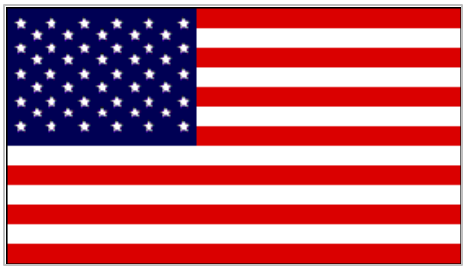




NORTH AMERICAN ENERGY EFFICIENCY

STANDARDS AND LABELING

NORTH AMERICAN ENERGY WORKING GROUP

NORTH AMERICAN ENERGY WORKING GROUP

The North American Energy Working Group (NAEWG) was established in the Spring of 2001 by the Canadian Minister of Natural Resources, the Mexican Secretary of Energy, and the U.S. Secretary of Energy, to enhance North American energy cooperation. The Group is led by officials from Natural Resources Canada, the Mexican Secretariat of Energy, and the U.S. Department of Energy.

The goals of the NAEWG are to foster communication and cooperation among the governments and energy sectors of the three countries on energy-related matters of common interest, and to enhance North American energy trade and interconnections consistent with the goal of sustainable development, for the benefit of all. This cooperative process fully respects the domestic policies, divisions of jurisdictional authority, and existing trade obligations of each country.

To achieve these goals, the NAEWG exchanges views and shares information on factors affecting North American energy, including policies and programs, market developments, and anticipated demand and sources of supply. It also identifies issues that need to be addressed, such as regulatory structures, interconnections, technical specifications, and technology research and development.

The scope of the NAEWG's discussions includes the full range of energy development, production, transport and transmission, distribution, and consumption in North America. It also considers the full range of energy sources, as well as the efficient and clean production and use of energy.

This document, as a publication of the NAEWG, reflects a joint perspective of the national energy departments of Canada, Mexico, and the United States. Information on each country contained in this document has been provided through the relevant country's national energy department, which retains sole responsibility for the information on its country.

TABLE OF CONTENTS

Introduction

In Canada, Mexico, and the United States, domestic programs relating to minimum energy performance standards (MEPS), test procedures, comparative labeling, and endorsement labeling are key elements in support of each country's goals in such areas as energy security, environmental protection, and economic growth. These programs, implemented in varying ways and within different institutional contexts, have been highly effective in reducing energy intensity in North America, and have supported growing markets for energy-efficient products and services.

On a regional level, the North American Free Trade Agreement (NAFTA) has had a positive impact on the development of a North American market for efficient products. A large number of products in North America are manufactured in one country and installed and used in others. However, different requirements in MEPS, test procedures, comparative labeling, and endorsement labeling have the potential to result in unnecessary barriers to trade within the region.

The North American Energy Working Group (NAEWG) has taken on the task of exploring possibilities for enhanced cooperation among our three countries to identify ways by which increased dialogue and closer cooperation on energy efficiency programs can guide the development of programs in the region.

The Group has been active in the following three areas:

1. Analyzing some of the commonalities and differences in the test procedures of Canada, Mexico, and the United States, and identifying areas in which the three countries might consider harmonization;
2. Exploring possibilities for increased mutual recognition of laboratory results; and
3. Looking at possibilities for enhanced cooperation in voluntary endorsement labeling programs (e.g., Energy Star).

The Working Group recognizes the high level of integration of the energy-using equipment markets in the three countries. Some energy-efficiency programs (e.g., technical specifications, test procedures) contain elements that are common to the three countries. There are, however, tangible opportunities for greater coordination through joint efforts on energy efficiency, respecting each country's individual energy efficiency policies, and recognizing existing jurisdictional and legislative boundaries.

By collaborating, the three countries hope to reduce the costs of compliance with standards and mandatory labeling programs in the region, accelerate the replacement of less-efficient products, and facilitate the transformation of the regional market for energy-efficient products.

The Working Group expects this collaboration to result in tangible benefits for energy, the environment, and the three economies of North America, through the reduction of energy

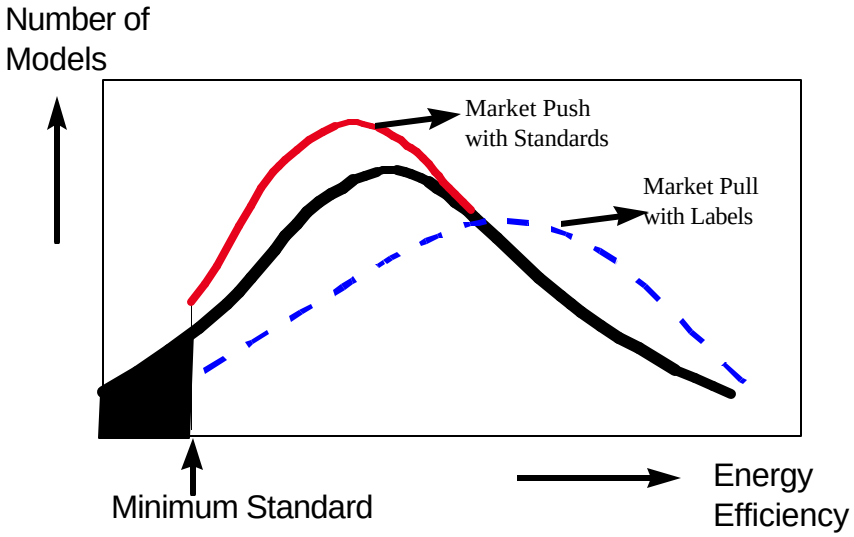
waste; the facilitation of market development for energy efficiency technologies; the attenuation of some of the environmental impacts of energy production, transportation, and use; and the reduction of North America's energy dependence on other regions of the world.

This paper provides an update on the Group's progress on energy efficiency, and shares some of the results of its analyses to date. Section I describes energy efficiency standards and labeling programs in general terms, and why they are effective instruments in meeting energy-efficiency goals. Section II explains the different processes and institutional contexts for standards and labeling programs in each country. Section III goes on to provide an overview of the status of standards and labels in the three countries, identifying where commonalities and differences exist. Section IV describes the activities to date of the Working Group in the area of energy efficiency. The NAEWG wishes to thank Lawrence Berkeley National Laboratory for its technical assistance in preparing this document.

I. Energy Efficiency Standards and Labels

Standards and labels are particularly effective policy tools for increasing the efficiency of energy-using appliances, equipment, and lighting by accelerating the penetration of energy-efficient technology into the marketplace.

