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March 22, 2021

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. ER21-726-001
Response to February 18, 2021 Deficiency Letter*

Dear Secretary Bose:

On December 23, 2020, PJM Interconnection, L.L.C. (“PJM”) filed,¹ pursuant to Schedule 12² of the PJM Open Access Transmission Tariff (“Tariff”) and section 205 of the Federal Power Act (“FPA”),³ amendments to Schedule 12-Appendix⁴ and Schedule 12-Appendix A⁵ of the PJM Tariff to provide updated annual cost allocations for Regional Facilities and Necessary Lower Voltage Facilities (in Schedule 12-Appendix and Schedule 12-Appendix A) and Lower Voltage Facilities (in Schedule 12-Appendix A only) included in the PJM RTEP. As PJM explained, the amendments to Schedule 12-Appendix and Schedule 12-Appendix A contained in the 2021 Annual Update Filing merely update existing RTEP cost responsibility assignments or update a Required Transmission Enhancement scheduled to enter into service beginning with calendar year 2021. The filing does not contain any new RTEP enhancements or

¹ *PJM Interconnection, L.L.C.*, Docket No. ER21-726-000 (Dec. 23, 2020) (“2021 Annual Update Filing”).

² 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.

³ 16 U.S.C. § 824d.

⁴ The cost responsibility assignments for all projects included in the regional transmission expansion plan (“RTEP”) prior to February 1, 2013, are located in Schedule 12-Appendix. *See* Tariff, Schedule 12, section (a)(v).

⁵ The cost responsibility assignments for all projects in the RTEP after February 1, 2013, are located in Tariff, Schedule 12-Appendix A. *See* Tariff, Schedule 12, section (a)(v).

expansions.⁶

On February 18, 2021, the Federal Energy Regulatory Commission (“Commission”) informed PJM that its filing was deficient and that the Commission required additional information to process the 2021 Annual Update Filing.⁷ The Commission raises questions about changes to cost responsibility assignments based on the solution-based distribution factor (“DFAX”) methodology for transmission enhancements and expansions included in Schedule 12-Appendix A, both from the facilities’ initial cost allocations and from their calendar year 2020 allocations.⁸ As PJM explains herein, changes to cost assignments calculated pursuant to solution-based DFAX are an expected outcome of planning model changes. That said, between the time PJM began using the solution-based DFAX methodology to calculate and allocate RTEP costs on February 1, 2013 and through the preparation of the 2021 Annual Update Filing, less than three percent of the total number of transmission expansions or enhancements allocated pursuant to solution-based DFAX had large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁹

Based on PJM’s following responses to the February 18 Letter and the information provided in the 2021 Annual Update Filing, PJM requests that the Commission accept the 2021 Annual Update Filing to be effective as of January 1, 2021 for the reasons set forth therein.

⁶ See 2021 Annual Update Filing at 19.

⁷ *PJM Interconnection, L.L.C.*, Deficiency Letter, Docket No. ER21-726-000 (Feb. 18, 2021) (“February 18 Letter”).

⁸ See February 18 Letter at 2.

⁹ See *infra* Section II. As explained below, PJM defines a large cost allocation change to be one where the DFAX percent allocation changed by 50 percent or more and was not the result of a regulatory change.

I. BACKGROUND

A. *Annual RTEP Cost Allocation Update Filings*

PJM files cost responsibility assignments for transmission enhancements and expansions that the PJM Board of Managers (“PJM Board”) approves as part of PJM’s RTEP in accordance with Schedule 12 of PJM’s Tariff and Schedule 6 of the Amended and Restated Operating Agreement of PJM (“Operating Agreement”).¹⁰ Under the PJM hybrid cost allocation method accepted as complying with Order No. 1000,¹¹ in the case of Regional Facilities and Necessary Lower Voltage Facilities that address a reliability need,¹² 50 percent of the costs of those facilities are allocated region-wide on a load-ratio share basis.¹³ The other 50 percent of the costs are allocated based on the solution-based DFAX method.¹⁴ Costs of Lower Voltage Facilities are allocated 100 percent using the solution-based DFAX method.¹⁵ In addition, for certain Regional Facilities and Necessary Lower Voltage Facilities included in the RTEP prior to February 1, 2013,

¹⁰ See PJM Operating Agreement, Schedule 6, section 1.6(b); PJM Tariff, Schedule 12, section (b)(viii).

¹¹ See *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, Order No. 1000, FERC Stats. & Regs. ¶ 31,323 (2011) (Order No. 1000), *order on reh’g*, Order No. 1000-A, 139 FERC ¶ 61,132, *order on reh’g and clarification*, Order No. 1000-B, 141 FERC ¶ 61,044 (2012), *aff’d sub nom. S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41 (D.C. Cir. 2014) (*S.C. Pub. Serv. Auth. v. FERC*). See also *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214 (2013), *order on reh’g and compliance*, 147 FERC ¶ 61,128 (2014), *order on reh’g and compliance*, 150 FERC ¶ 61,038, *order on reh’g and compliance*, 151 FERC ¶ 61,250 (2015).

¹² PJM identifies reliability transmission needs and economic constraints, and allocates the costs of the solutions to such transmission needs in accordance with the type of benefits they provide. See *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214, at P 441. See also Tariff, Schedule 12, section (b)(v) (assigning cost responsibility for Economic Projects).

¹³ Tariff, Schedule 12, section (b)(i)(A)(1).

¹⁴ Tariff, Schedule 12, section (b)(i)(A)(2)(a).

¹⁵ Tariff, Schedule 12, section (b)(ii).

50 percent of cost responsibility assignments are allocated using solution-based DFAX and, as a result, those allocations are updated annually as well.¹⁶

Solution-based DFAX cost allocation responsibilities for transmission enhancements and expansions are set at the time the transmission enhancement or expansion is included in the RTEP, and are revisited annually beginning with the calendar year in which a transmission enhancement or expansion is scheduled to enter service.¹⁷ As the Commission has previously explained, PJM's annual filings to change the cost responsibility assignments set forth in Schedule 12-Appendix A "simply reflect[] the result of the cost allocation method found in Schedule 12 of the Tariff" and "do not provide an independent basis for challenging the designations of cost responsibility pursuant to the existing Tariff requirements in Schedule 12."¹⁸

B. The Formulaic Nature of the Solution-Based DFAX Methodology

In setting boundaries for settlement negotiations in 2007 regarding the development of the mechanics of the cost allocation methodology in PJM, the Commission made clear that the goal should be to agree upon "a methodology that makes the allocation process routine."¹⁹ The Commission contemplated that future RTEP cost allocation filings would be "informational in nature."²⁰ In order to accomplish that goal, it was important that the formula provide for very little discretion.

¹⁶ Tariff, Schedule 12, section (a)(v) (The assignment of cost responsibility of Required Transmission Enhancements included in the RTEP prior to February 1, 2013 are set forth in Tariff, Schedule 12-Appendix).

¹⁷ See Tariff, Schedule 12, section (b)(iii)(H)(2).

¹⁸ *PJM Interconnection, L.L.C.*, 165 FERC ¶ 61,078, at P 20 (2018).

¹⁹ *PJM Interconnection, L.L.C.*, 119 FERC ¶ 61,067, at P 3 (2007) ("April 19 Order On Rehearing").

²⁰ April 19 Order On Rehearing at P 3.

Consistent with Commission expectations, the DFAX methodology is formulaic and does not contemplate modification on a project-by-project basis; rather, it is a comprehensive formula that determines cost allocations based on “beneficiary pays” principles and includes, among other things, prescribed analysis components such as zonal netting and nesting, the treatment of phase angle regulators, and a threshold for projects included in the RTEP.²¹ The methodology is based on a computer model of the PJM transmission system. Using power flow modeling software, PJM calculates the portion of the power that flows on the Required Transmission Enhancement for consumption by load in each transmission zone and withdrawal by each merchant transmission facility having Firm Transmission Withdrawal Rights (“TWRs”) (collectively, “Responsible Zones”). This calculation yields distribution factors, expressed as percentages that represent a measure of the use by the load in each Responsible Zone.²² These distribution factors are calculated for each Responsible Zone.²³

The basic steps of the solution-based DFAX calculations are as follows. The calculation of the DFAX for each Responsible Zone is based on its use of the upgrade to deliver PJM generation to serve its load. PJM uses the annual RTEP starting base case to develop all DFAX values for new RTEP enhancements or expansions. A DFAX represents a measure of the use of the upgrade by each megawatt of a zone’s aggregate load served by a megawatt of PJM generation, as determined by power flow analysis.

²¹ *PJM Interconnection, L.L.C.*, 119 FERC ¶ 61,067 at P 3 (2007) (“April 19 Order On Rehearing”).

²² April 19 Order On Rehearing at P 3.

²³ DFAX is calculated using linear matrix algebra. Distribution factors represent the ratio of (a) the change in megawatt flow on a transmission facility for (b) a change in megawatts transferred to aggregate load within a transmission zone or, in the case of a merchant transmission facility, the point of withdrawal associated with Firm Transmission Withdrawal Rights over the merchant transmission facility.

To perform a DFAX calculation for cost allocation, both a source and sink for power are defined. The source used for the DFAX calculation is the aggregate of all PJM generation and the sink is each transmission owner's peak zonal load or applicable megawatt value for a merchant transmission with Firm TWRs. Using this approach, the simulation produces the change in megawatt usage on a transmission facility as a single megawatt of power is transferred from PJM generation to each PJM load zone. This change represents the DFAX value that is an expression of the usage of a transmission facility by each Responsible Zone.

PJM has used the solution-based DFAX methodology to calculate and allocate RTEP costs since it was approved by the Commission, effective February 1, 2013.²⁴ The inputs to the methodology are updated annually using the annual RTEP starting base case for the upcoming RTEP year to develop all DFAX values. Those values are intended to reflect changing uses of the transmission system since the last annual update.

C. Factors That Have an Impact on Cost Allocations Stemming from the Use Solution-Based DFAX Analysis

As PJM discusses in detail below,²⁵ transmission system modifications that affect flows on the PJM network have an impact on cost allocations derived pursuant to the solution-based DFAX methodology. As also discussed below, changes in regulatory requirements have an impact on

²⁴ On October 11, 2012, PJM filed, on behalf of the PJM Transmission Owners, proposed tariff revisions to Schedule 12 of the PJM Tariff to change the cost allocation methodology from Violation-Based DFAX to Solution-Based DFAX. See *PJM Interconnection, L.L.C., et al.*, Filing Letter Proposing PJM Open Access Transmission Tariff Revisions to Modify Cost Allocation for PJM Required Transmission Enhancements, Docket No. ER13-90-000 (Oct. 11, 2012). The Commission conditionally accepted the Solution-Based DFAX methodology, to be effective February 1, 2013, subject to refund and to a future order in PJM's Order No. 1000 compliance proceeding on January 31, 2013. See *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,074 (2013), *order on compliance filing*, 142 FERC ¶ 61,214 (2013), *order on reh'g and compliance*, 147 FERC ¶ 61,128(2014), *order on reh'g and compliance*, 150 FERC ¶ 61,038 (2015).

