



# Policy Updates Relating to Energy Efficient Lighting in Thailand

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International Copper  
Association Southeast Asia  
Copper Alliance

ASEAN  
Standards  
Harmonization  
Initiative for  
Energy Efficiency



# Outline

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- 1) Energy Efficiency Plan 2015 and MEPS & HEPS Regulations
- 2) Energy Labelling Programme for Lighting Equipment
- 3) MVE
- 4) Update on MEPS for Lighting Equipment and LED Standards

*Bangkok, 2-3 February 2016*



# 1) Energy Efficiency Plan 2015 and MEPS & HEPS Regulations

*Bangkok, 2-3 February 2016*



# EEP 2015 - 2036 Saving Target

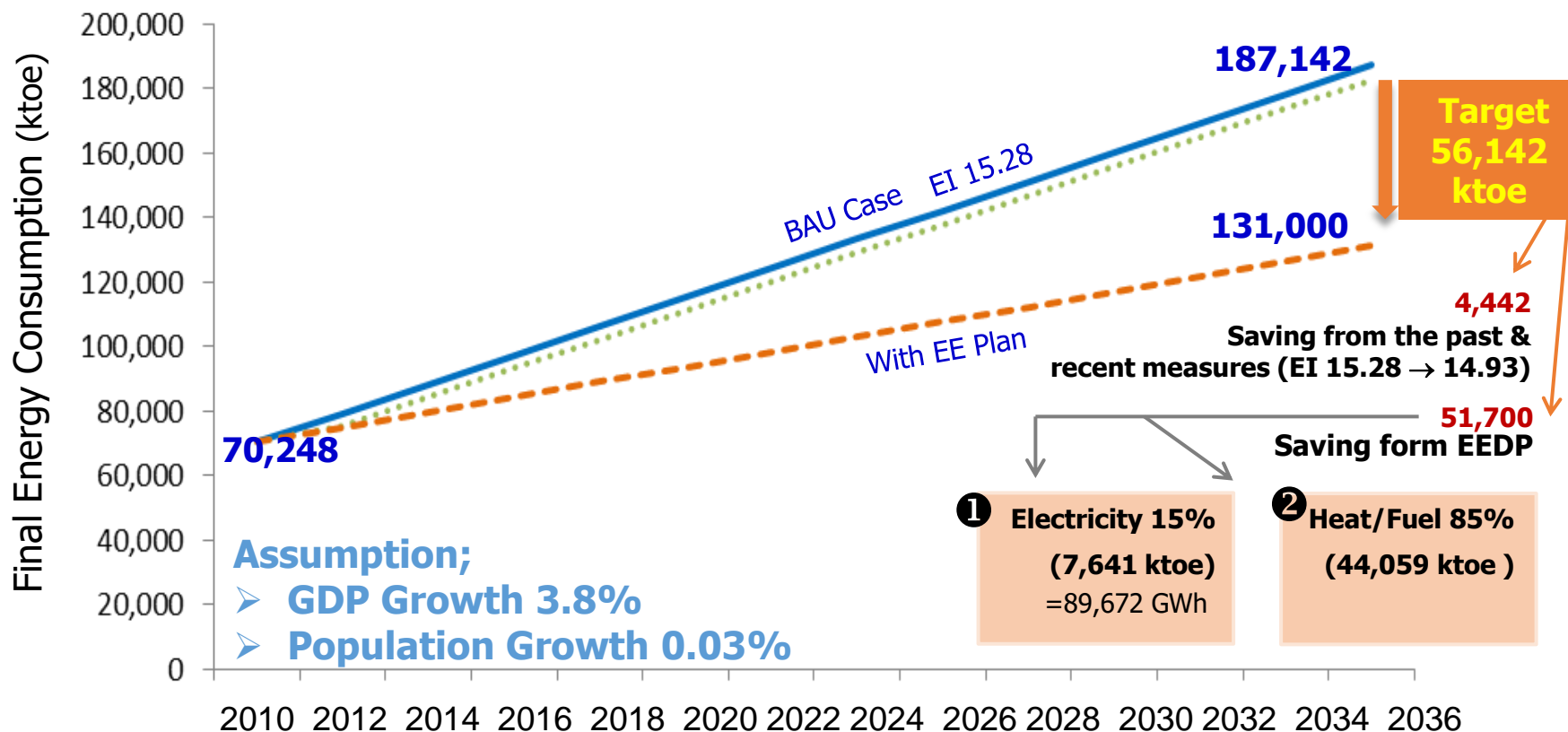
**A Target to reduce Energy Intensity by 30% in 2036,  
compared with that in 2010**

