



## **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	<input checked="" type="checkbox"/>
1	Planning energy efficiency programmes	<input checked="" type="checkbox"/>
2	Selecting products for MEPS and Labelling programmes	<input checked="" type="checkbox"/>
Tuesday 15 October 2019		
3	Assessing efficiency performance and setting MEPS	<input checked="" type="checkbox"/>
	Special - Regional harmonisation	<input checked="" type="checkbox"/>
4	Industry transformation	<input checked="" type="checkbox"/>
5	Stakeholder involvement and communication	<input checked="" type="checkbox"/>
6	The relationship between product efficiency and price	<input checked="" type="checkbox"/>
7	Modernising energy efficiency through digitalisation	<input checked="" type="checkbox"/>
Wednesday 16 October 2019		
8	Insights into energy labels	<input checked="" type="checkbox"/>
9	<b>Monitoring, verification and enforcement</b>	<input type="checkbox"/>
10	Evaluating policies and programmes	<input type="checkbox"/>
	Special - Available resources U4E	<input type="checkbox"/>
11	Roundtable discussion, review and report back	<input type="checkbox"/>

# Resources – What is MV&E

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Source: U4E

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

# Scenario

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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

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*What are some of the ways to increase compliance rates?*

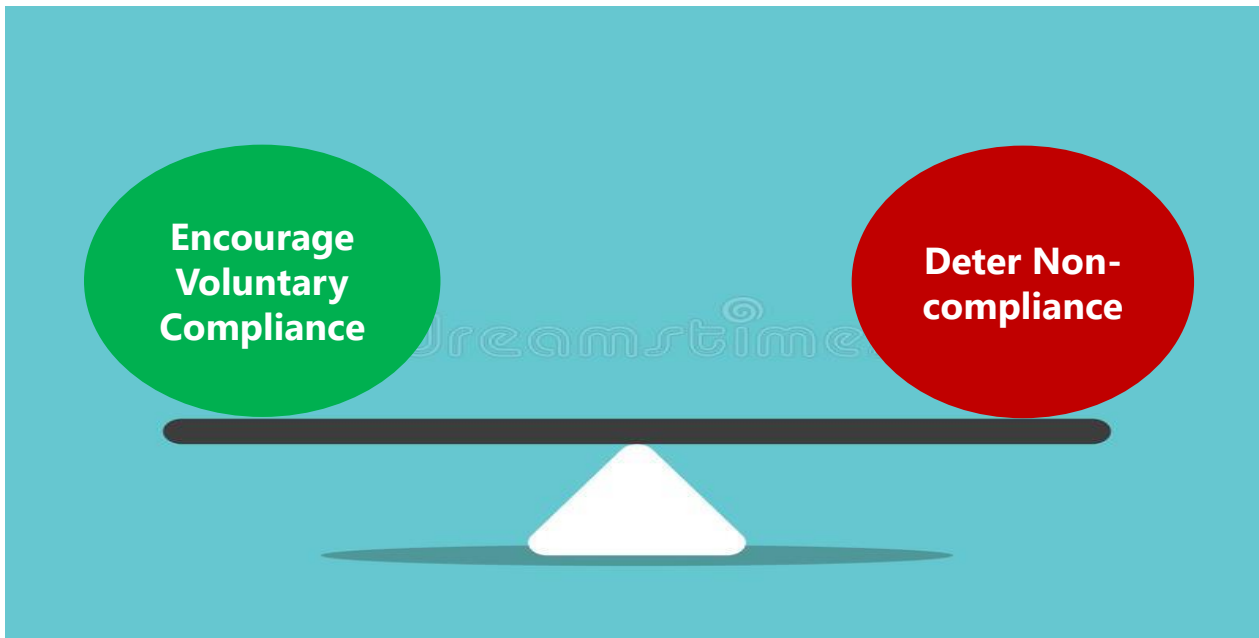


# What are the Options?

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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

**Effective Compliance Frameworks aim to.....**





# Steps to encourage voluntary compliance

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# Encouraging Compliance

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- 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 it 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

The screenshot shows the National Environment Agency (NEA) website. The header includes the NEA logo and the Singapore Government logo. The main navigation bar lists various topics: Weather & Climate, Public Health, Anti-Pollution & Radiation Protection, Events & Programmes, Energy & Waste, Grants & Awards, Training & Knowledge, and Services & Forms. The 'Energy & Waste' section is highlighted, and the breadcrumb trail shows: Home > Energy & Waste > Energy Efficiency > Household Sector > About Mandatory Energy Labelling.