²⁵ See *infra* Section III, PJM Response to Question 1 (Part A).

cost allocations derived pursuant to the solution-based DFAX methodology.²⁶ For instance, the Commission has previously directed PJM to revise the methodology used to calculate and allocate costs to certain facilities. Examples include:

- The settlement filed in Docket No. EL05-121-009²⁷ proposing a hybrid cost allocation methodology for certain Regional and Necessary Lower Voltage Facilities approved before February 1, 2013 whose costs were initially allocated using the 100 percent load-ratio share method established in Opinion No. 494.²⁸ The hybrid methodology is the same cost allocation method accepted as complying with Order No. 1000 for such facilities that address reliability needs, *i.e.*, 50 percent of the costs are allocated region-wide on a load-ratio share basis and the other 50 percent of the costs are allocated using solution-based DFAX.
- Rejection of the Form No. 715 cost allocation methodology which required PJM to revise cost responsibility assignments for facilities allocated 100 percent to the zone of the Transmission Owner who filed the Form No. 715 criteria²⁹ and, in its place, using the current hybrid methodology for Regional and Lower Voltage Facilities to address reliability needs and 100 percent solution-based DFAX methodology for Lower Voltage Facilities.

Additionally, other regulatory decisions have required PJM to make changes to the initial solution-based DFAX allocations for certain facilities. Examples have included: (i) the termination of the wheeling arrangement consisting of two transmission service agreements that enabled Consolidated Edison of New York (“Con Edison”) to wheel 1,000 MW of power from Con Edison through Public Service Electric and Gas Company’s facilities in northern New Jersey

²⁶ See *infra* Section III, PJM Response to Question 1 (Part A).

²⁷ *PJM Interconnection, L.L.C.*, Offer of Settlement, Docket No. EL05-121-009 (June 15, 2016) (“Settlement”). The Commission approved the Settlement and directed PJM to submit the associated Tariff amendments by way of compliance eTariff records consistent with the pro forma tariff records included with the Settlement. *PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,168 (May 31, 2018) (“Order Approving Settlement”)

²⁸ *PJM Interconnection, L.L.C.*, Opinion No. 494, 119 FERC ¶ 61,063 (2007), *order on reh’g*, Opinion No. 494-A, 122 FERC ¶ 61,082 (2008).

²⁹ Tariff, Schedule 12, section (b)(xv) *Reserved* (previously Required Transmission Enhancements to Address Transmission Owner Planning Criteria).

for delivery back to Con Edison in New York City;³⁰ (ii) East Coast Power, L.L.C., a/k/a Linden VFT, LLC (“Linden”) and Hudson Transmission Partners, LLC’s (“HTP”) conversion of their Firm TWRs to Non-Firm TWRs;³¹ and (iii) adoption of stability-deviation cost allocation methodology.³²

To be clear, while certain factors have an impact on the cost allocations stemming from the use of the solution-based DFAX analysis, there has been no change to the mechanics of the solution-based DFAX methodology since it was first applied in 2013.

II. THE 2020 AND 2021 ANNUAL UPDATE FILINGS

The Commission has asked PJM about changes to cost allocations calculated pursuant to the solution-based DFAX methodology for transmission enhancements and expansions included in Schedule 12-Appendix A, both from the facilities’ initial cost allocations and from their calendar

³⁰ See *PJM Interconnection, L.L.C.*, Revisions to Schedule 12-Appendix and Schedule 12-Appendix A, Docket No. ER17-950-000 (March 16, 2017) (filing revisions using solution-based DFAX due to termination of the Con Edison Wheel included the following baseline upgrades: b2436.10, b2436.21, b2436.22, b2436.33, b2436.34, b2436.50, b2436.60, b2436.70, b2436.81, b2436.83, b2436.84, b2436.85, b2436.90, b2437.10, b2437.11, b2437.20, b2437.21, b2437.30, b2437.33, b2688.1, b2688.2, b2688.3, b2743.2, b2743.2, b2743.3, b2743.4, b2743.5, b2743.6, b2743.6.1, b2743.7, b2752.1, b2752.2, b2752.3, b2752.4, b2752.5, b2752.6 and b2752.7). *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,124 (Feb. 20, 2020) (accepting revisions to Tariff, Schedule 12-Appendix and Schedule 12-Appendix A due to termination of the Con Edison transmission service agreements).

³¹ In PJM’s 2018 Annual Update Filing, PJM included revisions to implement the conversions from Firm TWRs to non-Firm TWRs by eliminating assignment of cost responsibility to Linden and HTP for RTEP projects included in Schedule 12-Appendix and Schedule 12-Appendix A. See *PJM Interconnection, L.L.C.*, 2018 Annual RTEP Update Filing, Docket No. ER18-579-000 (Dec. 29, 2017), supplemented on Jan. 3, 2018 (revisions removing allocations to Linden and HTP in Schedule 12-Appendix A using solution-based DFAX include the following baseline upgrades: b2436.10, b2436.81, b2436.83, b2436.84, b2436.85 and b2437.10, b2437.11, b2437.21 and b2437.30). PJM also filed revisions to the following baseline upgrades in Schedule 12-Appendix A to eliminate cost responsibility assignments to Linden and HTP using solution-based DFAX: b2436.21, b2436.22, b2436.33, b2436.34, b2436.50, b2436.60, b2436.70, b2436.90, b2437.20, b2218, b2766.1 and b2766.2. See *PJM Interconnection, L.L.C.*, Supplemental Filing, Docket No. ER18-579-001 (Jan. 3, 2018); *PJM Interconnection, L.L.C.*, Revisions to Schedule 12-Appendix and Schedule 12-Appendix A, Docket No. ER18-680-000 (Jan. 19, 2018).

³² *PJM Interconnection, L.L.C.*, Revisions to Schedule 12-Appendix A, ER20-736-000 (Jan. 3, 2020) (revising cost responsibilities for the Artificial Island Projects by replacing the use of solution-based DFAX with the stability deviation method. The baseline upgrades include: b2633.1, b2633.2, b2633.4, b2633.5, b2633.10)).

year 2020 allocations.³³ As an initial matter, PJM provides information in this response about transmission enhancements and expansions included in both Schedule 12-Appendix and Schedule 12-Appendix A, since both appendices have facilities that are allocated costs pursuant to the solution-based DFAX methodology and both appendices were included in PJM's 2021 Annual Update Filing.

Second, PJM provides the following additional information in **Table 1** below regarding the 2020 Annual Update Filing³⁴ and the 2021 Annual Update Filing:

- (i) the number of upgrades evaluated for inclusion in the 2021 Annual Update Filing, in both Schedule 12-Appendix and Schedule 12-Appendix A;³⁵
- (ii) the number of upgrades evaluated for inclusion in the 2020 Annual Update Filing, in both Schedule 12-Appendix and Schedule 12-Appendix A;³⁶
- (iii) the number of upgrades in both Schedule 12-Appendix and Schedule 12-Appendix A that were not initially allocated costs pursuant to the solution-based DFAX methodology, but are now allocated costs pursuant to the solution-based DFAX methodology as a result of Commission and court orders;³⁷
- (iv) the total number of upgrades that had a different solution-based DFAX allocation from their initial allocation and the allocation set forth in the 2021 Annual Update Filing, as well as such upgrades that had a large difference³⁸ between their initial allocation and the allocation set forth in the 2021 Annual Update Filing;³⁹ and
- (v) the total number of upgrades that had a different solution-based DFAX allocation as between the allocation set forth in the 2020 Annual Update and the allocation set forth in the 2021 Annual Update Filing, as well as such upgrades that had a large

³³ See February 18 Letter at 2, Questions 1 and 2.

³⁴ See *PJM Interconnection, L.L.C.*, Docket No. ER20-717-000 (Dec. 31, 2019) (“2020 Annual Update Filing”).

³⁵ See Table 1, Section I.

³⁶ See Table 1, Section II.

³⁷ See Table 1, Section III. See also *infra*, Response to Question 1.

³⁸ PJM defines a “large” cost allocation change to be one where the DFAX percent allocation changed by 50 percent or more and was not the result of a regulatory change.

³⁹ See Table 1, Section IV. See also *infra*, Response to Question 1.

difference between the allocation set forth in the 2020 Annual Update Filing and the allocation set forth in the 2021 Annual Update Filing.⁴⁰

Table 1

<u>Number Of Upgrades With Solution-Based DFAX Allocation</u>		<u>Schedule 12 Appendix</u>	<u>Schedule 12 Appendix A</u>	<u>TOTAL</u>
I.	Subject To 2021 Annual Update	119	342	461
II.	Subject To 2020 Annual Update	119	254	373
III.	Initial Allocation Not Based On SBDFAX But Later Changed To SBDFAX Because Of Commission Order	119	31	150
	a) EL05-121 (Table 3.A)	119	0	119
	b) Form 715 (Table 3.B)	0	31	31
IV.	Initial SBDFAX Allocation Different From 2021 SBDFAX Allocation (Supports response to Question 1)			
	a) Total Number Of Differences	93	58	151
	Table 2	0	41	41
	Table 3.A	93	0	93
	Table 3.B	0	17	17
	b) Large (>50%) Differences	3	9	12
	Table 2	0	6	6
	Table 3.A	3	0	3
	Table 3.B	0	3	3
V.	2020 Allocation Different From 2021 Allocation (Supports response to Question 2)			
	a) Total Number Of Differences (Tables 4.A and 4.B)	93	31	124
	b) Large (>50%) Differences (Table 4)	2	9	11

⁴⁰ See Table 1, Section IV. See also *infra*, Response to Question 2.

A. Differences Between Initial Solution-Based DFAX Allocation and Solution-Based DFAX Allocations in the 2021 Annual Update Filing

As shown in **Table 1**, between the time PJM began using the solution-based DFAX methodology to calculate and allocate RTEP costs on February 1, 2013 and through the preparation of the 2021 Annual Update Filing, PJM evaluated annual cost allocation assignments for 461 transmission enhancements or expansions that have all or a portion of their costs allocated based on the solution-based DFAX methodology; 342 of these enhancements or expansions are included in Schedule 12-Appendix A, while 119 of these enhancements or expansions are included in Schedule 12-Appendix.⁴¹

In order to prepare the 2021 Annual Update Filing, PJM evaluated the cost responsibility assignments for all 461 transmission enhancements or expansions described above. Of the 461 total enhancements or expansions, 151 (or approximately 33 percent) had allocation changes from the initial allocation calculated.⁴² And, only 12 (or less than three percent) of the total (461) number of transmission expansion or enhancement allocated pursuant to solution-based DFAX can be characterized as having large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁴³

Additional details about these changed allocations are included in PJM's response to Question 1, below.

