

September 9, 2010

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Rosemary Chiavetta, Secretary
Pennsylvania Utility Commission
Commonwealth Keystone Building
400 North Street, Second Floor
Harrisburg, PA 17120

2010 SEP 13 AM 10:45
PA P.U.C.
SECRETARY'S BUREAU

Reference: John R. Starzmann v. PECO Energy Company
PUC Docket No. C-2010-2192759

Dear Ms. Chiavetta:

The following comments are offered on the NEW MATTER OF RESPONDENT that was provided in Ms. Tishekia Williams/PECO's 9/01/2010 documents:

The background voltage information from an incident in the 1980's was provided to assist PECO in their review of power system disturbances that affect the voltage at my residence. The voltage in the earlier incident (post January 1984) was also a sustained 50% of nominal (65 volts were measure on my 120 volt system). A common issue to the 5/24/10 voltage event is that the grid design allowed a similar sustained under voltage (an hour or longer, not seconds or minutes) with a similar voltage (50% of rated). While PECO "specifically denies that Complainant notified a PECO engineer in the 1980's of a voltage problem that was not fixed and resurfaced 25 years later", PECO's position suggests that they accept no culpability for, and no interest in, determining the source and permanently resolving the low voltage issues that are reported. PECO should review the one-line and three-line electrical diagrams of the transmission and distribution system. A review of these circuits should provide PECO with a clue as to why there was a sustained low voltage at my residence, and most likely, on the distribution line on London Tract Road. A key may be the fact that the sustained voltage is one-half, which may suggest a transformer turns ratio issue; perhaps a result of a single phase condition or lost neutral.

Concurrent with a design review to determine scenarios during which the distribution system could sustain a prolonged undervoltage, PECO should review and provide the Commission with a list of equipment on the system, including the age, equipment average life, maintenance, and forced and planned outage report records, so that it may be determined if worn out or obsolete equipment, or insufficient maintenance, may be resulting in the reliability issues. A list of equipment and associated ages, in conjunction with a three-line diagram that includes impedances, may determine the scenarios that cause the one-half voltage issues. If the only protections for the low voltage condition are switch and fuse equipment, the installed switch and fuse equipment is not sufficient to provide voltage protection (fuses are primarily over current devices). Modern electrical

distribution systems utilize vacuum or SF6 switchgear or circuit breakers, and multipurpose relays, to provide over current protection and line protection for various conditions, including low voltage, over voltage, under frequency, phase sequence, etc. Multifunction relays also provide data acquisition.

Pacific Gas and Electric Company in California, for instance, use various techniques to anticipate and prevent forced outages. Corona detection in generator windings, gas in oil sampling in transformers and oil circuit breakers, statistical failure data both in house and through utility forums, are among those techniques that can be useful to predict imminent failures, mandate preventive action, initiate the purchase of new replacement equipment, and increase system reliability. In a proactive approach to system reliability, SF6 or vacuum breakers are replacing oil breakers; line post insulators are replacing cap and pin insulators.

PECO should evaluate the use of cap and pin insulators in our service area. In California a cap and pin replacement program was initiated to improve reliability. If a PECO burnt 3-phase tap was the source of the 5/24/10 extended low voltage condition, PECO should evaluate if a failed cap and pin insulator may also result in a prolonged low voltage condition where adequate relaying and circuit protective devices are not installed to isolate low voltage (and potentially other adverse) conditions that can damage equipment or pose a safety concern. Equipment should be monitored and older equipment replaced. Outages should be anticipated and minimized.

On the procedural side, review of the low voltage incident should include a review of temporary maintenance switching during equipment repair or replacement that may result in one-half voltage being distributed. A thorough review of operation procedures in conjunction with system diagrams, should confirm through analysis if systems maintenance work may be temporarily affecting voltage, or identify equipment and modes of failure that cause the voltage issues. System line repair procedures may need to be reviewed and revised to prevent future sustained low voltage occurrences due to repair or replacement. New equipment may be required to prevent future low voltage occurrences.

PECO should provide the Commission with the call log into the 1-800-841-4141 so that a review of the dates and times, and the root cause analysis of the issues that initiated the call from 610-274-8330, can be reviewed. While the majority of the calls from 610-274-8330 were a result of no power (no voltage; line tripped), there were several calls initiated because of one-half voltage. If the system call-in report system cannot provide this information, the system should be modified to provide the information.

In the 1980's, electro-mechanical single function relays were common. In today's modern distribution systems, multifunction electronic relays (SEL and GE/Multilin are two popular manufacturers) not only provide sensing to trip switchgear or circuit breakers to limit system disturbances, but they also provide fault and system condition (voltage, current, frequency, phase sequence, timeline) information. SCADA also provides similar data.

