

# U.S. Department of Energy Manufacturing and Supply Chains Office Draft Guidance on Implementing Section 1006 of the Energy Act of 2020

April 2022

## General Announcement

In accordance with section 1006 of the Energy Act of 2020 (42 U.S.C. 6317 note; Pub. L. 116-260, div. Z) and section 40555 of the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58), DOE is issuing this draft implementation guidance to establish a rebate program to encourage the replacement of energy inefficient transformers with transformers that meet or exceed the applicable energy conservation standards in 10 CFR part 431, subpart K. This document provides guidance on implementing the rebate program as it pertains to definitions, eligibility criteria, the eligibility window, rebate payment calculations, and application content requirements and process. DOE is publishing this draft implementation guidance for stakeholder input and feedback before it is finalized. DOE has specifically identified issues for which comment would be appreciated, but DOE welcomes feedback on all aspects of this guidance.

## I. Purpose and Scope

- (a) This guidance describes the application process and the information necessary for the Secretary of Energy to make rebate payments to qualified entities as defined in section 1006 of the Energy Act of 2020, Pub. L. No. 116-260, div. Z (42 U.S.C. 6317 note), as amended (“section 1006”).
- (b) The Secretary may make rebate payments to qualified entities, subject to the availability of appropriations, for purchases of qualified energy efficient transformers that replace qualified energy inefficient transformers during the eligibility window, to the qualified entity. Rebate payments may only be made upon receipt by the Secretary of a rebate payment application that demonstrates that the applicant is eligible to receive such rebate payment and satisfied the other requirements as deemed necessary.
- (c) This guidance may be revised in a future document.

## II. Authority

Section 1006 directs DOE to establish a rebate program to provide rebates to qualified entities for expenditures made by the qualified entity for the replacement of a qualified energy inefficient transformer with a qualified energy efficient transformer. Section 1006 also sets forth certain definitions, eligibility requirements, and authorized amounts of rebates. DOE will determine the extent to which appropriated funds are available to be obligated under this program.

**Note:** While section 1006 defines certain terms, DOE has added additional clarifications to the definitions of those terms and added definitions for other terms not defined in section 1006. The definitions given in this document are how DOE intends to interpret each of these terms.

## III. Definitions

*Calendar year* means a period beginning on January 1 and ending on December 31.

*Core Loss* means the no-load loss of a given transformer as measured according to section 4.4 of Appendix A to Subpart K of Part 431.

*DOE* means the U.S. Department of Energy.

*Fiscal Year* means the period beginning October 1 and ending on September 30.

*Manufacturer* means any entity that manufactures a transformer.

*Qualified Energy Efficient Transformer* means a transformer that -

- (1) meets the definition of distribution transformer at 10 CFR 431.192;
- (2) is rated for an identical capacity and number of phases as the qualified energy inefficient transformer it is replacing; and

**Note:** While it may be possible for a manufacturer to replace one, three-phase transformers with multiple single-phase transformers, or upgrade or downgrade the capacity of a transformer in a given application, such a modification would make a comparison of core losses more difficult. Further, permitting rebates for distribution transformers (DTs) with alternative ratings and phases runs the risk of an applicant claiming they are downgrading a transformer when the applicant is actually using a transformer in another application. Therefore, DOE is specifying that transformer phase and capacity ratings be equal between the qualified energy efficient transformer and qualified energy inefficient transformer. DOE welcomes comment on this issue.

- (3) meets or exceeds the applicable energy conservation standards described in the tables in subsection (b)(2) and paragraphs (1) and (2) of subsection (c) of 10 CFR 431.196 (as in effect on the date of enactment of the Energy Act of 2020).

*Qualified Energy Inefficient Transformer* means a transformer with an equal number of phases and capacity to a transformer described in any of the tables in subsection (b)(2) and paragraphs (1) and (2) of subsection (c) of section 431.196 of title 10, Code of Federal Regulations (as in effect on the date of enactment of the Energy Act of 2020) that –

- (A) Does not meet or exceed the applicable energy conservation standards described in paragraph (1); and
- (B) was manufactured between January 1, 1987, and December 31, 2008, for a transformer with an equal number of phases and capacity as a transformer described in the table in subsection (b)(2) of section 431.196 of title 10, Code of Federal Regulations (as in effect of the date of enactment of the Energy Act of 2020); or (ii) was manufactured between January 1, 1992, and December 31, 2011, for a transformer with an equal number of phases and capacity as a transformer described in the table in paragraph (1) or (2) of subsection (c) of that section (as in effect on the date of enactment of the Energy Act of 2020)

*Qualified Entity* means an owner of industrial or manufacturing facilities, commercial buildings, or multifamily residential buildings, a utility, or an energy service company that fulfills the requirements of the rebate program.