⁴¹ See Table 1, Section I. As stated above, cost responsibility assignments for all projects included in the RTEP prior to February 1, 2013, are located in Schedule 12-Appendix, while projects included in RTEP on and after February 1, 2013 are located in Schedule 12-Appendix A. See Tariff, Schedule 12, section (a)(v).

⁴² See Table 1, Sections I and IV. See also *infra* PJM Response to Question 1.

⁴³ As the Commission and courts have previously recognized, in discerning a just and reasonable cost allocation, "allocation of costs is not a matter for the slide-rule. It involves judgment on a myriad of facts. It has no claim to an exact science." See, e.g., *PJM Interconnection, L.L.C.*, 119 FERC ¶ 61,063, at P 38 (citing *Colorado Interstate Co. v. FPC*, 324 U.S. 581, 589 (1945)).

B. Differences Between Solution-Based DFAX in the Annual Update Filings

As shown in **Table 1**, between the time PJM began using the solution-based DFAX methodology to calculate and allocate RTEP costs on February 1, 2013 and through the preparation of the 2020 Annual Update Filing, PJM evaluated annual cost allocation assignments for 373 transmission enhancements or expansions that have all or a portion of their costs allocated based on the solution-based DFAX methodology; 254 of these enhancements or expansions are included in Schedule 12-Appendix A, while 119 of these enhancements or expansions are included in Schedule 12-Appendix.⁴⁴

In order to prepare this response to the February 18 Letter, PJM compared the cost allocations for each of the 373 upgrades as calculated for the 2020 Annual Update Filing to the cost allocations for each of those upgrades as calculated for the 2021 Annual Update Filing. As shown in **Table 1**, of the 373 total enhancements or expansions evaluated for inclusion in the 2020 Annual Update, 124 (or approximately 33 percent) had allocation changes between the 2020 Annual Update Filing and the 2021 Annual Update Filing.⁴⁵ Only 11 (or less than three percent) of the total (373) number of transmission expansions or enhancements allocated pursuant to solution-based DFAX can be characterized as having large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁴⁶

Additional details about these changed allocations are included in PJM's response to Question 2, below.

⁴⁴ See Table 1, Section II.

⁴⁵ See Table 1, Sections I and V. See also *infra* PJM Response to Question 2.

⁴⁶ See Table 1, Section V.

III. PJM'S RESPONSE TO QUESTIONS IN THE FEBRUARY 18 LETTER

QUESTION 1: Changes from Preliminary Cost Responsibility Assignments: For each Required Transmission Enhancement included in Schedule 12-Appendix A for which the portion of cost responsibility assignment based on the solution-based distribution factor (DFAX) method differed in the 2021 Annual Update from the preliminary cost responsibility determination provided to the Commission at the time the Required Transmission Enhancement was included in the Regional Transmission Expansion Plan (RTEP), please explain the changes to the solution-based DFAX method cost responsibility assignment and provide documentation supporting the changes.

PJM REPOSENSE TO QUESTION 1:

A. Changes to Cost Responsibility Assignments Calculated Pursuant to the Solution-Based DFAX Methodology Are Expected

The Commission has asked PJM to explain differences in cost responsibility assignments for each transmission enhancement or expansion in Schedule 12-Appendix A which had a preliminary, PJM Board-approved, cost responsibility determination that differed from the transmission enhancement or expansion's cost responsibility determination set forth in the 2021 Annual Update Filing.

The solution-based DFAX methodology "recognizes changing flows on transmission lines over time which provides a tool to more dynamically track line usage and beneficiaries."⁴⁷ Thus, changes to cost assignments calculated pursuant to solution-based DFAX are an expected outcome of planning model changes. PJM has identified two primary categories of drivers for changes to cost responsibility assignments calculated pursuant to solution-based DFAX: (i) changes to the PJM transmission system and (ii) regulatory changes. While these factors could cause revised cost allocations for individual transmission enhancements or expansions from year-to-year, the formulaic solution-based DFAX methodology itself does not change.

⁴⁷ *PJM Interconnection, L.L.C.*, Order No. 1000 Compliance Filing, Docket No. ER13-198-000, at 79-80 (Oct. 25, 2012).

First, and most significantly, transmission system modifications that affect flows on the PJM network have an impact on cost allocations derived pursuant to the solution-based DFAX methodology. Over time, the flows on the PJM transmission network are affected by the addition of transmission enhancements or expansions, as well as numerous other changes to the system, such as generation additions, generation retirements, changes in loads both in PJM and in neighboring systems and other transmission additions and modifications to the configuration of existing transmission facilities or even the new facility, itself.⁴⁸ The majority of such changes are reflected in the annual RTEP starting base case for the upcoming RTEP year and new Board-approved transmission enhancements and expansions are added to the model during the course of the RTEP year. The collective impact of these model updates results in cost allocation changes over time – which is precisely the intent of the solution-based DFAX methodology.⁴⁹ The longer the time lapse between the initial cost allocation and the update filing, the more variation there may be to the initial allocation, which could lead to larger cost allocation deviations. The fact is that cost allocations change. It is an intended feature of the solution-based DFAX methodology to ensure that the cost allocation tracks the actual beneficiaries throughout the lifetime of the assets as the system evolves over time.

⁴⁸ See *PJM Transmission Owners*, PJM Open Access Transmission Tariff Revisions to Modify Cost Allocation for PJM Required Transmission Enhancements, Exhibit No. PTO-1, Testimony of Steven R. Herling, Docket No. ER13-90-000, at 7:17-22 (Oct. 11, 2012) (“Herling Testimony”).

⁴⁹ See, e.g., Herling Testimony at 12:6-13 (explaining that the solution-based DFAX methodology “can be repeated periodically to reflect changes in the relative degree to which the facility is used by transmission zone loads and merchant transmission facilities” and that it “can be employed to capture changes in the distribution of benefits of the new transmission facility”); *PJM Interconnection, L.L.C.*, Order No. 1000 Compliance Filing, Docket No. ER13-198-000, at 80 (Oct. 25, 2012) (explaining that a benefit of the solution-based DFAX methodology is that it can be updated annually to “capture changes in flows in a way which is administratively feasible to implement.”); *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214, at P 427 (2013) (accepting the proposal to base cost allocation on the solution-based DFAX methodology and recognizing that “it may be conducted iteratively to account for changes in system topology.”)

Second, changes in regulatory requirements have an impact on cost allocations. Most recently, for example, cost allocations were impacted by Commission and court proceedings addressing the allocation of costs for projects included in the RTEP solely to address individual Transmission Owner Form No. 715 local planning criteria.⁵⁰ In the 2019 Remand Order, the Commission rejected the PJM Transmission Owners' cost allocation methodology that assigned 100 percent of the costs for Form No. 715 projects to the zone of the Transmission Owner that filed the planning criteria.⁵¹ In October 2019, PJM submitted a filing in compliance with the Order on Remand to revise Tariff, Schedule 12-Appendix A for Form No. 715 Projects ("Remand Projects") whose cost responsibility assignments changed as a result of the Order on Remand.⁵²

Additionally, following years of litigation before the Commission under multiple dockets,⁵³ two remand orders were issued by the United States Court of Appeals for the Seventh Circuit⁵⁴ and Commission-initiated hearing and settlement judge proceedings were held to determine the appropriate cost allocation for new Regional Facilities and Necessary Lower Voltage Facilities that PJM planned and approved before February 1, 2013. The PJM

⁵⁰ See *PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,096, *reh'g denied*, 157 FERC ¶ 61,192 (2016), *rev'd sub nom. Old Dominion Elec. Coop. v. FERC*, 898 F.3d 1254, *reh'g denied*, 905 F.3d 671 (D.C. Cir. 2018); *order on remand*, 168 FERC ¶ 61,133 (2019) ("2019 Remand Order"), *reh'g denied*, 171 FERC ¶ 61,012 (2020), *order on reh'g and clarification*, 172 FERC ¶ 61,118 (2020).

⁵¹ See 2019 Remand Order at P 4. The Commission directed PJM to refile assignment of cost responsibility in Schedule 12-Appendix A for Form No. 715 Projects included in the RTEP between May 25, 2015 and August 30, 2019. *Id.*

⁵² *PJM Interconnection, L.L.C.*, Form No. 715 Cost Allocation Compliance Filing, Docket No. ER15-1344-007 (Oct. 29, 2019) ("October 2019 Compliance Filing"). See also *PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,013 (2020) (accepting October 2019 Compliance Filing).

⁵³ See *PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,168, at PP 3-7 (2018).

⁵⁴ See *Illinois Commerce Comm'n, et al. v. FERC*, 756 F.3d 556 (7th Cir. 2014); *Illinois Commerce Comm'n, et al. v. FERC*, 576 F.3d 470 (7th Cir. 2009), *reh'g and reh'g en banc denied* (Oct. 20, 2009).

Transmission Owners subsequently filed a settlement agreement in Docket No. EL05-121-009.⁵⁵ In compliance with the Order Approving Settlement, PJM submitted a compliance filing to revise, in Schedule 12-Appendix, cost allocations for transmission enhancements or expansions that were originally allocated 100 percent to the entire PJM Region using each zone's load-ratio share to the hybrid cost allocation method described above.⁵⁶

B. Documentation Supporting the Changes to the Solution-Based DFAX Method Cost Responsibility Assignments

The Commission has requested documentation explaining changes to the solution-based DFAX method cost responsibility assignments. Because the solution-based DFAX method is formulaic and there are many thousands of changes to the transmission system from year-to-year that may drive changes in cost allocation, PJM does not attempt to isolate which of the multitude of transmission system modifications cause the changes in cost allocations for each individual transmission enhancement and expansion.

In order to isolate the particular cause driving changes in cost allocation for each and every baseline upgrade, PJM would have to go back to the time in which each project was first included in the RTEP and then step-by-step recreate the impact of all of the numerous changes to the system described above, as well as all subsequent transmission system modifications that have affected flows on the PJM network since the transmission upgrade was determined to be needed, and any

⁵⁵ *PJM Interconnection, L.L.C.*, Offer of Settlement, Docket No. EL05-121-009 (June 15, 2016) (“Settlement”). The Commission approved the Settlement and directed PJM to submit the associated Tariff amendments by way of compliance eTariff records consistent with the pro forma tariff records included with the Settlement. *PJM Interconnection, L.L.C.*, 163 FERC ¶ 61,168 (May 31, 2018) (“Order Approving Settlement”)

⁵⁶ *PJM Interconnection, L.L.C.*, Compliance Filing For Schedule 12 and Schedule 12-Appendices, Docket No. ER18-2102-000 (July 30, 2018) (“July 2018 Compliance Filing”). The Commission accepted the July 2018 Compliance Filing by order issued December 19, 2019. *See PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,238 (2019), *reh'g denied*, 171 FERC ¶ 61,161 (2020) (“December 2019 Order”).

regulatory changes since the initial cost allocation. The problem with doing so is that after a number of years, this could amount to removing from power flow models potentially thousands of transmission changes across the PJM system in order to recreate the conditions that existed when a transmission enhancement or expansion was first approved by the PJM Board, so that a new set of DFAX and cost allocation calculations could be performed. Making all of these adjustments would be time-consuming, complex and costly, and the assumptions used to make them would be subject to debate and potential challenges.