## 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 categorised 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](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/IOZ6RCXz18Q?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 ▶

**EXPLORE THIS PAGE**

注册流程 ▶  
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常见问题 - 注册之前 ▶  
常见问题 - 注册产品 ▶  
常见问题 - 注册管理 ▶  
重要文件 ▶  
监管标准 ▶  
词汇表 ▶

**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，且满足一部法律要求，然后才能销售或供应。

如果你正在考虑从新西兰进口、制造或供应产品，请访问[ECA网站 (ECA website) (link is external)]，因为相关政策和流程有所不同。

# Compliance Best Practice

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- S&L compliance frameworks are designed to:

a) Encourage voluntary compliance, and

**b) Deter non-compliance**

# Steps to deter non-compliance

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## *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?

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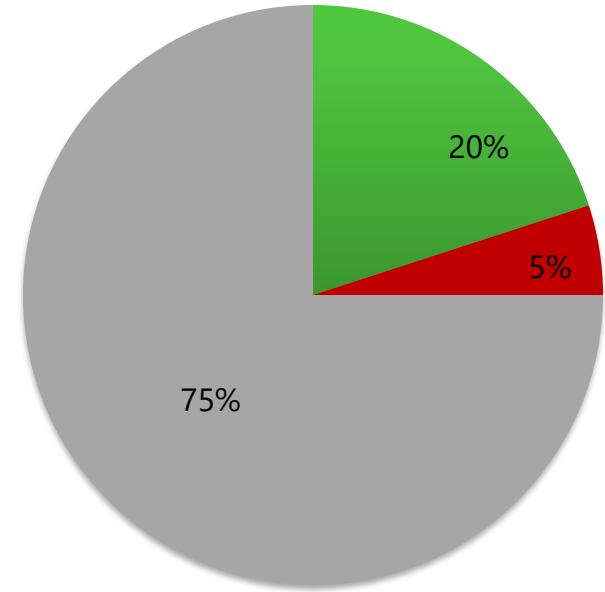
***VISIBILITY IS IMPORTANT!***



# 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

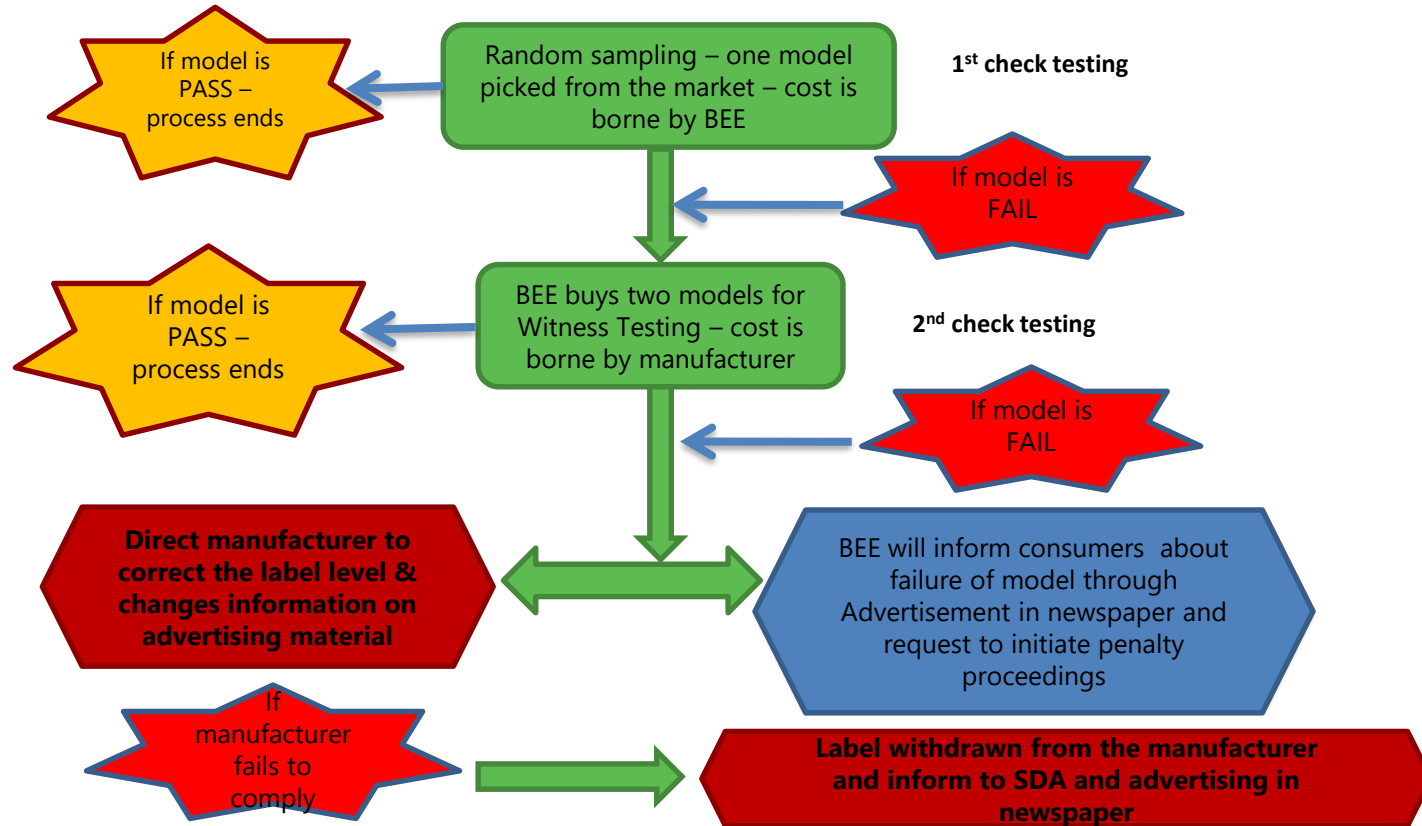
- Periodically monitor products within a sample of stores to check that:
  - All required products are correctly labelled,
  - All labels conform to requirements,
  - Fake labels are not being used
  - Products on the market are registered (where required)
- Market surveillance can be undertaken by:
  - 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



