Energy Efficiency Testing

[ErP Directive 2009/125/EC]

2010 APPLIANCE EFFICIENCY REGULATIONS
CALIFORNIA ENERGY COMMISSION

TÜVRheinland®
Precisely Right.

General Introduction

What is Energy Star?

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) aiming to protect the environment through energy efficient products and practices.

Details on proposed new scheme under
www.energystar.gov/testingandverification

Note:
The ENERGY STAR® logos are here shown for training purposes only.

Neither accepted Certification Bodies nor Laboratories are permitted to use ENERGY STAR® Logos or marks in any of their marketing materials or upon anything that they distribute. Use of the Mark by non-partners (including recognized CBs, Abs and Labs) will be treated as a logo violation by the Agency (EPA)

Certified Products

Energy Star Product Groups

Appliances
- Clothes Washers
- Dehumidifiers
- Dishwashers
- Freezers
- Refrigerators
- Room Air Cleaners & Purifiers
- Water Coolers

Computers & Electronics
- Audio/Video
- Battery Chargers
- Computers / Servers
- Cordless Phones (Telephony)
- Displays
- Imaging Equipment
- Set-top Boxes & Cable Boxes
- Televisions

Heating & Cooling
- Air Conditioning, Central
- Air Conditioning, Room
- Boilers
- Dehumidifiers
- Fans, Ventilating
- Furnaces
- Heat pumps, Air Source
- Heat pumps, Geothermal
- Home Sealing – Insulation & Air Sealing
- Mini–Split Heating & Cooling
- Room Air Cleaners & Purifiers

Lighting and Fans
- Decorative Light Strings
- Fans, Ceiling
- Light Bulbs
- Light Fixtures

Plumbing
- Water Heater, Gas Condensing
- Water Heater, Heat Pump
- Water Heater, High Efficiency Gas Storage
- Water Heater, Solar
- Water Heater, Whole Home Gas Tankless

Building Products
- Seal and Insulate
- Roof Products
- Windows, Doors and Skylights

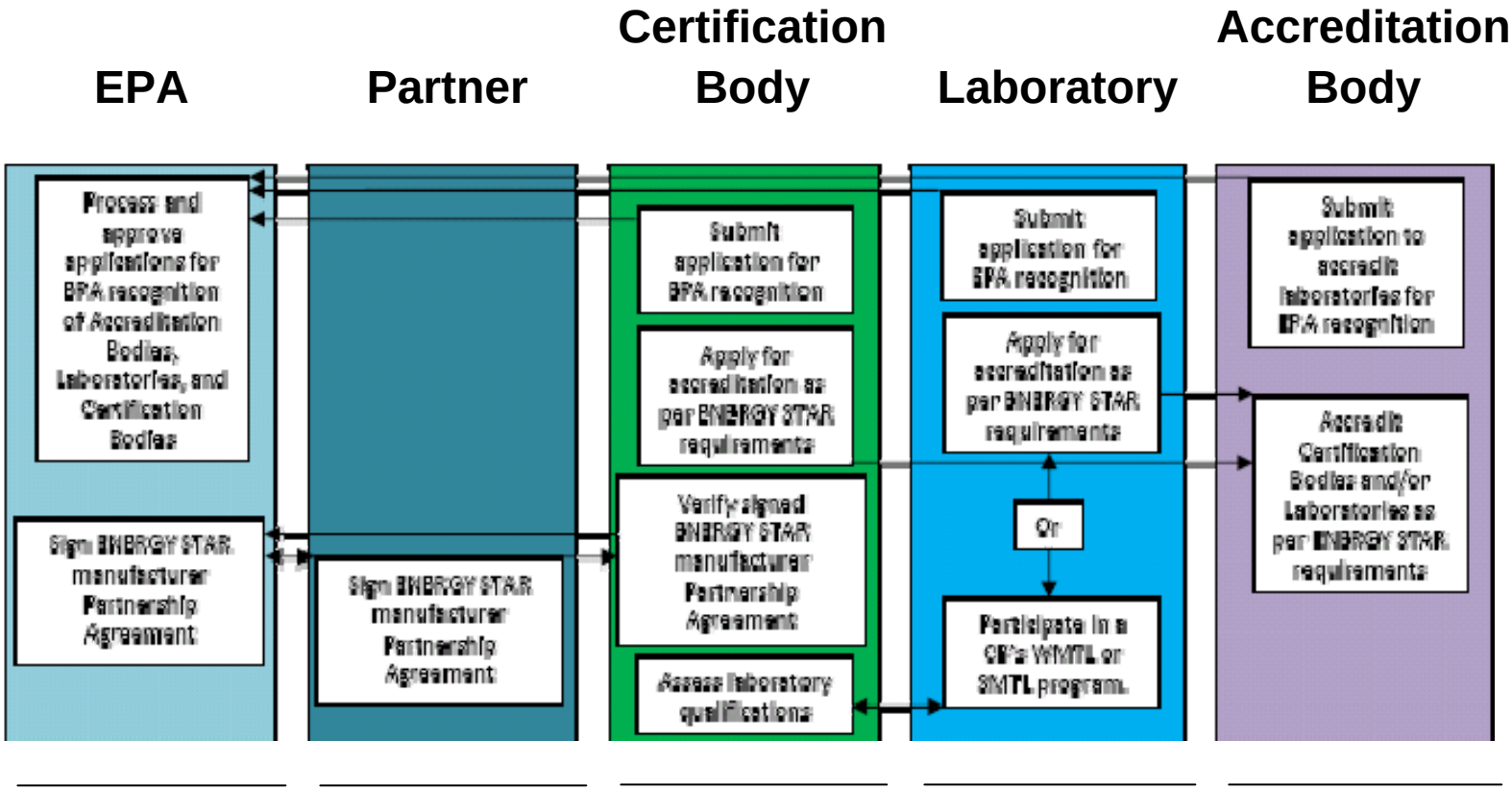
In Scope of TUV Rheinland of North America CB Accreditation / Lab recognition