Figure 1. Standards and Labels Work Together to Transform Markets



As Figure 1 shows, the effects of standards and labels in the marketplace are complementary. For each energy-using product or process (e.g., household appliances, office equipment, lighting products, industrial processes, automobiles), one can identify a metric that measures energy efficiency (e.g., kilowatt hours per year for refrigerators and miles per gallon for automobiles). The black line in Figure 1 represents the market for energy-using products in the absence of standards and labels. As the red line shows, standards "push" the market by causing manufacturers to eliminate production of the least-efficient models previously sold. As the hatched blue line shows, labels "pull" the market by providing information to consumers that allows them to make better-informed decisions and purchase the most-efficient available models, thus stimulating manufacturers to design higher-efficiency products. Together, standards and labels increase the efficiency of products offered in the market.

Energy-efficiency programs, including standards and labeling, aim to foster a sustainable "market transformation" process – permanently transforming specific markets toward increased sales of energy-efficient products. This is done by:

- developing a metric to measure the energy efficiency of a country's (or region's) major energy uses;
- designing clear procedures to test and verify energy use for each of these uses; and
- establishing consistent criteria for mandated and/or recommended efficiency levels throughout a country or region's different energy-efficiency policies and programs.

Among the range of available programs and tools, standards and labeling programs have several advantages:

(a) they have potential for generating very large energy savings,

(b) they are a cost-effective way to limit energy waste and contribute to increased economic efficiency,

(c) they require changes in the behavior of a manageable number of manufacturers rather than the total consuming public,

(d) they treat all manufacturers, distributors, and retailers equally, and

(e) the resulting energy savings are generally assured, are comparatively simple to quantify, and can be readily verified.

By providing assurances that the superiority of new models will be communicated to prospective buyers, standards and labeling programs stimulate the research and development (R&D) that introduces advanced technologies.

These programs benefit from continuous review and adjustment of the criteria to ensure that they accurately describe progress toward energy performance goals. An open and transparent review process helps to ensure that manufacturers can minimize the costs of adjusting to future standards and labeling requirements.

The Energy Star endorsement labeling program—active in the United States and Canada, and under consideration in Mexico—is an example of a powerful market transformation tool that meets all of these criteria and can be used in conjunction with other programs. The Energy Star label identifies for purchasers energy-using products that meet specified efficiency criteria (e.g., 10% or more above the minimum standard). The label also provides a basis for publicity campaigns, supports government and/or private purchasing programs, and gives manufacturers a motive for designing more-efficient products and a tool for marketing them. As in the United States, other programs, such as government purchasing guidelines and utility rebate programs, can be designed to use the Energy Star label as a criterion of compliance, effectively reinforcing to manufacturers and consumers the common efficiency levels endorsed across the programs.

This type of cross-cutting energy-efficiency program, based on integrated standards and labels, can help a country—or region—dramatically improve the efficiency of their energy-using products and processes.

II. The Process and Institutional Context for Energy Efficiency Standards and Labels in Each Country

A. Legal basis and institutions for MEPS and labels in the three countries

i. Canada

The *Energy Efficiency Act* passed in 1992 provides for the making and enforcement of regulations concerning MEPS for energy-using products, as well as the labeling of energy-using products and the collection of data. The first Regulations under the Act came into effect in 1995, following extensive consultations with the provincial governments, affected industries, utilities, environmental groups, and others. (Labeling had commenced in 1978 under earlier legislation.) The Regulations established MEPS for a wide range of energy-using products, with the objective of eliminating the least-efficient models from the Canadian market.

The Regulations apply to dealers (manufacturers or importers) who import regulated products into Canada or ship them from one Canadian province to another. The Federal Regulations do not apply to products that are manufactured and sold within one province. However, most provinces have their own energy efficiency regulations, which may differ from the Federal Regulations or may apply to other classes of equipment. The Federal Regulations, which are administered by Natural Resources Canada (NRCan), do not take precedence over provincial regulations for locally made and sold products.

For the products covered in the Federal Regulations, the MEPS levels apply equally where the products are incorporated into other products (e.g., where fluorescent lamps and ballasts are sold as part of a complete luminaire). Exports and products that are shipped between provinces only in order to be exported from Canada are exempt from the Federal Regulations.

Natural Resources Canada also administers the national comparative labeling program, EnerGuide, which has both mandatory and voluntary labeling elements. The EnerGuide label for major household appliances and room air conditioners is administered under the Regulations of Canada's Energy Efficiency Act, which specify all details pertaining to the labels, including placement on products. The voluntary EnerGuide label for heating, ventilation, and air conditioning (HVAC) products and gas fireplaces is administered in cooperation with industry associations. The EnerGuide label applies to both domestic and imported products.

In 2001, NRCan became the administrator of International Energy Star in Canada. NRCan and other partner countries recognize and promote the criteria and logo established under the USA Energy Star scheme.

ii. Mexico

Mexico's mandate for energy efficiency standards comes from a generic law, the Ley Federal Sobre Metrología y Normalización of July 16, 1992, which defines two types of

standards: voluntary Normas Mexicanas - NMX (Mexican Standards) and mandatory Normas Oficiales Mexicanas - NOM (Official Mexican Standards). The NOM are enacted by the Federal Secretariats, according to their areas of competence. In the case of energy efficiency, it is the Energy Secretariat, through the Comision Nacional para el Ahorro de Energia (CONAE), that enacts the mandatory standards. The Regulations apply to products that are marketed in Mexico. The legal basis for the Secretariat's mandate in energy efficiency is established in the Law for the Public Federal Administration, which aims to conserve non-renewable energy resources for future generations. CONAE is an agency of the Secretariat and it has been granted the authority to establish and operate the standards.

To operate the standards system, the Law establishes a set of specific and generic public and private organizations.

- ***Public***
  - National Standardization Commission (*Comisión Nacional de Normalización*): The main function of the Commission is to coordinate standardization activities at a national level. Its chair rotates among the participating ministries.
  - National standards advisory committees (*Comités consultivos nacionales de normalización*): Each committee is chaired by the corresponding ministry. For energy efficiency standards, the advisory committee is chaired by CONAE.
  - General Direction of Standards (*Dirección General de Normas*) of the Secretariat of the Economy (*Secretaría de Economía*). The Secretariat of the Economy enacts NOM related to user safety, commercial information (e.g., food labels), and practices. DGN approves testing laboratories.
  - National Metrology Center (*Centro Nacional de Metrología*): This is the primary calibration laboratory.

- ***Private***
  - Accreditation entities (*Entidades de acreditación*). These, such as the Entidad Mexicana de Acreditación (EMA), are in charge of recognizing the technical competence and trustworthiness of certification organizations, testing laboratories, calibration laboratories, and verification units.
  - Certification organizations (*Organismos de certificación*): These are organizations, such as the Asociación de Normalización y Certificación, A.C. (ANCE), whose objective is to certify compliance with standards. They require approval by the corresponding ministries.
  - National normalization organizations (*Organismos nacionales de normalización*): These are organizations whose objective is to elaborate (non-mandatory) Mexican Standards.
  - Testing laboratories (*Laboratorios de pruebas*). These can be either independent or operated by manufacturers.
  - Verification Units (*Unidades de verificación*).
  - Calibration laboratories (*Laboratorios de calibración*).

