International Energy Agency

Toolkit
Monitoring, Evaluation & Enforcement

Session 9

Kevin Lane, IEA – Paris, 16 October 2019

IEA #energyefficientworld

Overview of the appliance and equipment training sessions

Monday 14 October 2019		
0	Introduction and roundtable	☑
1	Planning energy efficiency programmes	☑
2	Selecting products for MEPS and Labelling programmes	☑
Tuesday 15 October 2019		
3	Assessing efficiency performance and setting MEPS	☑
	Special - Regional harmonisation	☑
4	Industry transformation	☑
5	Stakeholder involvement and communication	☑
6	The relationship between product efficiency and price	☑
7	Modernising energy efficiency through digitalisation	☑
Wednesday 16 October 2019		
8	Insights into energy labels	☑
9	**Monitoring, verification and enforcement**	☐
10	Evaluating policies and programmes	☐
	Special - Available resources U4E	☐
11	Roundtable discussion, review and report back	☐

Resources – What is MV&E

Source: U4E

https://www.youtube.com/watch?v=u8xPFhcFYhw

Scenario

You've been given $300,000 to improve compliance rates in your S&L programme

How do you go about deciding on the most effective ways to spend this?

How would you spend this?

Why is compliance important?

Ensure that **consumer** receive the performance they are paying for

Ensure **suppliers** who invest more in energy efficiency do not lose market share to unscrupulous competitors

Compliance

Ensure **governments** get the outcomes they expect (programme objectives)

Safeguards the integrity of the programme – hard to win back confidence once lost

Group exercise

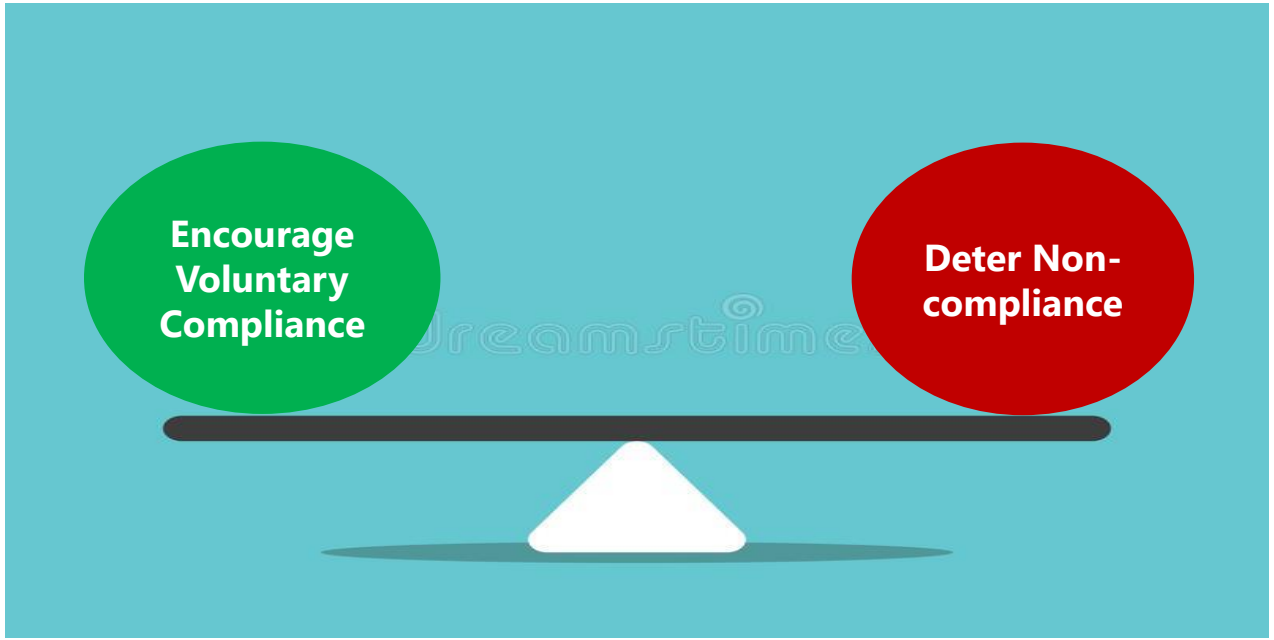
What are some of the ways to increase compliance rates?

What are the Options?

1. Test more products
2. Build a better laboratory
3. Better educate product suppliers
4. Publish list of offenders & actions taken
5. Inspect more labels in stores
6. Improved powers to act (legislation)
7. Improve the range of sanctions available
8. Publish rules / enforcement policy document
9. Make it easier for suppliers to demonstrate/report compliance
10. Improve targeting of testing
11. Develop in-house manual for staff
12. Publish testing targets in advance
13. Ensure that enforcement action is taken swiftly
14. Add requirements for retailers

Compliance Best Practice

Effective Compliance Frameworks aim to…….



Steps to encourage voluntary compliance

stakeholders understand their obligations

+

simple to demonstrate compliance

=

Greater voluntary compliance

Encouraging Compliance

- Are the requirements for suppliers and retailers clear and accessible?
- Are they understandable (not ‘legalese’)
- Is registration (or alternatives) simple and effective, online, includes FAQ and guides?
- Is is clear what documentation is required?
- Are all the relevant documents relating to MV&E clearly identified on the website?
- Are enforcement procedures and sanctions obvious?
- Are all staff clear about their roles and responsibilities? e.g. Is there a staff ‘operations manual’?
- Are you reaching ‘new’ stakeholders as they enter the market?

Benefits

- Avoids time-consuming questions to busy staff
- Avoids wasting time on unresolved cases, delayed action

Example: Singapore

National Environment Agency
Safeguard · Nurture · Cherish

Singapore Government
Integrity · Service · Excellence

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Home > Energy & Waste > Energy Efficiency > Household Sector > About Mandatory Energy Labelling

- Climate Change
- Energy Efficiency
  - Overview
  - Household Sector
  - Public Sector
  - Industry Sector
- 3Rs (Reduce, Reuse, Recycle)
- Waste Management

About Mandatory Energy Labelling

About Mandatory Energy Labelling	Registration of Suppliers	Test Report	Testing Laboratories
Registrable Goods	Registration and Renewal of Registrable Goods	The Energy Label	Database of Registered Goods (Revised Energy Ratings)
Minimum Energy Performance Standards	Verification Testing	Tick Rating	Contact Us

Mandatory Energy Labelling was introduced for registrable goods since 1 January 2008. Under the Energy Conservation Act (Cap. 92C), all registrable goods must carry energy labels.

Under Section 12 of the Act, no person shall, in the course of any trade or business, supply any registrable goods in Singapore on or after the effective date unless the registrable goods are registered and labelled in the prescribed manner, and meet minimum energy efficiency standards where prescribed.