-> in this context 'CB' = EPA ES Certification Body, not to be confused with IECEE Certification Body

TÜVRheinland® Precisely Right.

Process

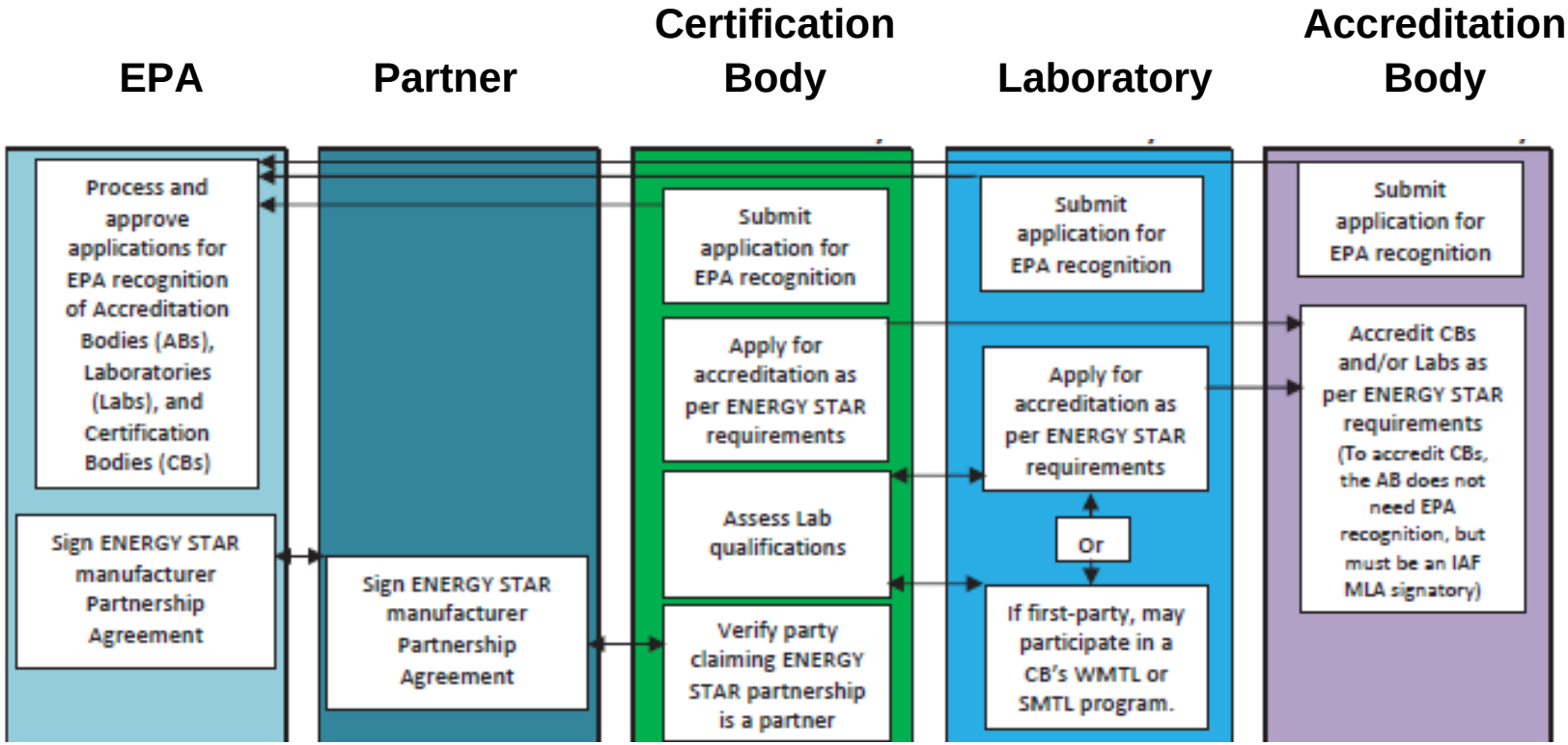
