



Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

Thailand Economy Update

Watcharin Boonyarit

**Department of Alternative Energy Development and Efficiency
Ministry of Energy, Thailand**



1

- **Thailand's Energy Efficiency Situation**

2

- **Energy Efficiency Plan (EEP 2015)**

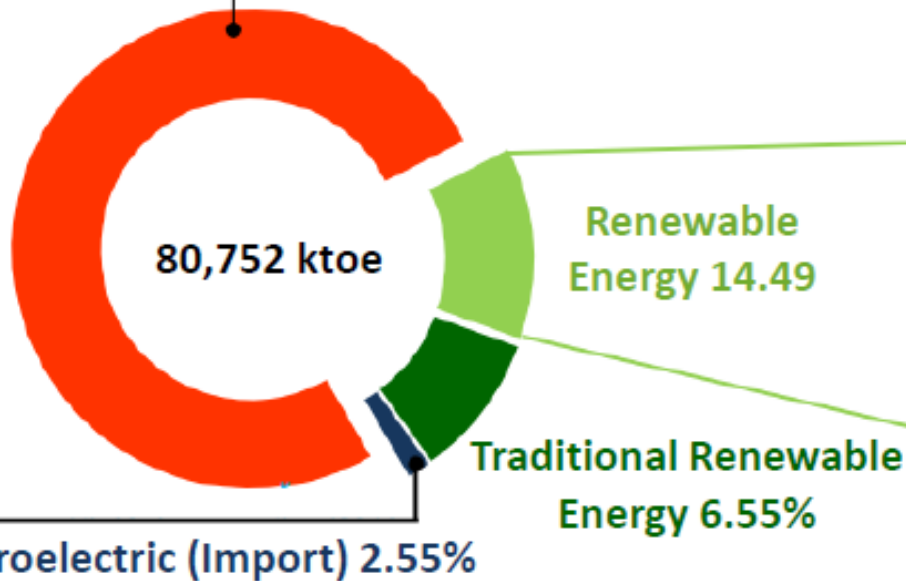
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- **Energy Efficiency Policies and Measures**

Thailand Energy Situation 2017

Final Energy Consumption

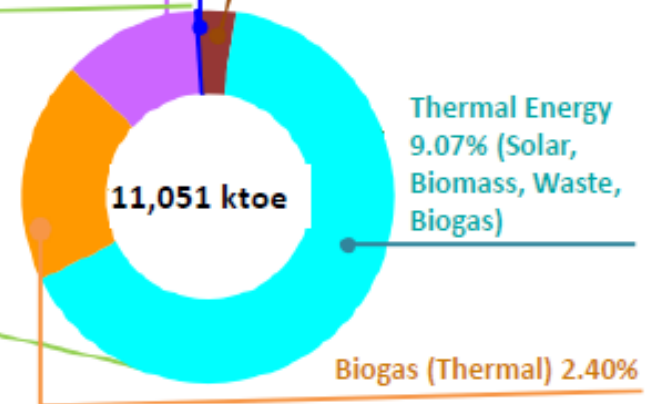
By Type **Fossil Fuel 76.41%**



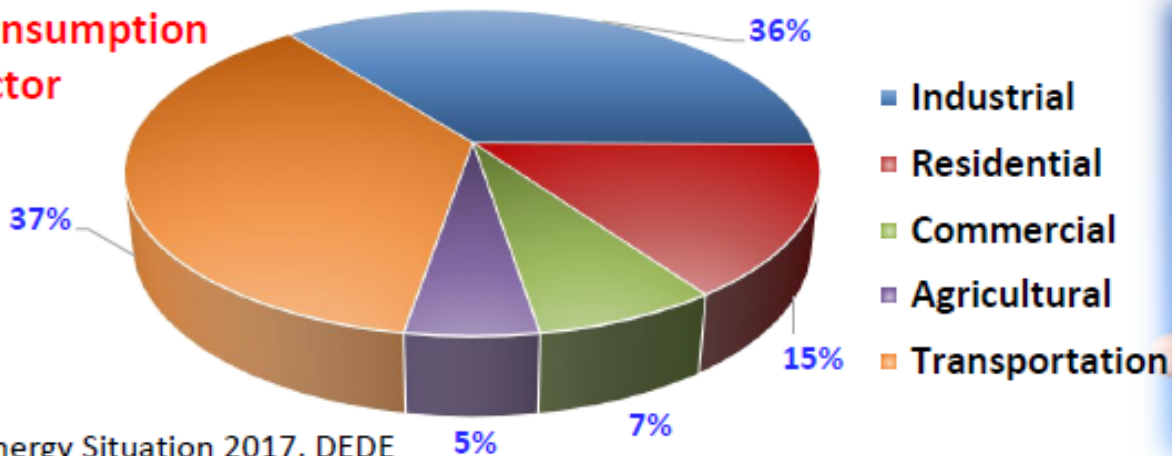
Electricity 2.51% (Solar, Wind, Biomass, Waste, Biogas)