*Rebate Payment* means the payment which a qualified entity may receive upon successfully proving eligibility and is valued at twice the amount equal to the difference in Watts between the core loss value of the qualified energy inefficient transformer and the qualified energy efficient transformer.

*Rebate Payment Application* means an application for a rebate payment for a qualified energy efficient transformer that is submitted during the application period.

*Secretary* means the Secretary of the U.S. Department of Energy or such officers or employees of the U.S. Department of Energy as designated by the Secretary of the U.S. Department of Energy.

#### **IV. Who May Apply?**

Any qualified entity may apply for rebate payments during the eligibility window provided they purchased a qualified energy efficient transformer to replace a qualified energy inefficient transformer and fulfill the requirements given in this document.

#### **V. Eligibility Window, Payment Period, and Maximum Rebate Payments**

- (a) Any qualified entity that is the purchaser of a qualified energy efficient transformer that replaces a qualified energy inefficient transformer is eligible for consideration for the rebate program.
- (b) Rebate payments will be administered on a first come, first serve basis until the exhaustion of availability of appropriated funds.
- (c) Maximum Rebate Payments
  - (1) No single qualified entity will be entitled to aggregate rebates under this section exceeding \$25,000 per calendar year.

#### **VI. Application Requirements**

- (a) When to Apply
  - (1) The following documentation must be included in the application for rebate payment for the purchase of a qualified energy efficient transformer following the purchase of a qualified energy inefficient transformer and after the qualified energy inefficient transformer has been permanently decommissioned and scrapped.
    - (i) In the event a qualified entity purchased multiple qualified energy efficient transformers to replace multiple energy inefficient transformers, multiple units may be combined into one application, provided the proper information is provided for each individual unit.
- (b) An application for a rebate payment must include all items listed in section (1) through (6) below. DOE may release aggregated, non-identifiable data contained in the application to third parties to inform the technical analyses performed in support of regulatory and non-regulatory programs:
  - (1) The name and physical address of the entity applying for the rebate payment
  - (2) The name, mailing address, telephone number, and email address of a point of contact to respond to questions or requests for additional information, and notification of eligibility determination.
  - (3) A description of the type of entity applying (i.e., industrial or manufacturing facility, commercial building, multifamily residential building, utility, or energy service company).

- (4) Evidence that the purchased transformer meets the definition of qualified energy efficient transformer set forth in section III and the qualified energy efficient transformer core loss value. Required evidence includes the following:
- (i) The purchase date of the qualified energy efficient transformer and a copy of the invoice or proof of payment for the purchased energy efficient transformer.
  - (ii) The zip code where the qualified energy efficient transformer is installed.
  - (iii) The serial number, kVA rating, voltage ratings, number of phases, basic impulse level (BIL) rating (for dry-type transformers), certification that such product is DOE compliant, manufacturing location (country), and year of manufacture of the qualified energy efficient transformer.
  - (iv) A copy or image of the qualified energy efficient transformer nameplate.
  - (v) A statement or receipt from the transformer manufacturer as to whether the purchased transformer core is constructed of grain-oriented electrical steel or amorphous electrical steel.
  - (vi) A statement or receipt from the transformer manufacturer as to the core loss value of the qualified energy efficient transformer.
  - (vii) A statement or receipt from the transformer manufacturer as to the load loss value at rated temperature rise of the qualified energy efficient transformer.
- (5) Evidence that the decommissioned transformer meets the definition of qualified energy inefficient transformer set forth in section III and the qualified energy inefficient transformer core loss value if a value other than those listed in DOE's default table of core losses set forth in section VII is used. Required evidence includes the following:
- (i) The serial number, kVA rating, voltage ratings, number of phases, BIL rating (for dry-type transformers), and year of manufacture of the qualified energy inefficient transformer.
  - (ii) A copy or image of the qualified energy inefficient transformer nameplate.
  - (iii) If a core loss value of the qualified energy inefficient transformer is used other than the values set forth in section VII paragraph I(a)(2)(iii), manufacturers must submit the name of the qualified professional or equipment manufacturer who verified the core loss value, a written statement from the qualified professional or equipment manufacturer the core loss value was determined in accordance with DOE's current test procedure (i.e., no-load loss of a given transformer as measured according to section 4.4 of Appendix A to Subpart K of 10 CFR 431), and the core loss value of the qualified energy inefficient transformer.
  - (iv) If the core loss value of the qualified energy inefficient transformer is adopted from DOE's default table of core losses set forth in section VII paragraph (b)(2)(iii), the information provided to meet (i) and (ii) is sufficient for verification of the core losses.
- (6) Evidence that the qualified energy inefficient transformer has been permanently decommissioned and scrapped. Required evidence includes
- (i) A signed statement by an authorized executive officer certifying that the qualified energy inefficient transformer has been permanently decommissioned and scrapped

