

155 FERC ¶ 61,090
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Norman C. Bay, Chairman;
Cheryl A. LaFleur, Tony Clark,
and Colette D. Honorable.

Delaware Public Service Commission and Maryland
Public Service Commission v. PJM Interconnection,
L.L.C. and Certain Transmission Owners Designated
under CTOA RS FERC No. 42

Docket No. EL15-95-000

PJM Interconnection, L.L.C.

Docket No. ER15-2563-000
ER15-2563-001

Not
Consolidated

ORDER DENYING COMPLAINT AND ACCEPTING COST ALLOCATION
REPORT

(Issued April 22, 2016)

1. On August 28, 2015, pursuant to section 205 of the Federal Power Act (FPA),¹ PJM Interconnection, L.L.C. (PJM), in accordance with Schedule 12 of the PJM Open Access Transmission Tariff (Tariff) and section 1.6 of Schedule 6 of the Amended and Restated Operating Agreement of PJM (Operating Agreement), filed amendments to Schedule 12-Appendix A of the PJM Tariff (August 28, 2015 Filing).
2. On August 28, 2015, the Maryland Public Service Commission (Maryland Commission) and the Delaware Public Service Commission (Delaware Commission) (together, State Commissions or Complainants), pursuant to section 206 of the FPA,² filed a complaint that the use of a solution-based distribution factor (DFAX) method to

¹ 16 U.S.C. §§ 824d (2012).

² 16 U.S.C. §§ 824e (2012).

allocate the costs of certain transmission projects that were approved through the PJM Regional Transmission Expansion Planning (RTEP) process is unjust, unreasonable, and unduly discriminatory and preferential (State Commission Complaint or Complaint). PJM calculated the cost responsibility assignments at issue in the Complaint pursuant to its regional cost allocation method, which the Commission accepted as compliant with Order No. 1000.³

3. In this order, we deny the Complaint and accept PJM's proposed cost responsibility assignments set forth in the August 28, 2015 Filing.

I. Background

A. PJM RTEP Cost Allocation Tariff Provisions

4. PJM files cost responsibility assignments for Required Transmission Enhancements that the PJM Board of Directors (PJM Board) approves as part of PJM's RTEP, in accordance with Schedule 12 of the Open Access Transmission Tariff (Tariff) and Schedule 6 of the Operating Agreement. The RTEP provides for the construction of expansions and upgrades to PJM's transmission system in order to comply with reliability criteria and to maintain and enhance the economic and operational efficiency of PJM's wholesale electricity markets. Types of reliability projects selected in the RTEP for purposes of cost allocation include Regional Facilities,⁴ which as a general matter are

³ 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). See *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,074 (2013) (accepting the proposed PJM cost allocation method, effective February 1, 2013, subject to the outcome of PJM's Order No. 1000 regional compliance filing proceeding). 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 (2015), *order on reh'g and compliance*, 151 FERC ¶ 61,250 (2015).

⁴ Regional Facilities are defined as Required Transmission Enhancements included in the RTEP that are transmission facilities that: (a) are AC facilities that operate at or above 500 kV; (b) are double-circuit AC facilities that operate at or above 345 kV; (c) are AC or DC shunt reactive resources connected to a facility from (a) or (b); or (d) are DC facilities that meet the necessary criteria as described in section (b)(i)(D). PJM, Intra-PJM Tariffs, OATT, Schedule 12, § (b)(i) (Regional Facilities and Necessary Lower Voltage Facilities) (6.1.0).

Alternating Current (AC) facilities that are single-circuit 500 kV or double-circuit 345 kV and above, Necessary Lower Voltage Facilities,⁵ and Lower Voltage Facilities.⁶

5. The cost allocation method for transmission projects selected in the RTEP for purposes of cost allocation is set forth in Schedule 12 of the PJM Tariff. For Regional Facilities and Necessary Lower Voltage Facilities, 50 percent of the facility's costs is allocated on a region-wide, postage stamp basis according to load-ratio shares and the other 50 percent is allocated pursuant to the solution-based distribution factor (DFAX) method described in Schedule 12(b)(iii) of the Tariff.⁷ For Lower Voltage Facilities, 100 percent of the facility's costs is allocated pursuant to the solution-based DFAX cost allocation method.⁸

⁵ Necessary Lower Voltage Facilities are defined as Required Transmission Enhancements included in the RTEP that are lower voltage facilities that must be constructed or reinforced to support new Regional Facilities. PJM, Intra-PJM Tariffs, OATT, Schedule 12, § (b)(i) (Regional Facilities and Necessary Lower Voltage Facilities) (6.1.0).

⁶ Lower Voltage Facilities are defined as Required Transmission Enhancements that (a) are not Regional Facilities and (b) are not "Necessary Lower Voltage Facilities." PJM, Intra-PJM Tariffs, OATT, Schedule 12, § (b)(ii) (Lower Voltage Facilities) (6.1.0).

⁷ Prior to using the solution-based DFAX method, PJM used a violation-based DFAX method. The violation-based DFAX method calculated the contributions of load and merchant facilities to flows on the constrained facility that would violate reliability criteria. The solution-based DFAX method evaluates the projected relative use of a new reliability project by load in each zone and withdrawals by merchant transmission facilities, and through this power flow analysis, identifies projected benefits for individual entities in relation to power flows. *See PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214 at P 416.

⁸ One hundred percent of the costs for Required Transmission Enhancements that are included in the RTEP solely to address individual transmission owner Form 715 local planning criteria are allocated to the zones of the individual transmission owners whose Form 715 local planning criteria underlie each project. *See PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,096 (2016) (Planning Criteria Order) (granting rehearing of proposal to assign cost responsibility of projects that are included in the RTEP solely to address transmission owner Form 715 local planning criteria, and are not selected in the RTEP for purposes of cost allocation to the zone of the individual transmission owner whose Form 715 local planning criteria underlies the project. *See also PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,172 (2015) (rejecting proposed Tariff changes).

B. Artificial Island Area

6. The Complaint identifies the Artificial Island Area as the area in Southern New Jersey in which the Salem Units 1 and 2 (Salem) and Hope Creek Unit 1 (Hope Creek) nuclear generating units are located.⁹ Complainants state that an Artificial Island Operating Guide, including a special protection scheme, was developed in 1987 to address stability limitations and minimum megavolt-ampere reactive (MVAR) output requirements at the Salem/Hope Creek generation facilities.¹⁰ Absent the development of the Operating Guide, Complainants state that the generation output from these facilities would need to be reduced under certain conditions to address dynamic and transient stability limitations.¹¹

7. In light of these operational issues, Complainants contend that PJM opened an RTEP process window on April 29, 2013 seeking proposals to improve operational performance on bulk electric system facilities in the Artificial Island Area.¹² Complainants state that on July 29, 2015, the PJM Board announced its approval of the Artificial Island Project.¹³ Complainants state that the Artificial Island Project is a PJM RTEP project that involves the construction of a new 230 kV transmission line under the Delaware River, and construction and installation of certain other facilities, to address certain system stability and related generation operation issues in the Artificial Island Area.¹⁴

C. August 28, 2015 Filing of Artificial Island Project Cost Allocation

8. The August 28, 2015 Filing included the cost responsibility assignments for 12 new transmission enhancements and expansions included in the most recent update to the RTEP that the PJM Board approved on July 29, 2015. PJM states that five of these new transmission enhancements and expansions will operate at 500 kV or will be double-

⁹ Complaint at 5.

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.* at 7.

¹³ *Id.* at 9.

¹⁴ *Id.* at 1.

circuit 345 kV facilities,¹⁵ and that 50 percent of the costs for these five Regional Facilities is allocated on a region-wide, load-ratio share basis, and 50 percent is allocated pursuant to the solution-based DFAX method. PJM states that the remaining seven transmission enhancements and expansions are Lower Voltage Facilities needed to address reliability needs,¹⁶ and 100 percent of the costs of these facilities is allocated pursuant to the solution-based DFAX cost allocation method. The 12 transmission enhancements and expansions included in the Docket No. ER15-2563-000 Filing are referred to as the Artificial Island Project.

II. State Commission Complaint

9. The State Commissions contend that PJM's use of a solution-based DFAX method to allocate the costs of the Artificial Island Project is unjust, unreasonable, and unduly discriminatory and preferential. The Complainants further contend that the solution-based DFAX method, as applied to the Artificial Island Project, does not produce an allocation of RTEP project costs that is roughly commensurate with the benefits. State Commissions provide a study, requested by the Delaware Commission, in which PJM staff analyzed the Artificial Island Project's impact on locational marginal price (LMP) and load payments throughout PJM. Based on this analysis, State Commission contend that only about 10 percent (\$17.04 million) of the total projected annual load payment savings of \$169.2 million would accrue to the Delmarva Zone on an annual basis.

