STATE OF DELAWARE
THE PUBLIC SERVICE COMMISSION
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June 2, 2014

VIA ELECTRONIC DELIVERY

Mr. Steven Herling
Vice President – Planning
PJM Interconnection
PO Box 1525
Southeastern, PA 19399-1525

Re: **COMMENTS OF DELAWARE PUBLIC SERVICE COMMISSION REGARDING TRANSMISSION EXPANSION ADVISORY COMMITTEE CONSIDERATION OF ARTIFICIAL ISLAND PROPOSALS**

Dear Mr. Herling,

As requested at the Monday, May 19th Special TEAC meeting, the Delaware Public Service Commission ("Delaware PSC") hereby submits these comments regarding consideration of the proposals to resolve the stability issues identified to provide for maximum power generation from Artificial Island ("AI"). The Delaware PSC recognizes, and appreciates, that ultimate decisions by the PJM Board regarding AI will be predominantly based on appropriate engineering requirements. As discussed further below, however, there are significant concerns with the potential cost allocation impacts illustrated at recent Transmission Expansion Advisory Committee ("TEAC") meetings.

In response to the Regional Transmission Expansion Plan proposal window initiated by PJM to address the AI stability issues on April 29, 2013, there were 26 proposed solutions submitted and evaluated by the TEAC. There was a range of costs from $100 million to $1.550 billion and included 500kV and 230kV transmission facilities as well as new transformation, substations, and additional circuit breakers. The proposals provided a diversity of station connections, a variety of routing options, project risks, resource requirements, and timelines. The Delaware PSC Staff monitored the TEAC meetings and certainly appreciates the complexity required in the evaluation to reduce the proposals to the 12 Southern Crossing and Red Lion Lines.

In response to a request from the Delaware PSC Staff, at the May 8, 2014 TEAC meeting PJM provided examples of cost responsibility for a Load Ratio Share and a DFAX allocation. As shown on slide 37 of that presentation[1] for a 500kV facility, Delmarva Power & Light Company ("Delmarva") was responsible for approximately 4.5% of the cost. The major responsibilities for the DFAX

[1]"May 8 TEAC presentation" http://www.pjm.com/~/media/committees-groups/committees/teac/20140508/20140508-item-01-reliability-analysis-update.ashx

allocation of a 500kV facility were AEC at approximately 38% and JCPL at approximately 51%. While the Delaware PSC takes no position at this time on the DFAX percentages shown in the example, the responsibilities appear logical in that cost responsibility is shared mainly among the entities in the New Jersey and Delaware transmission zones.

On the other hand, the cost allocation example for a 230kV facility displayed neither logic nor fairness. As shown on slide 38 of the May 8 TEAC presentation, Delmarva would be assigned 100% of the cost for such a facility. It is not clear to the Delaware PSC why such a dramatic difference could occur in a DFAX allocation between a 500kV and 230kV facility where the benefit of the project to alleviate an operational problem in the New Jersey transmission zone is the same, however, the cost responsibility is assigned solely to the Delaware transmission zone.

The Delaware PSC Staff estimates that the cost impact between the two allocation methodologies could be significant to Delaware ratepayers and (depending on the project selected) could range upwards of a 20% increase in Annual Transmission Revenue Requirements. Given the lack of clarity and cost impact, the Delaware PSC would request PJM to provide additional information in order to assist in the evaluation and assessment of a PJM Board decision regarding AI.

The Delaware PSC would request the following information from PJM:

1. Describe the difference between the DFAX Allocation for a 500kV facility versus a 230kV facility as illustrated for the AI projects.

2. Explain how a transmission project to alleviate an operational issue in one transmission zone could be solely the cost responsibility of a different transmission zone.

3. Provide any other examples in PJM's transmission planning where the cost for a project, or facility, to resolve a reliability and/or operational issue in a transmission zone was entirely assigned to another transmission zone(s)

It would be appreciated if the above information could be provided to the Delaware PSC on or before the June 16, 2014 scheduled TEAC meeting in order to allow for comments, if necessary, prior to the PJM Board meeting scheduled for July 22 on this issue.

Please feel free to contact me or Mr. Robert Howatt our Executive Director, should you have any questions, or if I can be of further assistance in this matter.

Sincerely,

/s/ Dallas Winslow
Chairman
Delaware Public Service Commission

Copies:
Commissioners, Delaware Public Service Commission
Mr. Robert Howatt, Executive Director, Delaware Public Service Commission
Ms. Janis Dillard, Deputy Director, Delaware Public Service Commission
Mr. Craig Glazer, Vice President-Federal Government Policy, PJM

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May 26, 2015

VIA ELECTRONIC DELIVERY

Mr. Howard Schneider
Chair, PJM Board of Managers
PJM Interconnection
PO Box 1525
Southeastern, PA 19399-1525

Re: **COMMENTS OF DELAWARE PUBLIC SERVICE COMMISSION REGARDING TRANSMISSION EXPANSION ADVISORY COMMITTEE ("TEAC") RECOMMENDATION FOR ARTIFICIAL ISLAND FACILITIES**

Dear Mr. Schneider,

At the April 28, 2015 TEAC meeting the PJM Staff provided its recommendation of the proposals to improve operational performance issues identified at Artificial Island ("AI") under a range of anticipated system conditions and to eliminate potential planning criteria violations (e.g., NERC, RFC, etc.) in the AI area. As requested at that meeting, the Delaware Public Service Commission ("Delaware PSC") hereby submits these comments regarding that recommendation. The Delaware PSC recognizes and appreciates that the ultimate decisions by the PJM Board regarding AI will be predominantly based on appropriate engineering and system reliability requirements. The Delaware PSC also recognizes and appreciates PJM's efforts in the extensive proposal window process to address and resolve the issues reflected in the AI operational difficulties. The Delaware PSC supports PJM's project recommendation and recognizes it offers not only system benefit, but also additional transmission support on the Delmarva Peninsula. However, as discussed further below, the Delaware PSC has significant concerns with the potential cost allocation impacts illustrated at recent TEAC meetings.