EI (2010) actual  
**15.28**  
ktoe/billion baht

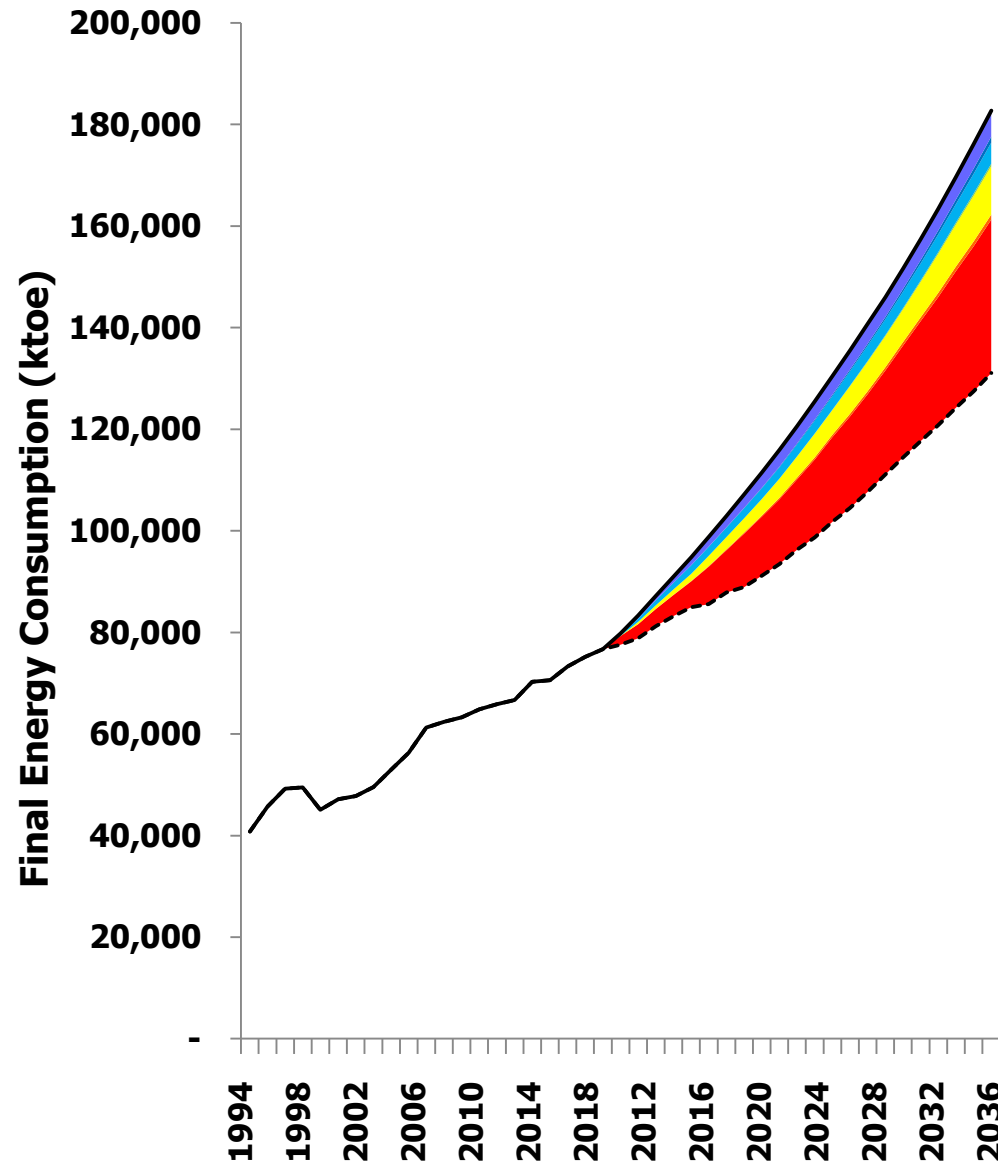
EI (2013) actual  
**14.93**  
ktoe/billion baht