10. The Complainants argue that use of solution-based DFAX method is not appropriate for the Artificial Island Project, which is intended to address transmission system stability and generation operation issues limiting exports out of an area. The Complainants also contend that the Commission has both the authority and the responsibility to correct this deficiency in the PJM Tariff, at least as it concerns the costs of the Artificial Island Project.

11. The Complainants request that the Commission find that the use of the solution-based DFAX method to allocate costs associated with the Artificial Island Project does not result in an allocation of costs that is roughly commensurate with the benefits of the project and is, therefore, unjust, unreasonable, and unduly discriminatory and preferential

¹⁵ August 28, 2015 PJM Filing at 3. These five projects include: b2633.3, b2633.6, b2633.6.1, b2633.7, and b2633.8.

¹⁶ August 28, 2015 PJM Filing at 4. The remaining seven projects include: b2633.1, b2633.2, b2633.4, b2633.5, b2633.91, b2633.92, and b2633.10. *See* August 28, 2015 PJM Filing, Appendix A.

and order PJM to file the necessary changes to the Tariff and Operating Agreement to ensure a just and reasonable allocation of Artificial Island Project costs.

III. Notice, Intervention, Answers and Responsive Pleading

A. State Commission Complaint

12. Notice of the State Commission Complaint was published in the *Federal Register*, 80 Fed. Reg. 53,507 (2015), with answers, interventions and comments due on or before September 17, 2015. At the request of PJM Transmission Owners,¹⁷ this date was extended to and including October 16, 2015. Notices of intervention and motions to intervene are listed in Appendix A.

13. Senator Thomas R. Carper, Senator Christopher A. Coons, and Congressman John Carney (jointly), the Easton Utilities Commission (Easton), Old Dominion Electric Cooperative (ODEC), the Delaware State Chamber of Commerce and Delaware Manufacturing Association, the New York Power Authority (NYPA), the Eastern Shore of Maryland Educational Consortium, Linden VFT, LLC (Linden), Consolidated Edison Company of New York (Con Edison), the Chemical Industry Council of Delaware, Hudson Transmission Partners, LLC (Hudson), and LSP Transmission Holdings and Northeast Transmission Development, LLC (collectively, LS Power) filed comments in support of the Complaint.

14. Answers to the Complaint were filed by PJM (PJM First Answer), PJM Transmission Owners (PJM Transmission Owners First Answer), and ODEC. Responsive pleadings were filed by the Delaware and Maryland State Agencies,¹⁸ PJM (PJM Second Answer), PJM Transmission Owners (PJM Transmission Owners Second Answer), and Linden.

1. Comments Supporting the Complaint

15. Comments supporting the Complaint agree with the Complainants that the costs assigned to the Delmarva Zone are not “roughly commensurate” with benefits, because 90 percent of the costs will be allocated to the Delmarva zone, which receives only

¹⁷ The PJM Transmission Owners, acting through the PJM Consolidated Transmission Owners Agreement.

¹⁸ The Delaware and Maryland State Agencies include the Delaware Commission, Maryland Commission, Delaware Department of Public Advocate, and the Maryland Office of Peoples Counsel.

10 percent of the total projected annual load payment savings.¹⁹ Senator Thomas R. Carper, Senator Christopher A. Coons, and Congressman John Carney claim estimates by the Delaware Commission show Delaware residential customers could see their electricity costs increase by \$1 to \$3 per month, while heavy industrial users would face even larger increases, for a transmission project needed to correct generation problems faced by another state, rather than to address a Delaware transmission problem.²⁰

16. Commenters also discussed other beneficiaries of the Artificial Island Project. Easton Commission states the Artificial Island Project will benefit many other zones, and PJM as whole, by increasing reliability during an unexpected loss of Artificial Island generation.²¹ ODEC argues the operators of the Artificial Island Area plants will benefit most directly from the project, but customers throughout PJM will benefit from the availability of unconstrained capacity and energy from the plants.²² Con Edison points to projected load savings, 90 percent of which will accrue to zones other than the Delmarva Zone, and reduced congestion costs of \$92 million over 15 years.²³ Con Edison also contends that PJM has acknowledged these concerns by, according to Con Edison, stating that the Artificial Island Project results may be “atypical.”²⁴ Con Edison states this is “a euphemism for saying that solution-based DFAX method produced results that are not roughly commensurate with benefits, and are therefore unjust and unreasonable.”²⁵

17. Several commenters also argue the solution-based DFAX method is inappropriate for non-flow-based projects, such as those that address short-circuit violations, storm hardening, or stability limits.²⁶ For example, Linden states that beneficiaries of projects

¹⁹ *E.g.*, NYPA September 17, 2015 Comments at 4-5.

²⁰ Senator Thomas R. Carper, Senator Christopher A. Coons, and Congressman John Carney September 22, 2015 Letter.

²¹ Easton Utilities Commission September 24, 2015 Comments, Attachment (Easton August 10, 2015 Comments to PJM Board).

²² ODEC Answer at 8.

²³ Con Edison Comments at 7.

²⁴ *Id.*

²⁵ *Id.*

²⁶ *E.g.*, ODEC Answer at 3, 4 and

that are not meant to address transmission flow-based constraints cannot be measured through the solution-based DFAX method, because it presumes flow-based beneficiaries.²⁷

18. Linden argues that it is not in a position to definitively state that the solution-based DFAX method alone is never an appropriate tool to identify project beneficiaries when upgrades are primarily meant to address flow-based issues, but that PJM's track record with the solution-based DFAX method, even in non-flow based projects, does not support PJM's claims that the method almost always allocates costs in a manner that is roughly commensurate with expected beneficiaries.²⁸ Linden argues that while PJM claims 316 baseline upgrades have been assigned cost responsibility using solution-based DFAX since January 1, 2014, the number is actually 75. In addition, Linden finds fault with PJM's purported claim that 95 percent of those upgrades have not been protested at the Commission. Rather, Linden maintains, of the 75 projects to which the solution-based DFAX method was actually applied, 81 percent are subject to one or more protests and/or complaint proceedings at the Commission. Linden claims that the cost of a significant portion of the remaining 19 percent of projects were allocated completely to the local transmission zone, such that 92 percent of the 75 projects to which the solution-based DFAX method was applied are either currently being protested or were allocated to the local load zone.²⁹ Linden requests the Commission require PJM to use supplemental proxies to identify beneficiaries of such projects.

19. Commenters argue that creating an exception for instances like the Artificial Island Project from using the solution-based DFAX method will result in greater cost allocation certainty, as promoted by Order No. 1000, because allowing such anomalous cost allocations results in increased litigation.³⁰ ODEC believes such rare occurrences

²⁷ Linden Comments at 3.

²⁸ Linden October 16, 2015 Comments at 7.

²⁹ PJM asserts that in the overwhelming majority of cases where the solution-based DFAX methodology is applied to assess cost allocation relating to a specified reliability violation, the change in power flows are consistent with the intended solution and the beneficiaries of that solution are readily identified based upon those power flows. To illustrate this point, PJM notes that of the 316 baseline upgrades assigned cost responsibility utilizing the solution-based DFAX methodology since January 1, 2014, and submitted to the Commission for approval approximately 95 percent of those cost allocations were not protested. *See* PJM First Answer at 8.

³⁰ *E.g.*, Old Dominion Electric Cooperative October 16, 2015 Answer at 16-17.

can be addressed with relatively narrow revisions to PJM's governing documents³¹ and asks the Commission to provide guidance for such revisions,³² perhaps including a set of pre-defined threshold criteria which trigger switching from the solution-based DFAX method to alternative methods for identifying beneficiaries.³³ ODEC supports the State Agencies argument that the solution-based DFAX method as applied to the Artificial Island Project, results in a cost allocation that is unjust and unreasonable, and unduly discriminatory and preferential. To remedy this deficiency, ODEC argues that the Commission should direct PJM to make a compliance filing within 90 days of the issuance of a Commission order modifying the PJM Tariff and/or Operating Agreement to provide for a just and reasonable allocation of costs for the Artificial Island Project. To ensure that the PJM compliance filing adequately addresses the deficiencies with the solution-based DFAX method, ODEC stresses, among other things, the importance of stakeholder involvement in creating PJM's compliance filing to an order, and emphasizes that the allocation of the costs of transmission facilities that operate at or above 345 kV is not at issue in this proceeding.³⁴ Some commenters raise concerns that the solution-based DFAX method may encourage selection of projects based on voltage or cost, rather than efficiency or cost effectiveness, as directed by Order No. 1000. For instance, Senator Thomas R. Carper, Senator Christopher A. Coons, and Congressman John Carney, as well as LS Power, are concerned companies may be encouraged to favor lower-voltage solutions paid for by a relatively small group, over larger, possibly more efficient, higher-voltage solutions paid for by all of PJM. Reallocating the costs more fairly will strengthen Order No. 1000, they argue, and ensure reliability needs are met going forward.³⁵

20. LS Power further argues the Artificial Island Project costs are only allocated to the Delmarva Zone because the new line terminates in that zone, and that any line built near a large source of generation crossing a physical barrier will flow away from the generation.³⁶ LS Power claims such considerations could become a part of the RTEP

³¹ Old Dominion Electric Cooperative October 16, 2015 Answer at 17.