As an initial matter, it is important for the PJM Board to understand that the Delaware PSC recognizes and does not intend to disturb the cost allocation methodology in PJM's Tariff as approved by the FERC and included in PJM Manuals. However, to the extent that the cost allocation procedures are intended to recognize beneficiaries of transmission facilities, the Delaware PSC suggests that rationale is deficient in this case. The Delaware PSC would recommend to the PJM Board that there are unique, specific, and objectively determinable

circumstances in this case that would justify additional studies to appropriately allocate costs consistent with the beneficiaries of the new facilities.

In response to the Regional Transmission Expansion Plan ("RTEP") proposal window initiated by PJM to address the AI stability issues on April 29, 2013, there were 26 proposed solutions submitted and evaluated by the TEAC. There was a range of costs from $100 million to $1.550 billion and included 500kV and 230kV facilities as well as new transformation, substations, and additional circuit breakers. The proposals provided a diversity of station connections, a variety of routing options, project risks, resource requirements, and timelines. The Delaware PSC monitored the TEAC meetings and certainly appreciates the complexity required in the evaluation to reduce the proposals to a final recommendation. PJM staff will recommend to the Board for inclusion in the RTEP a new 230kV circuit from Salem to a new substation near the 230kV corridor in Delaware tapping the existing Red Lion to Cartanza and Red Lion to Cedar Creek 230 kV lines, utilizing Horizontal Directional Drilling under the river ("LS Power 5a").

The Delaware PSC has not performed an independent analysis of the PJM staff final recommendations and takes no position at this time regarding the technical characteristics of the LS Power 5A (and supporting connection facilities). However, as presented by PJM staff, the LS Power 5A appears to provide both technical and economic benefits to the Delmarva zone. As discussed further below, however, the Delaware PSC has significant concerns regarding the ultimate cost responsibilities of PJM staff's final recommendations.

In response to a request from the Delaware PSC Staff, at the May 8, 2014 TEAC meeting PJM provided examples of cost responsibility for a Load Ratio Share and a DFAX allocation. As shown on slide 37 of that presentation[1] for a 500kV facility, Delmarva Power & Light Company ("Delmarva") was responsible for approximately 4.5% of the cost. The major responsibilities for the DFAX allocation of a 500kV facility included JCPL at approximately 51%. While the Delaware PSC takes no position at this time on the DFAX percentages shown in the example, the responsibilities appear logical in that cost responsibility is shared mainly among the entities in the New Jersey and Delaware transmission zones.

On the other hand, the cost allocation example for a 230kV facility such as the LS Power 5A displayed neither logic nor fairness. As shown on slide 38 of the May 8 TEAC presentation, the Delmarva zone would be assigned 100% of the cost for such a facility. It is not clear to the Delaware PSC why such a dramatic difference could occur in cost responsibility for a facility where the benefit of the project is to alleviate an operational problem in the New Jersey transmission zone and is the same for both facilities, yet the cost responsibility for the 230kV facility is assigned solely to the Delmarva transmission zone.

The Delaware PSC Staff estimates that the ultimate cost impact for the LS Power 5A and other AI facilities could be significant to Delaware transmission customers, including ratepayers of Delmarva.[2] Depending on the ultimate in-service costs of the LS Power 5A and other AI facilities, the cost impact could be nearly a 25% increase in Annual Transmission Revenue Requirements. Based on the last Annual Update filed by Delmarva, the Network Service Revenue

[1] "May 8 TEAC presentation" http://www.pjm.com/~/media/committees-groups/committees/teac/20140508/20140508-item-01-reliability-analysis-update.ashx

[2] The Delaware PSC additionally recognizes that the cost impact would also affect ratepayers of Old Dominion Electric Coop and the Delaware Municipal Electric Corporation.

Requirement for transmission service(s) effective June 1, 2014 was approximately $121 million.[3] Should the in-service costs for the LS Power 5A and other AI facilities assigned to Delmarva be estimated at $200 million with a conservative 15% carrying charge, the impact on the current Network Service Revenue Requirement for Delmarva transmission service(s) would be $30 million resulting in an increase of approximately 25%. In the view of the Delaware PSC, such an outcome is neither fair nor equitable and the resulting rate for transmission service(s) paid by Delmarva customers would not be just and reasonable.

What should be considered in this unique case is an appropriate assessment of the AI facilities that would reflect the benefits before and after construction of the new LS Power 5A. For example, when evaluating reliability projects for future periods, it appears that PJM's evaluations of costs and benefits of advancing reliability projects do contemplate such assessments. PJM Manual 14B: PJM Region Transmission Planning Process ("M-14B") provides as follows:[4]

> **2.6.4 Evaluation of cost / benefit of advancing reliability projects**
> PJM will perform annual market simulations and produce cost / benefit analysis of advancing reliability projects. An initial set of simulations will be conducted for current year plus 1 and current year plus 5 using the "as is" transmission network topology without modeling future RTEP upgrades. A second set of simulations will be conducted for each year using the as planned RTEP upgrades. A comparison of the "as is" and "as planned" simulations will identify constraints which have caused significant historical or simulated congestion costs but for which an as-planned upgrade will eliminate or relieve the congestion costs to the point that the constraint is no longer an economic concern.

