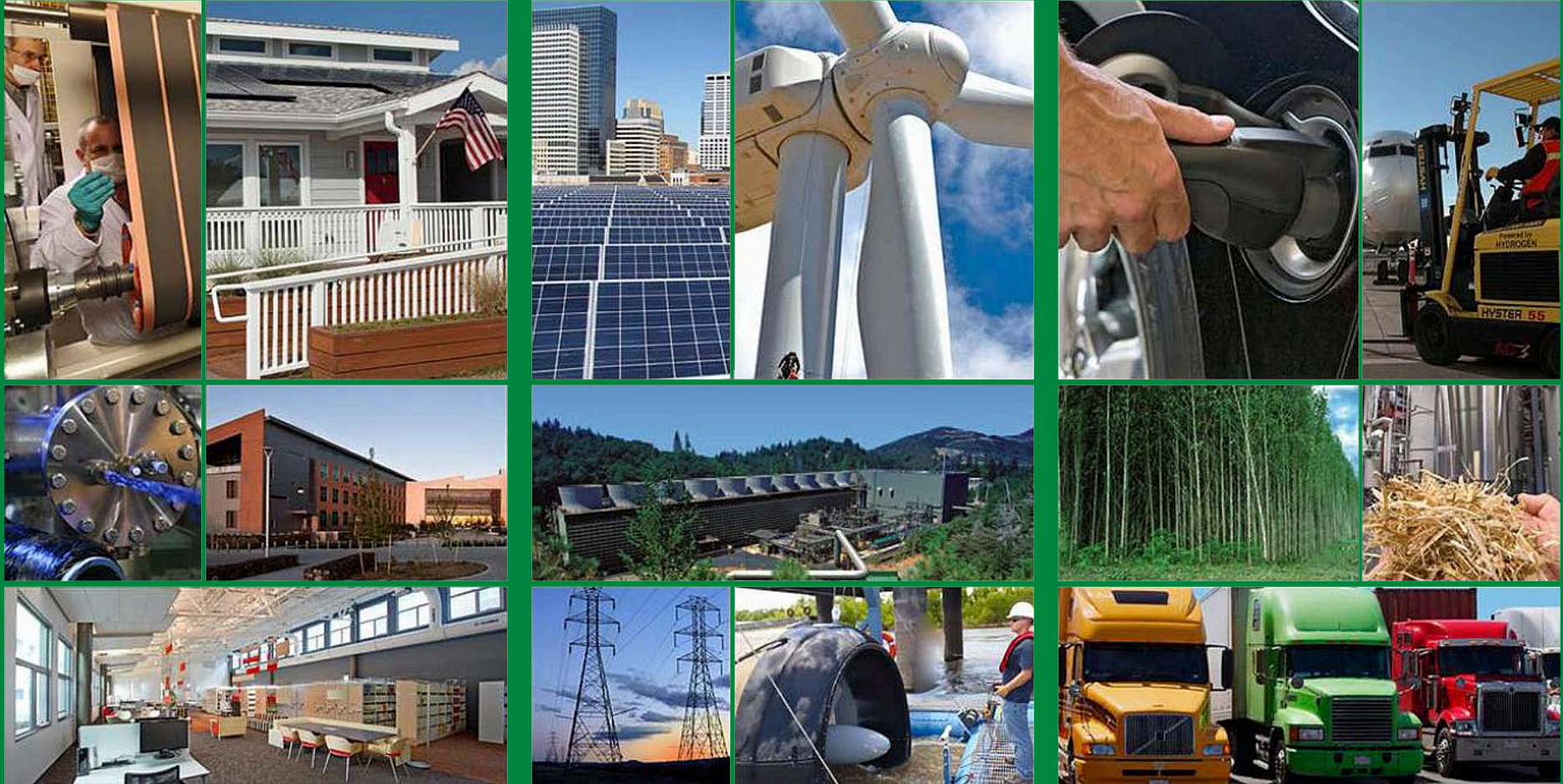


**4th U.S.-China
Energy Efficiency Forum
September 25, 2013**

Compiled Presentations from Track 4, Breakout
Session 1/Morning

**Appliance and Equipment Energy
Efficiency Standards**

US Appliance Standards Program Overview



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

John Cymbalsky
Program Manager - Appliance Standards and
Building Codes

Appliance Standards: What Does the Program Cover?

- Over 60 products are covered by DOE's appliance standards program. These are known as "covered products."
- Covered products are responsible for 90% of residential building energy consumption, 60% of commercial building energy consumption, and approximately 29% of industrial energy consumption.
 - In 2009, the Nation's 113 million households and 5.4 million commercial buildings consumed approximately 39.2 quadrillion Btu (quads) of energy annually, about 41 percent of the U.S. total.
 - Residential buildings use 22 percent of the U.S. total and commercial buildings use 19 percent. Industrial equipment and processes comprises 29 percent of the national total.
 - Energy use in buildings costs \$413.3 Billion (\$2009).

Appliance Standards: What are the Program Benefits

The Program is highly effective, achieving high bang-for-the-buck in energy savings.

- Standards to date have saved US consumers \$42 billion in utility bills annually and \$30 billion net of costs to achieve these savings.
- The national energy efficiency standards promulgated to date are expected to save 69 quads of energy by 2020 and 120 quads by 2030.
- The cumulative utility bill savings to consumers of these standards are estimated to be over \$900 billion by 2020 and over \$1.6 trillion through 2030.
- Annual carbon dioxide savings will reach nearly 260 million tons by 2020 and the cumulative savings by 2030 is estimated to be 6.5 billion tons.

What Does the Program Do?

- Establishes test procedures for measuring the energy efficiency of covered products.
 - Energy efficiency is often difficult to define, and requires different metrics for different products.*
 - Test procedures must be carefully developed, so they can't be gamed.*
- Establishes the mandatory standard levels for the energy efficiency of covered products.
 - The standard is defined in terms of the test procedures established by the Program.*
 - Manufacturers must test their products using the DOE test procedure, and it must meet the standard level to be sold in the U.S.*

(c) *Dishwashers.* (1) The Estimated Annual Operating Cost (EAO) for dishwashers must be rounded to the nearest dollar per year and is defined as follows:

(i) When cold water (50 °F) is used,

(A) For dishwashers having a truncated normal cycle as defined in section 1.15 of appendix C to this subpart,
 $EAO = (D_e \times S) + (D_e \times N \times (M - (E_D / 2)))$.

(B) For dishwashers not having a truncated normal cycle,
 $EAO = (D_e \times S) + (D_e \times N \times M)$

Where,
 D_e = the representative average unit cost of electrical energy, in dollars per kilowatt-hour, as provided by the Secretary,

See the Federal Register, August 29, 2003.

Product class	Standard level	
Residential water heaters*		
Gas-fired Storage	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.675 - (0.0015 \times \text{Rated Storage Volume in gallons})$.	For tanks with a Rated Storage Volume above 55 gallons: $EF = 0.8012 - (0.00078 \times \text{Rated Storage Volume in gallons})$.
Electric Storage	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.960 - (0.0003 \times \text{Rated Storage Volume in gallons})$.	For tanks with a Rated Storage Volume above 55 gallons: $EF = 2.057 - (0.00113 \times \text{Rated Storage Volume in gallons})$.
Oil-fired Storage	$EF = 0.68 - (0.0019 \times \text{Rated Storage Volume in gallons})$.	
Gas-fired Instantaneous	$EF = 0.82 - (0.0019 \times \text{Rated Storage Volume in gallons})$.	

See the Federal Register, April 16, 2010.

What Does the Program Do?

- Enforces the standards.
 - *DOE can order manufacturers to take corrective action if their products do not meet the standard levels.*
 - *This can include ordering them not to sell the products in the United States and the imposition of civil penalties.*

**BEFORE THE
U.S. DEPARTMENT OF ENERGY
Washington, D.C. 20585**

In the Matter of:)
Sears, Roebuck & Co.) Case Number: 2011-SE-1418
(freezers))
)

Issued: June 26, 2012

NOTICE OF NONCOMPLIANCE DETERMINATION

Manufacturers and private labelers are prohibited from distributing covered products that do not comply with applicable federal energy conservation standards. 10 C.F.R. § 429.102; 42 U.S.C. § 6302.

On September 22, 2011, DOE completed testing of one compact chest freezer, Kenmore-brand model number 255.19702010 ("19702"), privately labeled and distributed in commerce in the U.S. by Sears, Roebuck & Co. ("Sears") and manufactured in China. In December 2011 and January 2012, DOE completed testing of three additional units of 19702. DOE's testing was conducted in accordance with the relevant DOE test procedure (10 C.F.R. Part 430, Subpart B, Appendix B1).

DOE's testing demonstrated that Kenmore-brand chest freezer model number 19702 is not in compliance with federal law. Given the tested units' measured volumes, their respective maximum permissible rates of energy consumption were 261, 262, 263, and 262 kilowatt-hours per year (kWh/yr).¹ Based on their performance during testing, the four units that DOE tested consumed energy at the rates of 374, 413, 388, and 449 kWh/yr, an average of more than 50 percent over the federal limit.

(November 28, 2012)

Midea Agrees to Pay \$4.5M for Four Models that Fail to Meet Federal Energy Standards

Midea America Corp., Hefei Hualing Co., Ltd., and China Refrigeration Industry Co., Ltd. ("Midea")—all subsidiaries or affiliates of GD Midea Holding Co., Ltd.—agreed to pay \$4,562,838 after admitting in a compromise agreement that one refrigerator-freezer basic model and three freezer basic models fail to meet the relevant federal energy conservation standards. Specifically, Midea admitted that the DOE-tested units of the offending basic models consumed energy at approximately the following rates:

UL-WD195-D: 55% over the standard UL-WD145-D: 28% over the standard

HS-390C: 8% over the standard HD-146F: 8% over the standard

DOE Office of General Counsel Leads Enforcement with BTP Support

- **Certifications to Date**
 - Close to 2 million products have been certified to DOE since January 1, 2010
 - 100-percent of certifications are reviewed by DOE
- **Enforcement Activity**
 - Approximately 250 open enforcement actions
 - Emphasis on testing and standards violations
 - Expanding to commercial equipment
 - Collected over \$5,400,000 in civil penalties for violations
 - Enforcement news: <http://energy.gov/gc/enforcement-news>
- **Online, Public, Searchable Certification Database**
 - Launched at end of 2011
 - Version 2.0 release upcoming
- **Guidance Database**
 - DOE released a guidance database in September 2011, which houses responses to questions DOE has received regarding scope of coverage, definitions, test procedures, standards applicability, certification, and enforcement.