The 1980 incident was offered in good faith to assist PECO with a review of their distribution system. If the 1980's incident had been adequately reviewed, analyzed, and resolved with equipment installed (or procedures implemented) to prevent a similar adverse condition, the incident may have been avoided or at least better understood by PECO in 2010.

Review of PECO's equipment (including age and failure rate), forced outage reports, mode of failure, etc. may find a common thread between similar outages. A detailed outage report review commencing with 1984 may in fact, discover that there were indeed equipment failures or unplanned outages during which the circuit was not protected from the adverse voltage condition and identify that upgrading the system is overdue.

The following comments are offered on the ANSWER & NEW MATTER OF RESPONDENT, PECO ENERGY COMPANY that was provided in Ms. Tishekia Williams/PECO's 9/01/2010 documents:

Until one-line and three-line diagrams, including circuit impedances, are reviewed so that the distribution system can be evaluated, one cannot conclude that "there is too long of a period in between without incident to argue that the events are related". The Complainant does not maintain that he has had a continuous voltage issue leading into 2010. He does attest that there was a similar voltage condition in the 1980's; a condition similar to that which was reported on 5/24/10. Regardless, the 5/24/10 sustained low voltage condition should have been prevented and PECO should have instrumentation, relays, and switchgear or circuit breakers in place to either transfer to a separate circuit that had reliable power, or should have tripped the service to the residence. Required equipment was not in place as evident that the circuit neither transferred nor tripped from the burnt 3-phase tap on 5/24/10.

The writer's only recent low voltage complaint was regarding the 5/24/10 incident. There were references in the PECO document regarding June 11, 2010 and June 1, 2010 issues, but the writer (Complainant) was not aware of, nor did he report, a power quality issue on those June dates. The writer did eventually tender a formal written complaint to the Commission, only after not having been able to resolve the issue directly with PECO. After the first written request to PECO that included my name and telephone number, PECO closed the complaint because they could not locate me. A duplicate complaint regarding the same 5/24/10 issue was acknowledged but later closed out; the writer was advised to call 1-800-841-4141 if information were needed. The writer suggested in his complaint that PECO's lack of response was totally unacceptable. Only after writing the Commission with the complaint, did the writer have an informative discussion with Russ Brocato (sp?) who provided information (from a line operations point of view) on 5/24/10 events. There has only been one recent voltage event that the writer reported: the

5/24/10 event, and therefore it is not clear why PECO has responded "Complainant also has not reported any voltage concerns to PECO since June 11, 2020".

The writer requests that substantial PECO procedural changes be incorporated and evaluated by the Commission to up-grade customer service. Rate increases should be contingent upon satisfactory implementation of PECO customer service as well as an up-grade in system design and equipment that would increase grid reliability.

"PECO avers that the relief measures requested, based on two events that were quickly and permanently remedied, are not warranted." A 50% under voltage condition that was sustained for more than one hour neither is considered "quickly" by national standards (including IEEE and ANSI) nor is it considered "quickly" by the writer. Motors energized at one-half voltage for sustained periods are specifically prone to damage.

There have been additional one-half voltage experiences that the writer has not reported in the subject complaint. These other sustained low voltage experiences were reported to PECO through 1-800-841-4141 together with the typical reporting of no voltage, line tripped incidences.

"PECO notes that Complainant claims to have used his own voltage recording device to arrive at his conclusion that his voltage was low. However, Complainant refused to allow PECO to place its own voltage recording device at the property. Without allowing PECO to perform its own investigation, using its equipment that is regularly calibrated, PECO cannot be certain that Complainant sustained the low voltage he claims. PECO will be happy to thoroughly investigate Complainant's voltage concerns if he allows PECO to perform its investigation according to established procedures, which includes setting a PECO voltage recorder at the meter."

In a brief conversation with PECO when called to be informed that PECO was proposing that a recording voltage meter be installed, the writer suggested that it would not matter if the voltage meter were installed today, or tomorrow, or yesterday ... on days that he did not have a low voltage ...but that the recording voltage meter would have needed to have been installed on 5/24/10 when there was a voltage issue. The writer also commented that if the recording meter were to be installed, that he wanted to be present and to be called before installing the meter. If the recording meter would be installed at the writer's meter box, he would need to assist the installer with access similar to the assistance provided when the new meter was installed.