C. Changes Between Preliminary Cost Responsibility Determinations and Cost Assignments in the 2021 Annual Update Filing

PJM has prepared two tables to illustrate the changes from initial allocation⁵⁷ to the updates filed in the 2021 Annual Update Filing:

Table 2 includes transmission enhancements or expansions included in Schedule 12 Appendix-A that had their initial cost allocations based on the solution-based DFAX methodology; and

Table 3 includes transmission enhancements or expansions included in Schedule 12 Appendix and Schedule 12-Appendix A that had their initial cost allocations based on a different cost allocation methodology but now have all or some portion of their cost assignments calculated pursuant to the solution-based DFAX methodology.⁵⁸

1. Description of Table 2

In order to create **Table 2**,⁵⁹ PJM reviewed the 342 transmission enhancements or expansions included in Schedule 12 Appendix-A that were initially allocated costs using the

⁵⁷ Initial allocation is intended to mean at the time the PJM Board approved the baseline upgrade for inclusion in the RTEP.

⁵⁸ See *supra* Response to Question 1, Section 1.A.

⁵⁹ See Attachment A, Table 2. For each transmission enhancement or expansion that had a change from the initial solution-based DFAX allocation to the updates filed in the 2021 Annual Update Filing, PJM includes the baseline upgrade number and Board approval date and lists: (i) the initial allocation using solution-based DFAX and (ii) the 2021 annual updates to those solution-based DFAX allocations included in the 2021 Annual Update Filing.

solution-based DFAX methodology and are in service or are scheduled to enter service in calendar year 2021.⁶⁰ For purposes of creating **Table 2**, PJM excluded the 31 baseline upgrades which were initially allocated 100 percent to the zone of the transmission owner who filed the Form No. 715 criteria using the Form No. 715 cost allocation methodology, since their initial allocations were not based on solution-based DFAX.⁶¹ Thus, PJM reviewed a total of 311 transmission enhancements or expansions included in Schedule 12 Appendix-A that were initially allocated costs using the solution-based DFAX methodology and are in service or are scheduled to enter service in calendar year 2021. As demonstrated in **Table 2**, of those 311 transmission enhancements or expansions, 41 enhancements or expansions (or approximately 13 percent) have had cost allocation changes since their initial cost allocations based on the solution-based DFAX methodology were calculated.⁶² Additionally, only six (or less than two percent) of the total number (311) had cost allocation changes that can be characterized as large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁶³

⁶⁰ See Table 1, Section II.

⁶¹ See Table 1, Section III.b. These 31 Form No. 715 upgrades are discussed below and in Table 3.B. Note, PJM included in its analysis for Table 2 the Form No. 715 upgrades revised to allocate costs using solution-based DFAX and whose costs did not change as a result of the revision, *i.e.*, costs were initially allocated 100 percent to the zone of the Transmission Owner who proposed Form No. 715 criteria and after the Form No. 715 cost allocation method was rejected by the Commission, the costs of those facilities continued to be allocated 100 percent to the Transmission Owners Zone.

⁶² See Attachment A, Table 2. See also Table 1, Section IV.a.

⁶³ See Table 1, Section IV.b. These large cost allocations resulted from the proceedings described above where PJM was required to make changes to the initial solution-based DFAX allocations for certain facilities. See *supra* notes 30-32.

2. Description of Table 3

As PJM explains above, regulatory requirements have an impact on preliminary cost allocations. **Table 3**⁶⁴ consists of two categories of changes where the initial allocations were not based on a solution-based DFAX methodology but were later required to be revised using solution-based DFAX:

- Schedule 12-Appendix: Changes to Regional and Necessary Lower Voltage Facilities that were initially 100 percent using load ratio share (*see* **Table 3.A**); and
- Schedule 12-Appendix A: Changes to baseline upgrades initially allocated 100 percent to the zone of the transmission owner who filed the Form No. 715 criteria using the Form No. 715 cost allocation methodology (*see* **Table 3.B**).

In order to create **Table 3.A**, PJM reviewed the 119 transmission enhancements and expansions included in Schedule 12-Appendix. As indicated above, each of these facilities' costs were initially allocated on a load-ratio share basis. In response to the Commission's question, however, PJM compared each facility's initial cost allocation pursuant to the solution-based DFAX method (as included in the July 2018 Compliance Filing⁶⁵) to its cost allocation set forth in the 2021 Annual Update Filing. Of these 119 transmission enhancements or expansions, 93 of them have had cost allocation changes since their initial cost allocation pursuant to the solution-based DFAX method.⁶⁶ Additionally, only three (or less than three percent) of the total number (119)

⁶⁴ See Attachment B, Table 3. In Table 3, PJM includes the baseline upgrade number for each enhancement and expansion and lists in the three columns (i) the initial non solution-based DFAX allocations, (ii) the revisions using solution-based DFAX and (iii) the 2021 annual updates to those solution-based DFAX allocations included in the 2021 Annual Update Filing.

⁶⁵ See *supra* n.56.

⁶⁶ See Table 3.A. See also Table 1, Section IV.a.

had cost allocation changes that can be characterized as large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁶⁷

In order to create **Table 3.B**, PJM reviewed the 31 baseline upgrades which were initially allocated 100 percent to the zone of the transmission owner who filed the Form No. 715 criteria using the Form No. 715 cost allocation methodology. In response to the Commission's question, however, PJM compared each of these facility's initial cost allocation pursuant to the solution-based DFAX method (as included in the October 2019 Compliance Filing⁶⁸) to its cost allocation set forth in the 2021 Annual Update Filing. Of these 31 transmission enhancements or expansions, 17 of them have had cost allocation changes since their initial cost allocation pursuant to the solution-based DFAX method. Additionally, only three (approximately 10 percent) of the total number (31) had cost allocation changes that can be characterized as large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁶⁹

⁶⁷ See Table 1, Section IV.b.

⁶⁸ See *supra* n.52.

⁶⁹ See Table 1, Section IV.b.

QUESTION 2: Changes from Previously-Filed Cost Responsibility Assignments: For each Required Transmission Enhancement included in Schedule 12-Appendix A for which a portion of cost responsibility assignment based on the solution-based DFAX method differed from the previously filed cost responsibility assignment submitted to the Commission in the 2020 Annual Update, please provide the changed solution-based DFAX method analysis and explain the changes to the solution-based DFAX method cost responsibility assignment from the previous cost responsibility assignment and provide documentation supporting the changes.

PJM RESPONSE TO QUESTION 2:

A. The Reasons for Changes to Cost Responsibility Assignments Calculated Pursuant to the Solution-Based DFAX Methodology Would Be the Same Regardless of Whether the Comparison was to the Initial Allocation or the Previous Year's Allocation

The Commission has asked PJM to explain differences in solution-based DFAX method cost responsibility assignments for any transmission enhancement or expansion included in Schedule 12-Appendix A that had a changed cost responsibility assignment between the 2020 Annual Update Filing and the 2021 Annual Update Filing. As PJM explains above, because the inputs to the methodology are updated annually to reflect changing uses of the transmission system over time, cost allocation changes are an expected outcome. Regardless of whether one was comparing initial cost responsibility assignments to current cost responsibility assignments or last year's cost responsibility assignments to current cost responsibility assignments, the same factors PJM describes in response to Question 1 above would apply. That is, the reasons for transmission system modifications that affect flows on the PJM network would be the same and may have an impact on cost responsibility assignments.

B. Documentation Supporting the Changes to the Solution-Based DFAX Method Cost Responsibility Assignments

See PJM's Response to Question 1 (Part B).

C. Changes Between Cost Assignments in the 2020 Annual Update Filing and Cost Assignments in the 2021 Annual Update Filing

PJM has prepared **Table 4**⁷⁰ to illustrate changes included in Schedule 12-Appendix and Schedule 12-Appendix A for which a portion of cost responsibility assignment based on the solution-based DFAX method differed from the previously filed cost responsibility assignment submitted to the Commission in the 2020 Annual Update. In order to prepare **Table 4.A**, PJM reviewed the 254 transmission expansions or enhancements in Schedule 12-Appendix A that were in service or scheduled to be in service by December 31, 2020 and that have had some portion of their cost assignments calculated pursuant to the solution-based DFAX methodology.⁷¹ Of those 254 transmission expansions or enhancements, 31 (or approximately 12 percent) of them had cost allocation changes between the 2020 Annual Update Filing and the 2021 Annual Update Filing.⁷² Additionally, only nine (less than four percent) of the total number (254) had cost allocation changes that can be characterized as large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁷³

To prepare **Table 4.B**, PJM reviewed the 119 transmission expansions or enhancements in Schedule 12-Appendix that were in service or scheduled to be in service by December 31, 2020 and that have had some portion of their cost assignments calculated pursuant to the solution-based DFAX methodology. Of those 119 transmission expansions or enhancements, 93 (or approximately 83 percent) of them had cost allocation changes between the 2020 Annual Update

⁷⁰ See Attachment C, Table 4. In Table 4, PJM includes the baseline upgrade number for each enhancement and expansion and lists (i) the facility's 2020 allocation and (ii) the 2021 annual updates to those solution-based DFAX allocations included in the 2021 Annual Update Filing.

⁷¹ See Table 1, Section II.

⁷² See Table 4.A. See also Table 1, Section V.A.

⁷³ See Table 1, Section V.b.

Filing and the 2021 Annual Update Filing.⁷⁴ It is noteworthy that, only two (less than two percent) of the total number (119) had cost allocation changes that can be characterized as large cost allocation changes for at least one zone where the percent allocation changed by 50 percent or more.⁷⁵

QUESTION 3: Please identify what information PJM provides to stakeholders prior to submitting the annual cost allocation updates to the Commission. In your answer, describe any information made available; identify at what point(s) in time it is provided; and identify pursuant to what tariff provision PJM provides such information to the stakeholders.

PJM RESPONSE TO QUESTION 3:

As described above, PJM calculates solution-based DFAX cost allocation responsibilities for transmission expansions and enhancements at the time a project is included in the RTEP, and updates those responsibilities on an annual basis beginning with the calendar year in which a transmission expansion or enhancement is scheduled to enter service.⁷⁶

The RTEP models that form the basis for the annual cost allocation update filings are developed consistent with Operating Agreement, Schedule 6.⁷⁷ Near the beginning of a competitive window process, PJM posts preliminary RTEP power flow models that form the basis for the annual cost allocation update filings (“Power Flow Models”).⁷⁸ These preliminary Power Flow Models, which are typically initially posted in late February or early March,⁷⁹ are based on

⁷⁴ See Table 4.B; Table 1, Section V.a.