EI (2030) forecast  
**11.0**  
ktoe/billion baht

EI (2036) forecast  
**10.7**  
ktoe/billion baht



# Summary of EEP 2015 Target by Measures



Expected Energy Saving by Economic sector		Total	
		(ktoe)	(%)
EE1	Enforcement of energy conservation standard in designated factory/building	5,156	10%
EE2	Building Energy Code (BEC) for the new buildings	1,166	2%
EE3	Energy Labeling (HEPs & MEPs) ★	4,149	8%
EE4	Energy Efficiency Resource Standard (EERS) for large energy producers and distributors	9,524	18%
EE5	Financial Incentives and support for energy performance achievement	991	2%
EE6	Promoting greater use of LED ★	500	1%
EE7	Energy saving measures in transport sector	30,213	58%
Total (ktoe)		51,700	100%

**Economic Sector**

1. Industry
2. Commercial
3. Residential
4. Transportation

# Framework of EES&L Measures

## MEPS: Minimum Energy Performance Standard

- Both voluntary and mandatory program
- Collaboration between DEDE and TISI
- Draft standards are set up by DEDE, but they are regulated by TISI.



6 voluntary certification mark



mandatory certification mark

## HEPS: High Energy Performance Standard

- Voluntary program
- Collaboration between DEDE and EGAT
- Standards are set up by DEDE, and labelling programs are responsible by DEDE and EGAT



Electric Label



Non-Electric Label

## 2) Energy Labelling Programme for Lighting Equipment

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# Energy Label No.5



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Year	Products	Label amount
1994	Refrigerators	35,267,137
1995	Air Conditioner	23,012,245
1996	Compact Fluorescent Lamp ★	90,474,780
1998	Electromagnetic Ballast ★	7,622,722
1999	Brown Rice	9,738,862
2001	Electric fans	73,839,179
2004	Rice Cooker	3,684,295
	Luminaire (T8) ★	52,840
2009	Oscillator Electric Fan	1,750,580
	Fluorescent T5 Lamp ★	11,766,555
	Electronic Ballast for T5 ★	5,906,976
2010	Standby Power : TV	5,628,302
	Standby Power: monitor	1,545,450

(upto 31 Dec 2015)

Year	Products	Label amount
2010	Electric Pot	4,982,850
	Luminaries for T5 ★	21,420
2011	Water Heater	4,645,118
	Iron	2,405,840
	Ventilator fan	1,578,400
2012	Washing Machine	1,201,320
	LED Lamp ★	4,338,870
2013	Microwave Oven	51,300
	Induction Cooker	69,100
2014	TV : on mode	1,143,800
	Electric Kettle	197,00
2015	Refrigerated Display Cabinets	33,100
	Automatic Water Pumps	57,550
	Electric Fryers	75,400
<b>Total 28 product</b>		<b>291,139,691</b>



# Lighting Products: CFLs, T5 Fluorescent and LED Lamps

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Type			Efficiency (lm/W)
CFL	5-8 W	> 4400K	≥ 45
		≤ 4400K	≥ 50
	9-14 W	> 4400K	≥ 50
		≤ 4400K	≥ 55
	15-20 W	> 4400K	≥ 55
		≤ 4400K	≥ 60
	21-24 W	> 4400K	≥ 60
		≤ 4400K	≥ 60
	25-60 W	> 4400K	≥ 60
		≤ 4400K	≥ 65