**Note:** DOE is considering requiring submission of receipt from a third-party scrap company with the date of decommissioning, kVA, and serial number of the decommissioned transformer, in lieu of the signed statement by the executive officer. DOE requests feedback on the typical method for decommissioning and scrapping a distribution transformer, including whether this is done via a third-party company exclusively, as well as if established best practices for recycling component materials should be required.

- (7) A statement signed by an authorized executive officer certifying that the information contained in the application is accurate.

**Note:** Strengthening prosperity – by expanding good, safe union jobs and supporting job growth through investments in domestic manufacturing – are key goals set by President Biden, discussed in depth in his Executive Orders on Ensuring the Future Is Made in All of America by All of America's Workers (EO 14005), Tackling the Climate Crisis at Home and Abroad (EO 14008), Worker Organizing and Empowerment (EO 14025), and Promoting Competition in the American Economy (EO 14036). DOE is considering application criteria for distribution transformer rebates that will support the creation of good-paying jobs with the free and fair choice to join a union, the incorporation of strong labor standards, and high-road workforce development, especially registered apprenticeship and quality pre-apprenticeship. DOE is specifically seeking comments about the applicable workforce criteria, including labor standards, training programs, and certifications, that could be considered for the installation of qualified distribution transformers as part of eligibility.

## VII. Calculation of Rebate Payments

### (a) Rebate Payment Calculation

- (1) Rebate payments will be calculated as follows: \$2 per Watt multiplied by the difference between the core loss of the qualified energy inefficient transformer and the core loss of the qualified energy efficient transformer.

### (b) Core Loss Determination

- (1) The core loss of the qualified energy efficient transformer must be provided by the manufacturer and is equal to the no-load loss of a given transformer as measured according to section 4.4 of Appendix A to Subpart K of Part 431 or as determined by a qualified alternative method for determining energy efficiency or energy use (AEDM) as defined in 10 CFR 429.70(d).
- (2) The core loss of the qualified energy inefficient transformer is either:
  - (i) Measured by a qualified professional as equal to the no-load loss as measured according to section 4.4 of Appendix A to Subpart K of Part 431;
  - (ii) Verified by the equipment manufacturer and verified to have been tested in accordance with the no-load loss test as measured according to section 4.4 of Appendix A to Subpart K of Part 431; or
  - (iii) Selected from the below tables of default values - determined from the no-load loss values in the tables below.

**Table 1 Liquid-Immersed Transformer Core Loss Values of Qualified Energy Inefficient Transformers**

Single-Phase		Three-Phase	
kVA	Core Loss [W]	kVA	Core Loss [W]
10	31	15	52
15	42	30	90
25	62	45	124
37.5	84	75	185
50	105	112.5	255
75	142	150	320
100	178	225	441
167	263	300	553
250	357	500	770
333	444	750	1061
500	604	1000	1332
667	752	1500	2026
833	891	2000	2543
		2500	3033

**Note:** DOE relied on Oak Ridge National Laboratory’s (ORNL) 1996 report “Determination Analysis of Energy Conservation Standards for Distribution Transformers”<sup>1</sup> to develop an initial estimate of the core loss characteristics of qualified energy inefficient transformers. That document estimated the core loss of the base case liquid-immersed transformer– the results of which are repeated in the table below.

Size (kVA)	Type	Core Loss [W]
25	Pole	62
50	Pole	106
50	Pad	104
150	Pad	320
750	Pad	1,061
2000	Pad	2,543

DOE then scaled the core loss estimates to all other kVAs, based on the nearest capacity with the same number of phases, using a typical scaling equation<sup>2</sup> shown in **Error! Reference source not found.**

<sup>1</sup> Barnes, P. R., Van Dyke, J. W., McConnel, B. W. & Das, S., *Determination Analysis of Energy Conservation Standards for Distribution Transformers*. (Oak Ridge National Laboratory, 1996)

<sup>2</sup> See Appendix 5B of the April 2013 Distribution Transformer Final Rule Technical Support Document, available at Docket No. EERE-2010-BT-STD-0048-0760.