³² *Id.* at 5.

³³ ODEC Answer at 18-19.

³⁴ ODEC Answer at 18-20.

³⁵ Senator Thomas R. Carper, Senator Christopher A. Coons, and Congressman John Carney September 22, 2015 Letter, and LS Power October 16, 2015 Comments at 2.

³⁶ *Id.* at 4.

selection process as stakeholders attempt to shuttle costs away from their zones, thereby undermining Order No. 1000 by encouraging advocacy, not for the best project, but for the best allocation of costs.³⁷ If the Commission does not act to correct this unreasonable cost allocation, LS Power fears state sitting authorities will take the local rate impact into account over regional needs.³⁸

2. Answers

21. PJM notes in its answer that it does not take a position on the ultimate propriety of the solution-based DFAX method as applied to this case, as PJM Transmission Owners have the exclusive right to make filings related to the establishment and recovery of revenue requirements and rate design.³⁹ PJM does explain, however, that it selected the Artificial Island Project “based upon reasoned and sound engineering judgement when offered the more efficient or cost effective solution to address the identified system needs.”⁴⁰

22. Additionally, PJM asserts each RTEP cost allocation is updated annually to capture changes in system conditions and flows, thus making clear that every project is subject to the flow-based analysis embodied in the solution-based DFAX method.⁴¹

23. PJM Transmission Owners oppose the Complaint, claiming that the Complainants have failed to provide evidence that the solution-based DFAX method as a whole is not just and reasonable, and are inappropriately attacking a portion of the comprehensive method as applied to a single project.⁴² PJM Transmission Owners further argue the solution-based DFAX method measures benefits through use, so market efficiency studies cited in the Complaint do not apply, and the solution-based DFAX method correctly determined that the Delmarva Zone would reap 90 percent of the benefits of the Artificial Island Project by use.⁴³ Such use is coincident with reliability benefits,

³⁷ *Id.* at 6.

³⁸ *Id.* at 7.

³⁹ PJM First Answer at 2.

⁴⁰ *Id.* at 3.

⁴¹ PJM Second Answer at 3 and 22-23.

⁴² PJM Transmission Owners Answer at 3.

⁴³ *Id.* at 4.

according to PJM Transmission Owners,⁴⁴ and is the Commission-approved method for measuring benefits for determining reliability project cost responsibility assignments.⁴⁵ As such, PJM Transmission Owners contend that there is a presumption that the results are just and reasonable.⁴⁶ PJM Transmission Owners further assert that a flow-based analysis better reflects use of the facility over time.⁴⁷

24. PJM Transmission Owners argue that the solution-based DFAX method does not create a perverse incentive for transmission zones chosen as terminal points for new transmission lines to favor higher-voltage projects.⁴⁸

3. Responsive Pleadings

25. Complainants also argue that the Commission is obligated to compare the costs assessed against a party to the burdens imposed or benefits drawn by that party. Complainants argue that use of the solution-based DFAX method to allocate Project costs, where customers in the Delmarva Zone will be expected to absorb nearly 90 percent of total project costs without any demonstration of the receipt of “roughly commensurate” benefits, cannot result in a cost allocation that is in accordance with the FPA, appellate court precedent, and the Commission’s own determinations in Order No. 1000.⁴⁹

26. Complainants argue that PJM Transmission Owners are advocating that the Commission ignore this mismatch between benefits and costs because solution-based DFAX results may also “cut the other way,” and yield benefits to the Delmarva Zone that exceed costs on future projects.⁵⁰ Complainants contend that PJM Transmission Owners present no evidence that a certain project will nullify the significant harm that will occur

⁴⁴ *Id.* at 12.

⁴⁵ *Id.* at 13.

⁴⁶ *Id.* at 15.

⁴⁷ *Id.* at 20-21.

⁴⁸ *Id.* at 23.

⁴⁹ *Id.* at 7-8.

⁵⁰ *Id.* at 9.

to Delmarva Zone customers as a result of the Artificial Island Project cost allocation.⁵¹ However, Complainants clarify they are not proposing that the solution-based DFAX method be eliminated altogether or that the theoretical premise of the solution-based DFAX method is necessarily incorrect, but rather that, in this case, solution-based DFAX results are demonstrated to produce unjust, unreasonable, or unduly discriminatory outcomes, and alternatives must be considered.⁵²

27. Complainants contend this is not a collateral attack on the Commission's order accepting the solution-based DFAX method, but demonstrates the approach is unjust and unreasonable for the Artificial Island Project and presents a solution to allow the Commission to approve a cost allocation method for the Artificial Island Project that is consistent with its cost-benefit analysis obligations.⁵³ Further, Complainants argue application of the solution-based DFAX method to the types of projects at issue in the Complaints were not included as part of the examples provided by PJM to support acceptance of solution-based DFAX as a cost allocation method. Complainants contend that, had such examples been presented, further review may have highlighted the incongruity of using solution-based DFAX to identify beneficiaries and determine cost allocations for these types of projects.⁵⁴

28. Complainants point out that PJM Transmission Owners admit that the allocation of costs for transmission projects is an art rather than a science, but assert applying the solution-based DFAX method to the Artificial Island Project would be limiting the allocation of costs to a science resulting strictly from application of the solution-based DFAX method.

29. Complainants contend that PJM Transmission Owners are incorrect that the appropriate metric to evaluate the benefits of cost allocation for RTEP projects is the "relative *use* that will be made of the new project" as calculated by solution-based DFAX.⁵⁵ First, Complainants argue that the 1 percent *de minimus* threshold used in the calculation process automatically eliminates zones that "use" the project in question for less than 1 percent of their own peak load level, even if their "relative use" of a project as

⁵¹ Complainants November 2, 2015 Answer at 9.

⁵² *Id.* at 9-10.

⁵³ *Id.* at 8-9.

⁵⁴ *Id.* at 11.

⁵⁵ *Id.* at 10.

measured in MW is greater than other zones.⁵⁶ Second, Complainants again argue a power-flow-based calculation method is not appropriate for determining “relative use” of a facility when the facility’s purpose is to maintain system or facility reliability as determined by non-power-flow-based reliability criteria (such as a stability margin, storm flood resilience, or short circuit).⁵⁷

B. August 28, 2015 Filing of Artificial Island Project Cost Allocation

30. Notice of the August 28, 2015 Filing was published in the *Federal Register*, 80 Fed. Reg. 53,508 (2015), with an errata issued on September 2, 2015 extending the comment date to September 28, 2015. Notices of intervention and motions to intervene are listed in Appendix B.

31. State Commissions, Easton Utilities Commission (Easton), Linden, and ODEC each filed a protest. PJM, PJM Transmission Owners, and the Delaware and Maryland State Agencies filed answers.

1. Protests of the August 28, 2015 Filing

32. State Commissions, Easton, and ODEC filed protests stating that the results of the solution-based DFAX method for the Artificial Island Project were unjust and unreasonable and do not comply with the ‘beneficiary pays’ principles.⁵⁸ These parties argue that, according to an analysis performed by PJM at their request, 90 percent of the costs (\$246.43 million) were allocated to the Delmarva Zone, while only 10 percent of the benefits (\$169.2 million, as measured by annual load payment savings) accrue there.⁵⁹

33. State Commissions also argue that the misalignment between costs and benefits creates a perverse incentive for transmission zones chosen as end-points for projects like the Artificial Island Project to favor higher-voltage projects over lower-voltage ones, which may be more efficient, to avoid similar anomalous cost outcomes. State Commissions argue that the solution-based DFAX method ignores the benefits resulting

⁵⁶ *Id.* at 10-11.

⁵⁷ *Id.* at 11.

⁵⁸ Linden protested the cost responsibility assignments for the Bergen-Linden Corridor Project, which were filed in the cost allocation report PJM submitted in Docket No. ER15-2562-000, and were not pending in these proceedings.

