TrAILCo Rejoinder Statement No. 4-RJ
Witness: Scott W. Gass

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

IN RE: APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY FOR (I) A CERTIFICATE OF PUBLIC CONVENIENCE TO OFFER, RENDER, FURNISH AND/OR SUPPLY TRANSMISSION SERVICE IN THE COMMONWEALTH OF PENNSYLVANIA; (II) AUTHORIZATION AND CERTIFICATION TO LOCATE, CONSTRUCT, OPERATE AND MAINTAIN CERTAIN HIGH VOLTAGE ELECTRIC TRANSMISSION LINES AND RELATED ELECTRIC SUBSTATION FACILITIES; (III) AUTHORITY TO EXERCISE THE POWER OF EMINENT DOMAIN FOR THE CONSTRUCTION AND INSTALLATION OF AERIAL ELECTRIC TRANSMISSION FACILITIES ALONG THE PROPOSED TRANSMISSION LINE ROUTES IN PENNSYLVANIA; (IV) APPROVAL OF AN EXEMPTION FROM MUNICIPAL ZONING REGULATION WITH RESPECT TO THE CONSTRUCTION OF BUILDINGS; AND (V) APPROVAL OF CERTAIN RELATED AFFILIATED INTEREST ARRANGEMENTS	**:**	**Docket Nos. A-110172** **A-110172F0002** **A-110172F0003** **A-110172F0004** **G-000721229**

REJOINDER TESTIMONY OF SCOTT W. GASS

Re: Regional Planning Process

March 19, 2008

REJOINDER TESTIMONY OF SCOTT W. GASS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Scott W. Gass and my business address is 15 Shannon Way, Royersford, Pennsylvania.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes. I have filed written Direct Testimony on behalf of Trans-Allegheny Interstate Line Company (“TrAILCo”), which has been designated as TrAILCo Statement No. 4. I also filed written Rebuttal Testimony on behalf of TrAILCo, which has been designated as TrAILCo Statement No. 4-R.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REJOINDER TESTIMONY.

A. This Rejoinder Testimony addresses various assertions contained in surrebuttal testimony from opponents, concerning regional planning. Specifically, my rejoinder addresses surrebuttal filed by Energy Conservation Council ("ECC") witnesses George Loehr in ECC Statement SR-1 and Robert Q. Hanham in ECC Statement SR-2.

Q. WILL THE USE OF VARIOUS TERMS IN YOUR REJOINDER TESTIMONY BE CONSISTENT WITH THE DEFINITIONS ASSIGNED TO THOSE TERMS IN THE TABLE OF NOMENCLATURE ATTACHED TO TRAILCO WITNESS FLITMAN'S DIRECT TESTIMONY AS TRAILCO EXHIBIT DEF-1?

A. Yes. In addition, I may define other specific terms in my rejoinder.

Q. DO YOU AGREE WITH ECC WITNESS HANHAM'S SURREBUTTAL (PAGE 2 LINES 1 THROUGH 5) THAT "CONSUMER DEMAND" IN THE MID-ATLANTIC ("AREAS ALONG THE ATLANTIC SEABOARD FROM THE DISTRICT OF COLUMBIA TO NORTHERN NEW JERSEY") AND NORTHERN VIRGINIA IS THE PRIMARY FACTOR CAUSING "ELECTRICAL NEED FOR THE TRAIL PROJECT"?

A. No, I do not agree. The mid-Atlantic and northern Virginia "consumer demand" is not a primary factor causing the need for the Prexy Facilities which include the 500 kV line between the 502 Junction and Prexy substations. The electrical need for the Pennsylvania 502 Junction Facilities and the remainder of the 502 Junction – Loudoun 500 kV line is driven by load in the mid-Atlantic Region and northern Virginia. The need for the Prexy Facilities and the need for the Pennsylvania 502 Junction Segment are separate and distinct.

Q. DO YOU AGREE WITH ECC WITNESS HANHAM'S SURREBUTTAL (PAGE 3 LINES 7 THROUGH 9) THAT STATES "GASS, HIMSELF, CONFIRMS THAT "LOAD POCKETS" IN THE NORTHERN VIRGINIA AREA (NOT PENNSYLVANIA) DRIVE THE PROJECT."?

A. No, I do not agree. Once again, a distinction has to be made between the "Project," the "Prexy Facilities," and the "Pennsylvania 502 Junction Facilities," the last of which continue through West Virginia and end at Loudoun substation in Virginia. The section of my direct testimony on "load pockets" referenced by Mr. Hanham is specifically related to the need for the Pennsylvania 502 Junction Facilities, not the Prexy Facilities.