ANCE is responsible for developing the NMX related to the electric sector. It also can certify others and has its own laboratory for conducting various standardized test procedures.

Under Mexican law and as an element of the standards, CONAE also implements a mandatory comparative labeling program for room and central air conditioners, refrigerators and/or refrigerator-freezers, clothes washers, centrifugal residential pumps, gas water heaters, commercial refrigeration, and non-residential building envelopes.

In 1995, Mexico also introduced the Sello FIDE, a voluntary energy efficiency endorsement seal given by the Fideicomiso para el Ahorro de Energía Eléctrica (FIDE). FIDE is a fund that draws resources from the Comisión Federal de Electricidad (CFE), as well as labor organizations and businesses that sell to CFE. Appliances labeled under this program are room air conditioners, fluorescent lamps and compact fluorescent lamps (CFLs), refrigerators, refrigerator-freezers, motors, and compressors.

iii. United States

In 1975, The Energy Policy Conservation Act (EPCA) directed the U.S. Department of Energy (DOE) to develop voluntary appliance efficiency targets. The National Energy Conservation Policy Act of 1978 (NECPA) directed DOE to set MEPS in replacement of the EPCA voluntary targets, and gave federal MEPS preemption over state standards. The National Appliance Energy Conservation Act of 1987 and amendments of 1988 (NAECA) established MEPS for the twelve categories of appliances covered under EPCA and NECPA, and instructed DOE to set MEPS for one additional product if technically feasible and economically justified. It also required DOE to review and update the MEPS to keep pace with technological improvements, and strengthened the preemption of federal MEPS over state standards. The Energy Policy Act of 1992 (EPAct) directed DOE to develop voluntary national testing and information programs for widely used types of office equipment. It established MEPS for nine categories of energy- and water-using commercial sector products, electric motors, lighting products, plumbing products, and office equipment. It instructed DOE to set MEPS on additional products if technically feasible and economically justified. Like in Canada, the Regulations apply to manufacturers of regulated products or dealers who import regulated products into the United States.

NECPA also required the Federal Trade Commission (FTC) to mandate labels for appliances that indicate their energy consumption. The FTC issued guidelines for the comparative label in a rule promulgated in November 1979; the guidelines went into effect in 1980. The guidelines require manufacturers of major home appliances to place energy labels on their products.

Finally, there are two voluntary endorsement labeling programs in the United States. The Energy Policy Act of 1992 directed DOE to support a voluntary office equipment program (Energy Star). Energy Star is a joint effort with DOE and the US Environmental Protection Agency (EPA); the lead agency depends on the product. Appliances labeled under this

program include office equipment, household appliances and electronics, air conditioners and fans, furnaces and boilers, residential lighting products, and windows and roof products. In addition, a non-profit organization called Green Seal has implemented a voluntary ecolabel since 1992—the Green Seal of Approval—which endorses energy efficient products. Appliances labeled under this program include lamps, clothes washers and dryers, dishwashers, freezers, ranges/ovens, refrigerators, refrigerators-freezers, residential air conditioners, and heat pumps.

B. National procedures and protocols for the development of mandatory and/or voluntary MEPS and labels in the three countries

i. Canada

Test procedures are generally developed by consensus method at the Canadian Standards Association with participation from regulators (federal/provincial governments), manufacturers, and other interested stakeholders. These documents (generally called "standards") contain the test procedure, recommended minimum levels, and often marking or labeling instructions.

NRCan, through a process of public consultation (e.g., bulletins, workshops) and analysis (e.g., consumer economics, environmental impact), determines the mandatory MEPS and labeling requirements. The proposed amendments to the regulations are pre-published in the Canada Gazette, upon the approval of the Treasury Board. A 75-day period for receiving public comments must follow. Depending on the nature of the comments the proposal may be modified, after which it is approved again by the Treasury Board, published in the Canada Gazette for the final time, and implemented.

All regulated energy-using products imported into Canada or shipped between provinces must carry an energy-efficiency verification mark from a certification organization accredited by the Standards Council of Canada. The mark, which must be placed on the outside of the product, indicates that the energy performance of the product has been verified.

Before importing products or shipping them between provinces, dealers must ensure that an energy-efficiency report for that product has been filed with NRCan. The data in the report are used to verify compliance with MEPS, and also to develop energy labels and directories of labeled products. The Canadian EnerGuide labeling program commenced in 1978. A dealer who imports a covered product or ships it from one province to another must ensure that it is properly labeled, and that the label remains on the product until it is sold at the retail level or leased.

The label shows the energy consumption in kWh/year derived from the standard tests. (For room air conditioners, the label indicates the energy efficiency ratio – EER.) The label also shows:

- a bar scale comparing the model's energy consumption (or EER) to other models on the market that are in the same product group;

- the energy consumption (or EER) of the most and least energy-efficient models on the market that are in the same product group;
- the product group type and size category (or cooling capacity category in the case of room air conditioners); and
- the model number.

The Energy Efficiency Regulations specify the exact format, size, shape, and color of the EnerGuide label and how it is to be placed on the product.

Information on all labeled appliances is collected in two EnerGuide directories, one for appliances and one for heating, ventilation, and air conditioning. The EnerGuide program also has extensive support through Internet sites and retailer liaison and training programs.

As part of the International Energy Star Program, Canada (through NRCan) and other partner countries recognize and promote the criteria and logo established under the USA Energy Star scheme. Products in the agreement that currently have an EnerGuide label may have the Energy Star logo on the same label. The United States' EPA and DOE are responsible for developing the endorsement criteria, but NRCan is consulted when developing new specifications.

ii. Mexico

The National Consultative Committee of Standards for the Preservation and Rational Use of Energy Resources (CCNNPURRE) (Comité Consultivo Nacional de Normalización para la Preservación y Uso Racional de los Recursos Energéticos) is responsible for reviewing all MEPS proposals. CONAE presides over and defines membership in CCNNPURRE, which includes representatives from the Secretariats of Economy, Environment, Energy, and Treasury; research institutions such as the Electric Research Institute (Instituto de Investigaciones Eléctricas) and the National University; trade associations such as ANFAD, ANFEAA, and CANAME; and national associations of professionals (e.g., engineers and architects).

Enactment of a new MEPS typically takes about two years. Initially it takes 10 to 12 months to prepare a MEPS proposal and another 210 days to enact the MEPS. A MEPS proposal is presented to the CCNNPURRE, which has 75 days to provide comments. The CCNNPURRE comments are incorporated within the next 30 days and the proposal is then published in the Diario Oficial de la Federación (DOF). A period of 60 days for public comment is followed by another 45 days of consultation within CCNNPURRE to incorporate the public comments and approve the final MEPS and/or label and its publication in the DOF.

