

Abstract

For decades, application of National Electrical Code (NEC) rules for sizing services, feeders and branch circuits has resulted in unused capacity in almost all occupancy classes. US Department of Energy data compiled in 1999 indicates average load on building transformers between 10 and 25 percent. More recent data gathered by the educational facilities industry has verified this claim. Recognizing that aggressive energy codes are driving energy consumption lower, and that larger than necessary transformers create larger than necessary flash hazard, the 2014 NEC will provide an exception in Section 220.12 that will permit designers to reduce transformer kVA ratings and all related components of the power delivery system. This is a conservative, incremental step in the direction of reduced load density that is limited to lighting systems. More study of feeder and branch circuit loading is necessary to inform discussion about circuit design methods in future revisions of the NEC.

Citation

M. A. Anthony, T. L. Harman, J. R. Harvey, "Rightsizing Electrical Power Systems in Large Commercial Facilities", IEEE Industrial and Commercial Power Systems, May 2013. (Full paper submitted to IEEE Power Systems Engineering Committee).