⁷⁵ See Table 1, Section V.b.

⁷⁶ See Tariff, Schedule 12, section 12(b)(iii)(H)(2).

⁷⁷ See *PJM Interconnection, L.L.C.*, 165 FERC ¶ 61,078, at P 18 (2018) citing Operating Agreement, Schedule 6.1, Regional Transmission Expansion Planning Protocol, section 1.4(c); Operating Agreement, Schedule 6, section 1.6(a), Approval of the Final Transmission Expansion Planning Protocol.

⁷⁸ See PJM’s Competitive Planning Process web page: <https://pjm.com/planning/competitive-planning-process>.

⁷⁹ See <https://www.pjm.com/-/media/planning/rtep-dev/expan-plan-process/ferc-order-1000/rtep-proposal-windows/private-2021-long-term-proposal-window-1/2021-window-1-preliminary-study-files.ashx>. In order to

the final Power Flow Models used to perform the previous year’s solution-based DFAX analysis. The Power Flow Models that form the basis for the current year’s solution-based DFAX analysis are posted in July when the first annual RTEP window is opened.

PJM reviews the initial Power Flow Models and all subsequent updates with stakeholders throughout the year at the TEAC and Sub-regional RTEP Committees (“SRRTEP”).⁸⁰ Every transmission enhancement or expansion that PJM recommends to the Board is discussed extensively with stakeholders at TEAC and SRRTEPs meetings. By way of example, PJM discusses the need for the upgrade, potential solutions and the final solution that is selected. The Power Flow Models are updated throughout the year to include the transmission enhancements and expansions that are recommended to the Board for inclusion in the RTEP.

PJM also will provide stakeholders with the analytical files necessary to verify PJM’s updated cost allocation calculations through its “open and transparent” RTEP process.⁸¹ Stakeholders seeking such information must first make a request through the PJM established CEII process.⁸² Historically, PJM has received fewer than five requests in any one year for cost allocation filings from any stakeholders and this information has been made available, often

access the preliminary files, stakeholders must submit a request through PJM’s Critical Energy Infrastructure Information (“CEII”) process.

⁸⁰ See <https://www.pjm.com/committees-and-groups/committees/teac>; <https://www.pjm.com/committees-and-groups/committees/srrtep-ma>; <https://www.pjm.com/committees-and-groups/committees/srrtep-s>; <https://www.pjm.com/committees-and-groups/committees/srrtep-w>; <https://www.pjm.com/committees-and-groups/committees/srrtep-w>.

⁸¹ *PJM Interconnection, L.L.C.*, 165 FERC ¶ 61,078, at P 23 (2018). See also *id.* (explaining that PJM worked with a specific party “to provide information explaining the increase in cost responsibility assignments required by the solution-based DFAX method”); *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,156, at P 18 (2020) (explaining that during the RTEP process, PJM “responds to specific questions from stakeholders as to its data and assumptions”).

⁸² See <https://www.pjm.com/library/request-access>.

including extensive discussions with PJM staff to help those stakeholders understand the information that has been provided and how it can be used to determine the cost allocations.

The Commission has previously found that the information that PJM provides to stakeholders through the RTEP process is sufficient for the Commission and stakeholders to verify PJM's updated cost allocations.⁸³ In fact, Schedule 12 of the Tariff contains a detailed description of how PJM performs the solution-based DFAX analysis. It provides that:

[PJM], based on a computer model of the electric network and using power flow modeling software, shall calculate distribution factors, represented as decimal values or percentages, which express the portions of a transfer of energy from a defined source to a defined sink that will flow across a particular transmission facility or group of transmission facilities. These distribution factors represent a measure of the use by the load of each Zone or Merchant Transmission Facility ... of the Required Transmission Enhancement, as determined by a power flow analysis.⁸⁴

Schedule 12 further explains that the “distribution factors represent the ratio of: (i) a change in megawatt flow on a Required Transmission Enhancement to (ii) a change in megawatts transferred to aggregate load within a Zone or, in the case of a Merchant Transmission Facility, the point of withdrawal associated with Firm Transmission Withdrawal Rights over such Merchant Transmission Facility.”

As the Commission has previously explained, stakeholders can replicate the solution-based DFAX analysis using the information PJM provides and the formula set forth in Schedule 12.⁸⁵

⁸³ See *PJM Interconnection, L.L.C.*, 170 FERC ¶ 61,156, at P 18 (2020).

⁸⁴ Tariff, Schedule 12, section (b)(iii)(A). The Tariff further explains that the “distribution factors represent the ratio of: (i) a change in megawatt flow on a Required Transmission Enhancement to (ii) a change in megawatts transferred to aggregate load within a Zone or, in the case of a Merchant Transmission Facility, the point of withdrawal associated with Firm Transmission Withdrawal Rights over such Merchant Transmission Facility.” *Id.*, section (b)(iii)(A)(2).

⁸⁵ See *PJM Interconnection, L.L.C.*, 165 FERC ¶ 61,078, at P 22 (2018) (“The Tariff describes the solution-based DFAX method, including certain calculations in detail, and the distribution factor analysis is a standard computational tool used in electrical engineering, which can be replicated”).

III. CORRESPONDENCE

Correspondence and communications regarding this filing should be sent to:⁸⁶

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IV. SERVICE

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,⁸⁷ PJM will post a copy of this filing to the FERC filings section of its Web site, located at: <http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx>,⁸⁸ with a specific link to the newly-filed document, and will send an email on the same date as this filing to all PJM Members and all state utility regulatory commissions in the PJM Region alerting them of the filing and its availability on PJM's Web site. PJM also serves the parties on the Commission's

⁸⁶ To the extent necessary, PJM requests waiver of Commission Rule of Practice and Procedure Rule 203(b)(3) to permit these representatives to be included on the official service list compiled by the Secretary for this proceeding.

⁸⁷ See 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3).

⁸⁸ PJM maintains, updates, and regularly uses e-mail lists for all PJM members and affected state commissions.

Kimberly D. Bose, Secretary
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official service list for this docket. Notwithstanding the foregoing, if the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. A copy of this filing will also be available on the FERC's eLibrary Web site at <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

Respectfully submitted,

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cc: Jonathan Fernandez, Federal Energy Regulatory Commission
Service List: Docket No. ER21-726-000

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Additionally, PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,⁸⁹ 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 the PJM Region⁹⁰ alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

Dated at Audubon, PA, this 22nd day of March, 2021.

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⁸⁹ See 18C.F.R §§ 35.2(e) and 385.2010(f)(3) (2020).

⁹⁰ PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

ATTACHMENT A

TABLE 2

Table 2: Changes Between Schedule 12 Appendix A Preliminary Cost Responsibility Determinations and 2021 Annual Update Filing

	A	B	C	D
	Upgrade ID	Board Approval Date	Initial Allocation (Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
1	b1660.1	10/2/2013	APS (48.49%) / DEOK (0.24%) / Dominion (0.65%) / EKPC (0.07%) / PEPSCO (50.55%)	Dayton (8.37%) / DEOK (21.94%) / Dominion (56.40%) / EKPC (13.29%)
2	b1797.1	10/2/2013	AEP (2.91%) / APS (30.76%) / ATSI (1.41%) / BGE (23.12%) / Dayton (0.32%) / DEOK (1.28%) / Dominion (3.94%) / EKPC (0.40%) / PEPSCO (35.88%)	AEP (0.79%) / APS (53.70%) / Dayton (0.15%) / DEOK (0.40%) / Dominion (1.13%) / EKPC (0.23%) / PEPSCO (43.60%)
3	b2006.1.1	11/5/2014	BGE (17.43%) / ME (20.22 %) / PPL (62.35%)	PPL (100.00%)
4	b2373	12/11/2013	APS (35.59%) / BGE (17.80%) / Dominion (46.61%)	APS (25.51%) / Dominion (74.49%)
5	b2435	2/11/2014	ATSI (100.00%)	Dayton (100.00%)
6	b2436.10	12/11/2013	ConEd (93.00%) / ECP (5.76%) / HTP (0.24%) / PSEG (0.96%) / RE (0.04%)	PSEG (100.00%)
7	b2436.21	12/11/2013	ConEd (85.83%) / HTP*** (13.21%) / ECP** (0.96%)	PSEG (100.00%)
8	b2436.22	12/11/2013	ConEd (85.83%) / HTP*** (13.21%) / ECP** (0.96%)	PSEG (96.17%) / RE (3.83%)
9	b2436.33	12/11/2013	ConEd (86.07%) / ECP (0.30%) / HTP (13.63%)	PSEG (96.17%) / RE (3.83%)
10	b2436.34	12/11/2013	ConEd (86.05%) / ECP (0.33%) / HTP (13.62%)	PSEG (96.17%) / RE (3.83%)
11	b2436.50	12/11/2013	ConEd (86.59%) / HTP*** (12.31%) / ECP** (1.10%)	PSEG (100.00%)
12	b2436.60	12/11/2013	ConEd (87.35%) / HTP*** (12.42%) / ECP** (0.23%)	PSEG (96.17%) / RE (3.83%)
13	b2436.70	12/11/2013	ConEd (87.43%) / HTP*** (12.43%) / ECP** (0.14%)	PSEG (100.00%)
14	b2436.81	12/11/2013	ConEd (22.94%) / HTP*** (5.10%) / ECP** (0.08%) / PSEG (69.17%) / RE (2.71%)	PSEG (96.17%) / RE (3.83%)
15	b2436.83	12/11/2013	ConEd (22.94%) / HTP*** (5.10%) / ECP** (0.08%) / PSEG (69.17%) / RE (2.71%)	PSEG (96.17%) / RE (3.83%)
16	b2436.84	12/11/2013	ConEd (65.97%) / ECP (0.02%) / HTP (34.01%)	PSEG (96.17%) / RE (3.83%)
17	b2436.85	12/11/2013	ConEd (65.97%) / ECP (0.02%) / HTP (34.01%)	PSEG (96.17%) / RE (3.83%)
18	b2437.10	12/11/2013	ConEd (91.84%) / HTP*** (1.16%) / ECP** (3.56%) / PSEG (3.31%) / RE (0.13%)	PSEG (100.00%)
19	b2437.11	12/11/2013	ConEd (100.00%)	PSEG (100.00%)
20	b2437.20	12/11/2013	ConEd (100.00%)	PSEG (100.00%)

Table 2: Changes Between Schedule 12 Appendix A Preliminary Cost Responsibility Determinations and 2021 Annual Update Filing