On the other hand, it appears that PJM's baseline reliability upgrade cost allocation procedures do not include an assessment and comparison of "as is" and "as planned" simulations. PJM's M-14B provides as follows:

> **A.3 Schedule 12 Cost Allocation Process for Baseline Transmission Reliability Upgrades** . . . Allocation of transmission upgrades for reliability is beneficiary based. With respect to reliability projects, while a definitive benefit is from the elimination of a reliability criteria violation, the benefit quantified for the purpose of cost allocation is the use of the upgrade by PJM load zones. The usage of the reliability project by a PJM load zone relative to the usage by all other PJM load zones will be used to determine the percentage cost responsibility to be assigned to the zone.
>
> **A.3.1 RTEP Baseline Reliability Upgrade Cost Allocation** . . . Under this approach to cost allocation, it is entirely possible, and certainly consistent with the allocation philosophy, that the costs of upgrades in one transmission zone may be allocated in significant part to load in other transmission zones. While many required transmission upgrades are allocated entirely to load within the same zone where the criteria violation and the related upgrade are located, the nature of large, integrated transmission systems like the PJM system is such that transmission facilities in one area can be used

[3] FERC Docket No. ER09-1158 annual update filing May 15, 2014
http://elibrary.ferc.gov/idmws/file_list.asp?document_id=14216771
[4] The Delaware PSC "assumes" that the identification and relief of constraints would be similar to the identification and relief of the operational difficulties encountered at AI.

> significantly to serve loads in other areas. The planning process identifies the most effective solutions to criteria violations and the resultant use of these solutions by loads may not be related to the physical location of the transmission upgrade. Therefore, responsibility for the costs of baseline reliability upgrades likewise shall be allocated to those who use these solutions, regardless of their physical location relative to the location of the baseline reliability upgrade required to ensure the reliability of their service.

As shown above, when evaluating reliability upgrades for future periods there is a specific comparison between "as is" and "as planned" facilities which does not occur when determining the cost allocation process for reliability projects. While PJM Staff recognized, in M-14B section A.3.1 above, that one zone's required transmission reliability upgrades could be allocated to an entirely different zone based on load flows, they offered no potential mitigation for this issue. In this unique case, it would appear that in order to identify potential beneficiaries of new facilities, there should be assessments of "as is" of the existing AI facilities as well as "as planned" with the construction of the LS Power 5A.

Another example of potential beneficiaries of the LS Power 5A project, which is neglected in the current load flow cost allocation would be the expected improved system conditions that would allow maximum power output from all of the AI generation units without operational complexity. These assessments of limited generation operations with existing facilities compared to increased generation operations from all of the AI units after the installation of LS Power 5A should reflect the objectives of the original AI proposal window problem statement & requirements document as follows:[5]

1. Generate maximum power (3818 MW total) from all AI Units (Salem1: 1253MW, Salem-2: 1245MW, Hope Creek: 1320MW) without a minimum MVAr requirement from the AI. Full maximum power must be maintained under both the baseline and all N-1 outage conditions of 500kV transmission lines in the AI area. For both the baseline and N-1 outage conditions, AI voltage must be maintained within operating limits and stable for all NERC Category B and C contingencies. NERC Category C3 contingencies "N-1-1 contingencies" do not need to be run on top of the N-1 outage condition.
2. Maximum MW output from AI should not be affected by the simultaneous outage of Power System Stabilizers (PSS) of Artificial Island units Hope Creek and Salem-2. The Salem-1 PSS is assumed to be on for all scenarios.
3. Reduce operational complexity.
4. Improve Artificial Island stability.
5. Maintain PJM System Operating Limits (SOLs)

While these are the obvious benefits sought by PJM, there is no recognition of these benefits within the current cost allocation process. In the current allocation, enhanced New Jersey generation options, and generation company revenues, are predominantly paid by Delaware and Maryland rate payers. It does not appear that PJM has previously identified such benefits from enhanced operation of all of the AI generation units.

[5] http://www.pjm.com/~/media/planning/rtep-dev/expan-plan-process/ferc-order-1000/rtep-proposal-windows/redacted-artificial-island-problem-statement.ashx

Another example in M-14B where the identification of beneficiaries versus cost recovery does not appear consistent with the proposed cost responsibility of LS Power 5A is shown in section 2.5 as follows:

> **2.5 RTEP Cost Responsibility for Required Enhancements**
> . . . The cost responsibility for each baseline-revealed Network Reinforcement is borne by transmission owners based on the contribution to the need for the network reinforcement.

While the AI Area Network includes some Delmarva transmission facilities, it is not clear that those Delmarva facilities solely contributed to the need for the network reinforcement to address the operational complexity, stability issues, or other concerns with the operation of the AI generation units. PJM has not identified, to this point, the extent to which the Delmarva transmission facilities included in the AI Area Network supports the cost allocation proposed for the LS Power 5A.

The Delaware PSC requests that PJM perform the necessary simulations to identify the beneficiaries of the AI facilities before and after the construction of LS Power 5A through simulations of the "as is" and "as planned" facilities. The Delaware PSC suggests that reliance on a single DFAX of LS Power 5A showing just the usage of that new facility does not appropriately identify the beneficiaries of its construction and operation.

As mentioned previously, the Delaware PSC is not intending to protest PJM's procedures regarding the evaluation of RTEP upgrades. In this case, however, there are unique, specific, and objectively determinable circumstances that would justify additional studies to appropriately allocate costs consistent with the beneficiaries of the new facilities. There are three coincident circumstances, when all are occurring with a proposed RTEP upgrade, which PJM should consider to justify additional studies (simulations) to determine cost allocation as follows:

1. Construction of a new facility that also requires new right(s) of way in addition to new equipment; and

2. The DFAX of the new facility assigns all (or nearly all) of the costs to a transmission zone which is different than the zone where the evaluation of the costs and benefits of the new facility was considered; and

3. The cost allocation resulting from a single DFAX would significantly increase the rates paid by customers for transmission service(s).