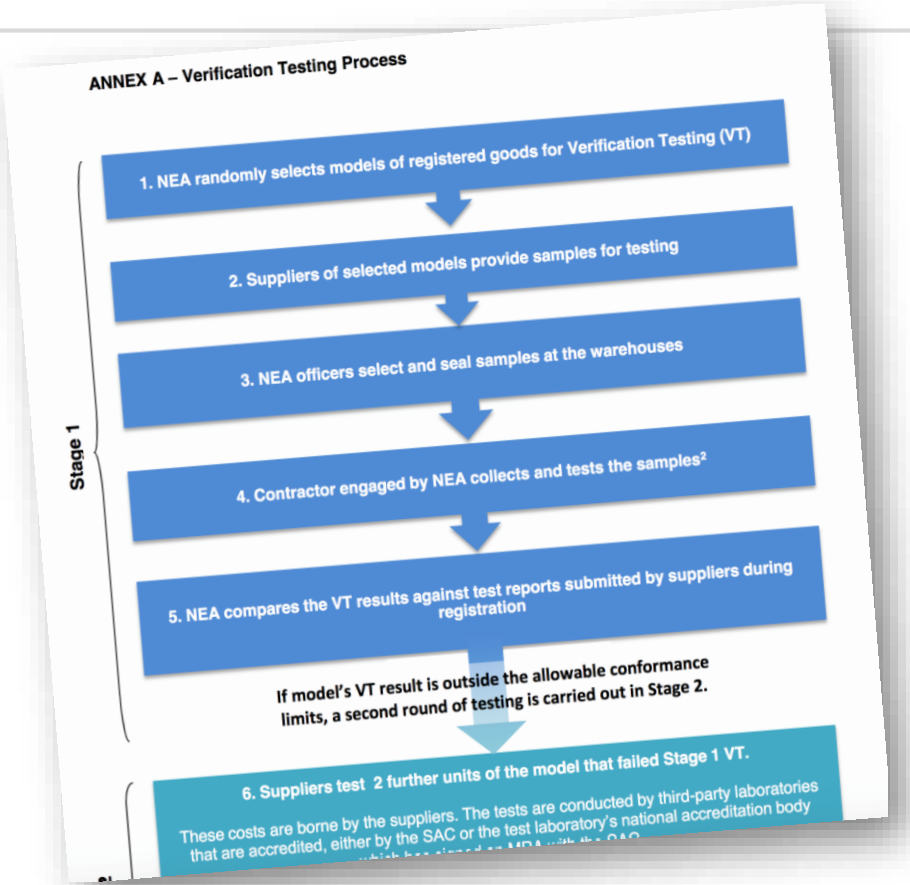
Under Section 13 of the Act, any importer and manufacturer who intends, in the course of any trade or business, to supply any registrable goods in Singapore on or after the effective date shall apply to the National Environment Agency (NEA) to be registered as a registered supplier and to register any registrable goods, which the importer or manufacturer intends to supply in Singapore.

The regulations governing these requirements are:

- Energy Conservation (Registrable Goods) Order 2013
- Energy Conservation (Energy Labelling and Minimum Performance Standards For Registrable Goods) Regulations 2013
- Energy Conservation (Composition of Offences) Regulations 2013
- Energy Conservation (Exemption for Registrable Lamps) Order 2015

Over the years, the energy performance of products offered in the market improved and a wide range of models with differing levels of energy efficiency were catergorised together in the same tick rating band. There was little incentive for suppliers to develop and offer more efficient models as they would be given the same tick rating as other models already in the market.

Example: MEPS Verification Process: Singapore



Source: http://www.nea.gov.sg/docs/default-source/energy-waste/energy-efficiency/report-on-vt-results-(updated).pdf

Example: Australia

Video: What suppliers need to know

How the E3 Program affects suppliers of products regulated for energy efficiency in Australia.

If you cannot see the video try viewing it on YouTube or download a transcript.

https://youtu.be/lOZ6RCXz18Q?t=19

ENERGY RATING
THE MORE STARS THE MORE SAVINGS

CONSUMERS | RETAILERS & TRADIES | SUPPLIERS | ABOUT THE E3 PROGRAM

Home / 供应商 / 注册流程

注册流程

合规
法律
注册流程

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注册流程

1 EDUCATE
Assisting responsible parties to understand their obligations.

2 MONITOR
Monitoring responsible parties' compliance with the requirements.

3 INVESTIGATE
Assesses each instance of suspected or alleged non-compliance and, where appropriate, conducts an investigation.

4 RESPOND
Actively pursuing non-compliance with a range of educative, administrative, civil, and criminal response options.

产品注册

本部分为希望通过澳大利亚监管人注册产品的进口商、制造商和供应商提供分步指示。

澳大利亚和新西兰的 能效监管产品（Products regulated for energy efficiency）必须经注册，且满足一些法律要求，然后才能销售或供应。

如果你正在考虑向新西兰进口、制造或供应产品，请访问EECA网站（EECA website）（link is external），因为相关规定和条例略有不同。

Compliance Best Practice

- S&L compliance frameworks are designed to:

a) Encourage voluntary compliance, and

b) Deter non-compliance

Steps to deter non-compliance

Deterrence theory:

- *There must be a credible likelihood of detecting violations*
- *Swift, certain, and appropriate sanctions upon detection*
- *A perception among the regulated firms that these detection and sanction elements are present*

1. Increase the risk that instances of non-compliance will be discovered
2. Take corrective action quickly to minimise damage (to all)
3. Make penalties proportional to the extent of transgression but sufficient to be an effective deterrent
4. Ensure corrective action is visible - to deter others

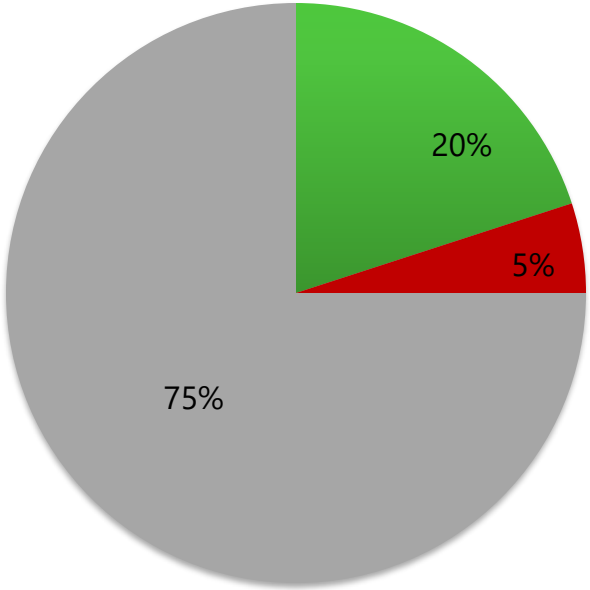
Which is the better deterrent?

