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January 17, 2019

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

**Re: Application of Transource Pennsylvania, LLC Filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection - East and West Projects in Portions of Franklin and York Counties, Pennsylvania
Docket No. A-2017-2640195 & A-2017-2640200**

**Petition of Transource Pennsylvania, LLC for a finding that a building to shelter control equipment at the Rice Substation in Franklin County, Pennsylvania is reasonably necessary for the convenience or welfare of the public
Docket No. P-2018-3001878**

**Petition of Transource Pennsylvania, LLC for a finding that a building to shelter control equipment at the Furnace Rune Substation in York County, Pennsylvania is reasonably necessary for the convenience or welfare of the public
Docket No. P-2018-3001883**

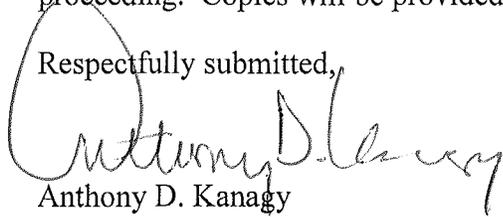
Application of Transource Pennsylvania, LLC for approval to acquire a certain portion of the lands of various landowners in York and Franklin Counties, Pennsylvania for the siting and construction of the 230 kV Transmission Lines associated with the Independence Energy Connection - East and West Projects as necessary or proper for the service, accommodation, convenience or safety of the public - Docket Nos. A-2018-3001881, et al.

Dear Secretary Chiavetta:

Rosemary Chiavetta, Secretary
January 17, 2019
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Enclosed for filing is the Answer of Transource Pennsylvania, LLC to the Motion of Stop Transource Franklin County to Designate Stricken Testimony in the above-referenced proceeding. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Anthony D. Kanagy". The signature is written in a cursive style with a large initial "A".

Anthony D. Kanagy

ADK/jl
Enclosures

cc: Honorable Elizabeth Barnes
Honorable Andrew M. Calvelli
Certificate of Service

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application of Transource Pennsylvania, LLC	:	
for approval of the Siting and Construction of	:	Docket No. A-2017-2640195
the 230 kV Transmission Lines Associated	:	Docket No. A-2017-2640200
with the Independence Energy Connection –	:	
East and West Projects in portions of Franklin	:	
and York Counties, Pennsylvania	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001878
equipment at the Rice Substation in Franklin	:	
County, Pennsylvania is reasonably necessary	:	
for the convenience or welfare of the public	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001883
equipment at the Furnace Run Substation in	:	
York County, Pennsylvania is reasonably	:	
necessary for the convenience or welfare of the	:	
public	:	
	:	
Application of Transource Pennsylvania, LLC	:	
for approval to acquire a certain portion of the	:	Docket No. A-2018-3001881, <i>et al.</i>
lands of various landowners in York and	:	
Franklin Counties, Pennsylvania for the siting	:	
and construction of the 230 kV Transmission	:	
Lines associated with the Independence Energy	:	
Connection – East and West Projects as	:	
necessary or proper for the service,	:	
accommodation, convenience or safety of the	:	
public	:	

**ANSWER OF TRANSOURCE PENNSYLVANIA, LLC.
TO THE MOTION OF STOP TRANSOURCE FRANKLIN COUNTY
TO DESIGNATE STRICKEN TESTIMONY**

I. INTRODUCTION

Transource Pennsylvania, LLC (“Transource PA or the “Company”), hereby submits this Answer to the Motion of Stop Transource Franklin County (“STFC”) to Designate Stricken Testimony Pursuant to the Sixth Prehearing Order (“Motion”). As explained herein, STFC’s

request to strike the portions of Transource PA's rebuttal testimony identified in "Exhibit A" of its Motion misinterprets the Sixth Prehearing Order and does not comply with the Administrative Law Judges' ("ALJs") directives in that Order. Although Transource PA does not agree with the Sixth Prehearing Order as it relates to striking certain testimony, the Company is filing this Answer to address STFC's erroneous interpretation of the Sixth Prehearing Order. Transource PA reserves its right to challenge the Sixth Prehearing Order as it relates to striking certain testimony if the Company's interpretation of the Order is not adopted.

The Sixth Procedural Order strikes rebuttal testimony concerning reliability benefits only to the extent that testimony should have been presented in the Company's direct testimony. The Sixth Prehearing Order does not include rebuttal testimony concerning facts that were not known at the time the Company submitted its direct testimony or rebuttal testimony that is in response to claims made by other parties.

The Company explained in its Application and direct testimony that the project would have reliability benefits and that PJM assesses reliability along with market efficiency during its annual planning process. (See Application, ¶ 19; Transource PA St. No. 3, pp. 15, 23). The Company's direct testimony also explains that PJM's planning process includes annual (or more frequent) re-evaluations of the Project approved in the RTEP and Project 9A would be re-evaluated after the filing of the Application. (Transource PA St. No. 3, p. 23). The specific reliability violations identified at the September 2018 Transmission Expansion Advisory Committee ("TEAC") meeting (as part of the PJM Interconnection, LLC ("PJM") planning process) that Project 9A will resolve did not exist when Transource PA filed its direct testimony. Therefore, Transource PA could not have addressed these reliability violations in direct testimony.

In 2016, PJM evaluated whether Project 9A would resolve reliability violations in 2016, and determined that Project 9A did not resolve specific reliability violations because none existed at that time. As explained herein, the reliability violations that will be resolved by the Project are due to changing transmission grid conditions that currently exist and did not exist in 2016 or December 27, 2017, when the Company filed its direct testimony.

PJM has conducted multiple re-evaluations of Project 9A and has always provided full information regarding Project 9A stemming from all re-evaluations, even when the cost-benefit ratio has decreased. And, opposing parties themselves have relied upon those same updates to argue (albeit incorrectly) that Project 9A is not needed. While the drivers causing the reliability benefits did not exist at the time the Application was filed, it was recognized that the IEC project could alleviate reliability concerns if they did exist. (See Application ¶ 19; Transource PA St. No. 2, pp. 11-12). Consistent with the direction provided in the Sixth Procedural Order, Transource PA should be permitted to provide all information regarding PJM's updates of Project 9A in this proceeding, not just selective information. STFC's position, taken to an extreme means that the Company and intervenors should not update costs, market changes and other updates that the intervenors point out. Taking into account only the updates that are favorable to the intervenor's position, and not considering all updates would be completely unfair. Moreover, it would be an egregious violation of Transource PA's due process rights to exclude directly relevant, updated information regarding significant reliability violations that will be resolved by Project 9A. Transource PA must be permitted to introduce all relevant evidence, including reliability violations that will be resolved by Project 9A that did not exist when Transource PA filed its direct testimony. The specific restriction in the Sixth Procedural Order to strike only testimony that could have been included in the Company's direct testimony serves

to protect the Company's due process right to provide in rebuttal testimony the evidence that did not exist when Transource PA filed its direct testimony.

Excluding information from updates is extremely poor public policy and contrary to all relevant Commission precedent. In every applicable transmission line proceeding, the Commission and the public have always relied on the most up to date information. It is even more egregious to allow other parties to rely on updates and to deny Transource PA the same opportunity.

II. BACKGROUND

The procedural history in this case is lengthy. This background is limited to only the portions of the procedural history that are relevant to STFC's Motion.

Over one year ago, on December 27, 2017, Transource PA filed the "Application of Transource Pennsylvania, LLC filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection-East Project in Portions of York County, Pennsylvania." Also on December 27, 2017, Transource PA filed the "Application of Transource Pennsylvania, LLC filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection-West Project in Portions of Franklin County, Pennsylvania," (collectively, the "IEC Project"). Along with the Siting Applications, Transource PA filed the supporting direct testimony.

The IEC Project has two components—the IEC-West Project, which consists of the siting and construction of the Rice-Ringgold 230 kV Transmission Line in portions of Franklin County, Pennsylvania, and the IEC-East Project, which consists of the siting and construction of the

Pennsylvania portion of the Furnace Run-Conastone 230 kV Transmission Line in portions of York County, Pennsylvania. As part of the IEC Project, Transource PA proposes to construct two new substations: the Furnace Run Substation to be located in York County, Pennsylvania and the Rice Substation to be located in Franklin County, Pennsylvania.

The IEC Project was approved by the PJM Interconnection, L.L.C. (“PJM”) Board in August 2016 following the Transmission Expansion Advisory Committee (“TEAC”) and stakeholder review of the Project as described in the testimony of witness Herling (see Transource PA St. No. 7-R, p. 4, adopting the direct testimony of Paul McGlynn at p. 33). The IEC Project was approved by PJM to alleviate transmission congestion constraints in Pennsylvania, Maryland, West Virginia, and Virginia. Although the primary benefits from the IEC Project relate to market efficiency and the reduction of congestion costs, the new transmission facilities associated with the IEC Project will also enhance the electrical strength and reliability of the transmission system by virtue of the new transmission facilities in the area that will be part of the interconnected transmission grid, as originally explained in the Company’s Application at Paragraph 19 and in direct testimony of Witness Ali, submitted on December 27, 2017.

Witness McGlynn (adopted by Herling) clearly stated in his direct testimony (p. 11) that PJM undertakes an annual planning process. This means that over the timeline of this procedural schedule, there can be, and has been, updated information as a result of PJM’s annual planning process pertaining to the Project during this timeframe. Witness McGlynn (adopted by Herling) also stated in his direct testimony (p. 11) that the annual PJM planning process considers 5 items: reliability, market efficiency, operational performance, meeting public policy requirements and addressing long-term congestion hedging deficiencies. Finally, Witness McGlynn (adopted by

Horger) also stated in his direct testimony (p. 23) that market efficiency projects are reviewed periodically (nominally on an annual basis) regarding “*substantive changes in the costs and/or benefits of the project*”(emphasis added). The Company also indicated in its Application that, although the primary purpose of Project 9A is market efficiency, the Project can be expected to enhance the reliability of the transmission system (see Application, ¶ 19). Reliability is not a new issue in this proceeding. Moreover, as explained herein, information regarding the specific reliability violations that will be resolved by Project 9A was not available when Transource PA filed its direct testimony in December 2017, but is updated information that just became available with PJM’s September 2018 re-evaluation.

Following the submission of the Company’s direct testimony, PJM has re-evaluated the IEC Project two times (namely in February 2018 and September 2018). The results of the most recent re-evaluation were presented at the September 13, 2018 TEAC meeting, as referenced in OCA witness Rubin’s testimony (OCA St. No. 2, p. 21, fn. 11). As explained in the rebuttal testimony of Company Witness Herling, the September 2018 re-evaluation revealed that, while Project 9A is a market efficiency project, it also will now resolve reliability violations. The PJM planning process covers all aspects of the Project, including reliability, and the Company has alerted other parties to the fact that there would be ongoing analysis of the Project and updates to address system changes. PJM has determined that, if the Project were not to go forward, reliability violations will occur on parts of the system in Pennsylvania (see Transource PA St. No. 7-R, pp. 16-18).

On September 25, 2018, other parties, except STFC, submitted their direct testimony. Of note, OCA’s testimony included extensive references to PJM’s September 2018 re-evaluation, and in fact included a link to the September 2018 TEAC presentation that includes PJM’s report

that in addition to the strengthening of the Project's benefits to costs ratio, the project has also now been determined to resolve reliability violations that would arise if the project is not constructed.

On the same day that other parties' direct testimony was due, STFC filed a motion for thirty additional days to submit direct testimony. Transource PA opposed STFC's request. STFC was given until October 11, 2018 to submit its direct testimony (Fifth Prehearing Order, p. 4).

The Company submitted its rebuttal testimony on November 27, 2018 in accordance with the new procedural schedule. The items in this rebuttal testimony were in response to the over 170 pages of direct testimony provided by other parties and the approximately 1,900 pages of testimony presented at the public input hearings and site visits. Among the many issues raised by the Office of Consumer Advocate ("OCA") and individuals who testified at the public input hearings were allegations that the proposed Project is not needed because it does not address reliability violations. See, e.g., OCA St. No. 2, p. 12, lines 3-4.

On December 7, 2018, the OCA filed a Motion to Amend the Procedural Schedule and therein requested a 90-day extension of time to submit surrebuttal testimony. On December 10, 2018, Citizens to Stop Transource, York County and Maple Lawn Farms, Inc. filed a Motion to Amend the Procedural Schedule and therein requested a five-month extension of time to submit surrebuttal testimony. On December 13, 2018, STFC filed a Motion to Amend the Procedural schedule and Strike Certain Testimony. STFC requested that the schedule be amended by adding 150 days or, in the alternative, that the ALJs strike certain portions of the rebuttal testimony of witnesses Chang, Herling, Herzog, and Stein to the extent they introduce direct testimony as rebuttal testimony. In its Motion, STFC did not identify specific portions of the

testimony which it believes should be stricken. Additionally, STFC moved to strike the testimony of witness Cawley, asserting that the testimony offers legal opinions.

On December 31, 2018, the ALJs issued a Sixth Prehearing Order, which granted intervenors an additional fourteen days to submit surrebuttal testimony and extended the rejoinder deadline to February 11, 2019. The Order also granted in part and denied in part STFC's Motion to Strike the rebuttal testimony of Judy Chang, Steve Herling, Kent Herzog, and Stephen Stein, to extent the rebuttal testimony introduces information that should have been presented in direct testimony. The Order denied STFC's request to strike witness Cawley's testimony.

On January 10, 2019, STFC filed a Motion to designate specific portions of Transource PA's rebuttal testimony as stricken.

III. ARGUMENT

A. The Sixth Prehearing Order strikes rebuttal testimony only to the extent it should have been presented in direct.

The Sixth Prehearing Order is strictly limited to striking rebuttal testimony to the extent it introduces direct testimony as rebuttal. Order, p. 5. STFC's Motion does not comply with the Sixth Prehearing Order. STFC's interpretation of the Sixth Prehearing Order as presented in "Exhibit A" to its Motion is much broader than what is described in the Order and proposes to strike testimony that: (1) could not have been introduced as direct testimony, and (2) also is proper rebuttal because it directly responds to arguments raised by the OCA that Project 9A is not needed because it does not resolve reliability violations. STFC's Motion attempts to eliminate a significant portion of Transource PA's rebuttal testimony and deprive the Company of an opportunity to respond to the many claims made by intervenors in their direct case.

While Transource PA disagrees with the Sixth Prehearing Order's conclusion that certain portions of the Company's testimony contains improper rebuttal, Transource PA has identified in "Appendix A" hereto those portions of the Company's rebuttal testimony which it believes are encompassed by the Sixth Prehearing Order. Specifically, the Order states as follows:

As Transource PA still claims the primary purpose of the project is market efficiency and the approval requested has not changed, we are persuaded to grant Citizens and Stop Transource's alternative motion to strike witnesses Chang, Herling, Herzog and Stein testimonies **to the extent they are introducing direct testimony as rebuttal testimony**. (emphasis added)

Order, p. 5. STFC's Motion is clearly not compliant with the Sixth Prehearing Order because it is overbroad and seeks to strike testimony that is clearly not excluded by the Order. Transource PA is seeking to comply with the Order's directive which only strikes rebuttal testimony to the extent it is direct testimony.

The Commission's regulations at 52 Pa. Code Section 5.243 govern what is proper rebuttal testimony. Section 5.243 of the Commission's regulations provides in relevant part:

- (e) A party will not be permitted to introduce evidence during a rebuttal phase which:
 - (1) Is repetitive.
 - (2) Should have been included in the party's case-in-chief.
 - (3) Substantially varies from the party's case-in-chief.

The premise of the Sixth Prehearing Order is to strike testimony that should have been included in direct testimony. 52 Pa. Code § 5.243(e)(2). As explained herein, Transource PA's rebuttal testimony should not be stricken for two reasons: (1) it was not available when Transource PA filed its direct testimony and/or (2) it is directly responsive to arguments made by opposing parties.

It must be noted that Transource PA is not materially changing its case-in-chief. Project 9A is a PJM-approved market efficiency project and that has not changed. Neither has the scope

of the Project changed. Subsequent re-evaluation of the Project has determined that there will be additional benefits, including benefits to Pennsylvania, in that Project 9A will also resolve reliability violations that would exist without the Project. This is an additional benefit of the Project determined through normal PJM updated evaluation.

As fully explained herein, STFC's Motion must be denied because it seeks to strike testimony that either could not have been presented in direct testimony or is directly responsive to claims made by other parties in their direct testimony.

B. Information regarding reliability violations could not have been presented in Transource PA's direct testimony because the reliability violations did not exist at that time.

Transource PA did not provide additional details regarding specific reliability violations when it filed its direct testimony because, although it was clear that the Project would have reliability benefits, the specific reliability violations that Project 9A will solve did not exist when Transource PA filed its direct testimony. As described in the affidavit of Steven R. Herling, attached hereto as "Appendix B," when PJM evaluated the costs and benefits of Project 9A in 2016, PJM also evaluated the reliability of the grid absent Project 9A as well as with Project 9A included. The 2016 evaluation revealed that there were no pre-existing identified reliability violations that would be resolved by Project 9A.

PJM conducted an updated evaluation of Project 9A in September 2017, which resulted in a reduced cost/benefit ratio of 1.30. The reduced cost/benefit ratio indicated to PJM that power flows had decreased. As a result, there was no reason for PJM to conduct a reliability analysis following the second reevaluation. In February 2018, PJM conducted a further evaluation of Project 9A, which resulted in a cost/benefit ratio of 1.32. This cost/benefit ratio is very close to the cost/benefit ratio from the September 2017 re-evaluation.

Transource PA advised the parties at the second pre-hearing conference that another reevaluation of Project 9A would be conducted in the fall of 2018. Fourth Prehearing Order, p. 13. This update was provided to the public at the September 13, 2018 TEAC meeting.¹ The September 2018 reevaluation revealed that the cost/benefit ratio had increased since the last reevaluation to 1.42² The increased flows associated with this change suggested to PJM that a subsequent reliability analysis should be conducted to identify whether any reliability violations would exist absent Project 9A.

The reliability analysis that PJM conducted in September 2018 is a subset of the same reliability analysis that was initially conducted in 2016. The reliability analysis conducted in 2018 identified specific reliability criteria violations that would result and would have to be resolved if Project 9A is not constructed. These reliability violations *did not exist* when Project 9A was evaluated in 2016 and *did not exist* when Transource PA filed its direct testimony on December 27, 2017. Transource PA has not engaged in trial by ambush.

The Order directs only that rebuttal testimony which should have been presented in direct (and is therefore improper rebuttal) be stricken. Order, p. 8. Transource PA's rebuttal testimony regarding specific reliability violations could not possibly have been presented in its direct testimony because the information did not exist at the time the direct testimony was prepared. Therefore, the Order cannot be interpreted to exclude testimony regarding specific reliability violations that are a result of changing transmission grid conditions that occurred after the submittal of the Company's direct testimony in December 2017.

¹ Also included in Appendix B is a copy of the TEAC Transource AP-South (2014/15 – 9A) Project Reevaluation dated September 13, 2018, which is cited in OCA Witness Rubin's testimony. (OCA St. No. 2, p. 21, fn. 11).

² Mr. Lanzalotta stated in response to Transource PA-OCA Set II-7 that he was aware of the September 2018 TEAC reevaluation and had reviewed the updated September 2018 TEAC analysis prior to submitting direct testimony. A copy of the response is attached as "Appendix C."

C. Transource PA's rebuttal testimony regarding reliability violations directly responds to other parties' claims that the Project is not needed because it does not address reliability violations.

In addition to the reasons explained above, Transource PA's rebuttal testimony regarding reliability violations addressed by Project 9A is also proper because it directly responds to OCA's argument that Project 9A is not needed to address reliability violations. Transource PA's right to respond in rebuttal to arguments made by OCA in its direct testimony cannot be disputed.³

The OCA's testimony is replete with claims that Project 9A is not needed because it does not address reliability violations. OCA's Witness Lanzalotta states as follows:

The transmission system reinforcements included in the IEC Project are not required to address any NERC violations and must, therefore, be justified on the basis of economics.

(OCA St. No. 2, p. 12, lines 3-4).