Recognition of these three unique, specific and objectively determined circumstances when they all occur with a proposed RTEP upgrade would allow PJM to provide the necessary additional information to implement appropriate cost allocation of transmission facilities corresponding to the beneficiaries of the construction and operation of those transmission facilities.

The Delaware PSC recognizes that cost allocation is within the Transmission Owners realm of authority and is anxious to resolve this concern without a lengthy protracted FERC process. As the Delaware PSC perceives it, the proposed cost allocation is unjust and unreasonable without a legitimate correlation to benefit.

The PJM Board has previously shown leadership in the determination of the selection process for the Artificial Island proposals. At the July 2014 Board meeting, the PJM Board deferred selection for the Artificial Island project solution in order to obtain additional information concerning cost caps, scope of work, and project schedules which resulted in a final recommendation by PJM staff that was able to incorporate much needed material to support the approval of the LS Power 5A project now before the Board. The Delaware PSC would urge the PJM Board to continue its leadership in this matter and to include in its approval of the LS Power 5A project a requirement that PJM staff address and resolve the cost allocation issue as recommended in the above comments.

Please feel free to contact me or Mr. Robert Howatt our Executive Director, should you have any questions, or if I can be of further assistance in this matter.

Sincerely,

Dallas Winslow

Chairman
Delaware Public Service Commission

Copies:
Members, PJM Board
Mr. Craig Glazer, Vice President-Federal Government Policy, PJM
Mr. Steve Herling, PJM Vice President – Planning
Mr. Paul McGlynn, Chair, Transmission Expansion Advisory Committee
Commissioners, Delaware Public Service Commission
Mr. Robert Howatt, Executive Director, Delaware Public Service Commission
Ms. Janis Dillard, Deputy Director, Delaware Public Service Commission
Mr. David Bonar, Delaware Public Advocate

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August 7, 2015

VIA ELECTRONIC DELIVERY

PJM Transmission Owners
Mr. Frank J. Richardson, II (FJRichardson@pplweb.com)
Chairman, Transmission Owners Administrative Committee

Re: **REQUEST OF DELAWARE PUBLIC SERVICE COMMISSION REGARDING THE PJM BOARD OF MANAGERS SELECTION OF THE LS POWER 5A ARTIFICIAL ISLAND PROJECT FOR RESOLUTION OF SYSTEM OPERATING AND RELIABILITY CONCERNS IN NEW JERSEY.**

At its July 29, 2015 meeting, the PJM Board of Managers selected the L.S. Power 5A project as the solution to operating and reliability concerns related to the Artificial Island complex. The Delaware Public Service Commission ("Delaware PSC") appreciates PJM's efforts to resolve these issues but has significant concerns with what appears to be the resulting cost allocation. Given the selection of this project, the Delaware PSC respectfully requests the Transmission Owners ("TOs") to review the cost allocation related to this project and to consider possible alternatives that may be more appropriate in this and other similar circumstances.

As the Transmission Owners within the PJM region, the cost allocation for this project is within the TOs' responsibility as approved by the Federal Energy Regulatory Commission ("FERC") and provided for in the PJM Tariff.[1] It is the Delaware PSC's understanding that the cost of the selected 230KV line, as a low voltage facility, will be based on PJM's Solution Based DFAX which will allocate 99.9 % of the 230KV line cost to the DPL Transmission Zone or approximately 89% of the total project cost, which includes certain 500KV high voltage improvements that are also required. The Delaware PSC considers this cost allocation patently unfair, substantially unrelated to the system benefits provided and neither reasonable nor equitable for the DPL Transmission Zone ratepayers. Unfortunately, that leaves the Delaware PSC with the only alternative of a 206 Complaint Filing at FERC and any further legal recourse that may be required. To avoid a long protracted proceeding related to the proposed cost allocation and to develop a just and reasonable cost allocation, the Delaware PSC urges the TOs to review potential cost allocation alternatives for

[1] PJM Tariff, Schedule 12 § (a)(i)

this and the few other similarly situated circumstances where such allocation creates an unfair burden on transmission ratepayers and is inconsistent with benefits.

Recognizing the need to correct transmission system deficiencies for the benefit of all, the Delaware PSC takes no position at this time regarding the need for the selected project or the selection criteria that PJM presented in the Transmission Expansion Advisory Committee meetings. The Delaware PSC is in no way suggesting that cost allocation should be a determining consideration in the selection of an appropriate project to solve technical system or market efficiency issues. What is being contested is the manner in which the FERC-approved cost allocation is being applied in this circumstance and the inequities that inevitably follow.

As previously noted in the Delaware PSC's letter to PJM and as expressed by other similar letters, there are ways to resolve this cost allocation issue and to avoid unnecessary and protracted proceedings. In the case of the Delaware PSC letter, the Commission urged consideration of three (3) specific factors **that when taken together**, [emphasis added] could support an alternative cost allocation. Upon further reflection, the Delaware PSC suggests the consideration of two additional factors that must also be satisfied to justify a different low voltage cost allocation process.

1. The cost allocation resulting from the Solution Based DFAX would significantly increase transmission rates paid by customers for transmission service;
2. The Solution Based DFAX assigns all (or nearly all) of the costs to a transmission zone which is different than the zone creating the system issue; and
3. The project solution requires new rights-of-way and new transmission equipment.

Additionally:

4. The operating and reliability concerns requiring transmission upgrades were caused by generator deliverability export or transmission limitation issues in one zone with over 50% of costs allocated to a nearby zone; and
5. The cost allocation is greater than or equal to twice (or some other agreed-upon value) the PJM-stated load benefits accruing to a specific transmission zone.