What Does the Program Do?

- Working with EPA, leads test procedure development, testing/verification, and **MOST EFFICIENT** for ENERGY STAR.
 - *DOE generally uses the same test procedure for appliance standards and ENERGY STAR.*
 - *DOE conducts testing in support of the ENERGY STAR program to verify the required efficiency levels.*
 - *DOE has tested over 400 products since 2010 to ensure that products bearing the ENERGY STAR logo deliver the energy savings consumers expect.*
 - *ENERGY STAR MOST EFFICIENT targets ~top 5% of market for several home appliances.*



Department of Energy

Washington, DC 20585

December 9, 2010

Ms. Leslie Jones
ENERGY STAR Program
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Room 62023
Washington, DC 20460

Dear Ms. Jones:

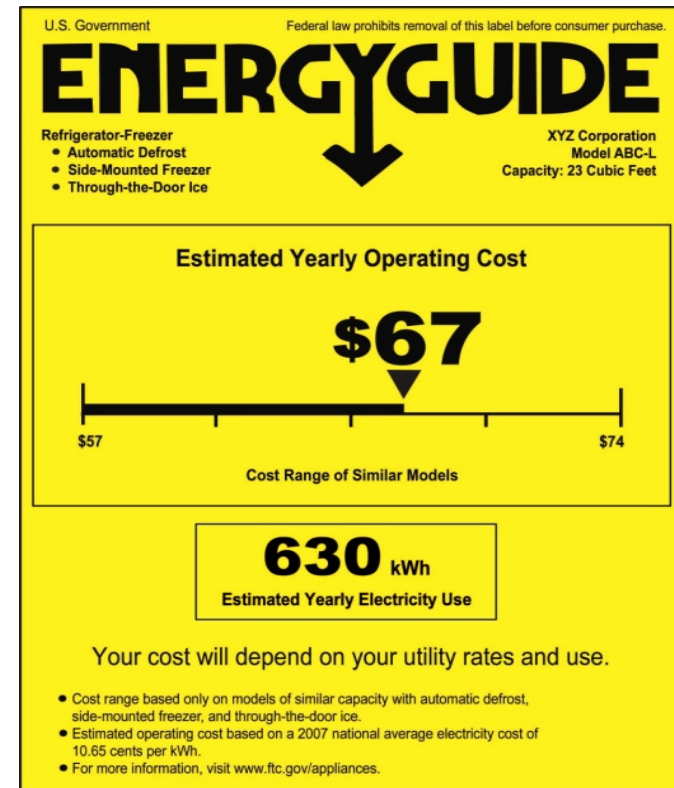
On October 20, 2010, the United States Department of Energy (DOE) notified Electrolux Major Appliance (Electrolux) that DOE had tested the Frigidaire brand chest freezer model FFN09M5HW* manufactured by Electrolux as part of the ENERGY STAR Testing Pilot Program, and that, according to Stage I testing, this model exceeded allowable ENERGY STAR energy-efficiency requirements by 20 percent. DOE gave Electrolux until November 1, 2010, to request additional testing or have this matter referred to the United States Environmental Protection Agency (EPA) for disqualification from the ENERGY STAR program.

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

What Does the Program Do?

- Working with FTC, DOE creates a methodology to calculate energy-usage values for Energy Guide labels on appliances.
 - *Generally the results on the FTC label are based on calculations resulting from DOE test procedures.*
 - *Manufacturers must file data reports with FTC and must contain the ratings for the appliances. FTC is allowing manufacturers to submit reports to DOE via CCMS.*



Compliance Dates for Standards Promulgated to Date

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
RESIDENTIAL PRODUCTS		
Clothes Washers (Water and Energy)	1988, 1994, 2004/2007, 2015/2018	NAECA 1987
Clothes Dryers	1988, 1994, 2014	NAECA 1987
Dishwashers (Water and Energy)	1988, 1994, 2010, 2013	NAECA 1987
Refrigerators and Refrigerator-Freezers	1990, 1993, 2001, 2014	NAECA 1987
Freezers	1990, 1993, 2001, 2014	NAECA 1987
Room Air Conditioners	1990, 2000, 2014	NAECA 1987
Central Air Conditioners and Heat Pumps	1992/1993, 2006, 2015	NAECA 1987
Water Heaters	1990, 2004, 2015	NAECA 1987
Furnaces	1992, 2013	NAECA 1987

Compliance Dates for Standards Promulgated to Date

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
RESIDENTIAL PRODUCTS		
Boilers	1992, 2012	NAECA 1987
Direct Heating Equipment	1990, 2013	NAECA 1987
Cooking Products	1990, 2012	NAECA 1987
Pool Heaters	1990, 2013	NAECA 1987
Ceiling Fans and Ceiling Fan Light Kits	2007	EPACT 2005
Torchieres	2006	EPACT 2005
Dehumidifiers	2007, 2012	EPACT 2005
External Power Supplies	2008	EISA 2007
Microwave Oven Stand-by Power	2016	EISA 2007

Compliance Dates for Standards Promulgated to Date (2)

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
COMMERCIAL & INDUSTRIAL PRODUCTS		
Electric Motors	1997, 2010	EPACT 1992
Warm Air Furnaces	1994	EPACT 1992
Packaged Boilers	1994	EPACT 1992
Air Conditioners and Heat Pumps	1994/1995, 2003/2004, 2010, 2012, 2012- 2014	EPACT 1992
Water Heaters, Hot Water Supply Boilers and Unfired Hot Water Storage Tanks	1994, 2004	EPACT 1992
Distribution Transformers	2007, 2010, 2016	EPACT 1992, EPACT 2005

Compliance Dates for Standards Promulgated to Date (3)

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
COMMERCIAL & INDUSTRIAL PRODUCTS		
Refrigerators, Refrigerator-Freezers and Freezers	2010, 2012	EPACT 2005
Automatic Ice Makers	2010	EPACT 2005
Clothes Washers ⁺	2007	EPACT 2005
Unit Heaters	2008	EPACT 2005
Refrigerated Beverage Vending Machines	2012	EPACT 2005
Walk-in Coolers and Walk-in Freezers	2009	EISA 2007

Compliance Dates for Standards Promulgated to Date (4)

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
LIGHTING PRODUCTS		
Fluorescent Lamp Ballasts	1990, 2005/2010, 2014	NAECA 1988
General Service Fluorescent Lamps and Incandescent Reflector Lamps	1995, 2008, 2012	EPACT 1992, EISA 2007
Medium Base Compact Fluorescent Lamps	2006	EPACT 2005
Illuminated Exit Signs	2006	EPACT 2005
Traffic Signal Modules and Pedestrian Modules	2006	EPACT 2005
Mercury Vapor Lamp Ballasts	2008	EPACT 2005
Metal Halide Lamp Ballasts and Fixtures	2009	EISA 2007
General Service Incandescent Lamps, Intermediate Base Incandescent Lamps and Candelabra Base Incandescent Lamps	2012/ 2014 & 2020	EISA 2007

Compliance Dates for Standards Promulgated to Date (5)

Product	Compliance Date for Original Standard and Updates	Authorizing Legislation
PLUMBING PRODUCTS (Water Only)		
Faucets	1994	EPACT 1992
Showerheads	1994	EPACT 1992
Water Closets	1994/1997	EPACT 1992
Urinals	1994/1997	EPACT 1992
Pre-rinse Spray Valves	2007	EPACT 2005

Standards Under Development

Standards	Stage
Computers	Framework
Computer Servers	Framework
Portable Air Conditioners	Framework
Commercial Packaged Boilers	Framework
Refrigerated Beverage Vending Machines	Framework
Commercial Compressors	Framework
Residential Boilers	Preliminary Analysis
Packaged Terminal Air Conditioners and Heat Pumps	Preliminary Analysis
Ceiling Fans and Ceiling Fan Light Kits	Preliminary Analysis
Commercial and Industrial Pumps	Preliminary Analysis
Commercial and Industrial Fans and Blowers	Preliminary Analysis
Miscellaneous Residential Refrigeration	Preliminary Analysis
Dehumidifiers	Preliminary Analysis

Standards Under Development - Continued

Standards	Stage
GSFL and Incandescent Reflector Lamps	NOPR
High Intensity Discharge Lamps	NOPR
Furnace Fans	NOPR
Electric Motors	NOPR
Set Top Boxes	NOPR
Automatic Commercial Ice Makers	NOPR
Commercial Clothes Washers	NOPR
Single Package Vertical Air Conditioners and Heat Pumps	NOPR
Residential Water Heaters	NOPR
Commercial Packaged Air Conditioners and Heat Pumps	NOPR
Commercial Warm-Air Furnaces	NOPR
Commercial Water Heaters	NOPR
Battery Chargers and External Power Supplies	Final Rule
Metal Halide Lamp Fixtures	Final Rule
Commercial Refrigeration Equipment	Final Rule
Walk-in Coolers and Freezers	Final Rule

