



Innovation and Investment in Energy

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November 12, 2020

VIA ELECTRONIC MAIL

Manu Asthana, President and CEO
PJM Interconnection, L.L.C.
2750 Monroe Boulevard
Audubon, Pennsylvania 19408

RE: End of Life (EOL) Transmission Planning

Dear Manu:

We appreciate your attention to the End of Life (EOL) Transmission Planning issues over the past few months. As we all know, EOL issues remain pending before the Federal Energy Regulatory Commission ("FERC").

Despite this, in the past two months, a number of significant high voltage EOL projects have been proposed under Attachment M-3, but not yet included in the RTEP. Obviously, if the FERC accepts the Joint Stakeholder Proposal related to EOL Planning, EOL Notifications will be regionally planned. Regardless, these proposed Attachment M-3 projects highlight the regional nature of Attachment M-3 projects and the lack of an appropriate cost allocation methodology for such projects.

LS Power asked our technical consultants at PTerra to review some of these recently proposed projects (\$750 million in total), and to answer the question of which consumers in PJM are going to benefit from these projects proposed to be paid 100% by the TO local zone. EOL high voltage projects, like all transmission projects, must follow long-standing cost causation principles.

A straight DFAX run will reflect the **actual** regional contributions associated with high voltage transmission projects. Under Order No. 1000-A, a regional project is defined as any project that benefits two or more TO zones by greater than zero percent in each zone. Generally, a regional project should be regionally planned under Order No. 1000 and have been identified through a competitive planning process.

PTerra performed a straight DFAX run for each recently proposed project, based on project information provided at the TEAC and SRRTep meetings by the reviewing transmission owner.

We outline the results in this letter and provide you thoughtful recommendations. In summary, we recommend that PJM or the PJM Market Monitor, acting in your respective public interest roles, perform this independent beneficiary analysis for each proposed EOL high voltage project as the Transmission Facilities are being included in the PJM RTEP.



The below set of DFAX results show the actual beneficiaries of the recently proposed EOL high voltage lines.

Upgrade ID	High Voltage Transmission Project/ Cost Estimate Per TEAC slides ¹	Solution-based DFAX Benefitting Customers Based on Actual DFAX Usage	M-3 Project Cost Allocated 100% to Local Zone
APS-2020-11	Goose Creek- Doubs 500 kV rebuild (line ID 514) \$60 Million	AEC (2.10%) / AEP (2.86%) / APS (13.80%) / ATSI (2.98%) / BGE (2.03%) / COMED (0.82%) / DAYTON (0.65%) / DEOK (1.76%) / DL (1.88%) / DPL (3.82%) / DVP (41.49%) / EKPC (1.06%) / JCPL (3.81%) / ME (3.38%) / NEPTUNE (0.44%) / OVEC (0.01%) / PECO (6.63%) / PENELEC (0.14%) / PEPCO_SMECO (4.03%) / PPL (0.32%) / PSEG_RECO (5.99%)	APS – 100% (for APS portion); DOM portion is separate 715 project with regional allocation
DOM-2020-0028	Staunton-Valley 230 kV \$35.6 million	AEC (0.72%) / AEP (3.10%) / APS (1.16%) / ATSI (17.58%) / BGE (1.34%) / COMED (2.13%) / DAYTON (.33%) / DEOK (6.17%) / DL (7.62%) / DPL (0.07%) / DVP (45.10%) / EKPC (0.06%) / JCPL (3.08%) / ME (1.58%) / NEPTUNE (0.35%) / PECO (1.97%) / PENELEC (0.06%) / PEPCO_SMECO (0.80%) / PPL (.13%) / PSEG_RECO (6.66%)	DOM- 100%
PPL-2020-0001	Summit-Lackawanna 1 & 2 230kV \$14.3 Million	AEC (0.87%) / AEP (0.29%) / APS (3.06%) / ATSI (8.57%) / BGE (1.79%) / COMED (0.12%) / DAYTON (0.01%) / DEOK (0.10%) / DL (1.06%) / DPL (0.19%) / DVP (0.77%) / EKPC (0.07%) / JCPL (5.53%) / ME (0.25%) / NEPTUNE (1.39%) / OVEC (0.00%) / PECO (0.26%) / PENELEC (3.77%) / PEPCO_SMECO (0.15%) / PPL (44.55%) / PSEG_RECO (27.20%)	PPL – 100%

¹ <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201006/20201006-item-05-aps-supplemental.ashx>, <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx>, and <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201104/20201104-item-05-dominion-supplemental.ashx>



