

Industry Perspective on the need for compliance

Kitti Sukutamantuntti

Illuminating Engineering Association of Thailand

Need for compliance

- Up to the products
- Up to the customer's Requirement / demand / market behavior
- Selling Price is an important issue
- If the additional cost increases the selling price/pay back period, customers may not be interested.
- Education need time
- Need for > 1 yr life warranty.



Thailand Lighting Market

**26,000 MB
(2013) +7%**

- ปัจจุบันโรงงานผลิตหลอดไฟแอลอีดี
ในเมือง ไทยมีอยู่ประมาณ 10 แห่ง

Lamp & Accs

12,000 MB

LED 30 % (2014)

F 50 % (2015)

FL 41%(2013) -> 22 %(2015)

CFL 30%(2013) -> 21 %(2015)

HID 10%(2013) -> 5 %(2015)

INC 2%(2013) -> 2 %(2015)

Luminaire

14,000 MB

**LED Luminaire
30 % (2014)**

F 50 % (2015)

HEPS lighting Products in Thailand

1. **Fluorescent Lamp**
2. **Compact Fluorescent Lamp**
3. **T5 Lamp**
4. **LED Lamp**
5. **Magnetic Low Loss Ballast**
6. **Electronic Ballast**
7. **High Efficient Luminaire**



MEPS lighting Products in Thailand

- 1. Fluorescent Lamp**
- 2. Compact Fluorescent Lamp**
- 3. T5 Lamp**
4. LED Lamp
- 5. Magnetic Low Loss Ballast**
- 6. Electronic Ballast**
7. High Efficient Luminaire

New TIS Standards Announced Update


TIS = Thailand Industrial Standard www.TISI.go.th
(some are mandatory, some are voluntary)



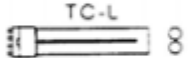
- TIS 902 – 2014 Luminaire Testing
- TIS 956 – 2014 Double-capped Fluorescent Lamp
- TIS 2234-2014 Self-ballasted lamp
- TIS 2235-2014 Single-capped Fluorescent Lamp
- TIS 2237-2014 Fluorescent Lamp Ballast : Efficiency
- TIS 2624 -2(1) – 2014 LED modules for general lighting (IEC 62717)
 - More than 6 LED new standards are being drafted.




ตารางที่ 1 บัลลาสต์สำหรับหลอดฟลูออเรสเซนต์ – การจัดประเภท EEI สำหรับแรงดันไฟฟ้าที่กำหนด 220/230 V

แบบหลอด และ รูปแบบ	กำลัง ไฟฟ้า ระบุของ หลอด W*	รหัส ILCOS	กำลังไฟฟ้าเข้าทั้งหมดที่แก้แล้ว สูงสุด W			
			การจัดประเภท EEI			
			A1**	A2	A3	B1
<div>หลอดตรง</div> <div>T</div> <div></div>	15	FD-15-E-G13-26/450	≤ 18.0	≤ 16.0	≤ 18.0	≤ 21.0
	18	FD-18-E-G13-26/600	≤ 21.0	≤ 19.0	≤ 21.0	≤ 24.0
	30	FD-30-E-G13-26/900	≤ 33.0	≤ 31.0	≤ 33.0	≤ 36.0
	36	FD-36-E-G13-26/1200	≤ 38.0	≤ 36.0	≤ 38.0	≤ 41.0
	38	FD-38-E-G13-26/1050	≤ 40.0	≤ 38.0	≤ 40.0	≤ 43.5

ตารางที่ 1 บัลลาสต์สำหรับหลอดฟลูออเรสเซนต์ – การจัดประเภท EEI สำหรับแรงดันไฟฟ้าที่กำหนด 220/230 V (ต่อ)

แบบหลอด และ รูปแบบ	กำลัง ไฟฟ้าระบุ ของ หลอด W*	รหัส ILCOS	กำลังไฟฟ้าเข้าทั้งหมดที่แก้ค่าแล้ว สูงสุด				
			W				
			การจัดประเภท EEI				
			A1**	A2	A3	B1	B2
<div>หลอดแฝด</div> <div>(1-U)</div> <div></div>	18	FSD-18-E-2G11	≤ 21.0	≤ 19.0	≤ 21.0	≤ 24.0	≤ 26.0
	24	FSD-24-E-2G11	≤ 27.0	≤ 25.0	≤ 27.0	≤ 30.0	≤ 32.0
	36	FSD-36-E-2G11	≤ 38.0	≤ 36.0	≤ 38.0	≤ 41.0	≤ 43.0
	40	FSDH-40-L/P-2G11	≤ 48.0	≤ 45.0	≤ 48.0	-	-
	55	FSDH-55-L/P-2G11	≤ 65.0	≤ 61.0	≤ 65.0	-	-