Small Hydroelectric 0.05%

Large hydroelectric 0.46%



Final Energy Consumption by Sector





Integration



Harmonized Time Frame



Better Balanced Focus

Security Economy Ecology

PDP

POWER DEVELOPMENT PLAN

แผนพัฒนากำลังผลิตไฟฟ้าของประเทศไทย*

EEP

ENERGY EFFICIENCY PLAN

แผนอนุรักษ์พลังงาน*

Approved:
August 13th,
2015

AEDP

ALTERNATIVE ENERGY DEVELOPMENT PLAN

แผนพัฒนาพลังงานทดแทนและพลังงานทางเลือก

GAS

GAS PLAN

แผนบริหารจัดการก๊าซธรรมชาติ

OIL

OIL PLAN

แผนบริหารจัดการน้ำมันเชื้อเพลิง



กระทรวงพลังงาน
MINISTRY OF ENERGY

PDP

EEP

AEDP

GAS

OIL

TIEB

Goal to reduce **Energy Intensity** by **30%** in **2036**, down to **5.97 ktoe/billion Baht**

EEDP 2011 - 2030
 = 25% Reduction



EEDP 2015 - 2036
 = 30% Reduction

$EI^{base2010} = 8.54$
 ktoe/billion baht

$EI^{Actual2017} = 7.94$
 ktoe/billion baht

$EI^{Goal2036} = 5.97$
 ktoe/billion baht

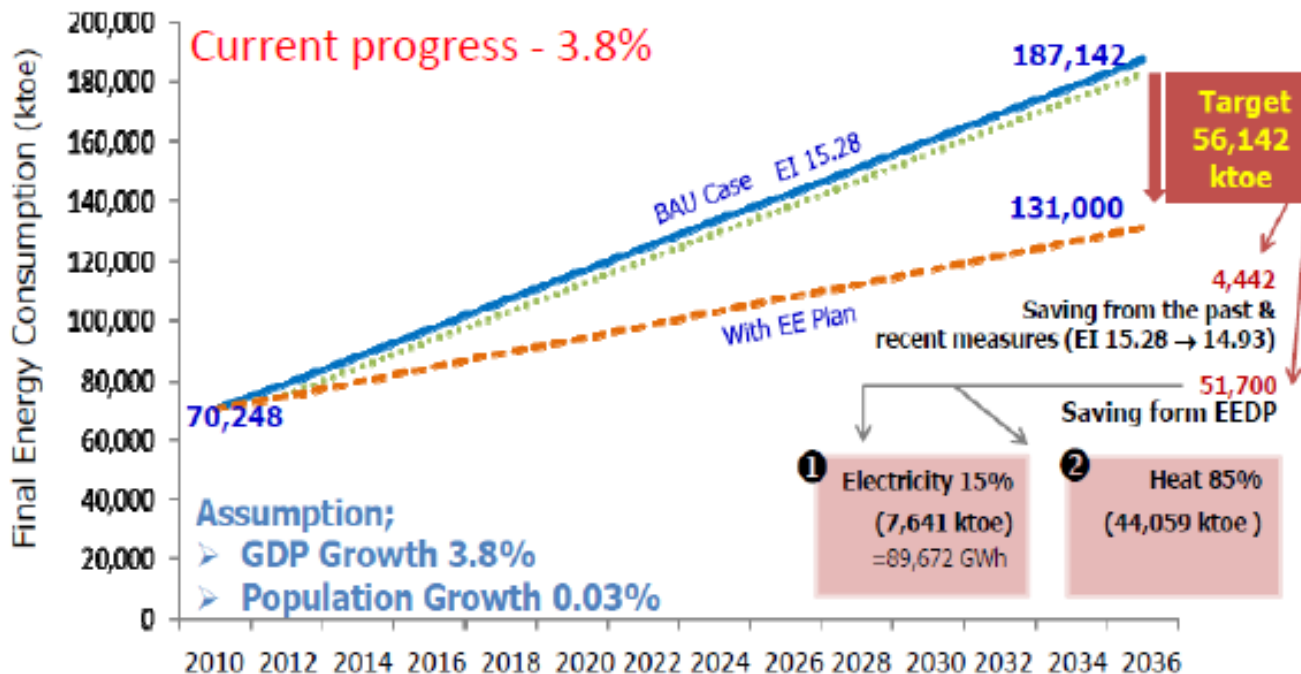
Concept



Long-term Implementation

Combination of Compulsory & Voluntary Measures

Performance-based Support



Thailand New Energy Efficiency Plan (EEP 2018-2036)