<p>PPL-2020-0002</p>	<p>Elimsport-Lycoming 2 & 3 230kV</p> <p>\$10.4 Million</p>	<p>AEC (1.52%) / AEP (0.00%) / APS (0.96%) / ATSI (0.00%) / BGE (3.38%) / COMED (0.00%) / DAYTON (0.17%) / DEOK (0.29%) / DL (0.29%) / DPL (0.01%) / DVP (1.11%) / EKPC (0.11%) / JCPL (13.97%) / ME (3.61%) / NEPTUNE (1.32%) / OVEC (0.00%) / PECO (0.03%) / PENELEC (0.02%) / PEPSCO_SMECO (1.54%) / PPL (49.93%) / PSEG_RECO (21.72%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0003</p>	<p>Manor-Millwood 230kV & Face Rock-Millwood 1 69kV</p> <p>\$13.2 million</p>	<p>AEC (1.22%) / AEP (0.51%) / APS (0.93%) / ATSI (1.74%) / BGE (34.99%) / COMED (0.08%) / DAYTON (0.38%) / DEOK (0.97%) / DL (0.62%) / DPL (0.49%) / DVP (6.05%) / EKPC (0.56%) / JCPL (6.64%) / ME (4.48%) / NEPTUNE (0.71%) / OVEC (0.01%) / PECO (3.27%) / PENELEC (0.83%) / PEPSCO_SMECO (2.79%) / PPL (22.21%) / PSEG_RECO (10.53%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0004</p>	<p>Montour-Milton 230 kV</p> <p>\$63 million under Supplemental Project 1106</p>	<p>AEC (1.65%) / AEP (0.53%) / APS (2.19%) / ATSI (0.10%) / BGE (4.53%) / COMED (0.07%) / DAYTON (0.28%) / DEOK (0.61%) / DL (0.99%) / DPL (0.55%) / DVP (3.37%) / EKPC (0.34%) / JCPL (16.46%) / ME (1.06%) / NEPTUNE (1.97%) / OVEC (0.00%) / PECO (2.39%) / PENELEC (5.55%) / PEPSCO_SMECO (5.66%) / PPL (12.07%) / PSEG_RECO (39.64%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0005</p>	<p>Sunbury-Milton 230kV & Sunbury-Milton 69kV</p> <p>\$26.1 million</p>	<p>AEC (1.98%) / AEP (0.08%) / APS (2.13%) / ATSI (0.04%) / BGE (7.25%) / COMED (0.04%) / DAYTON (0.39%) / DEOK (0.69%) / DL (2.33%) / DPL (2.74%) / DVP (3.98%) / EKPC (0.40%) / JCPL (12.32%) / ME (2.21%) / NEPTUNE (0.74%) / OVEC (0.00%) / PECO (2.19%) / PENELEC (12.46%) / PEPSCO_SMECO (6.82%) / PPL (32.39%) / PSEG_RECO (8.82%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0006</p>	<p>Stanton-Summit 3 & 4 230kV</p> <p>\$21.1 million</p>	<p>AEC (0.87%) / AEP (0.28%) / APS (3.07%) / ATSI (8.59%) / BGE (1.77%) / COMED (0.13%) / DAYTON (0.03%) / DEOK (0.17%) / DL (1.07%) / DPL (0.33%) / DVP (1.35%) / EKPC (0.13%) / JCPL (5.54%) / ME (0.21%) / NEPTUNE (1.40%) / OVEC (0.00%) / PECO (0.45%) / PENELEC (6.61%) / PEPSCO_SMECO (0.26%) / PPL (40.46%) / PSEG_RECO (27.29%)</p>	<p>PPL – 100%</p>



