

Abstract

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

Citation

“Right Sizing Commercial Electrical Systems”, Michael A. Anthony, Thomas L. Harman & James R. Harvey, *IEEE Industry Applications*, Vol. 22, No.4, 41-46, July/August 2016.