- Reduce energy intensity 30%
- To cut peak demand 4,000 MW by 2037
- Apply 3 steps of EE initiatives
 - Energy management, IoT, FMS, BMS, Demand response, Smart grid
 - Process improvement
 - High Eff. machine change
- Industry, Building, Household, Agriculture, Transportation

Key improvement of new EE plan

Target Group	
1	Industry
2	Building
3	Residential
4	Transportation

Measure	
EE1	Energy Management in Designated factory and building
EE2	Building Energy Code (BEC)
EE3	MEPS & HEPS
EE4	Financial Support
EE5	Promote the use of LED
EE6	Energy Efficiency Resource Standard (EERS)
EE7	Transportation Measures



Energy Conservation and Promotion Act. B.E. 1992 (revision B.E. 2007)

Decree on designated building

Effective from 12/12/1995

Decree on designated factory

Effective from 17/07/1997

Ministerial Regulations

**Energy Management in
designated buildings and
factories**

Effective from 20/11/2009

**Persons Responsible for
Energy (PRE)**

Effective from 31/07/2009

**Energy Management
Auditors**

Effective from 11/05/2012

Building Energy Code

Effective from 20/06/2009

**High Energy Efficiency
Standard for Equipments
and Machinery**

Effective from 08/04/2009



MEPS: Minimum Energy Performance Standards

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



voluntary certification mark
19 Products



mandatory certification mark
4 Products

Mandatory equipment:

1. Refrigerator
2. Air-conditioner
3. Fluorescent light tube
4. Ballast-integrated light bulb

HEPS: High Energy Performance Standard

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



Electric products (Home/Office)



30 Products



Non-Electric and Industrial products



19 Products

Insulator

Glazing Panes

VSD

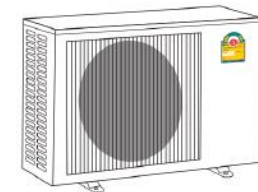
Air Conditioner

เครื่องปรับอากาศ		ค่าประสิทธิภาพตามฤดูกาล SEER (บีทียู/ชั่วโมง/วัตต์)			
ชนิด	ขนาด (BTU/hr)	เบอร์ 5	เบอร์ 5★	เบอร์ 5★★	เบอร์ 5★★★
Fixed Speed	≤27,296	12.85 – 13.84	13.85 – 14.84	14.85 – 15.84	≥15.85
	>27,296 - 40,944	12.40 – 13.39	13.40 – 14.39	14.40 – 15.39	≥15.40
Inverter	≤27,296	15.00 – 17.49	17.50 – 19.99	20.00 – 22.49	≥22.50
	>27,296 - 40,944	14.00 – 16.49	16.50 – 18.99	19.00 – 21.49	≥21.50

Cooling Seasonal Performance Factor : CSPF

ISO 5151 : 2010

ISO 16358-1 : 2013



LED Lighting

ชนิดหลอด LED	ค่าประสิทธิภาพ (ลูเมน/วัตต์)			
	เบอร์ 5	เบอร์ 5 ★	เบอร์ 5 ★★	เบอร์ 5 ★★★
MR16	65-70	71-76	77-82	≥ 83
PAR30/38	65-70	71-76	77-82	≥ 83
BULB E27	90.0-97.4	97.5-104.9	105.0-112.4	≥ 112.5
TUBE	120-129	130-139	140-149	≥ 150
HIGH/LOW BAY	90-99	100-109	110-119	≥ 120