The NOM includes both the minimum energy performance levels required and the test procedure for determining the equipment performance. CONAE is in charge of verifying compliance.

Products that require mandatory comparative labels are rated as part of the MEPS process, and the labels show the appliances' efficiency levels in comparison to the MEPS level.

To display the voluntary endorsement label, Sello FIDE, manufacturers have to submit certified test results on their products to confirm that they meet the Sello FIDE requirements. A certified laboratory tests the products to verify manufacturer claims. If approved, manufacturers pay for certification and sign an agreement stipulating the length of validity of the Sello FIDE endorsement, how it can be displayed, and issues related to cancellation of certification. Manufacturers can then display the Sello FIDE on their products.

iii. United States

The U.S. Department of Energy is required by legislation to set MEPS for a wide range of products. Additionally, those products which are not covered by MEPS but which consume more than a specified amount of energy are to be considered for MEPS. However, MEPS can only be set after a prescribed process of research and consultation, and the MEPS levels must be demonstrated to be technically feasible and cost-effective. MEPS levels are periodically reviewed by DOE, and higher levels are set if the analysis justifies a revision.

A number of analyses are performed in the setting of each MEPS. An engineering analysis identifies and quantifies the cost of energy-saving technologies. Economic analysis looks at historical and projected costs and benefits to consumers, manufacturers, utility companies, and the country. Environmental impacts, including reducing emissions of carbon dioxide and nitrogen oxides, and utilization of chlorofluorocarbons, also are analyzed.

DOE published new process rules in July 1996. The new rules were designed to: 1) provide for early input from stakeholders and support efforts to build consensus on MEPS, 2) increase the predictability of the rulemaking timetable, 3) reduce the time and cost of developing MEPS, 4) ensure increased use of outside expertise, 5) eliminate design options early in the process, 6) ensure thorough analyses of impacts and the use of transparent and robust analytical methods, 7) ensure consideration of non-regulatory approaches, and 8) articulate policies to guide the selection of MEPS. Central to the new process is the consultation with stakeholders at all stages. DOE created an advisory committee to guarantee stakeholders access to the process and continuing process evaluation and improvement.

The FTC is responsible for the design, implementation, and compliance of the US mandatory labeling program. The National Institute of Standards and Technology (NIST) is responsible for the test procedures. The labels use annual energy use (in kWh) as the main comparative indicator. The rating system shows energy (kWh/year), operating cost, and the lowest and highest energy used for similar products. Energy efficiency ratios (i.e., EER or seasonal energy efficiency ratio, SEER) are used for climate-control appliances, for which energy consumption varies by region and seasons. The annual cost appears on the label in the case of room air conditioners, and on fact sheets and in industry-produced product

directories for the other climate-control appliances. To enable manufacturers to produce the correct label, the FTC periodically collects data on the range extremes, and the DOE publishes the average energy prices to be used in the calculations.

Under the Energy Star program, the voluntary endorsement labels show different information depending on the type of equipment. For office equipment and household electronic equipment, the Energy Star label indicates that the model has certain power management capabilities, and that the manufacturer has undertaken to supply the product with those capabilities "enabled." For other types of equipment, the label indicates that the product is among the most efficient of its type, either because it is in the top percentile of the range on the market, or because it exceeds the MEPS level by a specified margin. The amount by which an appliance must exceed the MEPS differs for each product and is dependent on available technology in each product category.

Products eligible for a Green Seal label are selected according to the significance of their potential environmental impact and in consultation with industry, environmentalists, consumer groups, and the public. Criteria are then established addressing the areas where the product has most negative impact. Manufacturers pay Green Seal to organize the testing and monitoring of their product. Once the label is awarded, the product is checked annually. The label displays the program logo and clearly states the criteria for which the award was given e.g. "Meets Green Seal Environmental Criteria for high Energy Efficiency, low Noise, and recycled Packaging."

III. Status of Energy Efficiency Standards and Labels in Each Country

The Working Group has compared standards and labels in the three countries, and has reached the following conclusions: Out of 46 energy-using products for which at least one of the three countries has energy efficiency regulations, four products — refrigerators/freezers, electric three-phase motors, room air conditioners, and split system central air conditioners—have identical or similar MEPS in the three countries. The first three in that list, plus residential central air conditioners and heat pumps, have similar or identical test procedures throughout the region. There are eight products that have the near-term potential to develop harmonized MEPS, and nine products that have the near-term potential to develop harmonized test procedures. The following text and tables clarify these conclusions. The underlying comparative data are contained in the Appendix.

A. Products with similar or identical MEPS and test procedures in the three countries

Table 1 lists products that have identical or nearly identical MEPS and test procedures in Canada, Mexico, and the United States:

Table 1. Products with similar or identical MEPS and test procedures in Canada, Mexico, and the United States

MEPS	Test Procedures
Refrigerators and freezers	Refrigerators and freezers
Three-phase motors	Three-phase motors
Room air conditioners	Room air conditioners
Split system central AC	Central AC and heat pumps

B. Products with different MEPS and test procedures, but which could (in the short term) share common MEPS and labels

Table 2 lists products for which one of the following applies:

- Canada, Mexico, and the United States all have MEPS and/or test procedures, but the details of these regulations differ between two or more of the countries; or
- Only two countries have MEPS and/or test procedures, but these are the same or similar.

Table 2. Products that could share common MEPS and labels in the Near Term in Canada, Mexico, and the United States

MEPS	Test Procedures
Clothes washers	Clothes washers and dryers
Dishwashers	Dishwashers
Fluorescent lamp ballasts	Fluorescent lamp ballasts
Fluorescent lamps	Fluorescent lamps
Incandescent reflector lamps	Incandescent reflector lamps
Gas and oil water heaters	Gas and oil water heaters
Single packaged CAC and HPs	
Small motors	
	Transformers
	Electric ranges
	Gas furnaces

IV. Activities of the Working Group in the Area of Energy Efficiency

Stakeholder Involvement: Each country has solicited and continues to solicit the input of its stakeholders on the harmonization of test procedures and endorsement labels, and mutual recognition of test results. Stakeholders generally have expressed positive support for continuing cooperation on these elements of the three countries' standards and labeling efficiency programs, and some have made recommendations on which products may be appropriate for harmonization.

Test Procedures: The three countries verified that the test procedures for refrigerators and freezers, room air conditioners, and integral horsepower electric motors are identical or nearly identical in the three countries. The Working Group is investigating other products for similar test procedure comparisons.

Voluntary Endorsement Labels: With consultative support from the United States and Canada, Mexico is exploring possibilities for extending the Energy Star endorsement label to Mexico.

Mutual Recognition: The Group is investigating and working to identify mechanisms to enhance mutual recognition of test results.

Long-term Harmonization: The Group continues to gather information that would be necessary for preparing a long-term harmonization plan for additional test procedures, mutual recognition of laboratory testing and results, voluntary endorsement labels, and other harmonization and energy efficiency promotion activities.