³ The fact that the IEC Project will result in reliability benefits is not a new claim. Intervenors have been aware of the fact that the Project provides reliability benefits since the Company submitted its direct testimony. Company witness Ali explained in his direct testimony:

"Although the primary benefits from the IEC Project relate to market efficiency and the reduction of congestion costs, the new transmission facilities associated with the IEC Project will also enhance the electrical strength and reliability of the transmission system by virtue of the new transmission facilities in the area that will be part of the interconnected transmission grid. The IEC Project will provide additional and alternative paths for electricity in the event of outages on other Pennsylvania transmission facilities. The IEC Project will also allow the interconnection of future reliability, generation, and load projects in the area." (Transource PA St. No. 2, pp. 11-12).

Witness McGlynn also explained that the regional planning process and the annual RTEP addresses a full range of needs for transmission expansion, including reliability, market efficiency, operational performance, public policy requirements, and long-term congestion hedging deficiencies. (Transource PA St. No. 3, p. 11) Specifically, Mr. McGlynn stated on p. 23 of his direct testimony:

To assure that projects selected by the PJM Board for market efficiency continue to be economically beneficial, both the costs and benefits of these projects will be reviewed periodically (nominally on an annual basis). Substantive changes in the costs and/or benefits of the approved RTEP projects will be reviewed with the TEAC at a subsequent meeting to determine if these projects continue to provide economic benefits relative to their costs and should remain in the RTEP.

The entirety of the Company's rebuttal testimony regarding reliability violations is justified on the basis of responding to this statement alone.⁴ However, this is not nearly the only instance in which OCA states that the Project is not needed because it does not address reliability violations. Witness Lanzalotta also states:

In the case of the IEC, such congestion does not affect reliability to the extent that it causes a NERC violation that requires a remedy under NERC transmission planning requirements.

(OCA St. No. 2, p. 12, lines 18-20).

...

There is no NERC violation and no reliability-based need for more transmission capacity.

(OCA St. No. 2, p. 13, lines 17-18).

OCA's Witness Rubin also opines on the issue of whether the IEC Project is needed to address reliability violations. (See OCA St. No. 1, pp. 6, 18, 19, 35, 44). For example, OCA Witness Rubin states on page 6 of his testimony that the Project "does not solve an existing reliability concerns." (OCA St. No. 1, p. 6, lines 8-9). Witness Rubin also states:

In particular, the IEC Project is not proposed to address any reliability concerns.

(OCA St. No. 1, p. 18, lines 14-15).

...

Q. Before you continue with your understanding of the IEC Project, what do you mean by "enhancing the economical flow of power" and "relieving economic congestion"?

⁴ OCA's Witness Lanzalotta made this statement in his direct testimony on September 25, 2018 despite being aware of the PJM TEAC update on September 13, 2018, finding that the Project would resolve reliability violations. See Appendix C, which is a copy of the OCA's response to Transource PA-OCA Set II-7.

A. As Mr. Lanzalotta describes in more detail, these terms indicate that the IEC Project is not needed to enhance the reliability of electricity service. Rather, the IEC Project is being undertaken solely to reduce the cost of electricity flowing into the affected area. Stated differently, ***there is no reliability concern with the supply of electricity to the region***; but the transmission grid can be made more efficient to reduce the cost of the power that flows into certain parts of the region.

(OCA St. No. 1, p. 18, line 19 - p. 19, line 4).

...

Because the IEC Project is being built solely to reduce power costs, and not to provide any reliability benefits...

(OCA St. No. 1, p. 35, lines 14-15).

Several commenters at the public input hearings also criticized the Project for lacking reliability benefits. *See, e.g.*, Tr. at pp. 425, 391 (“This is not a reliability project. There is no risk of anyone’s lights going off.”), 1955, 1967, 1959-60 (“As this project has nothing to do with reliability, no one will suffer.”)

The Company witnesses who discuss the Project’s resolution of reliability violations are directly rebutting the OCA witnesses’ claims that the Project is not needed because it does not resolve reliability violations. The Company must be permitted to respond to other parties’ arguments that the IEC Project is not needed to resolve reliability violations. This testimony is clearly incorrect and must be rebutted in order to have a clear and complete record for the ALJs and the Commission.

Moreover, OCA Witness Rubin also was clearly aware of PJM’s September 13, 2018 re-evaluation which found that the IEC Project would resolve reliability violations ***because he specifically refers to that re-evaluation*** on page 21 of his direct testimony. OCA’s Witness Lanzalotta also admitted that he was aware of the September 2018 TEAC update and had

reviewed it before submitting his direct testimony. (See Appendix C). In addition to the reasons explained above, Transource PA's rebuttal testimony regarding reliability violations must also be admitted to address the credibility issues associated with OCA's Witnesses arguing that the IEC Project is not needed to address reliability violations when they were clearly aware of PJM's September 13, 2018 re-evaluation where PJM found that the IEC Project, in addition to relieving chronic congestion, will also resolve reliability violations which would need to be otherwise addressed if the IEC Project is not built.

The Company's rebuttal testimony regarding reliability violations is proper and complies with Section 5.243 because: (1) the Company could not have introduced this evidence in direct testimony because it did not exist at that time, and (2) it is directly responsive to other parties' arguments that the IEC Project is not needed to resolve reliability violations. The Sixth Prehearing Order cannot be interpreted to exclude rebuttal testimony that was not available at the time direct testimony was filed and that directly responds to other parties' claims that the Project is not needed because it does not resolve reliability violations.

D. It is proper to include updates in rebuttal testimony, and parties should not be able to choose which updates are included for the record based on the results of those updates.

Transource PA advised the ALJs and the parties that PJM was updating its re-evaluation of Project 9A at the Second Prehearing Conference held on July 9, 2018. In the Second Prehearing Conference Order, the ALJs stated as follows:

Transource PA believes there will be an update to the cost/benefit ratio for IEC Project 9A in October at a TEAC meeting. If the cost/benefit ratio is updated, an updated cost study should be provided as part of the update. N.T. 1611. We are interested in a breakdown analysis regarding costs/benefits to Pennsylvanians, particularly those residing in Franklin and York Counties. Additionally, environmental studies are being conducted. Section 57.76 of the Commission's regulations provides that a siting application will not be granted unless it is shown to have minimum

adverse environmental impact and that is in compliance with applicable statutes and regulations providing for the protection of the natural resources of the Commonwealth. 52 Pa. Code §§ 57.76(a)(3)(4). As information is available, we encourage Transource to update the cost/benefit ratio and environmental studies reports through its rebuttal testimony in November and the intervenors will be afforded an opportunity to address this evidence in their Surrebuttal testimonies.

Fourth Prehearing Order, p. 13.

Parties were clearly aware that there would be updated information provided in this proceeding and were given an opportunity to address this information both in their Intervenor Direct and their Surrebuttal testimony. Parties cannot reasonably argue that updated information that is adverse to their case should be stricken.

As explained herein, the fact that the IEC Project will resolve reliability violations was determined by PJM pursuant to its updated September 2018 re-evaluation of the Project. It is entirely proper for parties to update their case throughout the course of the proceeding. This practice is common in transmission line siting proceedings before the Commission. For example, in the Susquehanna-Roseland Siting Application at Docket No. A-2009-2082652, the Company provided an updated reliability analysis in its rebuttal testimony to reflect the release of a later PJM Retool Study, the results of which were revealed after the Company served its direct testimony. This did not result in intervenors receiving additional time for their testimony.

In that case, the applicant served its direct testimony on January 26, 2009. The results of a March 2009 PJM Retool Study indicated that ten of the twenty-three reliability violations that were originally presented dropped from Category B violations to Category C.5 violations. Other parties submitted direct testimony on June 30, 2009. The Company served its rebuttal testimony on August 8, 2009. The updated reliability violation information was addressed in the other parties' testimony, the Company's rebuttal testimony, and was considered by the ALJ and by the

Commission in reaching an ultimate decision on the application. *See Application of PPL Electric Utilities Corporation Filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval of the Siting and Construction of the Pennsylvania Portion of The Proposed Susquehanna-Roseland 500 kV Transmission Line in Portions of Lackawanna, Luzerne, Monroe, Pike and Wayne Counties, Pennsylvania; Petition of PPL Electric Utilities Corporation For A Finding That A Building To Shelter Equipment At The 500-230 kV Substation To Be Constructed In The Borough of Blakely, Lackawanna County, Pennsylvania is Reasonably Necessary For the Convenience Or Welfare Of the Public*, 2009 Pa. PUC LEXIS 2323 at *42, *206; Order, 2010 Pa. PUC LEXIS 434 at *59.

In the *NE Pocono Siting Application*, the applicant updated the results of its analysis regarding the number and timing of reliability violations in its rebuttal testimony. The litigation schedule was not changed as a result of the updated information being provided following the Company's submission of its direct testimony. The ALJ and Commission considered the updated reliability analysis results in their need determination. The applicant also updated its cost estimate for the project from the \$154 million estimate in provided in the applicant's direct testimony to \$247 million. The updated cost estimate was not excluded from the record even though it was not provided until the hearing. 2013 Pa. PUC LEXIS 620 at *87, *160.

It is also a common and long-standing practice in rate proceedings before the Commission for parties to update their cases with more recent information throughout the course of the proceeding. The Commission routinely considers this information as proper evidence without delaying the established procedural schedules and, in most instances, without objection from other parties. *See, e.g., Pa. PUC v. The Peoples Natural Gas Company*, Docket No. R-860310, 1986 Pa. PUC LEXIS 72 (updating gas cost exhibits to reflect current information

during course of proceeding); *Pa. PUC v. Duquesne Light Company*, Docket No. R-860378, 1987 Pa. PUC LEXIS 342 (updating rate case calculations to reflect current market conditions); *Pa. PUC v. Valley Utilities Company, Inc.*, Docket No. R-891358, 1990 Pa. PUC LEXIS 5 (updating rate case expense claim from original claim during the proceeding); *Pa. PUC v. Philadelphia Suburban Water Company*, Docket No. R-891270, 1989 Pa. PUC LEXIS 213, *99, (procedure of updating cost rates with actual information when it becomes known is “frequently employed in rate cases”); *Pa. PUC v. West Penn Power Company*, Docket No. R-009429861994, Pa. PUC LEXIS 144 at *143 (updating dividend yield figure that was previously provided in written direct testimony, which was subject to cross examination); *Pa. PUC v. West Penn Power Company*, Docket No. R-922378, 1993 Pa. PUC LEXIS 94 at *132 (updating rate case expense calculations).

In this case, the information regarding specific reliability violations was identified following PJM’s most recent cost/benefit evaluation on September 13, 2018. See “Appendix B.” To exclude the full results of the update simply because they are not favorable to STFC’s and other parties’ positions is unjust and would result in a skewed and incomplete record upon which the Commission is to base its decision. PJM communicates the results of all reevaluations that are conducted, regardless of what those updates reveal. Parties should not be able to include for the record in this case updated information pertaining to the reevaluations when it is favorable to their position, but at the same time choose to exclude updated information that may not support their position. It is only fair that the Commission consider all of the evidence that is available when making a decision regarding the proposed Project and not just the evidence that supports the position of certain parties.

The updated information regarding specific reliability violations should not be excluded from the record simply because conditions have changed since the Company submitted its direct testimony over a year ago, and the information was not available at that time. While the Project remains a market efficiency project, the Company believes that it should present the full results of PJM's revaluation, which includes information regarding specific reliability violations that Project 9A will solve, for the Commission to consider in its determination. It is not in the best interest of the parties or the public for the Commission to consider this Project based solely on the information available at the time of the filing, which would result in an incomplete record by excluding the most up-to-date information available.

E. **The specific portions of Transource PA's rebuttal testimony that STFC seeks to strike were properly presented as rebuttal testimony.**

1. **Witness Herling, Herzog, and Stein**

STFC requests that the entire rebuttal testimony of witnesses Herling, Herzog, and Stein be stricken. See "Exhibit A" to STFC's Motion. In support of its request, STFC cites to Paragraph 9 of the Sixth Prehearing Order. In doing so, STFC completely ignores that the Order strikes only those portions of witness Herling, Herzog, and Stein's rebuttal testimony "to the extent they are introducing direct testimony as rebuttal testimony." Order, p. 8.

a. **Witness Herling**

As explained above, the portions of witness Herling's rebuttal testimony that discuss reliability violations are directly responsive to allegations made by the OCA in its direct testimony and were not available when Transource PA submitted its direct testimony. For example, the OCA and other parties raised the issue in their direct testimony and at the public input hearings that Project 9A was not needed because it was not required to meet system reliability needs. OCA witnesses Rubin and Lanzalotta specifically claim that the Project has no

reliability benefits (OCA St. No. 1, p. 44; OCA St. No. 2, pp. 11-12). The OCA also alleged that the Project should not be approved because it is not needed and does not provide benefits to Pennsylvania (OCA St. No. 1, p. 45). OCA made this claim despite being aware of the September 2018 TEAC. In fact, in the OCA's direct testimony, witness Rubin cited directly to the PJM TEAC Project Reevaluation at <https://www.pjm.com/-/media/committees-groups/committees/teac/20180913/20180913-ap-south-9a-project-reevaluation-sept-2018.ashx> (OCA St. No. 1, fn. 11). Witness Herling's rebuttal testimony addresses these allegations by describing the benefits of regional planning and explaining that PJM's most recent evaluation of the Project revealed an updated cost/benefit ratio of 1.42, as well as specific reliability violations that would result if the Project were not constructed (Transource PA St. 7-R, pp. 18-25).

Much of witness Herling's testimony does not even address reliability benefits, but responds to claims made by other parties regarding several other topics: PJM's selection of Project 9A (see OCA St. No. 2, p. 20, OCA St. No. 3, p. 7, and Transource PA St. No. 7-R, pp. 7-8); PJM's transmission planning process, including its process for evaluating market efficiency projects (see Shaw St. No. 1, pp. 13-14, OCA St. No. 1, p. 24, OCA St. No. 2, p. 22 and Transource PA St. No. 7-R, pp. 8- 15, p. 19-20); PJM's cost/benefit test (see OCA St. No. 1, p. 21, Transource PA St. No. 7-R, pp. 15-17); the need for the Project to relieve congestion (see OCA St. No. 1, p. 5; Transource PA St. No. 7-R, p. 20); peak load levels (see OCA St. No. 2, p. 16, Transource PA St. No. 7-R, pp. 26-27; and the selection of Project 9A and consideration of alternatives (OCA St. No. 2, p. 20, OCA St. No. 3, p. 7, Transource PA St. No. 7-R, pp. 27- 34). Clearly, this rebuttal testimony is not encompassed by the Sixth Prehearing Order's directive to strike rebuttal testimony that should have been introduced in direct as it is directly responsive to

testimony submitted by other parties. The Order does not support striking Mr. Herling's rebuttal testimony in its entirety as STFC requests.

As stated above, Transource PA has provided as "Appendix A" hereto a document designating the portions of Mr. Herling's testimony that Transource PA believes are encompassed by the Order, which includes the penalty amount that would be incurred for violating a NERC reliability standard. While Transource PA believes that this testimony is responsive to OCA's arguments regarding NERC violations, to comply with the specific directions provided by the Sixth Pre-hearing Order, Transource PA is not opposed to striking the specific information about NERC penalty amounts (See Transource PA St. No. 7-R, p. 23, lines 10-12). The Order specifically identifies this portion of Mr. Herling's testimony as information that could have been presented in direct testimony. Order, p. 4. Transource PA proposes to remove this statement from Mr. Herling's rebuttal testimony in compliance with the Order.

STFC also criticizes the Company for substituting Mr. Herling as a witness for Mr. McGlynn in its rebuttal testimony after Mr. McGlynn changed roles within PJM in February 2018. However, Mr. Herling simply adopts certain portions of Mr. McGlynn's testimony without modification. It is unreasonable to suggest that rebuttal testimony is not the proper time to indicate substitution of witnesses when the Company is simply substituting witnesses based on the former witness changing job duties and when the substitution of witnesses resulted in no changes to the testimony, other than the portion of testimony relating to the witnesses' background and qualifications. Substitution of witnesses happens frequently in cases before the Commission and provides no basis for striking testimony.

b. Witness Herzog

Witness Herzog's rebuttal testimony does not discuss benefits of the Project. Instead, witness Herzog responds to claims made by others parties and the public regarding impacts to

farming and lighting of structures (see, e.g., Tr. at pp. 264, 669, 684, 672, 1020; Shaw St. No. 1, p. 8). Witness Herzog's testimony is proper rebuttal because it directly responds to testimony presented by other parties and at the public input hearings by explaining how the Company will address each of these issues.

c. Witness Stein

Witness Stein's rebuttal testimony addresses comments made at the public hearings that Transource PA has not updated its costs for the IEC Project (see, e.g, Tr. at p. 1956), as well as comments that construction of the line will impact property and infrastructure (YCPC St. No 1, pp. 14-16, 34; Shaw St. No. 1, p. 5), and comments regarding stormwater runoff and ground water sources (YCPC St. No. 1, pp. 28-29; Tr. at 243, 534, 684, 691, 1010, 1024). Therefore, witness Stein's rebuttal is proper responsive testimony and should not be stricken pursuant to the Sixth Prehearing Order. In its Motion, STFC suggests that Transource PA should have expected that these issues would arise throughout the course of the processing and therefore should have presented testimony from Mr. Stein in its direct case. STFC Motion, p. 6. However, the Company could not have possibly anticipated every issue that other parties would raise, nor is it required to do so. The very purpose of rebuttal testimony is to respond to the issues raised by other parties. In addition, the Fourth Prehearing Order specifically provided that Transource PA was to provide updated cost information in this proceeding and that parties could respond to that information in their Surrebuttal testimony. Fourth Prehearing Order, p. 13. Mr. Stein's testimony complies with this directive.

2. Witnesses Weber, Ali, and Horger

a. Witness Weber

STFC seeks to strike portions of the rebuttal testimony of witnesses Weber, Ali, and Horger. There is no basis in the Order for striking the rebuttal testimony as requested by STFC.

In fact, the Order does not even mention striking the rebuttal testimony of witnesses Weber, Ali, and Horger. Therefore, STFC cannot rely on the Order to strike the testimony of these witnesses.

Moreover, as explained below, the statements STFC seeks to strike are proper responsive testimony to claims raised by other parties. Specifically, STFC seeks to strike the following statement from page 5 of witness Weber's testimony:

- Q. How will Transource PA respond to Need Issue #2: the claim that the Project has no reliability benefits?
- A. Transource PA will clearly demonstrate that the Project does address both specific PJM reliability criteria violations and provide broader regional system resiliency.
- Witness Herling will demonstrate that if the Project were not constructed this would cause multiple reliability issues on the PJM system.
 - Witness Ali, Director Transmission Planning, will describe how the Project provides broader regional system resilience.

(STFC Motion, Exhibit A). STFC neglects to mention that witness Weber states on page 2 of his rebuttal testimony that Transource PA is responding to claims made by OCA witnesses Rubin and Lanzalotta that the Project has no reliability benefits. Mr. Weber provides specific references to the OCA testimony on this issue, citing OCA St. No. 1, p. 44 and OCA St. No. 2, pp. 11-12. Therefore, this statement on page 5 of Mr. Weber's testimony is proper rebuttal because it explains that Transource PA disagrees with the OCA's position regarding the Project's reliability benefits and introduces the witnesses that will specifically rebut the OCA's claim.

b. Witness Ali

STFC also requests that the ALJs strike page 12, lines 20-22 of Mr. Weber's rebuttal testimony which states, "Witness Stein explains that the Company will cooperate with local municipalities to address project construction issues." This statement in Mr. Weber's testimony

is proper rebuttal. The statement simply indicates that witness Stein will respond to the claim made by OCA witness Rubin and York County Planning Commission witness Gobrecht that Transource PA has not followed various state and local zoning and regulatory requirements (see OCA St. No. 1, pp. 16-18; YCPC St. No. 1, pp. 36-38). This is clearly responsive, appropriate rebuttal testimony.