⁵⁹ State Agencies Protest at 12-13; Easton Protest at 2-4; ODEC Protest at 5-6.

from reduced flow on existing transmission lines, which accrue to nearby zones, even though these are flow-based benefits. State Commissions argue that the solutions-based DFAX method will always result in the zone chosen as the end-point of a new transmission line being allocated all or most of the costs for the project. State Commissions explain that this is because the solution-based DFAX method examines directionally-weighted energy flows over the facilities involved in a particular project, and in the case of projects like the Artificial Island Project, the flow will almost always be away from the constrained generation area.⁶⁰

34. ODEC argues that there are other parties that benefit from the Artificial Island Project that are being ignored by the cost allocation, including the owners of the nuclear plants at Artificial Island which will now be able to operate at full capacity with increased stability and reduced operational complexity. ODEC states that the solution-based DFAX method is only appropriate for upgrades that resolve near-term thermal or voltage-based constraints.⁶¹ ODEC claims that the Artificial Island Project is an operational performance upgrade, meaning it was identified and added to the RTEP based on PJM's operating experiences, rather than the power flow planning model. ODEC states that these upgrades are analyzed using a different set of metrics and are subject to substantial PJM planning discretion, and notes that even a project that will provide primarily economic benefits may qualify.⁶²

35. ODEC requests that the Commission accept the proposed cost responsibility assignments, suspend them for five months, and establish hearing and settlement judge procedures to be held in abeyance pending Commission action on the complaint filed by State Commissions in Docket No. EL15-95-000. ODEC requests that if the Commission should set that docket for hearing, the Commission should consolidate the instant docket, given the common issues of law and fact in the two proceedings.⁶³

⁶⁰ State Agencies Protest at 16.

⁶¹ ODEC Protest at 16.

⁶² *Id.* at 2, 11, 14.

⁶³ *Id.* at 3.

2. Answers

36. PJM states that protestors' arguments are substantially similar to the State Commission Complaint.⁶⁴ PJM states that in answer to the Complaint, it clarified that the Artificial Island Project was selected based upon reasoned and sound engineering judgment in determining the more efficient or cost-effective solution to address the identified system needs.⁶⁵ PJM further states that in answer to the Complaint, it observed that even though the solution-based DFAX allocation method produces reasonable results in the overwhelming number of applications to typical reliability upgrades, it may also result in cost responsibility assignments that appear disproportionate in certain instances but do not necessarily render the overall cost allocation method unjust and unreasonable.

37. PJM Transmission Owners argue that State Commissions, Easton, and ODEC have been unable to demonstrate that the cost responsibility assignments for the Artificial Island Project are inconsistent with the Commission-approved cost allocation method set out in the Tariff. PJM Transmission Owners also argue that the protests attack the solutions-based DFAX method as applied to the Artificial Island Project. PJM Transmission Owners state that protestors' arguments are unfounded and misunderstand the purpose of the solutions-based DFAX method, which was to create greater certainty as to the cost allocation implications of a potential planning project and to enhance the ability of stakeholders in the regional transmission planning process to evaluate the merits of the transmission project. PJM Transmission Owners state that because the protesting parties are dissatisfied with the allocation of costs of a portion of a single project, they challenge part of the comprehensive cost allocation method.⁶⁶

38. PJM Transmission Owners state that the only support raised by the protests is a set of market efficiency analyses, which they claim are not the proper metric to measure the benefits of reliability projects in PJM. PJM Transmission Owners explain that the solutions-based DFAX method, a dynamic approach to cost allocation, was adopted to replace the static, causation-based violations-based DFAX method for allocating the costs of reliability projects in PJM.⁶⁷

⁶⁴ PJM attached a copy of its October 9, 2015 answer to the Complaint in Docket No. EL15-95-000.

⁶⁵ PJM First Answer at 2-3.

⁶⁶ PJM Transmission Owners Answer at 1-3.

⁶⁷ *Id.* at 16.

3. Responsive Pleadings

39. State Commissions filed an answer to PJM Transmission Owners, arguing that the Complaint and protests are not collateral attacks, but rather, they highlight and attempt to rectify the legal deficiencies in PJM's application of the solution-based DFAX method as consistent with the *ex ante* requirements of Order No. 1000. State Commissions agree with the principles suggested by ODEC in its recommendation that PJM develop threshold criteria that would require departure from the solution-based DFAX cost allocation method.⁶⁸

40. State Commissions argue that PJM's answer demonstrates that the solution-based DFAX method as applied to the Artificial Island Project may not produce results that are just and reasonable.⁶⁹ For example, State Commissions argue that the use of the *de minimis* threshold used in the calculation of the solution-based DFAX method automatically eliminates load zones that use the project for less than one percent of their own peak load, even if their relative use, as measured in MW, is greater than other load zones.⁷⁰ State Commissions also argue that a power flow-based calculation method is not appropriate for determining relative use of a facility when the purpose of that facility is for reliability as determined by non-power flow based reliability criteria.⁷¹

IV. Order Establishing a Technical Conference

41. By order issued November 24, 2015, the Commission found that the assignment of cost allocation for the proposed Tariff for the revisions to the Bergen-Linden Corridor Project and for the Artificial Island Project had not been shown to be just and reasonable and may be unjust, unreasonable, or unduly discriminatory or preferential.⁷²

⁶⁸ State Agencies Answer at 5-8.

⁶⁹ State Agencies Answer at 10.

⁷⁰ State Agencies Answer at 10.

⁷¹ State Agencies Answer at 11.

⁷² *PJM Interconnection, L.L.C.*, 153 FERC ¶ 61,245 (2015) (November 2015 Order). Linden filed a request for clarification, or in the alternative, rehearing of the November 2015 Order. In Docket No. ER15-2562-000, PJM filed Tariff revisions for projects included in the RTEP to address short circuit reliability issues in New Jersey. These projects are referred to as the Bergen-Linden Corridor Project. *See PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,089 (2016) (Linden Complaint Order) (denying the Linden Complaint). *See also, PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,091

(continued...)

Accordingly, the Commission accepted the proposed Tariff revisions in those proceedings for filing, suspended them for five months, to become effective on April 25, 2016, or an earlier date set forth in a subsequent order, subject to refund, and the outcome of a technical conference.

42. The Commission directed staff to establish a technical conference to explore both whether there is a definable category of reliability projects within PJM for which the solution-based DFAX cost allocation method may not be just and reasonable, such as projects addressing reliability violations that are not related to flow on the planned transmission facility, and whether an alternative just and reasonable *ex ante* cost allocation method could be established for any such category of projects.⁷³

A. Comments

43. Pre-Technical Conference comments were filed by PJM, PJM Transmission Owners, Delaware and Maryland State Agencies, New Jersey State Agencies,⁷⁴ Easton, the New York Power Authority (NYPA), Con Edison, Linden, Hudson, and ODEC. Post-Technical Conference comments were filed by PJM, PJM Transmission Owners, Easton, the Delaware Commission, PSEG, Hudson and Neptune Regional Transmission Systems, Inc. (Neptune), NYPA, Dayton, Con Edison, ODEC, Linden, and ITC Mid-Atlantic Development.

44. PJM Transmission Owners, Hudson filed motions to answer the Post Technical Conference comments, and Con Edison filed motions to answer in response.

1. Comments Supporting Use of Solution-Based DFAX

45. In order to provide a framework for discussion at the technical conference, PJM provided a matrix outlining the reliability-based drivers of projects included in PJM's RTEP process since its inception in the year 2000, as well as the number of projects within each category. The categories PJM identified include thermal, voltage/reactive, stability, and short-circuit violations to address reliability planning standards. In addition, PJM identified a category of real-time operation concerns to address operational

(2016) (accepting revisions to the Tariff sheets due to reconfiguration of the Bergen-Linden Corridor Project).

⁷³ *Id.* Ordering Paragraph (B).

⁷⁴ The New Jersey State Agencies include the New Jersey Board and the New Jersey Rate Counsel.

performance violations.⁷⁵ Finally, PJM identified storm hardening and end of life/aging infrastructure as other categories that address individual transmission owner planning criteria.⁷⁶

46. PJM states that while the initial nature of a reliability problem may not be related or entirely related to power flows over a planned transmission facility project, over time the solution-based DFAX cost allocation method captures the evolving use of the facility.⁷⁷ PJM further recognizes the difficulty of pointing to a single causal element to address short circuit reliability violations and stability concerns.⁷⁸ Instead, PJM states that these concerns are a result of an accumulation changes over time to the transmission system.⁷⁹ PJM comments that for short-circuit and stability concerns, over some period of time the original problem is not all that important.⁸⁰ PJM maintains that the solution-based DFAX method is a good indicator over a long period of time and that one of the benefits of solution based DFAX, method is the users of a facility change over time, and that the solution-based DFAX method is readily calculated year after year so you can measure those benefits as they change.⁸¹

47. PJM explains this ability to reflect changing system conditions and use over time is one of the primary benefits of solution-based DFAX method, along with eliminating the necessity of analyzing each violation and driver of a project separately. Specifically, PJM comments that because the solution-based DFAX identifies beneficiaries through

⁷⁵ This category of reliability concerns include thermal, voltage/reactive or stability operational violations that occur frequently enough to be operationally unacceptable, but do not rise to the level of reliability criteria violation in the planning analysis.