## 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 India Electronics Pvt. Ltd.	Samsung	AR18FC3TAUR	5	3.03	2.75	2.88	FAIL
2		Panasonic India Pvt. Ltd.	Panasonic	CS-UC18PEY	2	2.82	2.38	2.44	FAIL
3		Godrej & Boyce Mfg. Co. Ltd.	Godrej	GSC18FCSWMA2	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.




**SECRETARY**  
BUREAU OF ENERGY EFFICIENCY (BEE)  
Ministry of Power, Government of India  
Plot No. 1, Sector 10, Connaught Place, New Delhi - 110028  
Tel: 011-23323000, Fax: 011-23323001  
For any details and information,  
visit our website: [www.beeindia.in](http://www.beeindia.in)

**SAVE ENERGY. SAVE MONEY**



## 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		IFB Industries Limited	IFB	ACS38A3TC	5	3.02	2.65	2.70	FAIL
2		Videocon Industries Limited	Videocon	VSSC18WM-MCA	3	2.96	2.55	2.71	FAIL
3		Whirlpool of India Limited	Whirlpool	SARBB33VD	3	3.04	2.68	2.88	FAIL

**EER represents Energy Efficiency Ratio**

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# Verification testing

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- 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

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- 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

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- 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



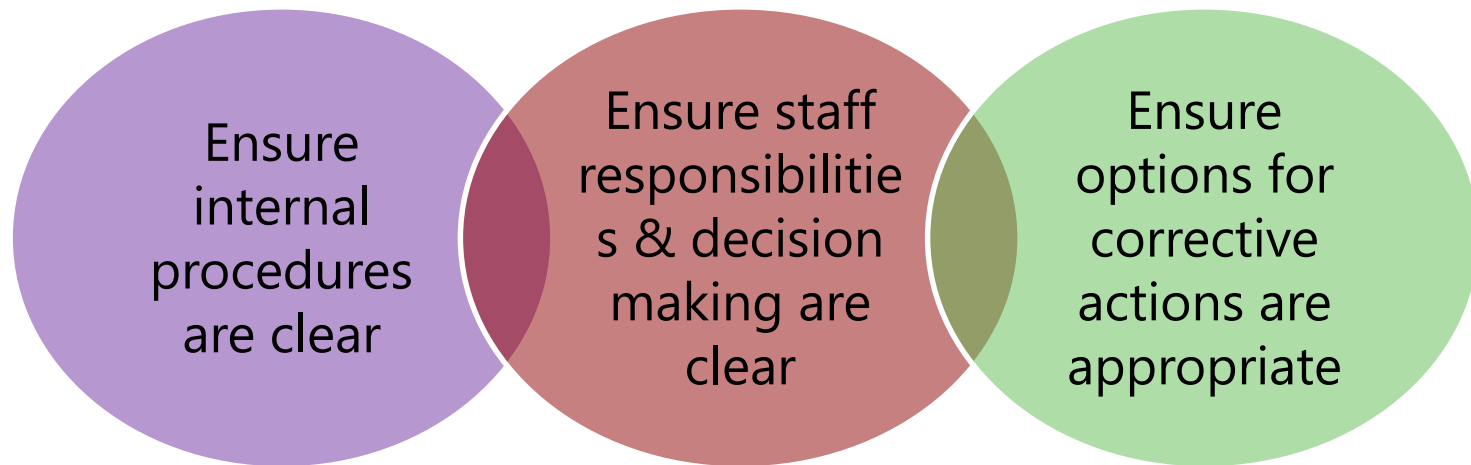
## Example – European surveillance coordination

