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P.U.C.

Jerry Murray
Public Utility Commission
550 Capitol St. NE Ste 215
Salem Oregon 97301-2551

Dear Mr. Murray:

Wasco Electric Cooperative (WEC) is respectfully requesting the assistance of the Public Utility Commission in asking for a delay in the implementation of Section 410 of the National Electrical Safety Code, due to take effect January 1, 2009.

NESC Section 410.A.3 requires an assessment be performed to determine the potential exposure to an electric arc. There are two methods that can be used to perform this assessment; utilizing Table 410-1 and Table 410-2 of the NESC or by performing an arc hazard analysis. First consider the Table 410-1, which applies to the WEC 15 kV system. The notes at the end of the table explain the table is only for single phase arcs in open air. The table cannot be used for any three phase, two phase lines or any underground facilities. To be in compliance you must perform an analysis. There are four industry standard methods for performing an analysis, IEEE Standard 1584, NFPA 70E, 1981 IEEE paper by Ralph Lee (Lees Formulas), Duke Power heat Flux Calculation Program and ARCPRO® software program. NPFA 70 is for systems below 600 volts and cannot be used on WEC high voltage system. IEEE 1584 and Lee's Formulas use three phase bolted faults in enclosures. This will work for WEC three phase underground systems but not for the overhead system or the two phase or single phase systems. The Duke Power and ARCPRO® software programs are for open air single phase arcs. They also cannot be used on the WEC three phase, two phase or underground systems.

The problem goes beyond which equation is appropriate for which situation. When the equations are run for a common set of values, the results are varied. Georgia Institute of Technology prepared a report "Arc Flash Hazards – Application to T&D Scoping Study, NEETRAC Baseline Project Number: 06-124. In the report a comparison is completed of the four equation methods that apply to distribution level voltages. IEEE and Lee equations yield Class 2 clothing, while ARCPRO® and Duke Heat Flux yield Class -0. The NESC tables yield Class 1.

This is the crux of the problem; the NESC requires an analysis but the methods used to perform the analysis do not lead to consistent results. This can lead to the potential for litigation on one end of the spectrum or extremely poor worker productivity on the other. Both ends of the spectrum meet NESC Section 410.A.

Implementing a level 0 program is estimated to cost about \$400 per year per employee. Implementing a level 2 clothing program is estimated cost about \$2,000 per year employee. The dollar amounts committed is directly correlated to the choice of equations.

It is the opinion of Wasco Electric Cooperative that NESC Section 410 should not be implemented until the methods of calculation yield consistent, verifiable results.

Respectfully,

Jeffrey R Davis, General Manager
Wasco Electric Cooperative, Inc.