80 kA breaker		APS (100%)
b2666.5	Replace Yukon 138 kV breaker "Y-4(4B-2BUS)" with an 80 kA breaker		APS (100%)
b2666.6	Replace Yukon 138 kV breaker "Y-5(LAYTON)" with an 80 kA breaker		APS (100%)
b2666.7	Replace Yukon 138 kV breaker "Y-8(HUNTING)" with an 80 kA breaker		APS (100%)
b2666.8	Replace Yukon 138 kV breaker "Y-9(SPRINGD)" with an 80 kA breaker		APS (100%)
b2666.9	Replace Yukon 138 kV breaker "Y-10(CHRL-SP)" with an 80 kA breaker		APS (100%)
b2666.10	Replace Yukon 138 kV 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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2666.12	Replace Yukon 138 kV 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%)
b2666.14	Replace Yukon 138 kV breaker "Y-22(SHEPHJT)" with an 80 kA breaker		APS (100%)
b2672	Change CT Ratio at Seneca Caverns from 120/1 to 160/1 and adjust relay settings accordingly		APS (100%)
b2688.3	Carroll Substation: Replace the Germantown 138 kV wave trap, upgrade the bus conductor and adjust CT ratios		AEP (12.91%) / APS (19.04%) / ATSI (1.24%) / ComEd (0.35%) / Dayton (1.45%) / DEOK (2.30%) / DL (1.11%) / Dominion (44.85%) / EKPC (0.78%) / PEPCO (15.85%) / RECO (0.12%)
b2689.3	Upgrade terminal equipment at structure 27A		APS (100%)
b2696	Upgrade 138 kV substation equipment at Butler, Shanor Manor and Krendale 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	Reconfigure the Ringgold 230 kV substation to double bus double breaker scheme		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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission 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		DL (100%)
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%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2970.5	*Convert Garfield 138/12.5 kV substation to 230/12.5 kV*		*APS (100%)*
b2996	Construct new Flint Run 500/138 kV substation		See sub-IDs for cost allocations
b2996.1	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 from Waldo Run substation. 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%)
b2996.2	Loop the Belmont – Harrison 500 kV line into and out of the new Flint Run 500 kV substation (less than 1 mile). Replace primary relaying and carrier sets on Belmont and Harrison 500 kV remote end substations		APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3005	Reconductor 3.1 mile 556 ACSR portion of Cabot to Butler 138 kV with 556 ACSS and upgrade terminal equipment. 3.1 miles of line will be reconductored for this project. The total length of the line is 7.75 miles		APS (100%)
b3006	Replace four Yukon 500/138 kV transformers with three transformers with higher rating and reconfigure 500 kV bus		APS (52.84%) / DL (47.16%)
b3007.1	Reconductor the Blairsville East to Social Hall 138 kV line and upgrade terminal equipment - AP portion. 4.8 miles total. The new conductor will be 636 ACSS replacing the existing 636 ACSR conductor. At Social Hall, meters, relays, bus conductor, a wave trap, circuit breaker and disconnects will be replaced		APS (100%)
b3010	Replace terminal equipment at Keystone and Cabot 500 kV buses. At Keystone, bus tubing and conductor, a wave trap, and meter will be replaced. At Cabot, a wave trap and bus conductor will be replaced		APS (100%)
b3011.1	Construct new Route 51 substation and connect 10 138 kV lines to new substation		DL (100%)
b3011.2	Upgrade terminal equipment at Yukon to increase rating on Yukon to Charleroi #2 138 kV line (New Yukon to Route 51 #4 138 kV line)		DL (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements	*Annual Revenue Requirement*	*Responsible Customer(s)*
b3013	Reconductor Vasco Tap to Edgewater Tap 138 kV line. 4.4 miles. The new conductor will be 336 ACSS replacing the existing 336 ACSR conductor	APS (100%)
b3015.6	Reconductor Elrama to Mitchell 138 kV line – AP portion. 4.2 miles total. 2x 795 ACSS/TW 20/7	DL (100%)
b3028	Upgrade substation disconnect leads at William 138 kV substation	APS (100%)
b3051.1	Ronceverte cap bank and terminal upgrades	APS (100%)
b3052	Install a 138 kV capacitor (29.7 MVAR effective) at West Winchester 138 kV	APS (100%)

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

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

Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company, all doing business as Allegheny Power (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b3128	Relocate 34.5 kV lines from generating station roof R. Paul Smith 138 kV station	APS (100%)

SCHEDULE 12 – APPENDIX A

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b1570.4	*Add a 345 kV breaker at Marysville station and a 0.1 mile 345 kV line extension from Marysville to the new 345/69 kV Dayton transformer*		*AEP (100%)*
b1660.1	Cloverdale: install 6-765 kV breakers, incremental work for 2 additional breakers, reconfigure and relocate miscellaneous facilities, establish 500 kV station and 500 kV tie with 765 kV station		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: ATSI (24.65%) / Dayton (8.85%) / DEOK (19.91%) / Dominion (41.38%) / EKPC (5.21%)

*Neptune Regional Transmission System, LLC

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

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b1797.1	Reconductor the AEP portion of the Cloverdale - Lexington 500 kV line with 2-1780 ACSS		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: ATSI (5.74%) / Dayton (1.97%) / DEOK (4.40%) / Dominion (9.97%) / EKPC (1.12%) / PEPCO (76.80%)
b2055	Upgrade relay at Brues station		AEP (100%)
b2122.3	Upgrade terminal equipment at Howard on the Howard - Brookside 138 kV line to achieve ratings of 252/291 (SN/SE)		AEP (100%)
b2122.4	Perform a sag study on the Howard - Brookside 138 kV line		AEP (100%)
b2229	Install a 300 MVAR reactor at Dequine 345 kV		AEP (100%)