Type			Efficiency (lm/W)
FT5	14 W	≥ 5000 K	≥ 80
		< 5000 K	≥ 85
	28 W	≥ 5000 K	≥ 92
		< 5000 K	≥ 95
LED	MR16	≤ 4400K	≥ 45
		> 4400K	≥ 50
	PAR	≤ 4400K	≥ 50
		> 4400K	≥ 55
	Tube T8	Clear	≥ 96
		Opaque	≥ 80
	E27	≤ 4400K	≥ 60
		> 4400K	≥ 65
	Luminaire High/Low bay	All CCT	≥ 90

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# Lighting Products: Ballasts and Luminaires

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## Ballast



Type			Loss Watts (W)
Electromagnetic	18 W	Single Cap.	$\leq 6$
	36 W	Single Cap.	$\leq 6$
Electronics T5	14 W	Single Cap.	$\leq 3$ (17)
		Double Cap.	$\leq 5$ (33)
	28 W	Single Cap.	$\leq 3$ (31)
		Double Cap.	$\leq 5$ (61)

## Luminaires



Type		Lighting Out Ratio: LOR (%)
Luminaire T8	1 X 36 W	$\geq 80$
	2X 36 W	$\geq 80$
Luminaire T5	2 X 28 W	$\geq 85$

# Progress of LED Energy Label No.5



# LED Expo 2015 and Upcoming Activities in 2016

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## • LED EXPO 2015 (22-24 MAY 2015)