It is important to note that the circumstances under which a variation of the DFAX cost allocation may be appropriate are a key component of the requested review. The Delaware PSC believes the recognition of these five unique, specific and objectively determined circumstances could provide justification for a different cost allocation that more accurately reflects the benefits in relation to the cost. It should be recognized that, ultimately, the FERC[2] and the courts[3] that have addressed this issue have concluded that there must be a reasonable alignment[4] of cost allocation and beneficiaries.

[2] Order No. 1000, 136 FERC ¶ 61,051, FERC Stats. & Regs. ¶ 31,323 (July 21, 2011) at P 622 (Costs of new transmission facilities must be "allocated to those within the transmission planning region that benefit from those facilities in a manner that is at least roughly commensurate with estimated benefits.")
[3] *KN Energy, Inc. v. FERC*, 968 F.2d 1295, 1300 (D.C. Cir. 1992) ("[A]ll approved rates reflect to some degree the costs actually caused by the customer who must pay them.")
[4] *KN Energy, Inc. v. FERC*, 968 F.2d at 1300-01 (quoting *Alabama Electric Cooperative, Inc v. FERC*, 684 F.2d 20, 27 (D.C. Cir. 1982): "Properly designed rates should produce revenues from each class of customers which match, as closely as practicable, the costs to serve each class or individual customer." (internal footnotes omitted) (emphasis removed))

The final question for the TOs' consideration is how the cost allocation could be developed under these specific circumstances. The Delaware PSC encourages the TOs to examine alternative cost allocation options. The following suggestions can each provide a more just and reasonable cost allocation more closely aligned with benefits.

- With respect to high voltage facilities, transmission ratepayers live in the 50/50 world as filed by the TOs (50% shared on a PJM load ratio basis and 50% on a Solution Based DFAX) that has been approved by the FERC. Under the above mentioned circumstances and as advocated by several Delaware industries in their July 17 letter to the PJM Board, at a minimum, PJM should consider the underlying low voltage line as a regional system requirement or necessary lower voltage facility as permitted by PJM Manual 14B: PJM Region Transmission Planning Process, and allocate the costs of the entire solution on the 50/50 basis

- A second alternative would be to consider a cost allocation based on the economic load benefit to be derived from the selected solution. If this method were employed for this L.S. Power project, and based on PJM's Market Efficiency Study (Exhibit 1) (with which one may or may not agree), under the circumstances assumed in the analysis, the DPL Zone allocation would be approximately 10.1% of the project costs with up to 16.0% allocated to PSEG's New Jersey customers. [5]

- Another option for consideration could be a different combination of alternatives such as perhaps a 40/60 cost allocation under the above limited circumstances (40% shared on a PJM load ratio basis and 60% on a Solution Based DFAX analysis). The 40/60 allocation is a compromise based on the assumption that under the above circumstances, the project, although low voltage, does provide a broader system benefit for which at least some portion of the project should be paid.

Another factor that needs to be considered in this particular cost allocation review is the uprating of the Artificial Island nuclear units that has occurred over the past 15 years. The Delaware industries point out that "past generation interconnection studies concerning up-rates to generation output at the Artificial Island complex performed by, or on behalf of, PJM, including a recent 50 MW up-rate that went in service in 2013, failed to identify the reliability problem for which Delmarva customers are now being asked to shoulder cost responsibility."[6] An equitable cost allocation to relieve generation operational constraints, even if for only the peak 100 hours in the

[5] Other major beneficiaries are: PECO, at 16.8%; and PLGRP, at 12.4% (Exhibit 1). None of the aforementioned zones, each with PJM-calculated annual load payment savings greater than DPL, are currently allocated any cost for the 230KV section of the AI transmission upgrade.

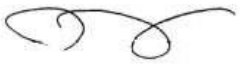
[6] Delaware industries' July 17 Letter to the PJM Board. Their accompanying footnote reads: "A review of the PJM Generation Interconnection Queues indicates that Artificial Island generator output was increased by 95 MW in 2001, by 236 MW in 2007-2008, and by 50 MW as recently as 2013, only a few months after PJM discussed the Artificial Island issue with stakeholders and a few months prior to issuing the Artificial Island RFP in April 2013. In approving the prior up-rates at Artificial Island, PJM appears to have permitted the use of minimum MVAR requirements and complex operating guides **in lieu of requiring the generation owner to reinforce the transmission system to provide adequate stability margins as is now being requested through the Artificial Island Proposal Window RFP**." (Emphasis added)

year, should certainly carry costs in relation to the benefits to be received by the generator. The ability to run at full output during the 100 highest cost hours on the system without "operational difficulties" creates a windfall profit for the generator. It requires Delaware ratepayers to not only pay for the transmission that permits higher system generation levels, but also the windfall profits paid to generators who rely on that transmission for full operation.

The Delaware PSC encourages the TOs to address this and similar cost allocation issues where the use of the Solution Based DFAX allocates costs in an unfair and inequitable manner. A cost allocation process that forces high energy use industries in one transmission zone to absorb the network costs for benefits to competing industries in neighboring zones creates a discriminatory business environment that foretells economic relocations and the related state impacts for industries that rely on lower energy costs to remain competitive.

This is an important issue for the Delaware PSC and needs a cooperative approach for resolution. The Delaware Public Service Commission and others would be happy to meet with the TOs to further discuss potential resolutions to this issue. We hope the PJM Transmission Owners can consider a review process and amendment to the current cost allocation process that helps resolve these types of circumstances.