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- 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



# Reporting testing results



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 dryer registered under the Mandatory Energy Labelling Scheme (MELS). This report exercise, which was completed in July 2014.

### Background

2 Under the Energy Conservation Act, suppliers of register their products with NEA, and ensure that products meet energy performance standards. Suppliers test and report energy performance standards. Suppliers test and report 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 requirements of MELS and preserve consumer confidence in the MELS. The VT process is described in Annex A.

4 In this first VT exercise by NEA, about 5% of registered models for VT were randomly selected, models with lower efficiency ratings had a higher probability of selection. Models 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


**ENERGY RATING**

CONSUMERS
RETAILERS & TRADIES
SUPPLIERS
ABOUT THE ES PROGRAM

Home / Documents / List: Suspended or Cancelled GEMS Registrations

30 MAY

**LIST: SUSPENDED OR CANCELLED GEMS REGISTRATIONS**

Download xlsx

Category: Compliance Date: 30/05/2016

18/05/2016	Air conditioner	SolAir World	SWW(R)-7.2GW
04/01/2016	Incandescent lamp	Olisent	A55 28W
04/01/2016	Incandescent lamp	Olisent	28W Halogen Globe Dimmable Clear Fancy Round P45 28W
14/12/2015	Incandescent lamp	Olisent	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	Olisent	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	Olisent	FE-IISB-18W 2700K
30/07/2015	Self-ballasted compact fluorescent lamp	Olisent	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	FL30SEX-N-HG-36 : 30W T8 Tri-Phosphor Natural 5000K

# Example: Suspended products Hong Kong

Mandatory Energy Efficiency Labelling Scheme  
**Look for the Energy Label  
Save Electricity, Save Money**

PRODUCT LISTS  
Models with Reference Numbers Removed

ABOUT MEELS UNDERSTANDING THE LABEL PRODUCT LISTS HOUSEHOLDS SUPPLIERS' CORNER PUBLICITY & FUN FAQs

Refrigerating Appliances

Energy Label Information before Removal of Reference Number

Brand	Model	Reference No.	Year (*)	Annual Energy Consumption (kWh)	Fresh Food Volume (litre)	Frozen Food Volume (litre)	Energy Consumption Index (I <sub>e</sub> )	Energy Efficiency Grade (1 to 5) (before 25 Nov 2015)	Energy Efficiency Grade (1 to 5) (from 25 Nov 2015)	Date of Removal of Reference No.
SHARP	SJ-188-H	R090113	2009	409	120	31	67.58	2	4	14/06/2012
SHARP	SJ-188-S	R090112	2009	409	120	31	67.58	2	4	14/06/2012
SHARP	GR-H908	R090083	2009	206	87	—	77.59	2	5	16/08/2012
TOSHIBA	BV320EW	R120058	2012	375	185	55	51.65	1	3	18/09/2013
CRISTAL	YI-218W	R120054	2012	311	125	88	42.14	1	2	29/04/2014
HYUNDAI	HY-218L	R120033	2012	311	125	88	42.14	1	2	29/04/2014
SANYO	SR-361NT	R100119	2010	522	251	78	61.57	1	4	16/08/2012
SANYO	SR-360R	R100118	2010	522	251	78	61.57	1	4	16/08/2012