<p>PPL-2020-0007</p>	<p>Saegers-Elimsport and Clinton-Elimsport/Clinton-Saegers 230 kV</p> <p>\$23.1 million</p>	<p>AEC (0.93%) / AEP (0.39%) / APS (2.13%) / ATSI (0.01%) / BGE (1.14%) / COMED (0.02%) / DAYTON (0.22%) / DEOK (0.46%) / DL (0.17%) / DPL (0.12%) / DVP (2.59%) / EKPC (0.26%) / JCPL (16.69%) / ME (0.06%) / NEPTUNE (1.16%) / OVEC (0.00%) / PECO (0.65%) / PENELEC (0.95%) / PEPCO_SMECO (1.23%) / PPL (45.65%) / PSEG_RECO (25.17%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0008</p>	<p>South Akron-Millwood 230kV & Millwood-Strasburg tie 69kV</p> <p>\$53.3 million</p>	<p>AEC (0.41%) / AEP (0.07%) / APS (0.13%) / ATSI (0.29%) / BGE (32.55%) / COMED (0.01%) / DAYTON (0.14%) / DEOK (0.35%) / DL (0.10%) / DPL (0.05%) / DVP (2.04%) / EKPC (0.20%) / JCPL (5.49%) / ME (1.65%) / NEPTUNE (0.54%) / OVEC (0.00%) / PECO (1.43%) / PENELEC (0.19%) / PEPCO_SMECO (0.47%) / PPL (51.39%) / PSEG_RECO (2.50%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0009</p>	<p>Montour-Saegers 1 & 2 230kV</p> <p>\$17.5 million</p>	<p>AEC (1.07%) / AEP (0.12%) / APS (0.64%) / ATSI (0.29%) / BGE (2.23%) / COMED (0.48%) / DAYTON (0.07%) / DEOK (0.14%) / DL (4.29%) / DPL (20.98%) / DVP (0.79%) / EKPC (0.08%) / JCPL (10.52%) / ME (2.45%) / NEPTUNE (0.98%) / OVEC (0.00%) / PECO (1.62%) / PENELEC (23.96%) / PEPCO_SMECO (0.97%) / PPL (12.02%) / PSEG_RECO (16.31%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0010</p>	<p>Jenkins-Stanton & Mountain-Stanton 230kV</p> <p>\$22.8 million</p>	<p>AEC (0.33%) / AEP (0.23%) / APS (2.60%) / ATSI (7.17%) / BGE (3.99%) / COMED (0.10%) / DAYTON (0.03%) / DEOK (0.47%) / DL (0.92%) / DPL (0.40%) / DVP (3.87%) / EKPC (0.38%) / JCPL (3.93%) / ME (3.44%) / NEPTUNE (1.13%) / OVEC (0.00%) / PECO (0.53%) / PENELEC (19.96%) / PEPCO_SMECO (0.62%) / PPL (27.89%) / PSEG_RECO (22.00%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0011</p>	<p>Mountain-Stanton and Mountain-Jenkins 230kV</p> <p>\$27 million</p>	<p>AEC (0.33%) / AEP (0.23%) / APS (2.60%) / ATSI (7.17%) / BGE (3.99%) / COMED (0.10%) / DAYTON (0.03%) / DEOK (0.47%) / DL (0.92%) / DPL (0.40%) / DVP (3.87%) / EKPC (0.38%) / JCPL (3.93%) / ME (3.44%) / NEPTUNE (1.13%) / OVEC (0.00%) / PECO (0.53%) / PENELEC (19.96%) / PEPCO_SMECO (0.62%) / PPL (27.89%) / PSEG_RECO (22.00%)</p>	<p>PPL – 100%</p>

<p>PPL-2020-0012</p>	<p>Montour-Susquehanna and Montour-Susquehanna T10 230kV</p> <p>\$69.6 million</p>	<p>AEC (1.39%) / AEP (0.17%) / APS (0.98%) / ATSI (0.64%) / BGE (1.66%) / COMED (0.09%) / DAYTON (0.06%) / DEOK (0.12%) / DL (0.21%) / DPL (11.40%) / DVP (0.80%) / EKPC (0.06%) / JCPL (11.71%) / ME (1.88%) / NEPTUNE (1.24%) / OVEC (0.00%) / PECO (1.69%) / PENELEC (24.24%) / PEPCO_SMECO (0.47%) / PPL (19.64%) / PSEG_RECO (21.56%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0013</p>	<p>Siegfried-Harwood and Harwood-East Palmerton/Siegfried-East Palmerton 230kV</p> <p>\$136.8 million</p>	<p>AEC (0.35%) / AEP (0.12%) / APS (0.20%) / ATSI (22.29%) / BGE (1.31%) / COMED (0.42%) / DAYTON (0.12%) / DEOK (0.34%) / DL (5.11%) / DPL (2.57%) / DVP (2.16%) / EKPC (0.22%) / JCPL (17.80%) / ME (5.71%) / NEPTUNE (0.86%) / OVEC (0.00%) / PECO (0.58%) / PENELEC (0.21%) / PEPCO_SMECO (0.46%) / PPL (23.28%) / PSEG_RECO (15.88%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0014</p>	<p>Montour-Columbia 230kV</p> <p>\$28.2 million</p>	<p>AEC (0.13%) / AEP (0.03%) / APS (0.07%) / ATSI (16.25%) / BGE (0.74%) / COMED (0.68%) / DAYTON (0.02%) / DEOK (0.04%) / DL (4.11%) / DPL (28.61%) / DVP (0.40%) / EKPC (0.36%) / JCPL (3.69%) / ME (1.11%) / NEPTUNE (0.22%) / OVEC (0.00%) / PECO (0.24%) / PENELEC (0.31%) / PEPCO_SMECO (0.20%) / PPL (39.34%) / PSEG_RECO (3.46%)</p>	<p>PPL – 100%</p>
<p>PPL-2020-0015</p>	<p>Frackville-Columbia 230kV</p> <p>\$91.9 million</p>	<p>AEC (0.32%) / AEP (0.07%) / APS (0.17%) / ATSI (16.33%) / BGE (1.84%) / COMED (0.47%) / DAYTON (0.06%) / DEOK (0.10%) / DL (4.12%) / DPL (28.73%) / DVP (0.98%) / EKPC (0.35%) / JCPL (9.14%) / ME (2.75%) / NEPTUNE (0.54%) / OVEC (0.00%) / PECO (0.60%) / PENELEC (0.76%) / PEPCO_SMECO (0.50%) / PPL (23.59%) / PSEG_RECO (8.58%)</p>	<p>PPL – 100%</p>
<p>ME-2020-009</p>	<p>Loop Hunterstown-Lincoln 115kV into Ortanna substation to address deterioration of Hunterstown-Orrtanna 115 kV 963 line</p> <p>\$38.5 million</p>	<p>AEC (2.55%) / AEP (0.49%) / APS (24.83%) / ATSI (3.20%) / BGE (1.25%) / COMED (0.22%) / DAYTON (0.42%) / DEOK (1.07%) / DL (1.17%) / DPL (2.38%) / DVP (7.65%) / EKPC (0.66%) / JCPL (7.90%) / ME (15.07%) / NEPTUNE (0.87%) / OVEC (0.01%) / PECO (8.52%) / PENELEC (0.86%) / PEPCO_SMECO (3.96%) / PPL (4.99%) / PSEG_RECO (11.94%)</p>	<p>ME-100%</p>