Equation 1

$$NL_1 = NL_0 \frac{S_1^x}{S_0}$$

Where

$NL_1$  = Core loss of transformer 1

$NL_0$  = Core loss of transformer 0

$S_1$  = Capacity of transformer 1

$S_0$  = Capacity of transformer 0

$x$  = Scaling exponent, equal to 0.76 for single – phase transformers and 0.79 for three – phase transformers

**Table 2 Medium-Voltage Dry-Type Transformer Core Loss Values of Qualified Energy Inefficient Transformers**

Single-Phase				Three-Phase			
kVA	BIL			kVA	BIL		
	20-45 kV	46-95 kV	≥96 kV		20-45 kV	46-95 kV	≥96 kV
	Core Loss [W]				Core Loss [W]		
15	104	128	132	15	134	165	172
25	146	180	188	30	214	263	275
37.5	192	236	247	45	281	345	362
50	232	286	300	75	395	486	513
75	305	374	396	112.5	518	638	675
100	370	455	481	150	629	773	821
167	521	641	682	225	825	1014	1082
250	683	840	897	300	1000	1230	1316
333	439	910	974	500	1408	1732	1862
500	971	1194	1284	750	1848	2273	2453
667	1178	1449	1562	1000	3044	2915	2984
833	1367	1681	1816	1500	3994	3825	3931
				2000	4843	4638	4780
				2500	5624	5386	5563

**Note:** DOE relied on its 2006 Distribution Transformer Final Rule Technical Support Document<sup>3</sup> base case scenario for its various representative units to estimate the no-load loss characteristics of qualified energy inefficient transformers. DOE used the 2006 Distribution Transformer Final Rule Technical Support Document instead of the ORNL report for medium-voltage dry-type transformers because the 2006 Distribution Transformer Final Rule Technical Support Document spans a larger range of the

<sup>3</sup> See Appendix 8E of the 2006 Distribution Transformer Final Rule Technical Support Document, available at Docket No. EERE-2006-0099-0253.

various sizes and BIL ratings that are incorporated into DOE's current energy conservation standards. That document estimated the no-load loss of the base case medium-voltage dry-type distribution transformers – the results of which are repeated in the table below.

Three-Phase MVDT Baseline Transformers			
kVA	BIL		
	20-45 kV	46-95 kV	≥96 kV
Core Loss [W]			
300	1,000	1,230	-
1500	3,994	3,825	-
2000	-	-	4,780

**Note:** DOE scaled the medium-voltage dry-type core loss estimates to all other three-phase kVAs, based on the nearest capacity with the same number of phases, using a typical scaling equation<sup>4</sup> shown in **Error! Reference source not found.**

Equation 2

$$NL_1 = NL_0 \frac{S_1^x}{S_0}$$

Where

$NL_1$  = Core loss of transformer 1

$NL_0$  = Core loss of transformer 0

$S_1$  = Capacity of transformer 1

$S_0$  = Capacity of transformer 0

$x$  = Scaling exponent, equal to 0.67 for less than 96 kV BIL transformers

and 0.68 for greater than or equal to 96 kV BIL

DOE assumed the core loss ratio between single-phase and three-phase transformers was the same for liquid-immersed and medium-voltage dry-type transformers. Therefore, DOE multiplied the three-phase medium-voltage dry-type default core loss values at 75 kVA and 500 kVA by the ratio of core losses assumed for single-phase liquid-immersed transformers to core losses assumed for three-phase liquid-immersed transformers to establish single-phase medium-voltage dry-type default core loss values. (75 kVA and 500 kVA are standard sizes for both single and three phase transformers for both

<sup>4</sup> See Appendix 5B of the April 2013 Distribution Transformer Final Rule Technical Support Document, available at Docket No. EERE-2010-BT-STD-0048-0760.



liquid-immersed and dry-type transformers). DOE assumed a similar ratio between single- and three-phase medium-voltage dry-type transformers at each BIL range. DOE then scaled the single-phase medium-voltage dry-type transformer default values using **Error! Reference source not found.**

## VIII. Procedures for Processing Applications

### (a) Processing applications:

- (1) Applications and notifications to the Department must be submitted to the Energy Efficient Transformer Rebate Program, at [EPS\\_EET\\_rebates@ee.doe.gov](mailto:EPS_EET_rebates@ee.doe.gov).
- (2) Following submission of an application, DOE will review and consider the completeness of the application data and may request supplementary information relating to the application. When DOE is satisfied that sufficient information has been reported, the application will be reviewed for eligibility consistent with section 1006 and this Guidance.
- (3) Applications will be processed on a first come, first serve basis subject to availability of appropriated funds.

