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Washington Utilities and Transportation Commission
WUTC Records Center
1300 S. Evergreen Park Drive Southwest
Post Office Box 47250
Olympia, WA-98504-7250

Subject: Comments regarding Electric System Reliability, Docket No. UE-991168, New Rule Addition to Chapter 480-100 WAC

Dear Sir:

Thank you for inviting me to comment on the New Rule Addition to the Washington Administrative Code regarding Electrical System Reliability. Unfortunately, the proposed rule does not adequately address monitoring and failure reporting procedures.

I am pleased to note that WAC 480-100-xx1 Electric Service Reliability is defined to include both "Continuity" and "Quality" of electric service. Formerly, the quality of voltage and frequency has not received the attention it deserves. The term "reliability" covered continuity but specifically excluded quality of service, as the workshop meetings on February 18, 2000 and July 21, 2000 demonstrated.

Voltage levels vary at consumer locations, dependent upon power source, distribution system, conductor size, length of conductors, load fluctuations, etc. One point of view is that power supplied to consumers is now better than in the past and that equipment failures are fewer. I found no valid evidence or data to support this view and I believe that the reverse is true.

In order to assess the magnitude of rapid destruction or shortened life of electrical equipment, monitoring of voltage and frequency should be done at customer locations at both ends of distribution lines in order to take into account of the "IR" drop from one end of the line to the other end. Effects of load variations and power grid variations should then be observable. A ten percent tolerance for 120 volts allows normal voltage to be 108 volts at one end of a line and 132 volts at the other end of the line. Load or power grid fluctuations will drive the voltage outside these limits and surely cause damage to consumer equipment.

It is essential that monitoring equipment be permanently connected and that out-of-limit conditions be recorded by duration and date. If continuous monitoring is not performed, measurements taken after damage occurs may be meaningless because power fluctuations

can be infrequent or sporadic. Seasonal variations are also important. Suitable monitoring equipment is readily available from companies such as EPRI/Electrotek.

New investments need not be great if reasonable small sampling is done. If the samples indicate that a serious problem exists, then additional sampling may be in order and justified. The costs should not be of great concern to utility companies because the costs will likely be passed on to the consumer. The important issue is that consumers should be protected against destructive power, which causes expensive equipment to fail.

The general public is uninformed to the degree that equipment is usually blamed for failure rather than placing blame on the power being supplied. Therefore customer complaints are not usually submitted to power companies and equipment warranties mask the problem. Reports of customer complaints are not likely to reveal the magnitude or nature of equipment failures. This is because very few consumers have the expertise or test instrumentation to question the power furnished by utility companies.

Results dependent upon consumer complaints and recorded by power companies may not be conclusive because of their limited scope. Data gathering and analysis should not be the responsibility of power companies due to possible conflict of interest.

Since a specific power quality monitoring plan was not included in your notice dated November 7, 2000, my comments are only of general nature. I trust that a definitive monitoring plan will be based upon industrial standards and limits as described in IEEE Standard 141, Chapter 3 (Red Book), or ANSI Standard c-84,1. Reference to those standards should be included in any revision to Washington State Codes.

In conclusion, I urge you to invite expert members of the academic community to attend workshops and make comments regarding power quality and proposed changes to Washington State Codes.

Yours truly,

C.C. Grassia