VISIBILITY IS IMPORTANT!

1. Increase the risk that non-compliance will be discovered

In most regulated markets:

- 20% of the regulated population will automatically comply with any regulation
- 5% will attempt to evade it
- and the remaining 75% will comply as long as they think that the 5% will be caught and punished.



1. Increase the risk that non-compliance will be discovered

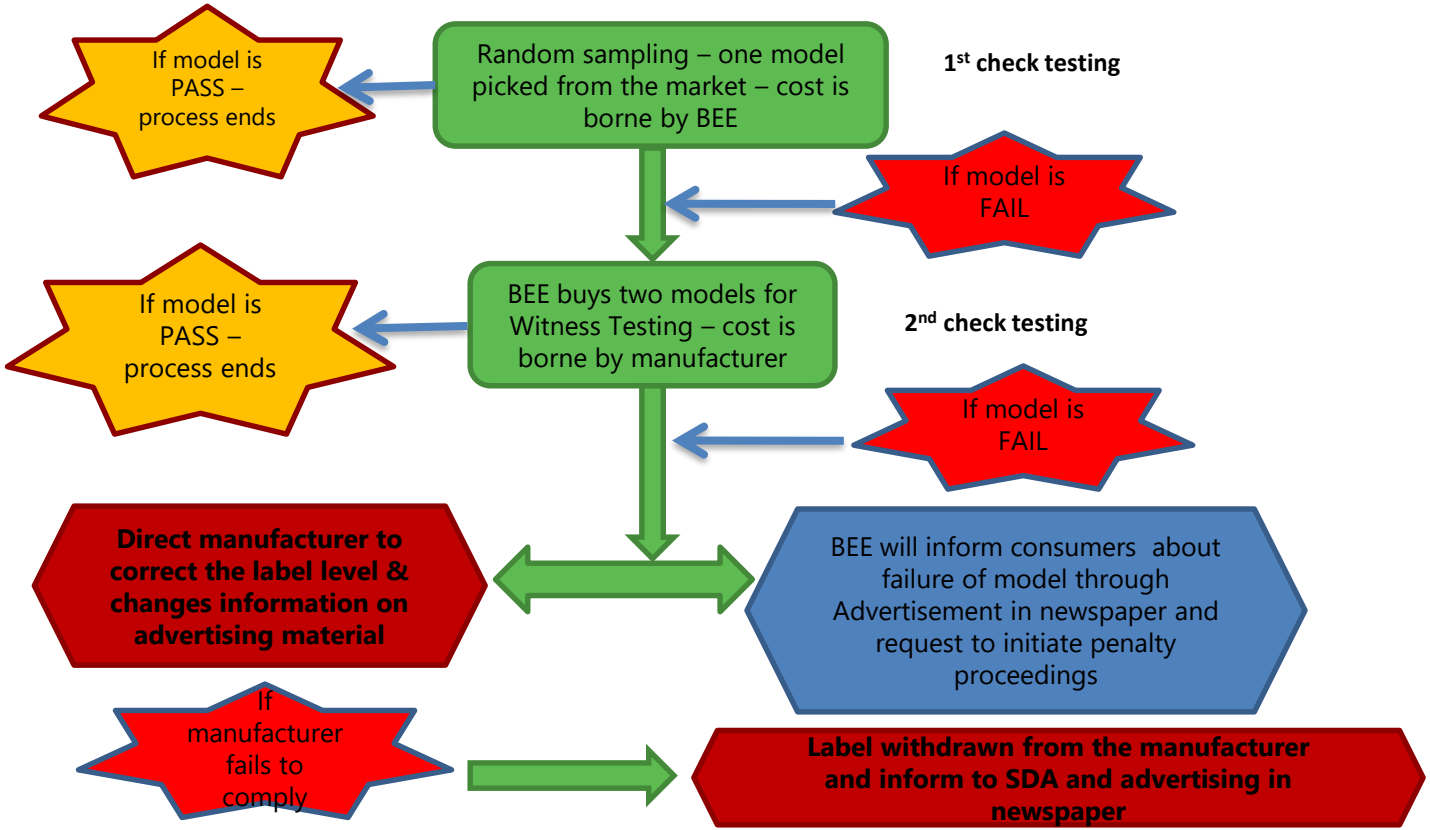
Market Surveillance: labelling display and registration monitoring

- Periodically monitor products within a sample of stores to check that:
  - All required products are correctly labelled,
  - All labels conform to requirements,
  - Fake labels are not being used
  - Products on the market are registered (where required)
- Market surveillance can be undertaken by:
  - Government staff, Consumer groups, Contractors
- Respond to any observed instances of non-compliance & publish results

Benefit

- Early detection of labelling errors can avoid more serious non-compliance
- Demonstrates to suppliers and retailers that government is being vigilant

How to check label compliance? Example from India



Published check testing results – Example from India

POWER SAVINGS GUIDE

Attention Consumers

FOLLOWING AIR CONDITIONERS FAILED TO MEET THE ENERGY CONSUMPTION DECLARED ON THEIR LABEL:

S. No.	Manufacturer Logo	Manufacturer/ Company Name	Brand	Model	Star Rating	EER as per BEE record	Test Results (EER)		Result
							Sample 1	Sample 2	
1	SAMSUNG	Samsung india Electronics Pvt. Ltd.	Samsung	AR18FC3TAUR	3	3.01	2.75	2.88	FAIL
2	Panasonic	Panasonic India Pvt. Ltd.	Panasonic	CS-UC18PKY	2	2.82	2.38	2.44	FAIL
3	Godrej	Godrej & Boyce Mfg. Co. Ltd.	Godrej	GSC18FC3WMZ	3	2.94	2.51	2.76	FAIL

EER represents Energy Efficiency Ratio

This notice has been issued in compliance with the provision of regulation 7 of the Bureau of Energy Efficiency (Particulars & Manner of their Display on Labels of Room Air Conditioners) Regulations, 2009.