[Test Result 2015 \(PDF format \(124KB\)\)](#)  
[Test Result 2012 \(PDF format \(123KB\)\)](#)  
[Test Result 2011 \(PDF format \(111KB\)\)](#)  
[Test Result 2010 \(PDF format \(142KB\)\)](#)

• Compact Fluorescent Lamps  
[Test Result 2017 \(PDF format \(154KB\)\) \(new\)](#)  
[Test Result 2016 \(PDF format \(176KB\)\)](#)



# 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	\$	\$

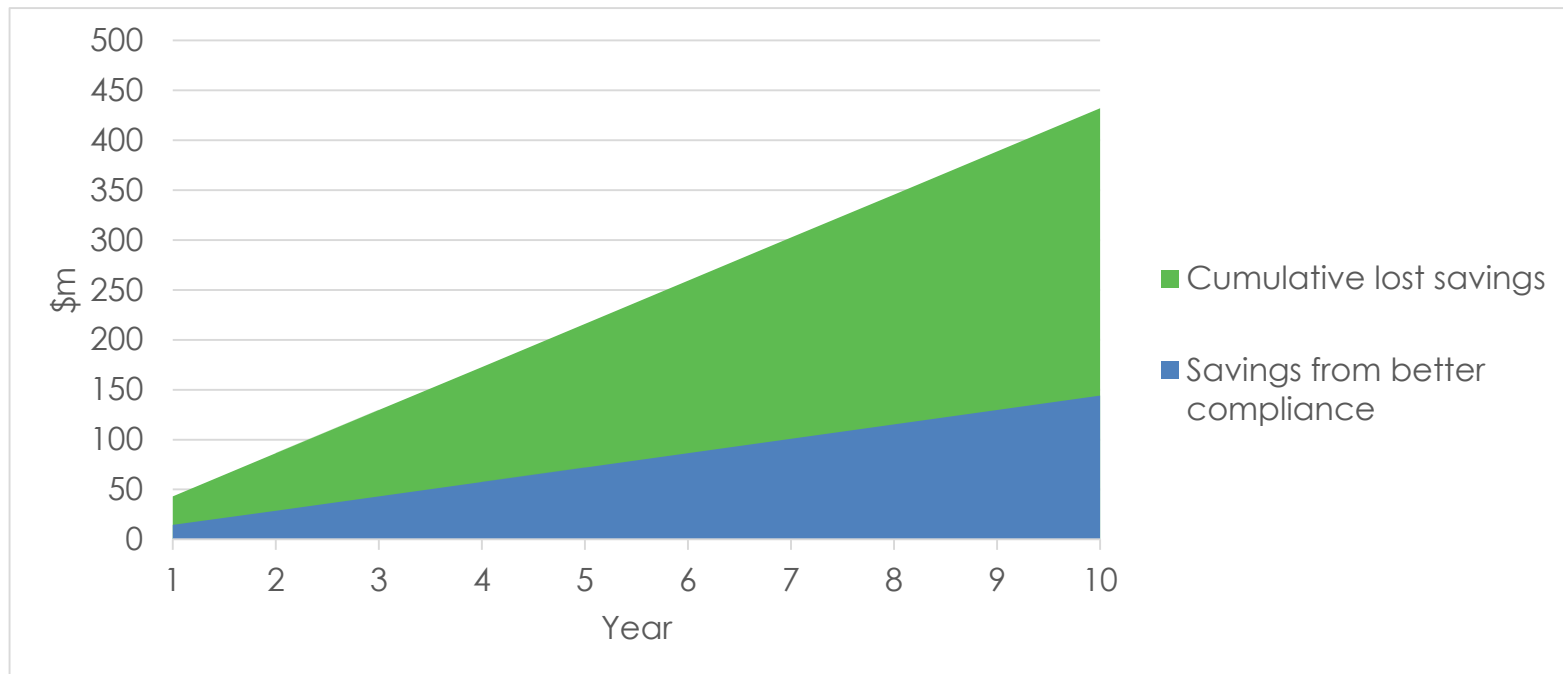
Total costs  $\approx$  same

# 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
<b>Value of lost electricity savings after one year</b>	<b>\$4.32 million</b>
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