Test Procedures Under Development

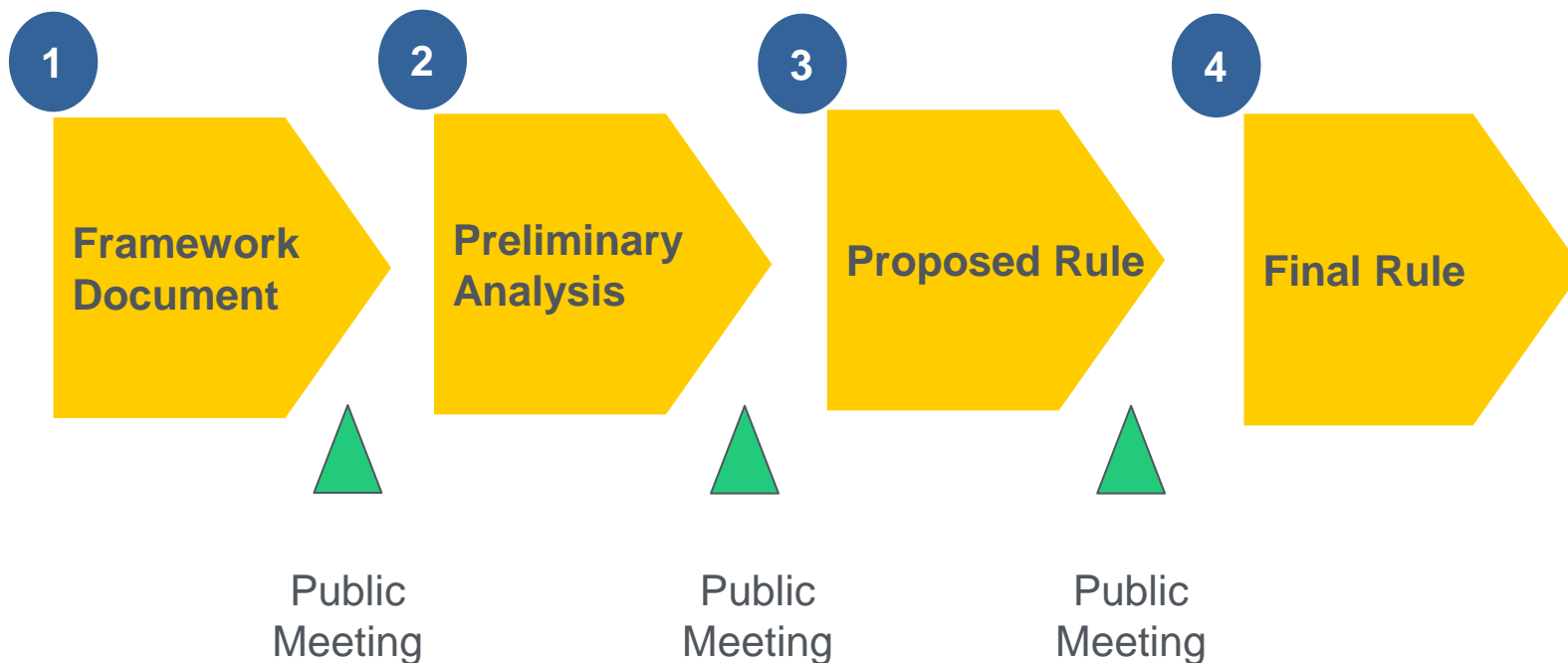
Test Procedures	Stage	Test Procedures	Stage
Alternative Efficiency Determination Methods	SNOPR	Compact Fluorescent Lamps	NOPR
Set Top Boxes	NOPR	Direct Heating Equipment and Pool Heaters (Active Mode)	NOPR
Electric Motors	NOPR	Illuminated Exit Signs	NOPR
High-Intensity Discharge Lamps	SNOPR	Light Emitting Diodes	SNOPR
Television Sets	SNOPR	Microwave Ovens (Active Mode)	NOPR
Central Air Conditioners and Heat Pumps	SNOPR	Packaged Terminal Air Conditioners and Heat Pumps	NOPR
Induction Cooking Products (Active-Mode)	NOPR	Plumbing Products	SNOPR
Clothes Dryers (Automatic Termination Sensors)	NOPR	Residential Furnaces & Boilers (Active Mode)	NOPR
Furnace Fans	SNOPR	Traffic Signal Modules and Pedestrian Modules	NOPR
Residential and Commercial Water Heaters	NOPR	Commercial Clothes Washers	NOPR
Miscellaneous Residential Refrigeration	NOPR	Residential Refrigerators - Ice Making	NOPR
Commercial and Industrial Pumps	NOPR	Dehumidifiers (Active)	NOPR
Commercial and Industrial Fans and Blowers	NOPR	Luminaires Lighting Systems	RFI
Beverage Vending Machines	NOPR		
Ceiling Fans and Ceiling Fan Light Kits	NOPR		

ENERGY STAR Test Methods Under Development & Review

Test Methods	Stage
Clothes Washer Performance (Rinsing ability/Cleaning ability)	Preliminary
Commercial Heat Pump Water Heaters	Draft 1
Computers	Draft Final
Connected Clothes Washers	Preliminary
Connected Clothes Dryers	Preliminary
Dishwasher Performance (Cleaning ability)	Final
Laboratory Grade Refrigerator/Freezer and Ultra-Low Temperature Freezers	Draft 2
Large Network Equipment	Draft 1
Boilers	Draft 2
Set-top Boxes	Draft 2
Commercial Refrigeration Equipment	Draft 2
Telephony	Draft 2
Central Air Conditioning	Preliminary
Clothes Dryers	Draft 2

Standards Rulemaking Process – How to Get Involved

DOE energy conservation standards are established by a four-phase rulemaking process which includes three public meetings



Stakeholders are encouraged to submit comments to the rulemaking docket during the comment periods that follow each of the first 3 phases

Certification basics

- Energy conservation standards regulatory program based on self-certification before distribution
 - Submitted annually
 - Updated to reflect discontinuance
- Manufacturer must submit a certification report
 - Report states that covered product/equipment was manufactured in compliance with the federal standards
 - Private labelers need not certify
 - Importers are “manufacturers”
- Representation of efficiency must be based upon either:
 - testing, or
 - estimations from a defensible mathematical model
 - This is only allowed for limited types of products/equipment!
- Certify efficiency based upon “basic model”

Basic Model Explanation

- **Manufacturer** decides scope of basic model
 - May contain multiple individual models
 - May be made up of only one individual model
 - Only have to test basic model – not each individual model
- All individual models must be from same manufacturer
 - May be distributed under different brand names
 - **Must** certify all brand names!
- Can **only** include individual models that have:
 - same primary energy source, and
 - essentially identical electrical, physical, and functional characteristics that affect
 - energy consumption,
 - energy efficiency,
 - water consumption, or
 - water efficiency

Certification Submission

- Requirements explained in 10 C.F.R. § 429.12
 - product or equipment type
 - product or equipment class
 - manufacturer's name and address;
 - private labeler's name(s) and address (if applicable);
 - brand name, if applicable;
 - basic model number and individual model numbers
 - whether new, discontinued model, or some other update
 - test sample size
 - importer identification numbers, if applicable;
 - whether certification based upon waiver of test procedure
 - whether certification is based upon exception relief from OHA
 - whether certification is based upon the use of ARM
 - product specific information listed in §§ 429.14 through 429.54

Certification Submission

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Ready | Certification | **Input** | Product Description | Instructions | 75%

Increasing Scope and Stringency of Energy Conservation Standards and Labeling in China

Bai Xue Ph.D



Resources and Environment Branch,
China National Institute of Standardization
25th September, 2013

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Challenges and Opportunities

Snapshot of CNIS



- China National Institute of Standardization dates back to 1963. As a national non-profit institute affiliated to AQSIQ, CNIS is dedicated to standardization research, especially for the all-round, strategic and comprehensive issues of standardization regarding national economic and social development.



Working fields of Resources and Environment



Energy conservation

Energy Efficiency of End Energy-using Products, Quota of Energy Consumption for High Energy consuming Products, Energy Fundamental and Management, Energy Efficiency Services, Energy System Optimization

Emission Reduction

Recycling and Reuse of Products, Greenhouse Gases Management, Environment Protection Industry, Environment Management System, Circular Economy, Industrial Clean Production

Water Conservation

Water Efficiency of Water-using Equipment, Quota of Water Consumption for Industrial Products

Renewable Energy

Solar Energy, Hydrogen Energy

Working tasks

Administration of China Energy Labeling, Testing Labs of Energy Efficiency, Operation of Energy Saving Products Rebate Programs

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Framework of standards for energy conservation



❖ Level

- National, Sector, Local, Enterprise

❖ Properties

- Mandatory, voluntary

❖ Categories

- General, Energy efficiency standards, Quota of Energy Consumption, Energy Saving Design, Measurement and Metrology, Calculation and Evaluation, Continuous Improvement

❖ Scope

- Product/device, System, Organizations, Regions

Important National Standards for energy conservation



Group of Standards	Main Content	Amount	Properties
Energy efficiency standards for end energy-using product	MEPS, energy efficiency grades, etc.	49	Mandatory
Quota of energy consumption per unit output	Quota for existing enterprises, Minimum Quota (threshold) for new enterprises, Advanced Quota	54	Mandatory
Energy efficiency monitoring	Testing methods, calculating and analyzing methods, etc. during energy efficiency monitoring activities	21	Voluntary
Economic operation	Basic requirements, evaluating methods, technical and management measures, methods for electric power balance test and calculation, etc..	8	Voluntary
Calculation methods	Basic methods and technical requirements for energy consumption statistics and calculation	20	Voluntary
Rational utilization of energy	Technical requirements for rational utilization of heat, electricity, etc..	6	Voluntary
Plan and management of energy metering equipment	Equipping rate, accuracy, and management requirements of energy metering equipment	7	Voluntary
Energy conservation for buildings	Requirements on energy conservation design and final acceptance of construction for buildings	9	M/V
Energy management system (EnMS)	Support establishment of energy management system in organizations, support energy management, energy auditing, energy performance contracting, etc. of enterprises		Voluntary

