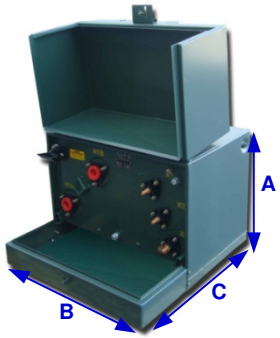
Department of Energy
Docket No. EERE-2010-BT-CE-0014

GE-Prolec CCE Meeting
10/19/2010

Covered Products

	Residential		Commercial	Industrial
Products	 Single Phase Poletype	 Single Phase Padmounted	 Three Phase Padmounted	 Substation Transformer (SST)
Variety(1)	**Designs Quoted** (2)**:** 8000 – 9000 **Typical Weight (lb):** 280 – 1450	**Designs Quoted**(2)**:** 2000 – 3000 **Typical Weight (lb) :** 690 –1600	**Designs Quoted**(2)**:** 9000 – 10000 **Typical Weight (lb):** 2500 – 13500	**Designs Quoted**(2)**:** 1000 – 2000 **Typical Weight (lb):** 6400 – 14000
Market (1)	**Typical Price Range:** $600 to $1,800 **Typical Lot Size:** 1 to 250 units	**Typical Price Range:** $1,000 to $3,000 **Typical Lot Size:** 1 to 200 units	**Typical Price Range:** $4,500 to $35,000 **Typical Lot Size:** 1 to 10 units	**Typical Price Range:** $18,000 to $65,000 **Typical Lot Size:** 1 to 5 units
Customers	Investor Owned Utilities Rural Electric Coops Municipal Electric Systems		Investor Owned Utilities Rural Electric Coops Municipal Electric Systems Industrials	Industrials Investor Owned Utilities Rural Electric Coops Municipal Electric Systems

Typical Dimensions Range

A (in)		B (in)		C (in)	
40	60	23	35	26	45

Typical Dimensions

A (in)		B (in)		C (in)	
25	33	29	36	14	24

Typical Dimensions

A (in)		B (in)		C (in)	
64	87	46	88	65	96

Typical Dimensions

A (in)		B (in)		C (in)	
90	95	50	65	60	80

(1) Representative of Transformer Industry.
(2) Represents a 1 year period.

Issue 1: Certification Report

Subpart C—Certification, §429.19 Certification, (b) Certification report.

To avoid confusion, we suggest paragraph (6) of this section be revised to add words displayed in red:

(6) For each brand, the basic model number and the individual manufacturer's model numbers covered by that basic model; in the case of external power supplies, when the manufacturer is certifying using a design family, the individual manufacturer's model numbers covered by the design family; in the case of distribution transformers, the individual manufacturer's least efficient basic model numbers covered by the kilovolt ampere (kVA) grouping; [75FR179, p.56819]

This revision in wording supports the additional Distribution Transformer related requirement in paragraph (13), (xlix) of this same section [75FR179, p.56821] **which reads:**

(13) For . . . (xlix) For the least efficient basic model of distribution transformer within each "kilovolt ampere (kVA) grouping" for which part 431 prescribes an efficiency standard, the kVA rating, the insulation type (*i.e.,* low-voltage dry-type, medium-voltage dry-type or liquid-immersed), the number of phases (*i.e.,* single-phase or three-phase), and the basic impulse insulation level (BIL) group rating (for medium-voltage dry-types). As used in this section, a "kVA grouping" is a group of basic models which all have the same kVA rating, have the same insulation type (*i.e.,* low-voltage dry-type, medium-voltage dry-type or liquid-immersed), have the same number of phases (*i.e.,* single-phase or three-phase), and, for medium-voltage dry-types, have the same BIL group rating (*i.e.,* 20–45 kV BIL, 46–95 kV BIL or greater than 96 kV BIL).

Thus, the requirement for Distribution Transformer certification reporting will be:

- For each brand, the Least Efficient Basic Model in each kVA Grouping – the unique combination of insulation (liquid-filled), phases (1 or 3), and kVA rating;
- As currently required by the existing regulations;
- Appropriate for the custom-designed, made-to-order Distribution Transformer industry with a proliferation of designs;
- Similar to the way Motors are handled;
- Consistent with the industry characterizations and resulting proposals and rules published in 71FR142 (7/25/2006), 72FR197 (10/12/2007), and 75FR2 (1/05/2010).

Issue 2: Discontinued Model Filing

Subpart C—Certification, **§429.19 Certification, (g) Discontinued model filing** [75FR179, p. 56822]

- For Distribution Transformers, we interpret this paragraph to apply to a discontinuance of a Least Efficient Basic Model(s) for a kVA group or for discontinuance of a kVA group itself.
- This interpretation is consistent with the kVA grouping of basic models for reporting in such a high volume custom-engineering and made-to-order industry.
- It recognizes that basic models are designed for specific transactions, most with a relatively short period of time associated with those transactions.
- While not discontinued per se, basic models designed for a given customer/transaction are typically not produced again after the initial transaction(s) are completed due to changes in customer requirements, materials, processes, etc.

Issue 3: Certification of Test Systems

Subpart C—Certification, §429.23 Alternative Methods for Determining Efficiency or Energy Use
[75FR179, p. 56822]

- Distribution Transformer electrical testing can be extremely complicated and requires test systems that use very special, precise, and sensitive equipment and knowledge of internal and external transformer connections and hook-ups for the test equipment. In addition, to test per DOE requirements on many transformer designs, access to the transformer internals must be made and transformer leads reconnected through unbolting and repositioning leads, and rebolting. While the requirements of accuracy and equipment basics are covered in DOE documents, we believe more refinement is necessary.