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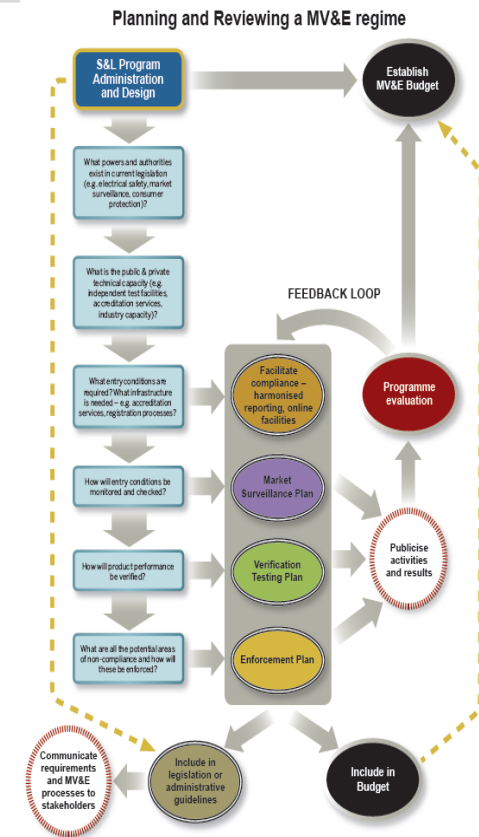
- How would you spend \$300,000 on improving compliance?
- [Write down on a piece of paper, not to share]

# 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
<b>Total</b>	<b>\$300,000</b>

# 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

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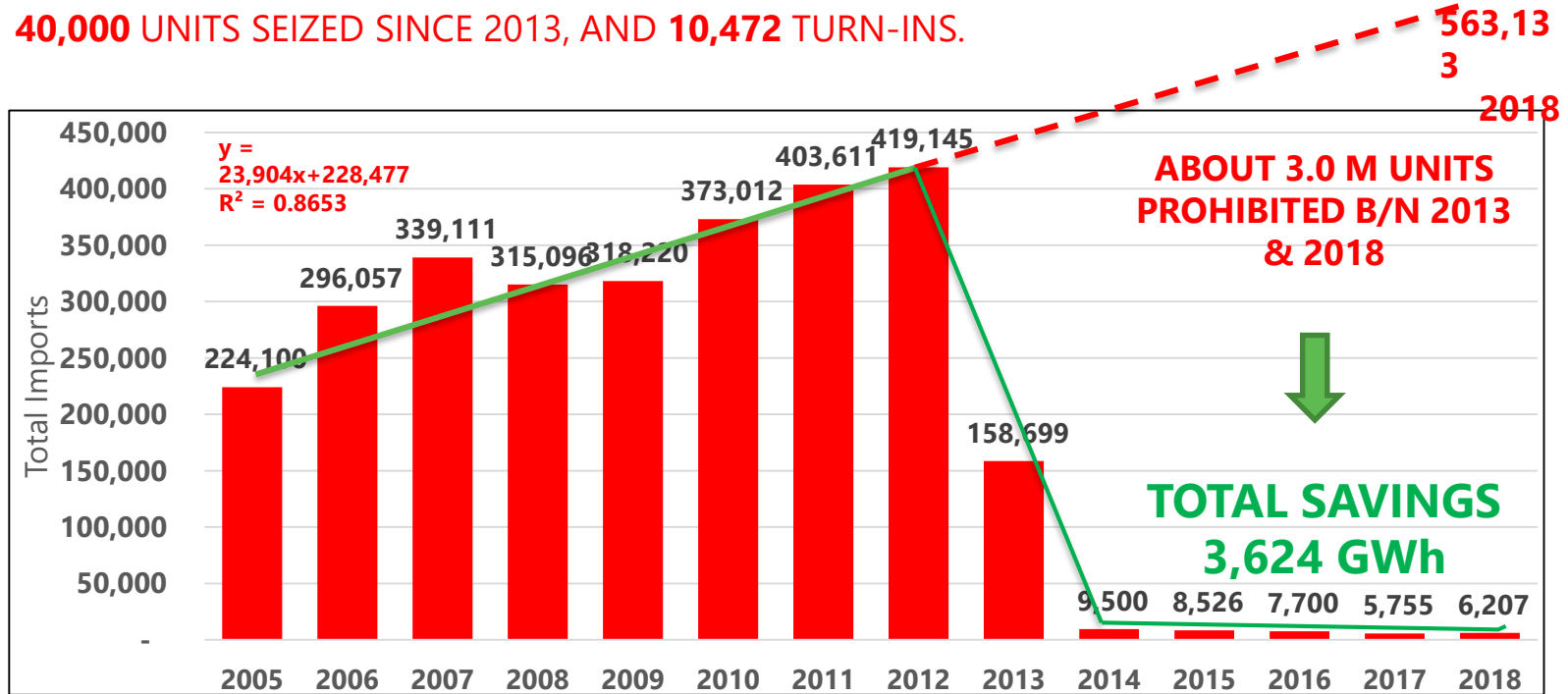
- Adopting digitalization - HS codes used in enforcement
- Adopting a risk-based profiling to identify contraband (non-compliance).
- Enforcement fees – re-export
- Naming and shaming of non-compliance companies