Q. ECC WITNESS LOEHR'S SURREBUTTAL (PAGE 22 LINES 17 THROUGH 26) STATES THAT OVERLOADS 1 THROUGH 9 IN EXHIBIT SWG-1 COULD BE ELIMINATED BY USE OF "TRANSMISSION CONSTRAINED DISPATCH." DO YOU AGREE WITH MR. LOEHR'S CONCLUSION?

A. No, I disagree with Mr. Loehr's conclusion. As identified in my direct testimony, overloads 1 through 9 are violations of NERC Standard TPL-002, a copy of which is attached as TrAILCo Exhibit SWG-RJ-1. NERC Standard TPL-002 states that in order to be valid, the assessment shall cover critical system conditions and study years as deemed appropriate by the responsible entity (section R1.3.2). TrAILCo Exhibit-SWG-RJ-2 contains a NERC interpretation of section R1.3.2 of TPL-002 where NERC states that "[t]he selection of the credible critical generation dispatch for modeling of critical system conditions is within the

discretion of the Planning Authority/Transmission Planner." PJM is the Planning Authority and as such applies the PJM Generator and Load Deliverability procedures which provided the critical system conditions that resulted in overloads 1 through 4 and 9 in Exhibit SWG-1. Dominion is the Transmission Planner and as such has developed its own critical system condition, the application of which resulted in overloads 5 through 8. Mr. Loehr's suggestion of applying a "transmission constrained dispatch" to eliminate the overloads is an incorrect application of the Planning Authority and Transmission Planner criteria that have been applied consistently in both the PJM system and the Dominion system for many years.

Let me reiterate that PJM's 2006 RTEP showed an overload on the Mt. Storm-Doubs 500 kV circuit under ***three*** separate planning tests: PJM's load deliverability and generator deliverability tests and Dominion Virginia Power's planning criteria. Additionally, Mt. Storm-Doubs 500 kV was identified as being overloaded for four different contingencies. These results overwhelmingly indicate a reliability problem in 2011 for a number of system conditions and various contingencies. While all these results indicate a reliability problem, the test resulting in the highest % loading on Mt. Storm-Doubs 500 kV was the PJM load deliverability procedure for an outage of either Mt. Storm-Greenland Gap 500 kV (electrical occurrence #1) or Greenland Gap-Meadowbrook 500 kV (electrical occurrence #2). In either contingency, the Mt. Storm-Doubs 500 kV line is loaded to ***106%*** of the emergency rating, or 156 MVA above the 2598

MVA conductor rating, a very significant violation. It is my view that PJM and TrAILCo have effectively demonstrated that serious reliability issues exist affecting major transmission lines, and the Commission should act affirmatively to address them.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes. However, I reserve the right to provide such additional testimony as may be necessary or appropriate.

Standard TPL-002-0 — System Performance Following Loss of a Single BES Element

A. Introduction

1. **Title:** **System Performance Following Loss of a Single Bulk Electric System Element (Category B)**

2. **Number:** TPL-002-0

3. **Purpose:** System simulations and associated assessments are needed periodically to ensure that reliable systems are developed that meet specified performance requirements with sufficient lead time, and continue to be modified or upgraded as necessary to meet present and future system needs.

4. **Applicability:**

   4.1. Planning Authority

   4.2. Transmission Planner

5. **Effective Date:** April 1, 2005

B. Requirements

R1. The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category B of Table I. To be valid, the Planning Authority and Transmission Planner assessments shall:

R1.1. Be made annually.

R1.2. Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.

R1.3. Be supported by a current or past study and/or system simulation testing that addresses each of the following categories,, showing system performance following Category B of Table 1 (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).

R1.3.1. Be performed and evaluated only for those Category B contingencies that would produce the more severe System results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.

R1.3.2. Cover critical system conditions and study years as deemed appropriate by the responsible entity.

R1.3.3. Be conducted annually unless changes to system conditions do not warrant such analyses.

R1.3.4. Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.

R1.3.5. Have all projected firm transfers modeled.

R1.3.6. Be performed and evaluated for selected demand levels over the range of forecast system Demands.

R1.3.7. Demonstrate that system performance meets Category B contingencies.

R1.3.8. Include existing and planned facilities.

R1.3.9. Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.

R1.3.10. Include the effects of existing and planned protection systems, including any backup or redundant systems.

R1.3.11. Include the effects of existing and planned control devices.

R1.3.12. Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.