Controlling Documents



TÜVRheinland®
Precisely Right.

Process

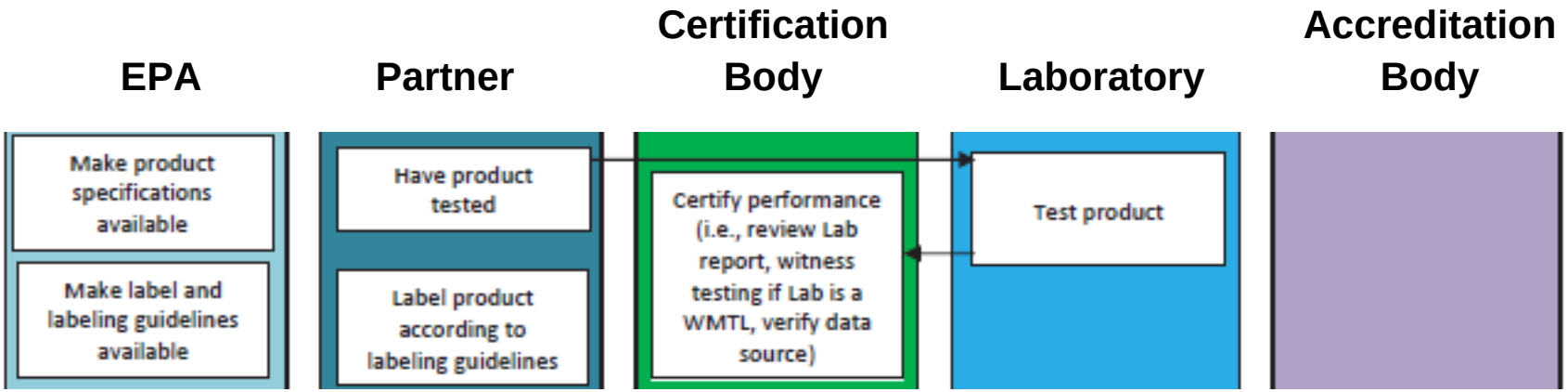
Controlling Documents



TÜVRheinland®
Precisely Right.