ME-2020-009 (alternative)	Rebuild Hunterstown-Lincoln as a double circuit 115kV line to address deterioration of Hunterstown-Orrtanna 115 kV 963 line	AEC (2.90%) / AEP (0.43%) / APS (24.85%) / ATSI (3.12%) / BGE (0.68%) / COMED (0.28%) / DAYTON (0.42%) / DEOK (1.07%) / DL (1.14%) / DPL (2.70%) / DVP (7.69%) / EKPC (0.66%) / JCPL (9.05%) / ME (9.55%) / NEPTUNE (1.00%) / OVEC (0.01%) / PECO (9.75%) / PENELEC (0.99%) / PEPCO_SMECO (4.33%) / PPL (5.71%) / PSEG_RECO (13.67%)	ME-100%
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The above information demonstrates that although the beneficiaries are diverse, cost allocation is proposed to single transmission owner zones, significantly mis-allocating costs. Interestingly, PJM’s existing cost allocation for many high voltage lines, applies an additional 1% “de minimis” threshold that artificially **modifies** the actual DFAX usage results for cost allocation purposes.

The implementation of the 1% de minimis threshold was made in the PJM Open Access Transmission Tariff at the time that violation-based DFAX was the cost allocation methodology in PJM. The change² was filed on August 6, 2012 and effective October 5, 2012,³ just prior to PJM’s required Order No. 1000 compliance filing.⁴ Order No.1000-A, which clarified the definition of regional project as two or more zones benefiting more than zero percent (and therefore, a regional project were subject to competitive processes), was issued on May 17, 2012.

As PSEG on behalf of the PJM Transmission Owners stated in their first FERC Section 205 filing on August 6, 2012:

“To determine cost responsibility under the DFAX methodology, PJM utilizes a computer model of the electric network and power flow modeling software to calculate individual distribution factors for each facility being studied. **The distribution factors, represented as decimal values or percentages, express the portions of a transfer of energy from a defined sink that will flow across a particular transmission facility or group of transmission facilities...**

Section (b)(iii)(C)(5) of Schedule 12 of the PJM Tariff sets the distribution factor threshold at 0.001 (any distribution factor below that threshold is set to zero). This low distribution threshold factor can produce DFAX analysis outcomes that result in nonadjacent transmission zones sharing costs responsibility for distant, seemingly isolated projects. PJM suggested that a slight increase in the distribution factor threshold would eliminate such anomalous results. Therefore, in the instant filing, the PJM Transmission Owners propose to change the distribution factor threshold to 0.01 to decrease the number of anomalous results in the allocation of costs responsibility for projects.”⁵ (emphasis added)

² FERC Docket ER12-2412-000

³ The second Section 205 filing was PJM Transmission Owners’ Order No. 1000 compliance filing changing from violations-based Dfax to solution-based Dfax and filed at FERC on October 11, 2012.

⁴ FERC Order No. 1000 was issued on July 21, 2011 and PJM’s compliance filing was made on October 11, 2012.



The increase to the DFAX 1% de minimis threshold, in combination with the PJM method of testing transmission facility usage only for a selected set of power transfers, results in a modelling phenomenon known as “nesting”. Technically, nesting occurs when actual DFAX values greater than de minimis are ignored for cost allocation because a locational delivery area (LDA) is nested within a larger LDA.⁶ The 2012 PJM Tariff changes create more “nesting” results, therefore, a higher probability of skewing the benefits to 100% cost allocation to the local zone (and in Order No. 1000 terms, a “local” project and non-competitive).