Sincerely,



Dallas Winslow, Chairman
Delaware Public Service Commission

Electronic Copies:
The Honorable Jack Markell, Governor
Commissioners, Delaware Public Service Commission
Mr. David Bonar, Delaware Public Advocate
Ms. Ruth A. Price, Delaware DeputyPublic Advocate
Mr. Robert Howatt, Executive Director, Delaware Public Service Commission
Mr. Matthew Hartigan, Deputy Director, Delaware Public Service Commission
Mr. John Farber, Public Utilities Analyst
Mr. Joe Delosa, Public Utilities Analyst
Mr. Howard Schneider, Chair, PJM Board of Managers
Mr. Craig Glazer, Vice President-Federal Government Policy, PJM
Mr. Michael Kormos, Executive Vice President, PJM
Mr. Steve Herling, PJM Vice President – Planning
Mr. Paul McGlynn, Chair, Transmission Expansion Advisory Committee
Mr. Gregory Carmean, Executive Director, OPSI

ATTACHED EXHIBIT 1

PJM Market Efficiency Study – Artificial Island Benefits
Requested by Delaware Public Service Commission

PJM Market Efficiency Study
Artificial Island Benefits

Requested by Delaware Public Service Commission

Market Efficiency Project Study approach:

- Utilized PJM Market Efficiency Base Case for study year 2019
- Compared LMP and Load Payments between the following scenarios for both a single hour* and annual value:
  - System without Artificial Island solution and one Salem Unit Offline**
  - System with Artificial Island solution and all Salem Units Online

** Single hour derived from RTO* Coincident Peak using 2019 Base Simulation*

***Annual assumes one Salem unit offline for entire simulated year.*

Peak Hour Benefits Due To Artificial Island Solution*

LMP Avg. Benefits Due to Artificial Island Solution (negative value is a benefit, a decrease in LMP)	
AECO	(3.4)
AEP	0.3
APS	0.9
BGE	(0.3)
COMED	0.4
DAY	0.3
DEOK	0.3
DOM	1.2
DPL	(3.5)
DUQ	(0.2)
EKPC	0.4
FE-ATSI	(0.1)
JCPL	(3.1)
METED	(4.9)
PECO	(3.2)
PENELEC	(1.3)
PEPCO	1.2
PLGRP	(3.2)
PSEG	(3.0)
RECO	(2.6)

Load Payments Benefits Due to Artificial Island Solution (Negative value is a benefit, a decrease in Load Payments)	
AECO	(8,266)
AEP	5,880
APS	7,557
BGE	(1,972)
COMED	8,530
DAY	770
DEOK	1,501
DOM	23,316
DPL	(13,772)
DUQ	(602)
EKPC	618
FE-ATSI	(1,770)
JCPL	(18,257)
METED	(14,097)
PECO	(25,998)
PENELEC	(4,050)
PEPCO	7,396
PLGRP	(23,506)
PSEG	(28,942)
RECO	(1,016)

**Simulated RTO coincident peak from 2019 simulation was 155,382 MWs on July 31.*

Annual LMP Benefits Due To Artificial Island Solution

- During the peak months of July and August, the market simulation shows an average LMP decrease in DPL Zone of 2.20 $/MWh and 1.90 $/MWh, respectively.
- The annual LMP average across DPL decreases by 0.86 $/MWh.
- The PJM average LMP decreases by 0.52 $/MWh in July, and 0.30 $/MWh in August.

LMP Avg. Benefits Due to Artificial Island Solution (negative value is a benefit, a decrease in LMP)