*Neptune Regional Transmission System, LLC

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

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2230	Replace existing 150 MVAR reactor at Amos 765 kV substation on Amos - N. Proctorville - Hanging Rock with 300 MVAR reactor		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** AEP (100%)
b2231	Install 765 kV reactor breaker at Dumont 765 kV substation on the Dumont - Wilton Center line		AEP (100%)
b2232	Install 765 kV reactor breaker at Marysville 765 kV substation on the Marysville - Maliszewski line		AEP (100%)
b2233	Change transformer tap settings for the Baker 765/345 kV transformer		AEP (100%)
b2252	Loop the North Muskingum - Crooksville 138 kV line into AEP's Philo 138 kV station which lies approximately 0.4 miles from the line		AEP (100%)

*Neptune Regional Transmission System, LLC

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2253	Install an 86.4 MVAR capacitor bank at Gorsuch 138 kV station in Ohio		AEP (100%)
b2254	Rebuild approximately 4.9 miles of Corner - Degussa 138 kV line in Ohio		AEP (100%)
b2255	Rebuild approximately 2.8 miles of Maliszewski - Polaris 138 kV line in Ohio		AEP (100%)
b2256	Upgrade approximately 36 miles of 138 kV through path facilities between Harrison 138 kV station and Ross 138 kV station in Ohio		AEP (100%)
b2257	Rebuild the Pokagon - Corey 69 kV line as a double circuit 138 kV line with one side at 69 kV and the other side as an express circuit between Pokagon and Corey stations		AEP (100%)
b2258	Rebuild 1.41 miles of #2 CU 46 kV line between Tams Mountain - Slab Fork to 138 kV standards. The line will be strung with 1033 ACSR		AEP (100%)
b2259	Install a new 138/69 kV transformer at George Washington 138/69 kV substation to provide support to the 69 kV system in the area		AEP (100%)
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%)

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

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2287	Loop in the Meadow Lake - Olive 345 kV circuit into Reynolds 765/345 kV station		AEP (100%)
b2344.1	Establish a new 138/12 kV station, transfer and consolidate load from its Nicholsville and Marcellus 34.5 kV stations at this new station		AEP (100%)
b2344.2	Tap the Hydramatic – Valley 138 kV circuit (~ structure 415), build a new 138 kV line (~3.75 miles) to this new station		AEP (100%)
b2344.3	From this station, construct a new 138 kV line (~1.95 miles) to REA's Marcellus station		AEP (100%)
b2344.4	From REA's Marcellus station construct new 138 kV line (~2.35 miles) to a tap point on Valley – Hydramatic 138 kV ckt (~structure 434)		AEP (100%)
b2344.5	Retire sections of the 138 kV line in between structure 415 and 434 (~ 2.65 miles)		AEP (100%)
b2344.6	Retire AEP's Marcellus 34.5/12 kV and Nicholsville 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%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2345.2	Rebuild the 34.5 kV lines between Keeler - Sister Lakes and Glenwood tap switch to 69 kV (~12 miles)		AEP (100%)
b2345.3	Implement in - out at Keeler and Sister Lakes 34.5 kV stations		AEP (100%)
b2345.4	Retire Glenwood tap switch and construct a new Rothadew station. These new lines will continue to operate at 34.5 kV		AEP (100%)
b2346	Perform a sag study for Howard - North Bellville - Millwood 138 kV line including terminal equipment upgrades		AEP (100%)
b2347	Replace the North Delphos 600A switch. Rebuild approximately 18.7 miles of 138 kV line North Delphos - S073. Reconductor the line and replace the existing tower structures		AEP (100%)
b2348	Construct a new 138 kV line from Richlands Station to intersect with the Hales Branch - Grassy Creek 138 kV circuit		AEP (100%)
b2374	Change the existing CT ratios of the existing equipment along Bearskin - Smith Mountain 138kV circuit		AEP (100%)
b2375	Change the existing CT ratios of the existing equipment along East Danville-Banister 138kV circuit		AEP (100%)