The PJM method selects only the lowest of all actual DFAX values for a particular load zone among several actual transfers analyzed. When all the lowest selected DFAX values are below the 1% de minimis threshold value, usage is deemed to be zero and all of the cost is then administratively allocated to the local utility, regardless of whether there is a larger DFAX benefit for other load zones that are also nested.⁷ PJM Nesting is when the lowest DFAX is selected for a load zone in place of higher DFAX values.

We asked PTerra to run the actual DFAX also applying the current PJM 1% “de minimis” threshold, using project assumptions provided by reviewing transmission owners at the TEAC and SRRTEP meetings, and this information is included in the Appendix to this letter.

There is real public interest benefit to the consumers and States in understanding actual beneficiary information based on DFAX results, the impact of the current PJM 1% de minimis threshold and nesting in modifying the results, and the often stark comparison to the administrative allocation of 100% cost to the local zone related to Attachment M-3 EOL Projects.

⁶ For example, the PSE&G transmission zone is nested within the PJM Eastern Mid-Atlantic region LDA, which in turn is nested in the PJM Mid-Atlantic LDA. PJM thus completes three DFAX calculations for PSE&G: PSE&G LDA, PSE&G nested in EMAAC, and PSE&G nested in MAAC.

⁷ Here is a Nesting example for a hypothetical project. The PJM protocol calculates the DFAX for three different power transfers (the power transfers are pre-defined in the protocol). Considering the case of the neighboring load area of PSEG for a hypothetical project in PPL Zone:

Hypothetical Transfer	Illustrative DFAX
WMAAC to PSEG	0.0002
PSEG gen to PSEG load	0.0001
MAAC to PSEG	0.0311

The PJM protocol states that of the three DFAX values, choose the lowest DFAX. In this case that value is 0.0001. This selected DFAX is then applied to the weighting value (DFAX) x (Planned Load) but since the selected DFAX is less than de minimis of 0.01, the weighted value is zero. Hence, cost allocation to PSEG for the project is zero. However, there is actually a larger DFAX (0.0311) that is present which is nesting the lowest DFAX of 0.0001. The PJM protocol ignores the higher DFAX even though there is clearly a benefit to PSEG from the project on power transfers from MAAC to PSEG. If all the neighboring load areas show de minimis DFAX, then the project cost is allocated 100% to the local utility, PPL!



LS Power encourages PJM or the PJM Independent Market Monitor to independently provide this information to stakeholders (either if requested by a Member or any PJM State, or as a matter of general PJM Board or PJM IMM policy) including both:

- (i) the pure DFAX run showing actual beneficiaries and
- (ii) the DFAX run showing assumed beneficiaries after the PJM modification due to the current PJM 1% de minimis test. When “nesting” results from PJM 1% de minimis test, maximum power flow sensitivities on the nesting result should be run to determine more accurate beneficiaries (see footnotes in Appendix).

The above beneficiary information should be posted to the Transmission and Expansion Advisory Committee informational materials (on the PJM website) as and when EOL Projects, whether regionally planned or in Attachment M-3, are included in the RTEP.

With utmost respect, we say that the PJM States and the ratepayers who pay for these projects deserve this independent candor concerning high voltage EOL Transmission Facilities⁸ included in the Regional Transmission Expansion Plan. Billions are in play with these issues, and PJM and its IMM’s role has never been more important in transparency, independence, and markets.

Sincerely,

Sharon K. Segner
Vice President

CC: Joseph Bowring, Independent Market Monitor
PJM Board
FERC Docket ER20-2308

⁸ Transmission Facilities is defined by the PJM Operating Agreement as: “facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC's Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.”



APPENDIX:

We also asked PTerra to run the actual DFAX also applying the current PJM 1% “de minimis” threshold, using project assumptions provided by reviewing transmission owners at the TEAC and SRRTEP meetings. To the extent that “nesting” occurred, as described on page 7, it is noted in the table. Additional sensitivities on any nesting outcome were also run selecting the highest DFAX value rather than the lowest DFAX value⁹ and these results are noted in footnotes, generally reflecting benefits more akin to highest utilization of the proposed project, but still reflect the 1% de minimis test to each transmission zone.