STFC seeks to strike the discussion in witness Ali's rebuttal testimony regarding the Project's reliability benefits, in particular that NERC reliability violations that would result without Project 9A (Transource PA St. No. 2-R, p. 2, ln. 17- p. 3, ln. 12). Mr. Ali's rebuttal testimony responds to the OCA's testimony that the Project is not required to address reliability violations (see OCA St. No. 2, p. 10, ln. 20-21, pp. 11-13; OCA St. No. 1, p. 44, ln. 17-22; p. 45, ln. 15-16, p. 46, ln. 15-16). Mr. Ali specifically disagrees with Mr. Lanzalotta's recommendation to disregard the Projects reliability benefits. Mr. Ali's testimony also rebuts Mr. Shaw's opinion that it is more reliable for generators to be located closer to load than to construct transmission lines (see Shaw St. No. 1, p. 15).

STFC seeks to strike pages 7-9 of Mr. Ali's testimony, which discusses how chronic congestion adversely impacts regional system planning and the many negative consequences of chronic congestion. This portion of witness Ali's testimony cannot be characterized as direct testimony, as it responds to OCA witness Lanzalotta's claim that the Project is no longer needed because of an alleged decrease in congestion on the AP South reactive interface (OCA St. No. 2, pp. 16-18). Therefore, it is proper responsive testimony and should not be stricken to comply with the Sixth Procedural Order. .

c. Witness Horger

In its December 13, 2018 Motion, STFC did not request that the rebuttal testimony of witness Horger be stricken. Now STFC proposes to strike significant portions of Mr. Horger's rebuttal testimony, entirely disregarding that the Order does not direct to strike any of Mr. Horger's rebuttal testimony. There is no basis in the Order to strike any of Mr. Horger's rebuttal testimony.

STFC seeks to strike the discussion on pages 7-13 of Mr. Horger's rebuttal testimony, which explains the process PJM undertook to select Project 9A and PJM's evaluation of alternatives. This testimony is directly responsive to the OCA's testimony disputing PJM's selection of Project 9A and criticizing PJM for not selecting other alternatives (OCA St. No. 2, p. 4, p. 20-22; OCA St. No. 3, pp. 2-3, p. 6-30). In this section of his rebuttal testimony, Mr. Horger does not even address reliability benefits. Rather, he testifies to the cost/benefit analysis that PJM undertakes during its evaluation. STFC also seeks to strike the reference to the TEAC webpage on page 8 of witness Horger's testimony. This is improper because the reference directly responds to OCA's testimony which specifically referenced those same materials regarding PJM's selection of Project 9A and its consideration of alternatives (see OCA St. No. 2, p. 4).

STFC also seeks to strike several portions of Witness Horger's testimony regarding the Project's reliability benefits and benefits to Pennsylvania (see p. 15, ln. 13-21; p. 17, ln. 23 – p. 18, ln. 1-19; p. 19, ln. 12-18). As explained above, this rebuttal testimony is proper because it responds to claims made by the OCA and at the public input hearings that the Project will result in no reliability benefits or benefits to Pennsylvania (see OCA St. No. 1, pp. 6, 18, 19, 35, 44; OCA St. No. 2, p. 12, 13, 18; Tr. at pp. 391, 425, 1955, 1967, 1959-60). In addition, the Fourth

Prehearing Order directs Transource PA to explain the Project's benefits to Pennsylvania. Order, p. 13. The reliability benefits are essential benefits to Pennsylvania.

STFC requests that the ALJs strike portions of TPA Exhibit No. 5-R, which is a copy of the November 15, 2018 PJM Whitepaper. STFC selectively chooses to remove any references to reliability in the Whitepaper. This is improper and should not be allowed. The Whitepaper is a public document published by PJM and contains the results of PJM's most recent re-evaluation of Project 9A. Modifying the document is misleading and takes the results on PJM's most recent re-evaluation out of context. The full results of PJM's analysis should be considered by the Commission when evaluating the Project, not just those portions of the analysis that STFC believes are favorable to its position.

3. Witness Chang

The Sixth Prehearing Order denied STFC's request to strike the testimony of witness Chang as it relates to the Project's economic benefits. Order, p. 5. STFC now seeks to strike Witness Chang's testimony regarding the Project's reliability benefits and PJM's market efficiency analysis. STFC Motion, pp. 8-9. Witness Chang's testimony is proper rebuttal and should not be stricken because it responds to the specific claims of other parties. The OCA claims that PJM's market efficiency analysis overstates the IEC Project's benefits (OCA St. No. 1, pp. 34, 42) and that the addition of certain energy efficiency resources will reduce the need for the IEC Project (OCA St. No. 3, p. 30). Witness Chang specifically rebuts these claims (Transource PA St. No. 10-R, pp. 4-10, p. 11, ln. 14-22 – p. 12, ln. 1-17).

F. Denying Transource PA an opportunity to respond to the claims made by other parties in their direct case would egregiously violate Transource PA's due process rights.

Other parties cannot be allowed to submit testimony alleging that the proposed Project has no reliability benefits and does not resolve reliability violations without permitting

Transource PA an opportunity to present responsive testimony. Due process requires that a party be afforded a fair opportunity to respond to adverse claims. *Smith v. Pa. P.U.C.*, 162 A.2d 80, 83 (Pa. Super. Ct. 1960). "The Commission . . . is bound by the due process provisions of constitutional law and by the principles of common fairness. (citation omitted) Among the requirements of due process are notice and an opportunity to be heard on the issues, to be apprised of the evidence submitted, . . . and to offer evidence in explanation or rebuttal." *Smith*, 162 A.2d at 83. The Commission has described this as a "fundamental right." *Hartnett v. Bell Atlantic-Pennsylvania, Inc.*, 1994 Pa. PUC LEXIS 57, at *5 (Oct. 19, 1994) (citations omitted). Pursuant to Section 332(c) of the Public Utility Code, "Every party is entitled to present his case or defense by oral or documentary evidence, to submit rebuttal evidence and to conduct such cross-examination as may be required for a full and true disclosure of the facts."

Striking Transource PA's rebuttal testimony as proposed by STFC would prevent the Company from responding to other parties' allegations in violation of Section 332(c) of the Public Utility Code as well as Transource's fundamental right to offer evidence in explanation or rebuttal. Due process requires that Transource PA be permitted to respond to these adverse claims.

G. Parties should not be given additional time to respond to Transource PA's rebuttal testimony.

The Sixth Procedural Order appropriately maintained the hearing dates while giving other parties additional time to prepare their surrebuttal testimony. Transource PA does not oppose this provided that its rebuttal testimony is not stricken, as discussed herein. Throughout the course of this proceeding, STFC and other parties have attempted to unreasonably delay a decision on Transource PA's Application. Any further delay is completely unreasonable and unnecessary as parties have been allowed more than sufficient time to prepare their surrebuttal

testimony. During the initial development of a procedural schedule, the OCA advocated for a schedule that set the deadline for filing reply briefs over a year from the date the Company filed its Application. STFC supported this schedule, which was nearly four months longer than the schedule proposed by the Company (Tr. at pp. 59-60). The OCA's preferred schedule was ultimately adopted, despite being much longer than schedules previously adopted in other transmission line siting applications.

On June 1, 2018, the OCA filed a motion requesting that the deadline for submitting intervenor direct testimony be extended by 60 days or until September 25, 2018. On June 26, 2018, the ALJs granted OCA's motion allowing intervenors until September 25, 2018 to submit their direct testimony (Third Prehearing Order, p. 10). The OCA then recommended that the remainder of the procedural schedule be extended so that reply briefs would be filed on April 17, 2019 (OCA Second Prehearing Memo, p. 11). STFC supported an even more extreme extension of the schedule, requesting that reply briefs be due on May 6, 2019 (STFC Second Prehearing Memorandum, Ex. 1). The Company proposed that the original reply brief date of February 28, 2019 be retained (Transource PA Second Prehearing Memo, p. 5). On July 30, 2018, the ALJs issued an order adopting the OCA's recommendation and setting a new reply brief date of April 17, 2019 (Fourth Prehearing Order, p. 14).

On September 25, 2018, the day that other parties' direct testimony was due, STFC filed a motion for thirty additional days to submit direct testimony. Transource PA opposed STFC's request. STFC was given until October 11, 2018 to submit its direct testimony (Fifth Prehearing Order, p. 4).

The Company has met its obligations under the previously approved procedural schedule. The Company filed its rebuttal testimony on November 27, 2018 in accordance with the new

procedural schedule. The items in this rebuttal testimony were in direct response to the over 170 pages of direct testimony provided by other parties and the approximately 1,900 pages of testimony presented at the public input hearings and site visits. On December 13, 2018, STFC filed a motion to extend the deadline for filing surrebuttal testimony by an additional 150 days for a total of 200 days or approximately six and one-half months to prepare surrebuttal testimony.

In the Sixth Prehearing Order, the ALJs granted intervenors an additional fourteen days to submit surrebuttal testimony and extended the rejoinder deadline to February 11, 2019. Pursuant to the current schedule, surrebuttal testimony is due on January 30, 2019. The current schedule provides parties with approximately two months to prepare surrebuttal testimony. This is more than sufficient given the already extended nature of the schedule and the fact that the results of the most recent reanalysis were made publically available following the September 2018 TEAC, or over four months prior to the due date for surrebuttal testimony. Further, STFC raised limited issues in its testimony and did not even address the need for the Project. STFC has not asked a single interrogatory since the Company submitted its rebuttal testimony almost two months ago. The schedule is already much longer than procedural schedules that have been adopted in prior transmission line siting cases before the Commission. No further delay is warranted in this case.

A straightforward implementation of the direction provided in the Sixth Prehearing Order negates any concern that the parties would require additional time to present Surrebuttal testimony regarding reliability violations (or any other issue), as the Order clearly already provided them additional time and clearly limited the scope of any striking of testimony to matters that should have been included in the Company's direct testimony. Moreover, the

rebuttal testimony of Mr. Horger, which was not the subject of the Sixth Prehearing Order, presents the reliability violations that will be addressed by Project 9A in the PJM Whitepaper. Parties were on notice that they would be required to respond to Mr. Horger's testimony and exhibits. Parties have had over 4 months since the September 2018 TEAC to seek discovery regarding the updated TEAC, including the reliability violations that will be resolved by Project 9A. OCA is the only party that sought discovery on this issue. No other party has asked a single discovery question regarding the reliability violations discussed in the September 2018 TEAC. It is disingenuous, to say the least, and in bad faith for parties such as STFC and Citizens to Stop Transource York County to seek additional time to respond to issues regarding the reliability violations that will be resolved by Project 9A when they have not asked a single discovery question or presented any testimony regarding need issues in this proceeding.

In addition, no additional public input hearings are required. As explained above, the scope of the Project has not changed. The Project remains a market efficiency Project. PJM's updated re-evaluation has simply determined that there are additional benefits.

It is essential that the hearing dates not be delayed any further. In order to give parties more time to respond to the September 2018 TEAC reliability violation issue, Transource PA is willing to allow parties to present Surrebuttal testimony on all issues except the reliability violations on January 30, 2019, and to present their Surrebuttal testimony regarding the reliability violation issues on February 11, 2019, provided that Transource PA is permitted to respond to the testimony submitted on February 11, 2019 in rejoinder that is presented orally (or in writing) at the hearings, which is consistent with how rejoinder testimony is provided in many cases. This will give parties approximately 5 months (September 13, 2018 – February 11, 2019) to respond to reliability issues identified by PJM at the September 13, 2018 TEAC. In addition,

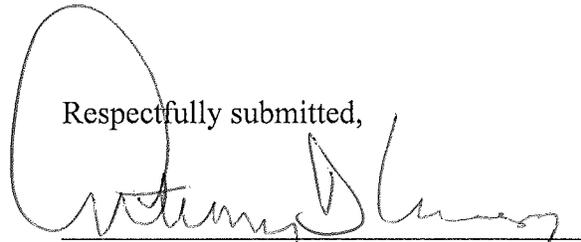
any member of the public that wants to address this issue should submit a statement by February 11, 2019.

Opposing parties have repeatedly sought to delay a ruling in this case, in the apparent hope that the need for the Project will go away. To the contrary, the delay and repeated re-evaluations have only strengthened the need for the Project. Delay cannot continue to be used as a tactic to avoid a decision on the merits. Additional delay harms the Company and the public by delaying the substantial public benefits that will result from the Project.

IV. CONCLUSION

WHEREFORE, Transource Pennsylvania, LLC respectfully requests that Stop Transource Franklin County's Motion to Designate Stricken Testimony be denied, the revised rebuttal testimony of witnesses Herling and Chang as provided as Appendix A hereto be substituted for the rebuttal testimony of witnesses Herling and Chang that were submitted on November 27, 2018, and that all parties be required to submit their Surrebuttal testimony as discussed herein.

Respectfully submitted,



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Date: January 17, 2019

Counsel for Transource Pennsylvania, LLC

Appendix “A”

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application of Transource Pennsylvania, LLC	:	
for approval of the Siting and Construction of	:	Docket No. A-2017-2640195
the 230 kV Transmission Lines Associated	:	Docket No. A-2017-2640200
with the Independence Energy Connection –	:	
East and West Projects in portions of Franklin	:	
and York Counties, Pennsylvania	:	
	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001878
equipment at the Rice Substation in Franklin	:	
County, Pennsylvania is reasonably necessary	:	
for the convenience or welfare of the public	:	
	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001883
equipment at the Furnace Run Substation in	:	
York County, Pennsylvania is reasonably	:	
necessary for the convenience or welfare of the	:	
public	:	
	:	
	:	
Application of Transource Pennsylvania, LLC	:	
for approval to acquire a certain portion of the	:	Docket No. A-2018-3001881, <i>et al.</i>
lands of various landowners in York and	:	
Franklin Counties, Pennsylvania for the siting	:	
and construction of the 230 kV Transmission	:	
Lines associated with the Independence Energy	:	
Connection – East and West Projects as	:	
necessary or proper for the service,	:	
accommodation, convenience or safety of the	:	
public	:	

TRANSOURCE PENNSYLVANIA, LLC

REBUTTAL TESTIMONY OF

STEVEN R. HERLING

STATEMENT NO. 7-R

Date: November 27, 2018

1 **Q. Please state your name and business address.**

2 A. My name is Steven R. Herling. I am Vice President of Planning for PJM Interconnection,
3 L.L.C. (“PJM”). My business address is 2750 Monroe Boulevard, Audubon,
4 Pennsylvania 19403.

5
6 **Q. What are your responsibilities at PJM?**

7 A. As PJM’s Vice President of Planning, I am responsible for the Resource Adequacy
8 Planning Department, which develops the long-term load forecast for the PJM region
9 and, in consultation with load-serving entities (“LSEs”), sets and enforces requirements
10 for the sufficiency, adequacy, and availability of the generation resources needed to
11 ensure reliable service to loads; the Interconnection Projects and Interconnection
12 Analysis Departments, which process requests for and evaluate interconnections to the
13 transmission system by new generation and merchant transmission projects; the
14 Interregional Planning Department, which coordinates planning activities with
15 neighboring transmission systems; and the System Planning Modeling and Support and
16 Transmission Planning Departments, which develop and maintain required analytical
17 models, evaluate the reliability and market efficiency of the transmission grid, and
18 develop the Regional Transmission Expansion Plans (“RTEPs”).

19

20 **Q. Please provide your professional background while at PJM.**

21 A. I have been employed by PJM since May 1990, when I began work as an Engineer in the
22 Operations Planning Department. I was promoted to Senior Engineer in 1993 and to
23 Manager of the System Planning Department in 1994. I then held a number of

1 management positions until I was promoted to Executive Director, System Planning
2 Division in 2003. I was promoted to my current position in May 2004.

3 While at PJM, I have contributed to or led initiatives that resulted in a wide range
4 of milestone achievements in its evolution and growth as a regional transmission
5 organization (“RTO”), including the creation of the RTEP process, the development of
6 procedures and standard terms and conditions for generation and merchant transmission
7 interconnections, the development of the competitive transmission process, and the
8 reliability and adequacy aspects of successive integrations of additional control areas that
9 more than doubled the size of the PJM market area. In addition to my work for PJM, I
10 have contributed to a wide range of activities for the North American Electric Reliability
11 Corporation (“NERC”) and on various regional industry working groups and committees
12 addressing reliability and planning matters.

13 Prior to joining PJM, I worked for the General Public Utilities Corporation
14 (“GPU”) for three years in systems operations, where I was responsible for dispatcher
15 training and certification, operations planning activities and energy management system
16 and operational support tools. Prior to GPU, I worked for the American Electric Power
17 Service Corporation (“AEP”) for eight years in bulk transmission planning. In that
18 position, I performed a range of power system analyses related to the AEP 765 kV
19 transmission system, generator and circuit breaker dynamic modeling and the mechanical
20 behavior of turbine-generator shaft systems.

21
22 **Q. Please describe your educational and professional credentials.**

1 A. I hold a Bachelor of Science in Electric Power Engineering and a Master of Engineering
2 in Electric Power Engineering, both from Rensselaer Polytechnic Institute. I am a
3 licensed Professional Engineer in the state of Ohio.

4
5 **Q. Have your previously provided testimony?**

6 A. Yes. I have testified in transmission line Certificate of Public Convenience and Necessity
7 (“CPCN”) proceedings in Pennsylvania, West Virginia, Virginia and New Jersey. I have
8 also testified on a number of occasions on system planning and reliability issues in
9 proceedings before the Federal Energy Regulatory Commission (“FERC”) and various
10 state commissions and legislative task forces.

11
12 **Q. Have you previously provided Direct Testimony in this proceeding?**

13 A. No. However, as explained below, I am adopting sections of Mr. McGlynn’s testimony,
14 Transource PA Statement No. 3.

15
16 **Q. Please describe the purpose of your Testimony.**

17 A. On December 27, 2017, PJM Witness Paul F. McGlynn submitted Direct Testimony
18 which described PJM and its RTEP process. In particular, Mr. McGlynn discussed the
19 proposed Transource IEC market efficiency project, also known as Project 9A (“Project
20 9A” or “Project”), in the context of the RTEP and the need for the Project to alleviate
21 transmission congestion in eastern PJM.

22 As of February 28, 2018, Mr. McGlynn changed his role within PJM from Senior
23 Director of System Planning to Senior Director of System Operations. As a result, I am

1 adopting Mr. McGlynn's Direct Testimony relative to PJM's regional planning process as
2 my own in this proceeding. Specifically, I am adopting the following sections of Mr.
3 McGlynn's Direct Testimony:

- 4 • Page 8, line 6 through page 16, line 10;
- 5 • Page 32, line 3 through Page 33, line 13.

6 My Rebuttal Testimony responds to the various assertions concerning PJM and
7 the PJM RTEP process relative to Project 9A addressed in Direct Testimonies of
8 Witnesses Geoffrey C. Crandall, Scott Rubin and Peter Lanzalotta on behalf of the
9 Pennsylvania Office of Consumer Advocate ("OCA") and Barron Shaw on behalf of
10 Barron Shaw and Shaw Orchards.