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

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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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2444	Willow - Eureka 138 kV line: Reconductor 0.26 mile of 4/0 CU with 336 ACSS	AEP (100%)
b2445	Complete a sag study of Tidd - Mahans Lake 138 kV line	AEP (100%)
b2449	Rebuild the 7-mile 345 kV line between Meadow Lake and Reynolds 345 kV stations	AEP (100%)
b2462	Add two 138 kV circuit breakers at Fremont station to fix tower contingency '408_2'	AEP (100%)
b2501	Construct a new 138/69 kV Yager station by tapping 2-138 kV FE circuits (Nottingham-Cloverdale, Nottingham-Harmon)	AEP (100%)
b2501.2	Build a new 138 kV line from new Yager station to Azalea station	AEP (100%)
b2501.3	Close the 138 kV loop back into Yager 138 kV by converting part of local 69 kV facilities to 138 kV	AEP (100%)
b2501.4	Build 2 new 69 kV exits to reinforce 69 kV facilities and upgrade conductor between Irish Run 69 kV Switch and Bowerstown 69 kV Switch	AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2502.1	Construct new 138 kV switching station Nottingham tapping 6-138 kV FE circuits (Holloway-Brookside, Holloway-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 138 kV		AEP (100%)
b2502.3	Rebuild/convert Freebyrd-South Cadiz 69 kV circuit to 138 kV		AEP (100%)
b2502.4	Upgrade South Cadiz to 138 kV breaker and a half		AEP (100%)
b2530	Replace the Sporn 138 kV breaker 'G1' with 80kA breaker		AEP (100%)
b2531	Replace the Sporn 138 kV breaker 'D' with 80kA breaker		AEP (100%)
b2532	Replace the Sporn 138 kV breaker 'O1' with 80kA breaker		AEP (100%)
b2533	Replace the Sporn 138 kV breaker 'P2' with 80kA breaker		AEP (100%)
b2534	Replace the Sporn 138 kV breaker 'U' with 80kA breaker		AEP (100%)
b2535	Replace the Sporn 138 kV breaker 'O' with 80 kA breaker		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2536	Replace the Sporn 138 kV breaker 'O2' with 80 kA breaker		AEP (100%)
b2537	Replace the Robinson Park 138 kV breakers A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, and F1 with 63 kA breakers		AEP (100%)
b2555	Reconductor 0.5 miles Tiltonsville – Windsor 138 kV and string the vacant side of the 4.5 mile section using 556 ACSR in a six wire configuration		AEP (100%)
b2556	Install two 138 kV prop structures to increase the maximum operating temperature of the Clinch River- Clinch Field 138 kV line		AEP (100%)
b2581	Temporary operating procedure for delay of upgrade b1464. Open the Corner 138 kV circuit breaker 86 for an overload 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%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2591	Construct a new 69 kV line approximately 2.5 miles from Colfax to Drewry's. Construct a new Drewry's station and install a new circuit breaker at Colfax station.		AEP (100%)
b2592	Rebuild existing East Coshocton – North Coshocton double circuit line which contains Newcomerstown – N. Coshocton 34.5 kV Circuit and Coshocton – North Coshocton 69 kV circuit		AEP (100%)
b2593	Rebuild existing West Bellaire – Glencoe 69 kV line with 138 kV & 69 kV circuits and install 138/69 kV transformer at Glencoe Switch		AEP (100%)
b2594	Rebuild 1.0 mile of Brantley – Bridge Street 69 kV Line with 1033 ACSR overhead conductor		AEP (100%)
b2595.1	Rebuild 7.82 mile Elkhorn City – Haysi S.S 69 kV line utilizing 1033 ACSR built to 138 kV standards		AEP (100%)
b2595.2	Rebuild 5.18 mile Moss – Haysi SS 69 kV line utilizing 1033 ACSR built to 138 kV standards		AEP (100%)
b2596	Move load from the 34.5 kV bus to the 138 kV bus by installing a new 138/12 kV XF at New Carlisle station in Indiana		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2597	Rebuild approximately 1 mi. section of Dragoon-Virgil Street 34.5 kV line between Dragoon and Dodge Tap switch and replace Dodge switch MOAB to increase thermal capability of Dragoon-Dodge Tap branch		AEP (100%)
b2598	Rebuild approximately 1 mile section of the Kline-Virgil Street 34.5 kV line between Kline and Virgil Street tap. Replace MOAB switches at Beiger, risers at Kline, switches and bus at Virgil Street.		AEP (100%)
b2599	Rebuild approximately 0.1 miles of 69 kV line between Albion and Albion tap		AEP (100%)
b2600	Rebuild Fremont – Pound line as 138 kV		AEP (100%)
b2601	Fremont Station Improvements		AEP (100%)
b2601.1	Replace MOAB towards Beaver Creek with 138 kV breaker		AEP (100%)
b2601.2	Replace MOAB towards Clinch River with 138 kV breaker		AEP (100%)
b2601.3	Replace 138 kV Breaker A with new bus-tie breaker		AEP (100%)
b2601.4	Re-use Breaker A as high side protection on transformer #1		AEP (100%)
b2601.5	Install two (2) circuit switchers on high side of transformers # 2 and 3 at Fremont Station		AEP (100%)

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

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2605	Rebuild and reconductor Kammer – George Washington 69 kV circuit and George Washington – Moundsville ckt #1, designed for 138kV. Upgrade limiting equipment at remote ends and at tap stations		AEP (100%)
b2606	Convert Bane – Hammondsville from 23 kV to 69 kV operation		AEP (100%)
b2607	Pine Gap Relay Limit Increase		AEP (100%)
b2608	Richlands Relay Upgrade		AEP (100%)
b2609	Thorofare – Goff Run – Powell Mountain 138 kV Build		AEP (100%)
b2610	Rebuild Pax Branch – Scaraboro as 138 kV		AEP (100%)
b2611	Skin Fork Area Improvements		AEP (100%)
b2611.1	New 138/46 kV station near Skin Fork and other components		AEP (100%)
b2611.2	Construct 3.2 miles of 1033 ACSR double circuit from new Station to cut into Sundial-Baileysville 138 kV line		AEP (100%)
b2634.1	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%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2643	Replace the Darrah 138 kV breaker 'L' with 40kA 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 (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%)

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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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEP (100%)