Energy efficiency standards for end energy-using product



49 standards

16 for household appliances

11 for Lighting equipment

5 for commercial devices

12 for industrial equipment

5 for office equipment

Mandatory energy efficiency standards

MEPS and Reach
MEPS

Energy efficiency grades

Evaluating index for energy saving product



Market access, phasing out bad products



Mandatory Energy Labeling Program



Voluntary certification scheme for energy saving products



Promotion of appliances in rural areas

Financial incentive for efficient products

Public procurement of efficient product

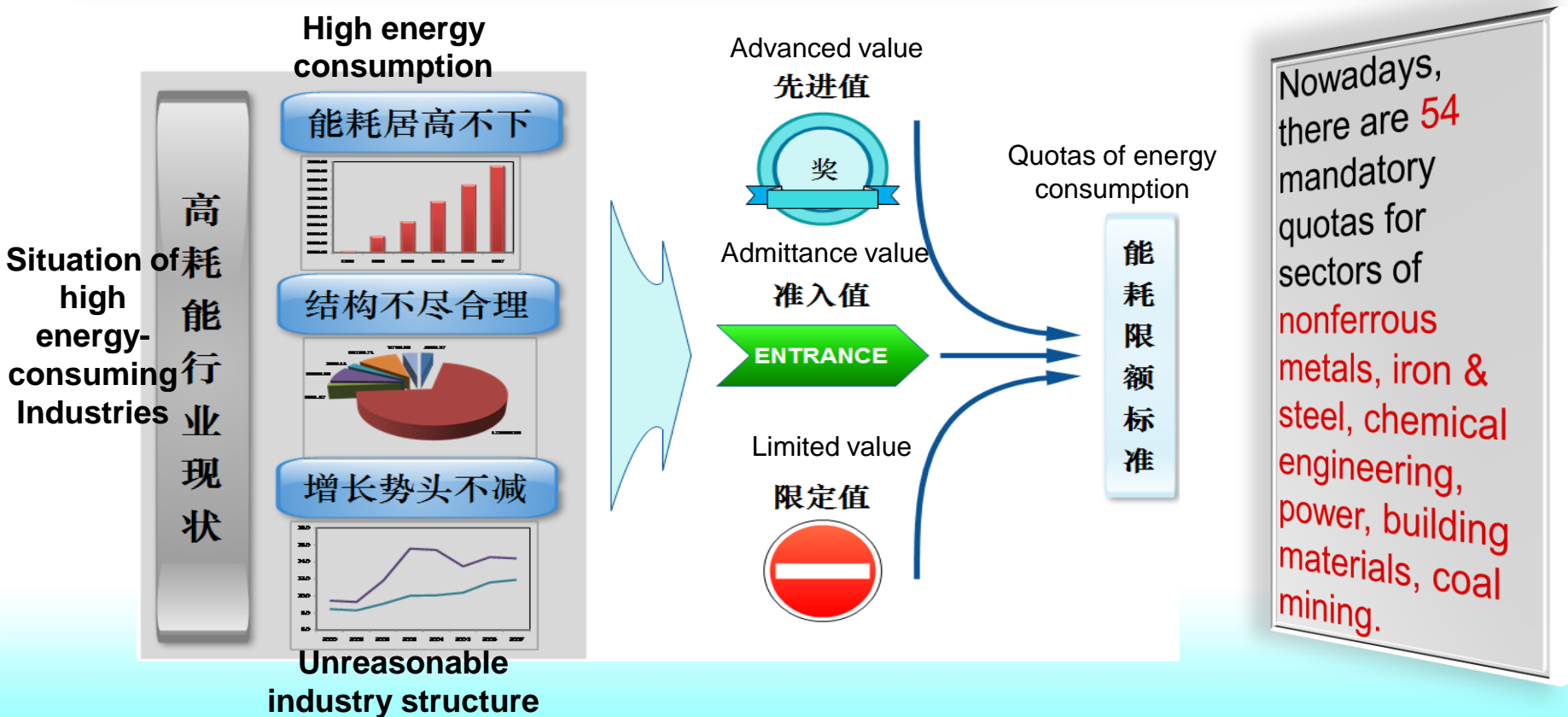
Local financial incentive

Preference of income tax for enterprises

Quota of energy consumption per unit output



The first batch of 22 quotas may save 200 million tce. They have been the main technical basis for energy efficiency assessment of new projects, phasing out backward production capacity, energy benchmarking, incentive and constrained policies.



100 Standards Program



- ❖ In 2012, NDRC and SAC jointly launched the “100 Standards Program”, aiming at developing and revising 100 national energy conservation standards in 2 years
- ❖ The program mainly focus on energy efficiency standards and Quota (energy consumption per unit output) standards
- ❖ It aims at providing technical support to promotion of energy-efficient products, energy assessment and inspection, “Energy Saving and Low Carbon Action for 10000 Enterprises”, Green Building action, phasing-out backward production capacity, etc..
- ❖ Up to end of 2012, totally 54 standards have been published, including 28 quota standards, 8 EE standards, and 18 fundamentals standards
- ❖ In 2013, the remaining 50 standards will be finished
- ❖ EF is an important funder



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China energy label program

-Label Type



Model: Defined According to Product Performance Standards

Grade 1: High Energy Efficiency but Low Energy Consumption

Grade 5: Low Energy Efficiency but High Energy Consumption

Valid EES



Ultimate Responsible Party or Brand Owner

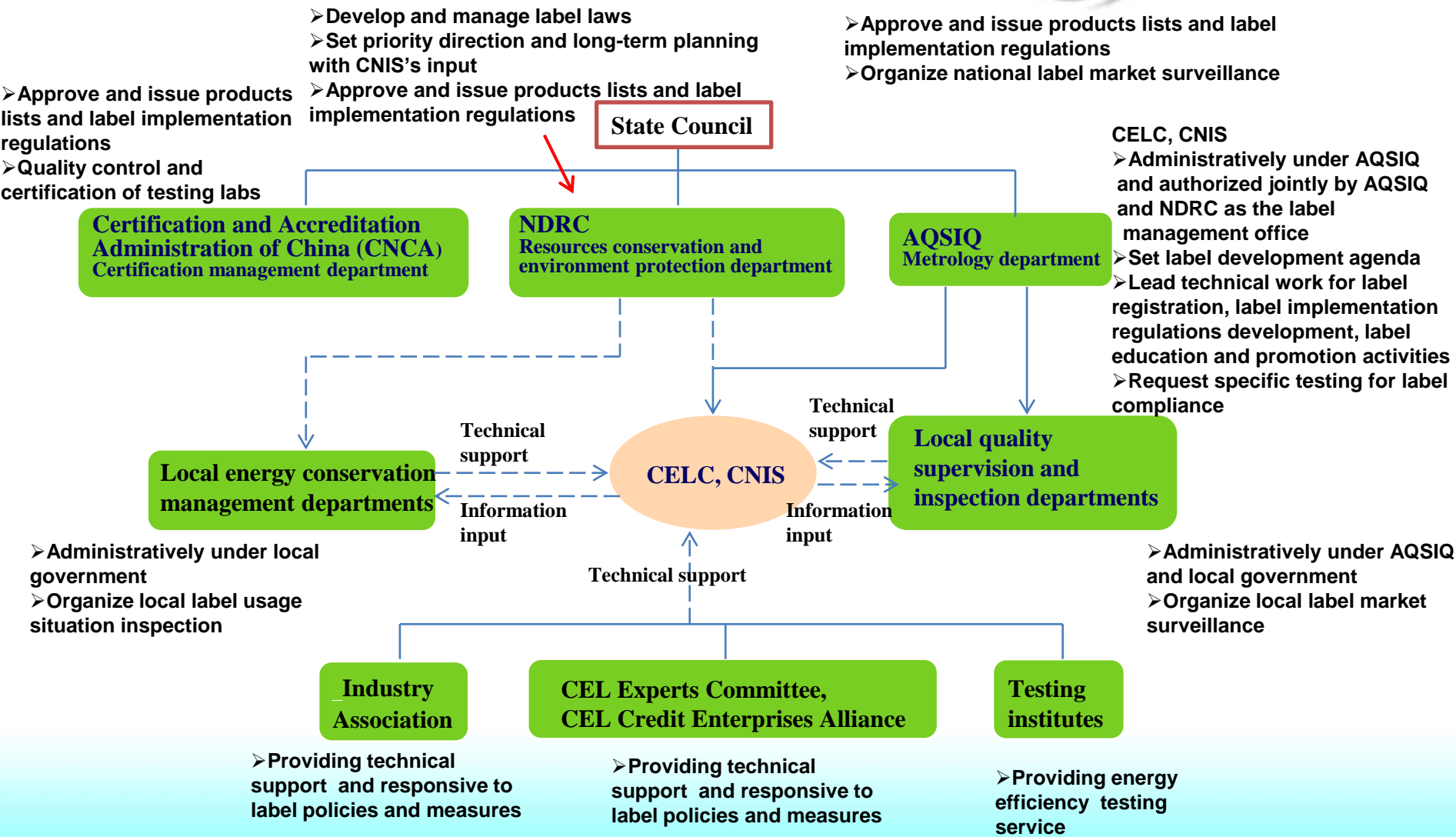
The most important part of label, which is determined according to energy efficiency standards

Present energy consumption indicators and main energy performance indicators which are determined according to Regulation on Label Implementation of each target product

3 or 5 Grades

China energy label program

-Roles and Responsibilities



China energy label program

-System Framework



Products Screening and Announcement of Label Regulation

- Market and production situation
- Energy saving potential
- Label information availability for consumers

Products Registration

- Based on manufacturer self-declared energy performance information
- Submit manufacturer information and testing report by registered labs
- Verification by CEL Center (directly under CNIS)
- Announced on CEL website

Labs Registration and Quality Management

- Based on labs' application and recognized by CNIS through:
 - Onsite inspection every 5 years to verify testing facilities, faculties, and lab management system
 - Round-robin testing every year to verify testing abilities

Market Surveillance

- Market supervision organized by AQSIQ and local quality inspection bureaus and testing institutes
- National Check-testing by CNIS
- Verification testing of super-high efficient products during product registration