Definitions

Accreditation: Conformity certification process by which the government ensures that testing facilities correctly perform tests with properly calibrated equipment.

Certification: Process intended to provide clear direction to participants about how to meet the labeling or standards requirements, to ensure consistency, and to add credibility to government and manufacturer claims about energy efficiency. Protects manufacturers by making willful non-compliance by cheaters unacceptable and unprofitable.

Comparative labels: Labels that offer consumers information that allows them to compare performance among similar products, using either discrete categories of performance or a continuous scale.

Compliance: Method to ensure that errors in testing and reporting are found, and that violators of the requirements are made to return to the permitted range or, if necessary, punished for transgressions. Protects manufacturers by making willful non-compliance by cheaters unacceptable and unprofitable.

Endorsement labels: "Seals of approval" according to some specified set of criteria.

Energy-efficiency labels: Informative labels affixed to manufactured products indicating a product's energy performance (usually in the form of energy use, efficiency, and/or energy cost) to provide consumers with the data necessary for making more informed purchases.

Energy-efficiency standards: Set of procedures and regulations that prescribe the energy performance of manufactured products, sometimes prohibiting the sale of products less energy-efficient than the minimum standard.

In the United States, the term "standard" is used to denote a minimum efficiency performance standard, and the term "test procedure" refers to test methods for determining energy performance. In Canada, "standards" contain the test procedure, recommended minimum levels, and often marking or labeling instructions. Similarly, in Mexico, the NOM generally includes the test procedure, recommended minimum levels, and labeling instructions; the term "norma" is used to refer to minimum efficiency performance standards.

To minimize confusion regarding terminology, whenever appropriate this document uses the term **MEPS** to refer to a federal mandatory minimum efficiency performance standard (the US "standard", the Mexican "norma"), and discusses test procedures separately.

Enforcement: All activities used to deal with manufacturers, distributors, and retailers that are not in compliance with regulations.

Harmonization: Process by which policymakers rely on test facilities, test procedures, label design, and standards already established by international organizations or neighboring countries, or in which countries enact common test procedures, label design, and standards to reduce non-tariff trade barriers.

Minimum Energy Performance Standard (MEPS): See Energy-efficiency standards.

Mutual recognition agreements (MRAs): Multilateral arrangements between two or more economies to mutually recognize or accept some or all aspects of another's test procedures (e.g., test results and certification).

Self-certification: Certification in which manufacturers formally test their own products and, in practice, also test each others' products and force compliance. Currently practiced in the U.S., Japan, and most European countries.

Stakeholder: Any party that may have an interest in the required data. This typically includes manufacturers, consumers, utilities, local governments, and representatives of environmental or energy efficiency interest groups; may also include representatives of importers and international organizations.

Test procedure: Agreed-on method of measuring the energy performance of an appliance. May be expressed as an efficiency, efficacy (for lighting products), annual energy use, or energy consumption for a specified cycle, depending on the appliance being tested. Used to rank similar products by their energy performance, to evaluate new technologies, and to forecast their energy performance. Also known as "test standard."

Verification mark: Indication that the energy performance of a product has been verified by a certification organization.

Acronyms and Abbreviations

AC	air conditioner
ANCE	Asociación de Normalización y Certificación (México)
ANFAD	Mexican trade association
ANFEAA	Mexican trade association
APLAC	Asia Pacific Laboratory Accreditation Cooperation
ARI	Air-Conditioning and Refrigeration Institute
CAC	central air conditioner
CANAME	Mexican trade association
CCNNPURRE	Comité Consultivo Nacional de Normalización para la Preservación y Uso Racional de los Recursos Energéticos (México)
CFE	Comisión Federal de Electricidad (Mexico)
CFL	compact fluorescent lamps
CONAE	Comisión Nacional para el Ahorro de Energía (México)
CSA	Canadian Standards Association
DGN	Dirección General de Normas (México)
DOE	Department of Energy (USA)
DOF	Diario Oficial de la Federación (México)
EER	energy efficiency ratio
EMA	Entidad Mexicana de Acreditación
EPA	Environmental Protection Agency (USA)
EPAct	Energy Policy Act (USA)
EPCA	Energy Policy Conservation Act (USA)
ER	elliptical reflector
FIDE	Fideicomiso para el Ahorro de Energía Eléctrica (México)
FTC	Federal Trade Commission (USA)
HP	heat pump
HVAC	heating, ventilation, and air conditioning
MEPS	minimum energy performance standards
NAECA	National Appliance Energy Conservation Act
NAEWG	North American Energy Working Group
NAFTA	North American Free Trade Agreement
NECPA	National Energy Conservation Policy Act of 1978 (USA)
NEMA	National Electrical Manufacturers Association (USA)
NIST	National Institute of Standards and Technology (USA)
NOM	Normas Oficiales Mexicanas (mandatory)
NMX	Normas Mexicanas (voluntary)
NRCan	Natural Resources Canada
R&D	research and development
SCC	Standards Council of Canada
SEER	seasonal energy efficiency ratio
TBD	to be determined
TP	test procedure
ULI	Underwriters Laboratories Inc

APPENDICES

Appendix A. Data Tables

Table A-1. Existing MEPS and Labels in Canada, Mexico, and the United States

Product	Canada	Mexico	USA
Refrigerators	L_{mc}, $L_{ve,}$ S_m	L_{mc},L_{ve},S_m	L_{mc},L_{ve},S_m
Freezers	L_{mc}, $L_{ve,}$ S_m	L_{mc},L_{ve},S_m	L_{mc},L_{ve},**S_m
Central AC	L_{vc}, $L_{ve,}$ S_m	L_{mc},S_m	L_{mc},L_{ve},S_m
Heat Pumps	L_{vc}, $L_{ve,}$ S_m		L_{mc},L_{ve},S_m
Room AC	L_{mc}, $L_{ve,}$ S_m	L_{mc},L_{ve},S_m	L_{mc},L_{ve},S_m
Other AC/HP Categories	L_{vc}, L_{ve} S_m	L_{mc}	L_{mc}
Clothes Washers	L_{mc}, L_{ve} S_m	L_{mc},S_m	L_{mc},L_{ve},S_m
Clothes Dryers	L_{mc},S_m		L_{ve},**S_m
Dishwashers	L_{mc},L_{ve},S_m		L_{mc},L_{ve},S_m
Fluorescent Ballasts	S_m	L_{mc}, S_v	L_{mc},S_m
Fluorescent Lamps	S_m	L_{mc},L_{ve},S_m	L_{mc}, S_m
Fluorescent Lamps (compact)	L_{ve}	S_m	L_{ve}
Incandescent Lamps and Luminaires	$S_{m\,(lamps\ only)}$		L_{ve},S_m
Ranges/Ovens	L_{mc}, S_m		L_{ve} **
Dehumidifiers	L_{ve} S_m		L_{ve}
Icemakers	S_m		
Televisions	L_{ve}		L_{ve}
VCRs	L_{ve}		L_{ve}
DVDs	L_{ve}		L_{ve}
Set Top Boxes	L_{ve}		L_{ve}
Radio Rcvr/Rcdr	L_{ve}		L_{ve}
Cordless Phones	L_{ve}		L_{ve}
Answering Machines	L_{ve}		L_{ve}
Ceiling and Ventilating Fans	L_{ve}		L_{ve}
Direct Heating Equipment			S_m
Computers	L_{ve}		L_{ve}
Monitors	L_{ve}		L_{ve}
Copiers	L_{ve}		L_{ve}
Printers	L_{ve}		L_{ve}
Fax Machines	L_{ve}		L_{ve}
Scanners	L_{ve}		L_{ve}
Multi-Function Devices*	L_{ve}		L_{ve}
Furnaces	L_{vc} L_{ve},S_m		L_{mc},L_{ve},S_m
Boilers	L_{ve} S_m	S_m	L_{mc},L_{ve},S_m
Central Gas Heaters	L_{vc}		L_{mc}
Space Heaters	L_{vc}		L_{mc}
Water Heaters	S_m	L_{mc},S_m	L_{mc},S_m
Motors	S_m	L_{ve},S_m	S_m