- Most manufacturers test all (100%) transformers made using test methods defined in ANSI standards, which differ but are very similar to DOE requirements. Such test records are maintained for years so ANSI tested loss values are available for all transformers made. They could be checked by DOE at any time and provide a good indicator of DOE efficiency. This 100% testing provides a very good assurance of manufacturers knowing if they are meeting efficiency requirements. Transformer loss information has been supplied to customers for many years as part of the contract performance terms and is another confirmation of meeting efficiency requirements.

- In order to adequately test transformers, both for DOE compliance via the test method or AEDM, and to provide accurate ANSI loss test results, there must be assurance that the test equipment is properly checked and calibrated. Since this equipment is used extensively as 100% of units are tested and the test systems used rely on interaction between a great number of elements, we believe it is imperative that the test system be well calibrated and certified.

- **Therefore, we believe that DOE should change the regulations to require that all transformer manufacturers have their test systems certified to be in compliance with DOE regulations and that this certification be performed by a third party that is knowledgeable in such equipment. Due to the high volume of usage and the importance of this issue, such 3rd party certification should be performed annually and included in the Certification Report sent to DOE annually as part of the requirement in §429.29 (c).**

Issue 4: Enforcement Testing

Subpart E—Enforcement [75FR179, p. 56825]

- We agree that DOE should do enforcement and verification testing of all products including Distribution Transformers. The issue for Distribution Transformers however is that the testing for losses is very complicated and requires the use of special, precise test equipment systems and connections. It also requires the reconnection of internal hook-ups and therefore whomever is doing the testing must know how to open a transformer, make re-connections, and close and seal the transformer. Once testing is completed, the transformer must be opened again, reconnections made back to original state, and the transformer resealed. The transformer should also have some tests performed to assure its quality. The transformer manufacturer could no longer sell the transformer as new if this work was performed by someone that does not have the equipment necessary to perform all these steps. Also, most manufacturers might be unwilling to warrant this work if performed by others.

- There is an assumption that any test lab can accurately measure losses in transformers, which requires a very sensitive *system* of test equipment for accurate measurement; high accuracy components by themselves are not enough.

- Manufacturers of distribution transformers should have some ability to challenge the results of an independent test lab that does not have proven established experience with the particular product tested. A lab that tests low voltage dry-type transformers may not be able to accurately assess the losses in a large medium-voltage product. The process may take longer, but it is a necessary step to assure accurate results.

- Once distribution transformer manufacturers have their own certified test labs, it would then provide for an environment where DOE could have transformers tested, using the manufacturers own equipment.

- Distribution Transformers are made-to-order products and manufacturers generally do not have inventory availably for enforcement testing (or verification testing). However, current production units of similar types would be available as the manufacturer would be testing transformers every day. DOE could chose units at random for enforcement (or verification) testing and could be assured that the test data is reliable. DOE or its representatives could observe and even be a part of the testing at the manufacturers location.

- Finally, most if not all manufacturers have test data by unit serial number for the ANSI based loss testing done on a production basis. These ANSI loss values can be used to closely approximate the DOE efficiency values and can be an excellent starting point for any verification or enforcement inquiry.

Issue 5: Importing and Exporting

Subpart D —General Provisions, §429.25 Imported products. [75FR179, p. 56824]

- All Prolec GE brand Distribution Transformers for the US market are imported into the US. Assuring a smooth and timely border crossing is critical to our ability to meet customer requirements. *We are concerned that the nature of the distribution transformer products make compliance applicability and determination at the border by Customs impractical.*
- All Prolec GE brand covered distribution transformer products imported for ***sale and use*** in the US are compliant and have a designation to that effect on the transformer nameplate. An example of a nameplate designator is: DOE 10 CFR PART 431 10/12/07 COMPLIANT.
- For many distribution transformers, the nameplate is not visible from the outside of the unit – e.g., for most padmounted transformers, single and three phase, the nameplate is attached inside the low voltage compartment.
- Distribution transformers that fall outside the range of units covered by the ruling may look similar to others that are covered products. Those units will ***not*** have a compliance designation even if they have an efficiency that meets the standards since they fall outside of the regulation. However, to a Customs inspector, these facts may not be clear, nor will the differences in transformers be apparent (e.g, a 2500 kVA Wind Farm unit – a step-up distribution transformer).
- We therefore recommend that DOE provide ***additional documentation guidelines*** for import reviews by Customs.

Subpart D —General Provisions, §429.26 Exported products. [75FR179, p. 56825]

- Some distribution transformers that fall into the range of designs that would be covered may be imported into the US for sale to a US based exporter for subsequent consolidation and shipment to an export non-covered location. These trans-shipment units would be for ***sale*** in the US, but not for ***use*** in the US. Such transformers would again not have a compliance designation on their nameplate, regardless of efficiency.
- Our current practice is to label such units and/or packaging “NOT FOR USE IN THE US”. The shipping documents also provide similar notation.
- We recommend that the requirement for a stamp or label in paragraph (b) of this section be changed to:

“NOT FOR USE IN THE UNITED STATES”

. . . to reflect the situations where units are imported and sold for subsequent export outside the US.