MINISTRY OF POWER
Government of India

SECRETARY
BUREAU OF ENERGY EFFICIENCY (BEE)

SAVE ENERGY, SAVE MONEY

POWER SAVINGS GUIDE

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S. No.	Manufacturer Logo	Manufacturer/ Company Name	Brand	Model	Star Rating	EER as per BEE record	Test Results (EER)		Result
							Sample 1	Sample 2	
1	IFB	IFB Industries Limited	IFB	IAC318AK3TC	3	3.02	2.65	2.70	FAIL
2	VIDEOCON	Videocon Industries Limited	Videocon	VS5C3WMI-MGA	3	2.96	2.55	2.71	FAIL
3	Whirlpool	Whirlpool of India Limited	Whirlpool	SAR18B33M0	3	3.04	2.68	2.88	FAIL

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MINISTRY OF POWER
Government of India

SECRETARY
BUREAU OF ENERGY EFFICIENCY (BEE)

SAVE ENERGY, SAVE MONEY

Verification testing

- Testing is expensive!
- Needed, but only worth it if:
  - It is done to required level of accuracy
  - Is defensible
  - Is acted upon
- Since you can only test a small proportion on models on the market – how do you increase cost-effectiveness?
  - Test products most likely to be non-compliant
  - Co-ordinate or share testing with other countries
  - Ensure tests are enforceable

Test products most likely to be non-compliant

- Random selection represents an inefficient allocation of resources
  - End up testing high proportion of compliant products

- Identify 'risk factors' for products most likely to be non-compliant and have most impact, e.g.
  - High market share
  - Does the brand have a good record of compliance?
  - What is the quality of evidence for claims – is the test lab known and credible?
  - Have competitors provided evidence of non-compliance?
  - Are the claims of performance excessively high - unbelievable?

Co-ordinate or share testing with other countries

- Numerous options to minimize costs and increase effectiveness:
- Co-ordinate joint market surveillance with neighbouring economies
- Share results of market surveillance to better target future actions
- Use quality laboratories in neighbouring economies
- Commission tests in product country of origin

Example – European surveillance coordination

- Various EU-wide (EU funded) projects

- EEPLIANT
  - 13 Market Surveillance Authorities (MSAs) from EU
  - Organises coordinated MV&E activities, including product testing of LEDs, printers and heaters
  - Electronic database allows MSAs to share plans and results of market surveillance activities in confidence
  - Publication of Best Practice Guide

- Industrial and Tertiary Product Testing and Application of Standards (INTAS)

2. Take corrective action quickly to minimise damage

- Any delay in taking corrective actions means non-compliant products remaining in the market
  - More energy savings lost
  - Higher household expenditure

- Most non-compliance can be quickly resolved, with minor enforcement

3. Make penalties proportional to the extent of transgression

Programmes need a range of enforcement tools
- To act appropriately and quickly to suspected transgressions to minimise damage

Example - UK response to non-compliance

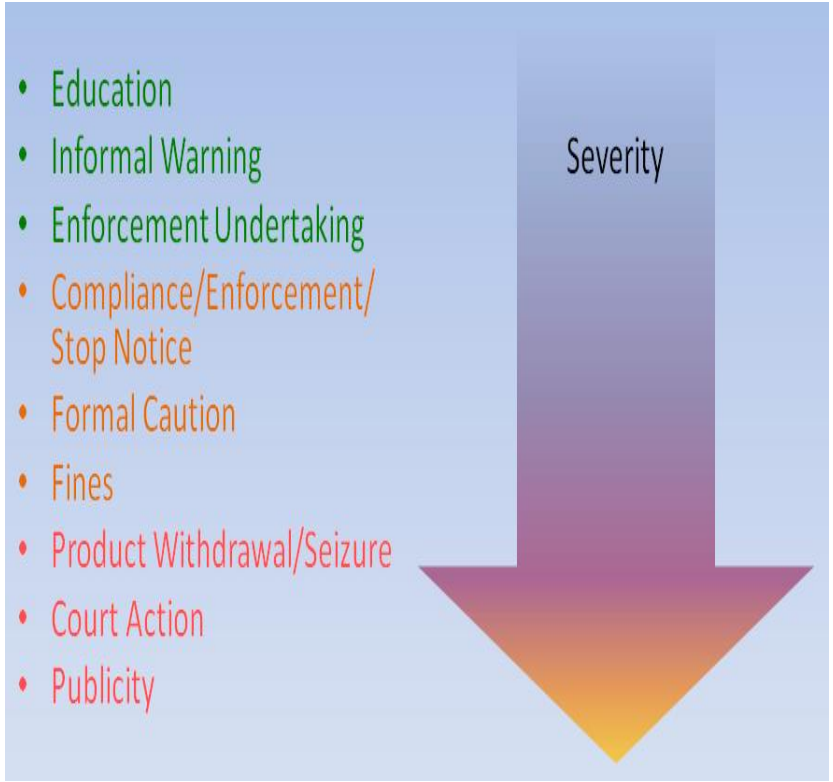
We operate in accordance with the Regulators' Code, which requires us to:

- support compliance and growth
- engage with those we regulate
- base our activity on risk
- share information
- offer clear guidance
- be transparent.

We always act proportionately, depending on the nature of the non-compliance.

We are approachable and do not take enforcement action just because a business asks us a question or tells us that they have a problem.

Source: BEIS (2017)



4. Ensure corrective action is visible - to deter others

Plans for compliance activity

Results of market surveillance

High Visibility

Testing activity and results (once resolved)

Enforcement actions taken

Reporting testing results

National Environment Agency
Safeguard · Nurture · Cherish

40 Scotts Road #13-00
Environment Building
Singapore 228231
Tel: 1 800 2255 632
Fax: 62352611
Email: contact_nea@nea.gov.sg
www.nea.gov.sg

Results of Verification Testing of Registrable Goods Under the Mandatory Energy Labelling Scheme

The National Environment Agency (NEA) carried out verification testing (VT) on a selection of air-conditioner, refrigerator and clothes drye registered under the Mandatory Energy Labelling Scheme (MELS). This report s exercise, which was completed in July 2014.

Background

2 Under the Energy Conservation Act, suppliers of register their products with NEA, and ensure that produc energy performance standards. Suppliers test and repo products when they register them with NEA. These test internationally recognised standards or protocols. The efficiency under the tick-rating system based on the results

3 VT is a compliance monitoring process to performance of products conform to the performance re safeguard the integrity of MELS and preserve consumer labelling scheme. The VT process is described in **Annex**

4 In this first VT exercise by NEA, about 5% of re models for VT were randomly selected, models wit efficiency ratings had a higher probability of selection were subject to VT and the number of models tested.

Stage 1 VT Results

5 VT results were compared against suppliers' test reports submitted during registration. The energy performance of 87% (40 out of 46) of the registered goods tested were found to be within the allowable conformance limits (refer to Table 3 of **Annex B**). By appliance category, the compliance rates were 95% for air-conditioners, 75% for refrigerators and 100% for clothes dryers.