⁷⁶ PJM identified 1268 RTEP projects including 900 projects driven by thermal violations, 300 projects driven by voltage/reactive violations, 50 projects driven by operational performance criteria, 15 projects driven by end of life/aging infrastructure, and 1 project each driven by stability, short-circuit, and storm hardening.

⁷⁷ Second Revised Transcript at 10.

⁷⁸ *Id.*

⁷⁹ *Id.* at 10, 79.

⁸⁰ *Id.* at 137-38.

⁸¹ *Id.* at 90.

use of the facility, the cost allocation does not need to be replicated for solutions that address multiple problems over changing system conditions. PJM further comments that analysis of the solution rather than cost allocation of the individual violations is a significant advantage of the solution-based DFAX method.⁸²

48. PJM Transmission Owners argue that solution-based DFAX method is an objective, neutral, and non-discriminatory cost allocation method. PJM Transmission Owners argue that the matrix PJM submitted has considerable overlap for the descriptions of the violations and that many of the projects were built to address multiple reliability concerns. PJM and PJM Transmission Owners state that the solution-based DFAX cost allocation method avoids the need to parse out the different causes, drivers, or categories of particular transmission enhancements. PJM and PJM Transmission Owners explain that while the cause of a project may sometimes be relevant to the need for the upgrade at the time of construction, it becomes less relevant over the life of the project, especially since load can shift over time.

49. PJM and PJM Transmission Owners assert that a single project may have many drivers and that allocating costs based on use allows for more flexibility as time passes and enhances PJM's ability to solve multiple problems with one project. PJM Transmission Owners also explain that parties contributing to a short circuit violation can be identified through the facilities with which the circuit breaker is associated. However, PJM Transmission Owners assert, such an approach to identify beneficiaries reverts back to a violation-based DFAX method, which is a one-time calculation that is not based on a repeatable measurement of benefits; rather it is a snap shot of facilities that does not objectively measure benefits across time, and across all types of reliability projects.⁸³ PJM Transmission Owners argue that the solution-based DFAX method is repeatable and provides for updates annually. PJM Transmission Owners argue that the violation-based DFAX method would result in the loss of the benefits of updating cost responsibility assignments to reflect the use of the facility over time.

50. Similarly, PSEG argues that the solution-based DFAX method is superior to the previous violation-based DFAX approach. PSEG contends the violation-based DFAX method is not suited for analysis of voltage or other issues such as short circuit or stability because those violations would require use of power flow baseline, which requires proxies or surrogates to analyze. PSEG asserts that selection of proxies would require exercises of engineering judgment. PSEG further contends that solutions to power flow violations can cause non-flow based violations. PSEG asserts that much of

⁸² *Id.* at 139-40.

⁸³ *Id.* at 13.

the transmission built is regional transmission, which makes the short circuit more than just a local issue. Thus, PSEG argues that the costs of projects to address short circuit violations should be allocated no differently than the costs of projects addressing voltage or thermal violations.

51. PJM Transmission Owners state solution-based DFAX method is both an *ex ante* cost allocation method and a method that can be applied in a just and reasonable manner to all reliability projects in PJM over the entire useful life of the project. PJM Transmission Owners state that opponents of the solution-based DFAX method propose to define benefits and proposed categories of transmission projects based exclusively on what or who caused the need for the project.⁸⁴

52. PJM stated that the Delaware Commission requested that PJM perform a market efficiency analysis to compare the system as it is today but with one nuclear facility turned off-line with the new transmission line and all three nuclear facilities running. PJM explained that the premise for the parameters being that without the transmission solution the probability of one nuclear facility needing to be turned off would be increased over time. As a result, PJM argued that the large deltas that were observed were as much or more of a function of one of the nuclear facilities being off-line as they were of adding the line to solve the stability problem. PJM further explained that this is not a traditional PJM market efficiency analysis. Rather, PJM explained it is a means of identifying certain LMP impacts of the stability of the unit.⁸⁵

53. PSEG argued that the market efficiency analysis that the Delaware Commission requested PJM to perform is based on unrealistic scenarios. PSEG argued that as early as 1976, PSEG has not placed one of its selling nuclear units off-line for a year because of stability issues, and it does not believe nuclear facilities will be placed off-line prospectively. PSEG further argued that the only time it even reduces the output of the Salem and Hope nuclear facilities is when there is a transmission line outage. Additionally, PSEG contends that it does not take transmission lines out with three units in service; rather, PSEG waits until one of the units is doing refueling and then it takes that line out at that time. Thus, PSEG asserts that when you have two units operating you do not have to reduce analysis. Therefore, PSEG contends that the results from the market efficiency analysis requested by the Delmarva Commission that PJM performed is unrealistic.⁸⁶

⁸⁴ PJM Transmission Owners Post Tech Comments at 4-6.

⁸⁵ Second Revised Transcript at 105.

⁸⁶ *Id.* at 108-109.

2. Comments Opposing Use of Solution-Based DFAX

54. State Agencies do not agree that the Artificial Island Project is a sufficiently flow-based project to fit within the current solution-based DFAX method. State Agencies argue that a limited exception to the solution-based DFAX method must exist. They assert that a stability-driven project, of which there is only one out of more than 1,200 projects identified by the PJM matrix, constitutes a definable category. State Agencies argue that additional benefits, such as economic benefits, need to be considered.⁸⁷

55. State Agencies argue that, for these reliability projects, a cost allocation that aligns with economic benefits is feasible and is the only outcome that would survive judicial scrutiny.⁸⁸ State Agencies argue that cost allocation based on economic benefits is capable of annual update, just like the current solution-based DFAX method allocation. State Agencies further contend that a cost allocation based on economic benefits comports with the objective of *ex-ante* rules. They argue when a project falls into an undefinable category, an economic benefits analysis should be conducted for the project in lieu of the solution-based DFAX method. State Agencies contend that another alternative method would be to allocate some of the cost to the generators that are directly benefiting from the line.⁸⁹

56. State Agencies assert that stability-driven projects are unique in that the problem to be addressed is caused by generator stability issues in a localized area; consequently, the remedy involves enhancing energy flows out of that area into any surrounding area, to the “aggregate of load.” State Agencies state that stability-driven projects are a “360-degree outward phenomenon.” State Agencies argue that this project objective is fundamentally different than the objective of RTEP projects driven by thermal overload issues, which are designed to enhance energy flows into an area.⁹⁰ State Agencies contend that the Artificial Island Project is not designed to enhance energy flows into the Delmarva zone; it is designed to enhance energy flows out of the Artificial Island area. State Agencies further contend that it matters little how the energy flows out of the Artificial Island area, as long as it does.⁹¹

⁸⁷ *Id.* at 35-36.

⁸⁸ *Id.* at 36-37.

⁸⁹ *Id.* at 37.

⁹⁰ State Agencies Post Tech Comments at 4.

⁹¹ *Id.* at 5.

57. State Agencies argue that these unique characteristics make the solution-based DFAX method unjust and unreasonable for stability-driven projects like the Artificial Island Project. Specifically, State Agencies argue when allocating the costs of a transmission project that is designed to facilitate energy flows outward to the “aggregate of load,” the energy flows to the aggregate of load, not the solution-based DFAX method related flows on one specific line that is developed to facilitate the outflow, should form the basis for allocating costs of that project. State Agencies contend that the solution-based DFAX method approach is not just and reasonable in this instance; and an alternative, must be applied in order to ensure just and reasonable results.⁹²

58. Con Edison comments that short circuits are not related to energy flows, which are the result of customer demand. Con Edison states that for certain types of projects, like non-flow based projects, neither solution-based nor violation-based DFAX method is appropriate because both are predicated on identifying beneficiaries by measuring flows on lines. Instead, Con Edison comments that cost should be allocated based on the purpose of the upgrade. Con Edison, Linden, and Hudson all argue that the solution-based DFAX method should not apply to projects that address short-circuit violations. NYPA states solution-based DFAX method is not just and reasonable when applied to reliability projects that resolve short circuit violations because flow on the new transmission element bears no relation to the reliability violations that are resolved. Instead, NYPA states, allocating the cost of all short circuit projects to the local load zone where the violation occurs is a just and reasonable *ex ante* cost allocation for short circuit projects.⁹³ Hudson and Neptune state that the solution-based DFAX method does not take into consideration cost causation.⁹⁴ Con Edison points to PJM Technical Conference comments as evidence that the solution-based DFAX method is limited to identifying benefits after some unspecified passage of time, and that this violates cost causation principles.