Area	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	Annual Average
AECO	$(0.15)	$(0.26)	$(0.82)	$(0.80)	$(0.18)	$(0.72)	$(1.79)	$(1.27)	$(1.01)	$(0.35)	$(0.48)	$(0.71)	$ (0.77)
AEP	$(0.23)	$(0.32)	$(0.01)	$(0.10)	$ 0.11	$(0.02)	$(0.11)	$(0.01)	$(0.10)	$ 0.25	$(0.19)	$ 0.01	$ (0.06)
APS	$(0.01)	$(0.19)	$(0.35)	$(0.11)	$ 0.38	$(0.07)	$(0.22)	$(0.11)	$(0.24)	$ 0.18	$(0.23)	$(0.06)	$ (0.09)
BGE	$ 0.04	$ 0.14	$(0.47)	$(0.20)	$ 0.20	$(0.12)	$(0.41)	$(0.17)	$(0.47)	$(0.06)	$(0.35)	$(0.28)	$ (0.18)
COMED	$(0.22)	$(0.29)	$ 0.44	$(0.36)	$(0.08)	$ 0.02	$(0.05)	$ 0.08	$ 0.01	$ 0.01	$ 0.48	$ 0.15	$ 0.02
DAY	$(0.31)	$(0.49)	$ 0.16	$(0.05)	$(0.00)	$(0.01)	$(0.09)	$ 0.00	$(0.06)	$ 0.44	$(0.15)	$(0.00)	$ (0.05)
DEOK	$(0.28)	$(0.47)	$ 0.20	$(0.14)	$(0.04)	$(0.02)	$(0.08)	$ 0.00	$(0.05)	$ 0.53	$(0.11)	$(0.01)	$ (0.04)
DOM	$ 0.02	$ 0.28	$(0.33)	$(0.04)	$ 0.31	$ 0.02	$(0.16)	$(0.03)	$(0.09)	$ 0.07	$(0.47)	$(0.16)	$ (0.05)
DPL	$(0.19)	$(0.22)	$(0.85)	$(0.70)	$(0.27)	$(0.77)	$(2.20)	$(1.90)	$(1.05)	$(0.36)	$(0.57)	$(0.77)	$ (0.86)
DUQ	$(0.16)	$(0.10)	$(0.69)	$(0.37)	$ 0.42	$(0.15)	$(0.23)	$(0.12)	$ 0.12	$ 0.70	$(1.04)	$(0.10)	$ (0.14)
EKPC	$(0.22)	$(0.38)	$ 0.11	$ 0.01	$ 0.03	$(0.01)	$(0.06)	$ 0.05	$(0.09)	$ 0.27	$(0.14)	$(0.01)	$ (0.05)
FE-ATSI	$(0.07)	$(0.20)	$(0.30)	$(0.38)	$ 0.22	$(0.15)	$(0.21)	$(0.08)	$(0.04)	$ 0.40	$(0.54)	$(0.07)	$ (0.12)
JCPL	$(0.12)	$(0.28)	$(0.71)	$(0.44)	$ 0.07	$(0.61)	$(1.52)	$(1.02)	$(0.85)	$(0.23)	$(0.41)	$(0.58)	$ (0.59)
METED	$ 0.00	$(0.12)	$(0.78)	$(0.62)	$(0.15)	$(0.62)	$(1.18)	$(0.69)	$(1.15)	$(0.24)	$(0.38)	$(0.46)	$ (0.54)
PECO	$(0.10)	$(0.24)	$(0.68)	$(0.61)	$(0.12)	$(0.63)	$(1.79)	$(1.23)	$(0.91)	$(0.22)	$(0.40)	$(0.63)	$ (0.66)
PENELEC	$ 0.12	$ 0.03	$(0.14)	$(0.51)	$ 0.05	$(0.41)	$(0.64)	$(0.44)	$(0.55)	$(0.16)	$(0.11)	$(0.19)	$ (0.24)
PEPCO	$ 0.03	$ 0.23	$(0.37)	$(0.03)	$ 0.36	$ 0.03	$(0.22)	$(0.05)	$(0.17)	$ 0.01	$(0.37)	$(0.20)	$ (0.06)
PLGRP	$(0.04)	$(0.15)	$(0.69)	$(0.45)	$(0.04)	$(0.56)	$(1.22)	$(0.80)	$(0.79)	$(0.15)	$(0.31)	$(0.50)	$ (0.48)
PSEG	$(0.16)	$(0.28)	$(0.70)	$(0.45)	$ 0.05	$(0.58)	$(1.49)	$(1.00)	$(0.81)	$(0.08)	$(0.59)	$(0.62)	$ (0.59)
RECO	$(0.35)	$(0.88)	$(1.95)	$(0.14)	$ 0.44	$(0.69)	$(0.93)	$(0.71)	$(0.65)	$ 0.09	$(0.81)	$(0.41)	$ (0.59)
PJM	$(0.11)	$(0.15)	$(0.25)	$(0.27)	$ 0.10	$(0.19)	$(0.52)	$(0.30)	$(0.31)	$ 0.09	$(0.25)	$(0.18)	$ (0.20)

Annual Load Payment Savings Due To Artificial Island Solution

- During the peak months of July and August, the market simulation shows a decrease of the monthly load payments across DPL zone of $4.32 million and $3.64 million, respectively.
- The annual total load payments across DPL zone decreases by $17.04 million.
- The PJM annual total load payments decrease by $169.2 million.

