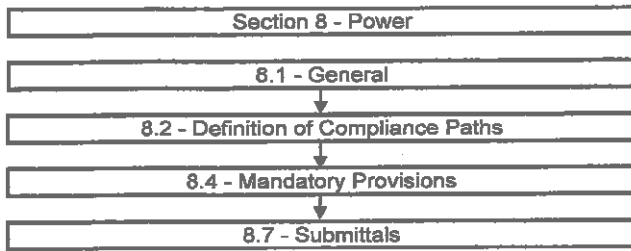


8. POWER



8.1 General

8.1.1 Scope. This section applies to all building power distribution systems and only to equipment described below.

8.1.2 Low Voltage Dry-Type Distribution Transformers. Low voltage *dry-type transformers* shall comply with the provisions of the Energy Policy Act of 2005 where applicable, as shown in Table 8.1. *Transformers* that are not included in the scope of the Energy Policy Act of 2005 have no performance requirements in this section, and are listed for ease of reference as exceptions.

Exceptions:

Transformers that meet the Energy Policy Act of 2005 exclusions based on NEMA TP-1 definition:

- a. special purpose applications
- b. not likely to be used in general purpose applications
- c. *transformers* with multiple voltage taps where the highest tap is at least 20% more than the lowest tap.

Products meeting these criteria and exempted from 8.1.2 include the following: *drive transformer, rectifier transformer, auto-transformer, uninterruptible power system transformer, impedance transformer, regulating transformer,*

sealed and nonventilating transformer, machine tool transformer, welding transformer, grounding transformer, or testing transformer.

8.1.3 New Buildings. *Equipment* installed in new buildings shall comply with the requirements of this section.

8.1.4 Addition to Existing Buildings. *Equipment* installed in addition to existing buildings shall comply with the requirements of this section.

8.1.5 Alterations to Existing Buildings.

Exception: Compliance shall not be required for the relocation or reuse of *existing equipment* at the same site.

8.1.5.1 Alterations to building service equipment or systems shall comply with the requirements of this section applicable to those specific portions of the building and its *systems* that are being altered.

8.1.5.2 Any new *equipment* subject to the requirements of this section that is installed in conjunction with the *alterations*, as a direct replacement of *existing equipment* shall comply with the specific requirements applicable to that *equipment*.

8.2 Compliance Path(s)

8.2.1 Power distribution systems in all projects shall comply with the requirements of Section 8.1, General; Section 8.4, Mandatory Provisions; and Section 8.7, Submittals.

8.3 Simplified/Small Building Option (Not Used)

8.4 Mandatory Provisions

8.4.1 Voltage Drop

Exception: *Feeder conductors* and *branch circuits* that are dedicated to emergency services.

8.4.1.1 Feeders. *Feeder conductors* shall be sized for a maximum *voltage drop* of 2% at design load.

8.4.1.2 Branch Circuits. *Branch circuit conductors* shall be sized for a maximum *voltage drop* of 3% at design load.

TABLE 8.1 Minimum Nominal Efficiency Levels for NEMA Class I Low-Voltage Dry-Type Distribution Transformers^a

Single Phase Transformers		Three Phase Transformers	
kVA ^b	Efficiency,% ^c	kVA ^b	Efficiency,% ^c
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.3
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
		750	98.8
		1000	98.9

^a A low voltage distribution *transformer* is a *transformer* that is air-cooled, does not use oil as a coolant, has an input voltage \leq 600 Volts, and is rated for operation at a frequency of 60 Hz.

^b kiloVolt-Amp rating.

^c Nominal efficiencies shall be established in accordance with the NEMA TP-1 2002 test procedure for low voltage *dry-type transformers*. Class I Low Voltage Dry-Type is a National Electrical Manufacturers Association (NEMA) design class designation.

8.4.2 Automatic Receptacle Control. At least 50% of all 125 volt 15- and 20-Ampere receptacles, including those installed in modular partitions, installed in the following *space* types:

- a. Private offices
- b. Open offices
- c. Computer Classrooms

shall be controlled by an *automatic control device* that shall function on:

- a. a scheduled basis using a time-of-day operated *control device* that turns receptacles off at specific programmed times—an independent program schedule shall be provided for areas of no more than 25,000 ft² but not more than one floor, or
- b. an *occupant sensor* that shall turn receptacles off within 30 minutes of all occupants leaving a *space*, or
- c. a signal from another control or alarm *system* that indicates the area is unoccupied.

Exceptions: Receptacles for the following shall not require an *automatic control device*:

- a. Receptacles specifically designated for *equipment* requiring 24 hour operation.
- b. *Spaces* where an *automatic* shutoff would endanger the safety or security of the room or building occupant(s).

8.5 Prescriptive Path (Not Used)

8.6 Alternative Compliance Path (Not Used)

8.7 Submittals

8.7.1 Drawings. *Construction documents* shall require that within 30 days after the date of *system* acceptance, *record drawings* of the actual installation shall be provided to the building owner, including

- a. a *single-line diagram* of the building electrical *distribution system* and
- b. floor plans indicating location and area served for all distribution.

8.7.2 Manuals. *Construction documents* shall require that an operating manual and maintenance manual be provided to the building owner. The manuals shall include, at a minimum, the following:

- a. Submittal data stating *equipment* rating and selected options for each piece of *equipment* requiring maintenance.
- b. Operation manuals and maintenance manuals for each piece of *equipment* requiring maintenance. Required routine maintenance actions shall be clearly identified.
- c. Names and addresses of at least one qualified *service agency*.
- d. A complete narrative of how each *system* is intended to operate.

(Enforcement agencies should only check to be sure that the *construction documents* require this information to be transmitted to the owner and should not expect copies of any of the materials.)

8.8 Product Information (Not Used)