11
12 **Q. Do you have any corrections to Paul McGlynn's Direct Testimony?**

13 A. No.

14
15 **Q. Do you make any changes to Paul McGlynn's recommendation in his Direct**
16 **Testimony?**

17 A. No.

18
19 **Q. Are you sponsoring any exhibits with your Rebuttal Testimony?**

20 A. Yes, I am sponsoring the following:

- 21 • TPA Exhibit No. SRH-1R – PJM value proposition document
- 22 • TPA Exhibit No. SRH-2R –PJM Project 9A re-evaluation results presented at the
23 September 13, 2018 TEAC meeting

- 1 • TPA Exhibit No. SRH-3R - PJM's competitive solicitation planning process
- 2 detailed in the Operating Agreement at Schedule 6 and PJM Manual 14F
- 3 • TPA Exhibit No. SRH-4R – The Company's data request response to OCA IV-24
- 4 • TPA Exhibit No. SRH-5R – PJM Load Forecasting Model Whitepaper (April 27,
- 5 2016)
- 6 • TPA Exhibit No. SRH-6R: PJM Market Efficiency Modeling Practices (February
- 7 2, 2017)

8

9 **Q. What was your role in the development of the Project?**

10 A. In my role as Vice President of Planning, I was responsible for overseeing the RTEP

11 process. This responsibility includes overseeing PJM Planning staff as they developed,

12 reviewed and implemented the assumptions and approved procedures to evaluate the

13 performance of the electric system, including both reliability criteria and market

14 efficiency analyses, that drive the need for the Project. Further, I was responsible for

15 overseeing the conduct of the stakeholder process through which these analyses were

16 reviewed and vetted and through which the ultimate recommendation for the Project was

17 developed. I was also responsible for recommending the Project to the PJM Board of

18 Managers ("PJM Board") for its consideration and approval.

19

20 **Q. Before you begin, please summarize your rebuttal testimony.**

21 A. After reviewing the Direct Testimonies mentioned above and conducting my own review

22 of the facts relative to this matter, I believe that:

- 1 • PJM conducted its FERC-approved planning process for Transource 9A in
2 accordance with its Open Access Transmission Tariff (“Tariff”), Amended and
3 Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating
4 Agreement”), and PJM Business Manuals;
- 5 • The regional planning process followed by PJM brings significant benefits
6 through efficient market operations to its participants, including those participants
7 in Pennsylvania;
- 8 • The Project continues to be needed as a market efficiency project for inclusion in
9 the RTEP;
- 10 • ~~While Project 9A was originally approved as a market efficiency project, it is now~~
11 ~~expected to provide specific reliability benefits because PJM has identified~~
12 ~~potential reliability violations that would be resolved by this Project;~~
- 13 • There is no viable non-transmission alternative to Project 9A.
- 14

15 **Q. How is your testimony organized?**

16 A. My testimony is organized as follows:

- 17 I. Background on PJM and the RTEP process
- 18 II. Roles and Responsibilities of the Parties
- 19 III. The Need for the Project
- 20 IV. Selection of Project 9A
- 21 V. Consideration of Non-Transmission Alternatives

1 **I. PJM RTEP PROCESS**

2 **Q. OCA has disputed PJM’s selection of Project 9A. (OCA St. Nos. 1-3). Please**
3 **discuss PJM’s planning obligations.**

4 A. As part of its ongoing responsibilities as an RTO, PJM is charged by FERC with ensuring
5 the safety, reliability and security of the Bulk Electric System. PJM also seeks, pursuant
6 to its FERC-accepted RTEP process, to improve the efficiency of the transmission system
7 by relieving congestion to enhance competition. As part of its regional planning
8 function, PJM prepares the RTEP each year in order to analyze the electric supply needs
9 of the customers in the PJM region. PJM evaluates the aggregate needs across its system,
10 identifying potential problems on a regional level. Electric reliability problems and
11 system congestion do not consider the boundaries of states or transmission owner service
12 territories; electricity flows over the interconnected facilities without regard for political
13 boundaries. By identifying problems on a regional level, PJM is able to identify regional
14 solutions unconstrained by state and transmission owner boundaries, which offers the
15 opportunity to provide additional benefits beyond simply mitigating violations of bright-
16 line NERC Reliability Standards. As the independent regional planner, PJM is able to
17 satisfy needs of the entire regional system.

18 The RTEP integrates transmission, generation and demand-side resources to
19 address transmission system constraints involving reliability and persistent congestion.
20 The result is a detailed, inclusive and comprehensive process that integrates many system
21 factors.

22 The RTEP directs the installation of transmission projects to address near-term
23 needs within five years or less and assesses long-term transmission options requiring up

1 to a 15-year planning horizon. The RTEP provides forward-looking information as to the
2 state of the supply and delivery infrastructure and identifies future system needs, both in
3 terms of reliability and market efficiency. The RTEP will direct PJM's transmission
4 owner members to address such needs through specific transmission solutions.
5 Additionally, the information publicly disseminated through the RTEP gives other
6 resource providers, including generators, demand response providers and merchant
7 transmission owners the opportunity to address identified system needs in a manner that
8 might delay or even obviate the need for a transmission solution first identified in the
9 RTEP.

10
11 **Q. Mr. Shaw argues in his Direct testimony that PJM has no legal responsibility to**
12 **relieve congestion and further states that Transource 9A is “predicated solely on the**
13 **assumption of an entitlement that is documented nowhere.” (Shaw, 14:2-4 and**
14 **13:17-18). Does PJM have a written protocol for its transmission planning process?**

15 A. Yes. Consistent with principles contained in Orders Nos. 890 and 1000, the FERC-
16 approved protocol is set forth in Schedule 6 of the Operating Agreement, entitled
17 “Regional Transmission Expansion Planning Protocol (“RTEPP”).” The purpose and
18 objective of Schedule 6 is stated as follows:

19 This [RTEPP] shall govern the process by which the Members
20 shall rely upon the Office of the Interconnection to prepare a plan
21 for the enhancement and expansion of the Transmission Facilities
22 in order to meet the demands for firm transmission service, and to
23 support competition, in the PJM Region. The [RTEP] to be

1 developed shall enable the transmission needs in the PJM Region
2 to be met on a reliable, economic and environmentally acceptable
3 basis.

4 This protocol goes on to describe the requirements for the RTEP to (i) conform
5 with NERC and other applicable reliability criteria and evaluate the economic benefits of
6 accelerating or modifying planned reliability-based transmission upgrades or constructing
7 new economic-based transmission enhancements or expansions focused on relieving
8 congestion, (ii) the committee structure to be put in place to provide for stakeholder
9 participation in the development of the RTEP, (iii) the contents of the RTEP, (iv) the
10 procedures used to develop the RTEP, (v) the process of approval of the RTEP by the
11 PJM Board, (vi) the obligation on the part of the transmission owners to build upgrades
12 included in the RTEP and (vii) the treatment of interregional transmission upgrades.

13 In addition to the FERC-approved documents, the planning process is further described in
14 extensive detail in the PJM Business Manuals. The PJM Business Manuals, which are
15 developed through PJM's public stakeholder process, include the technical criteria and
16 procedures used to implement the RTEP. PJM Manual 14B-*PJM Region Transmission*
17 *Planning Process* details the technical assumptions, procedures and protocol used to
18 evaluate electric system performance and identify reliability violations.

19
20 **Q. Please describe PJM's market efficiency planning process.**

21 A. PJM's market efficiency planning process is based upon evaluating the economic benefits
22 of accelerating or modifying planned reliability-based transmission upgrades or
23 constructing new economic-based transmission enhancements or expansions focused on

1 relieving congestion. Transmission congestion occurs when least cost energy cannot be
2 delivered to the consumer because of physical constraints on the electric transmission
3 system. The economic planning protocol was designed to integrate planning for
4 reliability and economics and to holistically identify system conditions, including
5 generation additions and retirements, as well as other contingencies to ensure a robust
6 transmission grid that serves the future needs of load and drives needed investment.

7
8 **Q. Please describe how the market efficiency process used to identify market efficiency**
9 **projects is implemented.**

10 A. For market efficiency planning, PJM uses a 24-month market efficiency process over the
11 15-year planning horizon. The 24-month market efficiency process is made up of two
12 similar 12-month cycles to identify reliability RTEP projects that may be accelerated or
13 modified and one 24-month planning cycle to provide sufficient time for the
14 identification and development of longer lead-time transmission upgrades. The first step
15 in the market efficiency planning process is to develop the set of assumptions that will be
16 used for the subsequent market efficiency analyses. These assumptions are vetted with
17 stakeholders at the Transmission Expansion Advisory Committee (“TEAC”) meetings.
18 Additionally, PJM performs sensitivity analyses and provides the results of the sensitivity
19 studies to the TEAC for informational purposes. Such sensitivity studies require PJM to
20 take into account changes in expected future system conditions including but not limited
21 to, load levels, fuel costs, the level and type of generation, generation patterns (including
22 but not limited to the effects of assumptions regarding generation that is at risk for

1 retirement and new generation to satisfy Public Policy Objectives), demand response and
2 uncertainties arising from estimated times to construct transmission upgrades.

3 As part of the 24-month market efficiency planning cycle, PJM initially develops
4 base cases for years 1, 5, 8, 11, and 15 that are used to evaluate congestion for the long-
5 term planning horizon. Proposed solutions to address market efficiency projected
6 congestion are developed by stakeholders during a four-month proposal window
7 beginning November 1 at the end of the first year of the 24-month planning cycle.
8 During the second year of the 24-month cycle, the base cases used for the long-term
9 analysis during the first year (*i.e.*, now year 0, 4, 7, 10, and 14) will be updated, as
10 appropriate, to reflect the latest assumptions regarding updates in load, generation,
11 demand response, transmission topology, or other input assumptions. Congestion issues
12 identified during the first year are validated and the proposed solutions are evaluated
13 during the second year of the 24-month cycle. An independent consultant is used to
14 develop a cost estimate and evaluate the constructability of proposed solutions. Results
15 from these long-term analyses are reviewed with the TEAC throughout the 24-month
16 planning process, and, ultimately, presented to the PJM Board for approval.

17
18 **Q. OCA Witness Rubin states that Project 9A fails to pass a cost-benefit analysis (OCA**
19 **Rubin, 24:4-7). When was the market efficiency process and the associated cost-**
20 **benefit analysis methodology established?**

21 A. On September 8, 2006, PJM filed a proposed modification to its RTEPP to replace its
22 existing economic planning protocol with a market efficiency process based upon
23 evaluating the economic benefits of accelerating or modifying planned reliability-based

1 transmission upgrades or of constructing new economic-based transmission
2 enhancements or expansions focused on relieving congestion. The FERC modified
3 PJM's initial proposal to base the evaluation on several metrics and directed PJM to file a
4 formulaic approach for selection of economic projects. On October 9, 2007, PJM filed a
5 formulaic approach that proposed to use a benefit/cost ratio. Under the formulaic
6 approach, a project's benefit/cost ratio had to meet a threshold of at least 1.25 to one to
7 be included in the RTEP.

8
9 **Q. Was the benefit determination methodology subsequently modified?**

10 A. Yes. On February 28, 2014, PJM filed proposed changes to its market efficiency benefit
11 determination to, among other things: (i) revise the proportional measurement used to
12 determine the market efficiency benefits for Regional Facilities¹ and Necessary Lower
13 Voltage Facilities;² (ii) revise the benefit metric used for Lower Voltage Facilities;³ and
14 (iii) apply a change to net load payments for Regional Facilities from all zones to zones
15 that benefit, i.e., zones with a decrease in net load payments only. Specifically, PJM
16 proposed to modify the weighting for Regional Facilities and Necessary Lower Voltage
17 Facilities between (i) the change in production cost and change in net load payment (for
18 Energy Benefit) and (ii) change in capacity costs and change in net capacity payments
19 (for Capacity Benefit) from the current 70/30 percent split to a 50/50 percent split.

¹ Regional Facilities are defined to mean transmission enhancements or expansions that, among other things, will operate at or above 500 kV or will be double-circuit 345 kV facilities. *See* PJM Tariff, Schedule 12, section (b)(i)..

² Necessary Lower Voltage Facilities are defined to mean new A.C. transmission facilities or transmission enhancements or expansions to existing facilities that operate below 500 kV (or 345 kV facilities in the case of a Regional Facility) or new D.C. transmission facilities that do not meet the criteria of Schedule 12, section (b)(i)(D) that must be constructed or strengthened to support new Regional Facilities. *See* PJM Tariff, Schedule 12, section (b)(i).

³ Lower Voltage Facilities are defined to mean transmission enhancements or expansions that are not Regional Facilities or Necessary Lower Voltage Facilities. *See* PJM Tariff, Schedule 1, section (b)(ii).

1 **Q. What precipitated the changes?**

2 A. While the 70/30 percent weighting seemed reasonable at the time it was proposed in
3 2007, PJM and its stakeholders found, based on re-evaluation of the proportional
4 measurement used to determine the market efficiency benefits for Regional Facilities and
5 Necessary Lower Voltage Facilities and as a result of the PJM Transmission Owners'
6 changes to the cost allocation methodology for market efficiency projects, a change in the
7 benefit determination for market efficiency projects to a 50/50 split between production
8 cost benefits and direct benefits to load customers was reasonable to (i) better equalize
9 consideration of market efficiency needs due to overall system conditions and direct
10 impact on load customers; and (ii) more closely align identification of economic projects
11 with the Transmission Owners' newly proposed "hybrid approach" cost allocation
12 methodology for Regional and Necessary Lower Voltage Facilities.

13
14 **Q. Did the changes to the benefit metric calculation also apply to Lower Voltage
15 Facilities?**

16 A. Yes. PJM also proposed to modify the benefit metric calculation for Lower Voltage
17 Facilities between the change in production cost and change in net load payment (for
18 Energy Benefit) and change in capacity costs and change in net capacity payments (for
19 Capacity Benefit) from the current 70/30 percent split to 100 percent change in net load
20 payments (for Energy Benefit) and 100 percent change in net capacity payments (for
21 Capacity Benefit). PJM and its stakeholders found this change better addressed the local
22 benefit attributable to Lower Voltage Facilities.

23

1 **Q. Why is it important for market efficiency projects to align with cost allocation**
2 **principles?**

3 A. First, the purpose of the market efficiency process is to ensure that the transmission
4 system is efficient, economical, and equitable. It would not be fair to customers in one
5 area to consistently pay higher prices than others simply because the system's design
6 prevented some customers from accessing the lowest-cost electricity. The market
7 efficiency process identifies these inequities and transmission solutions to mitigate them.
8 It is, however, appropriate that the regions benefitting from the deployment of market
9 efficiency projects are the regions paying for the upgrades.

10

11 **Q. Was this change to the benefit metric calculation vetted through both a PJM**
12 **stakeholder process and a regulatory approval process at FERC?**

13 A. Yes, this benefit metric was highly supported in the PJM stakeholder process and was
14 unopposed in the FERC proceeding where it was approved.

15

16 **Q. Did the OCA have an opportunity to participate in the PJM stakeholder process**
17 **that developed the changes to the benefit metrics?**

18 A. Yes, the OCA is an *ex officio* member of PJM and has voting rights at both the Markets
19 and Reliability Committee (MRC) and Members Committee (MC) as part of the End
20 User Customer Sector. Both the MRC and MC affords all PJM members, including *ex*
21 *officio* members like the OCA, the right to participate in PJM's open, transparent
22 stakeholder process and to vote to approve or reject proposed changes to the planning
23 process such as the one described above. To the extent a party such as the OCA has

1 concerns after the stakeholder process is completed, such party can file comments or a
2 protest at FERC voicing its approval or opposition of the PJM proposal prior to issuance
3 of a FERC order, thereby having the ability to influence FERC's approving or denial of
4 such proposed changes to the PJM Tariff and Operating Agreement relative to
5 transmission planning and ratemaking issues, such as cost allocation.

6
7 **Q. OCA suggests that the Project is not justified because it minimally passed PJM's**
8 **cost/benefit test in September 2017. (OCA St. No. 1, p.21.) Please describe the basis**
9 **for the cost/benefit ratio of 1.25 to 1.0.**

10 **A.** As described above, under PJM's formulaic approach, a project's benefit/cost ratio has to
11 meet a threshold of at least 1.25 to 1.0 to be included in the RTEP. This threshold was
12 initially proposed in PJM's October 2007 Filing. In that filing, PJM stated that
13 stakeholders expressed support for a proposed 1.25 to 1.0 benefit/cost ratio because they
14 believed it appropriately hedged against the uncertainty of estimating benefits in the
15 future, without being so restrictive as to overly limit the economic-based projects that
16 would be eligible for inclusion in the RTEP. This threshold was affirmed in Order
17 No. 1000. Specifically, under Regional Cost Allocation Principle 3, Order No. 1000
18 provided that if a transmission provider determines to use a benefit/cost ratio threshold, it
19 should not exceed 1.25 to 1.0 so as to ensure that transmission facilities with significant
20 positive net benefits that would otherwise be selected in the RTEP for purposes of cost
21 allocation are not excluded from the regional transmission plan. In other words, FERC
22 specifically rejected arguments raised in the Order No. 1000 to select a benefit/cost ratio

1 higher than 1.25 because FERC did not want to exclude projects, such as the Project 9A,
2 which will provide significant benefits to the transmission grid.

3
4 **Q. Was the cost/benefit analysis used by PJM accepted by FERC?**

5 A. Yes. Such changes to how the market efficiency benefits are calculated for Regional
6 Facilities, Necessary Lower Voltage Facilities and Lower Voltage Facilities were
7 accepted by FERC on April 23, 2014 in Docket No. ER14-1394-000 and no party filed
8 for rehearing.

9
10 **Q. How many market efficiency projects has PJM approved since implementing its
11 market efficiency process?**

12 A. The market efficiency process has identified, and the PJM Board has approved, 29
13 market efficiency projects that have reduced system congestion and costs to customers.

14
15 **Q. Does the market efficiency process allow for PJM to ensure that RTEP Projects
16 remain needed as system conditions change?**

17 A. PJM's planning process requires PJM to annually review the costs and benefits of
18 constructing a market efficiency project to assure that such RTEP project continues to be
19 cost beneficial. Such re-evaluation takes into account changing system conditions,
20 including but not limited to changes in load forecasts, market-based solutions such as the
21 addition or retirement of generation resources and demand response, anticipated
22 Merchant Transmission Facilities, as well as changes in customer behaviors related to
23 efficiency or behind the meter generation.

1 **Q. Have any market-based solutions been identified that remove the need for Project**
2 **9A?**

3 A. No, the congestion drivers leading to the selection of Project 9A were posted for
4 stakeholders in 2014 and customers have had over four years to respond to those drivers
5 with market-based solutions that might obviate the need for Project 9A, but have not. In
6 fact, recent market-based activities have exacerbated the need for Project 9A, and have
7 resulted in future violations of reliability criteria should the Project be removed from the
8 RTEP.

9

10 **Q. Can a market efficiency project be needed to resolve both market efficiency and**
11 **reliability issues?**

12 A. Yes. While there is no requirement that a market efficiency project also resolve
13 reliability criteria violations, it is possible that a market efficiency project may also
14 resolve reliability issues. Reliability-driven projects often resolve some level of
15 transmission congestion as a secondary benefit. The planning process also provides for
16 the possibility of multi-driver projects when one transmission project resolves both
17 initially identified reliability criteria violations and market congestion issues. In some
18 cases, such as with Project 9A, market efficiency projects can resolve later identified
19 violations of reliability criteria. In fact, trends that drive congestion, if continued, often
20 result in reliability criteria violations, which is the case in this instance.

21 In addition, even if a market efficiency project does not resolve specific reliability
22 criteria violations, it is incorrect to suggest that a market efficiency project has no
23 reliability benefit.

1 **II. ROLES AND RESPONSIBILITIES OF EACH ENTITY IN THE PLANNING**
2 **AND SITING OF NEW RTEP PROJECTS.**

3 **Q. Parties argue that Project 9A should not be approved because it does not provide**
4 **benefit to Pennsylvania. (OCA St. No. 1, p. 45). Please describe the benefits of**
5 **regional planning versus localized or state-by-state planning.**

6 A. Regional planning by an independent RTO approved by the FERC has been found to be
7 more efficient and cost effective than localized or state-by-state planning. Under a
8 regional transmission plan, transmission facilities are designed to address the needs of a
9 broader region. Regional planning prevents inefficient and overlapping transmission
10 development that can occur when planning is done at a local or state level. Localized
11 planning also can create more congestion rather than relieve congestion. However, the
12 planning of new transmission infrastructure includes separate and distinct responsibilities
13 for PJM, PJM transmission owners and state regulatory entities. Each party plays a
14 significant role in which project best serves the region as a whole.

15

16 **Q. Have the benefits of PJM's operation of an efficient regional grid been quantified?**

17 A. Yes. PJM estimates the annual benefits to PJM members of \$2.8 billion to \$3.1 billion,
18 including annual savings of \$525 million from energy production costs and \$600 million
19 through the integration of more efficient resources. This is further outlined in the PJM
20 value proposition document attached as TPA Exhibit No. SRH-1R.