Upgrade ID	High Voltage Transmission Project / Cost Estimate Per TEAC slides ¹⁰	Solution-based DFAX Benefitting Customers Based on Actual DFAX Usage	Today's Regional Cost Allocation: PJM 1% De Minimis DFAX Benefitting Customers	M-3 Project Cost Allocated 100% to Local Zone
APS-2020-011	Goose Creek-Doubs 500 kV rebuild (line ID 514) \$60 million	AEC (2.10%) / AEP (2.86%) / APS (13.80%) / ATSI (2.98%) / BGE (2.03%) / COMED (0.82%) / DAYTON (0.65%) / DEOK (1.76%) / DL (1.88%) / DPL (3.82%) / DVP (41.49%) / EKPC (1.06%) / JCPL (3.81%) / ME (3.38%) / NEPTUNE (0.44%) / OVEC (0.01%) / PECO (6.63%) / PENELEC (0.14%) / PEPSCO_SMECO (4.03%) / PPL (0.32%) / PSEG_RECO (5.99%)	APS (32.86%) / DPL (9.10%) / DVP (48.75%) / EKPC (1.25%) / ME (8.04%)	APS – 100% (for APS portion); DOM portion is separate 715 project with regional cost allocation ¹¹
PPL-2020-0001	Summit-Lackawanna 1 & 2 230kV \$14.3 million	AEC (0.87%) / AEP (0.29%) / APS (3.06%) / ATSI (8.57%) / BGE (1.79%) / COMED (0.12%) / DAYTON (0.01%) / DEOK (0.10%) / DL (1.06%) / DPL (0.19%) / DVP (0.77%) / EKPC (0.07%) / JCPL (5.53%) / ME (0.25%) / NEPTUNE (1.39%) / OVEC (0.00%) / PECO (0.26%) / PENELEC (3.77%) / PEPSCO_SMECO (0.15%) / PPL (44.55%) / PSEG_RECO (27.20%)	PPL (100.00%)	PPL – 100%

⁹ Testing the highest DFAX is a valid assumption since this DFAX also measures the anticipated transmission use of the proposed project.

¹⁰ See October 6, 2020 TEAC Materials at <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201006/20201006-item-05-aps-supplemental.ashx> and <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx>

¹¹ LS Power appreciates that PJM staff put the DOM portion of this EOL project in a competitive window (approximately 3 miles of the 15 mile line). Its cost allocation for 3 miles of the Goose Creek-Doubs 500 kV rebuild, as a regionally planned 500 kV project, will be 50% cost allocated based on the PJM load-share ratio and 50% cost allocated by the currently approved PJM DFAX method, which also includes the 1% “de minimis” threshold (1% De Minimis DFAX benefiting customers are the same for both DOM and APS portion of line: APS (32.86%) / DPL (9.10%) / DVP (48.75%) / EKPC (1.25%) / ME (8.04%)). See also page 26, <https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201006/20201006-item-10-reliability-analysis-update.ashx>, which outlines a cost estimate of \$7.6 million for the DOM portion. In contrast, the APS portion of the same line is 100% cost allocated to APS zone as it is an M-3 EOL project.



PPL-2020-0002	Elimsport-Lycoming 2 & 3 230kV \$10.4 million	AEC (1.52%) / AEP (0.00%) / APS (0.96%) / ATSI (0.00%) / BGE (3.38%) / COMED (0.00%) / DAYTON (0.17%) / DEOK (0.29%) / DL (0.29%) / DPL (0.01%) / DVP (1.11%) / EKPC (0.11%) / JCPL (13.97%) / ME (3.61%) / NEPTUNE (1.32%) / OVEC (0.00%) / PECO (0.03%) / PENELEC (0.02%) / PEPCO_SMECO (1.54%) / PPL (49.93%) / PSEG_RECO (21.72%)	PPL (100.00%)	PPL – 100%
PPL-2020-0003	Manor-Millwood 230kV & Face Rock-Millwood 1 69kV \$13.2 million	AEC (1.22%) / AEP (0.51%) / APS (0.93%) / ATSI (1.74%) / BGE (34.99%) / COMED (0.08%) / DAYTON (0.38%) / DEOK (0.97%) / DL (0.62%) / DPL (0.49%) / DVP (6.05%) / EKPC (0.56%) / JCPL (6.64%) / ME (4.48%) / NEPTUNE (0.71%) / OVEC (0.01%) / PECO (3.27%) / PENELEC (0.83%) / PEPCO_SMECO (2.79%) / PPL (22.21%) / PSEG_RECO (10.53%)	JCPL (22.43%) / PPL (77.57%)	PPL – 100%
PPL-2020-0004	Montour-Milton 230 kV \$63 million under Supplemental Project 1106	AEC (1.65%) / AEP (0.53%) / APS (2.19%) / ATSI (0.10%) / BGE (4.53%) / COMED (0.07%) / DAYTON (0.28%) / DEOK (0.61%) / DL (0.99%) / DPL (0.55%) / DVP (3.37%) / EKPC (0.34%) / JCPL (16.46%) / ME (1.06%) / NEPTUNE (1.97%) / OVEC (0.00%) / PECO (2.39%) / PENELEC (5.55%) / PEPCO_SMECO (5.66%) / PPL (12.07%) / PSEG_RECO (39.64%)	Nesting – Default Cost 100% PPL ¹²	PPL – 100%
PPL-2020-0005	Sunbury-Milton 230kV & Sunbury-Milton 69kV \$26.1 million	AEC (1.98%) / AEP (0.08%) / APS (2.13%) / ATSI (0.04%) / BGE (7.25%) / COMED (0.04%) / DAYTON (0.39%) / DEOK (0.69%) / DL (2.33%) / DPL (2.74%) / DVP (3.98%) / EKPC (0.40%) / JCPL (12.32%) / ME (2.21%) / NEPTUNE (0.74%) / OVEC (0.00%) / PECO (2.19%) / PENELEC (12.46%) / PEPCO_SMECO (6.82%) / PPL (32.39%) / PSEG_RECO (8.82%)	Nesting – Default Cost 100% PPL ¹³	PPL – 100%
PPL-2020-0006	Stanton-Summit 3 & 4 230kV \$21.1 million	AEC (0.87%) / AEP (0.28%) / APS (3.07%) / ATSI (8.59%) / BGE (1.77%) / COMED (0.13%) / DAYTON (0.03%) / DEOK (0.17%) / DL (1.07%) / DPL (0.33%) / DVP (1.35%) / EKPC (0.13%) / JCPL (5.54%) / ME (0.21%) / NEPTUNE (1.40%) / OVEC (0.00%) / PECO		