Process

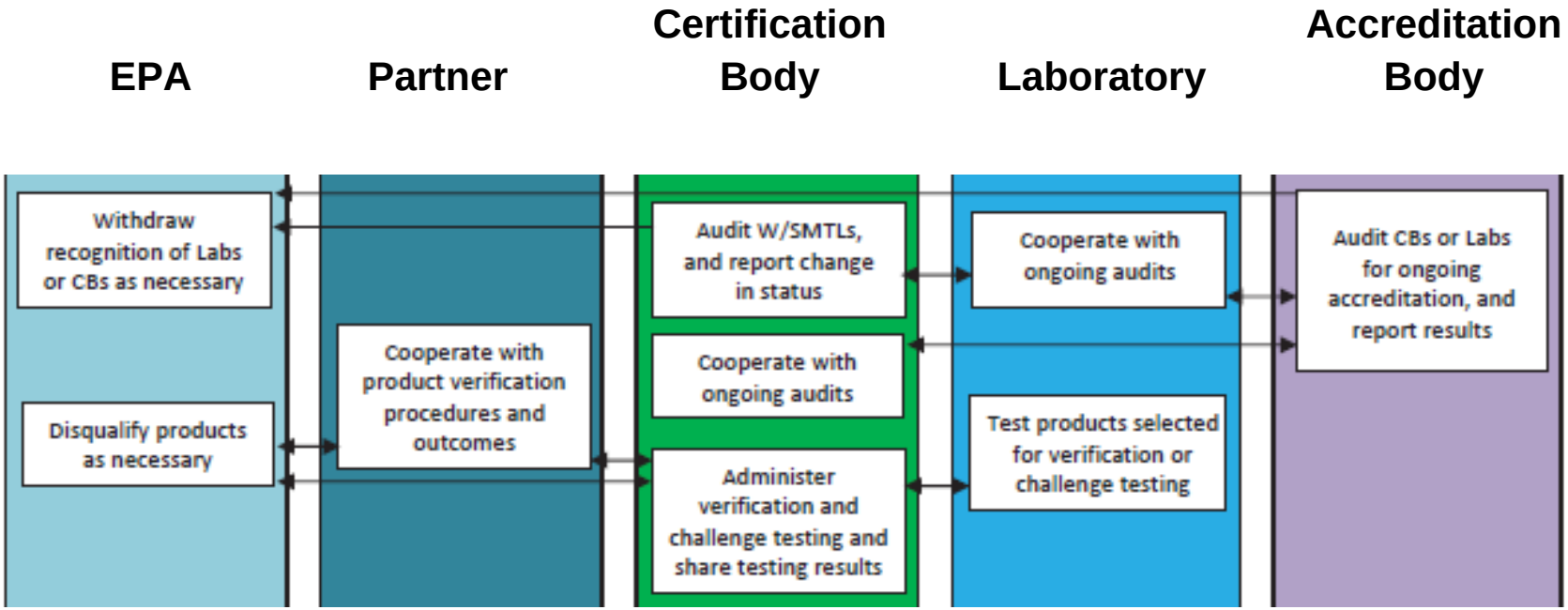
Product Qualification and Labeling



Product Listing

Process

Ongoing Verification



TUV Rheinland of N.A. capabilities

- TUV Rheinland operated Certification Body will accept tests performed based on testing in an ***EPA recognized third party*** laboratory, and on ***WMTL*** & ***SMTL*** procedures

WMTL: Witnessed Manufacturers' Testing Laboratory TUV Rheinland engineers each time will perform a check on suitability of Laboratory before testing and relevant steps as e.g. data acquisition

SMTL: Supervised Manufacturers' Testing Laboratory Certification Body TUV Rheinland will perform an extensive Audit on basis of ISO 17025 with annual follow-up

Notes:

a) WMTL / SMTL can work with one Certification Body per product category

b) Certification Body has to register WMTL's / SMTLs with EPA (laboratories will receive a lab-ID# which needs to be entered on product submission forms)

c) WMTL/SMTL needs to sign certification agreement with TUV Rheinland Certification Body

Other Information

www.energystar.gov/testingandverification

Resources for Accreditation Bodies, Certification Bodies, and Laboratories

	Program Requirements	How To Participate	Current Participants
Accreditation Bodies	Conditions and Criteria for Recognition of Accreditation Bodies for ENERGY STAR Laboratory Accreditation (41KB)	Application for EPA Recognition of an Accreditation Body (132KB)	EPA-Recognized Accreditation Bodies
Certification Bodies	Conditions and Criteria for Recognition of Certification Bodies for the ENERGY STAR program (60KB)	Application for EPA Recognition of a Certification Body (234KB)	EPA-Recognized Certification Bodies EPA-Recognized Lighting Certification Bodies
Laboratories	Conditions and Criteria for Recognition of Laboratories for the ENERGY STAR program (32KB) Required Test Methods for EPA-Recognized Laboratories (192KB) Guide to Lab Recognition by Lighting Category (314KB)	Application for EPA Recognition of a Laboratory (367KB)	EPA-Recognized Laboratories EPA-Recognized Lighting Laboratories