Transformers – Liquid-Filled	L_{ve}, S_v	S_m	
Transformers – Dry-Type	S_m, L_{ve}		L_{ve}
Centrifugal Residential Pumps		L_{mc},S_m	
Commercial Refrigerators		L_{mc}, S_m	L_{ve}
Commercial Fryers			L_{ve}
Comm. Hot Food Holding Cabinets			L_{ve}
Commercial Steam Cookers			L_{ve}
Pool Heaters			L_{mc}
Exit Signs	L_{ve}		L_{ve}
Water Coolers	L_{ve}		L_{ve}
Programmable Thermostats	L_{ve}		L_{ve}
Traffic Lights	L_{ve}		L_{ve}
Gas Fireplaces	L_{vc}		
Windows	L_{ve}		L_{ve}
Roof Products			L_{ve}

L = Label, S= Standard, m = mandatory, v = voluntary, e = endorsement, c = comparative.
***Multi-function devices = Usually a combination of printer, fax, scanner, and/or copier.**
**** In the US, Green Star voluntary endorsement labels apply to, clothes dryers, freezers, and ranges/ovens, but Energy Star labels do not.**

Table A-2. Characteristics of Endorsement Labels

AGREEMENTS WITH PARTNERS OR PARTICIPANTS	
Energy Star (Canada)	Voluntary. Products approved in the US are licensed to display the label in Canada. Promotion and implementation of the bilingual program is the responsibility of NRCan.
Sello FIDE (Mexico)	Voluntary. Manufacturers pay for certification and sign an agreement stipulating length of validity of the Sello FIDE endorsement, how it can be displayed, etc.
Energy Star (USA)	Voluntary. Manufacturers pay the costs for printing and applying the Energy Star logos.
Green Seal (USA)	Voluntary. The products eligible for a label are selected in consultation with industry, environmentalists, consumer groups, and the public.
CRITERIA	
Energy Star (Canada)	See Energy Star (USA). USEPA and USDOE are responsible for developing endorsement criteria, but all participants participate in the development of new specifications.
Sello FIDE (Mexico)	Products must have a high level of efficiency compared to the market in general.
Energy Star (USA)	For office and household electronic equipment, the label indicates that the model has certain power management capabilities and/or achieves a maximum allowable standby power consumption (e.g., for TVs, standby power ≤ 3W); in the case of computer equipment these capabilities have to be enabled when supplied. For other equipment, the

	label indicates that the product is among the most efficient of its type, either because it is in a specified top percentile of the range on the market, or because it exceeds the MEPS level by a specified margin (depending on available technology, e.g., 20% for refrigerators, 15% for room AC). For photocopiers, the product must have certain paper handling as well as power management capabilities.
Green Seal (USA)	Eligible products are selected according to the significance of their potential environmental impact and in consultation with industry, environmentalists, consumer groups, and the public. Criteria are then established addressing the areas where the product has most negative impact.
COMPLIANCE	
Energy Star (Canada)	See Energy Star (USA) – Manufacturers report their energy efficiency levels (as tested by a third party) to NRCan as part of the regulatory compliance, which allows for additional verification for those Energy Star products that also have MEPS or a comparison label.
Sello FIDE (Mexico)	Manufacturers submit certified test results on their products. A certified laboratory tests the product to verify manufacturer claims.
Energy Star (USA)	Manufacturers are responsible for ensuring their own compliance to Energy Star criteria. USDOE and EPA can test products to check compliance if necessary; non-compliant products/manufacturers are removed from the program.
Green Seal (USA)	Manufacturers pay Green Seal to organize the testing and monitoring of their product. Once the label is awarded, the product is checked annually. Energy is one of the many criteria assessed for eligibility.

Table A-3. Comparison of MEPS in Canada, Mexico, and the United States

Refrigerators and freezers	All three countries have MEPS for refrigerators and freezers. The MEPS for refrigerators are identical in all three countries (as of May 2003, when Mexico's new standard took effect).
Central air conditioners and heat pumps	For single-packaged central AC and HPs, Canada's cooling SEER is the same as the US1993 MEPS; for split-systems, Canada's SEER is the same as the US 1992 MEPS. For both types, Canada's heating HSPF is identical with the US level for those levels covered (though the climate does not warrant coverage of all levels). In Mexico, the MEPS for both split and packaged CACs is the same as the US and Canadian SEER for split system CACs, but heat pumps and CAC units with additional space heating capability are exempt. New MEPS for residential central AC are in progress in the US and Canada.
Room air conditioners	As of 2003, all three countries have identical MEPS for room air conditioners.
Other AC/HP categories	Only Canada and the US have MEPS in this category. For packaged terminal AC and HP, the two countries have different MEPS. Other classes of products in this category are defined differently and not comparable between the two countries.