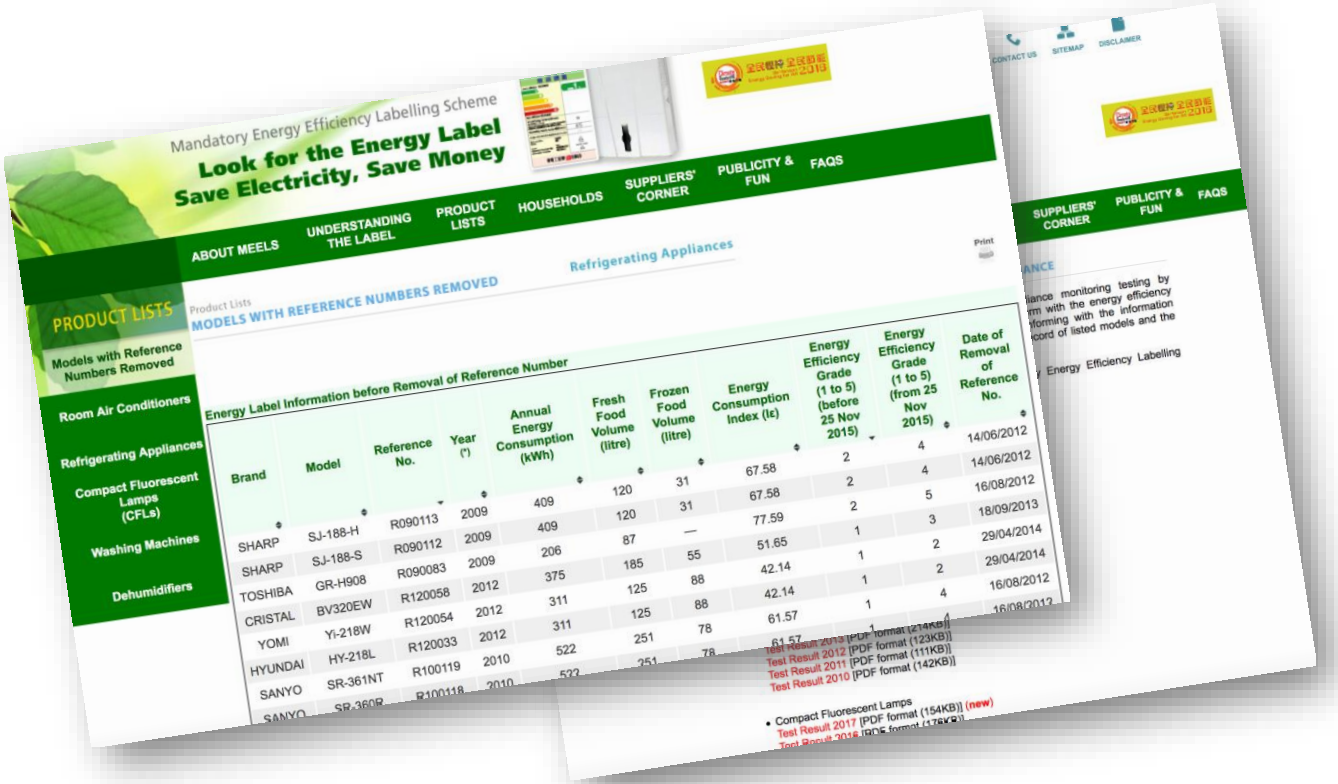
	Air-conditioner	Refrigerator	Clothes Dryer
No. of models tested	20	20	6
No. of models that passed Stage 1 VT	19	15	6
No. of models that failed Stage 1 VT	1	5	0

Table 2: Summary of Stage 1 VT results

Reporting enforcement actions

18/05/2016	Air conditioner	SolAir World	SWW(R)-7.2GW
04/01/2016	Incandescent lamp	Olsent	A55 28W
04/01/2016	Incandescent lamp	Olsent	28W Halogen Globe Dimmable Clear Fancy Round P45 28W
14/12/2015	Incandescent lamp	Olsent	Q35 MR16/CG/36 12V-35W F12T GU5.3 ELV Reflector
12/11/2015	Incandescent lamp	GE Lighting	Halogen GLS Lamp 100W 240V D0
05/11/2015	Incandescent lamp	Fozz	U5.3 12V 25W 60* tungsten halogen ELV Reflector
05/11/2015	Air conditioner	Pioneer International	GTIO-100A6/GTE-100A6
22/09/2015	Incandescent lamp	Osram	64543 A ECO 42W 240V B22D
22/09/2015	Incandescent lamp	Osram	64544 A FR ECO 53W E27
11/09/2015	Self-ballasted compact fluorescent lamp	Olsent	3P414-ES-40K,
17/08/2015	Self-ballasted compact fluorescent lamp	Envirolux	XEU48-15R80 E27 2700K
13/08/2015	Self-ballasted compact fluorescent lamp	Envirolux	XEU48-15R80 E27 4000K
30/07/2015	Self-ballasted compact fluorescent lamp	Olsent	FE-IISB-18W 2700K
30/07/2015	Self-ballasted compact fluorescent lamp	Olsent	FE-AU-15W 2700K
09/07/2015	Self-ballasted compact fluorescent lamp	E-Star	ESSP9W27E27 8w Mini Twist warm white 6500K
26/06/2015	Self-ballasted compact fluorescent lamp	Arlec	FT24
26/06/2015	Self-ballasted compact fluorescent lamp	Osram	Mini Twist 13W/827 E27
11/06/2015	Self-ballasted compact fluorescent lamp	Philips	Ambiance A55 11W WW
18/05/2015	Computer monitor	Philips	284E5Q
05/01/2015	Double-capped fluorescent lamp	NEC	FL30SSEX-N-HG-36 : 30W T8 Tri-Phosphor Natural 5000K

Example: Suspended products Hong Kong



Two types of testing models

	Post-market verification	Third-party certification
Entry conditions	**Independent tests, in-house testing, calculation or self declaration**	**Third-party verification and/or certification**
Government/Programme	**$**	**$**
Industry Participant	**$**	**$**
Consumers	$	$