	A	B	C	D
	Upgrade ID	Board Approval Date	Initial Allocation (Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
21	b2437.21	12/11/2013	ConEd (100.00%)	PSEG (100.00%)
22	b2437.30	12/11/2013	ConEd (86.94%) / HTP*** (11.36%) / ECP** (1.70%)	PSEG (96.17%) / RE (3.83%)
23	b2437.33	12/11/2013	ConEd (100.00%)	PSEG (100.00%)
24	b2479	7/22/2014	AEC (68.57%) / JCPL (31.43%)	AEC (100.00%)
25	b2552.1	11/5/2014	PENELEC (100.00%)	PENELEC (99.50%) / PPL (0.50%)
26	b2552.2	11/5/2014	PENELEC (100.00%)	PENELEC (98.84%) / PPL (1.16%)
27	b2633.1	7/29/2015	AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / Neptune (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
28	b2633.10	7/29/2015	AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / Neptune (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
29	b2633.2	7/29/2015	AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / Neptune (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
30	b2633.4	7/29/2015	AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / Neptune (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
31	b2633.5	7/29/2015	AEC (0.01%) / DPL (99.98%) / JCPL (0.01%)	AEC (8.01%) / BGE (1.94%) / DPL (12.99%) / JCPL (13.85%) / ME (5.88%) / Neptune (3.45%) / PECO (17.62%) / PPL (14.85%) / PSEG (20.79%) / RE (0.62%)
32	b2766.1	12/7/2016	AEC (0.05%) / APS (11.16%) / BGE (22.34%) / Dayton (2.18%) / DEOK (4.19%) / DPL (0.20%) / ECP** (1.03%) / EKPC (1.94%) / JCPL (10.82%) / NEPTUNE* (1.14%) / HTP*** (1.10%) / POSEIDON**** (0.63%) / PENELEC (0.06%) / PEPECO (18.97%) / PSEG (23.26%) / RECO (0.93%)	AEC (3.52%) / APS (9.95%) / ATSI (10.68%) / BGE (6.92%) / DPL (16.32%) / JCPL (11.32%) / NEPTUNE (1.22%) / PENELEC (2.30%) / PEPECO (12.59%) / PSEG (24.22%) / RE (0.96%)

Table 2: Changes Between Schedule 12 Appendix A Preliminary Cost Responsibility Determinations and 2021 Annual Update Filing

	A	B	C	D
	Upgrade ID	Board Approval Date	Initial Allocation (Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
33	b2766.2	12/7/2016	AEC (0.05%) / APS (11.16%) / BGE (22.34%) / Dayton (2.18%) / DEOK (4.19%) / DPL (0.20%) / ECP** (1.03%) / EKPC (1.94%) / JCPL (10.82%) / NEPTUNE* (1.14%) / HTP*** (1.10%) / POSEIDON**** (0.63%) / PENELEC (0.06%) / PEPCO (18.97%) / PSEG (23.26%) / RECO (0.93%)	AEC (3.52%) / APS (9.95%) / ATSI (10.68%) / BGE (6.92%) / DPL (16.32%) / JCPL (11.32%) / NEPTUNE (1.22%) / PENELEC (2.30%) / PEPCO (12.59%) / PSEG (24.22%) / RE (0.96%)
34	b2777	12/7/2016	AEP (100.00%)	EKPC (100.00%)
35	b2831.1	2/14/2017	Dayton (34.34%) / DEOK (56.45%) / EKPC (9.21%)	Dayton (61.71%) / DEOK (37.68%) / OVEC (0.61%)
36	b2831.2	2/14/2017	Dayton (34.34%) / DEOK (56.45%) / EKPC (9.21%)	Dayton (61.71%) / DEOK (37.68%) / OVEC (0.61%)
37	b2833	2/14/2017	Dayton (100.00%)	AEP (80.83%) / Dayton (18.73%) / OVEC (0.44%)
38	b2955	12/5/2017	JCPL (93.78%) / NEPTUNE* (6.22%)	JCPL (43.23%) / NEPTUNE (3.54%) / PSEG (51.19%) / RE (2.04%)
39	b2956	12/5/2017	JCPL (0.05%) / NEPTUNE* (0.01%) / PSEG (96.07%) / RE (3.87%)	PSEG (100.00%)
40	b3006	7/31/2018	APS (52.84%) / DL (47.16%)	APS (73.55%) / DL (26.45%)
41	b3015.2	7/31/2018	DL (100.00%)	APS (100.00%)

ATTACHMENT B

TABLE 3

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
1	b0171.1	Pre-2013	0%	AEC (5.65%) / DPL (11.27%) / JCPL (15.28%) / NEPTUNE (0.01%) / PECO (67.73%) / PSEG (0.06%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
2	b0171.2	Pre-2013	0%	AEC (5.65%) / DPL (11.27%) / JCPL (15.28%) / NEPTUNE (0.01%) / PECO (67.73%) / PSEG (0.06%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
3	b0172.1	Pre-2013	0%	AEC (5.23%) / ECP (1.70%) / HTP (1.45%) / JCPL (30.06%) / NEPTUNE (4.42%) / PECO (8.85%) / PSEG (46.40%) / RE (1.89%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
4	b0172.2	Pre-2013	0%	AEC (5.23%) / ECP (1.70%) / HTP (1.45%) / JCPL (30.06%) / NEPTUNE (4.42%) / PECO (8.85%) / PSEG (46.40%) / RE (1.89%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
5	b0210	Pre-2013	0%	AEC (100%)	AEC (80.73%) / JCPL (19.27%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
6	b0216	Pre-2013	0%	APS (40.18%) / BGE (13.21%) / Dominion (25.51%) / PEPSCO (21.10%)	APS (53.10%) / Dominion (36.32%) / PEPSCO (10.58%)
7	b0217	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPSCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPSCO (9.40%)
8	b0222	Pre-2013	0%	BGE (7.93%) / Dominion (76.09) / PEPSCO (15.98%)	Dominion (100.00%)
9	b0269	Pre-2013	0%	PECO (100%)	AEC (7.30%) / PECO (92.70%)
10	b0269.6	Pre-2013	0%	PECO (100%)	AEC (7.30%) / PECO (92.70%)
11	b0284.2	Pre-2013	0%	AEC (6.58%) / ECP (0.88%) / HTP (0.82%) / JCPL (23.16%) / ME (12.80%) / NEPTUNE (2.33%) / PECO (23.16%) / PSEG (29.08%) / RE (1.19%)	AEC (5.58%) / BGE (18.21%) / JCPL (18.24%) / ME (11.07%) / Neptune (2.03%) / PECO (18.80%) / PSEG (25.07%) / RE (1.00%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
12	b0287	Pre-2013	0%	AEC (5.65%) / DPL (11.27%) / JCPL (15.28%) / NEPTUNE (0.01%) / PECO (67.73%) / PSEG (0.06%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
13	b0290	Pre-2013	0%	AEC (5.23%) / ECP (1.70%) / HTP (1.45%) / JCPL (30.06%) / NEPTUNE (4.42%) / PECO (8.85%) / PSEG (46.40%) / RE (1.89%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
14	b0328.1	Pre-2013	0%	BGE (7.93%) / Dominion (76.09%) / PEPCO (15.98%)	Dominion (100.00%)
15	b0328.2	Pre-2013	0%	BGE (7.93%) / Dominion (76.09%) / PEPCO (15.98%)	Dominion (100.00%)
16	b0328.3	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
17	b0328.4	Pre-2013	0%	BGE (7.93%) / Dominion (76.09%) / PEPCO (15.98%)	Dominion (100.00%)
18	b0347.1	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
19	b0347.10	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
20	b0347.11	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
21	b0347.12	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
22	b0347.13	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
23	b0347.14	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
24	b0347.15	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
25	b0347.16	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
26	b0347.17	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
27	b0347.18	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
28	b0347.19	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
29	b0347.2	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
30	b0347.20	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
31	b0347.21	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
32	b0347.22	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
33	b0347.23	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
34	b0347.24	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
35	b0347.25	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
36	b0347.26	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
37	b0347.27	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
38	b0347.28	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
39	b0347.29	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
40	b0347.3	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPCO (44.40%)	APS (78.44%) / PEPCO (21.56%)
41	b0347.30	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
42	b0347.31	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPSCO (23.17%)	APS (43.43%) / Dominion (56.57%)
43	b0347.32	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPSCO (23.17%)	APS (43.43%) / Dominion (56.57%)
44	b0347.4	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPSCO (23.17%)	APS (43.43%) / Dominion (56.57%)
45	b0347.5	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)
46	b0347.6	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)
47	b0347.7	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)
48	b0347.8	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)
49	b0347.9	Pre-2013	0%	(APS 36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)
50	b0376	Pre-2013	0%	AEC (6.58%) / ECP (0.88%) / HTP (0.82%) / JCPL (23.16%) / ME (12.80%) / NEPTUNE (2.33%) / PECO (23.16%) / PSEG (29.08%) / RE (1.19%)	AEC (5.58%) / BGE (18.21%) / JCPL (18.24%) / ME (11.07%) / Neptune (2.03%) / PECO (18.80%) / PSEG (25.07%) / RE (1.00%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
51	b0393	Pre-2013	0%	APS (100%)	APS (61.86%) / Dayton (11.46%) / DEOK (20.33%) / EKPC (6.35%)
52	b0412	Pre-2013	0%	APS (20.86%) / BGE (24.68%) / PEPCO (54.46%)	APS (53.81%) / DEOK (17.91%) / PEPCO (28.28%)
53	b0457	Pre-2013	0%	DEOK (0.06%) / Dominion (80.28%) / PEPCO (19.66%)	Dominion (99.00%) / EKPC (1.00%)
54	b0487	Pre-2013	0%	ECP (2.43%) / HTP (2.73%) / JCPL (33.42%) / Neptune (3.79%) / PSEG (55.37%) / RE (2.26%)	JCPL (33.79%) / NEPTUNE (4.36%) / PSEG (59.48%) / RE (2.37%)
55	b0489	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
56	b0489.10	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
57	b0489.11	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
58	b0489.12	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
59	b0489.13	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
60	b0489.14	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
61	b0489.15	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
62	b0489.5	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
63	b0489.6	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
64	b0489.7	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
65	b0489.8	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
66	b0489.9	Pre-2013	0%	ECP (2.72%) / HTP (3.41%) / JCPL (37.79%) / NEPTUNE (3.42%) / PSEG (50.60%) / RE (2.06%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
67	b0495	Pre-2013	0%	BGE (45.97%) / DEOK (0.01%) / PEPCO (54.02%)	AEP (58.84%) / APS (3.61%) / BGE (16.86%) / Dayton (1.39%) / DEOK (1.98%) / EKPC (0.49%) / PEPCO (16.83%)
68	b0498	Pre-2013	0%	AEC (14.30%) / ECP (1.14%) / HTP (0.98%) / JCPL (31.36%) / NEPTUNE (3.35%) / PSEG (46.96%) / RE (1.91%)	AEC (13.46%) / JCPL (25.00%) / Neptune (2.97%) / PECO (17.71%) / PSEG (39.30%) / RE (1.56%)
69	b0549	Pre-2013	0%	AEC (5.58%) / BGE (15.73%) / DPL (5.84%) / ECP (0.61%) / HTP (0.55%) / JCPL (17.34%) / ME (11.09%) / NEPTUNE (1.75%) / PECO (19.53%) / PSEG (21.12%) / RE (0.86%)	AEC (5.55%) / BGE (22.16%) / JCPL (16.44%) / ME (12.45%) / Neptune (1.83%) / PECO (18.75%) / PSEG (21.95%) / RE (0.87%)
70	b0559	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPCO (23.17%)	APS (43.43%) / Dominion (56.57%)
71	b0829.6	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
72	b1410	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
73	b1411	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
74	b1412	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
75	b1413	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
76	b1414	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
77	b1415	Pre-2013	0%	PSEG (96.08%) / RE (3.92%)	PSEG (96.17%) / RE (3.83%)
78	b1507	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
79	b1507.1	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
80	b1507.2	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
81	b1507.3	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
82	b1659.13	Pre-2013	0%	AEP (74.58%) / Dayton (7.99%) / DEOK (17.43%)	AEP (75.95%) / Dayton (7.52%) / DEOK (12.77%) / EKPC (3.76%)
83	b1659.14	Pre-2013	0%	AEP (63.61%) / ATSI (22.53%) / ComEd (0.01%) / Dayton (6.83%) / DL (7.02%)	AEP (71.06%) / ATSI (15.95%) / Dayton (7.10%) / DL (4.84%) / EKPC (0.77%) / OVEC (0.28%)
84	b1660	Pre-2013	0%	APS (33.80%) / BGE (26.47%) / PEPCO (39.73%)	Dayton (8.37%) / DEOK (21.94%) / Dominion (56.40%) / EKPC (13.29%)
85	b1694	Pre-2013	0%	APS (12.14%) / BGE (16.21%) / Dominion (54.33%) / PEPCO (17.32%)	BGE (11.04%) / Dominion (78.91%) / PEPCO (10.05%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
86	b1797	Pre-2013	0%	AEP (0.10%) / APS (30.84%) / ATSI (0.04%) / BGE (27.57%) / Dayton (0.01%) / DEOK (0.04%) / Dominion (0.11%) / EKPC (0.01%) / PEPSCO (41.28%)	AEP (0.79%) / APS (53.70%) / Dayton (0.15%) / DEOK (0.40%) / Dominion (1.13%) / EKPC (0.23%) / PEPSCO (43.60%)
87	b1799	Pre-2013	0%	APS (2.14%) / DPL (0.36%) / Dominion (96.45%) / ME (0.34%) / PEPSCO (0.71%)	APS (1.22%) / DPL (0.33%) / Dominion (91.89%) / EKPC (5.42%) / ME (0.31%) / PEPSCO (0.83%)
88	b1800	Pre-2013	0%	BGE (54.22%) / DPL (21.56%) / ME (24.22%)	DPL (45.54%) / ME (54.46%)
89	b1803	Pre-2013	0%	APS (19.55%) / BGE (15.30%) / Dominion (48.38%) / PEPSCO (16.77%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPSCO (9.40%)
90	b1804	Pre-2013	0%	APS (30.37%) / Dominion (46.46%) / PEPSCO (23.17%)	APS (43.43%) / Dominion (56.57%)
91	b1805	Pre-2013	0%	APS (36.47%) / BGE (19.13%) / PEPSCO (44.40%)	APS (78.44%) / PEPSCO (21.56%)

