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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service

7 CFR Parts 966 and 980

[Docket No. FV97–966–1 PR]

Tomatoes Grown in Florida and Imported Tomatoes; Reopening of Comment Period on Changing Minimum Size and Size Designation Requirements

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Reopening of the comment period.

SUMMARY: Notice is hereby given that the comment period on proposed changes in the minimum size and size designation requirements for Florida and imported tomatoes is reopened until November 5, 1997.

DATES: Comments must be received by November 5, 1997.

ADDRESSES: Interested persons are invited to submit written comments concerning this proposal. Comments must be sent in triplicate to the Docket Clerk, Fruit and Vegetable Programs, AMS, USDA, room 2525–S, P.O. Box 96456, Washington, DC 20090–6456, Fax: (202) 720–5698. All comments should reference the docket number and the date and page number of this issue of the **Federal Register** and will be available for public inspection in the Office of the Docket Clerk during regular business hours.

FOR FURTHER INFORMATION CONTACT: George Kelhart, Marketing Order Administration Branch, F&V, AMS, USDA, room 2525–S, P.O. Box 96456, Washington, DC 20090–6456; Telephone: (202) 720–2491, Fax: (202) 720–5698. Small businesses may request information on compliance with this proposed regulation by contacting: Jay Guerber, Marketing Order Information Branch, Fruit and Vegetable Programs, AMS, USDA, P.O. Box 96456, room 2525–S, Washington, DC 20090–6456; Telephone: (202) 720–2491, Fax: (202) 720–5698.

SUPPLEMENTARY INFORMATION: A proposed rule was issued on October 2, 1997, and published in the **Federal Register** (62 FR 52047; October 6, 1997). The proposed rule would increase the minimum diameter size requirement for Florida and imported tomatoes from 2 8/32 inches to 2 9/32 inches. For Florida tomatoes alone, the rule would change the size designations from Medium, Large, Extra Large to numeric size designations of 6×7, 6×6, and 5×6. The proposal also would slightly increase the diameter size ranges for the designated sizes. The comment period ended October 16, 1997.

The Secretaria de Comericio Y Fomento Industrial (SECOFI) of Mexico requested that additional time be provided for interested persons to comment on the proposed rule. SECOFI stated that U.S. tomato imports from Mexico have accounted for over 30 percent of U.S. consumption during the marketing order season, on average, over the past 10 years, and that the proposed measures would have a direct and important impact on Mexican producers and exporters. SECOFI further stated that it first became aware of the proposal only after it was published in the **Federal Register**, and that Mexican producers were not given advance notice and allowed to prepare for the possible change. The request indicated that immediate implementation of the proposal could seriously disrupt Mexican exports.

SECOFI also pointed out that Article 1802 of the North American Free Trade Agreement (NAFTA) requires that proposed regulatory measures affecting trade be published in advance, and that interested persons and the NAFTA country governments be provided a ''reasonable opportunity'' to comment on those proposed measures. SECOFI indicated that the 10-day time limit did not give a ''reasonable opportunity'' for comments, and requested that the comment period be extended for 60 additional days.

Providing an additional 60 days for comments would delay the final decision on these proposed measures until January of 1998. This is not acceptable because these measures, if adopted, should apply to as much of the 1997–98 domestic and import shipping seasons as possible. The Florida tomato industry has just begun harvesting, packing, and shipping 1997–98 season tomatoes, while Mexico exports to the U.S. each month of the year, with the most significant shipping period starting in mid-December.

Article 909.1(a) of NAFTA generally requires at least a 60-day notice period prior to the adoption or modification of a technical regulation, but, for a technical regulation relating to perishable goods, a 30-day notice prior to adoption of a regulation can be used.

After reviewing the situation, and in accordance with NAFTA, the Department is reopening the comment period for 20 additional days or until November 5, 1997. This will provide interested persons a total of 30 days to review the proposed rule, perform a more complete analysis, and submit any written comments.

This delay should not substantially add to the time required to complete this rulemaking action. Accordingly, the period in which to file written comments is reopened until November 5, 1997. This notice is issued pursuant to the Agricultural Marketing Agreement Act of 1937.

Authority: 7 U.S.C. 601–674.

Dated: October 17, 1997.

Robert C. Keeney,

Deputy Administrator, Fruit and Vegetable Programs.

[FR Doc. 97–28020 Filed 10–20–97; 8:45 am]

BILLING CODE 3410–02–P

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

10 CFR Part 430

[Docket No. EE–DET–97–550]

RIN 1904–AA85

Energy Conservation Program for Consumer Products: Determination Concerning the Potential for Energy Conservation Standards for Electric Distribution Transformers

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy (DOE).

ACTION: Notice of Determination.

SUMMARY: The Department of Energy (DOE or the Department) has

determined, based on the best information currently available, that energy conservation standards for electric distribution transformers are technologically feasible, economically justified and would result in significant energy savings. This determination initiates the process of establishing, by notice and comment rulemaking, test procedures and energy conservation standards for this product.

ADDRESSES: Copies of ''Guide for Determining Energy Efficiency for Distribution Transformers'' (NEMA Standards Publication TP 1–1996), ''Determination Analysis of Energy Conservation Standards for Distribution Transformers, ORNL–6847,'' and ''Supplement to the Determination Analysis (ORNL–6847) and Analysis of the NEMA Efficiency Standard for Distribution Transformers, ORNL–6925,'' are available in the DOE Freedom of Information Reading Room, U.S. Department of Energy, Forrestal Building, Room 1E–190, 1000 Independence Avenue, SW, Washington, DC, 20585, (202) 586–6020, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT:

Kathi Epping, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Mail Station EE–43, Forrestal Building, 1000 Independence Avenue, SW, Washington, DC 20585–0121, (202) 586–7425, FAX: (202) 586–4617, email: kathi.epping@hq.doe.gov.