¹² As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be BGE (13.02%) / ME (10.71%) / PENELEC (11.13%) / PEPCO_SMECO (12.37%) / PPL (52.77%).

¹³ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be BGE (14.60%) / ME (12.03%) / PENELEC (12.50%) / PEPCO_SMECO (13.87%) / PPL (46.99%).



		(0.45%) / PENELEC (6.61%) / PEPSCO_SMECO (0.26%) / PPL (40.46%) / PSEG_RECO (27.29%)	PPL (100.00%) ¹⁴	PPL – 100%
PPL-2020-0007	Saegers-Elimsport and Clinton-Elimsport/Clinton-Saegers 230 kV \$23.3 million	AEC (0.93%) / AEP (0.39%) / APS (2.13%) / ATSI (0.01%) / BGE (1.14%) / COMED (0.02%) / DAYTON (0.22%) / DEOK (0.46%) / DL (0.17%) / DPL (0.12%) / DVP (2.59%) / EKPC (0.26%) / JCPL (16.69%) / ME (0.06%) / NEPTUNE (1.16%) / OVEC (0.00%) / PECO (0.65%) / PENELEC (0.95%) / PEPSCO_SMECO (1.23%) / PPL (45.65%) / PSEG_RECO (25.17%)	Nesting – Default Cost 100% PPL	PPL – 100%
PPL-2020-0008	South Akron-Millwood 230kV & Millwood-Strasburg tie 69kV \$53.3 million	AEC (0.41%) / AEP (0.07%) / APS (0.13%) / ATSI (0.29%) / BGE (32.55%) / COMED (0.01%) / DAYTON (0.14%) / DEOK (0.35%) / DL (0.10%) / DPL (0.05%) / DVP (2.04%) / EKPC (0.20%) / JCPL (5.49%) / ME (1.65%) / NEPTUNE (0.54%) / OVEC (0.00%) / PECO (1.43%) / PENELEC (0.19%) / PEPSCO_SMECO (0.47%) / PPL (51.39%) / PSEG_RECO (2.50%)	BGE (50.00%) / JCPL (10.72%) / NEPTUNE (1.14%) / PPL (21.30%) / PSEG_RECO (16.84%)	PPL – 100%
PPL-2020-0009	Montour-Saegers 1 & 2 230kV \$17.5 million	AEC (1.07%) / AEP (0.12%) / APS (0.64%) / ATSI (0.29%) / BGE (2.23%) / COMED (0.48%) / DAYTON (0.07%) / DEOK (0.14%) / DL (4.29%) / DPL (20.98%) / DVP (0.79%) / EKPC (0.08%) / JCPL (10.52%) / ME (2.45%) / NEPTUNE (0.98%) / OVEC (0.00%) / PECO (1.62%) / PENELEC (23.96%) / PEPSCO_SMECO (0.97%) / PPL (12.02%) / PSEG_RECO (16.31%)	Nesting – Default Cost 100% PPL	PPL – 100%
PPL-2020-0010	Jenkins-Stanton & Mountain-Stanton 230kV \$22.8 million	AEC (0.33%) / AEP (0.23%) / APS (2.60%) / ATSI (7.17%) / BGE (3.99%) / COMED (0.10%) / DAYTON (0.03%) / DEOK (0.47%) / DL (0.92%) / DPL (0.40%) / DVP (3.87%) / EKPC (0.38%) / JCPL (3.93%) / ME (3.44%) / NEPTUNE (1.13%) / OVEC (0.00%) / PECO (0.53%) / PENELEC (19.96%) / PEPSCO_SMECO (0.62%) / PPL (27.89%) / PSEG_RECO (22.00%)	Nesting – Default Cost 100% PPL ¹⁵	PPL – 100%
PPL-2020-0011	Mountain-Stanton and Mountain-Jenkins 230kV	AEC (0.33%) / AEP (0.23%) / APS (2.60%) / ATSI (7.17%) / BGE (3.99%) / COMED (0.10%) / DAYTON (0.03%) / DEOK (0.47%) / DL (0.92%) / DPL (0.40%) / DVP (3.87%) / EKPC (0.38%) / JCPL (3.93%) / ME (3.44%) / NEPTUNE (1.13%) / OVEC (0.00%) / PECO		