*Neptune Regional Transmission System, LLC

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

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2687.2	Install a 300 MVAR shunt line reactor on the Broadford end of the Broadford – Jacksons Ferry 765 kV line		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%)
			DFAX Allocation: AEP (100%)
b2697.1	Mitigate 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 addressed.		AEP (100%)
b2697.2	Replace terminal equipment at AEP's Danville and East Danville substations to improve thermal capacity of Danville – East Danville 138 kV circuit		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2698	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%)
b2701.1	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%)
b2701.2	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%)
2701.3	Install 1-138 kV CB at Blue Racer to terminate new Herlan circuit	AEP (100%)
b2714	Rebuild/upgrade line between Glencoe and Willow Grove Switch 69 kV	AEP (100%)
b2715	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%)
b2727	Replace the South Canton 138 kV breakers 'K', 'J', 'J1', and 'J2' with 80kA breakers	AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2731	Convert the Sunnyside – East Sparta – Malvern 23 kV sub-transmission network to 69 kV. The lines are already built to 69 kV standards	AEP (100%)
b2733	Replace South Canton 138 kV breakers 'L' and 'L2' with 80 kA rated breakers	AEP (100%)
b2750.1	Retire Betsy Layne 138/69/43 kV station and replace it with the greenfield Stanville station about a half mile north of the existing Betsy Layne station	AEP (100%)
b2750.2	Relocate the Betsy Layne capacitor bank to the Stanville 69 kV bus and increase the size to 14.4 MVAR	AEP (100%)
b2753.1	Replace existing George Washington station 138 kV yard with GIS 138 kV breaker and a half yard in existing station footprint. Install 138 kV revenue metering for new IPP connection	AEP (100%)
b2753.2	Replace Dilles Bottom 69/4 kV Distribution station as breaker and a half 138 kV yard design including AEP Distribution facilities but initial configuration will constitute a 3 breaker ring bus	AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2753.3	Connect two 138 kV 6-wired circuits from "Point A" (currently de-energized and owned by FirstEnergy) in circuit positions previously designated Burger #1 & Burger #2 138 kV. Install interconnection settlement metering on both circuits exiting Holloway		AEP (100%)
b2753.6	Build double circuit 138 kV line from Dilles Bottom to "Point A". Tie each new AEP circuit in with a 6-wired line at Point A. This will create a Dilles Bottom – Holloway 138 kV circuit and a George Washington – Holloway 138 kV circuit		AEP (100%)
b2753.7	Retire line sections (Dilles Bottom – Bellaire and Moundsville – Dilles Bottom 69 kV lines) south of FirstEnergy 138 kV line 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 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 Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2760	Perform a Sag Study of the Saltville – Tazewell 138 kV line to increase the thermal rating of the line		AEP (100%)
b2761.1	Replace the Hazard 161/138 kV transformer		AEP (100%)
b2761.2	Perform a Sag Study of the Hazard – Wooten 161 kV line to increase the thermal rating of the line		AEP (100%)
b2761.3	Rebuild the Hazard – Wooton 161 kV line utilizing 795 26/7 ACSR conductor (300 MVA rating)		AEP (100%)
b2762	Perform a Sag Study of Nagel – West Kingsport 138 kV line to increase the thermal rating of the line		AEP (100%)
b2776	Reconductor the entire Dequine – Meadow Lake 345 kV circuit #2		AEP (100%)
b2777	Reconductor the entire Dequine – Eugene 345 kV circuit #1		AEP (100%)
b2779.1	Construct a new 138 kV station, Campbell Road, 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 as 138 kV double circuit and extend 138 kV from Campbell Road station		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2779.3	Construct a new 345/138 kV SDI Wilmington Station which will be sourced from Collingwood 345 kV and serve the SDI load at 345 kV and 138 kV, respectively	AEP (100%)
b2779.4	Loop 138 kV circuits in-out of the new SDI Wilmington 138 kV station resulting in a direct circuit to Auburn 138 kV and an indirect circuit to Auburn and Rob Park via Dunton Lake, and a circuit to Campbell Road; Reconductor 138 kV line section between Dunton Lake – SDI Wilmington	AEP (100%)
b2779.5	Expand Auburn 138 kV bus	AEP (100%)
b2787	Reconductor 0.53 miles (14 spans) of the Kaiser Jct. - Air Force Jct. Sw section of the Kaiser - Heath 69 kV circuit/line with 336 ACSR to match the rest of the circuit (73 MVA rating, 78% loading)	AEP (100%)
b2788	Install a new 3-way 69 kV line switch to provide service to AEP's Barnesville distribution station. Remove a portion of the #1 copper T-Line from the 69 kV through-path	AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2789	Rebuild the Brues - Glendale Heights 69 kV line section (5 miles) with 795 ACSR (128 MVA rating, 43% loading)		AEP (100%)
b2790	Install a 3 MVAR, 34.5 kV cap bank at Caldwell substation		AEP (100%)
b2791	Rebuild Tiffin – Howard, new transformer at Chatfield		AEP (100%)
b2791.1	Rebuild portions of the East Tiffin - Howard 69 kV line from East Tiffin to West Rockaway Switch (0.8 miles) using 795 ACSR Drake conductor (129 MVA rating, 50% loading)		AEP (100%)
b2791.2	Rebuild Tiffin - Howard 69 kV line from St. Stephen's Switch to Hinesville (14.7 miles) using 795 ACSR Drake conductor (90 MVA rating, non-conductor limited, 38% loading)		AEP (100%)
b2791.3	New 138/69 kV transformer with 138/69 kV protection at Chatfield		AEP (100%)
b2791.4	New 138/69 kV protection at existing Chatfield transformer		AEP (100%)
b2792	Replace the Elliott transformer with a 130 MVA 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%)