Edward Levy, Esq., U.S. Department of Energy, Office of General Counsel, Mail Station GC–72, Forrestal Building, 1000 Independence Avenue, SW, Washington, DC 20585–3410, (202) 586–9507, email: edward.levy@hq.doe.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

A. Authority

The National Energy Conservation Policy Act of 1978, Pub. L. 95–619, amended the Energy Policy and Conservation Act (EPCA) to add a Part C to Title III, which established an energy conservation program for certain industrial equipment. The most recent amendments to EPCA, in the Energy Policy Act of 1992, Pub. L. 102–486, (EPACT) included amendments that expanded Title III of EPCA to include certain commercial water heaters and heating and air-conditioning equipment, incandescent and fluorescent lamps, electric motors and electric distribution transformers.

Among these amendments is section 124(a) of EPACT, which amended section 346 of EPCA, 42 U.S.C. 6317, to provide that the Secretary of Energy must prescribe testing requirements and energy conservation standards for those distribution transformers for which the Secretary determines that standards ''would be technologically feasible and economically justified, and would result in significant energy savings.'' 42 U.S.C. 6317(a). Section 346 was also amended to require the Secretary, within six months after prescribing energy conservation standards for distribution transformers, to prescribe labeling requirements for such transformers.

Section 346 requires the Department to make a determination that standards for transformers are technologically feasible and economically justified, and would save significant amounts of energy, *before* the Department initiates the process for promulgating test procedures and specific standards. The section could be read as providing that once this initial determination is made, there is no further consideration of technological feasibility, economic justification, or energy savings, and that the Department must proceed to adopt standards. Such an interpretation, however, would be inconsistent with the approach in other provisions of EPCA, and would be impractical. It is inconsistent, for example, with section 325(o) of EPCA, under which economic justification is addressed *after* specific standards have been proposed, based on a detailed evaluation with respect to one or more specific standards. It is impractical because, even if one or more design options has the potential for achieving energy savings, a determination that such savings could in fact be achieved cannot be made without first having developed test procedures to measure the energy efficiency of transformer designs, and then conducting an in-depth analysis of each design option. Such analysis might show that no standard meets all three of the prescribed criteria: i.e., technologically feasible, economically justified and significant energy savings.

For these reasons, the Department construes section 346 as requiring it to: (1) Determine based upon the best information available whether standards for transformers would be ''technologically feasible and economically justified, and would result in significant energy savings,'' and (2) if energy conservation standards appear to be warranted under these criteria, to prescribe test procedures and conduct a rulemaking concerning such standards. During the standards rulemaking, the Department would describe whether and at what level(s) to promulgate standards. This decision would be based on in-depth consideration, with public participation, of the technological feasibility, economic justification, and energy savings of potential standard levels. Thus, the initial determination made today that standards are warranted under the criteria specified in section 346(a) would in effect be reviewed during the rulemaking process, based on more complete information than is currently available as to whether those criteria are met.

B. Rulemaking Procedures

EPCA, which provides rulemaking procedures for the promulgation of test procedures and standards for appliances and commercial equipment, is ambiguous as to whether these procedures apply to rulemakings on test procedures and standards for transformers. For the reasons discussed below, the Department will nonetheless use these procedures in conducting the test procedure and standards rulemakings for transformers.

In conducting rulemakings on all subjects, the Department must, at a minimum, adhere to the procedures required by the Administrative Procedure Act and section 501 of the Department of Energy Organization Act (DOE Organization Act), 42 U.S.C. 7191. Section 501 in essence requires the following: (1) Issuance of a notice of proposed rulemaking (NOPR), (2) an opportunity for comment, (3) an opportunity for presentation of oral comments, if there exists ''a substantial issue of fact or law'' or if the rule will have a ''substantial impact,'' and (4) publication of the final rule accompanied by appropriate explanation. Pursuant to E.O. 12662, the comment period must be at least 75 days.

With respect to test procedures for transformers, the Department has decided to use the same rulemaking procedures it uses under Part B of EPCA, and for other equipment covered under Part C. Thus, in addition to the generic procedural requirements described above, the Department will provide an opportunity for oral comment (i.e., hold a hearing) on all proposed test procedures, regardless of the ''substantial issue'' or ''substantial impact'' criteria, as is done in other EPCA test procedure rulemakings. See, e.g., EPCA section 323(b)(2), 42 U.S.C. 6293(b)(2). Hearings have been useful in promulgating test procedures in the appliance program, and a hearing can help to identify issues that should be addressed and points that should be amplified in the written comments. In addition, permitting oral as well as written comments will maximize the opportunity for interested parties to express their views on the proposed rule. This should give greater assurance of the validity and feasibility of the final test procedure that the Department adopts.

As to energy conservation standards, for most other products covered by EPCA, EPCA requires the Department to take supplemental steps in promulgating standards, including the following, that are not required by the Administrative Procedural Act or the DOE Organization Act:

1. An advance notice of proposed rulemaking (ANOPR) must be issued, followed by a 60-day comment period;
2. The notice of proposed rulemaking (NOPR) must set forth the maximum efficiency improvement that is technologically feasible and, if the proposed standard does not achieve this level, an explanation of why; and
3. A hearing must be held following issuance of the NOPR, regardless of the ''substantial issue'' or ''substantial impact'' criteria.

EPCA sections 325(p), 336(a), and 345(a), 42 U.S.C. 6295(p), 6306(a), and 6317(a). The Department also has a policy, in conducting rulemakings on appliance standards, to allow 75 days for comment on the ANOPR (rather than the 60 days required by EPCA), with at least one public hearing or workshop during this period. Procedures for Consideration of New or Revised Energy Conservation Standards for Consumer Products, 61 FR 36974, (July 15, 1996) (the ''Interpretive Rule'').