IES LM79 – 08 , IEC 62612:2013 , IEC 62722-2-1





Motors Standards and Labeling Program

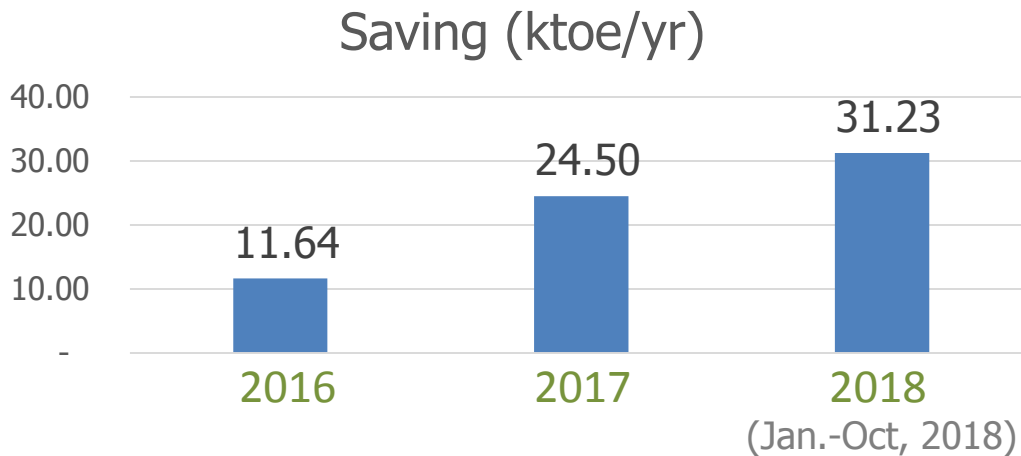
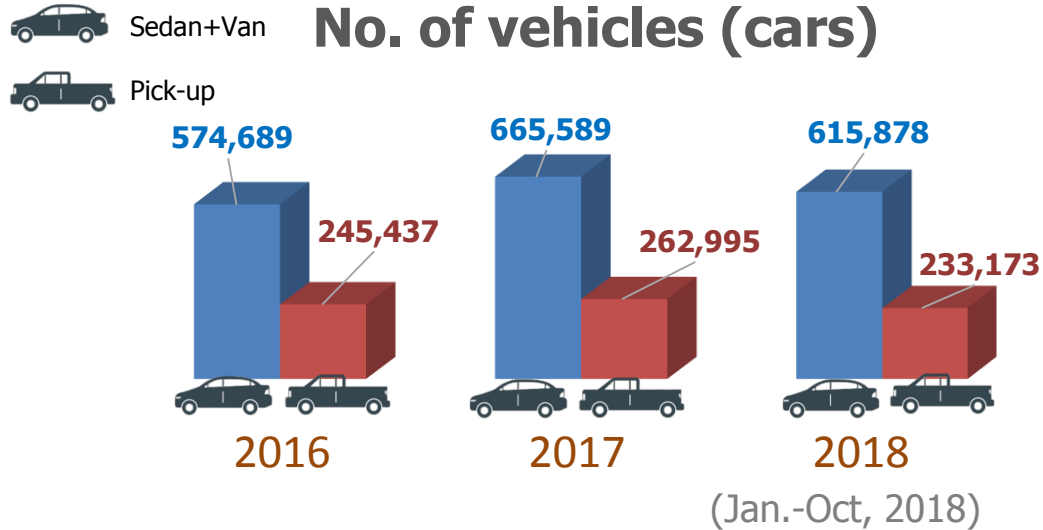
1. One-Phase Induction Motors
2. Three-Phase Induction Motors



	1-Phase (0.12-2.2 kW)	3-Phase (0.73-185 kW)
Standard Ref. (starting year)	IEC 60034-2 (2016)	IEC 60034-2 (2010)
MEPs	IE 1	IE 1
HEPs	IE 2 (53.6 - 84.3 %)	IE3 (80.3 – 95.7 %)
HEPs Labeling (starting year)	90,600 (2017)	342,000 (2012)
Energy Saving	9.9 GWh/Year	520 GWh/Year

Co2 Tax and Eco sticker

As of October 2018



Cumulative number of vehicles with Eco sticker from Jan. 2016 – Oct. 2018:
2,597,761 vehicles
Energy saving: 67.37 ktoe