59. Several parties, including Delaware and Maryland State Agencies,, NYPA, Easton, Hudson and Neptune, Linden, and Con Edison, support allocating 100 percent of the costs of short-circuit projects to the local transmission zone because they state that: (i) the projects are meant for local reliability issues; and (ii) solution-based DFAX method does not allocate costs in a manner roughly commensurate with the benefits since the projects are not flow-based.

⁹² *Id.*

⁹³ NYPA Post Tech Comments at 1-3.

⁹⁴ Hudson and Neptune Post Tech Comments at 7-8.

60. While comments oppose the solution-based DFAX method for non-flow based projects such as short-circuit and stability violations, some comments supporting its use for flow-based projects such as thermal or voltage violations. For example, ODEC states that solution-based DFAX produces reasonable cost responsibility assignments for the overwhelming majority of PJM RTEP projects, with a few exceptions, as PJM outlined in its subcategory matrix.⁹⁵ ODEC asserts that the Artificial Island Project falls within this subcategory.⁹⁶ ODEC states that the PJM matrix itself is evidence that PJM can readily break out RTEP projects by reliability planning drivers. ODEC further states that it is not reasonable to rely on solution-based DFAX for RTEP projects to address stability violations, short circuit violations, or storm hardening.⁹⁷ With respect to projects to address operational performance issues, ODEC asserts that if such projects are driven by a non-flow based criterion, such as stability concerns, their costs should be allocated through an alternate cost allocation method. ODEC contends that an alternative cost allocation method can be developed.⁹⁸

V. Procedural Matters

61. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2015), the notices of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding. We grant the unopposed out-of-time motions to intervene submitted by Astoria, given its interest in this proceeding, the early stage of this proceeding and the absence of undue prejudice or delay.

62. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2015), prohibits an answer to a protest and or answer unless otherwise ordered by the decisional authority. We will accept the answers and responsive pleadings because they have provided information that assisted us in our decision-making process.

63. We will deny the motions to answer the Post Technical Conference comments and responsive pleading because they reargue pleading already filed, or present arguments outside the scope of this proceeding.

⁹⁵ Second Revised Transcript at 55.

⁹⁶ *Id.* at 56.

⁹⁷ *Id.* at 58-59.

⁹⁸ *Id.* at 59.

VI. Determination

A. State Commission Complaint

64. We deny the State Commission Complaint.

65. We find that the State Commissions have failed to satisfy its burden under FPA section 206 to demonstrate that the solution-based DFAX method is unjust, unreasonable, unduly discriminatory or preferential. We note that the Commission accepted the solution-based DFAX method as part of PJM's Order No. 1000 compliance filing as a just and reasonable method of identifying projected benefits for individual entities, including withdrawals by merchant transmission facilities.⁹⁹ The Commission found that under the solution-based DFAX method, entities benefit from a transmission project in proportion to their use of the project. The Court of Appeals for the District of Columbia Circuit affirmed the Commission's adoption of a beneficiary-based cost allocation method.¹⁰⁰

66. Complainants contend that application of the solution-based DFAX method to the Artificial Island Project in the Delmarva zone results in a disproportionate alignment of benefits and costs that is unjust, unreasonable, and inconsistent with cost causation principles. We disagree. The courts have recognized that no cost allocation method can perfectly assign costs to the beneficiaries of a transmission project, particularly in the case of a transmission grid.¹⁰¹ The Commission has found that where a cost allocation

⁹⁹ *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214, at P 416, *order on reh'g and compliance*, 147 FERC ¶ 61,128, at PP 335 and 342.

¹⁰⁰ *See S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41 (D.C. Cir. 2014) (“the Commission’s adoption of a beneficiary-based cost allocation method is a logical extension of the cost causation principle”). *See also FirstEnergy Service Company v. FERC*, 758 F.3d 346, at 355 (D. C. Cir. 2014) (citing *American Transmission Systems, Inc. v. PJM Interconnection, L.L.C.*, 140 FERC ¶ 61,226, at P 26 (2012) (“Even if a new member is not using the system when a particular project was planned or authorized, the new member may nevertheless use and benefit from the new facility in the future”).

¹⁰¹ *See Illinois Commerce Commission*, 576 F.3d 470 at 476-77 (Seventh Cir. 2008) (“[w]e do not suggest that the Commission has to calculate benefits to the last penny, or for that matter to the last million or ten million or perhaps hundred million dollars”). *See also Midwest ISO Transmission Owners v. FERC*, 373 F.3d 1361 at 1369 (D.C. Cir. 2004) (“we have never required a ratemaking agency to allocate costs with exacting precision”).

method is accurate in a very high percentage of circumstances to which it applies, then that is a strong indicator that the cost allocation method is just and reasonable.¹⁰² Comments from the Technical Conference broadly support use of the solution-based DFAX method for identifying the beneficiaries of a variety of projects. In fact, comments opposing the solution-based DFAX method can only point to two projects out of over 1,200 identified by PJM as raising concerns. As with the Commission's order denying a Con Edison Complaint, we deny the State Commission Complaint related to those two projects.¹⁰³

67. Complainants, and commenters contend that while the solution-based DFAX method may be an appropriate cost allocation method for some types of transmission projects, it does not lead to just and reasonable results when applied to certain types of transmission projects at issue in this proceeding. We disagree. The solution-based DFAX method focuses on the benefits of the facility as measured through use of the facility over time rather than the reliability violation that drove the immediate need for the project. Users of the facilities benefit from the project on an ongoing basis because the presence of the facility ensures reliable delivery of power and alleviates future reliability concerns and violations that could have otherwise caused operational issues. We find convincing PJM's argument that the solution-based DFAX method identifies benefits associated with the evolving use of transmission facilities over time.¹⁰⁴ Specifically, as PJM comments, the initial nature of the problem may not necessarily be related or entirely related to flows, but over time, the evolving use of the facility is well represented by the solution-based DFAX method.¹⁰⁵ We are further persuaded by PJM comments that because the solution-based DFAX identifies beneficiaries through use of the facility, the solution-based DFAX method does not need to be replicated for solutions that address multiple problems over changing system conditions. We agree with PJM that analysis of the solution rather than cost allocation of the individual violations is a significant advantage of the solution-based DFAX method.¹⁰⁶

¹⁰² See *PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,096.

¹⁰³ See *Consolidated Edison Company of New York, Inc. v. PJM Interconnection*, 155 FERC ¶ 61,088 (2016) . See also *Linden Complaint Order*, 155 FERC ¶ 61,089.

¹⁰⁴ Second Revised Transcript at 9-10.

¹⁰⁵ Second Revised Transcript at 9-10.

¹⁰⁶ *Id.* at 139-40.

68. As noted above, under the solution-based DFAX method, cost allocation for reliability projects such as Artificial Island are based on the projected use of the planned transmission project. While reliability violations may drive the need for a transmission project, the solution-based DFAX method identifies the beneficiaries through their use of a facility. We recognize that RTEP projects may have several drivers.¹⁰⁷ We find that, in PJM, even if a stability violation is the primary driver of a transmission project, the solution-based DFAX method allocates costs of a transmission facility that address the reliability violations based on use of the facilities. The ability to reflect changing system conditions and use over time, and thus the changing beneficiaries of a transmission facility, is one of the primary benefits of the solution-based DFAX method, along with the elimination of the necessity of analyzing each violation and driver of a project separately.

69. Complainants further argue that they do not contribute to the need for the Artificial Island Project. Con Edison and Linden provided similar comments that the cost allocation for planned transmission project assigned should be based the initial nature of the reliability violation. The Commission has recognized the flaws in a violation-based analysis.¹⁰⁸ Specifically, the Commission has recognized that a violation-based analysis cannot identify the causes of multiple constraints and changes in usage and flow direction over time.¹⁰⁹ PJM comments from the Technical Conference, which recount these deficiencies, further note that a violation-based analysis only captures the driver for a project when the project is first identified, does not objectively measure benefits across time, and across all types of reliability projects. These arguments miss the point of the solution-based DFAX method analysis. As discussed, it is not the initial nature of the reliability problem, but the identification of beneficiaries through the solution-based DFAX method based on use of the planned transmission facility project that addresses the reliability violation. Because we agree with the Technical Conference comments that support identification of beneficiaries through the solution-based DFAX method, we do not agree with Complainants comments.

70. Complainants point to an analysis of the economic benefits, measured by reductions in LMP, as a result of the Artificial Island Project that PJM prepared according to the complainants' specifications. Complainants contend the cost allocation results are unjust and unreasonable because the cost responsibility assignments calculated

¹⁰⁷ *Id.* at 132.

¹⁰⁸ *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214 at P 427 (citing *PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,230 (2012)).