### (b) Notice of decision:

- (1) DOE will issue a written notice of the determination to each applicant with the following content:
  - (i) Disapproving or approving the application as eligible for rebate payment in whole or in part; and
  - (ii) Setting forth the applicant's amount of rebate payment.
- (2) If the application does not meet the requirements of this program, DOE will issue a written notice denying the application in whole or in part with an explanation of the basis for denial.

## IX. Administrative Appeals

(a) In order to exhaust administrative remedies, an applicant who receives a notice denying an application in whole or in part, must file an appeal within 30 calendar days of the date on the notice denying an application with the DOE Office of Hearings and Appeals, 1000 Independence Avenue, S.W., Washington, D.C. 20585, in accordance with the procedures set forth below and in accordance with the procedural regulations codified at 10 C.F.R. Part 1003.

(b) If an applicant does not file an appeal in accordance with these requirements, the determination of DOE shall become final. If an applicant files an appeal on a timely basis in accordance with these requirements, the decision and order of the Office of Hearings and Appeals shall be final. If the Office of Hearings and Appeals orders a rebate, the Director of the Office of Hearings and Appeals shall send a copy of such order to the DOE Finance Office with a directive to make the required payment.

(c) The appeal shall contain: (1) a concise statement of the ground(s) upon which the applicant contests the written notice of DOE; (2) a copy of the DOE notice; (3) contact information (i.e., name, telephone number, mailing and e-mail addresses) for a representative able to respond to questions and provide

information relevant to the appeal; and (4) any data, documentation, or other relevant information supporting a showing by the appellant that the denial of eligibility or disallowance of payment, either in whole or in part, is arbitrary and capricious.

(d) The appeal, including attachments, should be electronically filed with the Office of Hearings and Appeals (OHA), U.S. Department of Energy, at: [OHA.filings@hq.doe.gov](mailto:OHA.filings@hq.doe.gov). Upon filing, OHA will confirm receipt of the appeal and assign the appeal a case number.

(e) The following matters are not subject to appeal:

(1) the denial of an application on the basis of untimeliness, and

(2) a proportional award of a rebate payment based upon DOE's determination that insufficient appropriated funds are available to make rebate payments on all eligible production to all qualified applicants.

(f) The appeal process shall proceed as follows:

(1) An appeal under these procedures must be filed within ten (10) days of an applicant receiving the determination by DOE denying eligibility or a claim for rebate payment, in whole or in part.

(2) In evaluating an appeal, OHA may require the submission of additional information by the appellant regarding any statement, data, documentation, or other information included in an appeal. OHA may also solicit and accept submissions of relevant information from other sources, including DOE, provided that the appellant is afforded an opportunity to respond to all such submissions. OHA may, on its own initiative, convene a conference or hearing if, in its discretion, it considers that such conference or hearing will advance its evaluation of the appeal. OHA will determine the scope and format of any conference or hearing convened under these procedures, as well as the parties allowed to participate.

(3) OHA may issue an order summarily dismissing an appeal if: (a) the appeal is not filed in a timely manner, unless good cause is shown; (b) the appeal is defective on its face; (c) the appellant fails to provide additional information requested by OHA within the time specified by OHA; or (d) for any other reason that the appeal would be subject to dismissal under the OHA procedural regulations codified at 10 C.F.R. Part 1003.

(4) OHA will provide DOE with the opportunity to submit a written response to an appeal within a period of time specified by OHA. OHA will provide the appellant with a copy of DOE's response and allow the appellant to submit a reply within a period of time specified by OHA.

(5) Within thirty (30) days of receiving all required information, including additional information requested by OHA subsequent to the submission of the appeal, OHA shall issue a written decision granting or denying the appeal, in whole or in part. The decision shall include a written statement setting forth the relevant facts and basis for the determination. Upon issuance, OHA shall serve an electronic version of the decision upon the appellant and the DOE Office of Energy Efficiency and Renewable Energy. The decision will also be published on the OHA website:

<http://www.energy.gov/oha>. The decision of OHA shall constitute the final agency action and the appellant's final right of administrative review.

(6) All expenses incurred by the appellant in pursuing any appeal before OHA shall be borne exclusively by the appellant.