Source: Ghana Energy Commission, Hubert Zan



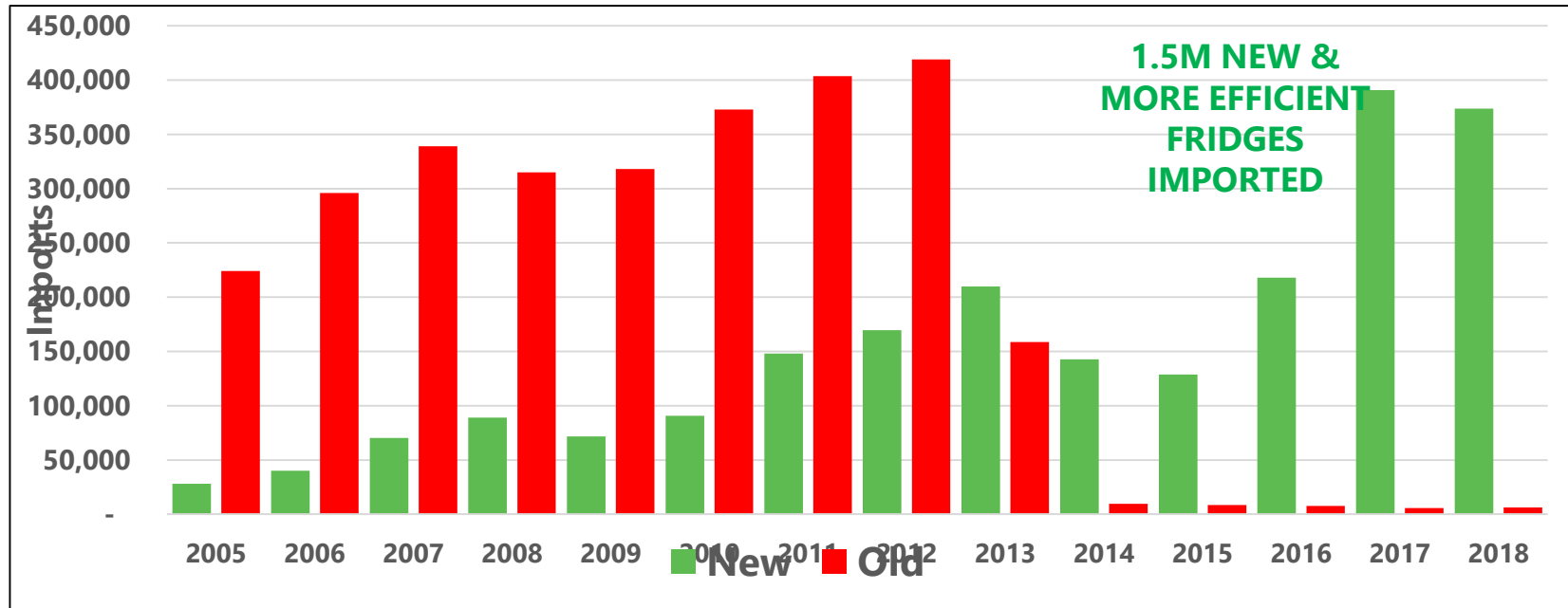
- ABOUT **2,884,863** USED FRIDGES IMPORTED SINCE 2005.