¹⁰⁹ *Id.*

pursuant to the solution-based DFAX method differ significantly from the LMP effects shown on their analysis. We find persuasive PJM's and PSEG's argument that the market efficiency analysis based on Complainant's specifications performed by PJM at the request of the Delaware Commission is flawed. Specifically, the Delaware Commission specified market efficiency analysis is based on scenarios that are inconsistent with the normal historic operations of the Salem and Hope Creek nuclear units.¹¹⁰ For instance, the analysis is based, in part, on one of the nuclear units being out of service for one year due to stability issues. PSEG convincingly argues that such a scenario is unlikely, and that output would only be reduced in the event of a transmission outage. Additionally, as noted above, the Commission has accepted PJM's approach that an appropriate benefit measurement for determining cost allocation for reliability projects, including operational performance issues, is the projected use of the planned transmission project.

71. We do not find that merely because the results of the economic analysis differ from the results of the solution-based DFAX analysis that the solution-based DFAX method is unjust and unreasonable. Under the solution-based DFAX method, the benefits of a reliability project are measured based on use of the project. That there may be economic benefits to a project that may not coincide with the use identified by the solution-based DFAX method does not invalidate the beneficiaries identified by the solution-based DFAX method. Moreover, PJM uses economic analysis to determine the cost allocation for economic projects that are driven solely by economic considerations. The Artificial Island Project, in contrast, responds to a reliability problem that PJM has identified, ultimately determining a transmission facility is the more efficient or cost-effective transmission project to address the identified system needs.

72. Further, as part of PJM's Commission-approved RTEP process, a market efficiency production cost analysis revealed economic benefits for projects involving Delaware river crossings on the order of several million dollars per year, but well below the economic benefits necessary to justify the Artificial Island Project under PJM's market efficiency criteria based on economics alone.¹¹¹ As we stated in PJM's Order No. 1000 compliance order, where a similar issue was raised, we find that market efficiency analyses are not the appropriate metric for measuring the benefits of reliability

¹¹⁰ Second Revised Transcript at 108-109.

¹¹¹ State Agencies Complaint, Appendix 2, Artificial Island White Paper, Section 3 – Analytical Evaluation at 15. *See also* Intra-PJM Tariffs § 1.5.7 of Schedule 6 of the Operating Agreement, PJM models the impact of a proposed new market efficiency facility to determine discounted net benefits over a 15-year period. This analysis is also used as the basis for cost allocation under Schedule 12 of the Tariff.

projects in the PJM region, because such methods do not capture all of the broad regional benefits.¹¹² And, as demonstrated by the results of the solution-based DFAX analysis, the Delmarva zone will receive significant benefits associated with its use of the Artificial Island Project.

73. We find unpersuasive Complainants' suggestions that a portion of the costs for the Artificial Island Project should be allocated to the generators that are directly benefiting from the increased output of the new facility.¹¹³ As we stated above, under the solution-based DFAX method, cost allocation for reliability projects, such as Artificial Island, is allocated to load based on the projected use of the facility. PJM comments that while stability is a function of the relationship between generators and the strength of the transmission system, the function of the generators is to serve load. The assignment of costs for the Artificial Island Project resulted from a reliability concern that PJM needed to resolve to provide load reliable service. Therefore, allocating costs of transmission projects to serve load is appropriate. The generators involved were built well before the Commission adopted standards for generator interconnection.¹¹⁴ For many years, the generators operated under the Artificial Island Operating Guide that created a special protection scheme to address stability limitations and minimum megavolt-ampere reactive output requirements at the Salem/Hope Creek generation complex. But PJM found in 2014 that these procedures were no longer sufficient to resolve the reliability issues and therefore needed a transmission facility. It therefore is not unjust and unreasonable to allocate the costs of the reliability transmission facility to load. While commenters state that other projects could have also addressed the Artificial Island Area stability, PJM has stated that PJM's selection of the Artificial Island Project was based upon reasoned and sound engineering judgment which offered the more efficient or cost

¹¹² *PJM Interconnection, L.L.C.*, 142 FERC ¶ 61,214 at P 416. In contrast, the Commission found that the proposal to allocate one-half of a Regional or Necessary Lower Voltage Facility's costs based on the postage-stamp method, and one-half based on the solution-based DFAX method recognized both the broad regional benefits and specifically identifiable benefits over time of such a facility. *Id.* PP 412-413.

¹¹³ Second Revised Transcript at 102-103.

¹¹⁴ *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003, FERC Stats. & Regs. ¶ 31,146 (2003), *order on reh'g*, Order No. 2003-A, FERC Stats. & Regs. ¶ 31,160, *order on reh'g*, Order No. 2003-B, FERC Stats. & Regs. ¶ 31,171 (2004), *order on reh'g*, Order No. 2003-C, FERC Stats. & Regs. ¶ 31,190 (2005), *aff'd sub nom. Nat'l Ass'n of Regulatory Util. Comm'rs v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007), *cert. denied*, 552 U.S. 1230 (2008).

effective solution to address the identified system needs. Having followed its process for the selection of the Artificial Island Project, we do not find that the assignment of costs for the Artificial Island Project unjust and unreasonable.

74. Commenters raise concerns that the solution-based DFAX method may encourage selection of projects based on voltage or cost, rather than efficiency or cost-effectiveness, as directed by Order No. 1000. There is no evidence to support the contention that PJM is selecting transmission projects in a manner that is inconsistent with Order No. 1000's requirement that it select the more efficient or cost-effective transmission project to address the identified system needs.

B. August 28, 2015 Filing

75. We accept the August 28, 2015 proposed Tariff revisions.

76. Protestors challenge the allocation of costs for the Artificial Island Project and the justness and reasonableness of the solution-based DFAX method. As discussed above, we find that the solution-based DFAX method has not been shown to be an unjust and unreasonable method for allocating costs for the Artificial Island Project. We find that PJM allocated costs in accordance with the Tariff, and the Protestors have not provided any evidence to the contrary. Because the proposed Tariff revisions are consistent with the cost allocation provisions of Schedule 12 of the Tariff, we find that PJM complied with its Tariff obligations in applying the solution-based DFAX method to determine the cost allocation of the Artificial Island Project. Since we find that the solution-based DFAX method is just and reasonable and not unduly discriminatory or preferential cost allocation method to use for the Artificial Island Project, we dismiss the protests. In addition, because we have denied Linden's complaint, we dismiss the request for clarification.¹¹⁵

¹¹⁵ See Linden Complaint Order, 155 FERC ¶ 61,089 (2016) (denying the Linden Complaint).

The Commission orders:

(A) The State Commission's Complaint is denied, as discussed in the body of this order.

(B) The cost allocations set forth in the August 28, 2015 Filing are hereby accepted, as discussed in the body of this order.

(C) Linden's request for clarification is dismissed, as discussed in the body of this order.

By the Commission. Commissioner LaFleur is dissenting with a separate statement attached.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix A

Docket No. EL15-95-000 Intervention

Notices of intervention were filed by the New Jersey Board of Public Utilities and Illinois Commerce Commission. Motions to intervene were filed by American Municipal Power, Inc., American Electric Power Service Corporation, Consolidated Edison Company of New York (Con Edison), Delaware Division of the Public Advocate (Delaware DPA), Exelon Corporation, Dayton Power and Light Company, Dominion Resources Services, Inc., Duke Energy Corporation,¹¹⁶ FirstEnergy Service Company,¹¹⁷ New Jersey Division of Rate Counsel, Public Power Association of New Jersey, PPL Electric Utilities Corporation, Public Service Electric and Gas Company,¹¹⁸ New York Power Authority (NYPA), LSP Transmission Holdings, LLC, Duke Energy Business, LLC,¹¹⁹ Hudson Transmission Partners, LLC (Hudson), ITC Mid-Atlantic Development LLC, Linden VFT, LLC, Maryland Office of People's Counsel (Maryland OPC), North Carolina Electric Membership Corporation, Pepco Holdings, Inc., Rockland Electric Company, Duquesne Light Company, Dayton Power and Light Company, Easton Utilities Commission, Old Dominion Electric Cooperative (ODEC), Ameren Services Company, and Indicated New York Transmission Owners.¹²⁰ A late filed motion to intervene was filed by Astoria Generating Company (Astoria).

¹¹⁶ On behalf of its franchised public utility affiliates, Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., Duke Energy Indiana, Inc., Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc.

¹¹⁷ On behalf of its affiliates American Transmission Systems, Inc., Jersey Central Power & Light Company, Metropolitan Edison Company, Pennsylvania Electric Company, West Penn Power Company, The Potomac Edison Company, Monongahela Power Company and Trans-Allegheny Interstate Line Company (collectively, FirstEnergy Companies).

¹¹⁸ Including PSEG Power LLC and PSEG Energy Resources & Trade LLC (PSEG Companies).

¹¹⁹ On behalf of Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., Duke Energy Carolinas, LLC and Duke Energy Progress, Inc. (Duke).