Clothes washers and dryers	All three countries have MEPS for clothes washers. Only Canada and the US have MEPS for clothes dryers. Canada is working to develop new MEPS for clothes washers to harmonize with recent USDOE modifications, which took effect in 2004 (additional requirements will take effect in 2007). Mexico's MEPS for clothes washers is different.
Dishwashers	Only Canada and the US have dishwasher MEPS. They are identical.
Fluorescent lamp ballasts	Only Canada and the US have MEPS. New levels in Canada and the US are scheduled to take effect in 2005 and 2010.
Fluorescent lamps	The US and Canada have identical MEPS for general service fluorescent lamps; Mexico has a voluntary standard, with different MEPS. Mexico and the US have different MEPS for CFLs; Canada has no MEPS for CFLs.
Incandescent lamps and luminaires	The US and Canadian MEPS scope and levels are similar (except that Canada's includes ER lamps). Mexico has a MEPS for lighting in commercial buildings and exterior lighting. The US has a MEPS for incandescent non-reflector lamps.
Electric ranges and ovens	Only Canada has MEPS. [n.b. United States regulations mandate that gas cooking products with an electrical supply cord shall not be equipped with a constant burning pilot light. Canada's regulations require that gas ranges may not have a continuously burning pilot light if the product has a cord set.]
Dehumidifiers	Only Canada has MEPS.
Icemakers	Only Canada has MEPS.
Direct Heating Equipment	Only the US has MEPS.
Furnaces and boilers	All three countries have different MEPS for residential furnaces and boilers. The US is undertaking a revision of the MEPS for this equipment.
Water heaters	All three countries have different levels, and Canada is working to harmonize with US levels (for gas and oil only), which took effect in 2004. In Canada, new MEPS for electric water heaters (effective July 2004) will be based on standby loss, and will not be harmonized with the US. Mexico's MEPS do not cover electric water heaters.
Motors	All three countries have MEPS. For electric three-phase motors, all three countries have identical MEPS. In Canada and the US, the MEPS relating to motors that conform to National Electrical Manufacturers Association (NEMA) requirements are identical, but the Canadian program also covers metric motors. For small motors, Canada is investigating establishing minimum efficiency levels and harmonization with Mexico's MEPS. The US is considering a small motors MEPS.
Transformers	Mexico has MEPS for liquid-filled distribution transformers and voluntary standards for dry-type transformers. Canada has a voluntary agreement with industry for minimum levels for liquid-filled transformers and MEPS for dry-type transformers (effective January 1, 2005). The US is developing MEPS for both dry-type and liquid-filled

	transformers.
Pumps	Mexico has MEPS for four types of pumps: vertical turbine external motor, centrifugal residential water, submersible clean water, and electromechanical systems of vertical turbine pumps. The US and Canada have no MEPS for pumps.
Commercial Refrigerators	Only Mexico has MEPS for commercial refrigeration units. The US is considering MEPS for reach-in refrigerators and freezers, beverage merchandisers, and vending machines.
Chillers	Canada has proposed MEPS for Chillers in 2004.
Exit Signs	Canada has proposed MEPS for Exit Signs in 2004.

Table A-4. Comparison of Test Procedures in Canada, Mexico, and the United States

Refrigerators and freezers	All three countries use an equivalent test procedure (TP).
Central air conditioners and heat pumps	Canada's TPs are based on ARI 210/240-89 and ASHRAE 37-1988. The US test procedure refers to ARI 310/380-93 and ARI 210/240-94. Mexico's test method is ANSI/ASHRAE 37; the tolerances and efficiency levels are identical to that used in the US, but Mexico's test procedure does not include heat pumps. The US and Canadian test procedures are under revision.
Room air conditioners	The test procedures are essentially the same in all three countries.
Other AC/HP Categories	For packaged terminal AC and HP, the US test procedure is ASHRAE 90.1, which specifies a number of ANSI and ARI standards as the test methods. Canada's TP is identical to ARI-310/380-93; Canada is working toward publication of a new Joint Standard with ARI 310/380.
Clothes washers and dryers	All three countries have test procedures for clothes washers. Only Canada and the US have test procedures for clothes dryers. The current Canadian and US TPs are essentially identical for both clothes washers and clothes dryers. Mexico's test procedure for clothes washers is different.
Dishwashers	Only Canada and the US have test procedures. The US issued (in September 2003) an additional test procedure for "smart" equipment. Canada also is revising its existing test procedure.
Fluorescent lamp ballasts	All three countries have test procedures. Those of Canada and the US are similar.
Fluorescent lamps	All three countries have test procedures for general service fluorescent lamps; those of the US and Canada are essentially identical. The three countries have different test procedures for CFLs.
Incandescent lamps and luminaires	The US and Canadian test procedures for incandescent reflector lamps are essentially the same. Mexico has TPs for lighting in commercial buildings and exterior lighting. Canada has TPs for dusk-to-dawn luminaries and roadway luminaries. The US has a TP for incandescent

	non-reflector lamps.
Ranges and ovens	Only Canada and the US have test procedures for electric ranges; they are similar.
Dehumidifiers	Only Canada has a test procedure.
Icemakers	Only Canada has a test procedure.
Direct Heating Equipment	Only the US has a test procedure.
Furnaces and boilers	All three countries have different test procedures, although the TP for gas furnaces is identical in Canada and the US. The US will soon publish a revised test procedure for commercial furnaces and boilers, which references ASHRAE 90.1. Canada has published a new version of the TP for oil-fired furnaces and boilers (updating to ANSI) but it has not been referenced in the regulations.
Water heaters	The three countries have test procedures for water heaters. Canada and the US have harmonized their TPs for gas and oil water heaters. Canada's TP (to be referenced in regulations) for electric water heaters (effective July 2004) will not be harmonized with the US. A test procedure is in progress in the US for commercial water heaters, which references ASHRAE 90.1.
Motors	The three countries have similar test procedures, with some minor differences.
Transformers	Canada's test procedure for dry-type and liquid-filled transformers is essentially equivalent to NEMA TP2. The US has a test procedure underway that may be based on NEMA TP 2. Mexico has its own test procedures for transformers. Canada published a new TP for power transformers in 2001.
Pumps	Canada and Mexico have different test procedures. Three of four test procedures for pumps in Mexico are based on ISO-3555 standards. The US has no test procedure for pumps.
Refrigerated Display Cabinets/ Commercial Refrigerators	Only Canada has a test procedure for refrigerated display cabinets. Only Mexico has a test procedure for commercial refrigeration units.
Uninterruptible Power Supplies	Only Canada has a test procedure.
Exit Signs	Only Canada has a test procedure.
Mechanical Ventilation Systems	Only Canada has a test procedure.
High intensity discharge lamp ballasts	Only Canada has a test procedure.
Building Envelopes	Only Mexico has a test procedure.
Gas Fireplaces	Only Canada has a test procedure. Testing is mandatory within

	Canada’s Energy Efficiency Regulations. EnerGuide labeling is voluntary
Chillers	Only Canada has a test procedure.

Appendix B. Test Procedures: Regional Comparisons

The three countries are undertaking to verify that the test procedures for refrigerators and freezers, room air conditioners, and three-phase, integral horsepower electric motors are identical or nearly identical in the three countries.

The Experts Group performed detailed comparisons of U.S., Canadian, and Mexican test procedures for these three products. Table B.1 lists the specific test procedures compared. In all three cases, the Expert Group found that the test procedures are nearly identical in the three countries; the exceptions include minor differences in definitions, testing conditions, or testing equipment, and additional options that exist in one or two countries' test procedures. These differences generally are not likely to affect the testing outcomes. The differences are outlined in Tables B.2–B.4.