**LED Expo Thailand 2015** is a premier business event host by **EGAT** and organized by **IMPACT Exhibition Management Co.,Ltd** and **MIX Exhibition Pvt.,Ltd**. It is ASEAN's largest exhibition on LED lighting product and technology.

The grand event took place from **22<sup>nd</sup>-24<sup>th</sup> May, 2015** at **IMPACT Bangkok ,Thailand**. The show showcase over **300 brands** from **290 companies** worldwide, occupying a total area of 300 sqm. Over the 3 days, some **16,348 visitors** attended the event out of which 752 were overseas visitor from **57 countries** such as Thailand ,Singapore, Malaysia, China, Indonesia, Myanmar, Taiwan, Hong kong, Japan, Korea, Egypt, Canada, Germany & other neighbouring countries.



**19-22**  
**APRIL, 2016**  
Hall 4-8, IMPACT Exhibition  
& Convention Center  
Bangkok, Thailand



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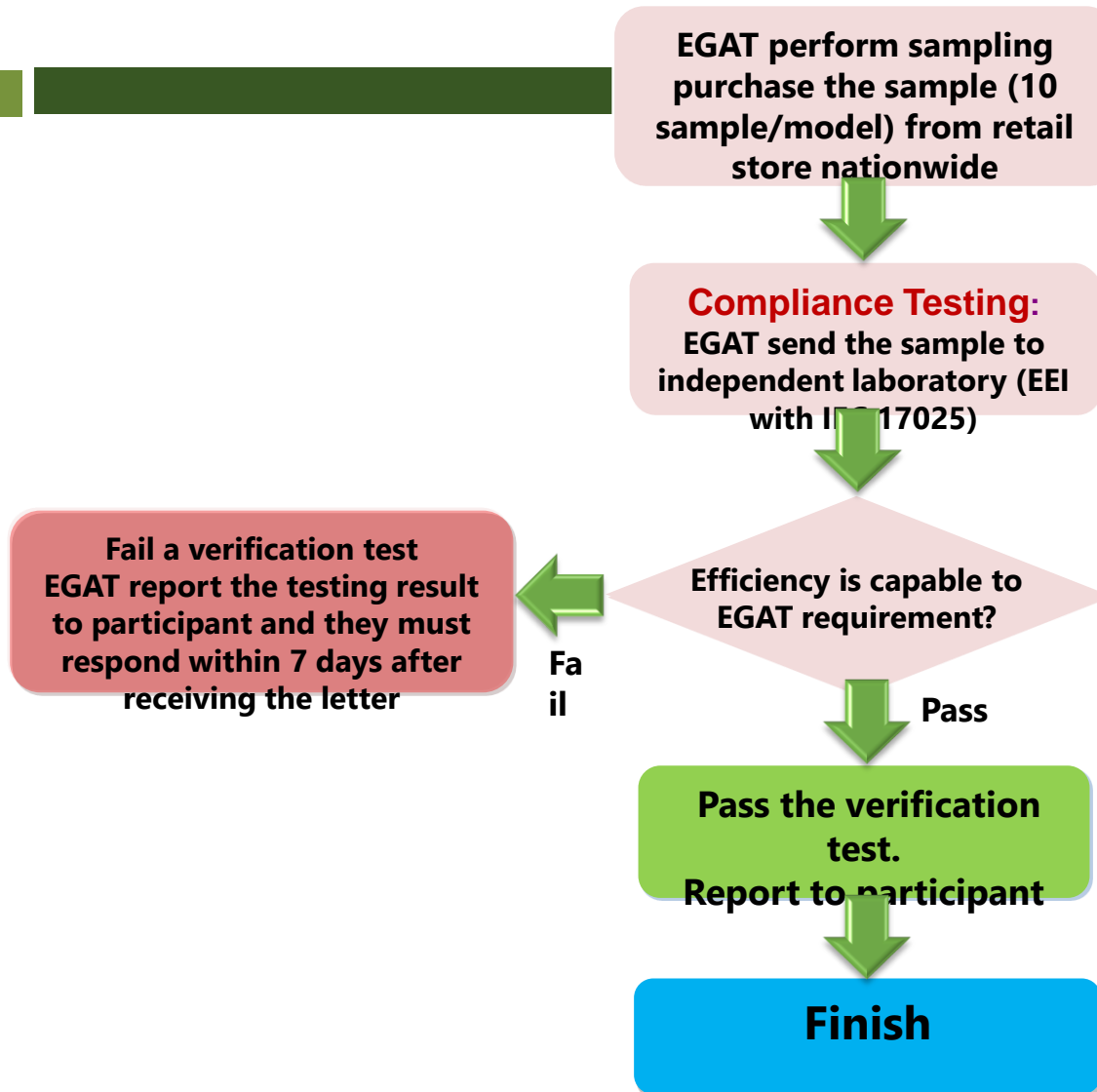