¹²⁰ The Indicated New York Transmission Owners are Central Hudson Gas & Electric Corporation, Power Supply Long Island, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation.

Appendix B

Docket No. ER15-2563-000 Intervention

Notices of intervention were filed by the Maryland Public Service Commission (Maryland PSC) and the Delaware Public Service Commission (Delaware PSC).¹²¹ Timely motions to intervene were filed by American Electric Power Service Corporation, Con Edison Company of New York (Con Edison), Delaware Division of the Public Advocate (Delaware DPA), Dominion Resources Services, Inc., Easton Utilities Commission (Easton), Exelon Corporation, ITC Mid-Atlantic Development LLC, Linden VFT, LLC (Linden), LSP Transmission Holdings, LLC, Northeast Transmission Development, LLC, Maryland Office of People's Counsel (Maryland OPC), North Carolina Electric Membership Corporation, Old Dominion Electric Cooperative (ODEC), Pepco Holdings, Inc.,¹²² PPL Electric Utilities Corporation, Public Service Electric and Gas Company, Rockland Electric Company, Public Power Association of New Jersey, and Wabash Valley Power Association, Inc. Motions to intervene out-of-time were filed by American Municipal Power, Inc. (AMP), Duke Energy Corporation (Duke),¹²³ FirstEnergy Service Company (FirstEnergy),¹²⁴ Hudson Transmission Partners, LLC, (Hudson), New York Power Authority (NYPA), Sothern Maryland Electric Cooperative (SMEC), and Astoria Generating Company (Astoria).

¹²¹ The Delaware Commission and Maryland Commission are collectively referred to as the State Commissions.

¹²² Potomac Electric Power Company, Delmarva Power and Light Company, and Atlantic City Electric Company.

¹²³ On behalf of behalf of its franchised public utility affiliates, Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., Duke Energy Indiana, Inc., Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc.

¹²⁴ On behalf of its affiliates American Transmission Systems, Incorporated, Pennsylvania Electric Company, Metropolitan Edison Company, Jersey Central Power & Light Company, Monongahela Power Company, West Penn Power Company, The Potomac Edison Company, and Trans-Allegheny Interstate Line Company.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Delaware Public Service Commission and Maryland
Public Service Commission v. PJM Interconnection,
L.L.C.

Docket No. EL15-95-000

PJM Interconnection, L.L.C.

Docket No. ER15-2563-000
ER15-2563-001

Not
Consolidated

(Issued April 22, 2016)

LaFLEUR, Commissioner *dissenting*:

In companion orders issued today, the Commission denies relief sought in a series of complaints challenging the application of the solution-based distribution factor (DFAX) cost allocation methodology to a limited number of transmission projects approved through the PJM Interconnection, L.L.C. (PJM) Regional Transmission Expansion Plan (RTEP) process.¹ Complainants allege, among other things, that the solution-based DFAX methodology does not result in a just and reasonable cost allocation for these projects because they address reliability violations that are not related to flow on the planned projects, and therefore it is inappropriate to allocate the projects' costs using a flow-based allocation methodology like solution-based DFAX.

I acknowledge that these cases present difficult questions regarding *ex ante* cost allocation methodologies, and I understand the reasoning and considerations that led the Commission to reject the complaints. Determining an appropriate cost allocation methodology for large transmission projects has been among the most complicated issues presented during my time on the Commission.

Nonetheless, I do not agree with the orders' denial of the complaints. Based on the record, particularly as developed through the technical conference, I am persuaded that the complainants have met their burden to establish that the use of solution-based

¹ *Consolidated Edison of New York, Inc. v. PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,088 (2016); *Linden VFT, LLC v. PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,089 (2016).

DFAX to allocate the costs of the Bergen-Linden Corridor Project and the Artificial Island Project is unjust and unreasonable.²

I strongly support *ex ante* cost allocation in general and PJM's solution-based DFAX cost allocation methodology in particular, as I believe it results in just and reasonable cost allocations in most instances. However, the record in this case clearly establishes that there is a discrete and identifiable set of transmission projects as to which that methodology produces an anomalous result and does not allocate costs in a manner roughly commensurate with benefits. This set of projects includes those developed to address short circuit violations, like the Bergen-Linden Corridor Project, and stability violations, like the Artificial Island Project. These two categories of projects are readily definable,³ are historically limited in number (and therefore unlikely to impact use of the solution-based DFAX for the vast majority of projects going forward),⁴ and address violations unrelated to flows across the planned facility that, in my view, are properly addressed through a more tailored cost allocation methodology.

For these projects, a flow-based methodology alone is insufficient to properly align benefits and costs. Because the solution-based DFAX methodology relies solely on the use of the facilities to identify beneficiaries and allocate costs, it fails to adequately identify those entities that benefit from resolution of the very specific underlying reliability issues that triggered the development and selection of these projects, and

² Both the Bergen-Linden Corridor and Artificial Island Projects include high-voltage (i.e., 500 kilovolt (kV) or double-circuit 345 kV and above) and lower-voltage components. Pursuant to PJM's existing cost allocation method, 50 percent of the projects' high-voltage costs are allocated through the solution-based DFAX methodology, with the remaining 50 percent allocated on a postage stamp basis. The projects' lower-voltage portions are allocated 100 percent through the solution-based DFAX methodology. Consistent with the PJM tariff and my prior recognition of the regional benefits of high-voltage transmission projects, I would only grant relief for the portion of the projects' costs allocated through the solution-based DFAX methodology.

³ PJM provided a matrix in preparation for the technical conference that outlines that reliability-based drivers of projects included in its RTEP process since 2000, as well as the number of projects within each category.

⁴ As PJM's matrix notes, of the 1,268 RTEP projects approved since 2000, the Bergen-Linden Corridor and Artificial Island Projects are the only projects that address, respectively, short circuit and stability violations. The record shows that short circuit violations are typically addressed through targeted, inexpensive circuit breaker fixes that are allocated to the local zone, and that stability violations are similarly addressed through the generator interconnection process, rather than the RTEP.

therefore fails to allocate those entities a corresponding share of the projects' costs. As a result, entities that use the lines may grossly overpay, while entities that benefit from resolution of the underlying violation underpay. I believe the record supports granting the complaints to remedy this flaw.

Had it determined that solution-based DFAX is not just and reasonable in these limited instances, the Commission would be required to establish an alternative cost allocation method to apply to these and other similar projects. In my view, the Commission should direct PJM to include in its tariff a new *ex ante* cost allocation methodology to address stability and short circuit projects like those in dispute here.

The records in these cases largely debate a binary choice between full solution-based DFAX or some other method, such as local zone allocation.⁵ However, I do not believe the choice is necessarily that stark. Rather, in my view, a just and reasonable cost allocation methodology should recognize two types of benefits – (1) benefits accruing from resolution of the specific underlying short circuit or stability issue, and (2) benefits accruing from use of the facility over time – and allocate a portion of a project's costs to entities that benefit under each approach. Similar to PJM's existing hybrid methodology for high voltage projects, which recognizes the broad, long-term regional benefits of high voltage transmission as well as the near-term benefits accruing through use of the line, this hybrid methodology would reflect a fairer identification of benefits and allocation of costs.

Therefore, to establish the new hybrid methodology, I believe it would be appropriate to initiate a paper hearing to develop a more complete record regarding (1) what methodology should be used to identify “non-flow based beneficiaries” in short circuit or stability cases, and (2) how to apportion the costs and benefits between that methodology and the solution-based DFAX methodology that identifies beneficiaries based upon their use of the line over time. Upon receipt of that information, the Commission would be able to set the just and reasonable methodology and direct PJM to include the methodology in its tariff to allocate the costs of these and any similar projects going forward.

It is a cliché to observe that hard cases make bad law, but unfortunately I believe that is the result of today's orders. In my view, the orders err by rigidly adhering to the solution-based DFAX methodology in the face of strong record evidence demonstrating its poor fit for the types of projects at issue in these proceedings. Apprehension over the “slippery slope” that will jeopardize *ex ante* cost allocation may invite a “stay the course”

⁵ The relief sought by Consolidated Edison of New York, Inc. in its complaint in Docket No. EL15-18 is a notable exception, and is, at the highest level of generality, conceptually similar to the relief I discuss here.

approach in the form of solution-based DFAX. However, because the instant cases are discrete and identifiable and have significant rate impacts that are not roughly commensurate with benefits, a failure to grant these complaints may actually undermine a cost allocation methodology that is just and reasonable in the vast majority of instances. I would grant the complaints and develop an expanded record to identify a just and reasonable alternative that better aligns the benefits and costs of the Bergen-Linden Corridor Project, Artificial Island Project, and other similar projects that may arise in the future.

Accordingly, I respectfully dissent.

Cheryl A. LaFleur
Commissioner