Other Information

Power Supply Requirements

- If the product uses an ***internal power supply***, the submittal must include a certificate of compliance issued by an EPA-recognized laboratory that covers the internal power supply, and the certification body must accept this certificate of compliance in lieu of a lab report.

- If the product uses an ***external power supply*** with integral fan cooling or multi-output external power supply (that is not covered by the International Efficiency Marking Protocol), the certification body may accept either a certificate of compliance from an EPA-recognized laboratory or a laboratory report that covers the external power supply.

- If the product uses an external power supply covered by the International Efficiency Marking Protocol, the certification body must obtain documentation, or affirmation from the test laboratory of visual inspection that confirms the external power supply is marked as Level V. The certification body must not require a full lab report or certificate of compliance from the manufacturer.

Note: on July 19, 2010 EPA announced to sunset the ES programs for EPSs and End-Use Products Using EPSs (details see next slide)

Other Information

Power Supply Requirements

EPA's sunset decision:

"…..

EPA will continue to recognize EPSs, End-Use Products Using EPSs and their manufacturers at www.energystar.gov until December 31, 2010.

- *Manufacturers must stop using the ENERGY STAR name and ENERGY STAR mark or EPS graphic in association with all products manufactured on or after December 31, 2010. (Qualified products manufactured before that date are allowed to carry the ENERGY STAR mark or EPS graphic on their packaging and product literature, as applicable. Retailers and distributors will be allowed to sell off their existing inventory.)*

- *No new promotional materials for EPSs and End-Use Products Using EPSs (printed and electronic) featuring the ENERGY STAR mark or EPS graphic may be produced after December 31, 2010. (Manufacturers are allowed to use up existing printed material, including packaging, in order to minimize waste.)*

- *To minimize the cost of labeling changes and be in compliance by December 31, 2010, manufacturers of EPSs and End-Use Products Using EPSs may remove ENERGY STAR references on websites or in other collateral materials as these materials are reprinted or changed in the coming months.*

…."

Other Information

Verification testing program

The verification testing is a Partner funded program, which ensures products on the market continue to meet all product performance parameters as described in the relevant ENERGY STAR product specification

- Annually 10% of all ENERGY STAR certified models will be subject to verification testing.
- 10% figure shall be caluclated on the number of original models
- EPA may advise to increase the number of models tested in subsequent years in the event of significant product failures
- Models selected for verification testing shall be currently certified
- At least 50% of models to be tested shall be randomly selected from the certification list or database, remaining models shall comprise referrals provided by the EPA

General Introduction

Canada Energy Efficiency Verification (EEV)

What **is the EEV mark ?**

The EEV mark indicates that the product meets the energy efficiency regulations of Canada, which is regulated by NRCan. A certification body must be accredited by the Standards Council of Canada (SCC).

General Introduction

Why **the EEV mark ?**

Regulated energy-using products must bear an EEV mark before the product is sold or leased in Canada.

Who **is affected by the Regulations…?** ….a dealer who imports or ships a regulated energy-using product

What do the Regulations do?

✓prescribe energy efficiency standards for prescribed products;

✓establish energy efficiency labelling (includes EEV);

✓prescribe reporting and importing requirements for a number of energy-using products.