Table 3.A: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Docket No. EL05-121 Settlement				
	Upgrade ID	Board Approval Date	Initial Allocation using Load Ratio Share/No Solution-based DFAX Allocation	Revised Allocation via Compliance	2021 Allocation
92	b1908	Pre-2013	0%	DEOK (0.06%) / Dominion (80.28%) / PEPCO (19.66%)	Dominion (99.00%) / EKPC (1.00%)
93	b2006.1	Pre-2013	0%	BGE (16.09%) / ME (21.47%) / PPL (62.44%)	PPL (100.00%)

Table 3.B: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
Changes Resulting from Form 715 Cost Allocation Methodology					
	Upgrade ID	Board Approval Date	Initial Allocation using Form 715 Cost Allocation	Revised Allocation via Compliance	2021 Allocation
1	b2276	10/2/2013	PSEG (100%)	ConEd (50.82%) / ECP (49.18%)	PSEG (100.00%)
2	b2276.1	10/2/2013	PSEG (100%)	ConEd (50.82%) / ECP (49.18%)	PSEG (100.00%)
3	b2276.2	10/2/2013	PSEG (100%)	ConEd (50.82%) / ECP (49.18%)	PSEG (100.00%)
4	b2582	2/17/2015	Dominion (100%)	BGE (6.39%) / Dominion (81.64%) / PEPCO (11.97%)	Dominion (100.00%)
5	b2665	12/15/2015	Dominion (100%)	Dominion (71.81%) / PEPCO (28.19%)	Dominion (100.00%)
6	b2758	2/14/2017	Dominion (100%)	APS(0.09%) / DL (0.03%) / Dominion (99.88%)	Dominion (100.00%)
7	b2835.3[1]	2/14/2017	PSEG (100%)	PSEG (96.13%) / RE (3.87%)	AEC (10.19%) / PECO (19.21%) / PSEG (67.90%) / RE (2.70%)
8	b2836.2	2/14/2017	PSEG (100%)	NEPTUNE (100%)	AEC (19.58%) / NEPTUNE (80.42%)
9	b2836.3	2/14/2017	PSEG (100%)	NEPTUNE (100%)	AEC (100.00%)
10	b2836.4	2/14/2017	PSEG (100%)	NEPTUNE (100%)	AEC (100.00%)

¹ Sub-IDs were not necessary when the projects were allocated 100 percent to the Zones but were required when PJM was directed to assign cost responsibility for such projects using solution-based DFAX.

Table 3.B: Changes Between Preliminary Cost Responsibility Determinations Based on Solution-Based DFAX and Cost Assignments in the 2021 Annual Update Filing

	A	B	C	D	E
	Changes Resulting from Form 715 Cost Allocation Methodology				
	Upgrade ID	Board Approval Date	Initial Allocation using Form 715 Cost Allocation	Revised Allocation via Compliance	2021 Allocation
11	b2837.4	2/14/2017	PSEG (100%)	NEPTUNE (7.65%) / PSEG (88.71%) / RECO (3.64%)	NEPTUNE (8.50%) / PSEG (88.00%) / RE (3.50%)
12	b2837.5	2/14/2017	PSEG (100%)	NEPTUNE (6.18%) / PSEG (90.12%) / RECO (3.70%)	NEPTUNE (6.91%) / PSEG (89.53%) / RE (3.56%)
13	b2837.9	2/14/2017	PSEG (100%)	NEPTUNE (9.14%) / PSEG (87.28%) / RECO (3.58%)	NEPTUNE (100.00%)
14	b2837.10	2/14/2017	PSEG (100%)	NEPTUNE (7.50%) / PSEG (88.85%) / RECO (3.65%)	NEPTUNE (8.52%) / PSEG (87.98%) / RE (3.50%)
15	b2837.11	2/14/2017	PSEG (100%)	NEPTUNE (5.89%) / PSEG (90.40%) / RECO (3.71%)	NEPTUNE (6.31%) / PSEG (90.10%) / RE (3.59%)
16	b2960.1	12/5/2017	Dominion (100%)	DEOK(6.04%) / Dominion (91.37%) / EKPC (2.59%)	DEOK (5.63%) / Dominion (91.06%) / EKPC (3.31%) /
17	b2960.2	12/5/2017	Dominion (100%)	DEOK (29.79%) / Dominion (60.32%) / EKPC (9.89%)	DEOK (17.57%) / Dominion (74.24%) / EKPC (8.19%)

ATTACHMENT C

TABLE 4

**Table 4.A: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix A		
	Upgrade ID	2020 Current Allocation (Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
1	b1660.1	ATSI (25.80%) / Dayton (7.12%) / DEOK (17.02%) / Dominion (42.82%) / EKPC (7.24%)	Dayton (8.37%) / DEOK (21.94%) / Dominion (56.40%) / EKPC (13.29%)
2	b1797.1	ATSI (3.01%) / Dayton (0.77%) / DEOK (1.85%) / Dominion (5.17%) / EKPC (0.79%) / PEPCO (88.41%)	AEP (0.79%) / APS (53.70%) / Dayton (0.15%) / DEOK (0.40%) / Dominion (1.13%) / EKPC (0.23%) / PEPCO (43.60%)
3	b2373	APS (30.46%) / Dominion (69.54%)	APS (25.51%) / Dominion (74.49%)
4	b2435	ATSI (100.00%)	Dayton (100.00%)
5	b2436.22	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
6	b2436.33	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
7	b2436.34	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
8	b2436.60	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
9	b2436.81	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
10	b2436.83	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
11	b2436.84	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
12	b2436.85	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
13	b2437.30	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
14	b2552.1	PENELEC (95.41%) / PPL (4.59%)	PENELEC (99.50%) / PPL (0.50%)
15	b2552.2	PENELEC (95.43%) / PPL (4.57%)	PENELEC (98.84%) / PPL (1.16%)
16	b2582	APS (9.27%) / Dominion (90.73%)	Dominion (100.00%)
17	b2758	APS (0.09%) / DL (0.03%) / Dominion (99.88%)	Dominion (100.00%)
18	b2766.1	AEC (1.12%) / ATSI (6.83%) / BGE (9.41%) / DPL (6.56%) / JCPL (17.79%) / Neptune (2.00%) / PEPCO (19.80%) / PSEG (35.05%) / RE (1.44%)	AEC (3.52%) / APS (9.95%) / ATSI (10.68%) / BGE (6.92%) / DPL (16.32%) / JCPL (11.32%) / NEPTUNE (1.22%) / PENELEC (2.30%) / PEPCO (12.59%) / PSEG (24.22%) / RE (0.96%)
19	b2766.2	AEC (1.12%) / ATSI (6.83%) / BGE (9.41%) / DPL (6.56%) / JCPL (17.79%) / Neptune (2.00%) / PEPCO (19.80%) / PSEG (35.05%) / RE (1.44%)	AEC (3.52%) / APS (9.95%) / ATSI (10.68%) / BGE (6.92%) / DPL (16.32%) / JCPL (11.32%) / NEPTUNE (1.22%) / PENELEC (2.30%) / PEPCO (12.59%) / PSEG (24.22%) / RE (0.96%)