The first sentence of section 345(a) could be interpreted as requiring the Department to employ these EPCA procedures in developing standards on transformers. In any case, the Department has decided it will employ the foregoing procedures set forth in EPCA and the Interpretive Rule. It will do so in part for the same reasons it will use EPCA procedures to promulgate transformer test procedures. These reasons include: (1) EPCA procedures have worked well in the appliance program, and (2) they will provide enhanced the opportunity for public comment, thereby helping to improve the quality of the final rules. In addition, the Department has never developed efficiency standards for a product such as distribution transformers. Therefore, the Department believes that the development of transformer standards will benefit from enhanced opportunities for public participation during the standards development process. Such participation can best be achieved if the Department employs the full range of procedures used in its program to set efficiency standards.

C. Background

After the passage of EPACT, the Department contracted with the Oak Ridge National Laboratory (ORNL) to conduct a study to obtain data and assist the Department in making a determination as to whether standards for distribution transformers are warranted. ORNL developed and published a report, entitled ''Determination Analysis of Energy Conservation Standards for Distribution Transformer, ORNL–6847'' which was based on information from annual sales data, average load data, and surveys of existing and potential transformer efficiencies that were obtained from several organizations.

In the ORNL analysis, transformers with a primary voltage of 480 V to 35 kV and a secondary voltage of 120 to 480 V are defined as distribution transformers. This definition is consistent with ANSI/IEEE C57.12.80–1978 (subsection 2.3.1.1), which defines a distribution transformer as ''a transformer for transferring electrical energy from a primary distribution circuit to a secondary distribution circuit or consumer's service circuit.'' Typical utility primary distribution voltages in the U.S. range from 5 kV to 35 kV medium-voltage classes, and typical primary consumers' services are 480 V or higher; thus the total primary voltage range is 480 V to 35 kV. Typical secondary voltages in the U.S. range from 120 to 480 V. ANSI/IEEE C57.12.80–1978 indicates that distribution transformers usually have a rated capacity in the order of 5 –500 kVA. However, ANSI/IEEE C57.12.26–1993 defines pad-mounted distribution transformers as transformers with a rated capacity 2500 kVA or lower, with primary voltages of 34,500 V (35 kV class) or lower and secondary voltages of 480 V or lower. The ORNL analysis considered rated capacities ranging from of 10 to 2500 kVA for liquid-immersed transformers, because most manufacturers no longer produce units smaller than 10 kVA. For dry-type transformers a rated capacity range of 0.25 to 2500 kVA was considered; comments from manufacturers indicate that this range covers nearly all the U.S. dry-type transformer market, although the bulk of that market is in the range of 10 to 2500 kVA. The ORNL analysis did not consider transformers which are not continuously connected to a power distribution system as a distribution transformer. For example, transformers that are part of machinery which are switched off from electrical power were considered by the study as a component of the machinery's circuit and not part of the power distribution circuit. Also, special-purpose control and signal transformers, as well as bulk power transformers, were excluded from consideration because they are not classified as distribution transformers.

In the Department's view, the term ''distribution transformer'' in section 346 of EPCA means all transformers with a primary voltage of 480 V to 35 kV, a secondary voltage of 120 V to 480 V, and a capacity of either 10 to 2500 kVA for liquid-immersed transformers or 0.25 kVA to 2500 kVA for dry-type transformers, except for transformers described in the foregoing three sentences. This definition encompasses the transformers considered in the ORNL analysis.

ORNL collected data from the following organizations and sources: The American National Standards Institute (ANSI), Department of Commerce (DOC), Department of Energy (DOE), Edison Electric Institute (EEI), Institute of Electrical and Electronics Engineers (IEEE), National Electrical Manufacturers Association (NEMA), North American Electric Reliability Council (NAERC), Office of Management and Budget (OMB), various books and phone conversations with interested parties. In addition, the ORNL report used data from a survey developed by ORNL and circulated by NEMA to NEMA and non-NEMA manufacturers, to obtain no-load losses, load losses and selling prices of various sizes and types of distribution transformers. Data from these surveys and other relevant information were used in the report to show the potential energy savings of various conservation case studies such as: (1) Lowest Total

Owning Cost (TOC)[1] Case, (2) Median TOC Case, (3) Average Losses Case, (4) High-Efficiency Case, and (5) Two-Year Payback Case. The last of these, the Two-Year Payback Case, was not derived from the survey. Rather, a manufacturer developed this case during peer review of the report by using a combination of price and design losses, with the objective of achieving a two-year payback based on typical transformer operation and electricity rates. The efficiency levels used to define the conservation cases are based on responses from surveys completed by manufacturers.

Two peer reviews of the drafts of the report were performed by ORNL. The ORNL peer review consisted of 22 reviewers, including representatives of distribution transformer manufacturers, metal manufacturers, research institutions/laboratories, private as well as municipal electric utilities, manufacturer associations, metal associations, and energy conservation groups. After the comments from stakeholders were incorporated into the draft, the report (ORNL–6847) was published in July 1996. The information contained in this report assisted the Department in making this determination on the feasibility and significance of energy savings for distribution transformers.

In September 1996, shortly after publication of the ORNL report, the National Electrical Manufacturers Association (NEMA) developed and published a voluntary guide entitled ''Guide for Determining Energy Efficiency for Distribution Transformers'' (NEMA Standards Publication TP 1–1996, referred to ''NEMA TP–1'') to help purchasers choose more efficient distribution transformers. The NEMA TP–1 is intended to give manufacturers a vehicle to promote the use of high efficiency transformers and to assist purchasers/users in the selection of energy efficient transformers. NEMA TP–1 offers a simplified methodology to help users of utility (liquid-immersed) and commercial/industrial (dry-type) transformers to understand and calculate the equivalent first cost of core and load losses. It also offers an alternative method to users who would rather use tables of minimum efficiencies based on transformer kVA size, voltage considerations, and type (liquid-immersed or dry-type).