R1.4. Address any planned upgrades needed to meet the performance requirements of Category B of Table I.

R1.5. Consider all contingencies applicable to Category B.

R2. When System simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-002-0_R1, the Planning Authority and Transmission Planner shall each:

R2.1. Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:

R2.1.1. Including a schedule for implementation.

R2.1.2. Including a discussion of expected required in-service dates of facilities.

R2.1.3. Consider lead times necessary to implement plans.

R2.2. Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.

R3. The Planning Authority and Transmission Planner shall each document the results of its Reliability Assessments and corrective plans and shall annually provide the results to its respective Regional Reliability Organization(s), as required by the Regional Reliability Organization.

C. Measures

M1. The Planning Authority and Transmission Planner shall have a valid assessment and corrective plans as specified in Reliability Standard TPL-002-0_R1 and TPL-002-0_R2.

M2. The Planning Authority and Transmission Planner shall have evidence it reported documentation of results of its reliability assessments and corrective plans per Reliability Standard TPL-002-0_R3.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Compliance Monitor: Regional Reliability Organizations.
Each Compliance Monitor shall report compliance and violations to NERC via the NERC Compliance Reporting Process.

1.2. Compliance Monitoring Period and Reset Timeframe

Annually.

1.3. Data Retention

None specified.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance

2.1. Level 1: Not applicable.

2.2. Level 2: A valid assessment and corrective plan for the longer-term planning horizon is not available.

2.3. Level 3: Not applicable.

2.4. Level 4: A valid assessment and corrective plan for the near-term planning horizon is not available.

E. Regional Differences

1. None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New

Table I. Transmission System Standards — Normal and Emergency Conditions

Category	Contingencies	System Limits or Impacts		
	Initiating Event(s) and Contingency Element(s)	System Stable and both Thermal and Voltage Limits within Applicable Rating [a]	Loss of Demand or Curtailed Firm Transfers	Cascading Outages
A No Contingencies	All Facilities in Service	Yes	No	No
B Event resulting in the loss of a single element.	Single Line Ground (SLG) or 3-Phase (3Ø) Fault, with Normal Clearing: 1. Generator 2. Transmission Circuit 3. Transformer Loss of an Element without a Fault.	Yes Yes Yes Yes	No [b] No [b] No [b] No [b]	No No No No
	Single Pole Block, Normal Clearing[e]: 4. Single Pole (dc) Line	Yes	No[b]	No
C Event(s) resulting in the loss of two or more (multiple) elements.	SLG Fault, with Normal Clearing[e]: 1. Bus Section 2. Breaker (failure or internal Fault)	Yes Yes	Planned/ Controlled[c] Planned/ Controlled[c]	No No
	SLG or 3Ø Fault, with Normal Clearing[e], Manual System Adjustments, followed by another SLG or 3Ø Fault, with Normal Clearing[e]: 3. Category B (B1, B2, B3, or B4) contingency, manual system adjustments, followed by another Category B (B1, B2, B3, or B4) contingency	Yes	Planned/ Controlled[c]	No
	Bipolar Block, with Normal Clearing[e]: 4. Bipolar (dc) Line Fault (non 3Ø), with Normal Clearing[e]: 5. Any two circuits of a multiple circuit towerline[f]	Yes Yes	Planned/ Controlled[c] Planned/ Controlled[c]	No No
	SLG Fault, with Delayed Clearing[e] (stuck breaker or protection system failure): 6. Generator 7. Transformer 8. Transmission Circuit 9. Bus Section	Yes Yes Yes Yes	Planned/ Controlled[c] Planned/ Controlled[c] Planned/ Controlled[c] Planned/ Controlled[c]	No No No No

D[d] Extreme event resulting in two or more (multiple) elements removed or Cascading out of service	3Ø Fault, with Delayed Clearing[e] (stuck breaker or protection system failure): 1. Generator 2. Transmission Circuit 3. Transformer 4. Bus Section 3Ø Fault, with Normal Clearing[e]: 5. Breaker (failure or internal Fault) 6. Loss of towerline with three or more circuits 7. All transmission lines on a common right-of way 8. Loss of a substation (one voltage level plus transformers) 9. Loss of a switching station (one voltage level plus transformers) 10. Loss of all generating units at a station 11. Loss of a large Load or major Load center 12. Failure of a fully redundant Special Protection System (or remedial action scheme) to operate when required 13. Operation, partial operation, or misoperation of a fully redundant Special Protection System (or Remedial Action Scheme) in response to an event or abnormal system condition for which it was not intended to operate 14. Impact of severe power swings or oscillations from Disturbances in another Regional Reliability Organization.	Evaluate for risks and consequences. ▪ May involve substantial loss of customer Demand and generation in a widespread area or areas. ▪ Portions or all of the interconnected systems may or may not achieve a new, stable operating point. ▪ Evaluation of these events may require joint studies with neighboring systems.