Regulated Products

- automatic ice-makers
- chillers
- ceiling fans and ceiling fan light kits
- clothes dryers & clothes washers (residential and commercial)
- compact fluorescent lamps – CFLs
- dehumidifiers
- dishwashers
- dry-type transformers
- electric motors, 1 to 200 HP (0.746 to 150 kW)
- electric ranges
- electric water heaters
- exit signs
- fluorescent lamp ballasts
- freezers
- gas boilers, -fireplaces, -furnaces, -ranges, -unit heaters, -water heaters
- general service lamps (fluorescent, incandescent reflector, ER and BR)
- ground- or water-source heat pumps
- integrated over/under washer-dryers
- internal water-loop heat pumps
- large air conditioners, heat pumps and condensing units
- oil-fired boilers, -furnaces, -water heaters
- packaged terminal air conditioners and heat pumps
- refrigerators, refrigerator-freezers and wine chillers
- refrigerated beverage vending machines
- room air conditioners
- self-contained commercial freezers, -refrigerator-freezers, -refrigerators
- single-package central air conditioners and heat pumps: single- and three-phase
- split-system central air conditioners and heat pumps: single- and three-phase
- snack and refrigerated beverage and vending machines
- traffic and pedestrian signal modules
- torchiere lamps

Pre-Publiction of Regulations Amending Canada's Energy Efficiency Regulations – Notice June 2010 (Amendment 11)

- standby for electronic products
  - compact audio products
  - TV and TV combination units (and reporting only of TV on mode)
  - video products
- external power supplies
- digital TV adaptors
- electric boilers
- portable air-conditioners
- single package vertical air-conditioners and heat pumps

In Scope of TUV Rheinland of North America Accreditation

TÜVRheinland®
Precisely Right.

Program Details

Energy efficiency standards:

The prescribed energy efficiency standard for each regulated product is listed in Schedule I of the regulations and in the tables in Part Two of the guide under: http://oee.nrcan.gc.ca/regulations/guide.cfm?attr=0

Reporting requirements:

The Energy Efficiency Regulations require that dealers (a) must ensure that an energy efficiency report has been filed with NRCan and (b) must include the information required in Part VI of the Energy Efficiency Regulations in a customs release document.

An energy efficiency report must be submitted only when a product model is not already listed in the NRCan database.

Program Details

The energy efficiency report:

Section 5 of the Act requires that an energy efficiency report be sent to NRCan before an energy-using product is imported into Canada or shipped between provinces.

The energy efficiency report should include the following data:

- product type
- brand name
- model number
- manufacturer
- name of the organization or province that carried out the product energy performance verification and authorized the verification mark that will be put on the product
- specific information about the energy efficiency and energy-use characteristics of the product. Schedule IV of the Energy Efficiency Regulations sets out the exact information that must be provided for each type of product.

Program Details

'Import' reporting:

A dealer who imports a regulated energy-using product into Canada must, at the time of release, include specific information on the customs release document (e.g., customs or commercial invoice, bill of sale, price list).

- name of product (see the list of energy-using products)
- model number
- brand name, if any
- address of the dealer who is importing the product
- the purpose for which the product is being imported
  - for sale or lease in Canada without modification
  - for sale or lease in Canada after being modified to comply with the prescribed energy efficiency standard or
  - for use as a component in a product being exported from Canada

Program Details

Energy efficiency verification mark:

Regulated energy-using products imported into Canada or shipped between provinces must bear an energy efficiency verification mark from a certification body accredited for energy efficiency verification by the Standards Council of Canada (SCC).

Indicating that the energy performance of the product has been verified

TÜVRheinland®
Precisely Right.

Program Details

Other Labeling requirements:

The Act and Regulations require dealers to attach an EnerGuide label to the following energy-using products:

- clothes dryers
- clothes washers
- integrated over/under washer-dryers
- dishwashers
- electric ranges
- freezers
- refrigerators and combination refrigerator-freezers
- room air conditioners

And a lighting product label for:

- general service incandescent reflector lamps, ER and BR lamps
- CFLs
- general service lamps (common light bulbs)

Program Details

~~First Factory Inspection~~:

Not necessary for the EEV-mark

Follow-up Inspection:

Before certification is granted the applicant must agree to the required Follow-up Program. The Follow-up Inspection may be subcontracted to an independent outside organization provided that this organization operates under a recognized Quality Standard such as ISO/IEC 17025 or equivalent

Frequency of Follow-up Inspection for EEV: 1/yr [-> annual inspection]

TUV Rheinland of N.A. capabilities

Testing for the EEV-mark can be handled in any TUV Rheinland laboratory in the U.S.

