



## New Federal Distribution Transformer Regulations Coming in 2016

Audio consultants using distribution transformers to electrically isolate installed sound systems from the rest of the building's electrical system need to be warned, it's going to get more costly to do so thanks to new DOE regulations coming online January 1<sup>st</sup>, 2016. The new distribution transformer guidelines were designed to make the use of large transformers more efficient and thereby cut down on carbon emissions. Unfortunately, in order to achieve the new federal standards, transformers will be required to use larger quantities of higher grade metals which will translate into larger transformer enclosures and a substantial increase in purchase prices. While none of the manufacturers have introduced their new pricing as of today, they estimate that prices may increase as much as 50%. We have been notified that we will be informed of the new pricing by November 2015.

### Distribution Transformers

A distribution transformer provides the final voltage transformation in the electric power distribution system by reducing the high voltage of electric current from a power line to a lower voltage for use in a building. The Department of Energy (DOE) has regulated the energy efficiency level of low-voltage dry-type distribution transformers since 2007.

Beginning in 2016, newly amended energy efficiency standards for distribution transformers will save up to \$12.9 billion in total costs to consumers — ultimately saving families and businesses money while also reducing energy consumption. The new distribution transformer standards will also save 3.63 quadrillion British thermal units (BTU) of energy for equipment sold over the 30-year period of 2016 to 2045.

The new amendments to the existing efficiency standards would further decrease electrical losses by about 18 percent for low-voltage dry-type transformers. In addition, about 264.7 million metric tons of carbon dioxide emissions will be avoided, equivalent to the annual greenhouse gas emissions of about 51.75 million automobiles.

The distribution transformers final rule was the DOE's first "negotiated rulemaking," conducted under the Federal Advisory Committee Act and the Negotiated Rulemaking Act, and is viewed as an alternative to traditional procedures for drafting proposed regulations.

The Standards and Test Procedures for this product are related to [Rulemaking for Liquid-Immersed and Medium-Voltage Dry-type Distribution Transformers Energy Conservation Standard](#) and [Rulemaking for Low-Voltage Dry-Type Distribution Transformers Energy Conservation Standard](#).

### Recent Updates

DOE published a final rule regarding amended energy efficiency standards for liquid-immersed, medium-voltage dry-type, and low-voltage dry-type distribution transformers. [78 FR 23335](#) (April 18, 2013). For more information, please see the rulemaking webpages: [liquid-immersed and medium-voltage Dry-type](#) and [low-voltage dry-type](#).

### Standards for Distribution Transformers

The following content summarizes the energy conservation standards for distribution transformers. The text is not an official reproduction of the Code of Federal Regulations and should not be used for legal research or citation.

## Current Standard

Distribution transformers covered by this standard are defined in the Code of Federal Regulations, [10 CFR 431.192](#). The three types of distribution transformers covered by the standard: low-voltage dry-type (less than 600 volts), liquid-immersed, and medium-voltage, dry-type distribution transformers. The full standard can be found in the Code of Federal Regulations, [10 CFR 431.196](#). This information is also in the [Electronic Code of Federal Regulations](#).

Single phase		Three phase	
kVa	Efficiency (%) <sup>1</sup>	kVa	Efficiency (%) <sup>1</sup>
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

**Table 1. Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers**

<sup>1</sup> Efficiencies are determined at the following reference conditions: (1) for no-load losses, at the temperature of 20°C, and (2) for load-losses, at the temperature of 75°C and 35 percent of nameplate load. (Source: Table 4–2 of National Electrical Manufacturers Association (NEMA) Standard TP–1–2002, "Guide for Determining Energy Efficiency for Distribution Transformers.")



### Amended Standard

Distribution transformers covered by this standard are defined in the Code of Federal Regulations, 10 CFR 431.192. The full standard can be found in the Code of Federal Regulations, 10 CFR 431.196. This information is also in the Electronic Code of Federal Regulations.

The efficiency of a low-voltage dry-type distribution transformer manufactured on or after January 1, 2016, shall be no less than that required for their kVA rating in the table below. Low-voltage dry-type distribution transformers with kVA ratings not appearing in the table shall have their minimum efficiency level determined by linear interpolation of the kVA and efficiency values immediately above and below that kVA rating.

Single phase		Three phase	
kVa	Efficiency (%)	kVa	Efficiency (%)
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.6	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
		750	99.23
		1000	99.28

**Table 4: Amended Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers**

Note: All efficiency values are at 35 percent of nameplate-rated load, determined according to the DOE Test Method for Measuring the Energy Consumption of Distribution Transformers under Appendix A to Subpart K of 10 CFR part 431.