Products in energy label program



Industry : 18%

Motors, AC contactor,
Air compressor, Power
transformer, Ventilator



Office: 14%

Computer monitor,
Photocopier,
Printer/Fax Machine,
Microcomputer



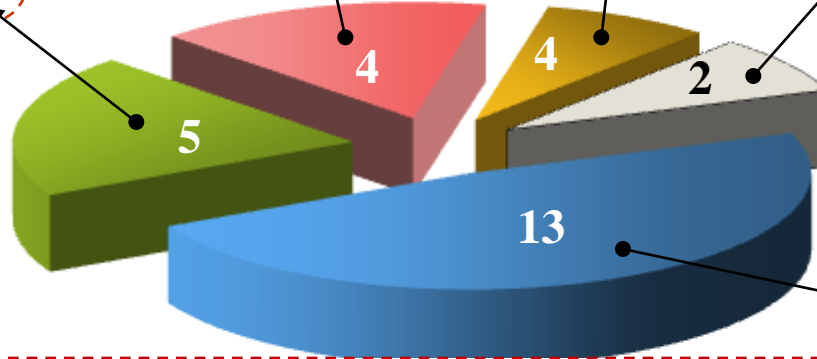
Commercial: 14%

Water chiller, Multi-
connected AC, Unitary
AC, Remote
Condensing Unit
Refrigerated Counter



Lighting: 7%

CFL, High-
voltage Sodium
Lamp



Household: 47%

AC, VS-AC, Refrigerator, Electric
washer, Gas water heater, Electric
water heater, Induction cooker, Rice
cooker, Fan, Flat-panel TV,
Microwave oven, Set-top Box, Solar
water system

Totally 10 lists including 28 products are covered by CEL

- Over 4500 manufacturers and product models were registered
- Over 700 labs were registered, among which about 30% are third-party labs

State Subsidy Program for efficient products

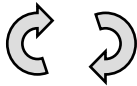


National financial subsidy

14 kinds of efficient products

Household appliances	ACs, flat TVs, water heaters, refrigerators, washing machines
Commercial equipment and lighting products	CFLs, desktops, unit ACs, Chillers
Industrial equipment	Motors, fans, pumps, air compressors, distribution transformers
Vehicles	Efficient cars and new energy cars

Save energy



Benefit the people



- Establishment of Long-term scheme to promote the efficient products
- Improvement of the market share of efficient product to save energy and reduce emission
- Boost the domestic demand

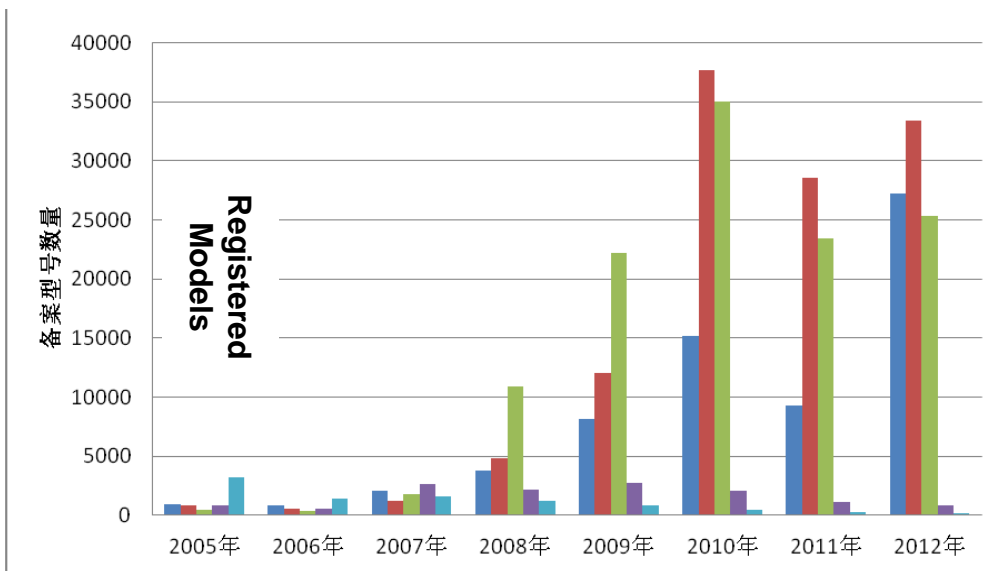
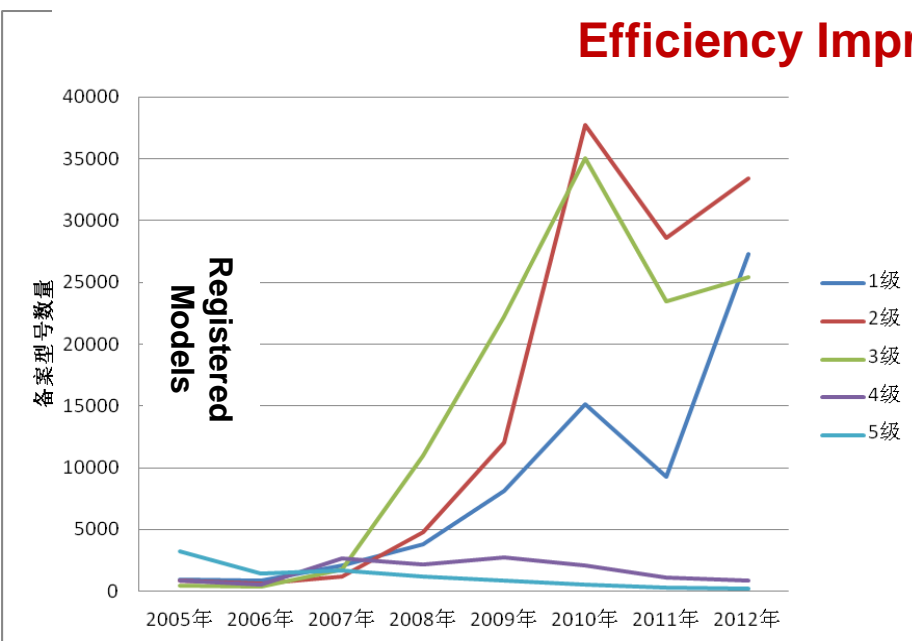
In 2012, the central government provided RMB 50.3 billion to boost the demand on efficient product including efficient appliances

Impact of energy standards and labeling



By 2012, 20 energy efficiency standards may reach cumulative energy savings of 900 TWh, equaling to the output of 9 Three-Gorges power plants in 2012

Efficiency Improvement of products



By 2012, After 7-year implementation, China Energy Label Program was estimated to reach cumulative energy savings of about 420 TWh, equaling to 30 million tons of CO₂.

Contents



1

Introduction of R&E Branch, CNIS

2

Progress of Energy Conservation Standards

3

Progress of Mandatory Energy Labeling

4

Challenges and Development

Issues and challenges for standards and labeling



**Incomplete monitoring,
verification and
enforcement scheme**

**Insufficient finance
input**

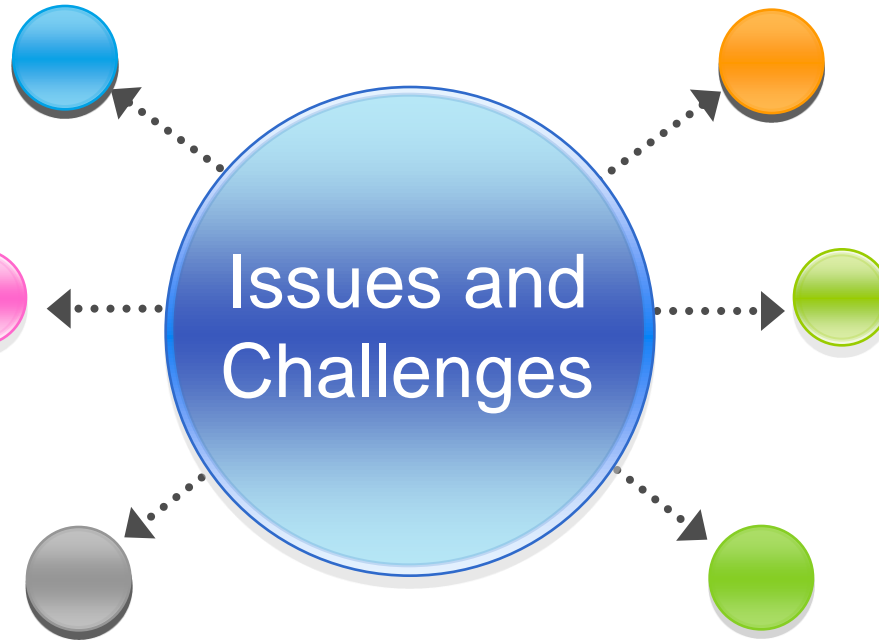
**Launch of Leading
Efficiency Program**

**Issues and
Challenges**

**Weak capacity of
local institute and
its personnel**

**Reform of
Administrative
System for
Mandatory
Standards**

Poor data basis



Future Development of energy conservation standards



Continuous Improvement of Organizational Energy Performance



Adoption of international experiences, development of key methodology and tools standards

EnMS

Energy Saving M&V

Energy Assessment

Energy Audit Benchmarking

Thank you!

谢谢!

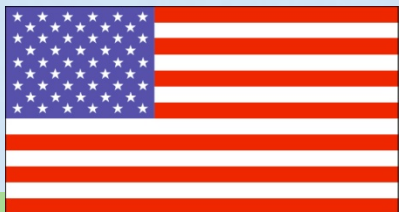


Energy-Saving Certification System in China

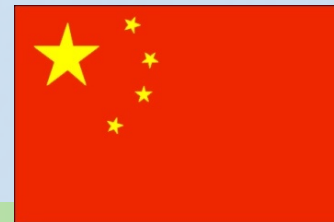
中国节能认证制度

HAO Xin / 郝欣

CNCA / Certification and Accreditation Administration of
the People's Republic of China



4th EEFORUM , 2013.9.25, Washington



Outline / 提纲

Certification & Sustainable Development

节能认证与社会可持续发展

Energy-saving products certification

节能产品认证

Low-carbon products certification

低碳产品认证

Energy Management System Certification

能源管理体系认证

Developments 发展动态

Certification & Sustainable Development

- * 认证工作在中国已发展20余年，在涉及安全、资源节约、环境保护等领域，逐步发挥着不可替代的作用。
- * The third-party certification system has developed more than 20 years in China.
- * Related to electrical safety, resource conservation, environmental protection and other fields.
- * It is gradually playing an irreplaceable role.