Total costs ≈ same

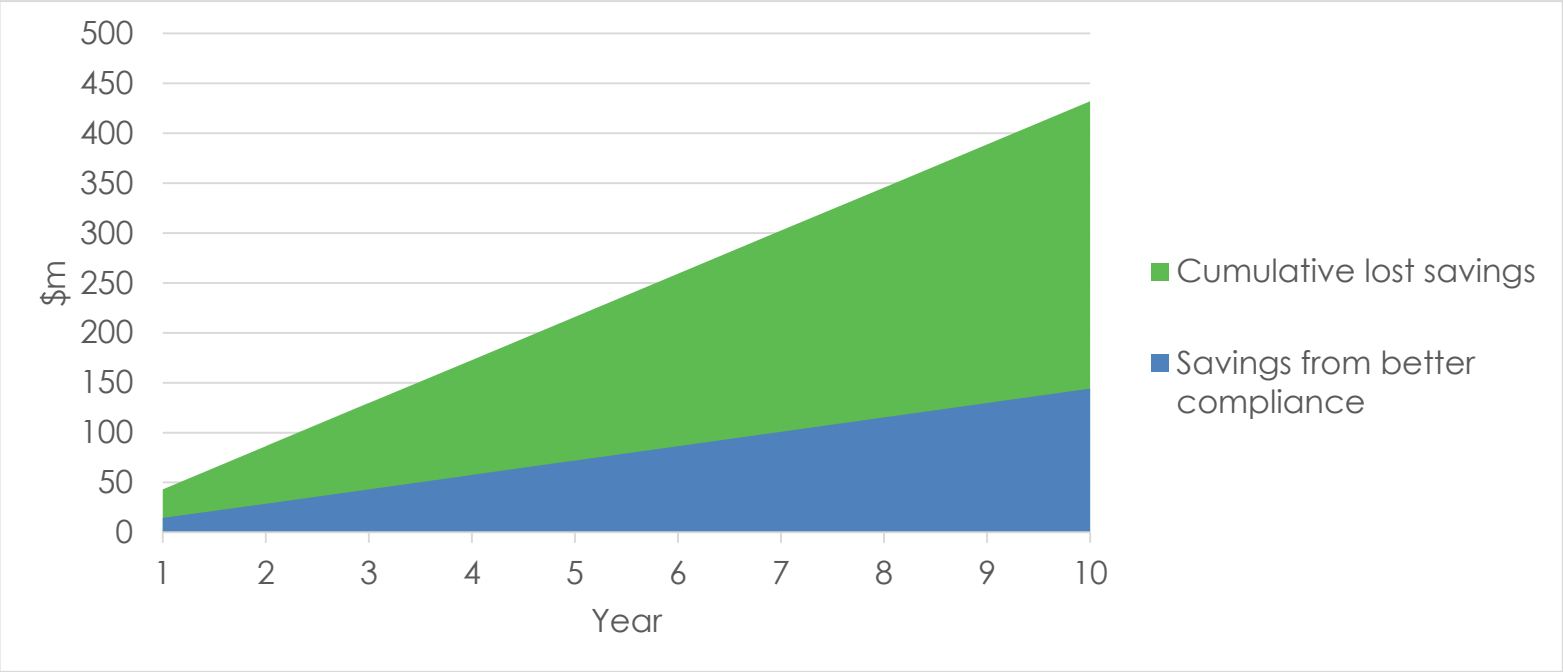
Value of improving non-compliance

Assumptions	
Fridge market p.a.	200,000
Av. Energy consumption (kWh/year)	400
Non-compliance rate	15%
Extent of non-compliance	15%
Lifetime (years)	12
Cost of electricity ($/kWh)	0.2

Value of lost electricity savings after one year	**$4.32 million**
Cumulative after ten years…	$430 million

Outcomes	
Reducing non-compliance rate to 10%	
Saving after one year	$1.44 million
Cost-benefit ratio (if $300k MVE programme), one year	1:4.8
Cumulative savings after ten years	$144 million

The Value of Better Compliance – for $300k per year



$144m saved after 10 years, for $300k MVE programme

Scenario

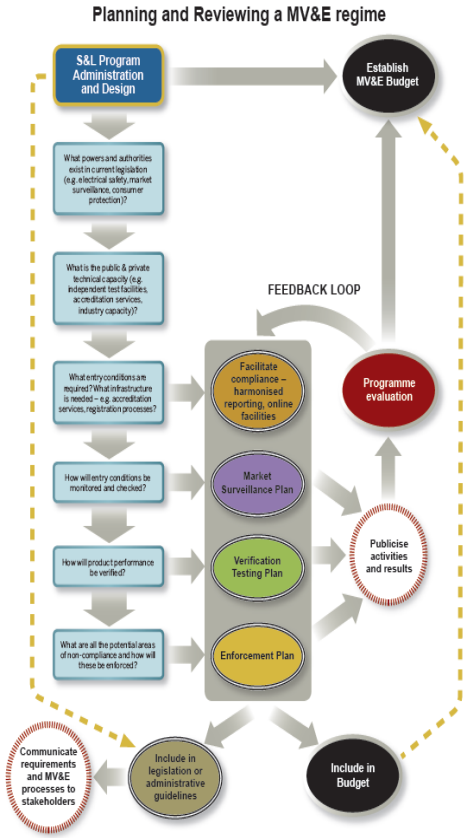
- How would you spend $300,000 on improving compliance?
- [Write down on a piece of paper, not to share]

What would I do?

Item	$
Dedicated compliance staff -Drafting enforcement policy -Drafting internal procedures -Testing selection criteria -Managing tests, reporting on results -Organising legislative change if necessary	110,000
Highlight compliance on website, promotion of enforcement policy	25,000
Labelling survey	25,000
Round-robin tests	60,000
Compliance tests	80,000
Total	**$300,000**

Essential elements of compliance regimes

- Mechanism to facilitate compliance
- Market surveillance
- Verification testing
- Enforcement
- Communication, reporting, feedback
- Legal and administrative framework
- Budget and resource allocation
- Evaluation processes



Example – Ghana - ENFORCEMENT OF Standards/Regulations

Approach:

- Submission of test reports for approval before importation of appliances
- Enforcement team stationed at the main entry ports
- Market surveillance
- Monitoring and inspection
- Installation of test facilities at GSA FOR TESTING
- Energy efficient appliance Database / mobile App.
- Enact Regulations to prohibit importation/sales of used appliances

Source: Ghana Energy Commission, Hubert Zan

Example – Ghana - ENFORCEMENT OF Standards/Regulations

- Adopting digitalization - HS codes used in enforcement
- Adopting a risk-based profiling to identify contraband (non-compliance).
- Enforcement fees – re-export
- Naming and shaming of non-compliance companies

Source: Ghana Energy Commission, Hubert Zan

- ABOUT **2,884,863** USED FRIDGES IMPORTED SINCE 2005.

- **40,000** UNITS SEIZED SINCE 2013, AND **10,472** TURN-INS.