Subsequently, the Department determined that the initial estimate, reflected in the initial ORNL report, of the market size for dry-type transformers was too high. In addition, it was determined that the effective annual loads for liquid-immersed transformers were also too high. Consequently, ORNL re-analyzed the energy savings using a more accurate disaggregated model including data for all types and sizes of transformers. This data had not been available for the original ORNL study. Furthermore, the manufacturer that developed the two-year payback case advised ORNL that the actual payback will likely be substantially longer than 2 years due to higher than anticipated manufacturing costs. The two-year payback case was eliminated from the analysis because of this misestimation of cost and because this case is no longer necessary due to the addition of the TP–1 case. A description of the new data and model, ORNL's re-analysis, and an analysis of NEMA TP–1 are set forth in a second report, entitled ''Supplement to the 'Determination Analysis' (ORNL–6847) and Analysis of the NEMA Efficiency Standard for Distribution Transformers, ORNL–6925''. The purpose of this report is to assess NEMA TP–1 along with the options considered in the determination study, using the more accurate analysis model and transformer market and loading data developed subsequent to the publication of the original ORNL report.

Data and comments received from stakeholders during the peer review of the initial ORNL report have been considered in preparing this determination and will be more fully considered during all actions taken by the Department when proceeding with the rulemaking process to consider conservation standards for distribution transformers. Results of the energy savings analyses of the ORNL reports will be discussed in detail in the following sections of this determination notice.

II. Discussion of ORNL Reports

A. Purpose and Content

ORNL assisted the Department by studying the feasibility of achieving potential energy savings that could result from energy conservation standards for distribution transformers. The potential energy savings presented in the ORNL reports are preliminary estimates. Subsequent analyses will be performed after test procedures are established. These analyses will involve more exact, detailed information which will be developed during the standards rulemaking process, and will cover the effects of energy conservation standards for distribution transformers.

B. Methodology

The study methodology consisted of four major elements: (1) Development of a database, (2) development of conservation options, (3) assessments of the energy conservation options, and (4) incorporation of feedback from stakeholders. The following is a brief description of each element:

- *Database development.* Collecting and processing data was a major part of the study. Data on transformer designs, losses, and sales were provided by NEMA and individual manufacturers. The Edison Electric Institute (EEI), the American Public Power Association (APPA), and selected utilities provided utility user information. The database includes the results of a survey circulated by EEI and APPA to their member utilities. User information on dry-type transformers was provided by the American Institute of Plant Engineers. In addition, the Federal Energy Regulatory Commission's Form 1, Energy Information Administration data and trade journals were used. The basic information included historical information on user purchases, and costs and losses of new transformers for the various options considered in the study. Information on transformer loading factors was obtained from discussions with transformer manufacturers, utilities, and surveys of commercial and industrial users.
- *Development of energy conservation options.* Technically feasible energy conservation cases for distribution transformers were based on results of a survey circulated by NEMA, and other information provided by non-NEMA transformer manufacturers.
- *Assessments.* The technical analysis provided estimates of appropriate transformer loading factors, losses, and energy savings for the energy conservation cases.
- *Stakeholders input.* A distribution transformer review group consisting of manufacturers, users, material suppliers, and public interest groups was formed to provide data, and to review the study (see Appendix A of the initial ORNL report). Input from these stakeholders was incorporated in the report.

Much of the data on losses associated with cost-effective transformer designs used in this study are from a survey of

[1] Total Owning Cost is a capitalized value that permits the first cost of the transformer to be compared to the lifetime cost. The capitalized values can be converted to the equivalent discounted present values of the life-cycle costs by multiplying by the ratio of the fixed charge rate over the capital recovery factor. This information can be used to more accurately assess the tradeoffs between transformer first costs and operating costs, and allow the purchaser to compare the total costs of transformers with different energy efficiency levels.

transformers, called the NEMA-ORNL survey, developed by ORNL and circulated by NEMA to its members and several non-NEMA manufacturers. Utilities usually request that manufacturers submit bids for the lowest TOC transformer that they can design by specifying the transformer features and their A and B factors. The NEMA-ORNL survey took this approach. It included what were believed to be the most common features that would be requested for each size and price for the lowest TOC transformer they could design. The survey requested that manufacturers reveal the transformer design that had the lowest TOC in terms of core losses or no load losses (A factor), coil losses or load losses (B factor), and transformer price. While both A and B factors reflect the capitalized cost of losses, they differ in their cost per watt rates for two reasons. First, a watt of core loss represents a continuous loss that occurs whenever a transformer is energized, which is normally 100 percent of the time for most distribution transformers. This continuous loss of energy increases the cost per rated watt of core loss compared with the rated watt of coil loss, which occurs only while power is drawn through the transformer. The second reason for the difference in rate for A and B factors is the cost of energy associated with the losses. Load losses are proportionally higher during peak periods when the per unit cost of producing electricity is relatively high.

Three combinations of A and B factors were requested in the survey. The combinations of A/B factors requested were as follows:

1. A/B=$0/$0, which represents non-evaluated transformers. In the $0/$0 design, only the first cost is considered, and the price of the transformer is used as the TOC value (i.e., the value of losses is not included in the purchase decision). This design was requested in the survey to establish a baseline efficiency for non-evaluated distribution transformers.
2. A/B=$3.50/$2.25, with the B factor of $2.25 per watt representing a transformer with a relatively high average load.
3. A/B=$3.50/$0.75, with the B factor of $0.75 per watt representing a transformer with a normal to low average load while the A factor remains fixed at $3.50 per watt.

Twelve transformer sizes—six liquid-immersed and six dry-type—were surveyed:

Liquid-immersed transformers
1. Single-phase 25-kVA pole-mounted
2. Single-phase 50-kVA pole-mounted
3. Single-phase 50-kVA pad-mounted
4. Three-phase 150-kVA pad-mounted
5. Three-phase 750-kVA pad-mounted
6. Three-phase 2000-kVA pad-mounted

Dry-type transformers
7. Single-phase 1-kVA
8. Single-phase 10-kVA
9. Three-phase 45-kVA
10. Three-phase 1500-kVA
11. Three-phase 2000-kVA
12. Three-phase 2500-kVA

There were 216 transformer designs submitted for the 12 different types of transformers. Each type had at least three designs for each of the three A and B combinations. Eight designs for each of the three A and B combinations were submitted for the liquid-immersed 25-kVA pole, 50-kVA pole, and 50-kVA pad-mounted transformers.