Certification & Sustainable Development



Certification & Sustainable Development



Certification & Sustainable Development

A prerequisite for supporting policies, measures in building the **sustainable development society**.

可持续发展社会建设配套政策/措施实施的重要前提条件之一

“Energy Star” certification in U.S.. A prerequisite for the federal government purchases regulated by law.

《政府采购法》、总统令等都明确要求联邦政府采购的耗能产品必须是“能源之星”认证的产品

“Energy-saving product” certification in China. A prerequisite for the government purchases.

财政部、国家发改委《节能产品政府采购实施意见》：从国家认可的节能产品认证机构认证的节能产品中按类别确定实行政府采购的范围，并以“节能产品政府采购清单”的形式公布。

Energy-saving products certification

Paid more attention to energy-saving products certification.

Achieved certain results in many aspects.

主管部门高度重视节能产品认证工作，取得了成效。

- CNCA, AOSIQ, NDRC, MIIT...

Took measures to promote energy-saving products certification.

积极推进节能产品认证工作

- Cultivate and standardize the certification market. 认证市场培育和规范
- Technical bodies' capacity building. 技术机构能力建设
- Products and technical specification development. 产品和认证技术规范开发
- Certification results acceptable and recognition. 认证结果采信

Energy-saving products certification

“The guide opinions on strengthening the resource-saving products certification”

《关于加强资源节约产品认证工作的意见》

2007

CNCA, NDRC, AQSIQ

Official Document



“Management approach on energy-saving products certification”

《节能产品认证管理办法》

To be released

AQSIQ, NDRC, CNCA

Administrative
Regulations

Energy-saving products certification

Resource-saving products certification

Energy-
saving

Water-
saving

Renewable
energy

Fuel-
saving

And so
on...

Energy-saving products certification

**Energy-
saving
certification**

**Terminal
Energy-using
products**

Refrigerator, Air
conditioning,
Television,
Computer...

Fluorescent...

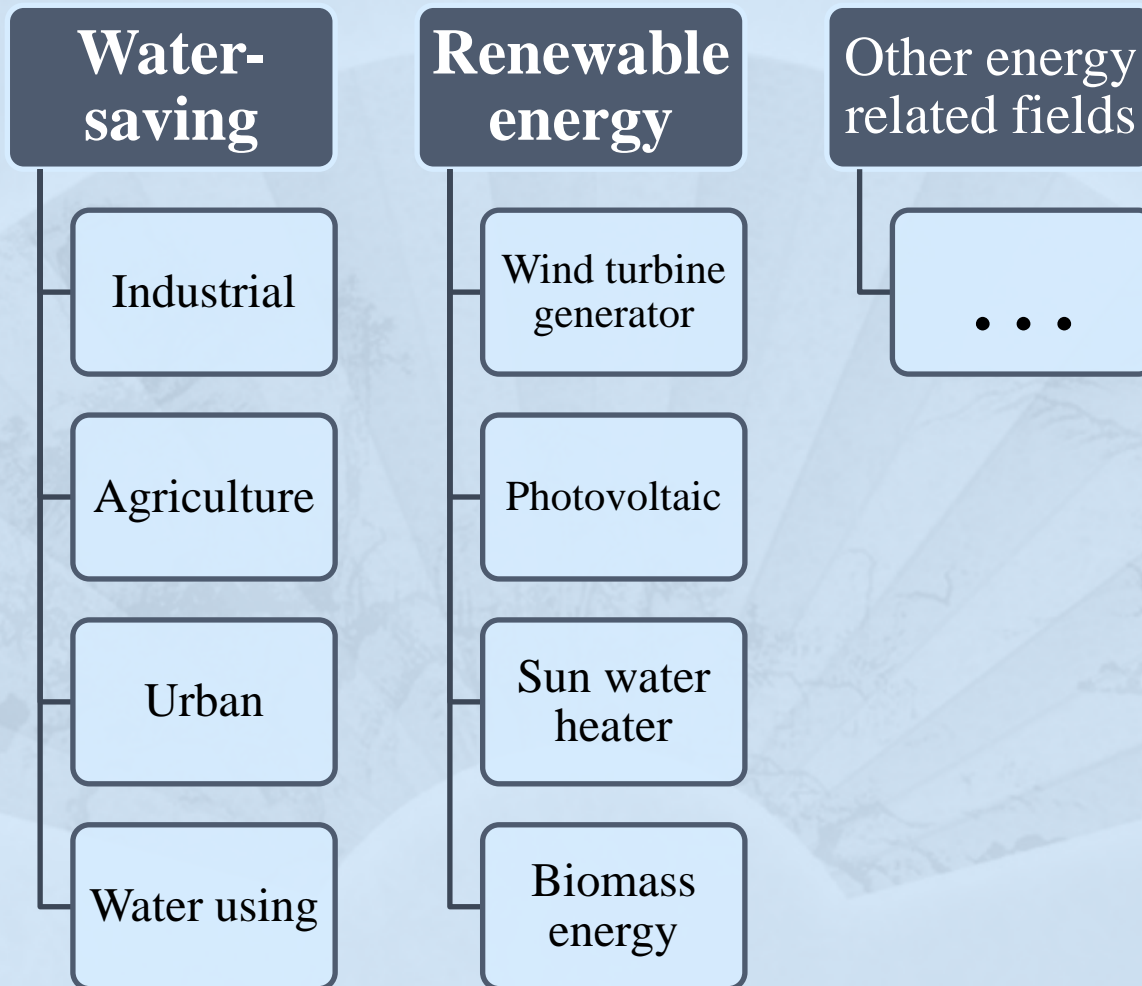
**Industrial
Energy-using
Products**

Electric motor,
Ventilators,
Centrifugal pumps...

**Transmission
and distribution
products**

Distribution
transformers,
Inverter,
Prefabricated
Substation...

Energy-saving products certification



Energy-saving products certification

- * By the end of June 2013, four major energy-saving product certification bodies accumulated issued 45620 certificates which involved 79 kinds of energy-saving products. In 2013, the total of new certificates is 5205, and the total of current valid certificates is 20299.
- * 截止2013年6月底，4家主要节能产品认证机构共对79种产品颁发节能产品认证证书45620张，其中2013年新增证书5205张，目前有效证书20299张。

Energy-saving products certification

- * First half of 2013, 52 kinds of products (68826 types), 459 manufactures listed in the 14th Government Purchases List for the energy-saving products.
- * 25 kinds of products (57635 types) are government-mandated procurement.
- * 2013年上半年完成的第14期《节能产品政府采购清单》共覆盖26个品目、52种产品类别，清单中涉及459家企业、68826个产品型号/系列；其中政府强制采购的节能产品覆盖10个品目、25种产品类别，共涉及318家企业、57635个产品型号/系列。

Energy-saving products certification

- * Continued to carry out energy-saving products certification quantified. Estimates showed that since 2008, energy certification of products accumulated saving/replacing 318.6 Billion kWh electricity, equivalent to 113.435 million tons of standard coal.
- * 持续开展节能产品认证指标量化工作，将发证量较大、计算方法成熟的近30种节能认证重点产品纳入指标量化体系进行测算。测算结果显示，自2008年以来，获得节能认证的产品累计节约/替代318640.51百万度电，相当于11343.50万吨标准煤。

Energy-saving products certification

Capacity of technical institution has steadily improved, some well-known certification brand gradually formed.

技术机构能力稳步提升，形成了一些知名的认证品牌

High attention to the certification standard system construction, and put much effort to the technical specification management.

高度重视认证用标准体系建设，加大技术规范管理力度

Good social and economic benefit.

产生了良好的社会、经济效益

Low-carbon products certification

- * Reduce carbon emissions, guide low-carbon production and consumption
- * 降低碳排放，引导低碳生产和消费的有力手段。
- * February 2013, NDRC & CNCA, "Interim Measures on Management of low-carbon products certification."
- * 2013年2月，国家发展改革委和国家认监委联合印发《低碳产品认证管理暂行办法》
- * Low-carbon authentication technology committee: responsible for product certification catalog, certification standards and specifications, implementation rules, requirement for certification body and personnel.
- * 组建低碳认证技术委员会，研究制定国家低碳产品认证的产品目录、认证技术规范 and 认证实施规则，研究制定低碳产品认证实施机构和人员的资质准入条件。

Low-carbon products certification

Announcement about the scope of certification.