21

1 **Q. OCA Witness Mr. Rubin argues that PJM's selection of Project 9A should not**
2 **supersede the regulations of the public utility commission. (OCA St. No. 1, pp. 42 –**
3 **43). Please respond.**

4 A. Without weighing into the legal aspect of this question, as a policy matter each party to
5 this proceeding plays a distinct and separate role in the approval of this Project. That
6 said, PJM, as the independent regional planner responsible for identifying the need for
7 this Project, has followed its FERC-accepted planning process, and PJM has determined
8 that the Project is necessary.

9

10 **Q. OCA Witness Lanzalotta states that PJM [assigned] no value to the environmental**
11 **benefits of avoiding impacts of 29 miles of new ROW and new overhead**
12 **transmission lines. (OCA, St. No. 2, 22:9-14). Does that mean no party considered**
13 **such environmental impacts of this Project?**

14 A. No. As described above each party plays a critical role in the review of this RTEP
15 Project. While a range of environmental and other siting factors are considered in PJM's
16 constructability evaluation of the proposed Project for the PJM Region, PJM as the
17 independent RTO approved by FERC cannot favor the interests of one state over another
18 state in the PJM Region. Thus, PJM does not consider state boundaries in developing its
19 regional plans. It considers reliability and congestion issues from a regional perspective,
20 which is the most efficient way to ensure that the wholesale power markets and
21 transmission system are just and reasonable for all participants and do not operate in an
22 unduly discriminatory manner. By identifying problems on a regional level, PJM is able
23 to identify regional solutions unconstrained by state and transmission owner boundaries,

1 which offer the opportunity to provide secondary benefits beyond simply mitigating
2 violations of bright-line NERC Reliability Standards and thereby satisfy needs of the
3 entire regional system.

4
5 **III. THE NEED FOR THE PROJECT**

6 **Q. OCA Witnesses argue there is no need for Project 9A. (OCA St. No. 1, p. 5). What**
7 **are the factors relied upon by PJM to support the need for Project 9A?**

8 A. The AP South interface has experienced significant and persistent congestion in the past,
9 approximately \$800 million from 2012 – 2016 alone. Transource Pa. St. No. 3, p. 25. In
10 addition, forward-looking economic studies continue to show persistent congestion not
11 only for the AP south interface but across the region. Moreover, as explained in more
12 detail below, there would be significant reliability violations if the Project is not
13 constructed. For these reasons, Project 9A is clearly necessary.

14
15 **Q. Has PJM recently updated its evaluation of Project 9A?**

16 A. Yes, PJM re-evaluated the Project and presented the results at its September 13, 2018
17 TEAC meeting. A copy of the results is provided as TPA Exhibit No. SRH-2R.

18
19 **Q. Please explain what PJM determined in its updated evaluation.**

20 A. PJM determined that Project 9A is still necessary and still meets the Benefit/Cost ratio.
21 The revised Benefit/Cost ratio is 1.42. In addition, the Project is estimated to save \$866.2
22 million in congestion costs over 15 years. Subsequently, Transource updated the
23 estimated cost of its portion of Project 9A resulting in a Benefit/Cost ratio of 1.40.

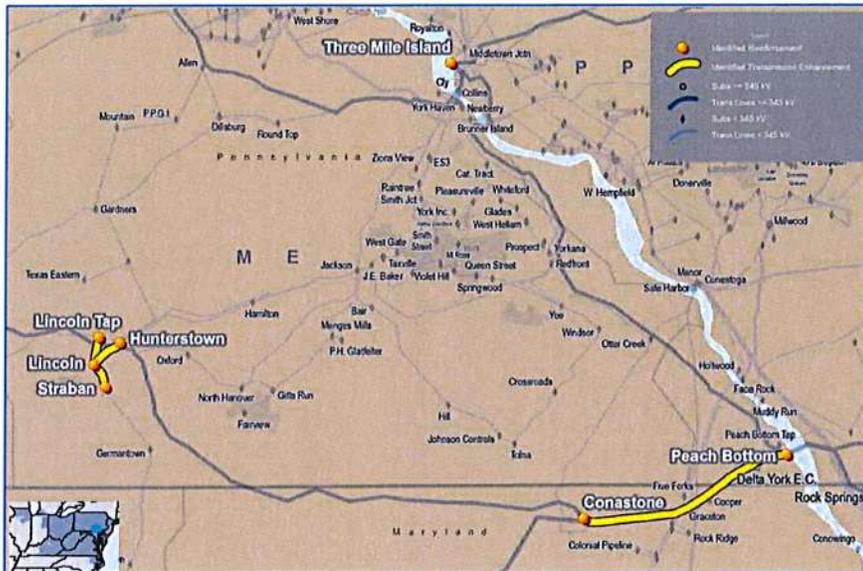
1 Project 9A was originally justified on basis of market efficiency to mitigate congestion.
 2 The latest Benefit Cost ratio re-evaluation - presented at the September 13, 2018 TEAC
 3 meeting - reaffirmed that economic need. Moreover, while reliability is not a driver of
 4 the Project, PJM has identified reliability criteria violations that would result and would
 5 have to be resolved if the Project is not constructed. This is not particularly surprising.
 6 History has shown that RTEP projects justified on the basis of reliability have also shown
 7 economic benefit by mitigating congestion.
 8

9 **Q. What reliability violations would result if the Project is not constructed?**

10 A. **Table No. 1** below lists the single contingency (n-1) thermal criteria violations – as
 11 presented at the September 13, 2018 TEAC – identified by PJM in an RTEP 2023 study
 12 year case generator deliverability analysis without Project 9 in the model. These
 13 violations – shown on **Map No. 1** – could impact both Pennsylvania and Maryland
 14 customers. While Project 9A was originally identified as a market efficiency project to
 15 resolve system congestion, it now clearly provides significant reliability benefits to the
 16 PJM transmission system, including Pennsylvania and Maryland.

17 **Table No. 1:** n-1 Single Contingency Reliability Criteria Violations without Project 9A

Facility Name	Limiting Equipment	Loading
Three Mile Island 500/230 kV Transformer	Transformer	117%
Peach Bottom-Conastone 500 kV Line	Conductor	109%
Hunterstown-Lincoln 115 kV Line	Conductor	123%
Lincoln Tap-Lincoln 115 kV Line	Conductor	120%
Lincoln-Straban 115 kV Line	Conductor	104%



2 **Map No. 1:** n-1 Single Contingency Reliability Criteria Violations – September 2018

3 Analysis without Project 9A (2023 study year)

4

5 **Q. Please describe PJM's generation deliverability test.**

6 A. PJM's generation deliverability testing method is an established means for addressing
 7 system deliverability. The testing method conforms to industry standard. Generation
 8 deliverability ensures that clusters of capacity resources within PJM have sufficient
 9 transmission capability to be delivered to the aggregate of PJM load during circumstances
 10 where the capacity of that cluster of resources is needed due to higher than normal
 11 unavailability of resources elsewhere in PJM. In other words, the generation
 12 deliverability test ensures the ability of the transmission system to deliver energy from
 13 the aggregate of generation in one area to the aggregate of load in another. Based on
 14 PJM's generation deliverability test absent Project 9A, PJM identified the potential
 15 reliability violations described above.

1 **Q. Please explain the role of FERC and NERC in addressing transmission reliability.**

2 A. The Energy Policy Act of 2005 (“EPAAct 2005”) created a mandatory compliance and
3 enforcement regime for reliability standards under the oversight of FERC. Pursuant to
4 EPAAct 2005, FERC has designated NERC as the “Electric Reliability Organization” for
5 the United States and NERC has proposed various reliability standards, most of which
6 have been adopted by FERC for enforcement as FERC rules, with mandatory compliance
7 that began on June 1, 2007. PJM has been applying the NERC reliability standards, and
8 the PJM deliverability standards used to apply them, on a mandatory basis since the
9 initiation of the RTEP process.

10

11 ~~Q. Are any of these reliability standards enforceable through the imposition of~~
12 ~~monetary penalties for non-compliance?~~

13 ~~A. Yes. Penalties for violation of the reliability standards developed by NERC and~~
14 ~~approved by FERC may be as high as \$1 million per violation per day.~~

15

16 **Q. What reliability criteria does PJM evaluate in the development of the RTEP?**

17 A. PJM tests a wide range of reliability criteria in the development of the RTEP. All
18 reliability criteria testing procedures employed in the development of the RTEP include
19 detailed assumptions regarding load levels, transfer levels and generation patterns. The
20 tests are referred to as “bright line” tests because there can be no doubt as to whether the
21 criteria are satisfied or violated. The specific assumptions and requirements associated
22 with each criterion are documented and the analysis procedures are posted on the PJM
23 website.

1 PJM tests for compliance with all reliability criteria imposed through the NERC
2 Planning Standards. NERC Category P0 criteria require that, for all facilities in service,
3 equipment thermal ratings and system voltage limits are respected and that the system is
4 stable. NERC Category P2 and P3 criteria impose similar requirements with one facility
5 removed from service. This is referred to as the “n minus 1” or “n-1” criteria. NERC
6 Category P2, P4, P5 and P6 criteria impose similar requirements with two facilities
7 removed from service and can be referred to as the “n minus 2” or “n-2” criteria. NERC
8 Category P3 and P6 criteria again impose similar requirements with two facilities
9 removed from service, however this analyses permits adjustments to the system dispatch
10 between the removal of the first and the second facility from service. This is referred to
11 as the “n minus 1 minus 1” or “n-1-1” criteria.

12 These criteria ensure that the system continues to remain reliable upon the
13 instantaneous outage of a transmission element. PJM ensures compliance with all
14 Categories of NERC criteria through testing of the PJM system.

15
16 **Q. What would happen if Project 9A is not constructed?**

17 A. If the Project were to be removed from the RTEP, the AP South congestion that Project
18 9A addresses would persist. Market participants would incur congestion charges to
19 control power flowing on constrained transmission facilities, resulting in the potential
20 need for another market efficiency project in future planning cycles. More importantly,
21 PJM would be required to seek solutions to the reliability criteria violations referenced
22 above. NERC Planning Criteria TPL-001-4 and PJM planning criteria require that PJM
23 develop a solution to all identified reliability criteria violations to avoid “reliability

1 consequences". The need to address such criteria violations would be more immediate
2 and pressing, considering the timing of the identified violations and the time required to
3 develop, site, and construct an effective solution.
4

5 **Q. Has PJM estimated the costs to resolve these reliability issues without the Project?**

6 A. No. Should Project 9A be removed from the RTEP, planning process procedures would
7 be followed to identify a solution to resolve the identified reliability criteria violations.
8 In the course of those efforts, cost estimates would be developed for the solution. At this
9 point, we have only completed a subset of a full RTEP analysis, *i.e.*, a "n-1" single
10 contingency thermal analysis under PJM's generator deliverability test. There could be
11 additional reliability violations that would need to be corrected and that would factor into
12 the selection of a solution. However, I note that the analysis identified violations on
13 500 kV facilities. The solutions for n-1 violations on 500 kV facilities are not typically
14 small in scope or cost.
15

16 **Q. You mentioned previously that any additional reliability benefits are included as**
17 **avoided costs in the market efficiency analysis. Are these additional benefits**
18 **included in the current benefit to cost metric of 1.42 for the Project?**

19 A. No, even though the Project is already above the required benefit to cost threshold of 1.25
20 for market efficiency projects, the benefits would be significantly higher if these avoided
21 costs were included. The reliability benefits have not been quantified at this time, and are
22 not necessary to exceed the 1.25 threshold.
23

1 **Q. At the input hearing, a member of the public asserted that other areas have plenty**
2 **of power and are not experiencing blackouts and therefore Project 9A is not**
3 **necessary. (Tr. 1810-11). Is this an appropriate analysis?**

4 A. Experiencing blackouts is **not** the threshold by which the need for a reliability or market
5 efficiency transmission project is justified. PJM plans and operates the system to
6 established NERC, regional and transmission owner reliability criteria to avoid blackouts
7 in the first instance. If the reliability issues identified are not addressed, PJM may need
8 to take action, including system operations such as potential load shedding to address any
9 reliability issues. Such actions are not acceptable permanent solutions.

10

11 **Q. OCA Witness Lanzalotta argues that PJM summer peak load levels have been**
12 **decreasing, which demonstrates that the Project 9A is no longer necessary. (OCA**
13 **St. No. 2, p. 16.) Is Mr. Lanzalotta's analysis correct?**

14 A. This analysis is fundamentally flawed. Market efficiency is a function of many factors,
15 including load forecasts, generation additions and retirements, and a range of economic
16 assumptions such as fuel prices. PJM's market efficiency analysis is also not dependent
17 on one peak hour load of one year. The market efficiency analysis looks at all 8,760
18 hours of a year across a 15-year forward-looking planning horizon. The market
19 efficiency analyses, including recent re-evaluations that have been performed,
20 demonstrate the continuing need for Project 9A.

21

1 **Q. OCA Witness Lanzalotta also cites to a September 2015 U.S. Department of Energy**
2 **Study (DOE Study) regarding electric transmission congestion as support for his**
3 **conclusion that Project 9A is not necessary. (OCA St. No. 2, p. 18.) Please respond.**

4 A. This DOE Study is not relevant to the need for Project 9A. This report is not specific to
5 PJM or the AP South Interface and does not suggest that there is no congestion anywhere.
6 PJM's market efficiency analysis – including that driving the need for Project 9A is based
7 on 15-year forward-looking planning horizon, not historical data. PJM's market
8 efficiency analysis continues to demonstrate that Project 9A is needed.

9

10 **III. SELECTION OF PROJECT 9A**

11 **Q. How many different proposed solutions did PJM evaluate when selecting**
12 **Project 9A?**

13 A. PJM selected Project 9A from 41 competitive project proposals submitted through the
14 2014/2015 Long Term Proposal Window. In accordance with the RTEP process set forth
15 in the Operating Agreement at Schedule 6, PJM conducted a thorough, objective analysis
16 of all proposals that were submitted. PJM selected Project 9A as the more efficient, cost
17 effective overall solution.

18

19 **Q. Please explain the process that PJM undertook in evaluating the proposed solutions.**

20 A. As a result of Order No. 1000, PJM proposed, and the FERC accepted, PJM's
21 competitive solicitation planning process, which is detailed in the Operating Agreement
22 at Schedule 6 and PJM Manual 14F. *See* TPA Exhibit No. SRH-3R. PJM's competitive
23 solicitation planning process is based on a sponsorship model, meaning that PJM must

1 consider only those project proposals as submitted through its competitive proposal
2 windows. All project proposals submitted are reviewed by PJM and presented to the
3 TEAC. The proposals that merit further consideration because they resolve potential
4 reliability criteria violations, market efficiency congestion, and Reliability Pricing Model
5 (RPM) constraints on facilities identified in the Proposal Window Problem Statement
6 published by PJM on its website in accordance with planning (PJM, NERC, SERC, RFC,
7 and Local Transmission Owner criteria) and market efficiency criteria will be studied and
8 evaluated. After consultation with the TEAC, the project proposal found to be the more
9 efficient or cost effective solution will be recommended to the PJM Board for review and
10 approval. Only if PJM determines that none of the project proposals submitted through
11 the competitive proposal window resolves any posted violation or system condition
12 identified in the Problem Statement, may PJM re-evaluate and re-post on its website the
13 unresolved violation(s) or system conditions (provided such re-evaluation and re-posting
14 would not affect PJM's ability to timely address the identified reliability need). If timing
15 is an issue, PJM may propose a project to solve the posted violation or system conditions.
16 While PJM has the ability to modify proposals under its RTEP process in order to
17 enhance their performance, to evaluate certain aspects of proposals in isolation, or to
18 combine aspects of multiple proposals, PJM's sponsorship model does not permit PJM to
19 develop its own standalone solutions unless none of the project proposals submitted
20 through the competitive proposal window resolve the violation or system conditions, and
21 PJM does not have time to open another proposal window. PJM undertook an evaluation
22 of the project proposals submitted through the 2014/2015 Long Term Proposal Window,
23 and properly determined that Project 9A was the more efficient, cost effective proposal to

1 address the system constraints in this area. In addition, PJM also evaluated in this
2 context the possibility of accelerating or expanding the scope of approved reliability-
3 based projects to relieve congestion on the AP South Reactive Interface.

4
5 **Q. OCA Witness Lanzalotta argues that there are viable alternatives to the new Rights**
6 **of Way proposed and that PJM did not evaluate the use of the existing PPL**
7 **transmission towers and rights of way. (OCA, St. No. 2, 20:10-16). Did PJM**
8 **perform an assessment as to the effectiveness of an alternative project using two**
9 **existing rights of way on which PPL has single 230 kV circuits on double circuit**
10 **towers?**

11 A. Yes. As explained in the rebuttal testimony of Company Witness Weber and identified
12 as the “Conceptual Alternative”, PJM modeled a second circuit on both the Furnace Run
13 – Conastone 230 kV circuit towers and the Furnace Run – Graceton 230 kV circuit
14 towers. However, no such proposal was submitted through the 2014/2015 Long Term
15 Proposal Window and, therefore, was not evaluated when Project 9A was chosen. It
16 should be noted that no such proposal was ever raised during the lengthy stakeholder
17 discussions at the PJM TEAC meetings that led to the selection of Project 9A. Rather,
18 the general concept was raised as an alternative during public hearings related to Project
19 9A. Nonetheless, PJM’s analysis of such alternative route showed that the Conceptual
20 Alternative would violate NERC Reliability Standards. Specifically, for the single
21 contingency loss of the Conastone-Peach Bottom 500 kV line, the new Furnace Run –
22 Conastone 230 kV circuit is loaded to 114 percent of its emergency rating and the new
23 Furnace Run – Graceton 230 kV circuit is loaded to 142 percent of its emergency rating.

1 Therefore, even if that route had been proposed through the Proposal Window, it would
2 not have been considered as a viable solution for the market efficiency issues.
3

4 IV. NON-TRANSMISSION ALTERNATIVES

5 **Q. Mr. Crandall argued that PJM did not appropriately consider non-transmission**
6 **alternatives to the Project. (OCA St. No. 3, p. 7.) Is he correct?**

7 A. I disagree with Mr. Crandall's conclusions. As an initial matter, energy efficiency,
8 demand response, renewable resources and distributed energy resources are incorporated
9 into PJM RTEP. (See TPA Exhibit No. SRH-4R (OCA IV-24)). PJM's modeling of
10 these resources is not arbitrary, but is based on defined forecasting methodologies and
11 established practice. PJM does not include speculative projections in its forecast. More
12 specifically, existing non-transmission resources are factored into the base cases as part
13 of the load forecast and include wholesale-connected resources (such as generation)
14 modeled discretely and retail/commercial resources (such as customer behavior driven
15 energy efficiency or behind the meter generation (solar)). Future resources are similarly
16 considered with wholesale-connected resources included discretely based on generation
17 with executed interconnection service agreements.
18

19 Modeling Energy Efficiency

20 With respect to energy efficiency, trends in equipment saturation and efficiency are
21 incorporated into the PJM load forecast model through the use of three end-use variables
22 (heating, cooling, and other). The heating variable uses detail for the following uses:
23 electric furnaces and resistant room space heaters, heat pumps, ground-source heat

1 pumps, secondary heating, and furnace fans. The cooling variable uses detail for the
2 following uses: central air conditioning, heat pumps, ground-source heat pumps, and
3 room air conditioners. The other variable uses detail for the following uses: water
4 heating, electric cooking, refrigerator, second refrigerator, freezer, dishwasher, electric
5 clothes washer, electric clothes dryer, TV sets, lighting, and a miscellaneous electric
6 appliances category. An outside vendor provides the historic and forecast data for the
7 end-use variables, which are drawn from the Energy Information Administration's
8 Annual Energy Outlook. A full description of this methodology is provided in
9 Section IV of the load forecasting whitepaper available here:
10 [\[http://www.pjm.com/~media/library/reports-notice/load-forecast/2016-load-forecast-
whitepaper.ashx\]](http://www.pjm.com/~media/library/reports-notice/load-forecast/2016-load-forecast-
11 whitepaper.ashx) and provided as TPA Exhibit No. SRH-5R.