Conservation cases were developed to determine if efficiency standards are warranted for distribution transformers. These cases were based on an economic methodology that is widely used by electric utilities in their purchase of distribution transformers: the TOC (total owning cost) methodology which considers the life cycle cost of owning a transformer. It finds the economically optimal tradeoff between the transformer's capital cost and its operating cost. The TOC methodology is neutral with respect to the technology and materials utilized in the transformer. It is a different approach from conservation based standards that are developed through explicitly considering energy efficient technologies.

For transformers, the technologies applied to alter the losses, and hence efficiencies, are very interactive and involve multiple variables, such as operating current density, flux density, geometric ratios and electrical insulation. For example, reducing no-load losses by using lower loss core materials generally requires an alteration of flux density and core/coil dimensions, which may or may not lower load losses. Hence, the ORNL reports used the TOC approach to allow for this interaction of design parameters in an optimal manner.

The TOC approach allows a utility to purchase the optimum distribution transformer for the particular set of energy costs and operating characteristics that are anticipated over the transformer's life. The TOC approach has led to significant increases in utility transformer efficiencies since it became widespread in the mid-1970's. Because the methodology is neutral with respect to transformer technologies and materials, it leads to choosing transformers that take advantage of any opportunities to economically improve transformer efficiencies.

The TOC approach was used in developing the conservation cases discussed in the ORNL reports. The first step in developing these conservation cases was selection of parameters that define the value of energy losses over a transformer's life. As previously explained, the TOC methodology hinges on the development of the A and B factors which represent the expected lifetime value per watt of a transformer's rated full load losses using the following formula:

$$TOC = price + (\text{no-load losses} \times A) + (\text{load losses} \times B)$$

A second key for developing these cases was selection of the low-TOC designs for the selected A and B values. During a typical transformer bid process, a buyer submits its required technical specifications and A and B values to a manufacturer. The manufacturer considers many transformer designs that meet the buyer's technical specifications with various load losses, no-load losses, and prices. From this large number of designs and costs, the manufacturer submits a selection of very low TOC designs for the buyer's consideration. The survey of manufacturers requested information on their lowest TOC designs for the selected A and B factors.

The losses and prices for each transformer manufacturer's lowest TOC design were used along with the utility surveys to develop the database. The database was used to develop the conservation cases for the determination study: The base case, the lowest TOC case, the median TOC case, the average losses case, and the high-efficiency case. The base case consisted of data on non-evaluated dry-type transformers and recent utility purchases of liquid-immersed transformers. The average losses case was developed by averaging losses from the three lowest TOC designs for each transformer size and type. A description of the conservation cases and their weighted efficiencies are presented in Table 1.

Amorphous-core transformer designs were excluded from two of the conservation cases, the lowest TOC case and the median TOC case. This exclusion does not imply that amorphous-core transformers are not economical for the A and B factors used in the study. Rather the rationale for excluding the amorphous-core transformers was to develop moderately high-efficiency cases that do not depend on a particular technology.

TABLE 1.—THE CONSERVATION CASES, PLUS THE NEMA TP–1 CASE, LISTED IN ORDER OF WEIGHTED EFFICIENCIES

Case	Description	Case efficiency weighted by sales [a] (%)
Base	Existing mix of transformers	98.40
NEMA TP–1	A voluntary efficiency guide	98.59
Median TOC	Efficiency of the transformer with the median TOC design according to a survey of manufacturers [b]	98.68
Average losses	Efficiency corresponding to the average full-load and no-load losses for the three most cost-effective transformers according to a survey of manufacturers [b].	98.81
Lowest TOC	Efficiency of the most cost-effective transformer according to a survey of manufacturers [b]	98.88
High-efficiency	Efficiency corresponding to highest efficiency according to a survey of manufacturers [b]	99.21

[a] The case efficiencies were recalculated by ORNL for this notice and are also set forth in the supplemental ORNL report.
[b] Distribution transformer manufacturers were asked to submit their lowest TOC designs corresponding to economic parameters developed to represent the nation.

Three of the conservation cases were based on the transformer manufacturers' minimum TOC designs. Use of different criteria to select from among the submitted designs provides a range of cost-effective transformer designs with different efficiencies. Estimates of the potential energy that could be saved if distribution transformers were more energy-efficient were developed for the conservation cases. Each conservation case is based on maximum load and no-load losses for the 12 sizes and types that were used to represent all new transformers by allocating each design to a range of transformer sizes. This approach was used because NEMA reports transformer sales in categories that include a range of transformer sizes. To estimate total annual losses for each conservation case, the average transformer losses per kilovolt-ampere were multiplied by the projected kilovolt-amperage of transformer sales. The energy losses (i.e., energy consumed by the transformer) for each conservation case were subtracted from the energy losses for the base case to provide an estimate of annual savings. The base case defines energy use for existing transformer purchasing practices. Table 2 represents the possible energy savings results based on the surveys circulated by NEMA to several NEMA and non-NEMA transformer manufacturers.

TABLE 2.—CUMULATIVE ENERGY SAVINGS FOR CONSERVATION CASES AND NEMA TP–1 [a]

Conservation case by transformer type	Cumulative savings, 2004–2034 (quads)
NEMA TP–1:	
Liquid	0.39
Dry	2.12
Total	2.51
Median total owning cost (TOC):	
Liquid	0.95
Dry	2.75
Total	3.70
Average losses:	
Liquid	1.84
Dry	3.58
Total	5.42
Lowest TOC:	
Liquid	1.26
Dry	5.04
Total	6.30
High-efficiency:	
Liquid	5.52
Dry	5.18
Total	10.70

[a] The energy savings were re-calculated by ORNL for this notice and are also set forth in the supplemental ORNL report; these savings have been revised downward from those estimated in the initial ORNL report.