ตารางที่ 1 บัลดาสต์สำหรับหลอดฟลูออเรสเซนต์ – การจัดประเภท EEI สำหรับแรงดันไฟฟ้าที่กำหนด 220/230 V (ต่อ)

แบบหลอด และ รูปแบบ	กำลัง ไฟฟ้าระบุ ของ หลอด W *	รหัส ILCOS	กำลังไฟฟ้าเข้าทั้งหมดที่แก้ค่าแล้ว สูงสุด			
			W			
			การจัดประเภท EEI			
			A1 **	A2	A3	B1
<div>หลอดรูปสี่เหลี่ยม</div> <div></div>	10	FSS-10-E-GR10q FSS-10-L/P/H- GR10q	≤ 13.5	≤ 11.5	≤ 13.5	≤ 14.5
	16	FSS-16-I-GR8 FSS-16-E-GR10q FSS-16-L/P/H-GR10q	≤ 20.0	≤ 18.0	≤ 20.0	≤ 21.0
	21	FSS-21-E-GR10q FSS-21-L/P/L-GR10q	≤ 24.0	≤ 22.0	≤ 24.0	≤ 27.0
	28	FSS-28-I-GR8 FSS-28-E-GR10q FSS-28-L/P/H-GR10q	≤ 32.0	≤ 30.0	≤ 32.0	≤ 34.0

Government

- **DEDE** : Department of Alternative Energy Development and Efficiency
- **EGAT** : Electricity Generating Authority of Thailand
- **DIW** : Department of Industrial Works
- **TISI** : Thai Industrial Standards Institute
- **RD** : Revenue Department
- **BOI** : Board of Investment

What is enforcement ?

Enforcement

Products < MEPS
Legally cannot be sold in Thailand.

However, there is no MEPS standard for some products , e.g. LED

Building Design < W/sq.m. according to The Energy Conservation Promotion Act B.E. 2535(1992)

Motivation

Product \geq HEPS

Buyers Can get

- Subsidy for buyers from DEDE
- Tax Reduction from DEDE+RD
- Green loan/low interest rate/ESCO

Manufacturers Can get

- **Energy efficient label from EGAT**
- Energy efficient label from DEDE
- **Environmental/Green label from TISI**
- Factory Fee Exemption for manufacturers from DIW
- **Corporate Tax Exemption for manufacturers from BOI**

Home Developers Can get

- Home label from DEDE

Thailand already has **a building energy code**



The Energy Conservation Promotion Act

B.E. 2535

BHUMIBOLADULYADEJ REX.

Given on the 2nd day of April B.E. 2535 (1992)

The Royal Decree on Designated Building

B.E. 2538

Given on the 17th day of July B.E. 2538



A set of Ministerial Regulations

B.E. 2538 (1995)

Table 3.4: Net Energy Consumption Derived from Modeling Each Building Type under Each Level of Energy Saving Capability.

Building Type	Energy Consumption under Each Level of Energy Saving Capability (kWh/m ² /y)				
	Reference	BEC	HEPS	Econ	ZEB
Office building	219	171	141	82	57
Department store	308	231	194	146	112
Retail & wholesale business facility	370	298	266	161	126
Hotel	271	199	160	116	97
Condominium	256	211	198	132	95
Medical center	244	195	168	115	81
Educational institution	102	85	72	58	39
Other general buildings	182	134	110	66	53