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Required Transmission Enhancements		Annual 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2799.1	Rebuild 12 miles of Valley – Almena 69 kV line as a double circuit 138/69 kV line using 795 ACSR conductor (360 MVA rating) to introduce a new 138 kV source into the 69 kV load pocket around Almena station		AEP (100%)
b2799.2	Rebuild 3.2 miles of Almena to Hartford 69 kV line using 795 ACSR conductor (90 MVA rating)		AEP (100%)
b2799.3	Rebuild 3.8 miles of Riverside – South Haven 69 kV line using 795 ACSR conductor (90 MVA rating)		AEP (100%)
b2799.4	At Valley station, add new 138 kV line exit with a 3000 A 40 kA breaker for the new 138 kV line to Almena and replace CB D with a 3000 A 40 kA breaker		AEP (100%)
b2799.5	At Almena station, install a 90 MVA 138/69 kV transformer with low side 3000 A 40 kA breaker and establish a new 138 kV line exit towards Valley		AEP (100%)
b2799.6	At Hartford station, install a second 90 MVA 138/69 kV transformer with a circuit switcher and 3000 A 40 kA low side breaker		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2817	Replace Delaware 138 kV breaker 'P' with a 40 kA breaker		AEP (100%)
b2818	Replace West Huntington 138 kV breaker 'F' with a 40 kA breaker		AEP (100%)
b2819	Replace Madison 138 kV breaker 'V' with a 63 kA breaker		AEP (100%)
b2820	Replace Sterling 138 kV breaker 'G' with a 40 kA breaker		AEP (100%)
b2821	Replace Morse 138 kV breakers '103', '104', '105', and '106' with 63 kA breakers		AEP (100%)
b2822	Replace Clinton 138 kV breakers '105' and '107' with 63 kA breakers		AEP (100%)
b2826.1	Install 300 MVAR reactor at Ohio Central 345 kV substation		AEP (100%)

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Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2826.2	Install 300 MVAR reactor at West Bellaire 345 kV substation		AEP (100%)
b2831.1	Upgrade the Tanner Creek – Miami Fort 345 kV circuit (AEP portion)		**DFAX Allocation:** Dayton (34.34%) / DEOK (56.45%) / EKPC (9.21%)
b2832	Six wire the Kyger Creek – Sporn 345 kV circuits #1 and #2 and convert them to one circuit		AEP (100%)
b2833	Reconductor the Maddox Creek – East Lima 345 kV circuit with 2-954 ACSS Cardinal conductor		**DFAX Allocation:** Dayton (100%)
b2834	Reconductor and string open position and sixwire 6.2 miles of the Chemical – Capitol Hill 138 kV circuit		AEP (100%)
b2872	Replace the South Canton 138 kV breaker 'K2' with a 80 kA breaker		AEP (100%)
b2873	Replace the South Canton 138 kV breaker "M" with a 80 kA breaker		AEP (100%)
b2874	Replace the South Canton 138 kV breaker "M2" with a 80 kA breaker		AEP (100%)
b2878	Upgrade the Clifty Creek 345 kV risers		AEP (100%)
b2880	Rebuild approximately 4.77 miles of the Cannonsburg – South Neal 69 kV line section utilizing 795 ACSR conductor (90 MVA rating)		AEP (100%)

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Required Transmission 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 limited)		AEP (100%)
b2882	Rebuild Reusens - Peakland Switch 69 kV line. Replace Peakland Switch		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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2885.1	Install a new Ironman Switch to serve a new delivery point requested by the City of Jackson for a load increase request		AEP (100%)
b2885.2	Install a new 138/69 kV station (Rhodes) to serve as a third source to the area to help relieve overloads caused by the customer load increase		AEP (100%)
b2885.3	Replace Coalton Switch with a new three breaker ring bus (Heppner)		AEP (100%)
b2886	Install 90 MVA 138/69 kV transformer, new transformer high and low side 3000 A 40 kA CBs, and a 138 kV 40 kA bus tie breaker at West End Fostoria		AEP (100%)
b2887	Add 2-138 kV CB's and relocate 2-138 kV circuit exits to different bays at Morse Road. Eliminate 3 terminal line by terminating Genoa - Morse circuit at Morse Road		AEP (100%)
b2888	Retire Poston substation. Install new Lemaster substation		AEP (100%)
b2888.1	Remove and retire the Poston 138 kV station		AEP (100%)
b2888.2	Install a new greenfield station, Lemaster 138 kV Station, in the clear		AEP (100%)

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Required Transmission 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)		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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2890.1	Rebuild 23.55 miles of the East Cambridge – Smyrna 34.5 kV circuit with 795 ACSR conductor (128 MVA rating) and convert to 69 kV		AEP (100%)
b2890.2	East Cambridge: Install a 2000 A 69 kV 40 kA circuit breaker for the East Cambridge – Smyrna 69 kV circuit		AEP (100%)
b2890.3	Old Washington: Install 69 kV 2000 A two way phase over phase switch		AEP (100%)
b2890.4	Install 69 kV 2000 A two way phase over phase switch		AEP (100%)
b2891	Rebuild the Midland Switch to East Findlay 34.5 kV line (3.31 miles) with 795 ACSR (63 MVA rating) to match other conductor in the area		AEP (100%)
b2892	Install new 138/12 kV transformer with high side circuit switcher at Leon and a new 138 kV line exit towards 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%)
b2936.1	Rebuild approximately 6.7 miles of 69 kV line between Mottville and Pigeon River using 795 ACSR conductor (129 MVA rating). New construction will be designed to 138 kV standards but operated at 69 kV		AEP (100%)

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Required Transmission 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2988	Replace the Twin Branch 345 kV breaker "JM" with 63 kA breaker and associated substation works including switches, bus leads, control cable and new DICM		AEP (100%)
b2993	Rebuild the Torrey – South Gambrinus Switch – Gambrinus Road 69 kV line section (1.3 miles) with 1033 ACSR 'Curlew' conductor and steel poles		AEP (100%)
b3000	Replace South Canton 138 kV breaker 'N' with an 80kA breaker		AEP (100%)
b3001	Replace South Canton 138 kV breaker 'N1' with an 80kA breaker		AEP (100%)
b3002	Replace South Canton 138 kV breaker 'N2' with an 80kA breaker		AEP (100%)
b3036	Rebuild 15.4 miles of double circuit North Delphos – Rockhill 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%)