The savings per kilovolt-ampere and the projections of estimated megavolt-amperage of transformer sales have been used to estimate the rate of savings in the first year and cumulative savings over 30 years if a conservation standard were enacted. Table 2 assumes that both utility and non-utility purchases of transformer capacity will grow by 1.2 percent annually, which is consistent with low-to-moderate growth energy scenarios. Sales of liquid-immersed utility distribution transformers depend primarily on new housing starts, while gross private domestic investments provide a good indicator for the growth rate of the non-utility (dry-type) transformer market. Several comments during the peer review of the initial ORNL report indicated that higher growth rates used in the report, such as 2.5% for the dry-type transformer market, were not realistic for the distribution transformer industry. The re-analysis on which Tables 1 and 2 are based essentially accepts these comments.

C. Conservation Cases

1. Base Case

Losses for the base case were estimated from the survey of electric utilities for evaluated liquid-immersed transformers (i.e., A and B factors = $0), and from the survey of manufacturers for the non-evaluated liquid-immersed and dry-type transformers (i.e., A factor = $3.50, and B factor = $2.75 or $0.75). The percentage of evaluated transformers was developed from information provided by transformer manufacturers. The base case non-evaluated transformers were assumed to have the average losses that were reported for the three lowest-priced transformers for the $0/$0 evaluation in the NEMA–ORNL survey. It was assumed that the evaluated transformers for the base case have the same losses as transformers that have been recently purchased by utilities. These losses were calculated from the average no-load and load loss ratings reported in the EEI–ORNL survey. The weighted average transformer efficiency for the base case was calculated at 98.40 percent.

2. Lowest Total Owning Cost (TOC) Case

The lowest TOC case measures savings resulting from the use of the lowest TOC non-amorphous transformer design for each of the 12 types of transformers surveyed in the NEMA–ORNL survey. The potential energy savings for this conservation case is 6.30 quads over a period of 30 years. Liquid-immersed transformers have a potential to achieve 1.26 quads in energy savings and dry-type transformers 5.04 quads. The weighted average transformer efficiency for this case was calculated to be 98.88 percent. The annual energy savings of this case is equivalent to constructing a large coal-fired power plant every four years. Although the technology required to meet this conservation case is feasible, some retooling might be required for manufacturers of dry-type transformers to achieve 5.05 quads of savings over a 30 year period. The actual amount and expenses required of retooling, if any, will be determined by performing a manufacturer impact analysis during the standards rulemaking process.

3. Median Total Owning Cost (TOC) Case

The median TOC case measures savings from the design that represents the median TOC of all submitted designs for each of the 12 types of transformers surveyed. The potential energy savings of this conservation case is 3.7 quads over a 30 year period. Liquid-immersed transformers have a potential to achieve 0.95 quads in energy savings and dry-type 2.75 quads. The weighted average transformer efficiency estimated for this case is 98.68 percent. The technology required to achieve savings at this level is feasible and is currently utilized by manufacturers of liquid and dry-type transformers. Some retooling might be required of dry-type manufacturers to meet this particular conservation case. Further analysis will examine this issue.

4. Average Losses Case

The average losses case measures the average losses for the designs with the three lowest TOC's for each of the 12 types of transformers that were evaluated. If high-efficiency amorphous-core designs qualified as one of the three lowest TOC's, they were included in these averages. Because this case incorporates the losses from several designs that were averaged, it better represents the diversity in cost-effective designs than the other cases. It is more representative of the transformer market than the cases that are based on selecting a single design. It should be reiterated that the transformer losses used to represent the average losses case do not represent the losses of a specific transformer design. Rather, this case represents an average of the losses of the three lowest TOC's for transformers submitted for each category in the survey.

The potential energy savings for this conservation case is 5.42 quads over a 30 year period. Liquid-immersed transformers have a potential energy savings of 1.84 quads and dry-type transformers 3.58 quads. The weighted average efficiency level of this conservation case is 98.81 percent. Although the technology required to meet this conservation case is feasible, retooling might be required for manufacturers of dry-type transformers to meet 3.58 quads of energy savings over a 30 year period. The actual amount and expense required of retooling, if any, will be determined by performing a manufacturer impact analysis during the standards rulemaking process.

5. High-Efficiency Case

This case included both amorphous and non-amorphous core transformer designs and is represented by the highest-efficiency design that was submitted for each of the 12 transformer types surveyed, regardless of the technology used to achieve that efficiency and independent of any economic evaluation criteria such as TOC. The weighted average transformer efficiency for this case is 99.21 percent. For transformer categories where no amorphous-core designs were submitted, the most efficient of the non-amorphous designs was selected.

Although production of amorphous-core transformers may be less process-intensive (i.e., manufacturing involves a smaller number of steps) than that of oriented silicon steel transformers, it is very labor-and materials-intensive. The lack of cost-effective access to this technology by all manufacturers may present an economic hardship to both the transformer manufacturers and end users.

Electric Power Research Institute (EPRI), General Electric (GE), and Allied Signal Amorphous Metals hold most of the U.S. patents for amorphous metal and amorphous technology. The EPRI patents are available under licensing terms and conditions to U.S. manufacturers. An important patent on amorphous ribbon manufacturing held solely by Allied Signal Amorphous Metals will expire this year. However, a critical patent on magnetic field annealing used during transformer core manufacturing is held by GE and will not expire until early in the next century. At present, GE has licensed Allied Signal Amorphous Metals to sublicense transformer manufacturers to use this patent.