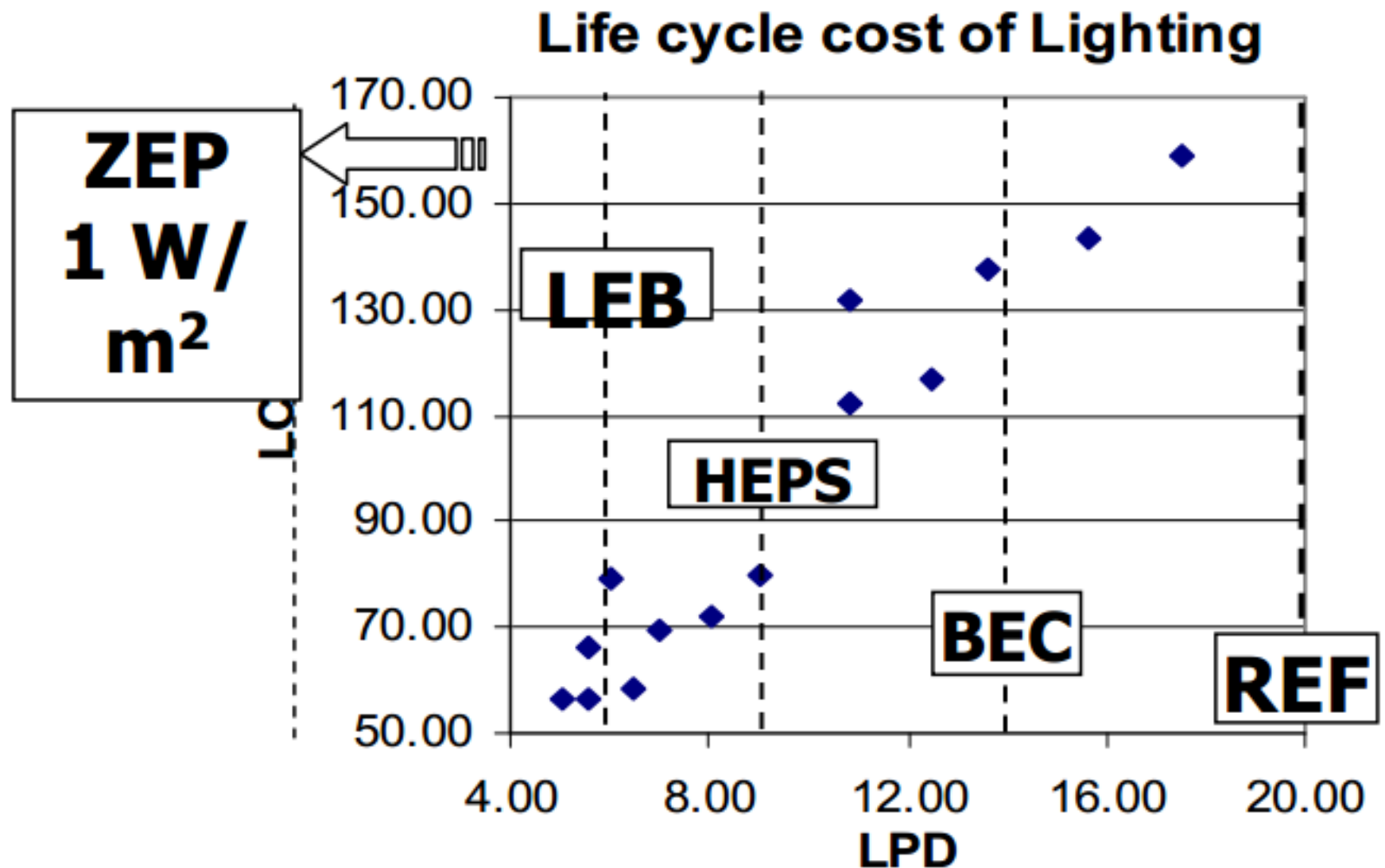
- The Thai BEC set requirements on performance of building envelope, lighting and air-conditioning systems

- The **Overall Thermal Transfer Value (OTTV)** of wall of a building represents the size of the average heat gain through the envelope as sensed by the air-conditioning system of the building, eg. for **Office**, $OTTV < 50 \text{ W/m}^2$.

Lighting

Index	Buildingtype	Value
Lighting Power density (W/sqm.) ⇒ LPD	Office and School	14
	Hotel Hospital Condominium	12
	Dept Store Hypermart	18