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Required Transmission 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%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3086.3	Rebuild West Melrose – Whirlpool 34 kV line Str's 55–80 (1 mile), utilizing 795 26/7 ACSR conductor		AEP (100%)
b3086.4	North Findlay station: Install a 138 kV 3000A 63kA line breaker and low side 34.5 kV 2000A 40kA breaker, high side 138 kV circuit switcher on T1		AEP (100%)
b3086.5	Ebersole station: Install second 90 MVA 138/69/34 kV transformer. Install two low side (69 kV) 2000A 40kA breakers for T1 and T2		AEP (100%)
b3087.1	Construct a new greenfield station to the west (approx. 1.5 miles) of the existing Fords Branch Station in the new Kentucky Enterprise Industrial Park. This station will consist of six 3000A 40kA 138 kV breakers laid out in a ring arrangement, two 30 MVA 138/34.5 kV transformers, and two 30 MVA 138/12 kV transformers. The existing Fords Branch Station will be retired		AEP (100%)
b3087.2	Construct approximately 5 miles of new double circuit 138 kV line in order to loop the new Kewanee station into the existing Beaver Creek – Cedar Creek 138 kV circuit		AEP (100%)

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Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3087.3	Remote end work will be required at Cedar Creek Station		AEP (100%)
b3095	Rebuild Lakin – Racine Tap 69 kV line section (9.2 miles) to 69 kV standards, utilizing 795 26/7 ACSR conductor		AEP (100%)
b3099	*Install a 138 kV 3000A 40 kA circuit switcher on the high side of the existing 138/34.5 kV transformer No.5 at Holston station*		*AEP (100%)*
b3100	*Replace the 138 kV MOAB switcher "YY" with a new 138 kV circuit switcher on the high side of Chemical transformer No.6*		*AEP (100%)*
b3101	*Rebuild the 1/0 Cu. conductor sections (approx. 1.5 miles) of the Fort Robinson – Moccasin Gap 69 kV line section (approx. 5 miles) utilizing 556 ACSR conductor and upgrade existing relay trip limit (WN/WE: 63 MVA, line limited by remaining conductor sections)*		*AEP (100%)*
b3102	*Replace existing 50 MVA 138/69 kV transformers #1 and #2 (both 1957 vintage) at Fremont station with new 130 MVA 138/69 kV transformers*		*AEP (100%)*

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Required Transmission 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%)*

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Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3103.6	*Rebuild the 69 kV Hartford City – Armstrong Cork line but instead of terminating it into Armstrong Cork, terminate it into Jay station*		*AEP (100%)*
b3103.7	*Build a new 69 kV line from Armstrong Cork – Jay station*		*AEP (100%)*
b3103.8	*Rebuild the 34.5 kV Delaware – Bosman line as the 69 kV Royerton – Strawboard line. Retire the line section from Royerton to Delaware stations*		*AEP (100%)*
b3104	*Perform a sag study on the Polaris – Westerville 138 kV line (approx. 3.6 miles) to increase the summer emergency rating to 310 MVA*		*AEP (100%)*
b3105	*Rebuild the Delaware – Hyatt 138 kV line (approx. 4.3 miles) along with replacing conductors at both Hyatt and Delaware substations*		*AEP (100%)*
b3106	*Perform a sag study (6.8 miles of line) to increase the SE rating to 310 MVA. Note that results from the sag study could cover a wide range of outcomes, from no work required to a complete rebuild*		*AEP (100%)*
b3109	*Rebuild 5.2 miles Bethel – Sawmill 138 kV line including ADSS*		*AEP (100%)*

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Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3112	*Construct a single circuit 138 kV line (approx. 3.5 miles) from Amlin to Dublin using 1033 ACSR Curlew (296 MVA SN), convert Dublin station into a ring configuration, and re-terminating the Britton UG cable to Dublin station*		*AEP (100%)*
b3116	*Replace existing Mullens 138/46 kV 30 MVA transformer No.4 and associated protective equipment with a new 138/46 kV 90 MVA transformer and associated protective equipment*		*AEP (100%)*
b3118.1	*Expand existing Chadwick station and install a second 138/69 kV transformer at a new 138 kV bus tied into the Bellefonte – Grangston 138 kV circuit. The 69 kV bus will be reconfigured into a ring bus arrangement to tie the new transformer into the existing 69 kV via installation of four 3000A 63 kA 69 kV circuit breakers*		*AEP (100%)*
b3118.2	*Perform 138 kV remote end work at Grangston station*		*AEP (100%)*
b3118.3	*Perform 138 kV remote end work at Bellefonte station*		*AEP (100%)*
b3118.4	*Relocate the Chadwick – Leach 69 kV circuit within Chadwick station*		*AEP (100%)*

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Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3118.5	*Terminate the Bellefonte – Grangston 138 kV circuit to the Chadwick 138 kV bus*		*AEP (100%)*
b3118.6	*Chadwick – Tri-State #2 138 kV circuit will be reconfigured within the station to terminate into the newly established 138 kV bus #2 at Chadwick due to construability aspects*		*AEP (100%)*
b3118.7	*Reconductor Chadwick – Leach and Chadwick – England Hill 69 kV lines with 795 ACSS conductor. Perform a LiDAR survey and a sag study to confirm that the reconductored circuits would maintain acceptable clearances*		*AEP (100%)*
b3118.8	*Replace the 20 kA 69 kV circuit breaker 'F' at South Neal station with a new 3000A 40 kA 69 kV circuit breaker. Replace line risers towards Leach station*		*AEP (100%)*
b3118.9	*Rebuild 336 ACSR portion of Leach – Miller S.S 69 kV line section (approx. 0.3 mile) with 795 ACSS conductor*		*AEP (100%)*
b3118.10	*Replace 69 kV line risers (towards Chadwick) at Leach station*		*AEP (100%)*
b3119.1	Rebuild the Jay – Pennville 138 kV line as double circuit 138/69 kV. Build a new 9.8 mile single circuit 69 kV line from near Pennville station to North Portland station		AEP (100%)