Load Payments Savings Due to Artificial Island Solution ($ million, negative value is a benefit, a decrease in load payments)													
Area	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	Annual Total
AECO	$ (0.14)	$ (0.22)	$ (0.67)	$ (0.60)	$ (0.15)	$ (0.70)	$ (2.13)	$ (1.46)	$ (0.91)	$ (0.28)	$ (0.38)	$ (0.64)	$ (8.28)
AEP	$ (2.82)	$ (3.54)	$ (0.13)	$ (0.99)	$ 1.16	$ (0.21)	$ (1.34)	$ (0.17)	$ (1.05)	$ 2.57	$ (1.98)	$ 0.06	$ (8.43)
APS	$ (0.04)	$ (0.84)	$ (1.49)	$ (0.43)	$ 1.48	$ (0.29)	$ (0.97)	$ (0.51)	$ (0.93)	$ 0.73	$ (0.91)	$ (0.28)	$ (4.46)
BGE	$ 0.14	$ 0.39	$ (1.31)	$ (0.50)	$ 0.52	$ (0.35)	$ (1.37)	$ (0.55)	$ (1.29)	$ (0.14)	$ (0.91)	$ (0.83)	$ (6.22)
COMED	$ (2.09)	$ (2.47)	$ 3.78	$ (2.89)	$ (0.71)	$ 0.14	$ (0.49)	$ 0.82	$ 0.08	$ 0.08	$ 4.04	$ 1.41	$ 1.70
DAY	$ (0.52)	$ (0.73)	$ 0.24	$ (0.07)	$ (0.00)	$ (0.02)	$ (0.15)	$ 0.00	$ (0.09)	$ 0.64	$ (0.21)	$ (0.00)	$ (0.92)
DEOK	$ (0.70)	$ (1.04)	$ 0.45	$ (0.28)	$ (0.09)	$ (0.04)	$ (0.22)	$ 0.00	$ (0.10)	$ 1.14	$ (0.24)	$ (0.02)	$ (1.16)
DOM	$ 0.17	$ 2.46	$ (2.86)	$ (0.32)	$ 2.53	$ 0.19	$ (1.58)	$ (0.26)	$ (0.80)	$ 0.57	$ (3.95)	$ (1.49)	$ (5.33)
DPL	$ (0.34)	$ (0.35)	$ (1.35)	$ (0.99)	$ (0.40)	$ (1.30)	$ (4.32)	$ (3.64)	$ (1.66)	$ (0.53)	$ (0.85)	$ (1.32)	$ (17.04)
DUQ	$ (0.22)	$ (0.13)	$ (0.88)	$ (0.43)	$ 0.51	$ (0.21)	$ (0.35)	$ (0.17)	$ 0.15	$ 0.86	$ (1.27)	$ (0.14)	$ (2.26)
EKPC	$ (0.26)	$ (0.39)	$ 0.10	$ 0.01	$ 0.03	$ (0.01)	$ (0.06)	$ 0.05	$ (0.08)	$ 0.23	$ (0.13)	$ (0.01)	$ (0.53)
FE-ATSI	$ (0.44)	$ (1.13)	$ (1.76)	$ (2.03)	$ 1.22	$ (0.89)	$ (1.36)	$ (0.50)	$ (0.23)	$ 2.19	$ (2.96)	$ (0.40)	$ (8.28)
JCPL	$ (0.25)	$ (0.53)	$ (1.37)	$ (0.77)	$ 0.13	$ (1.34)	$ (3.90)	$ (2.52)	$ (1.71)	$ (0.42)	$ (0.75)	$ (1.19)	$ (14.62)
METED	$ 0.00	$ (0.16)	$ (1.08)	$ (0.78)	$ (0.19)	$ (0.88)	$ (1.80)	$ (1.04)	$ (1.53)	$ (0.31)	$ (0.50)	$ (0.68)	$ (8.96)
PECO	$ (0.39)	$ (0.81)	$ (2.38)	$ (1.93)	$ (0.39)	$ (2.36)	$ (7.56)	$ (5.05)	$ (3.20)	$ (0.72)	$ (1.33)	$ (2.32)	$ (28.46)
PENELEC	$ 0.22	$ 0.04	$ (0.24)	$ (0.79)	$ 0.08	$ (0.66)	$ (1.09)	$ (0.76)	$ (0.88)	$ (0.26)	$ (0.18)	$ (0.34)	$ (4.87)
PEPCO	$ 0.08	$ 0.59	$ (0.95)	$ (0.07)	$ 0.91	$ 0.07	$ (0.73)	$ (0.15)	$ (0.45)	$ 0.04	$ (0.89)	$ (0.55)	$ (2.10)
PLGRP	$ (0.15)	$ (0.55)	$ (2.58)	$ (1.49)	$ (0.12)	$ (2.00)	$ (4.72)	$ (3.09)	$ (2.70)	$ (0.50)	$ (1.08)	$ (2.00)	$ (20.97)
PSEG	$ (0.61)	$ (0.96)	$ (2.54)	$ (1.50)	$ 0.20	$ (2.40)	$ (6.98)	$ (4.55)	$ (3.11)	$ (0.28)	$ (2.02)	$ (2.33)	$ (27.10)
RECO	$ (0.04)	$ (0.10)	$ (0.23)	$ (0.02)	$ 0.05	$ (0.10)	$ (0.15)	$ (0.11)	$ (0.09)	$ 0.01	$ (0.09)	$ (0.05)	$ (0.92)
PJM	$ (8.40)	$ (10.46)	$ (17.24)	$ (16.88)	$ 6.77	$ (13.36)	$ (41.29)	$ (23.66)	$ (20.57)	$ 5.61	$ (16.58)	$ (13.13)	$ (169.20)

Distribution Factor Allocations

DFAX ALLOCATIONS WITH AI PROJECT

500 kV Transmission Line	AEC	BGE	DPL	ECP	JCPL	NEPTUNE	HTP	PECO	PENELEC	PEPCO	PSEG	RE
Salem - New Freedom	7.7%	0.0%	0.0%	1.3%	16.7%	1.8%	1.2%	22.5%	0.0%	0.0%	47.0%	1.9%
Salem - Hope Creek	22.8%	1.1%	0.0%	0.0%	41.4%	4.4%	0.0%	0.0%	0.0%	0.0%	29.1%	1.2%
Salem - Orchard	8.2%	0.0%	0.0%	1.3%	16.7%	1.8%	1.2%	22.6%	0.0%	0.0%	46.5%	1.9%
Orchard - New Freedom	0.0%	0.0%	0.0%	1.7%	17.1%	2.0%	1.5%	20.6%	0.0%	0.0%	54.9%	2.2%
Hope Creek - New Freedom	7.7%	0.0%	0.0%	1.3%	16.8%	1.8%	1.2%	22.4%	0.0%	0.0%	47.0%	1.9%
Hope Creek - Red Lion	1.9%	36.0%	29.4%	1.2%	3.2%	0.3%	1.7%	0.0%	0.0%	26.3%	0.0%	0.0%

DFAX ALLOCATIONS WITHOUT AI PROJECT

500 kV Transmission Line	AEC	BGE	DPL	ECP	JCPL	NEPTUNE	HTP	PECO	PENELEC	PEPCO	PSEG	RE
Salem - New Freedom	7.6%	0.0%	0.0%	1.3%	16.6%	1.8%	1.2%	22.9%	0.0%	0.0%	46.8%	1.9%
Salem - Hope Creek	21.2%	3.8%	7.7%	0.0%	41.2%	4.4%	0.0%	0.0%	0.0%	0.0%	20.9%	0.9%
Salem - Orchard	8.1%	0.0%	0.0%	1.3%	16.6%	1.8%	1.2%	23.1%	0.0%	0.0%	46.2%	1.9%
Orchard - New Freedom	0.0%	0.0%	0.0%	1.7%	16.9%	2.0%	1.5%	21.0%	0.0%	0.0%	54.7%	2.2%
Hope Creek - New Freedom	7.6%	0.0%	0.0%	1.3%	16.7%	1.8%	1.2%	22.8%	0.0%	0.0%	46.7%	1.9%
Hope Creek - Red Lion	0.6%	26.1%	51.6%	0.9%	1.1%	0.1%	1.3%	0.0%	0.1%	18.3%	0.0%	0.0%