Thailand Road Map to Near Zero Energy Building Developed



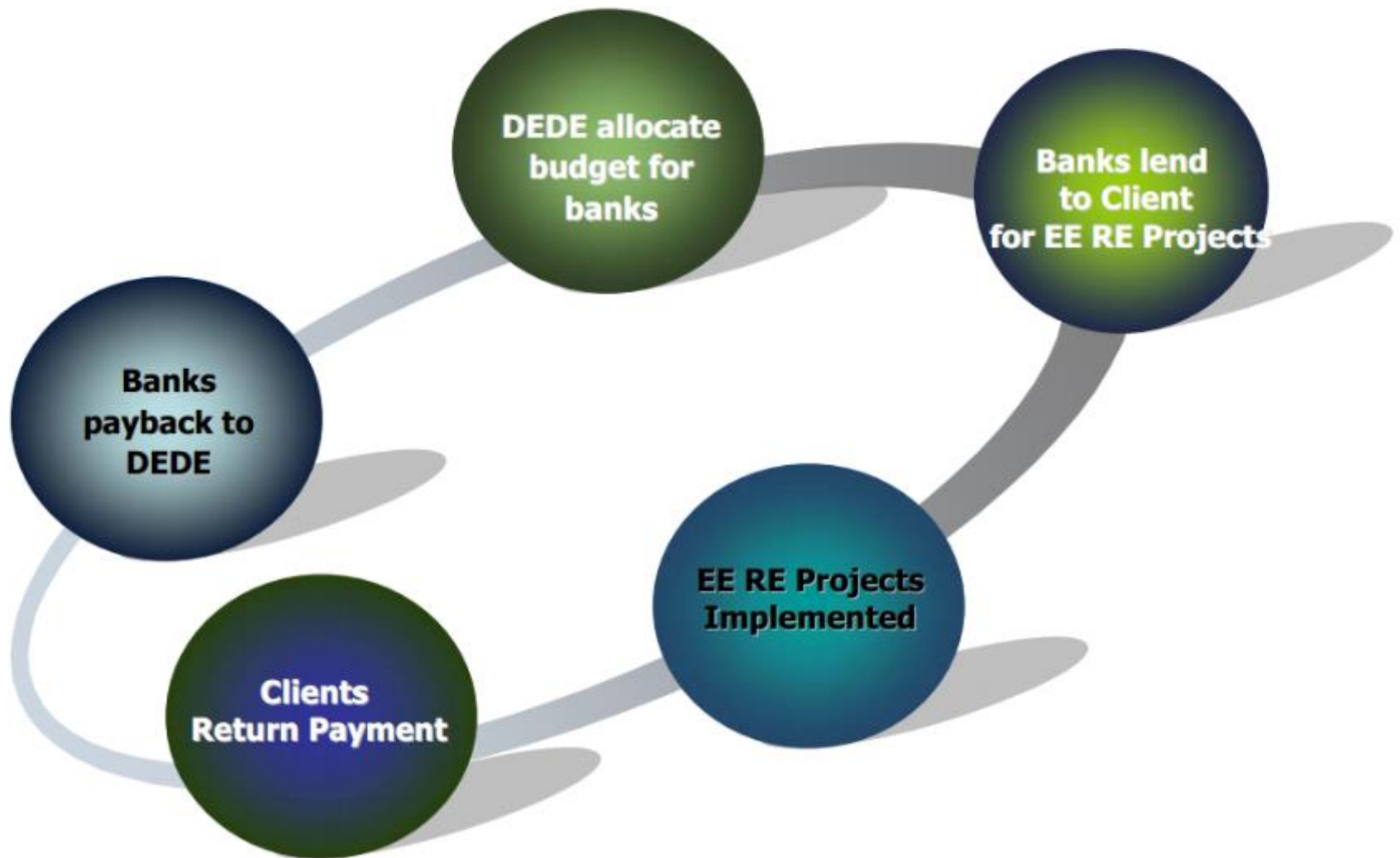
Thailand Road Map to Near Zero Energy Building Developed

Year	2012	2015	2018	2021	2024	2027	2030	2033
Step	REF	BEC	BEC+	HEPS	HEPS+	LEB	LEB+	ZEB
OTTV	60	50	45	40	35	30	25	20
A/C – kW/RFT	1.4	1.12	0.95	0.8	0.7	0.6	0.5	0.4
LPD	16	14	12	10	8	6	4	2
Building	100	80	70	60	50	40	30	20

REF = Reference, BEC = building energy code, HEPS = higher performance standards,
LEB = low energy building, ZEB = zero energy building
OTTV = overall thermal transfer, LPD = lighting power density, A/C = air-conditioning



RF Work Process



What are the consequences of non-compliance for the industry?

- **Products < MEPS :**
 - Cannot be sold legally
 - Cannot join government green shops
- **Products < HEPS :**
 - May not be sold , competing with competitors
 - **Warning, Product Withdrawal, Publicity**
 - At the present, some smart buyers considers green procurement, LCA, pay back period, price/benefits when buying.

How can manufacturers support compliance ?

- **Joining in meeting for developing/5-yr revising the criteria of MEPS / HEPS and related IEC / TISI standards.**
- **There are more than 60 products in energy efficiency program.**
- **Factory Laboratory support the testing criteria, sample tests.**
- **The LAB network program strengthen capacity and improving ISO 17025 compliance is support by DEDE.**
- **Supporting the Thailand 20 yr Energy Efficiency road map drafting in Power Development Plan (PDP 2015)**

Thank you for your Kind attention

Kitti Sukutamatunti

Line : kitti2558

e-mail : kitti_suku@Hotmail.com