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Required Transmission Enhancements		*Annual Revenue Requirement*	*Responsible Customer(s)*
b3119.2	Install three (3) 69 kV breakers to create the "U" string and add a low side breaker on the Jay transformer 2		AEP (100%)
b3119.3	Install two (2) 69 kV breakers at North Portland station to complete the ring and allow for the new line		AEP (100%)
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%)

SCHEDULE 12 – APPENDIX A

(20) Virginia Electric and Power Company

Required Transmission Enhancements	Annual Revenue Requirement		Responsible Customer(s)
b1698.7	Replace Loudoun 230 kV breaker '203052' with 63kA rating		Dominion (100%)
b1696.1	Replace the Idylwood 230 kV '25112' breaker with 50kA breaker		Dominion (100%)
b1696.2	Replace the Idylwood 230 kV '209712' breaker with 50kA breaker		Dominion (100%)
b1793.1	Remove the Carolina 22 SPS to include relay logic changes, minor control wiring, relay resets and SCADA programming upon completion of project		Dominion (100%)
b2281	Additional Temporary SPS at Bath County		Dominion (100%)
b2350	Reconductor 211 feet of 545.5 ACAR conductor on 59 Line Elmont - Greenwood DP 115 kV to achieve a summer emergency rating of 906 amps or greater		Dominion (100%)
b2358	Install a 230 kV 54 MVAR capacitor bank on the 2016 line at Harmony Village Substation		Dominion (100%)
b2359	Wreck and rebuild approximately 1.3 miles of existing 230 kV line between Cochran Mill - X4-039 Switching Station		Dominion (100%)
b2360	Build a new 39 mile 230 kV transmission line from Dooms - Lexington on existing right-of-way		Dominion (100%)
b2361	Construct 230 kV OH line along existing Line #2035 corridor, approx. 2.4 miles from Idylwood - Dulles Toll Road (DTR) and 2.1 miles on new right-of-way along DTR to new Scott's Run Substation		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2368	Replace the Brambleton 230 kV breaker '209502' with 63kA breaker		Dominion (100%)
b2369	Replace the Brambleton 230 kV breaker '213702' with 63kA breaker		Dominion (100%)
b2370	Replace the Brambleton 230 kV breaker 'H302' with 63kA 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** Dominion (100%)
b2397	Replace the Beaumeade 230 kV breaker '2079T2116' with 63kA		Dominion (100%)
b2398	Replace the Beaumeade 230 kV breaker '2079T2130' with 63kA		Dominion (100%)
b2399	Replace the Beaumeade 230 kV breaker '208192' with 63kA		Dominion (100%)
b2400	Replace the Beaumeade 230 kV breaker '209592' with 63kA		Dominion (100%)
b2401	Replace the Beaumeade 230 kV breaker '211692' with 63kA		Dominion (100%)
b2402	Replace the Beaumeade 230 kV breaker '227T2130' with 63kA		Dominion (100%)
b2403	Replace the Beaumeade 230 kV breaker '274T2130' with 63kA		Dominion (100%)

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.

*Neptune Regional Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2404	Replace the Beaumeade 230 kV breaker '227T2095' with 63kA		Dominion (100%)
b2405	Replace the Pleasant view 230 kV breaker '203T274' with 63kA		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 50kA		Dominion (100%)
b2443.2	Replace the Ox 230 kV breaker '206342' with 63kA 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 63kA 230 kV breakers with 19 80kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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	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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **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 50kA breaker		Dominion (100%)
b2543	Replace the Loudoun 500 kV 'H2T584' breaker with a 50kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	Annual Revenue Requirement	Responsible Customer(s)
b2582	Rebuild the Elmont – Cunningham 500 kV line		Dominion (100%)
b2583	Install 500 kV breaker at Ox Substation to remove Ox Tx#1 from H1T561 breaker failure outage.		Dominion (100%)
b2584	Relocate the Bremo load (transformer #5) to #2028 (Bremo-Charlottesville 230 kV) line and Cartersville distribution station to #2027 (Bremo-Midlothian 230 kV) line		Dominion (100%)
b2585	Reconductor 7.63 miles of existing line between Cranes and Stafford, upgrade associated line switches at Stafford		**DFAX Allocation:** PEPCO (100%)
b2620	Wreck and rebuild the Chesapeake – Deep Creek – Bowers Hill – Hodges Ferry 115 kV line; minimum rating 239 MVA normal/emergency, 275 MVA load dump rating		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