¹⁴ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be PENELEC (50%) / PPL (50%).

¹⁵ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be PENELEC (75.00%) / PPL (25.00%).



	\$27 million	(0.53%) / PENELEC (19.96%) / PEPCO_SMECO (0.62%) / PPL (27.89%) / PSEG_RECO (22.00%)	Nesting – Default Cost 100% PPL ¹⁶	PPL – 100%
PPL- 2020- 0012	Montour- Susquehanna and Montour- Susquehanna T10 230kV \$69.9 million	AEC (1.39%) / AEP (0.17%) / APS (0.98%) / ATSI (0.64%) / BGE (1.66%) / COMED (0.09%) / DAYTON (0.06%) / DEOK (0.12%) / DL (0.21%) / DPL (11.40%) / DVP (0.80%) / EKPC (0.06%) / JCPL (11.71%) / ME (1.88%) / NEPTUNE (1.24%) / OVEC (0.00%) / PECO (1.69%) / PENELEC (24.24%) / PEPCO_SMECO (0.47%) / PPL (19.64%) / PSEG_RECO (21.56%)	Nesting – Default Cost 100% PPL ¹⁷	PPL – 100%
PPL- 2020- 0013	Siegfried- Harwood and Harwood-East Palmerton/Sie gfried-East Palmerton 230kV \$136.8 million	AEC (0.35%) / AEP (0.12%) / APS (0.20%) / ATSI (22.29%) / BGE (1.31%) / COMED (0.42%) / DAYTON (0.12%) / DEOK (0.34%) / DL (5.11%) / DPL (2.57%) / DVP (2.16%) / EKPC (0.22%) / JCPL (17.80%) / ME (5.71%) / NEPTUNE (0.86%) / OVEC (0.00%) / PECO (0.58%) / PENELEC (0.21%) / PEPCO_SMECO (0.46%) / PPL (23.28%) / PSEG_RECO (15.88%)	Nesting – Default Cost 100% PPL ¹⁸	PPL – 100%
PPL- 2020- 0014	Montour- Columbia 230kV \$28.2 million	AEC (0.13%) / AEP (0.03%) / APS (0.07%) / ATSI (16.25%) / BGE (0.74%) / COMED (0.68%) / DAYTON (0.02%) / DEOK (0.04%) / DL (4.11%) / DPL (28.61%) / DVP (0.40%) / EKPC (0.36%) / JCPL (3.69%) / ME (1.11%) / NEPTUNE (0.22%) / OVEC (0.00%) / PECO (0.24%) / PENELEC (0.31%) / PEPCO_SMECO (0.20%) / PPL (39.34%) / PSEG_RECO (3.46%)	PPL- (100.00%)	PPL – 100%
PPL- 2020- 0015	Frackville- Columbia 230kV \$91.9 million	AEC (0.32%) / AEP (0.07%) / APS (0.17%) / ATSI (16.33%) / BGE (1.84%) / COMED (0.47%) / DAYTON (0.06%) / DEOK (0.10%) / DL (4.12%) / DPL (28.73%) / DVP (0.98%) / EKPC (0.35%) / JCPL (9.14%) / ME (2.75%) / NEPTUNE (0.54%) / OVEC (0.00%) / PECO (0.60%) / PENELEC (0.76%) / PEPCO_SMECO (0.50%) / PPL (23.59%) / PSEG_RECO (8.58%)	Nesting – Default Cost 100% PPL ¹⁹	PPL – 100%

¹⁶ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be PENELEC (75.00%) / PPL (25.00%).

¹⁷ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be ME (16.45%) / PENELEC (15.45%) / PPL (59.54%) / PSEG_RECO (8.56%).

¹⁸ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be JCPL (32.73%) / ME (23.04%) / NEPTUNE (2.74%) / PPL (27.85%) / PSEG_RECO (13.64%).

¹⁹ As noted earlier, the PJM method selects only the lowest DFAX value among the transfers tested. However, if the highest DFAX value is selected, then the beneficiaries for this otherwise “nested” project would be ME (19.32%) / PPL (80.68%).