If a standard were set at this conservation case level, the impacts on existing liquid-immersed transformer manufacturers that do not produce amorphous core transformers would depend on (1) the ease of access to the technology, (2) the availability of amorphous core material, (3) the level of necessary investments, and (4) the higher transformer selling price. Because the quantity as well as the cost of raw materials in this case is higher than that of oriented silicon steel, the price of these transformers is typically 20 to 40 percent higher than the price of silicon steel transformers. The cost of raw material for amorphous core transformers is twice that of oriented silicon steel. These higher costs are due to the use of ferro-boron, most of which is imported from Japan, China, and the United Kingdom. The cost of this material has decreased during the past two decades from $140 per pound in 1978 to about $1.50 per pound now. By comparison, however, the cost of materials for a non-amorphous core transformer is considerably lower, ranging from $0.70 to $1.15 per pound, depending on the grade of the silicon steel. Although this conservation case is technologically feasible, the increased costs of retooling and of purchasing amorphous core material as opposed to less expensive silicon steel appear to be a potential burden to most manufacturers. Further analysis during the rulemaking process will be performed to determine the potential costs for manufacturers to meet this energy conservation level.

This conservation case includes proprietary amorphous-core technology. Some comments received during the peer review expressed concern regarding the limited access to amorphous core technology. The Department recognizes that standards which effectively limit transformer designs to a particular technology, especially if that particular technology is proprietary, may have adverse competitive and consumer impacts, and that such impacts must be carefully considered in assessing economic justification.

D. Voluntary Programs

1. NEMA TP–1 Guide

In September 1996, NEMA published voluntary guidelines, ''Guide for Determining Energy Efficiency for Distribution Transformers'' (NEMA TP–1), to help purchasers choose energy efficient distribution transformers. Developed by NEMA's Transformer Committee and approved by participating manufacturers as a means to promote the purchase of high efficiency transformers, the guide recommends the use of the TOC methodology to select the most desirable transformer designs and provides a table of recommended efficiency levels for buyers that do not wish to use the TOC methodology.

NEMA TP–1 is a significant purchase decision tool. It offers utility transformer and commercial/industrial transformer users a simplified method for determining the equivalent first cost of transformers with different efficiency characteristics. This information can be used by prospective purchasers to more accurately assess the tradeoffs between transformer first costs and operating costs. For those who choose not to use this method for analyzing the total operating costs of transformers, NEMA TP–1 also provides tables of minimum efficiencies based on transformer kVA size and voltage.

NEMA TP–1's impact on energy savings will depend largely on two variables: (1) Manufacturer participation and (2) actual buyer/user purchase decisions. In the supplemental ORNL report, the possible energy impacts of NEMA TP–1 program were analyzed. ORNL has advised the Department that the upper bound of energy savings, with full manufacturer participation and universal acceptance by transformer purchasers of the minimum efficiency levels recommended in the NEMA TP–1 tables, would approach 2.51 quads over a 30-year period.

The ORNL analysis concluded that the efficiency levels recommended in the NEMA TP–1 tables would produce roughly a three year payback. The Department believes that such efficiency levels would capture the most cost-effective energy savings, but may not capture substantial energy savings that appear to be economically justified and technologically feasible.

2. National Business Awareness Campaign

The National Business Awareness Campaign was developed by NEMA to increase awareness of the benefits of more energy efficient electrical products, and to promote purchases of such products. This $1.5 million campaign, which has been under development for three years, will be directed at chief executive officers and chief financial officers of companies that purchase or make electrical products. NEMA is seeking support for the campaign from energy interest groups, distributors, energy service companies, and utilities. NEMA is also seeking partnerships with governmental agencies, such as the Environmental Protection Agency and the Department of Energy. NEMA plans to launch its campaign in the June/July time frame of 1997.

The Department seeks to support NEMA's campaign and intends to monitor its effectiveness in increasing the manufacture and purchase of more energy efficient electrical products.

III. Conclusion

A. Determination

Based on its analysis of the information now available, the Department has determined that energy efficiency standards for transformers appear to be technologically feasible and economically justified, and are likely to result in significant savings. Consequently, the Department will initiate the development of energy efficiency test procedures and standards for electric distribution transformers.

All energy conservation cases discussed in today's determination notice are technologically feasible. Data from the ORNL reports clearly show that current technologies used in the transformer market are available to all manufacturers. These technologies include increased use of higher grade silicon steels, copper, aluminum, and amorphous core materials. The machinery and tools used to produce more energy efficient transformers also appear to be generally available to manufacturers.

The cases analyzed in the determination report show that there is a large potential for energy savings, especially over a 30-year period: the Lowest TOC case has the potential to save 6.30 quads over a 30-year period; the Median TOC case could save 3.70 quads; and the High-Efficiency case could save 10.70 quads. The Lowest and Median TOC cases also demonstrate that increased efficiency could reduce significantly the total operating costs incurred by users of transformers, which is a strong indication that such efficiency levels would be economically justified. It also appears that these efficiency levels can be achieved without imposing substantial costs on manufacturers, thus providing further indication that they are economically justified.

Although all of the cases analyzed are technologically feasible and have significant energy savings, and at least two of these cases appear to be economically justified, it is still uncertain whether further analyses will reconfirm these findings. For example, the Department has not assessed the potential adverse impacts of a national standard on manufacturers or individual categories of users. During the course of the standards rulemaking process, the Department will perform an analysis of the impact of possible standards on manufacturers, as well as a more disaggregated assessment of their possible impacts on users.

The Department supports and commends NEMA's initiative to develop voluntary programs that will promote the manufacture and purchase of energy efficient distribution transformers. Industry-wide support for voluntary programs, such as NEMA's TP–1 guide and the National Business Awareness Campaign, could result in significant energy savings that might obviate the need for Federal regulatory intervention.