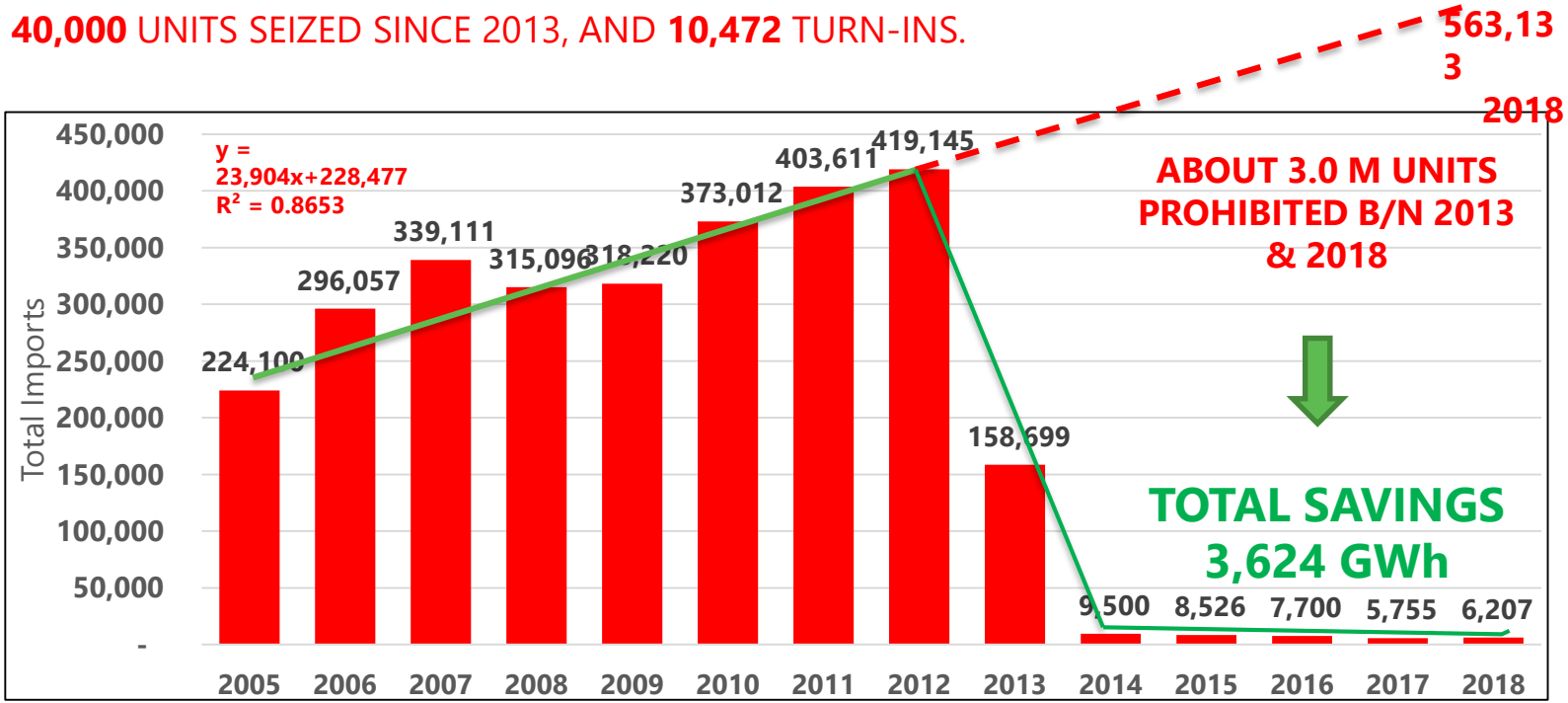


FIGURE 1: TREND IN USED REFRIGERATING APPLIANCES IMPORTS (2005 – 2018)

Trends in New Versus Used Refrigerator Imports (2005 – 2018)

- Drastic reduction in used fridge imports from 2013 due to the enforcement of L.I. 1932 and increase in the imports of the new fridges (l.i. 1958).
- B/N 2013 & 2018, NEW FRIDGES WOULD HAVE CONSUMED 489GWh instead of 1,757gwh, resulting in a saving of 1,268gwh.

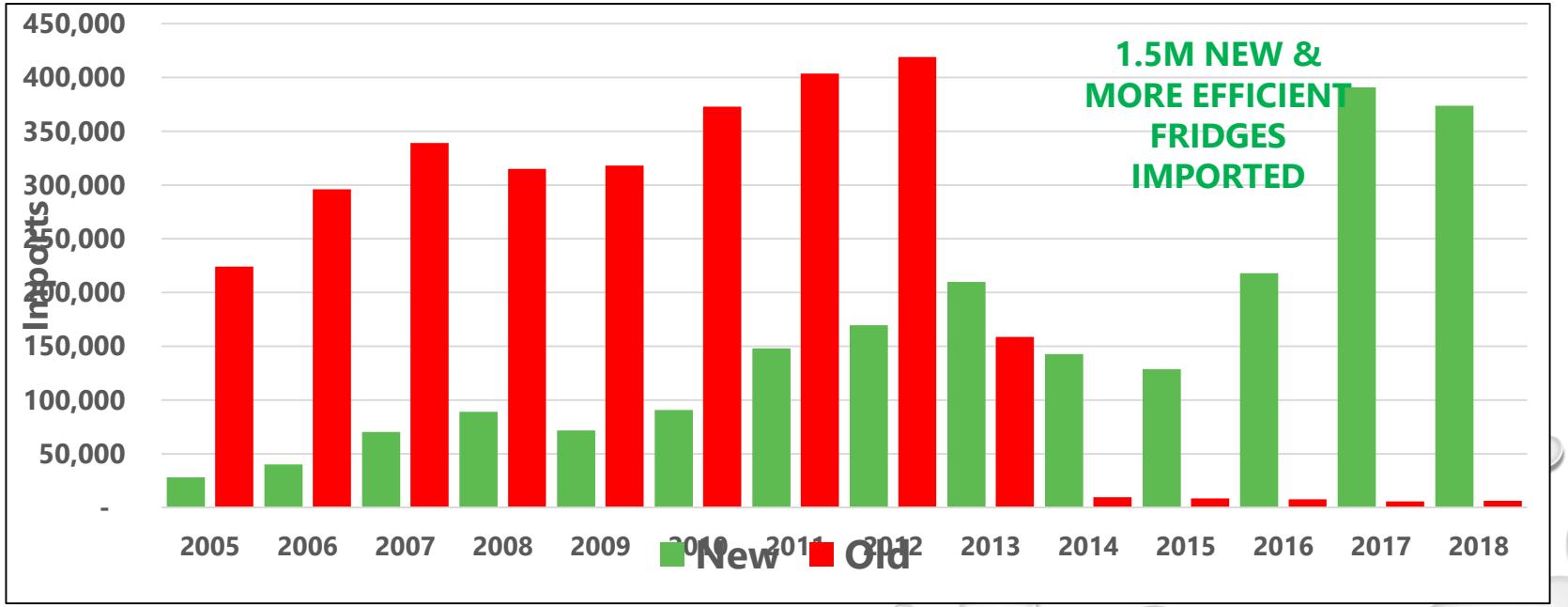
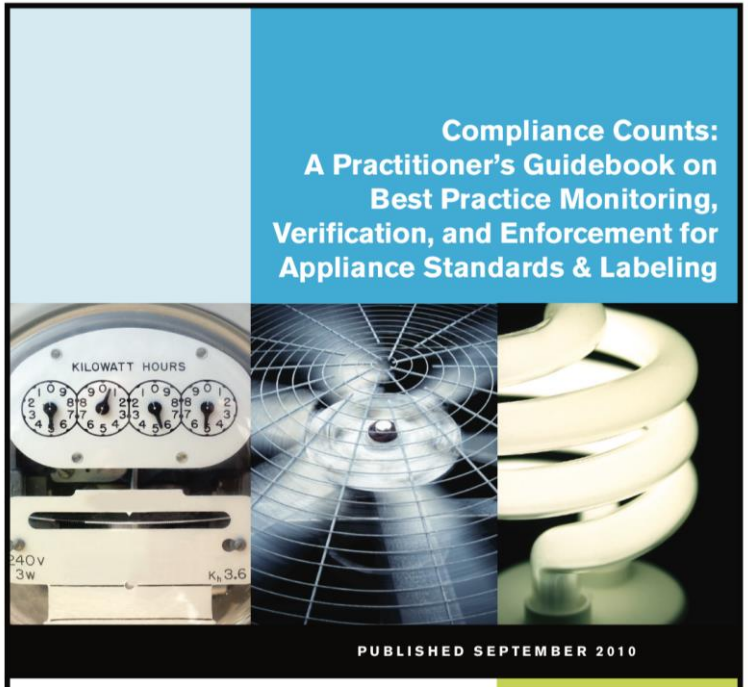