The writer subsequently had a phone call from Russ Brocato (sp?). I advised Mr. Brocato that the voltage event was not in August as he had understood, but extended back to 5/24/10. He asked to have time to do additional research. He called back a few hours later, providing a few general details and mentioned a phase B flashover. Mr. Brocato indicated that there were several operating and line issues on the morning of 5/24/10. From Mr. Brocato's review of the PECO problem reports, Mr. Brocato was satisfied (in the writer's opinion from Mr. Brocato's operations or trouble shooting point of view) that there was enough going on the morning of 5/24/10 that in fact he would not have been

surprised if I had an issue. I received another phone call from Mr. Brocato, who had been contacted from headquarters regarding my complaint, and I clarified that I had spoken to no additional PECO representative subsequent to our two phone discussions, nor had I issued an additional complaint subsequent to our two phone discussions. On the Friday that PECO had scheduled to install the recording voltage meter, I called Mr. Brocato and left a message on his phone late in the morning that I had waited for someone from PECO to call to inform what time the meter would be installed, but that I had to leave the house for a few hours and would be back by 1 PM. I returned home to have the following message from Mr. Brocato: "Hey Mr. Starzmann. Sorry I missed your call. Russ Brocato. I closed that job out as soon as I found out the explanation for the voltage situation at your house. I closed that job out. There is no need for me to come out there to set a voltage recording meter. I am in agreement with you there so there will not be anybody out there and we will see what happens next time. Thanks a lot."

The writer would emphasize to the Commission that Russ Brocato was the one highlight in this entire scenario. Russ communicated on a timely basis, was professional and courteous, and appeared knowledgeable for a lineman or supervisor responsible for daily operations on the sections in distribution lines that were in question. However the writer anticipates that the voltage issue is systemic of larger design and equipment issues. The Complainant did not refuse to allow PECO to place its own voltage recording device at the property.

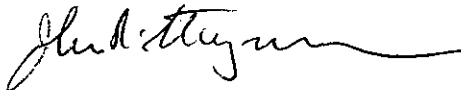
The Complainant is a current Registered Professional Engineer (Electrical, Delaware) who was as an engineer for GE for nine years in various positions associated with electrical power distribution and was employed as a Senior Quality Engineer by Pacific Gas and Electric Company for 31 years. The Complainant is a graduate from the University of Delaware (Engineering).

At the bottom of page 2 and beginning of page 3 in Ms. Tishekia Williams/PECO's 9/01/2010 document there is question of the accuracy of the Complainant's volt meter. Having been employed as a Senior Quality Engineer with Pacific Gas and Electric Company for 31 years, the writer appreciates the suggestion that his voltmeter may have not been included on a calibration schedule (it was not). The PECO SCADA, substation meters, and multifunction instrumentation on the PECO system should be calibrated and should provide the Commission with calibrated voltage and time parameters. PECO should provide 5/24/10 calibrated information from SCADA and relays to the Commission. If the equipment was not installed, they should be. The calibration accuracy of the Complainant's meter is not an issue since it is not relevant if 59 Volts or 71 Volts were actually fed to the panelboard circuits that should have been 120 Volts. For the record, when new, the Amprobe AM-1 had an AC accuracy of +/- 4% of full scale. Review of the system and outage details will demonstrate why and how the one-half voltage was applied to the residence. Hopefully PECO and the Commission can move forward and get to the system design and equipment inadequacies that most likely caused the sustained low voltage. It should be PECO who is responsible for supplying the Commission with 5/24/10 calibrated voltage and time information. There was no question that the Complainant had a low voltage before he measured the voltage because

the lights were dimmed, and the refrigerator motor was growling. The writer's subsequent measurements of the voltage confirmed his suspicions. If the accuracy of the Complainant's voltmeter can be shown to be relevant to the discussion (but the accuracy should not be an issue since root/cause analysis should clarify the issue) the voltmeter may be checked against a calibrated instrument and voltage source.

The Ms. Tishekia Williams/PECO 9/01/10 letter appears to acknowledge that PECO actually does not know what the voltage was at my service entrance panel or on the high side of the pole bolted transformer that feeds the residential service during the time of the incident. Otherwise, PECO could provide the Commission with the line voltage on London Tract Road at 8:45 AM on 5/24/10. The writer did clarify with Russ Brocato that the source of the low voltage was deemed by the Complainant to be on the line side of the pole bolted transformer and that no PECO crews were observed working on the lines in the immediate neighborhood.

The writer thanks the Commission for following up on the Complaint. It is the Complainant's hope that after a thorough review of the system designs, the installed equipment, and the operating procedures in place at the time of incident, the system can be modernized to preclude future similar voltage issues. At the same time, if improvements are developed, implemented, and evaluated with PECO's customer service department to encourage customer dialog, sharing of information and resolution directly with the applicable PECO departments, issues could more efficiently be resolved without involving the Commission. Thank you for following-up with the complaint, your assistance, and your service.



John R. Starzmann

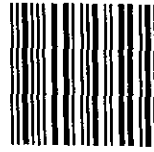
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