2013年8月14日，《国家认监委关于发布<低碳产品认证目录（第一批）>的公告》（2013年第21号公告）。

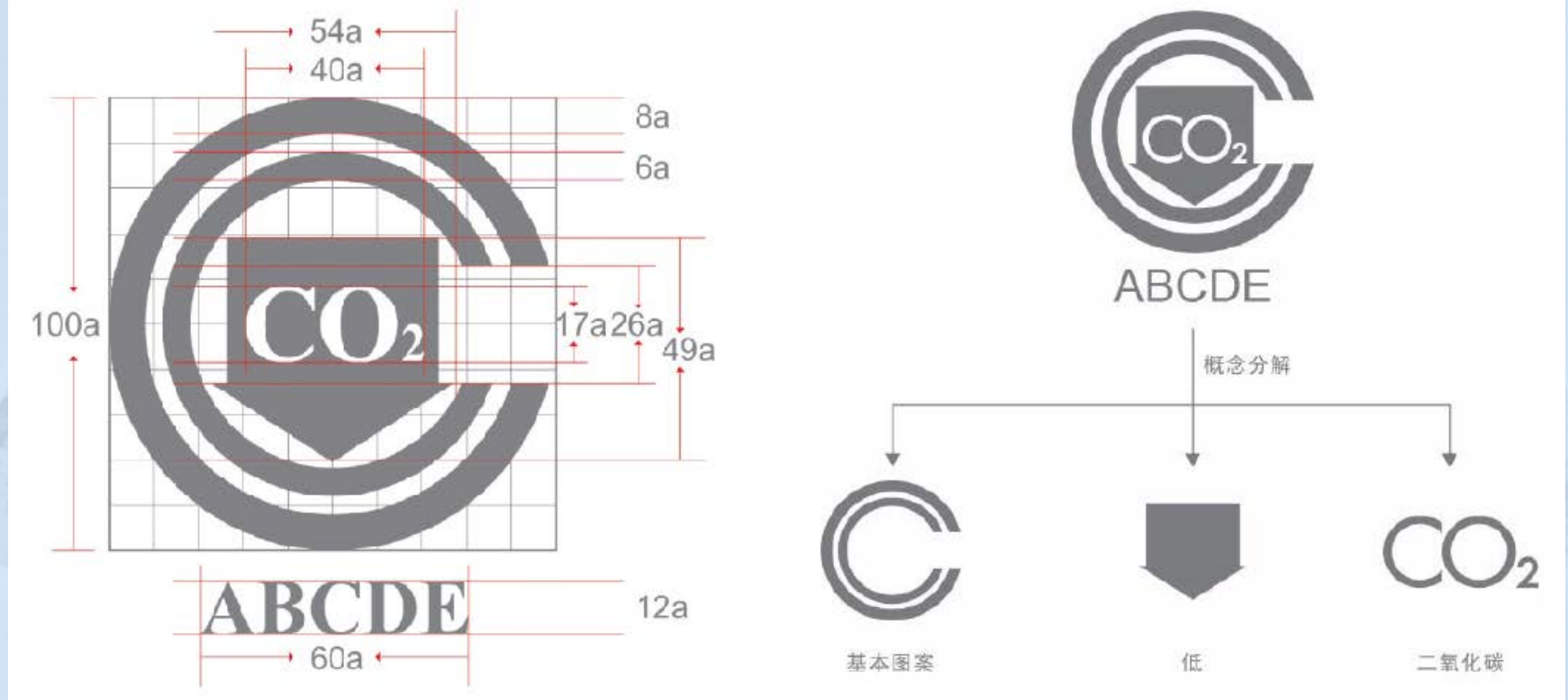
- Common Portland Cement 通用硅酸盐水泥
- Plate glass 平板玻璃
- Aluminum Profiles 铝合金建筑型材
- Small three-phase asynchronous motor 中小型三相异步电动机

Announcement about the approval requirements for low-carbon products certification bodies

2013年8月30日，《国家认监委关于开展低碳产品认证机构审批有关事项的公告》（2013年第21号公告），

- Scope of Certification 认证范围
- Certification standards 认证依据
- Requirement for certification body 认证机构条件
- Approval procedures 审批程序

Low-carbon products certification



Energy Management System Certification

2002, the conception for "energy management system"

2002年，提出能源管理体系的概念

2009.10, certification test run

2009年10月,能源管理体系认证试点

2011.06, ISO50001 released

2011年6月，ISO50001 《能源管理体系 要求与实施指南》

2012.12, IDT GB/T23331-2012

2012年12月，GB/T23331-2012 《能源管理体系 要求》

2013.10.01, formally implemented

2013年10月1日，正式实施.....

Energy Management System Certification

Energy Management System Certification - Test Run

37 certification bodies are involved in.

37家机构参与了能源管理体系认证试点工作

Issued 209 certificates by the end of June 2013.

截止2013年6月，共颁发认证证书209张，75%的获证组织是列入发改委万家企业名单的重点用能单位。

Issued Document joint with NDRC, accept the results of certification in certain area.

2012年11月，与发改委共同发布《关于加强万家企业能源管理体系建设工作的通知》，对认证结果予以采信

Energy Management System Certification

Institutional arrangements for the formal implementation

制度正式实施相关安排

- Management: CNCA/CNAS/CCAA 分工管理
- Approval of certification bodies 认证机构审批
- Professional division 专业划分
- The frequency of inspection 监督频次

Developments

Release
“energy-
saving
product
certification
management
measures”
发布《节能产
品认证管理办
法》

- **Organization and management (the responsibilities of various stakeholders, the system model, and institutional management)**
- **Establishment and implementation of certification**
- **Certificates and mark**
- **Results acceptance**
- **Supervision**
- **Punishment...**

Developments

- * Expand the scope of energy-saving products certification rely on energy efficiency standards for energy-using products.
- * 依靠用能产品能效标准，扩大节能产品认证目录。
- * To strengthen coordination with NDRC, NEA, MWR, etc., issue the unified products certification catalogue, certification rules, and the certification mark.
- * 加强与国家发改委、国家能源局、水利部等部门的协调，联合发布国家统一的产品认证目录、认证规则、认证标志等。

Thanks !

Contact me: 010-82262717(Tel)

010-82260772(Fax)

haox@cnca.gov.cn



The Role of Third Party Equipment Certification in Assuring Equipment Energy Efficiency and Regulatory Compliance

Henry Hwong

Senior Vice President, Technical Services and Communications

Introduction to AHRI



Introduction to AHRI

➤ Standards:

- Globally recognized & accredited SDO
- Over 100 standards and growing portfolio!
- Global and regional harmonization efforts

➤ Certification:

- Certifying performance for over 60 years!
- Voluntarily driven
- 40 programs, 3,000 tests yearly, and growing

➤ Advocacy:

- Promote industry interests domestically and globally



Globally Recognized. Industry Respected.



A History of Cooperation

➤ Standards:

- MOU on standard usage
- Translations into Chinese
- US, China, EU regional standards harmonization

➤ Certification:

- Advocated and supported voluntary, industry driven certification programs in China
- MOU on certification cooperation with CRAA
- Certification agreement with CRAA as AHRI's exclusive agent in China

➤ Advocacy:

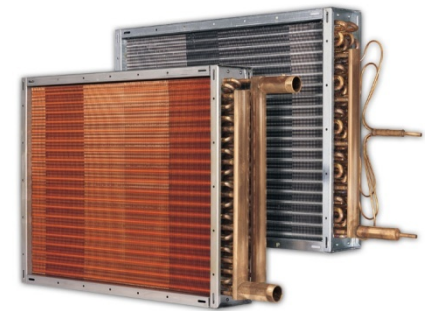
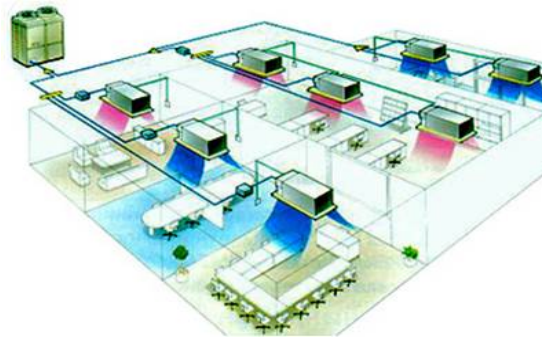
- Refrigerant policies
- Trade show registration



What is Performance Certification

➤ Program that verifies performance of products

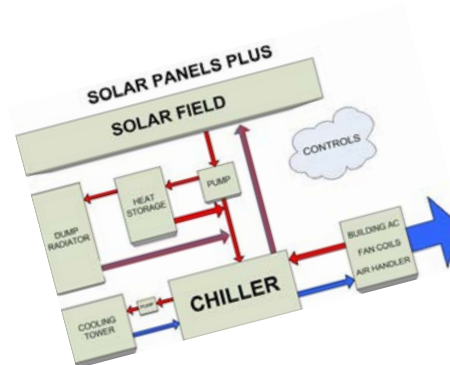
- Capacity
- Power Consumption
- Energy Efficiency
- Pressure Drop
- Purity of refrigerants



➤ Product safety or quality are not certified



Globally Recognized. Industry Respected.



Elements of a Credible Certification Program

- Uses ISO 17025 accredited laboratories
- Accreditation to ISO 17065 as CB
- Uses recognized industry test standards
- Stringent qualification process
- Certify all
- Extensive and continuous testing
- Penalty for rerates
- Challenge tests
- Open to all manufacturers
- Random selection
- Industry directed and respected
- Globally recognized



Globally Recognized. Industry Respected.

AHRI Directory of Certified Product Performance

- Provides certified performance ratings for 40 product categories
- Real-time data
- Quick search functions
- Sophisticated up front data validation
- Identifies tax credit/rebate eligibility
- Meets FTC labeling requirements
- Source of Data for all federal, state, and some global entities
- On-demand printout of certificates



www.ahridirectory.org

AHRI Certificate of Product Ratings

- Instantly generated and date stamped
- Printout of all certified ratings
- Identifies product re-rates due to certification test failures
- Identifies manufacturer and all associated brand names
- Unique reference and certificate number
- Authoritative proof of certification!

AHRI CERTIFIED
www.ahri.org

Certificate of Product Ratings

AHRI Certified Reference Number: 3016870 Date: 08/2010 †Status: Active

Product: Forced Circulation Air-Cooling and Air-Heating Coils
Coil Type or Line Designation: ZCWH12ZCWH16LKHWH12
Manufacturer: ZECO AIRCOIL INDUSTRIES PVT. LTD.
Trade/brand name: ZECO

Rated as follows in accordance with AHRI Standard 410.2001 for Forced Circulation Air-Cooling and Air-Heating Coils and subject to verification of rating accuracy by AHRI approved, independent, third party testing:

Fluid(s) Used: Chilled Water, Hot Water
Catalog Number:
Catalog Issue Date/Code:
Software Version Number: Coil Zero Version 5.0

AHRI CERTIFIED

† Models with an "Active" status are those that are currently in production. Models with a "Discontinued" status are those that the manufacturer has discontinued production, yet stock is still available. Models with an "Obsolete" status are those that the manufacturer has required to stop manufacturing due to an AHRI certification program test failure.