- **CAN/CSA-C654-M91 (amended 2001)**
  Fluorescent Lamp Ballast Efficacy Measurements; Performance of Electrical Products – General Instruction No 1-3
- **CAN/CSA C802.2-00 and C802.2-06**
  Minimum Efficiency Values for Dry-Type Transformers
- **CAN/CSA-C62301-07**
  Household electrical appliances - Measurement of standby power
- **CSA-C381.1-08**
  Test method for calculating the energy efficiency of single-voltage external ac-dc and ac-ac power supplies

Other acceptable test methods cover the testing performed under the ***WMTL*** & ***SMTL*** procedures

Other Information

http://oee.nrcan.gc.ca/regulations/guide.cfm?attr=0

TÜVRheinland®
Precisely Right.

General Introduction

[California Code of Regulations, Title 20, Sections 1601-1608]

2010 APPLIANCE EFFICIENCY REGULATIONS

CALIFORNIA ENERGY COMMISSION

- *Appliance Efficiency Regulations* include standards for both federally regulated appliances and non-federally regulated appliances
- Twenty-three categories of appliances are included in the scope of these regulations
- The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and
- those designed and sold exclusively for use in recreational vehicles or other mobile equipment.
- The manufacturer shall cause the testing of units of each basic model of appliance
- If the manufacturer does not participate in an approved industry certification program, or does not apply such a program to test all units under section 1603, the testing shall be at a laboratory that the Executive Director determines

TÜVRheinland®
Precisely Right.

Process

- The manufacturer shall file with the Executive Director a statement for each appliance that is sold or offered for sale in California.

EXCEPTIONS:

1. *non-commercial cooking products*
2. *power supplies*
3. *refrigerators without doors and freezers without doors*
4. *walk-in coolers and walk-in freezers, and*
5. *low-profile ceiling fans.*

- After review of the statement the Executive Director shall immediately include the appliance in the database and shall so inform the manufacturer.
- Section 1608(a) states that no appliance within the scope of the regulations may be sold or offered for sale in California unless the appliance is in the database

Regulated Products

2010 APPLIANCE EFFICIENCY REGULATIONS | CALIFORNIA ENERGY COMMISSION

(a) Refrigerators, refrigerator-freezers, and freezers that can be operated by alternating current electricity, including but not limited to refrigerated bottled or canned beverage vending machines, automatic commercial ice-makers, refrigerators with or without doors, freezers with or without doors, walk-in coolers, walk-in freezers, and water dispensers, but excluding the following types:

(1) consumer products with total refrigerated volume exceeding 39 ft^3;

(2) commercial refrigerators, commercial refrigerator-freezers, and commercial freezers with total refrigerated volume exceeding 85 ft^3; except that walk-in coolers and walk-in freezers are not excluded;

(3) blast chillers; and

(4) automatic commercial ice makers with a harvest rate less than 50 lbs./24 hours and automatic commercial ice makers with a harvest rate greater than 2500 lbs./24 hours.

In Scope of TUV Rheinland of North America CEC Lab approval program

Regulated Products

2010 APPLIANCE EFFICIENCY REGULATIONS | CALIFORNIA ENERGY COMMISSION

(b) Room air conditioners, room air-conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(c) Central air conditioners, which are electrically-powered unitary air conditioners and electrically-powered unitary heat pumps, except those designed to operate without a fan; and gas-fired air conditioners and gas-fired heat pumps.

(d) Spot air conditioners, evaporative coolers, ceiling fans, ceiling fan light kits, whole house fans, residential exhaust fans, and dehumidifiers.

(e) Vented gas space heaters and vented oil space heaters, vented and unvented infrared gas heaters, electric residential boilers, and gas-fired combination space-heating and water-heating appliances.

Regulated Products

2010 APPLIANCE EFFICIENCY REGULATIONS | CALIFORNIA ENERGY COMMISSION

(f) Water heaters, including but not limited to hot water supply boilers.

(g) Gas pool heaters, oil pool heaters, electric resistance pool heaters, heat pump pool heaters, residential pool pump and motor combinations, replacement residential pool pump motors, and portable electric spas.

(h) Plumbing fittings, which are showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, and commercial pre-rinse spray valves.