### 3) MVE

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# Verification Checking Process



## LED-E27

### EGAT requirement



#### Basic test 10 Bulb

1. Efficiency (lm/W) not change more than -5% from value at label and power input not change more than  $\pm 10\%$  from power required)

#### Criteria

Average value of all test sample

2. Power factor >0.50

Average value of all test sample

3. CCT test according to ANSI C78.377

100% of test sample

4. CRI>80, R9>0

Average value of all test sample

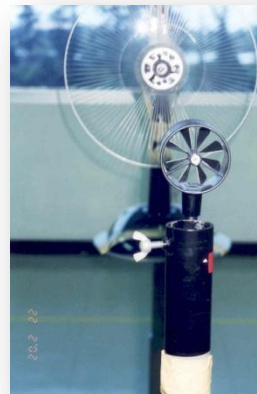
5. Blue light hazard

100% of test sample

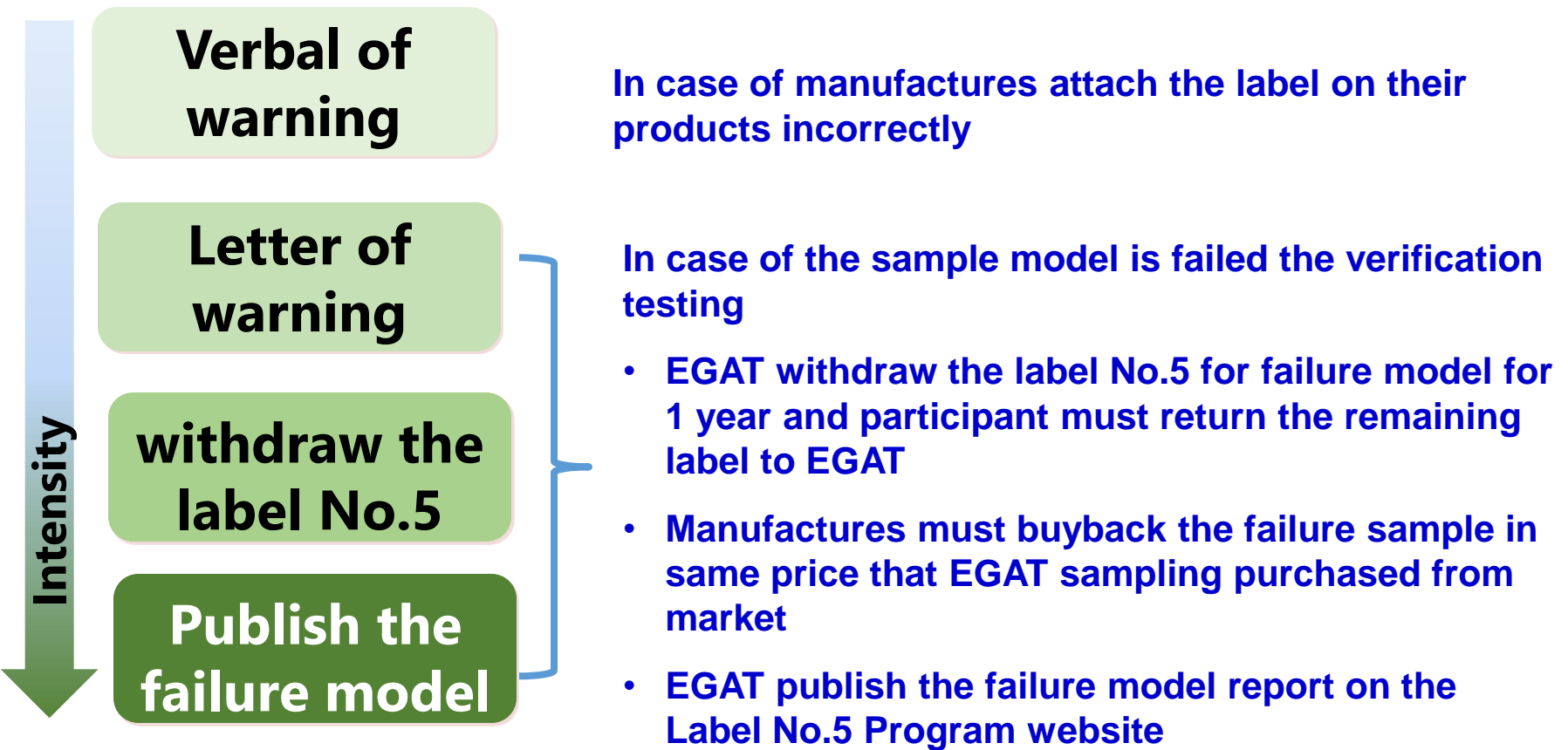


# Verification Process: Spot Checking

- Randomly spot-purchase the NO.5 appliances at the electric appliances shop and department stores countrywide
- Check product's specification whether main specification complies with NO.5 criteria
- Send those models to test for compliance with Label NO.5's criteria at the accredited laboratory (Electrical and Electronics Institute: EEI)



# Enforcement for non-compliance





## 4) Update on MEPS for Lighting Equipment and LED Standards

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# MEPS for Lighting Equipment

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- Mandatory MEPS

- 1) Self-ballasted Compact Fluorescent Lamps
- 2) Double-capped Fluorescent Lamps

- Voluntary MEPS

- 1) Single-capped Fluorescent Lamps
- 2) Magnetic Ballasts for Fluorescent Lamps
- 3) Electronic Ballasts for Fluorescent Lamps

# LED Standards Under Development by TISI

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- 1) LED Modules for General Lighting – Safety Specifications
- 2) LED Modules for General Lighting – Performance Requirements
- 3) Self-ballasted LED Lamps for General Lighting Services by Voltage > 50 V – Safety Specifications
- 4) Lamp Controlgear – Part 2-13: Particular Requirements for D.C. Or A.C. Supplied Electronic Controlgear for LED Modules
- 5) Double-capped LED Lamps Designed to Retrofit Linear Fluorescent Lamps – Safety Specifications
- 6) Self-ballasted LED Lamps for General Lighting Services With Supply Voltages > 50 V – Performance Requirements

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*Thank  
you...*

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