Based on the results of the analyses that have been completed, however, the Department believes it would be inappropriate to conclude now that either NEMA TP–1 or the National Business Awareness Campaign are likely to result in savings sufficient to eliminate the potential of technologically-feasible and economically-justified national standards to achieve significant additional energy savings. At this time, the Department does not share NEMA's view that the NEMA TP–1 program will result in efficiency levels that approach the maximum technologically feasible and economically justified levels. The supplemental ORNL report indicated that the potential energy savings of NEMA's TP–1 program is 2.51 quads over a 30-year period, while the potential savings from a higher efficiency level that appears to be both technologically feasible and economically justified exceeds 6 quads over 30 years. Furthermore, based on ORNL's analysis of NEMA TP–1, it appears that many buyers of electric distribution transformers, especially in the commercial market (dry-type transformers), are not likely to participate in NEMA's voluntary TP–1 program, so the actual savings are likely to be below the 2.51 quads estimated. The Department will reassess the impact of these voluntary programs during the rulemaking on standards.

B. Future Proceedings

The Department will begin, therefore, the process of establishing testing requirements for distribution transformers, which it expects will result in the publication of a Notice of Proposed Rulemaking in 1998. During this rulemaking process, the Department will consider the draft test procedure currently being developed through a joint effort of NEMA and the National Institute of Standards and Technology (NIST). The Department will schedule a public hearing and may also hold workshops to receive comments in reference to the test procedures. Publication of a Final Rule containing test procedures is anticipated during 1999.

The Department will also begin a proceeding to consider establishment of conservation standards for distribution transformers. Throughout the rulemaking process, the Department intends to adhere to the provisions of the Interpretive Rule, where applicable. The Department will continue its review and analysis of the likely effects of NEMA TP–1 and National Business Awareness Campaign programs during the standards rulemaking. There will be workshops early in the standards development process to obtain the views of interested parties on design options, the conduct of the engineering and life-cycle cost analyses, and the expertise needed by the Department to perform such analyses. During the rulemaking process, the Department also intends to reevaluate its determination that mandatory standards are technologically feasible and economically justified, and are likely to result in significant energy savings. For example, the Department anticipates that NEMA will strengthen its efforts to promote voluntary standards for distribution transformers and will submit additional data for the Department's review and analysis. The Department welcomes data demonstrating the successful market penetration of NEMA TP–1 and/or the National Business Campaign. If further analyses reveal that standards are not warranted, DOE will revise this determination and will not proceed to promulgate standards.

Issued in Washington, D.C., on September 5, 1997.

Joseph J. Romm,

Acting Assistant Secretary, Energy Efficiency and Renewable Energy.

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 52 and 64

[CC Docket No. 92–237; FCC 97–364]

Administration of the North American Numbering Plan, Carrier Identification Codes (CICs)

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: On October 9, 1997, the Commission released a Further Notice of Proposed Rulemaking (FNPRM) addressing carrier identification codes (CICs). The FNPRM is intended to obtain comment on issues related to CIC use and assignment. This FNPRM contains proposed information collections subject to the Paperwork Reduction Act of 1995 (PRA). It has been submitted to the Office of Management and Budget (OMB) for review under the PRA. OMB, the general public, and other Federal agencies are invited to comment on the proposed information collections contained in this proceeding. The Commission concurrently released a Order in the same docket.

DATES: Comments must be filed on or before November 24, 1997, and reply comments must be filed on or before December 22, 1997. Written comments by the public on the proposed information collections are due on November 24, 1997. Written comments must be submitted by OMB on the proposed information collections on or before December 22, 1997.

ADDRESSES: Federal Communications Commission, Secretary, Room 222, 1919 M Street, N.W., Washington, DC 20554. In addition to filing comments with the Secretary, a copy of any comments on the proposed information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, Room 234, 1919 M Street, N.W., Washington, DC 20554, or via the Internet to jboley@fcc.gov, and to Timothy Fain, OMB Desk Officer, 10236 NEOB, 725—17th Street, N.W., Washington, DC 20503 or via the Internet to fain—t@al.eop.gov.

FOR FURTHER INFORMATION CONTACT: Elizabeth Nightingale, Attorney, Network Services Division, Common Carrier Bureau, (202) 418–2352. For additional information concerning the information collections contained in this FNPRM contact Judy Boley at 202–418–0214, or via the Internet at dconway@fcc.gov.

SUPPLEMENTARY INFORMATION: This summarizes the Commission's Further Notice of Proposed Rulemaking in the matter of Administration of the North American Numbering Plan, Carrier Identification Codes (CICs), CC Docket 92–237, adopted October 8, 1997, and released October 9, 1997. The file is available for inspection and copying during the weekday hours of 9 a.m. to 4:30 p.m. in the Commission's Reference Center, Room 239, 1919 M St., N.W., Washington D.C., or copies may be purchased from the Commission's duplicating contractor, ITS, Inc., 1231 20th Street, N.W., Washington, D.C. 20036, phone (202) 857–3800.

Paperwork Reduction Act

This FNPRM contains a proposed information collection. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the OMB to comment on the information collections contained in this FNPRM, as required by the Paperwork Reduction Act of 1995, Public Law 104–13. Public and agency comments are due at the same time as other comments on this FNPRM; OMB notification of action is due 60 days from date of publication of this FNPRM in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

Title: Administration of the North American Numbering Plan, Carrier Identification Codes (CICs), CC Docket 92–237 (Semi-Annual Access and Usage Reporting Requirements), adopted October 8, 1997, and released October 9, 1997.

Form No.: N/A.

Type of Review: New collection.

Respondents: Business or other for-profit.

Title	No. of respondents	Est. time per response	Total annual burden
1. Incumbent LEC and CIC Assignees Semi-Annual Access and Usage Reporting	2600	4x2	20,800
2. NANP Administrator Semi-Annual Access and Usage Reporting	1	16x2	32

Total Annual Burden: 20,832 hours.

Frequency of Response: Semi-annual.

Estimated costs per respondent: $0.

Needs and Uses: Proposal 1: that semi-annual access and usage reporting requirements for Feature Group D CICs be imposed on all incumbent local exchange carriers (LECs) and CIC assignees and that this information be