Table B.1. Test Procedures Compared

	Canada	**Mexico**	**United States**
Refrigerators and Freezers	CAN/CSA C300-00	NOM-015-ENER-1997	10 CFR, Part 430, Subpt. B, Appendix A1 (Sept. 2001)
Three-Phase Motors	CAN/CSA C390-93	NOM-016-ENER-1997	10 CFR, Part 431, Subpt. B, Appendix A (NEMA MG-1-19993, CSA C390-93, IEEE Standard 112-1996 Test Method B)
Room Air Conditioners	AHAM RAC-1-2002/ ANSI/ASHRAE 16-1983 CAN/CSA-368.1-M90	NOM-021-ENER/ SCF/ECOL-2000	AHAM RAC-1-2002/ ANSI/ASHRAE 16-1983 CAN/CSA-368.1-M90

Table B.2. Differences in Test Procedures for Refrigerators

Category	Description of Difference
Definitions	*Classification of refrigerator and freezer compartments:* There are differences in the temperatures that define whether a compartment is a refrigerator or freezer compartment. In some cases the classification of a freezer or refrigerator compartment depends on the type of refrigerator or refrigerator-freezer the appliance is classified as. For practical purposes, it is obvious what is a freezer or a refrigerator compartment, and these different definitions would have little or no effect on actual testing.
	Variable defrost: Canada and the U.S. have a more generic definition.
	Refrigerator-freezer and conventional (basic) refrigerator definitions: The three countries have slightly different definitions, in terms of the temperature in the freezer compartment.
	Compact designation: The U.S. and Canada define compact refrigerators as a separate product type. This has a greater impact on set efficiency levels than on testing procedures.
Calculations	*Adjustment factor:* The Mexican procedure includes no chest and upright freezer adjustment factor.
Testing Procedures	*Sampling:* All three countries choose three units for testing, but Mexico has different criteria for choosing the refrigerators.
	Instrumentation: The U.S. requires greater temperature measurement accuracy. Mexico requires greater accuracy in measuring power consumption.

	Operating conditions: Canada notes the importance of the drip tray location, and does not require defrosting in all cases for a manual defrost refrigerator. Mexico provides more detail on the distance from the back of the appliance to the wall. The Canadian test procedure allows for an alternative test for chest and upright freezers that allows an unloaded condition. The U.S. and Canada allow the use of chopped spinach as a load as well as sawdust. *Reference temperature conditions:* There are options available in the Canadian reference temperatures that could possibly affect test results. *Temperature control without user-adjustable temperature control:* Canada and the U.S. have the compressor run continuously for one of the tests. It is not known if current models exist without user-adjustable temperature controls. *Alternative tests:* Canada and the U.S. allow for alternative tests that allow for door openings. *Additional tests:* The U.S. requires a third test if the compartment temperatures cannot reach the standardized reference temperatures, whereas in this situation the Mexican test procedure states that the product does not comply with the standard. Canada and U.S. specify tests for dual compressor systems. The U.S. has an additional test procedure for externally-vented refrigerators

II. Differences in Test Procedures for 3-Phase Motors

Category	Description of Difference
Testing Conditions	In the Canadian and U.S. test procedures, the deviation factor of the voltage wave must be less than 10%. Instead, the new Mexican test procedure requires a 5% total harmonic distortion (THD) of the voltage wave.
Testing Equipment	*Calibration:* In the U.S. and Canada, analog and digital instruments must be calibrated with a maximum uncertainty of ±0.5% of total scale, and be traceable to national standards within the last 12 months. Mexico's National Standards System meets these requirements, though they are not written into the test procedure.

	Power output: The shaft method of power output is used in the U.S. and Canada, but not in Mexico.
Segregation of Losses	*Friction and ventilation losses*: Canada and the U.S. specify a K value for aluminum windings. Mexico does not specify K values for any materials. *Dynamometer correction factor*: Mexico considers no load frequency in this calculation.

III. Differences in Test Procedures for Room Air Conditioners

Category	Description of Difference
Classification	Mexico does not consider two classes of "portable" room air conditioners considered in the U.S. and Canadian test procedures.
Calibration of Calorimeter	The procedures are similar in all three countries, but the U.S./Canadian test procedure requires an additional hour of periodic temperature readings.
Testing Conditions	Minor variations exist between the inlet and outlet temperatures for dry and wet bulbs required by the US/Canadian and Mexican test procedures, and in the permissible variations in calorimeter readings. These temperature differences are all less than half of one degree C; resulting variations in calculated cooling capacity values fall within the required 1% maximum variation.

Appendix C. Mutual Recognition: Certification of Product Testing in Canada, Mexico, and the United States

The Experts Group is investigating and working to identify mechanisms for mutual recognition of test results. Each country has solicited the input of its domestic stakeholders on the harmonization of test procedures and endorsement labels, and mutual recognition of test results.

Canada, Mexico, and the United States have independent but, by the nature of our closely-linked economies and electrical safety requirements, already-integrated product certification processes, as shown in the following summary table:

Canada	Mexico	United States
General Information – The following five entities are recognized by Canada (NRCan and SCC) to certify the energy efficiency of products and provide a verification mark to that effect under the Energy Efficiency Regulations. These agencies accept test results of various laboratories according to their internal criteria, many of which are based on internationally-accepted laboratory accreditation practice: • Air-Conditioning and Refrigeration Institute (ARI) • CSA International • Intertek Testing Services NA Inc. • Intertek Testing Services NA Ltd. • Underwriters Laboratories Inc. (ULI) • OMNI Test Laboratories Inc.	**General Information –** Test laboratories accredited in Mexico must gain approval from both the Secretary of Economy (through DGN) and the Secretary of Energy (through CONAE) for signing mutual recognition agreements.	**General Information –** Except for motors and lamps, third-party certification is not required and manufacturers are responsible for self-certification. For motors and lamps, DOE, through the National Institute of Standards and Technology (NIST), certifies certain laboratories for testing and certification.
USA and Mexico – Where existing relationships are not already established, manufacturers would have to get their own internal labs recognized by one of the above five entities or get their products tested at a laboratory already recognized by one of the five entities. There is also the possibility that other certification agencies could apply to NRCan to be recognized (meet SCC recognition through mutual recognition agreement).	**USA and Canada –** Test labs in the USA and Canada could make independent agreements with accredited test labs in Mexico, as long as the Mexican labs received the appropriate governmental approvals.	**Mexico and Canada** – To sell products in the United States, manufacturers must follow the US self-certification rules and must submit a letter to DOE stating that they meet the US standards program's legal requirements. Challenges to a manufacturer's certification claims would result in a review and suggested remedial measures by DOE and NIST. For motors and lamps, Canadian and Mexican certification entities would have to be qualified for the US program; this process is currently ongoing between DOE and CSA International.