13 Demand Response

14 A zonal level forecast of each of the DR resource types can be obtained from Table B-7
15 of PJM's Load Forecast Report. Market Efficiency models these products as generation
16 resources in PROMOD. Three PROMOD resource types are defined for each zone, with
17 availability of these resources consistent with the periods of the Limited DR, Extended
18 Summer DR, and Annual DR. Because the available time periods are the same, the Base
19 Capacity DR and Capacity Performance DR are mapped to the Limited DR and Annual
20 DR resource types, respectively. See also Section 2.4, of PJM Market Efficiency
21 Modeling Practices:" [\[https://pjm.com/~media/planning/rtep-dev/market-efficiency/pjm-
market-efficiency-modeling-practices.ashx?la=en\]](https://pjm.com/~media/planning/rtep-dev/market-efficiency/pjm-
22 market-efficiency-modeling-practices.ashx?la=en), which is provided as TPA Exhibit No.
23 SRH-6R.

1 Renewable Energy

2 PJM's RTEP process evaluates each generator interconnection request when it enters
3 PJM's new services queue. A capacity resource powered by a renewable fuel is eligible
4 to participate in PJM capacity auctions to the extent it acquires Capacity Interconnection
5 Rights, regardless of whether or not it is part of a state renewable energy program.

6
7 Distributed Generation

8 PJM develops estimated distributed solar generation values based on historical installed
9 capacity, DC to AC conversion factors, solar insolation, cloud cover, solar panel
10 efficiency degradation due to temperature, and panel tilt angle. Additional description
11 can be found in the following on-line PJM document: "Load Forecasting Model
12 Whitepaper". which is available at: [[http://www.pjm.com/~media/library/reports-
14 notices/load-forecast/2016-load-forecast-whitepaper.ashx](http://www.pjm.com/~media/library/reports-
13 notices/load-forecast/2016-load-forecast-whitepaper.ashx)] and provided as TPA Exhibit
15 No. SRH-5R.

16 **Q. Do you agree with Mr. Crandall's conclusion that non-transmission alternatives**
17 **such as solar and wind to the South and East of AP South eliminate the need for the**
18 **Project?**

19 A. I do not agree. PJM has modeled non-transmission alternatives in its load forecast across
20 PJM, not just to the South and East of AP South. PJM's analysis supports the need for
21 Project 9A. I note that Mr. Crandall did not provide any studies or supporting evidence
22 to actually demonstrate any impact on the Project in comparison to the robust analysis of
23 the impact of potential non-transmission alternatives which PJM has already performed

1 in its planning process including for the Project. Mr. Crandall also seems to focus on
2 purported non-transmission alternatives in Maryland and Virginia but ignores the
3 potential for additional non-transmission alternatives to the north and west of the AP
4 South interface, which will continue to develop through the normal course of market
5 activity in the generation interconnection queue and would further increase congestion.
6 Mr. Crandall's conclusion that the need for Project 9A can be eliminated completely by
7 non-transmission alternatives is unsupported and inaccurate.

8
9 **Q. Are resources related to the achievement of public policy initiatives considered?**

10 A. Resources that are related to the achievement of public policy initiatives that are not
11 committed through agreements or cannot be forecasted based on sales trends are not
12 included, as PJM cannot count on the resource to be placed into service. I would also
13 note that public policy can change with changes in government and unless these policies
14 are supported by law or committed through agreements they can substantially change
15 over time. Such policies will not satisfy the needs of the transmission grid.

16
17 **Q. Mr. Crandall also contends that PJM's preferred solution is to build power lines,
18 not rely on non-transmission alternatives. Please respond.**

19 A. I disagree with his conclusion. PJM is simply carrying out its FERC mandated duty to
20 alleviate congestion on the transmission grid and allow for the many benefits of an
21 efficient regional market to be realized. I do not find Mr. Crandall's conclusions that
22 congestion on the AP South interface will be resolved by non-transmission alternatives to
23 be credible.

1 **Q. Can non-transmission alternatives that have not been built be relied upon to reduce**
2 **congestion in the AP South interface?**

3 A. No. PJM could only evaluate that which was proposed through the 2014/15 Long-Term
4 Window or what was reasonably included in PJM's models and load forecast that were
5 the basis of its analysis. No non-transmission alternatives were proposed. If they had
6 been proposed, PJM would have evaluated them along with all other proposals.

7

8 **Q. Does this conclude your Rebuttal testimony at this time?**

9 A. Yes.

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application of Transource Pennsylvania, LLC	:	
for approval of the Siting and Construction of	:	Docket No. A-2017-2640195
the 230 kV Transmission Lines Associated	:	Docket No. A-2017-2640200
with the Independence Energy Connection –	:	
East and West Projects in portions of Franklin	:	
and York Counties, Pennsylvania	:	
	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001878
equipment at the Rice Substation in Franklin	:	
County, Pennsylvania is reasonably necessary	:	
for the convenience or welfare of the public	:	
	:	
	:	
Petition of Transource Pennsylvania, LLC for a	:	
finding that a building to shelter control	:	Docket No. P-2018-3001883
equipment at the Furnace Run Substation in	:	
York County, Pennsylvania is reasonably	:	
necessary for the convenience or welfare of the	:	
public	:	
	:	
	:	
Application of Transource Pennsylvania, LLC	:	
for approval to acquire a certain portion of the	:	Docket No. A-2018-3001881, <i>et al.</i>
lands of various landowners in York and	:	
Franklin Counties, Pennsylvania for the siting	:	
and construction of the 230 kV Transmission	:	
Lines associated with the Independence Energy	:	
Connection – East and West Projects as	:	
necessary or proper for the service,	:	
accommodation, convenience or safety of the	:	
public	:	

TRANSOURCE PENNSYLVANIA, LLC

REBUTTAL TESTIMONY OF

JUDY CHANG

STATEMENT NO. 10-R

Date: November 27, 2018

1 **Q. Please state your name and business address.**

2 A. My name is Judy Chang. My business address is One Beacon Street, Suite 2600, Boston,
3 MA 02108.

4

5 **Q. By whom are you employed and in what capacity?**

6 A. I am a Principal of The Brattle Group, an economic and finance consulting firm.

7

8 **Q. Please describe your professional and educational background.**

9 A. I have over 20 years of experience in advising energy companies on regulatory and
10 financial issues, including investment decisions in transmission. I have submitted expert
11 testimonies to the U.S. Federal Energy Regulatory Commission, U.S. state and Canadian
12 provincial regulatory authorities on topics related to transmission planning, access, and
13 pricing; resource planning; and power purchase and sale agreements. Relatedly, I have
14 conducted analyses to advise clients on various topics across the energy sector, including
15 evaluating proposed transmission projects, forming or expanding regional electricity
16 markets, approaches to integrating renewable energy onto power systems, and proposed
17 energy and environment policies. I have estimated the economic impacts associated with
18 transmission and renewable energy investments and provided public policy advice to
19 policymakers regarding energy investments. I have presented at a variety of industry
20 conferences and have presented at graduate school seminars on energy and environmental
21 policies at Harvard Law School, Tuft's Fletcher School of Law and Diplomacy, and
22 MIT's Sloan School of Management. I hold a Bachelor of Science in Electrical

1 Engineering and Computer Science from University of California, Davis and a Master of
2 Public Policy from Harvard Kennedy School.

3
4 **Q. What is the purpose of your testimony?**

5 A. I describe the economic benefits associated with the proposed Independence Energy
6 Connection Project (“IEC Project” or “the Project”). Specifically, these benefits include
7 those that the project can provide to electricity customers in Pennsylvania. Further, I
8 estimate the potential employment and economic stimulus impacts associated with the
9 construction of the IEC Project.

10
11 **Q. Please describe the IEC Project.**

12 A. The IEC Project is an electric transmission project that is a component of PJM’s Market
13 Efficiency Project 9A. The project is designed to include approximately 45 miles of new
14 230 kV transmission line, separated into two segments. The western segment will
15 connect from the newly constructed Rice substation located in Franklin County,
16 Pennsylvania to the Ringgold substation in Washington County, Maryland. The eastern
17 segment will connect from another new substation, Furnace Run, in York County,
18 Pennsylvania to the Conastone substation in Harford County, Maryland. The IEC Project
19 includes the construction of two new substations, one at each of the northern ends of the
20 segments in Pennsylvania.

21
22 **Q. Please summarize the findings of your testimony.**

1 A. I present several benefits of the IEC Project that are not considered in PJM's estimate of
2 the benefits of the Project. In the first section of the testimony, I discuss how PJM's
3 estimate of the benefits from the IEC Project is conservatively low, as it only considers
4 one type of benefit—transmission congestion relief—that will be provided by the Project.
5 While PJM's approach is sufficient for the purpose of PJM's market efficiency analysis, I
6 explain that additional economic benefits will accrue to Pennsylvania electricity
7 customers due to the Project. These benefits include: improved reliability of the
8 transmission system and avoided reliability-related transmission costs; enhanced
9 operation of the PJM market; capacity market efficiencies; ~~storm-hardening;~~ and
10 insurance against extreme market conditions and different future policies that would
11 significantly affect the way the electricity grid will be used.

12 The second part of the testimony presents an analysis I conducted to estimate the
13 employment and economic stimulus benefits to the local economies in Franklin and York
14 Counties in Pennsylvania, the rest of the state of Pennsylvania, and in Maryland. That
15 analysis finds that the construction of the IEC Project will support between 74 and 93
16 jobs and generate between \$25.6 million and \$29.6 million in economic activity in
17 Pennsylvania. In addition, the construction of the IEC Project will create between
18 \$530,000 and \$660,000 in tax revenue for state and local governments within
19 Pennsylvania.

20

1 **BENEFITS FROM THE IEC PROJECT FOR PENNSYLVANIA ELECTRICITY**
2 **CUSTOMERS NOT CONSIDERED IN PJM'S ANALYSIS**

3 **Q. Various parties argue that PJM's market efficiency analysis overstates the overall**
4 **benefits of the IEC Project (See OCA St. No. 1, pp. 34, 42; Shaw St. No. 1, pp. 16-**
5 **17). Do you agree with these comments?**

6 A. No. PJM has conducted its market efficiency analysis solely to quantify the benefits
7 associated with relieving transmission congestion in PJM. However, the IEC project will
8 bring other benefits to electricity users across PJM, which PJM's analysis did not
9 consider.

10
11 **Q. Please describe the additional benefits of the Project that you reference in your**
12 **response above.**

13 A. High-voltage transmission infrastructure, like the IEC Project, provides many benefits to
14 the electric power system and the associated electricity customers in the region. The
15 analysis used by PJM to estimate the market efficiency benefit of the Project is focused
16 on only one specific type of benefit—congestion relief in the PJM market. As described
17 in the testimony of PJM Witness Horger, the IEC Project is designed to alleviate
18 congestion on the AP-South constraint. This type of congestion relief is important for the
19 PJM market to continue to function efficiently and provide low-cost power to all
20 electricity customers in its footprint,¹ but it is not the only benefit the IEC Project will
21 deliver to electricity customers in the region.

¹ See Rebuttal Testimony of PJM witness Steven R. Herling, Transource St. No. 7-R.

1 The benefit analysis conducted by PJM is conservative for two reasons. First, the
2 PJM analysis studies the congestion relief provided by the IEC Project only under normal
3 system conditions. This ignores the type of system conditions, such as high load
4 situations and system outages that typically increase transmission congestion and
5 augment the value of a project like the IEC beyond those experienced under normal
6 system conditions. Second, the PJM analysis considers only congestion relief benefits
7 and does not account for the other benefits electricity customers in Pennsylvania will
8 experience due to the construction of the IEC Project.

9
10 **Q. Please explain why the analysis produces conservatively low benefits when PJM**
11 **studies only normal system conditions in determining the congestion relief benefits**
12 **of the IEC Project.**

13 A. The PJM study simulates how much congestion is reduced by the IEC Project under
14 normal system conditions. That means that the PJM simulation does not take into
15 account any transmission outages, both expected and unexpected, or high load conditions
16 driven by weather events, such as heat waves or cold snaps. System conditions, such as a
17 sudden spike in load or outages, can cause congestion that is much higher than what PJM
18 has simulated, often increasing the costs to electricity users. These conditions can occur
19 unexpectedly, and at times in locations where PJM usually does not experience
20 congestion. Transmission investments that reduce congestion, improve the robustness of
21 the transmission system, and increase the efficient use of power generation across the
22 PJM footprint are typically more valuable and beneficial to customers during these
23 system events, that are not accounted for in PJM's analysis of benefits.

1 There have been several recent examples of extreme conditions or events in PJM
2 that can illustrate how system congestion increases under high load or outage conditions;
3 for example the Polar Vortex extreme cold conditions in January 2014 and the Cold Snap
4 in December 2017 and January 2018. During both of these extreme weather and
5 therefore electricity usage events, unusually high load conditions and generation outages
6 caused unusually high congestion on PJM’s system. The elevated levels of congestion on
7 the PJM system cause prices to spike up to abnormally high levels. For example, the
8 service territories of Metropolitan Edison Co. (METED), PECO, and PPL Electric
9 Utilities experienced average day-ahead wholesale electricity prices of \$308/MWh,
10 \$311/MWh, and \$308/MWh, respectively, during the 12 days from January 20–31,
11 2014.² This compares to the average day-ahead price in PJM during the year 2013 prior
12 to the Polar Vortex of \$37.15/MWh.³

13 Day-ahead congestion in the PJM market was \$720 million⁴ in just a few days,
14 from January 20–31, 2014, which represented over 32% of the annual day-ahead
15 congestion for all of 2014.⁵ I understand that the AP-South constraint was the most
16 constrained interface in PJM during that period, accounting for nearly \$285 million of

² Average prices are calculated using the hourly day-ahead zonal prices for METED, PECO, and PPL. Data were sourced from the ABB Velocity Suite.

³ “2013 Annual State of the Market Report for PJM Volume 2: Detailed Analysis”, Monitoring Analytics, LLC, Section 3, p. 60, March 13, 2014.

⁴ “PJM Cold Snap Performance December 28, 2017 to January 7, 2018,” PJM Interconnection, February 26, 2018, p. 25.

⁵ Total day-ahead congestion in PJM during 2014 was \$2,231.3 million. See “2014 State of the Market Report for PJM Volume 2: Detailed Analysis”, Monitoring Analytics, LLC, Chapter 11, p. 389, March 12, 2015.

1 day-ahead congestion during those 12 days.⁶ Similarly, during the 12 days from
2 December 28, 2017 through January 8, 2018, the day-ahead congestion in PJM was \$435
3 million,⁷ or over two-thirds the amount of congestion experienced in the entire first
4 quarter of 2018 (\$641.7 million).⁸ None of these types of events is captured in PJM's
5 congestion relief analysis because the type of analysis conducted by PJM are based only
6 on assumptions that represent normal and anticipated system conditions. Since very large
7 cost savings associated with congestion relief provided by high-voltage transmission lines
8 such as the IEC Project would accumulate during these types of extreme events, PJM's
9 analysis and finding of congestion relief benefits are conservative in nature.

10
11 **Q. Is congestion relief, including those during extreme system conditions, the only**
12 **benefit Pennsylvania electricity customers will receive from the IEC Project?**

13 A. No. In addition to providing congestion relief, the IEC Project will deliver other benefits
14 for electricity customers in Pennsylvania and surrounding regions. In Table 1 below, I
15 list the potential values that the IEC Project is likely to deliver to Pennsylvania electricity
16 users.

⁶ "PJM Cold Snap Performance December 28, 2017 to January 7, 2018," PJM Interconnection, February 26, 2018, p. 26.

⁷ "PJM Cold Snap Performance December 28, 2017 to January 7, 2018," PJM Interconnection, February 26, 2018, p. 25.

⁸ "2018 Quarterly State of the Market Report for PJM: January through March", Monitoring Analytics, LLC, Section 11, p. 501, May 10, 2018.

Table 1: Sample of Benefits Provided by Transmission Infrastructure Projects

Benefit Category	Transmission-Provided Benefit	Accounted for in PJM Analysis of IEC Project
Traditional Production Cost Analysis	<ul style="list-style-type: none"> • Congestion relief under normal system conditions 	✓
Additional Production Cost Analysis	<ul style="list-style-type: none"> • Mitigation of extreme weather/load events and system contingencies • Reduced congestion due to system outages • Reduced transmission system losses 	✗
Reliability Benefits	<ul style="list-style-type: none"> • Avoided or deferred reliability projects 	✗
Capacity Market Benefits	<ul style="list-style-type: none"> • Increased import/export capability between capacity zones in PJM market 	✗
Market Benefits	<ul style="list-style-type: none"> • Enhanced competition in the PJM market • Increased market liquidity 	✗
Storm Hardening	<ul style="list-style-type: none"> • Improved flexibility of the transmission system in cases of damage from severe weather events 	✗
Public Policy / Customer Choice Benefits	<ul style="list-style-type: none"> • Reduced cost of meeting policy and other customers power purchase goals (e.g., increasingly higher levels of renewable energy purchases) 	✗
Insurance Value	<ul style="list-style-type: none"> • Having a robust and flexible transmission system can deliver cost savings or mitigate increases under uncertain market futures 	✗
Benefits Beyond 15-year Time Horizon	<ul style="list-style-type: none"> • Transmission infrastructure provide benefits throughout its entire useful life, which is generally much longer than 15 years 	✗

1 Table 1 above provides a more comprehensive range of potential economic benefits that
2 the IEC Project could provide to Pennsylvania electricity users. For example, the IEC
3 Project, even though it was not approved explicitly for reliability reasons, enhances the
4 reliability of the system and thereby reduces the need for future projects or upgrades to
5 address reliability issues. In its latest evaluation of the benefits of the IEC Project, PJM

1 has found that if the IEC Project were not built, five additional transmission elements
2 would need to be upgraded or enhanced to maintain the continued reliability of the PJM
3 system.⁹ The five elements identified by PJM are entirely or partially located in the state
4 of Pennsylvania. This means that the IEC Project, in addition to providing significant
5 congestion relief and other economic benefits, maintains the reliability of the overall
6 transmission system, including the grid located in Pennsylvania.¹⁰ If the IEC Project
7 were not built, the reliability issues that PJM has identified would need to be addressed
8 through investments in other transmission upgrades or replacements, and the costs of
9 those investments would likely be paid by the electricity customers of the utilities that
10 would have to address the five reliability violations in their service territories. Overall,
11 PJM's identification of these reliability needs in the absence of IEC shows that
12 constructing the IEC Project avoids other reliability transmission projects and thereby
13 saves ratepayers money by doing so. Such avoided reliability costs are true cost savings
14 that have not been considered in PJM's market efficiency analysis.

15 As stated in Table 1, new transmission lines can further produce benefits in the
16 PJM capacity market by increasing the ability to import and export capacity across the
17 capacity zones within PJM's footprint. This can help lower prices in the areas of PJM
18 that have been subject to higher capacity prices, such as the eastern portions of

⁹ "Transource AP-South (2014/15_9A) Project Reevaluation," PJM Transmission Expansion Advisory Committee, September 13, 2018, p. 4.

¹⁰ The five elements are: 1) a transformer at Three Mile Island, 2) a conductor on the Peach Bottom-Conastone 500kV line, 3) a conductor on the Hunterstown-Lincoln 115kV line, 4) a conductor on the Lincoln Tap-Lincoln 115kV line, and 5) a conductor on the Lincoln-Straban 115kV line. The Peach Bottom-Conastone 500kV line is partially located in Maryland. The other 4 elements are located in Pennsylvania.

1 Pennsylvania.¹¹ PJM has recently identified this as an additional benefit of the IEC
2 Project.¹²

3
4 **Q. The PJM analysis of benefits from the IEC Project focuses on the reduction in load**
5 **payments due to congestion relief over the first 15 years of the IEC’s useful life.**
6 **Will the IEC Project stop providing benefits after being in service for 15 years?**

7 A. No. Transmission infrastructure, like the IEC Project, generally has a useful life that is
8 well beyond 50 years¹³ and will continue to provide benefits as long as it is in service.
9 The IEC project will continue to provide congestion relief and other benefits beyond the
10 15 year time horizon studied by PJM. In fact, one of the benefits transmission
11 infrastructure, like the IEC Project, provides electricity customers is its ability to provide
12 reliability and flexibility value far into the future even when future system conditions and
13 regulatory policies for the power sector are uncertain today. Transmission infrastructure,
14 like the IEC Project, provides insurance value against changing system conditions in the
15 future because it has a long useful life and will continue to enhance the flexibility of the
16 electric grid as long as it remains in service.