a) Applicable rating refers to the applicable Normal and Emergency facility thermal Rating or system voltage limit as determined and consistently applied by the system or facility owner. Applicable Ratings may include Emergency Ratings applicable for short durations as required to permit operating steps necessary to maintain system control. All Ratings must be established consistent with applicable NERC Reliability Standards addressing Facility Ratings.

b) Planned or controlled interruption of electric supply to radial customers or some local Network customers, connected to or supplied by the Faulted element or by the affected area, may occur in certain areas without impacting the overall reliability of the interconnected transmission systems. To prepare for the next contingency, system adjustments are permitted, including curtailments of contracted Firm (non-recallable reserved) electric power Transfers.

c) Depending on system design and expected system impacts, the controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted Firm (non-recallable reserved) electric power Transfers may be necessary to maintain the overall reliability of the interconnected transmission systems.

d) A number of extreme contingencies that are listed under Category D and judged to be critical by the transmission planning entity(ies) will be selected for evaluation. It is not expected that all possible facility outages under each listed contingency of Category D will be evaluated.

e) Normal clearing is when the protection system operates as designed and the Fault is cleared in the time normally expected with proper functioning of the installed protection systems. Delayed clearing of a Fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer, and not because of an intentional design delay.

f) System assessments may exclude these events where multiple circuit towers are used over short distances (e.g., station entrance, river crossings) in accordance with Regional exemption criteria.

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Interpretation of TPL-002-0 Requirements R1.3.2 and Requirement R1.3.12 and the identical requirements (Requirements R1.3.2 and Requirement R1.3.12) in TPL-003-0 for MISO

Request for Interpretation received from MISO on August 9:

MISO asks if the TPL standards require that any specific dispatch be applied, other than one that is representative of supply of firm demand and transmission service commitments, in the modeling of system contingencies specified in Table 1 in the TPL standards.

MISO then asks if a variety of possible dispatch patterns should be included in planning analyses including a probabilistically based dispatch that is representative of generation deficiency scenarios, would it be an appropriate application of the TPL standard to apply the transmission contingency conditions in Category B of Table 1 to these possible dispatch pattern.

R1.3.2	Cover critical system conditions and study years as deemed appropriate by the responsible entity.

The following interpretation of TPL-002-0 and TPL-003-0 R1.3.2 was developed by the NERC Planning Committee on September 12, 2007:

TPL-002 and TPL-003 do not specify the process for selection of the credible critical generation dispatch for modeling of critical system conditions. The selection of the credible critical generation dispatch for modeling of critical system conditions is within the discretion of the Planning Authority/Transmission Planner.

Request for Interpretation of TPL-002-0 and TPL-003-0 Requirement R1.3.12 received from MISO on August 9:

MISO asks if the term "planned outages" means only already known/scheduled planned outages that may continue into the planning horizon, or does it include potential planned outages not yet scheduled that may occur at those demand levels for which planned (including maintenance) outages are performed?

If the requirement does include not yet scheduled but potential planned outages that could occur in the planning horizon, is the following a proper interpretation of this provision?

> *The system is adequately planned and in accordance with the standard if, in order for a system operator to potentially schedule such a planned outage on the future planned system, planning studies show that a system adjustment (load shed, re-dispatch of generating units in the interconnection, or system reconfiguration) would be required concurrent with taking such a planned outage in order to prepare for a Category B contingency (single element forced out of service)? In other words, should the system in effect be planned to be operated as for a Category C3 n-2 event, even though the first event is a planned base condition?*

If the requirement is intended to mean only known and scheduled planned outages that will occur or may continue into the planning horizon, is this interpretation consistent with the original interpretation by

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NERC of the standard as provided by NERC in response to industry questions in the Phase I development of this standard1?

R1.3.12	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.

The interpretation of TPL-002-0 and TPL-003-0 Requirement R1.3.12 was developed by the NERC Planning Committee on September 12, 2007

TPL-002-0 and TPL-003-0 explicitly provide that the inclusion of planned (including maintenance) outages of any bulk electric equipment at demand levels for which the planned outages are performed are within the discretion of the Planning Authority/Transmission Planner.