**Table 4.A: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix A		
	Upgrade ID	2020 Current Allocation (Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
20	b2835.1	PECO (100.00%)	AEC (12.08%) / PECO (22.78%) / PSEG (62.65%) / RE (2.49%)
21	b2835.2	PECO (100.00%)	AEC (11.09%) / PECO (20.90%) / PSEG (65.40%) / RE (2.61%)
22	b2835.3	PECO (40.15%) / PSEG (57.49%) / RE (2.36%)	AEC (10.19%) / PECO (19.21%) / PSEG (67.90%) / RE (2.70%)
23	b2836.1	PSEG (100.00%)	AEC (22.42%) / PSEG (74.61%) / RE (2.97%)
24	b2836.2	Neptune (100.00%)	AEC (19.58%) / NEPTUNE (80.42%)
25	b2836.3	Neptune (100.00%)	AEC (100.00%)
26	b2836.4	Neptune (100.00%)	AEC (100.00%)
27	b2955	JCPL (92.14%) / Neptune (7.86%)	JCPL (43.23%) / NEPTUNE (3.54%) / PSEG (51.19%) / RE (2.04%)
28	b2960.1	DEOK (6.04%) / Dominion (91.37%) / EKPC (2.59%)	DEOK (5.63%) / Dominion (91.06%) / EKPC (3.31%) /
29	b2960.2	DEOK (29.79%) / Dominion (60.32%) / EKPC (9.89%)	DEOK (17.57%) / Dominion (74.24%) / EKPC (8.19%)
30	b2965	APS (100.00%)	DL (100.00%)
31	b3015.2	DL (100.00%)	APS (100.00%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
1	b0171.1	AEC (4.19%) / DPL (5.88%) / JCPL (19.81%) / PECO (70.12%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
2	b0171.2	AEC (4.19%) / DPL (5.88%) / JCPL (19.81%) / PECO (70.12%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
3	b0172.1	AEC (4.49%) / JCPL (29.72%) / Neptune (4.97%) / PECO (9.91%) / PSEG (48.90%) / RE (2.01%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
4	b0172.2	AEC (4.49%) / JCPL (29.72%) / Neptune (4.97%) / PECO (9.91%) / PSEG (48.90%) / RE (2.01%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
5	b0210	AEC (100.00%)	AEC (80.73%) / JCPL (19.27%)
6	b0216	APS (53.02%) / Dominion (33.27%) / PEPSCO (13.71%)	APS (53.10%) / Dominion (36.32%) / PEPSCO (10.58%)
7	b0217	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) / PEPSCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPSCO (9.40%)
8	b0222	Dominion (91.39%) / PEPSCO (8.61%)	Dominion (100.00%)
9	b0269	PECO (100.00%)	AEC (7.30%) / PECO (92.70%)
10	b0269.6	PECO (100.00%)	AEC (7.30%) / PECO (92.70%)
11	b0284.2	BGE (21.26%) / JCPL (18.75%) / ME (14.00%) / Neptune (2.11%) / PECO (18.78%) / PSEG (24.11%) / RE (0.99%)	AEC (5.58%) / BGE (18.21%) / JCPL (18.24%) / ME (11.07%) / Neptune (2.03%) / PECO (18.80%) / PSEG (25.07%) / RE (1.00%)
12	b0287	AEC (4.19%) / DPL (5.88%) / JCPL (19.81%) / PECO (70.12%)	AEC (8.78%) / DPL (9.27%) / JCPL (19.92%) / PECO (62.03%)
13	b0290	AEC (4.49%) / JCPL (29.72%) / Neptune (4.97%) / PECO (9.91%) / PSEG (48.90%) / RE (2.01%)	AEC (8.09%) / JCPL (32.99%) / NEPTUNE (5.38%) / PSEG (51.49%) / RE (2.05%)
14	b0328.1	Dominion (91.39%) / PEPSCO (8.61%)	Dominion (100.00%)
15	b0328.2	Dominion (91.39%) / PEPSCO (8.61%)	Dominion (100.00%)
16	b0328.3	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
17	b0328.4	Dominion (91.39%) / PEPSCO (8.61%)	Dominion (100.00%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
18	b0347.1	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
19	b0347.10	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
20	b0347.11	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
21	b0347.12	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
22	b0347.13	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
23	b0347.14	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
24	b0347.15	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
25	b0347.16	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
26	b0347.17	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
27	b0347.18	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
28	b0347.19	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
29	b0347.2	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
30	b0347.20	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
31	b0347.21	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
32	b0347.22	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
33	b0347.23	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
34	b0347.24	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
35	b0347.25	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
36	b0347.26	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
37	b0347.27	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
38	b0347.28	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
39	b0347.29	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
40	b0347.3	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
41	b0347.30	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
42	b0347.31	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
43	b0347.32	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
44	b0347.4	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
45	b0347.5	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
46	b0347.6	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
47	b0347.7	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
48	b0347.8	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
49	b0347.9	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
50	b0376	BGE (21.26%) / JCPL (18.75%) / ME (14.00%) / Neptune (2.11%) / PECO (18.78%) / PSEG (24.11%) / RE (0.99%)	AEC (5.58%) / BGE (18.21%) / JCPL (18.24%) / ME (11.07%) / Neptune (2.03%) / PECO (18.80%) / PSEG (25.07%) / RE (1.00%)
51	b0393	APS (19.10%) / ATSI (25.82%) / Dayton (18.43%) / DEOK (29.32%) / DL (1.19%) / EKPC (5.96%) / OVEC (0.18%)	APS (61.86%) / Dayton (11.46%) / DEOK (20.33%) / EKPC (6.35%)
52	b0412	APS (55.52%) / ATSI (0.01%) / PEPCO (44.47%)	APS (53.81%) / DEOK (17.91%) / PEPCO (28.28%)
53	b0457	DEOK (5.02%) / Dominion (92.89%) / EKPC (2.09%)	Dominion (99.00%) / EKPC (1.00%)
54	b0487	JCPL (32.93%) / Neptune (4.37%) / PSEG (60.23%) / RE (2.47%)	JCPL (33.79%) / NEPTUNE (4.36%) / PSEG (59.48%) / RE (2.37%)
55	b0489	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
56	b0489.10	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
57	b0489.11	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
58	b0489.12	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
59	b0489.13	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
60	b0489.14	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
61	b0489.15	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
62	b0489.5	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
63	b0489.6	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
64	b0489.7	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
65	b0489.8	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
66	b0489.9	JCPL (39.21%) / Neptune (4.05%) / PSEG (54.50%) / RE (2.24%)	JCPL (39.48%) / NEPTUNE (4.03%) / PSEG (54.33%) / RE (2.16%)
67	b0495	APS (31.25%) / BGE (19.37%) / Dayton (9.85%) / DEOK (13.77%) / EKPC (2.73%) / PEPSCO (23.03%)	AEP (58.84%) / APS (3.61%) / BGE (16.86%) / Dayton (1.39%) / DEOK (1.98%) / EKPC (0.49%) / PEPSCO (16.83%)
68	b0498	AEC (8.37%) / JCPL (25.68%) / Neptune (3.11%) / PECO (19.78%) / PSEG (41.36%) / RE (1.70%)	AEC (13.46%) / JCPL (25.00%) / Neptune (2.97%) / PECO (17.71%) / PSEG (39.30%) / RE (1.56%)
69	b0549	AEC (4.26%) / ATSI (0.03%) / BGE (26.21%) / DL (0.01%) / JCPL (15.53%) / ME (14.86%) / Neptune (1.75%) / PECO (17.49%) / PSEG (19.08%) / RE (0.78%)	AEC (5.55%) / BGE (22.16%) / JCPL (16.44%) / ME (12.45%) / Neptune (1.83%) / PECO (18.75%) / PSEG (21.95%) / RE (0.87%)
70	b0559	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
71	b0829.6	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
72	b1410	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
73	b1411	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
74	b1412	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
75	b1413	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
76	b1414	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
77	b1415	PSEG (96.06%) / RE (3.94%)	PSEG (96.17%) / RE (3.83%)
78	b1507	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) / PEPCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
79	b1507.1	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) / PEPCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
80	b1507.2	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) / PEPCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
81	b1507.3	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) / PEPCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
82	b1659.13	AEP (76.97%) / Dayton (10.17%) / DEOK (12.86%)	AEP (75.95%) / Dayton (7.52%) / DEOK (12.77%) / EKPC (3.76%)
83	b1659.14	AEP (61.24%) / ATSI (23.28%) / Dayton (5.43%) / DL (8.02%) / EKPC (1.78%) / OVEC (0.25%)	AEP (71.06%) / ATSI (15.95%) / Dayton (7.10%) / DL (4.84%) / EKPC (0.77%) / OVEC (0.28%)
84	b1660	ATSI (25.80%) / Dayton (7.12%) / DEOK (17.02%) / Dominion (42.82%) / EKPC (7.24%)	Dayton (8.37%) / DEOK (21.94%) / Dominion (56.40%) / EKPC (13.29%)
85	b1694	BGE (11.54%) / Dominion (75.32%) / PEPCO (13.14%)	BGE (11.04%) / Dominion (78.91%) / PEPCO (10.05%)
86	b1797	ATSI (3.01%) / Dayton (0.77%) / DEOK (1.85%) / Dominion (5.17%) / EKPC (0.79%) / PEPCO (88.41%)	AEP (0.79%) / APS (53.70%) / Dayton (0.15%) / DEOK (0.40%) / Dominion (1.13%) / EKPC (0.23%) / PEPCO (43.60%)
87	b1798	Dominion (91.39%) / PEPCO (8.61%)	Dominion (100.00%)
88	b1799	APS (6.31%) / DL (1.34%) / Dominion (85.81%) / ME (1.66%) / PEPCO (4.88%)	APS (1.22%) / DPL (0.33%) / Dominion (91.89%) / EKPC (5.42%) / ME (0.31%) / PEPCO (0.83%)
89	b1800	DL (0.02%) / DPL (36.96%) / JCPL (0.04%) / ME (62.90%) / PSEG (0.08%)	DPL (45.54%) / ME (54.46%)

**Table 4.B: Changes Between Cost Assignments in the 2020 Annual Update Filing and
Cost Assignments in the 2021 Annual Update Filing**

	A	B	C
	Schedule 12 Appendix		
	Upgrade ID	2020 Allocation(Non-Load-Ratio-Share)	2021 Allocation (Non-Load-Ratio-Share)
90	b1803	APS (24.07%) / BGE (9.92%) / Dominion (54.43%) /PEPCO (11.58%)	APS (21.37%) / BGE (9.63%) / Dominion (59.60%) / PEPCO (9.40%)
91	b1804	APS (42.58%) / Dominion (57.42%)	APS (43.43%) / Dominion (56.57%)
92	b1805	APS (70.95%) / PEPCO (29.05%)	APS (78.44%) / PEPCO (21.56%)
93	b1908	DEOK (5.02%) / Dominion (92.89%) / EKPC (2.09%)	Dominion (99.00%) / EKPC (1.00%)