

# UNDERSTAND THE IMPACT ENERGY EFFICIENT TRANSFORMERS



**TRANSFORMERS POWER INDUSTRIAL, COMMERCIAL AND RESIDENTIAL APPLICATIONS. THEY REMAIN A KEY AND ESSENTIAL PART OF OUR NATION'S ELECTRICAL INFRASTRUCTURE.**

*"What are the new DOE Energy Efficiency levels that will be in effect next year for U.S. transformers? And how will that affect my SolaHD transformers?"*

Improving the energy efficiency of distribution transformers is a goal of the U.S. Department of Energy (DOE). They have the legal authority to define efficiency levels and enforce compliance. In addition, environmentally conscious consumers and individuals also recognize that buying a higher energy efficiency transformer will have both a financial and environmental impact in the coming years.

SolaHD manufactures transformers of unsurpassed quality, right here in the United States. We know transformers are a key part of the U.S. infrastructure. Our low-voltage, dry-type models will meet the new DOE 2016 energy-efficiency requirements for distribution transformers.

**SOLAHD**

  
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## DOE 2016 LEGISLATION.

The DOE has worked over the last few years to establish new and more stringent energy efficiency levels for distribution transformers. The legislation took effect January 1, 2016 making these new levels mandatory. This new law primarily affects three-phase efficiency levels. Single-phase levels will remain the same. Please refer to the table below for the efficiency levels which apply to the low-voltage dry-type transformers that SolaHD manufactures; these are distribution transformers that include low temperature rise, K-Factor and general purpose. There are additional distribution transformers affected. Those are defined in the DOE's CFR (Code of Federal Regulations) title 10, part 431 (also known as DOE 10 CFR p431). It was published in the Federal Register Vol. 78, No. 75 on Thursday April 18, 2013. According to the DOE, the new efficiency levels are expected to reduce energy losses by an average of 18% in low-voltage dry-type distribution transformers over the current TP-1 efficiency levels over the life of the new program. To help put these benefits in perspective, over a 30 year period the DOE projects energy savings up to 3.63 quadrillion BTUs and \$12.9 billion. In addition, about 265 million metric tons of carbon dioxide emissions will be avoided, that's equivalent to the annual greenhouse gas emissions of about 52 million automobiles.

### DOE 2016 ENERGY EFFICIENCY LEVELS

*Note: Efficiency testing is done at 35% loading.*

Single-Phase	
kVA	Eff %
15	97.7
25	98
37.5	98.2
50	98.3
75	98.5
100	98.6
167	98.7

Three-Phase	
kVA	Eff %
15	97.89
30	98.23
45	98.4
75	98.6
112.5	98.74
150	98.83
225	98.94
300	99.02
500	99.14

### Some effects of the legislation:

A transformer under normal operation is always energized, thus making any energy efficiency improvements more significant over an extended period of time. This means that customers will be rewarded in two ways:

1. They are reducing greenhouse gas emissions and there is an economic payback through reduced energy costs overtime. Considering the life expectancy of a transformer and the fact that the transformer will be on 24 hours a day, 7 days a week for the next 25-30 years, even small energy efficiency improvements will pay dividends over the life of the transformer.
2. It will generate less heat. In many cases this translates into lower costs to cool the environment in which they are utilized equating into more savings not easily identified in calculations.

It is important to note that the mandated energy efficiency levels are already hovering around 98-99%, depending on the type of transformer and ratings. This means that any further efficiency improvements become more challenging to achieve. Typically they will require more and/or better core and conductor materials. In most cases, this will directly impact the cost of the transformer. However, as noted above, there is an economic benefit to offset the higher initial transformer costs overtime. SolaHD is making every effort to optimize our DOE 2016 designs to minimize cost impacts, but expect prices to be higher throughout the transformer industry.

### HOW SolaHD IS SUPPORTING THIS LEGISLATION AND OUR CUSTOMERS.

The end result of the new legislation is a lower environmental impact and a cost savings derived from decreased energy use for our customers. SolaHD supports this change, and the environmental benefits our society will receive as a result. SolaHD has a long tradition as a high quality, U.S. manufacturer of low voltage general purpose distribution transformers. We are proud to offer transformers meeting the most stringent energy efficiency requirements today.