Figure 2: Trends in New Versus Used Refrigerators Imports (2005 – 2018)

Sources of further information

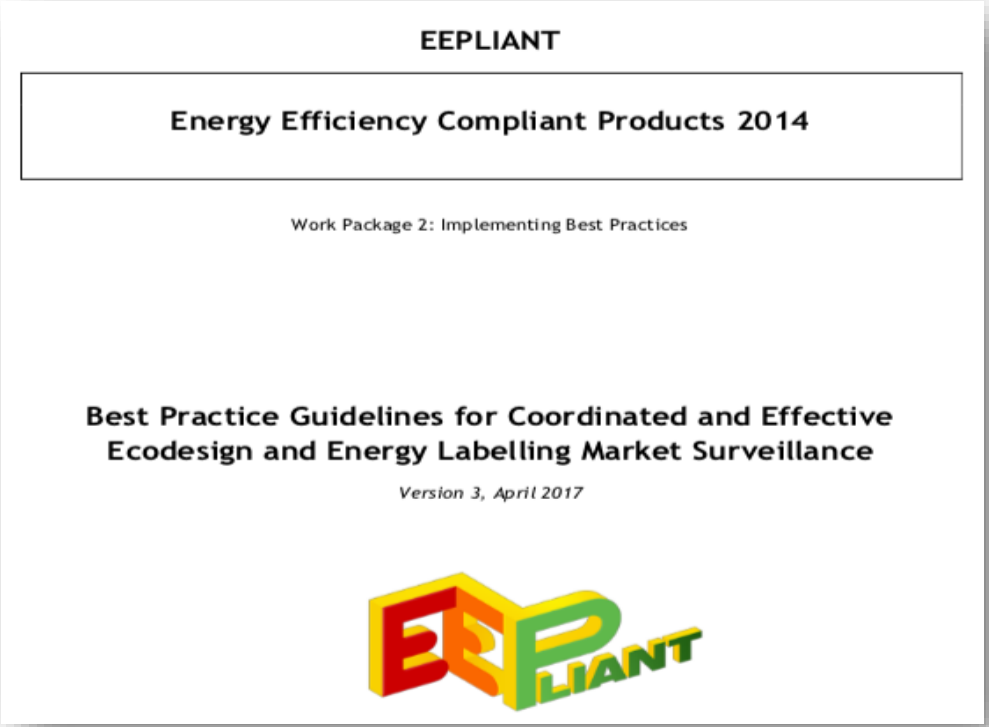
CLASP

https://clasp.ngo



https://clasp.ngo/publications/compliance-counts-a-practitioners-guidebook-on-best-practice-monitoring-verification-and-enforcement-for-appliance-standards-labeling-1

Sources of further information



EEPLIANT

Energy Efficiency Compliant Products 2014

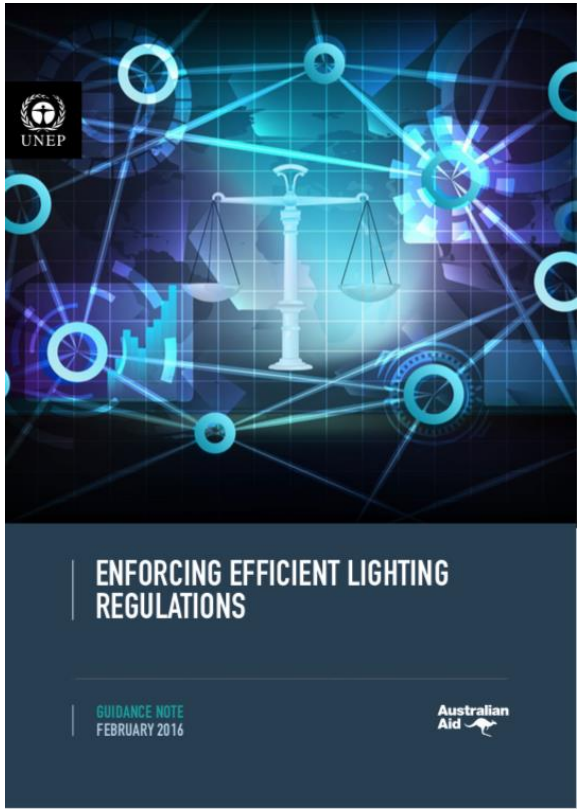
Work Package 2: Implementing Best Practices

Best Practice Guidelines for Coordinated and Effective Ecodesign and Energy Labelling Market Surveillance

Version 3, April 2017

http://www.eepliant.eu/index.php/knowledge-base/item/2017-05-16

United for Efficiency: Enforcing Lighting Regulations



https://united4efficiency.org/resources/enforcing-efficient-lighting-regulations/

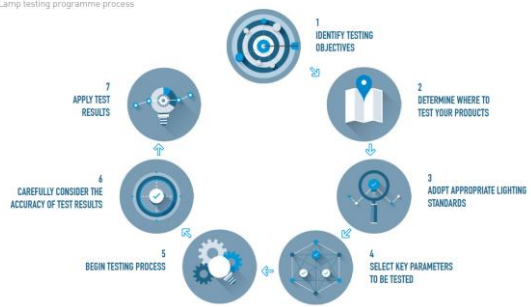
Resources

- Cost of laboratories (SEAD report, 2019)
- What is MV&E

https://www.youtube.com/watch?v=u8xPFhcFYhw

Performance testing of lighting products

Figure 1
Lamp testing programme process



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