(i) Plumbing fixtures, which are water closets and urinals.

(j) Fluorescent lamp ballasts that are designed to:

(1) operate at nominal input voltages of 120 or 277 volts,
(2) operate with an input current frequency of 60 Hertz, and
(3) be used with T5, T8, or T12 lamps; and mercury vapor lamp ballasts.

(k) Lamps, which are federally-regulated general service fluorescent lamps, federally-regulated incandescent reflector lamps, state-regulated general service incandescent lamps, general service lamps, and includes GU-24 base lamps.

Regulated Products

2010 APPLIANCE EFFICIENCY REGULATIONS | CALIFORNIA ENERGY COMMISSION

(l) Emergency lighting, which is illuminated exit signs.

(m) Traffic signal modules and traffic signal lamps.

(n) Luminaires, which are torchieres, metal halide luminaires, portable luminaires, under-cabinet luminaires, and includes luminaires with GU-24 socket and base configurations and GU-24 adaptors.

(o) Dishwashers that are federally-regulated consumer products.

(p) Clothes washers that are federally-regulated consumer products; and commercial clothes washers.

(q) Clothes dryers that are federally-regulated consumer products.

(r) Cooking products that are federally-regulated consumer products; and food service equipment.

Regulated Products

2010 APPLIANCE EFFICIENCY REGULATIONS
CALIFORNIA ENERGY COMMISSION

(s) Electric motors, excluding definite purpose motors, special purpose motors, and motors exempted by the U.S. Department of Energy under 42 U.S.C. Section 6313(b).

(t) Low voltage dry-type distribution transformers that are designed to operate at a frequency of 60 Hertz, and that have a rated power output of not less than 15 kVa.

(u) Power supplies, which are single voltage external AC to DC and AC to AC power supplies included with other retail products, and single voltage external AC to DC or AC to AC power supplies sold separately, excluding power supplies that are classified as devices for human use under the Federal Food, Drug, and Cosmetic Act and require U.S. Food and Drug Administration listing and approval as a medical device.

(v) Televisions with a screen area not greater than 1,400 square inches, and consumer audio and video equipment, which are compact audio products, digital versatile disc players, and digital versatile disc recorders.

(w) Battery charger systems.

Other Information

2010 APPLIANCE EFFICIENCY REGULATIONS
CALIFORNIA ENERGY COMMISSION

California's Appliance Efficiency Program:

http://www.energy.ca.gov/appliances/

Approved Testing Laboratories:

http://www.energy.ca.gov/appliances/database/forms_instructions_cert/approved_test_laboratories/2011_list_of_approved_labs/

TÜVRheinland®
Precisely Right.

ErP Directive 2009/125/EC

- Directive 2009/125/EC for ErP (Energy-related-Products), *previously EuP-Directive 2005/32/EC for 'Energy using Products'),* establishes a framework directive for the setting of eco-design requirements for all energy using products except in the transport sector. It also covers products outside the electrical area.

- It is the first directive to cover a product's total life cycle:
  - Raw Material Acquisition
  - Manufacturing
  - Transport and Trade
  - **Use/ Maintenance**
  - Reuse/ Recycling/ End of Life Treatment

ErP Directive 2009/125/EC

- The directive 2009/125/EC is a recast of the EuP-Directive and is largely the same in content.
- Same products are covered:
  - Standby and Off Mode Consumption for Household and Office Equipment
  - External Power Supplies
  - Simple Set Top Boxes
  - TVs
  - Domestic Lighting
  - Tertiary Lighting
  - Domestic Cold Appliances
  - Electric Motors 0.75 – 375kW
  - Circulators
- The process of introduction of implementing measures under the EuP directive will not be affected by the recast directive.
- The levels to be met are specified in the regulations
- For office equipment products such as PCs and monitors are generally in line with ENERGY STAR® requirements.

Questions……..?

TUV Rheinland of North America, Inc.
Business Field Electrical
Product Safety

Uwe Meyer
Technical Operations Manager - West
1819 Aston Avenue, Suite 103
Carlsbad, CA 92008, USA
Tel.: (760) 929-1780, Ext. 242#
Fax: (760) 929-1781
e-mail: umeyer@us.tuv.com
www.tuv.com