¹¹ The Philadelphia Electric Co. (PECO) and Metropolitan Edison Co. (METED) areas both experienced higher prices than parts of western Pennsylvania, West Virginia, and Virginia in the capacity auction conducted in May 2017 for the 2020/2021 delivery year. See 2020/2021 RPM Base Residual Auction Results located here: <https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2020-2021-base-residual-auction-report.ashx?la=en>

¹² See “Transource AP-South (2014/15_9A) Project Reevaluation,” PJM Transmission Expansion Advisory Committee, September 13, 2018, p. 5.

¹³ See Rebuttal Testimony of Company Witness Kamran Ali, Transource PA St. No. 2-R.

1 **Q. The Office of Consumer Advocate witness, Mr. Geoffrey C. Crandall, states that the**
2 **addition of energy efficiency, distributed generation (including combined heat and**
3 **power), demand response, and renewable energy resources (“non-transmission**
4 **alternatives”) in Virginia, Maryland, and Washington DC will alleviate congestion**
5 **on the AP-South constraint and reduce the need for the IEC Project.¹⁴ Will adding**
6 **non-transmission alternatives in Virginia, Maryland, and Washington DC provide**
7 **the same benefits as the IEC Project?**

8 **A.** No. The non-transmission alternatives discussed by Mr. Crandall are not able to deliver
9 the full range of benefits that the IEC Project can provide. Non-transmission alternatives,
10 like the resources Mr. Crandall describes, may be able to provide some of the benefits
11 listed in Table 1 in the areas where they are deployed. However, the non-transmission
12 alternatives cannot simultaneously provide all of those benefits across a broader section
13 of the PJM footprint like the IEC Project.

14 For example, as PJM’s analysis shows, the IEC Project provides congestion relief
15 benefits for customers in Virginia, Maryland, and Washington DC, but the Project also
16 provides reliability benefits for electricity customers in Pennsylvania in the form of
17 avoided or deferred reliability investments. Non-transmission alternatives in Virginia,
18 Maryland, and Washington DC may be able to reduce prices in those areas in some of the
19 hours, depending on how they might be deployed and other factors on the system, but
20 they will likely be unable to avoid reliability-related investments in Pennsylvania.

21 In addition, the IEC Project provides insurance value against unforeseen future
22 market conditions, both in the near-term and in the long-term. While non-transmission

¹⁴ OCA St. No. 3, p. 30.

1 alternatives can reduce load when they are activated and can be valuable, they are not
2 likely to provide long-term insurance against unforeseen policies or system conditions in
3 a systematic manner. For instance, the IEC Project will increase grid flexibility and the
4 ability of the PJM transmission system to transfer power between Pennsylvania and
5 Maryland for many decades to come. This flexibility and capability provided by the IEC
6 Project can help the PJM market significantly by helping the operators manage the power
7 transfers under future changes such as generation retirements or additions, shifts in the
8 geographic dispersion of load, or significant changes in fuel prices.

9 As an example, if power prices in the Virginia, Maryland, and Washington DC
10 area decrease due to the installation of renewable energy resources, as Mr. Crandall
11 suggests would be possible, the IEC Project would still provide benefits to Pennsylvania
12 electricity customers by helping PJM manage the intermittent production from these new
13 renewable resources and allow increasing the flows of any such low-cost energy into
14 Pennsylvania. Non-transmission alternatives are local solutions and do not add flexibility
15 to the transmission system like the IEC Project would be able to provide. Therefore, non-
16 transmission alternatives do not always provide the same type of insurance against
17 unforeseen market conditions that the IEC Project can provide.

18 **JOBS AND ECONOMIC STIMULUS IMPACT ANALYSIS FOR THE IEC**
19 **PROJECT**

20 **Q. Various parties argue that the Project does not provide employment or economic**
21 **stimulus value to Pennsylvania (see, e.g., Tr. at pp. 1060, 1075, 1101, 1128, 1135).**
22 **Do you agree with this position?**

1 A. No, I do not agree. In addition to the various benefits from the new transmission
2 facilities outlined above, I have performed a study of employment and economic impacts
3 from the Project.

4
5 **Q. Please summarize the results of the employment and economic impact analysis.**

6 A. Across Pennsylvania and Maryland, I estimate that during the construction phase of the
7 Project, Transource's investment will support the equivalent of between 85 to 112 full-
8 time equivalent years ("FTE-years") of employment,¹⁵ stimulate between \$30.7 million
9 and \$36.8 million of economic activities, and generate between \$690,000 and \$900,000
10 of tax revenues for state and local governments. In Pennsylvania, I estimate that the
11 Project would support between the equivalent of 74 and 93 FTE-years and stimulate
12 between \$25.6 and \$29.6 million of economic activities. In addition, the construction of
13 the IEC Project will create between \$530,000 and \$660,000 in tax revenue for state and
14 local governments within Pennsylvania

15
16 **Q. Please explain how you estimated the employment and economic stimulus impact of
17 the IEC Project.**

18 A. I gathered information about the Project's expenditures from Transource, including how
19 those investment dollars would be spent across materials, equipment, and labor, to
20 estimate the likely economic impact of the Project. Specifically I focused on the labor,

¹⁵ This employment figure includes FTE-years calculated using an economic impact model (IMPLAN) and figures provided by Transource, specifically Company Witness Stephen P. Stein. In the economic impact model used here, one FTE-year is equivalent to 52 weeks of 40 hour per week employment, and a single FTE-year could be one year-long full-time position or multiple part-time positions. Transource's estimates of FTE-years are based on a 50-hour work week, which primarily affects direct jobs.

1 materials, and equipment supplied from within the counties and states analyzed. After
2 gathering the information about the expected investment, an input-output model, called
3 IMpact Analysis for PLANing or IMPLAN, is used to estimate the employment and
4 economic stimulus impact associated with the IEC Project. I have assumed that the
5 investment dollars associated with paying for materials, equipment, and labor that would
6 be procured from outside the localities analyzed would not induce local economic
7 activities. The model reports the economic activities as the value of all goods and
8 services sold throughout the supply chain (such as in the form of sale and resale
9 revenues). Thus, reported economic output refers to the total flow of money that occurs
10 throughout the local economy examined.

11
12 **Q. You stated that the IEC Project is part of PJM Market Efficiency Project 9A. Did**
13 **you quantify the economic impacts of investments other than the IEC Project that**
14 **are part of PJM Project 9A?**

15 A. No, my analysis includes only the investments made by Transource as part of the IEC
16 Project. While I understand that Project 9A also includes additional investments by other
17 utilities, I did not estimate the potential economic impacts from investments other than
18 the IEC Project.

19
20 **Q. Please describe the IMPLAN model and your use of the model.**

21 A. IMPLAN is a well-established industry-standard model used by economists to estimate
22 how an economy responds to a change in expenditures and adjusts in a way that the
23 overall quantity of goods and services produced balances with the quantity consumed

1 across the economy.¹⁶ Input-output models contain detailed relationships between the
2 “outputs” of certain activities across various sectors of the economy (such as constructing
3 new transmission infrastructure), to their required “inputs,” (such as salaries paid to
4 workers, spending on certain materials for the project, and the up-stream processes of
5 producing the necessary materials and equipment that would be used in the project). It is
6 an industry-standard approach to use an input-output model to estimate the impact of
7 infrastructure investments on the various sectors of a state’s or region’s economy. The
8 results that I report in this testimony can be interpreted as the economic activities that
9 take place in the localities analyzed when Transource invests in the IEC Project.

10
11 **Q. What are the economic effects that you estimate using IMPLAN?**

12 A. The impacts that I estimate using the IMPLAN model include: (1) the number of jobs
13 supported in each county or state (measured in full-time-equivalent years or FTE-years);
14 (2) the economic activities associated with the Project (increases in “economic output” as
15 measured in total sales and resale revenues of businesses within the areas analyzed); and
16 (3) the likely state and local tax revenues collected due to the Project during construction.

17 These effects are reported by IMPLAN as direct, indirect, or induced effects.
18 Direct effects represent the changes in employment and economic activities in the
19 industries that directly support the investment. For example, the investment in the IEC
20 Project would include direct spending on design, engineering, and construction services.

¹⁶ The IMPLAN economic impact modeling system is developed and maintained by the IMPLAN Group LLC, which has continued the original work on the system done at the University of Minnesota in close partnership with the U.S. Forest Service’s Land and Management Planning Unit. IMPLAN divides the economy into 440 sectors and allows the user to specify the expenditure allocations associated with a given expansion in demand to all relevant parts of the local economy in order to derive the economic impacts—changes in employment, earnings, and economic output.

1 Indirect effects measure the changes in the supply chain and inter-industry purchases
2 associated with the transmission project, including the upstream activities associated with
3 the construction and manufacturing of the equipment and materials used in the Project.
4 These activities include, for example, the revenues for and the employment associated
5 with the suppliers of transmission equipment and installation supplies, such as concrete.
6 Induced effects represent the increased spending on housing, food, clothing, and other
7 products and services by those directly or indirectly employed in the development and
8 construction of the Project.

9
10 **Q. Which regions did you analyze in your economic impact analysis of the IEC**
11 **Project?**

12 A. I analyzed the economic impact of the IEC Project in four distinct regions: (1) Franklin
13 County, Pennsylvania; (2) York County, Pennsylvania; (3) the remaining part of
14 Pennsylvania (“Rest of PA”), and (4) Maryland.

15
16 **Q. When Transource invests in Maryland for the IEC Project, would there be any spill-**
17 **over effects in Pennsylvania? If so, have you analyzed the cross-regional effects?**

18 A. Yes, when spending occurs in Maryland, there may be spill-over effects into
19 Pennsylvania, and vice versa. I use IMPLAN’s Multi-Regional Input-Output (MRIO)
20 model to estimate the likely economic impact of Transource’s investment in each region
21 separately, which automatically accounts for cross-regional impacts. Even though the
22 investment dollars are provided based on the location of the spending, the model
23 considers the interactions among employment, taxes, trade flows, and other aspects of the

1 local economy such that the results capture the spill-over effects that would occur due to
2 the movements of workers and goods traded across the jurisdictional borders. For
3 example, when using the IMPLAN MRIO model, the investment dollars assumed to be
4 made by Transource in Franklin County, PA would affect the regional economy and may
5 yield indirect and induced effects in the surrounding areas, including York County, PA,
6 other parts of Pennsylvania, and Maryland. Thus, in reporting the estimated economic
7 impact, I pay particular attention to account for the interactions across county and state
8 boundaries.

9
10 **Q. Why did you model Pennsylvania as three regions and Maryland as one region?**

11 A. I modeled the states differently due to the geographic distribution of the proposed project.
12 The IEC Project will include over 37 miles of new transmission line in Pennsylvania and
13 approximately 7.5 miles of new transmission line in Maryland. Since a significant
14 portion of the physical infrastructure will be constructed in Pennsylvania, I separately
15 estimated the economic impact on Franklin and York Counties in Pennsylvania, as well
16 as the rest of Pennsylvania.

17
18 **Q. How did you estimate the investment expenditures associated with the IEC Project?**

19 A. I obtained the investment expenditures by spending category and location from
20 Transource, specifically from Company Witness Stephen P. Stein. Those expenditure
21 data reflect the best estimate of the local spending associated with building the IEC
22 Project. For the purpose of this study, I use only the investments that will be made in the
23 regions of interest: Pennsylvania and Maryland. For example, if Transource plans to

1 purchase materials or equipment from outside the two states, the amount budgeted for
2 that spending is not included in my analysis because I assume that any spending outside
3 of Pennsylvania and Maryland would not affect the economic activities in the two states
4 of my focus. Similarly, any expenditures budgeted to hire workers from outside of the
5 two states is assumed not to contribute toward the economic stimulus impact in the two
6 states. One exception is the budget for paying for out-of-area workers' that will be
7 working within Pennsylvania and Maryland on the construction of the IEC Project. The
8 budgeted amount for lodging and meals for out-of-area works, in the form of "per-diem,"
9 is included in my analysis because I assume that those dollars would likely be spent on
10 lodging and restaurants located in Pennsylvania and Maryland, which in turn contributes
11 toward the local economies. I will explain how I estimated per-diem expenditures
12 following a discussion of the other expenditures.

13
14 **Q. Please summarize the expenditures analyzed in the economic impact analysis.**

15 A. The investment expenditures data were provided by Transource Witness Stephen P. Stein
16 and a high and low estimate are summarized in Table 2 below. The table provides a
17 range of the local investment dollars categorized by the type of spending. Specifically,
18 Table 2 shows the estimated expenditures on materials and services that will be sourced
19 from within the various localities analyzed, taxes paid on materials and services sourced
20 from the local economy, earnings for in-area workers and other payments to local
21 entities, and spending on food and lodging for out-of-area workers (per-diem spend).

1 The direct expenditures on materials and services that Transource expects to spend in the
 2 local economy, as shown in Table 2, exclude my estimates of the state and local taxes.
 3 The estimates of the taxes are shown in row 2 of Table 2.

**Table 2: Estimated Local Project Expenditures in Pennsylvania and Maryland
 Based on Cost Categories**

Cost Category		Low Estimates	High Estimates
Materials and Services	[1]	\$6,928,000	\$8,503,000
Taxes on Materials & Services	[2]	\$26,000	\$36,000
Local Labor Compensation & Other Payments	[3]	\$14,778,000	\$16,632,000
Per Diem Spend	[4]	\$2,107,000	\$2,384,000
Total	[5]	\$23,839,000	\$27,555,000

Note: The expenditures listed in this table include only the portion of total project costs Transource plans to spend locally in Pennsylvania and Maryland. Therefore, the range of \$23.8 to \$27.6 million shown in the table does not represent the total project costs, only the portion that will be spent locally. Values are rounded to the nearest \$1,000.

4 **Q. How did you allocate the Project’s local spending to Pennsylvania and Maryland?**

5 A. The investment amounts shown in Table 2 are allocated to the four regions based on the
 6 proportion of new transmission line miles being built in each region. For example, the
 7 proposed project will build 24.4 miles of new transmission line in Franklin County, PA,
 8 which is 55% of total line miles being constructed. Therefore, 55% of the local
 9 investment is allocated to Franklin County.¹⁷ This allocation of the investment dollars by
 10 line miles is used to represent how spending would affect the local economies due to the
 11 relative amount of spending and the associated structures of the local economies. Table 3
 12 below shows the investment dollars that I estimate Transource would spend for the IEC

¹⁷ For a subset of categories of expenditures, Transource was able to provide more specific estimates of local spend; this is why “Rest of PA” has direct expenditures in Table 3 despite not having any line miles of transmission.

1 Project in Pennsylvania and Maryland based on the high and low estimates provided by
 2 Transource. These investment assumptions are used as input assumptions in the
 3 IMPLAN model.

**Table 3: Summary of IMPLAN Inputs for Analyzing Impacts on Pennsylvania and Maryland
 (in \$thousands)**

Cost Category		Franklin (PA)		York (PA)		Rest of PA		MD		Total	
		Low	High	Low	High	Low	High	Low	High	Low	High
Materials and Services	[1]	\$2,257	\$2,745	\$1,175	\$1,429	\$2,663	\$3,013	\$833	\$1,316	\$6,928	\$8,503
Taxes on Materials & Services	[2]	\$15	\$18	\$7	\$9	N/A	N/A	\$4	\$9	\$26	\$36
Local Labor Compensation & Other Payments	[3]	\$8,085	\$9,099	\$4,208	\$4,736	N/A	N/A	\$2,485	\$2,797	\$14,778	\$16,632
Per Diem Spend	[4]	\$1,152	\$1,305	\$600	\$679	N/A	N/A	\$355	\$400	\$2,107	\$2,384
Total	[5]	\$11,509	\$13,167	\$5,990	\$6,853	\$2,663	\$3,013	\$3,677	\$4,522	\$23,839	\$27,555

Notes: Values are rounded to the nearest \$1,000..

4
 5 **Q. Please explain how you have estimated the taxes from the direct effects associated**
 6 **with the Project investment dollars included in Table 2 and Table 3?**

7 A. I estimated the state and local tax revenues from direct spending on labor and materials
 8 shown in Table 2 and Table 3 using the IMPLAN model. Specifically, the IMPLAN
 9 model contains data and information on the tax rates assessed on the purchases of
 10 materials and services across various sectors of the economy. Thus, I used those data to
 11 estimate the amount of state and local taxes that Transource would likely pay when the
 12 investment dollars are spent on the local purchases of materials and services across the
 13 regions analyzed. The tax rate assumptions contained in the IMPLAN model are not
 14 specific to the construction of new transmission projects like the IEC. Thus, I used the
 15 tax rates typically used for the construction of new highways and streets as a proxy for

1 estimating the local taxes likely to be associated with Transource’s purchases of its
2 project-related materials and services.¹⁸

3 The estimated state and local taxes associated with the purchase of materials and
4 services for the Project are shown in row 2 of Table 2. I estimate that Transource will
5 pay between \$26,000 and \$36,000 in state and local taxes when purchasing local
6 materials and services across Pennsylvania and Maryland. However, additional direct,
7 indirect, and induced tax revenues will materialize. For example, the money spent by
8 Transource to hire local workers and purchase materials or services from local businesses
9 will ripple through the economy, creating additional tax revenue for local and state
10 governments.

11
12 **Q. Please explain how you estimate the “per-diem” expenditures shown in Table 2 and**
13 **Table 3?**

14 A. The food and lodging expenditures (depicted as “per-diem spend”) will have an impact
15 on the local economies where the IEC Project is being constructed. The per-diem
16 expenditures, shown in row 4 of Table 2 and row 4 of Table 3, are based on information
17 taken from the U.S. General Services Administration’s (“GSA”) per-diem rates

¹⁸ It is reasonable to use same tax rates for the construction of new highways and streets as for taxes arising from Transource’s direct expenditures on the IEC because Transource’s estimates of local spending on the IEC Project and highway projects have significant similarities in terms of the sectors of the economy they affect. This means that due to the lack of a specific tax rate that would be applied when purchasing materials and services to build the IEC Project, I have implicitly assumed that the tax rates on the materials and services for the IEC Project are similar to those that would be applied when purchasing the materials and services associated with the construction of new highways and roads. Specifically, I used the level of local taxes that the IMPLAN model estimates for the amount of local IEC Project spending. I used this amount as the estimate of Transource’s local taxes paid when purchasing material and services. The use of this proxy industry applies only to the estimation of direct-effect taxes. The other economic impacts described in this report, including the indirect and induced taxes, are estimated by building a custom industry in IMPLAN based on the specific sectors of the local economy Transource will impact through its investment.

1 designated for Pennsylvania and Maryland. The GSA establishes the per-diem rates for
2 lodging and food to reimburse federal government employees for work-related travel.
3 For fiscal year 2018, which runs from October 2017 through September 2018, the GSA
4 has established a rate of \$93/day for lodging and \$51/day for meals and incidentals as the
5 standard rate for Pennsylvania and Maryland.¹⁹ The salaries of out-of-area workers are
6 not included in this analysis since I assume that all of the salaries for out-of-area workers
7 would be spent outside of Pennsylvania and Maryland. I obtained information from
8 Transource for the estimated number of out-of-areas workers to be employed on the IEC
9 Project during construction. Transource estimates that the out-of-area workers will range
10 between 56 and 64, and that construction will last approximately one year. Therefore, I
11 estimate the amount of per-diem spend as the number of out-of-area workers times 260
12 workdays in the year (five days a week times 52 weeks in the year), times the per-diem
13 rates specified by GSA.