DISCLAIMER
AHRI does not endorse the products listed on this Certificate and makes no representations, warranties or guarantees as to, and assumes no responsibility for, the products listed on this Certificate. AHRI expressly disclaims any liability for damage of any sort arising out of the use or performance of the products, or the manufacturer's omission of any data on this Certificate. Certified ratings are valid only for models and configurations listed in the directory at www.ahri.org.

TERMS AND CONDITIONS
This Certificate and its contents are proprietary products of AHRI. This Certificate shall not be used for individual, personal and confidential reference purposes. The contents of this Certificate may not, in whole or in part, be reproduced, copied, disseminated, entered into a computer database, or otherwise stored in any form or manner or by any means, except for the user's individual, personal and confidential reference.

CERTIFICATE VERIFICATION
For information on the model listed on this certificate you can verify at www.ahri.org/verify. Click on "Verify Certificate" link and enter the AHRI Certificate Reference Number and the date on which the certificate was issued, which is listed above, on the Certificate "to", which is listed below.

2009 Air-Conditioning, Heating, and Refrigeration Institute **AHRI** Air-Conditioning, Heating, and Refrigeration Institute
CERTIFICATE NO.: 1202040094 01/10

One Stop Shopping for Regulatory Compliance

- DOE
- Energy Star
- California Energy Commission
- Natural Resources of Canada
- Consortium of Energy Efficiency
- Tax credit eligibility
- State demand side rebate eligibility
- LEED credit eligibility
- FTC labeling
- Specified around the world



Natural Resources
Canada

Ressources naturelles
Canada

Canada



AHRI Certification Meets Industry Needs!

➤ Don't take our word for it...

seattle.gov
Department of Planning and Development

BuildingConnections

Department of Planning and Development news and events

New Certification Program for Variable Refrigerant Equipment

The 2009 *Seattle Energy Code* (and Washington State Energy Code), Section 1411.1, last sentence of the first paragraph, requires that products covered by Tables 14-1A through 14-1G be listed in a nationally recognized certification program. Tables 14-1A(3) and 14-1A(4) of the 2009 *Seattle Energy Code* specify minimum efficiency requirements for variable refrigerant flow (VRF) equipment and are subject to the *Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standard 12 test procedure*.

AHRI worked with VRF manufacturers for several years to develop the certification program for AHRI Standard 1230. During the last year VRF manufacturers have submitted applications for AHRI certification. AHRI now has reviewed the applications for a range of products from the manufacturers in the field.

In September 2011, AHRI announced the launch of their 37th certification program for variable refrigerant flow (VRF) equipment covered under AHRI Standard 1230. Manufacturers of VRF equipment have products listed in the program. For more information, see the AHRI website at www.ahrinet.org.

Consequently, permit applications that include VRF equipment need to demonstrate that the VRF equipment has AHRI certification (i.e., VRF equipment efficiency needs to be determined in accordance with AHRI Standard 1230 and certified in the AHRI Directory of Certified Product Performance).

Find Split or Packaged Air Conditioners
Find Split or Packaged Heat Pumps
Find Variable Speed Mini-Split Air Conditioners
Find Variable Speed Mini-Split Heat Pumps
Find Central Air-Conditioner and Heat Pump Efficiency LDI
Find a Rebate or Incentive Program
Why Choose ENERGY STAR?
How and Why of Certified
About CEE and AHRI

Directory of Energy Efficient HVAC Equipment

HOW AND WHY OF CERTIFIED

Across the globe, regulators increasingly depend on AHRI Certified Heating and Refrigeration Institute (AHRI) for accurate and unbiased evaluation of heating, ventilation, air conditioning and commercial refrigeration (HVAC) equipment. AHRI certification programs demonstrate to government building owners and homeowners that equipment performance claims have been independently measured and verified, instilling consumer confidence and enabling fair product comparisons. Only upon performance verification are certification marks applied to HVAC products to serve as visual statements of conformance.

The CEE HVAC Directory provides easy access to energy-efficient residential and small commercial central air conditioners and heat pump equipment certified through AHRI. The directory lists thousands of certified systems that qualify for CEE's residential and commercial HVAC initiatives.

Certified Matched Systems

It is important to know that split central air conditioning and heat pump systems typically consist of two parts: an indoor (coil) unit and an outdoor (condensing) unit. These two parts are specifically designed to work together as a coordinated "team" to provide top performance and maximum efficiency and comfort. For split systems, AHRI certifies the performance of the system and not the individual units.

A certified matched system will list the indoor and outdoor unit combination together in the directory and each system is assigned a unique Certified Reference Number (formerly AHRI

AHRI CERTIFICATION

HAVTECH

INNOVATIVE SOLUTIONS. EXCEPTIONAL SERVICE.

WHY IS AHRI CERTIFICATION IMPORTANT?

Honest performance ratings
The most important reason for AHRI certification is that it guarantees to the owner, architect, and engineer that capacity and performance ratings are not only honest but confirmed by sophisticated, internationally recognized testing facilities.

Level playing field
Reputable manufacturers support AHRI because it ensures that all manufacturers are using the same rating procedures and are competing fairly in the marketplace. This allows the purchaser to make intelligent, informed decisions when selecting and buying equipment.

Are all HVAC products covered by AHRI?
Our most air HVAC products are covered by AHRI certification programs, from swimming pool water heaters, rooftop, energy recovery ventilators, chillers, air handlers, to self-regulated display cases. Responsible manufacturers are eager to join and participate in AHRI certification programs because bearing the AHRI certification sticker is a sure indicator that you are dealing with a respectable, honest, technically competent manufacturer.

AHRI certification and ENERGY STAR
Most homes have achieved ENERGY STAR as part of their building code and ENERGY STAR requires that HVAC equipment be AHRI certified. Consequently, the use of non-certified equipment for which there is a certification program is a violation of code.

AHRI certification and LEED
LEED certification requires that HVAC equipment and design be in accordance with ASHRAE-91.1 which ultimately requires AHRI certification.

Conclusions
The acceptance and use of a non-certified product where a certification program exists has a number of negative implications:

For thirty years, Havtech has provided innovative comfort solutions and service to customers in industries including Technology, Health Care and Education.

Havtech is the Mid-Atlantic's leading independent commercial HVAC equipment supplier. Our team of highly trained Sales Engineers and support staff are ready and able to support all of your commercial comfort needs today.

Havtech is headquartered in Columbia, MD, serving Maryland, Massachusetts, PA, Virginia, Maryland,

POOLgear PLUS

YOUR POOL IS OUR PASSION

AHRI Certified Heat Pump Pool and Spa Heaters

When selecting heat pump pool and spa heaters, you consider size, efficiency, and costs. Another important consideration: Determining whether it is AHRI Certified!

The Air-Conditioning, Heating, and Refrigeration Institute, as the trade association representing more than 200 heating, air conditioning, water heating, and commercial refrigeration (HVAC) manufacturers, administers the industry's independent product performance certification programs. The certification program for heat pump pool and spa heaters, launched in September 2008, joins 35 other certification programs in providing consumers with verification of performance ratings for millions of HVAC products.

- You can be assured products bearing the AHRI Certified mark have undergone rigorous, annual testing by independent laboratories under contract to AHRI.
- Every certified product is also listed in the AHRI Directory of Certified Product Performance. This reliable, online database provides valuable tools to conduct performance comparisons of similar products offered by multiple manufacturers and allows printing of AHRI Certificates of Product Ratings for every model listed. The certificate provides the consumer with proof of the model's certified performance ratings.
- By choosing AHRI Certified heat pump pool and spa heaters:

- You can be confident that the unit's capacity rating plate is providing you with accurate information to select the appropriately-sized unit for your specifications. Selecting AHRI Certified heat pump pool heaters ensures the product will deliver the manufacturer's claimed capacity and efficiency, and is capable of heating the pool effectively and efficiently.
- You are able to satisfy building code requirements. State building codes referencing the International Energy Conservation Code (IECC) or ASHRAE 90.1 require heat pump pool and spa heaters meet a minimum COP of 4.0 (minimum efficiency of 100% Btu input per Btu output).

Pool Care Guide

FMD Facility Maintenance Decisions

HVAC Equipment: Third-Party Certification Ensures Efficiency

By James Piper, P.E. - April 2009 - HVAC

Premium energy-efficiency products typically carry a premium price, so how do managers know the premium they are paying for a system or component with a higher rating really is more efficient? How do they know they are getting their money's worth.

To help managers evaluate different HVAC systems and components, the certification program from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the U.S. Environmental Protection Agency's Energy Star program, for example, are designed to ensure products meet specific performance and energy-efficiency criteria.

AHRI has developed and published a series of test procedures in rating HVAC system and components. Manufacturers submit products to independent testing facilities that perform specified test procedures under strict operating conditions to evaluate performance.

The testing agency then certifies that performance to meet an established standard. The

FMD Facility Maintenance Decisions

HVAC: Insist On AHRI Certified Equipment

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Maybe an organization is designing a new building. Or maybe a maintenance or engineering manager is placing a bid for a retrofit heating, ventilation, air conditioning and commercial refrigeration (HVAC) and water-heating system in a commercial or institutional building, or replacing an aging chiller or rooftop unit.

No matter what the situation, managers should insist on AHRI Certified HVAC and water-heating equipment. These days, odds are that managers and other in-house parties involved in the process have made saving energy an important part of the decision to upgrade or, in the case of a new building, an important component in meeting specific requirements under the Leadership in Energy and Environmental Design (LEED) rating system.

Certainly, when it comes to designing a HVAC system for a facility, the choices and decisions can be daunting. One thing that is for certain is that the system's design needs to be based on accurate performance ratings. For this reason, managers should start the project off right by specifying HVAC and water-heating equipment and components listed in the AHRI Directory of Certified Product Performance, which is available at www.ahridirectory.org. Products listed in this directory have been subject to rigorous, third-party testing and have been found to meet the performance claims of the manufacturer.

Ensuring Performance

AHRI's certification programs cover product categories from air-to-air, energy-recovery

When it comes to Assuring Equipment Performance ... AHRI Certification is the First Best Practice!

www.ahridirectory.org



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