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



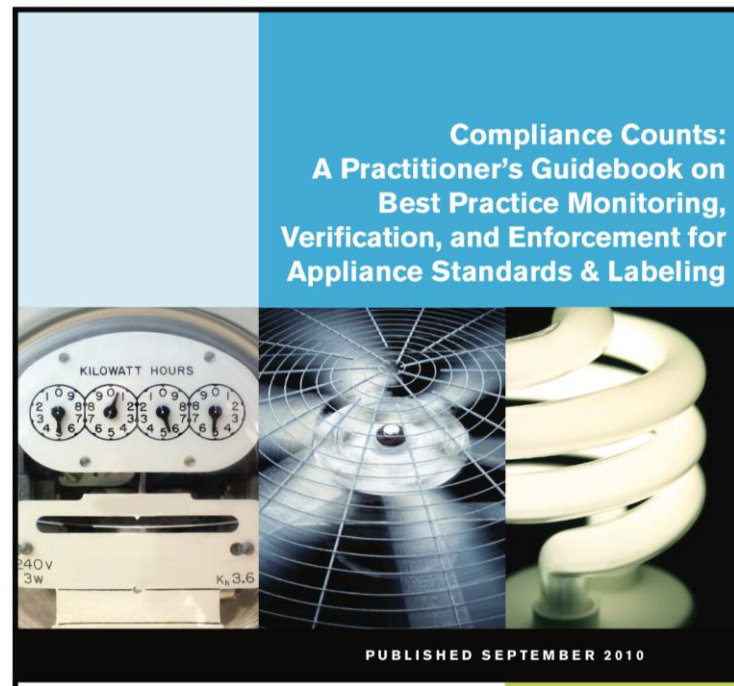
# Trends in New Versus Used Refrigerator Imports (2005 – 2018)

- 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).
- 8/N 2013 & 2018, NEW FRIDGES WOULD HAVE CONSUMED 489GWh instead of 1,757gwh, resulting in a saving of 1,268gwh.



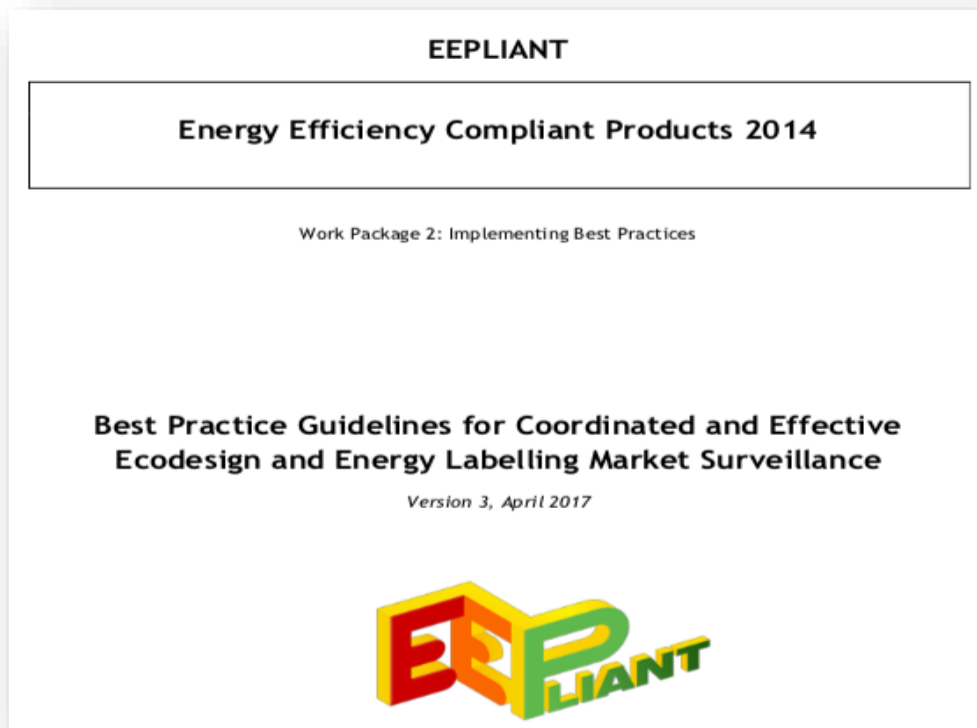
## CLASP

<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



<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

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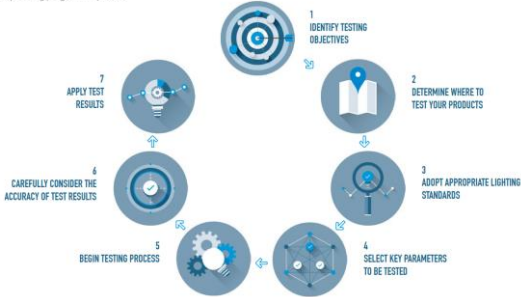
- Cost of laboratories (SEAD report, 2019)
- What is MV&E

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

# Performance testing of lighting products



Figure 1  
Lamp testing programme process



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