14 I assume that the per-diem paid to out-of-area workers will be spent in the areas
15 where the IEC Project will be constructed. The portion of the per-diem spent on lodging
16 is allocated to the hotels and motels industry, while the portion spent on meals and
17 incidentals is allocated to three food service sectors—food and beverage stores (e.g.,
18 grocery stores), full-service restaurants, and limited-service restaurants.

19
20 **Q. How do the inputs shown in Table 2 influence direct versus indirect and induced**
21 **effects?**

¹⁹ The standard rate for each state applies in all areas where the IEC Project is being constructed. See data provided on GSA's website: <https://www.gsa.gov/travel/plan-book/per-diem-rates>.

1 A. All of the expenditures shown in Table 3 represent local spending and as a result produce
2 direct effects. The indirect and induced effects from expenditures depend on where local
3 business procure materials and services. For example, if Transource purchases certain
4 equipment from a supplier in Pennsylvania, the amount spent for those purchases would
5 be considered local spending; this local spending would contribute to the direct effects of
6 the IEC Project. But if that local supplier does not source all of the equipment sold to
7 Transource locally, that “next layer” of local spending would reduce the level of indirect
8 and induced effects on the economy of Pennsylvania compared to a situation where all of
9 the upstream resources and services were procured locally. As a result, the indirect and
10 induced effects may be lower than the direct effects.

11

12 **Q. How did you estimate what portion of the investment dollars spent locally on**
13 **materials and services would produce indirect effects?**

14 A. For each category of investment in materials and services listed in Table 3 above, I used a
15 combination of default assumptions contained within the IMPLAN model and
16 assumptions provided by Transource as to the amount that likely would be provided by
17 suppliers within the local region studied. These assumptions do not alter the total amount
18 spent locally (which is shown in Table 3 above), they affect only the indirect and induced
19 effects associated with the direct spending.

20 Within the IMPLAN model, the portion of each sector that is procured locally is
21 reflected within the Local Purchase Percentage (“LPP”). The LPP assumptions included
22 in the IMPLAN model incorporate the likely regional impacts of the local direct spending
23 made in each industry sector, and the default LPP percentages in IMPLAN are derived

1 from data from the U.S. Bureau of Economic Analysis, the U.S. Census Bureau, and the
2 analyses of regional trade-flow patterns. For example, an LPP of ten percent results in
3 ten cents of every dollar spent in the modeled region and ninety cents spent elsewhere.

4 I reviewed the LPP for each category of materials and services listed in Table 4
5 with Transource's procurement team to determine if the percentage of locally sourced
6 materials and services is relatively accurate for the IEC Project. For most of the materials
7 and services categories, I retained the default LPP assumptions that are contained in the
8 IMPLAN database. However, for certain categories I adjusted the default LPPs to reflect
9 the Project specific information provided to me by Transource. If Transource knows that
10 a likely vendor of a material or service will procure 100% of inputs from local sources, I
11 reflect that in the input used in IMPLAN. For example, if Transource is planning to hire
12 an environmental consulting firm with offices located in Pennsylvania, I assume that
13 100% of the money spent to hire that firm will be procured in Pennsylvania based on the
14 information provided to me by Transource, whereas IMPLAN's default assumption may
15 be only 68% of expenditures on environmental consulting will be procured locally in
16 Pennsylvania. The percentages of how each spending would be sourced locally for each
17 category of materials and services are presented in Table 4 below.

Table 4: Local Purchase Percentages (LPP) Used in the Modeling

Sector Description		Franklin (PA)	York (PA)	Rest of PA	MD
Sand and Gravel Mining	[1]	11%	32%	N/A	48%
Ready-Mix Concrete	[2]	3%	9%	N/A	58%
Construction of New Roadways	[3]	100%	100%	N/A	100%
Waste Management	[4]	100%	100%	N/A	95%
Spring and Wire Products	[5]	0.01%	5%	N/A	13%
Real Estate	[6]	N/A	N/A	100%	N/A
Architectural and Engineering	[7]	45%	77%	100%	92%
Environmental Consulting	[8]	37%	45%	100%	91%
Legal Services	[9]	N/A	N/A	100%	100%
Food and Beverage Stores	[10]	87%	86%	N/A	99%
Full-Service Restaurants	[11]	73%	72%	N/A	82%
Limited-Service Restaurants	[12]	84%	83%	N/A	90%
Hotels and Motels	[13]	0.02%	0.1%	N/A	2%

Source: IMPLAN’s Regional Social Accounting Matrices adjusted to reflect estimates of local procurement provided by Transource.

1 The local direct investment shown in Table 3 and the LPPs presented in Table 4
2 make up the main inputs used in simulating the effect of the Project-related expenditures
3 on local economies. After these inputs are finalized, the IMPLAN model is used to
4 simulate the economic impacts of the investment dollars spent in each of the regions of
5 interest.

6

7 **Q. Please summarize the results of your analysis.**

8 A. The simulated economic benefits for Franklin County, York County, and the remaining
9 part of Pennsylvania are presented in Table 5. The results are broken into three
10 categories: (1) the number of jobs supported (measured in full-time equivalent years); (2)
11 the amount of economic activity stimulated; and (3) the state and local taxes generated by
12 the Project.

Table 5: Economic Impact of the IEC Transmission Project for Pennsylvania

Impact Type	Franklin County		York County		Rest of Pennsylvania		
	Low	High	Low	High	Low	High	
Jobs Supported (FTE-years)							
Direct Effect	[1]	11	16	6	9	19	21
Indirect Effect	[2]	6	7	4	5	5	6
Induced Effect	[3]	8	12	5	7	10	11
Total Effect	[4]	25	35	15	21	34	37
Economic Activity Simulated (thousands \$)							
Direct Effect	[5]	\$10,700	\$12,200	\$5,600	\$6,400	\$2,700	\$3,000
Indirect Effect	[6]	\$800	\$900	\$700	\$800	\$1,200	\$1,300
Induced Effect	[7]	\$1,100	\$1,600	\$800	\$1,100	\$2,000	\$2,300
Total Effect	[8]	\$12,600	\$14,700	\$7,100	\$8,300	\$5,900	\$6,600
State and Local Taxes (thousands \$)							
Direct Effect	[9]	\$80	\$110	\$40	\$50	\$90	\$110
Indirect Effect	[10]	\$20	\$20	\$20	\$20	\$50	\$50
Induced Effect	[11]	\$70	\$100	\$50	\$70	\$110	\$130
Total Effect	[12]	\$170	\$230	\$110	\$140	\$250	\$290

Notes: Values rounded to the nearest \$100,000 for Economic Activity and nearest \$10,000 for State and Local Taxes. Direct FTE-years include Transource’s estimates, which are based on a 50-hour work week. IMPLAN FTE-year results assume a 40-hour work week.

1 Table 5 shows that the IEC project is expected to support 25 to 35 full-time jobs
2 in Franklin County and between 15 and 21 full-time jobs in York County during
3 construction. The project is expected to stimulate \$12.6 million to \$14.7 million in
4 economic activity within Franklin County, and an additional \$7.1 million to \$8.3 million
5 of economic activity within York County while under construction. The jobs supported
6 and the economic activity stimulated in Franklin and York Counties represent about half
7 of all the job-supported and two-thirds of local economic activity stimulated by the IEC
8 project. As discussed in the previous section, the majority of the jobs supported and
9 economic activity stimulated occur within Franklin and York Counties because the
10 majority of the new transmission line and the two new substations will be constructed in
11 these two counties. Lastly, Table 5 indicates that in Franklin County, the IEC project is

1 expected to generate between \$170,000 and \$230,000 of state and local taxes while under
2 construction. Likewise, in York County, the project is expected to generate between
3 \$110,000 and \$140,000 in state and local taxes.

4 Table 5 also presents the results for the rest of the state of Pennsylvania, outside
5 of Franklin and York Counties. In the remainder of the state, I estimate that the IEC
6 project will support between 34 and 37 FTE-year jobs, stimulate between \$5.9 million
7 and \$6.6 million of economic activities, and generation between \$250,000 and \$290,000
8 of state and local tax revenues. These economic benefits are in addition to the benefits
9 seen in Franklin and York Counties.

10 The sum of Pennsylvania and Maryland economic benefits, which represent the
11 total local economic benefits that I estimate from Transource's investments in the IEC
12 Project, is shown in Table 6.

Table 6: Economic Impact of the IEC Transmission Project for Pennsylvania and Maryland

Impact Type	Pennsylvania		Maryland		Total		
	Low	High	Low	High	Low	High	
Jobs Supported (FTE-years)							
Direct Effect	[1]	36	45	6	7	41	52
Indirect Effect	[2]	16	17	2	5	17	23
Induced Effect	[3]	22	30	4	7	26	37
Total Effect	[4]	74	93	11	19	85	112
Economic Activity Simulated (thousands \$)							
Direct Effect	[5]	\$19,000	\$21,600	\$3,400	\$4,300	\$22,400	\$25,900
Indirect Effect	[6]	\$2,700	\$3,000	\$700	\$1,300	\$3,400	\$4,300
Induced Effect	[7]	\$3,900	\$5,000	\$1,000	\$1,600	\$4,900	\$6,600
Total Effect	[8]	\$25,600	\$29,600	\$5,100	\$7,200	\$30,700	\$36,800
State and Local Taxes (thousands \$)							
Direct Effect	[9]	\$210	\$270	\$70	\$90	\$280	\$360
Indirect Effect	[10]	\$90	\$90	\$30	\$50	\$120	\$140
Induced Effect	[11]	\$230	\$300	\$60	\$100	\$290	\$400
Total Effect	[12]	\$530	\$660	\$160	\$240	\$690	\$900

Notes: Values rounded to the nearest \$100,000 for Economic Activity and nearest \$10,000 for State and Local Taxes. Direct FTE-years include Transource’s estimates, which are based on a 50-hour work week. IMPLAN FTE-year results assume a 40-hour work week.

1 The number of jobs supported by the IEC Project is presented in rows 1–4 of
2 Table 6 above. The results indicate that Transource’s investment in the IEC transmission
3 project would support between 85 and 112 full-time FTE-years during construction, of
4 which 74 to 93 would be in Pennsylvania. Rows 5–8 of Table 6 show that construction
5 of the IEC Project would generate between \$30.7 million and \$36.8 million of economic
6 activity in Pennsylvania and Maryland combined. Of this total, \$25.6 million to \$29.6
7 million would be in the state of Pennsylvania.

8 The overall economic activities stimulated are larger than the total local
9 investment associated with the IEC Project because each dollar spent would have a
10 rippling effect through the economy. For example, a dollar paid to a worker hired to

1 work on the Project may be spent at a restaurant where the worker eats with her family,
2 and then be paid to staff at the restaurant, and later spent on housing by the restaurant
3 staff. This ripple effect of spending throughout the economy creates economic activities
4 larger than the total spending on the Project. As shown in Table 3, Transource is
5 expecting to invest between \$20.2 and \$23 million in Pennsylvania to construct the IEC
6 Project, and I estimate that this investment would stimulate between \$25.6 and \$29.6
7 million of economic activity in Pennsylvania.

8 The last section of Table 6 (rows 9–12) shows the amount of local and state tax
9 revenues that will be collected during the construction of the IEC Project. The results of
10 my analysis indicate that the Project will provide local and state governments in
11 Pennsylvania between \$530,000 and \$660,000 during the construction phase.

12
13 **Q. Does this complete your testimony?**

14 **A.** Yes, it does. If necessary, I will supplement my testimony if and as additional issues
15 arise during the course of this proceeding.

Appendix “B”

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application of Transource Pennsylvania, LLC	:	
for approval of the Siting and Construction of	:	Docket No. A-2017-2640195
the 230 kV Transmission Lines Associated with	:	Docket No. A-2017-2640200
the Independence Energy Connection – East	:	
and West Projects in portions of Franklin and	:	
York Counties, Pennsylvania	:	
	:	
	:	
Petitions of Transource Pennsylvania, LLC for	:	
a finding that a building to shelter control	:	Docket No. P-2018-3001878
equipment at the Rice Substation in Franklin	:	Docket No. P-2018-3001883
County, Pennsylvania and the Furnace Run	:	
Substation in York County, Pennsylvania is	:	
reasonably necessary for the convenience or	:	
welfare of the public	:	
	:	
	:	
Application of Transource Pennsylvania, LLC	:	
for approval to acquire a certain portion of the	:	Docket No. A-2018-3001881, <i>et al.</i>
lands of various landowners in York and	:	
Franklin Counties, Pennsylvania	:	

AFFIDAVIT OF STEVEN R. HERLING

1. I am Steven R. Herling, and I am Vice President of Planning for PJM Interconnection, L.L.C. (“PJM”). My business address is 2750 Monroe Boulevard, Audubon, Pennsylvania 19403.
2. I am providing this affidavit in support of Transource Pennsylvania LLC’s response to Stop Transource Franklin County’s Motion to Strike specific testimony.
3. PJM has analyzed Project 9A on five separate occasions.
4. PJM’s 2016 analysis of Project 9A resulted in a cost/benefit ratio of 2.48. As part of the 2016 RTEP analysis, PJM also evaluated the reliability of the grid absent Project 9A as well as with Project 9A included. The 2016 evaluation revealed that there were no pre-existing identified reliability violations that would be resolved by Project 9A.

5. PJM conducted a second evaluation of Project 9A in September 2017, which resulted in a reduced cost/benefit ratio of 1.30. The reduced cost/benefit ratio indicated to PJM that power flows had decreased. As a result, there was no reason for PJM to conduct a reliability analysis following the second reevaluation.

6. In February 2018, PJM conducted a third evaluation of Project 9A, which resulted in a cost/benefit ratio of 1.32. Another reevaluation was conducted in September 2018. The September, 2018 reevaluation revealed that the cost/benefit ratio had increased since the last reevaluation to 1.42. The increased flows associated with this change suggested to PJM that a reliability analysis should be conducted to identify any potential violations that would exist absent Project 9A. The reliability analysis that PJM conducted in September, 2018 is a subset of the reliability analysis that was initially conducted in 2016. The reliability analysis conducted in 2018 identified specific reliability criteria violations that would result and would have to be resolved if Project 9A is not constructed. These reliability violations did not exist when Project 9A was evaluated in 2016 and did not exist when Transource PA filed its Direct Testimony on December 27, 2017 in this proceeding.

7. This concludes my affidavit, which is true, accurate, and complete to the best of my knowledge, understanding, and belief.

Date: January 9, 2019

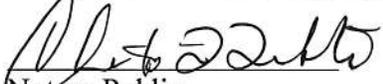


Steven R. Herling

State of Ohio

County of Franklin : ss

AND NOW, this 9th day of January 20 19 before me, the undersigned Notary Public, personally appeared Steven R. Herling, who acknowledged himself to be the Vice President of Planning for PJM Interconnection, L.L.C., and that he, as such Vice President being authorized to do so, executed the foregoing instrument for the purposes therein contained.



Notary Public

My commission expires: N/A



CHRISTINE L. LIBERTO, Attorney At Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date
Sec. 147.03 R.C.



Transource AP-South (2014/15_9A) Project Reevaluation

Transmission Expansion Advisory Committee
September 13, 2018

- History of 9A project
 - Project submitted by Transource during 2014/2015 Regional Transmission Expansion Plan (RTEP) window to relieve AP-South congestion
 - Initial approval benefit/cost ratio May 2016 was 2.48
 - Capital cost \$340.6M used for May 2016, Sep 2017

- Previous Reevaluation Processes
 - Project reevaluated September 2017 - Benefit/Cost ratio: 1.30
 - Project reevaluated February 2018 - Benefit/Cost ratio: 1.32
 - Capital cost \$340.6M used for September 2017, Feb 2018
 - Lower benefit/cost ratios due to reduced load payment benefits

- Latest Reevaluation Process
 - Project reevaluated September 2018 - Benefit/Cost ratio: **1.42**
 - Capital cost \$366.17M



Reevaluation Model Assumptions as of August 31, 2018

- Used the current Market Efficiency Base Case (posted on 09/13/2018)
 - 2023 RTEP case, including all Board approved projects through Feb. 2018
 - Added BGE 5E project

- Model Assumptions as of August 31, 2018
 - Load forecast from 2018 PJM Load Forecast report
 - Latest ABB data release as of April 2018 with gas forecast update as of August 2018
 - Updated uniform generation expansion plan
 - Machine list from 2023 RTEP case
 - Generator status update as of May 2018, retirements as of August 2018
 - MEPETF Manual 14B change effective August 23rd
 - Generator Must Run status based on ABB's feedback and historical 2016-2018 evaluation
 - Reactive limits updated with and without 9A project
 - Updated ARR definitions to match aggregate definitions as defined in the 2018 ARR Allocation
 - Updated interregional modeling



Reliability Violations with 9A Removed

Facility Name	Limiting Equipment (Preliminary)
Three Mile Island 500/230 kV	Transformer
Peach Bottom - Conastone 500 kV	Conductor
Hunterstown - Lincoln 115 kV	Conductor
Lincoln Tap - Lincoln 115 kV	Conductor
Lincoln - Straban 115 kV	Conductor



Conclusion

- The Benefit/Cost ratio for Transource 9A project is 1.42
- According to this latest analysis, the project is estimated to save \$866.2 million in congestion costs over 15 years
- There are significant reliability violations with Transource 9A removed from model
- There are RPM benefits for RTEP year due to BGE CETL increase
 - Difficult to estimate RPM benefits beyond the RTEP year due to lack of data
- Additional report will be available on PJM.com
- October/November TEAC will have reevaluation results of other projects

Appendix “C”

**Application of Transource Pennsylvania, LLC for Approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection – East and West Projects in Portions of York and Franklin Counties, Pennsylvania, et al.
Docket No. A-2017-2640195, et al.**

**Responses of the Office of Consumer Advocate to
Transource’s Interrogatories and
Requests for Production of Documents
SET II**

Transource to OCA-II-7

7. Re OCA Statement No. 2, page 10. Mr. Lanzalotta states on line 20 that there is “no reliability need for the IEC.”
- a) Prior to submitting testimony, did Mr. Lanzalotta review the updated TEAC analysis on Project 9A presented by PJM on September 13, 2018?
 - b) Is Mr. Lanzalotta aware that PJM determined that there would be significant reliability violations if the IEC Project were not constructed? If yes, please explain your position that there is no reliability need?

Answer:

The request selectively quotes from Mr. Lanzalotta’s testimony which states: “Based on the Company’s filed testimony, there is no reliability need for the IEC which PJM says would address congestion on the transmission system.”

- a) Yes.
- b) Mr. Lanzalotta is aware that the documentation provided regarding the updated TEAC analysis makes reference to reliability violations, but is not aware that such violations were identified or characterized as “significant”, or that any analysis of what system reinforcements other than the IEC might be sufficient to remedy these violations. Further, no reliability violations are claimed in the Company’s filing before the Pennsylvania Public Utility Commission.

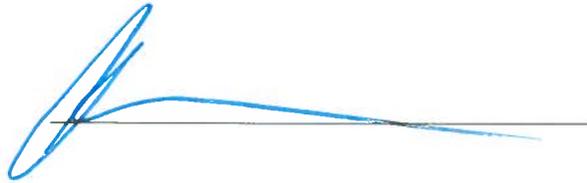
Prepared by: Peter Lanzalotta

VERIFICATION

I, Brian D. Weber, being Vice President, Transource Pennsylvania, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date:

1/17/19



A handwritten signature in blue ink, consisting of a large, stylized initial 'B' followed by a long horizontal stroke, positioned above a thin horizontal line.

CERTIFICATE OF SERVICE

Docket Nos. A-2017-2640195 & A-2017-2640200, et al.

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

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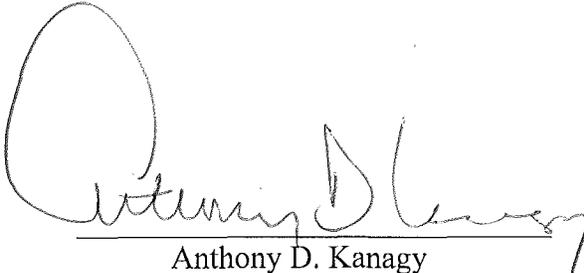
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Date: January 17, 2019



Anthony D. Kanagy