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

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2665	Rebuild the Cunningham – Dooms 500 kV line		Dominion (100%)
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 Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission 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 50kA 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 (1.97%) / BGE (14.46%) / Dominion (35.33%) / DPL (3.78%) / JCPL (3.33%) / ME (2.53%) / Neptune (0.63%) / PECO (6.30%) / PEPCO (20.36%) / PPL (3.97%) / PSEG (7.34%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2744	Rebuild the Carson – Rogers Rd 500 kV circuit		**Load-Ratio Share Allocation:** AEC (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **DFAX Allocation:** Dominion (100%)
b2745	Rebuild 21.32 miles of existing line between Chesterfield – Lakeside 230 kV		Dominion (100%)
b2746.1	Rebuild Line #137 Ridge Rd – Kerr Dam 115 kV, 8.0 miles, for 346 MVA summer emergency rating		Dominion (100%)
b2746.2	Rebuild Line #1009 Ridge Rd – Chase City 115 kV, 9.5 miles, for 346 MVA summer emergency rating		Dominion (100%)
b2746.3	Install a second 4.8 MVAR capacitor bank on the 13.8 kV bus of each transformer at Ridge Rd		Dominion (100%)
b2747	Install a Motor Operated Switch and SCADA control between Dominion's Gordonsville 115 kV bus and FirstEnergy's 115 kV line		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2757	Install a +/-125 MVAr Statcom at Colington 230 kV		Dominion (100%)
b2758	Rebuild Line #549 Dooms – Valley 500kV		Dominion (100%)
b2759	Rebuild Line #550 Mt. Storm – Valley 500kV		Dominion (100%)
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 115kV		Dominion (100%)
b2815	Build a new Pinewood 115kV switching station at the tap serving North Doswell DP with a 115kV four breaker ring bus		Dominion (100%)
b2842	Update the nameplate for Mount Storm 500 kV "57272" to be 50kA breaker		Dominion (100%)
b2843	Replace the Mount Storm 500 kV "G2TY" with 50kA breaker		Dominion (100%)
b2844	Replace the Mount Storm 500 kV "G2TZ" with 50kA breaker		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b2845	Update the nameplate for Mount Storm 500 kV "G3TSX1" to be 50kA breaker		Dominion (100%)
b2846	Update the nameplate for Mount Storm 500 kV "SX172" to be 50kA breaker		Dominion (100%)
b2847	Update the nameplate for Mount Storm 500 kV "Y72" to be 50kA breaker		Dominion (100%)
b2848	Replace the Mount Storm 500 kV "Z72" with 50kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission 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		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		Dominion (100%)
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 63kA breaker		Dominion (100%)
b2962.2	Replace the NIVO 230 kV breaker “2116T2130” with 63kA 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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual 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 (1.61%) / AEP (14.10%) / APS (5.79%) / ATSI (7.95%) / BGE (4.11%) / ComEd (13.24%) / Dayton (2.07%) / DEOK (3.22%) / DL (1.73%) / DPL (2.48%) / Dominion (13.17%) / EKPC (2.13%) / JCPL (3.71%) / ME (1.88%) / NEPTUNE* (0.42%) / PECO (5.34%) / PENELEC (1.86%) / PEPCO (3.98%) / PPL (4.76%) / PSEG (6.19%) / RE (0.26%) **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%)

*Neptune Regional Transmission System, LLC

Virginia Electric and Power Company (cont.)

Required Transmission 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%)
b3019	Rebuild 500 kV Line #552 Bristers to Chancellor – 21.6 miles long		Dominion (100%)
b3019.1	Update the nameplate for Morrisville 500 kV breaker “H1T594” to be 50kA		Dominion (100%)
b3019.2	Update the nameplate for Morrisville 500 kV breaker “H1T545” to be 50kA		Dominion (100%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3020	Rebuild 500 kV Line #574 Ladysmith to Elmont – 26.2 miles long		Dominion (100%)
b3021	Rebuild 500 kV Line #581 Ladysmith to Chancellor – 15.2 miles long		Dominion (100%)
b3026	Reconductor Line #274 (Pleasant View – Ashburn – Beaumeade 230 kV) with a minimum rating of 1200 MVA. Also upgrade terminal equipment		Dominion (100%)
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 50kA breaker		Dominion (100%)
b3027.4	Update the nameplate for Ladysmith 500 kV breaker "H1T575" to be 50kA breaker		Dominion (100%)
b3027.5	Update the nameplate for Ladysmith 500 kV breaker "568T574" (will be renumbered as "H2T568") to be 50kA 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%)

Virginia Electric and Power Company (cont.)

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

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements	*Annual Revenue Requirement*	*Responsible Customer(s)*
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%)*
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%)

Virginia Electric and Power Company (cont.)

Required Transmission Enhancements		Annual Revenue 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%)

SCHEDULE 12 – APPENDIX A

(23) American Transmission Systems, Inc.

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

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

American Transmission Systems, Inc. (cont.)

Required Transmission Enhancements		Annual Revenue Requirement	Responsible Customer(s)
b3032	Greenfield - NASA 138 kV terminal upgrades: NASA substation, Greenfield exit: Revise CT tap on breaker B22 and adjust line relay settings; Greenfield substation, NASA exit: Revise CT tap on breaker B1 and adjust line relay settings; replace 336.4 ACSR line drop with 1033.5 AL		ATSI (100%)
b3033	Ottawa – Lakeview 138 kV reconductor and substation upgrades		ATSI (100%)
b3034	Lakeview – Greenfield 138 kV reconductor and substation upgrades		ATSI (100%).
b3066	Reconductor the Cranberry – Jackson 138 kV line (2.1 miles), reconductor 138 kV bus at Cranberry bus and replace 138 kV line switches at Jackson bus		ATSI (100%)
b3067	Reconductor the Jackson – Maple 138 kV line (4.7 miles), replace line switches at Jackson 138 kV and replace the line traps and relays at Maple 138 kV bus		ATSI (100%)
b3080	Reconductor the 138 kV bus at Seneca		ATSI (100%)
b3081	Replace the 138 kV breaker and reconductor the 138 kV bus at Krendale		ATSI (100%)
b3127	At Bay Shore 138 kV station: Install new switchyard power supply to separate from existing generating station power service, separate all communications circuits, and construct a new station access road		ATSI (100%)