**** Excise Department and Ministry of Finance are going to implement this measure in Motorcycles and EV ****



Financial Incentives

- Co-Investing Program (ESCO Fund)
- Direct subsidy (20-30%)
- ESCO scheme

Standards & Regulations

- EE Designated Facilities
- MEPS & HEPS & Labeling
- Building Energy Code



Awareness Raising

- Thailand Energy Award
- Campaign & Media

Technical Support

- Training & Seminar
- Tech. Demonstration
- Guideline & Handbook

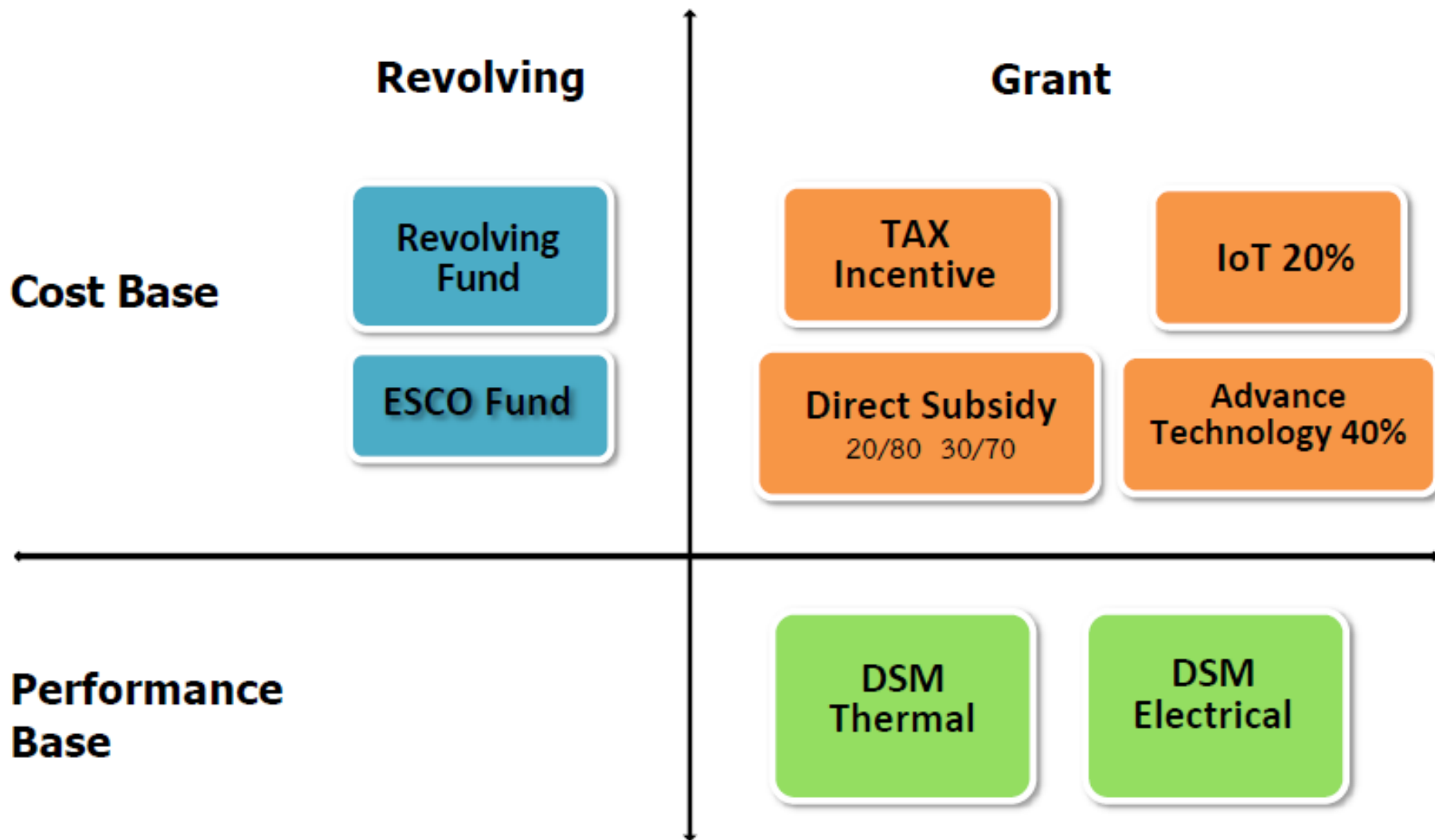


EE Networking

- Voluntary Agreement
- R&D with Universities
- Partnership with Professional Associations



Financial Incentive Overview





Direct Subsidy 20:80

- For EE measures
- **Subsidy 20-30% of EE measures,**
 - **maximum 1.5 million baht**
- To replace/install EE equipment
- Payback period < 7 years

80
20

70
30
SMEs



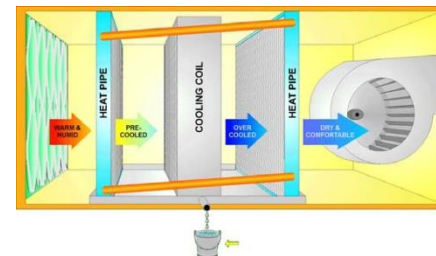
High eff. motor



VSD



LED



Heat Pipe



Heat Pump

*Factory - Building – Farming → IoT, BMS, Smart Farming
Smart Industries*



Internet of Things (IoT) Subsidy Program



In Progress

Internet of Things (IoT) Subsidy Program

Target group:

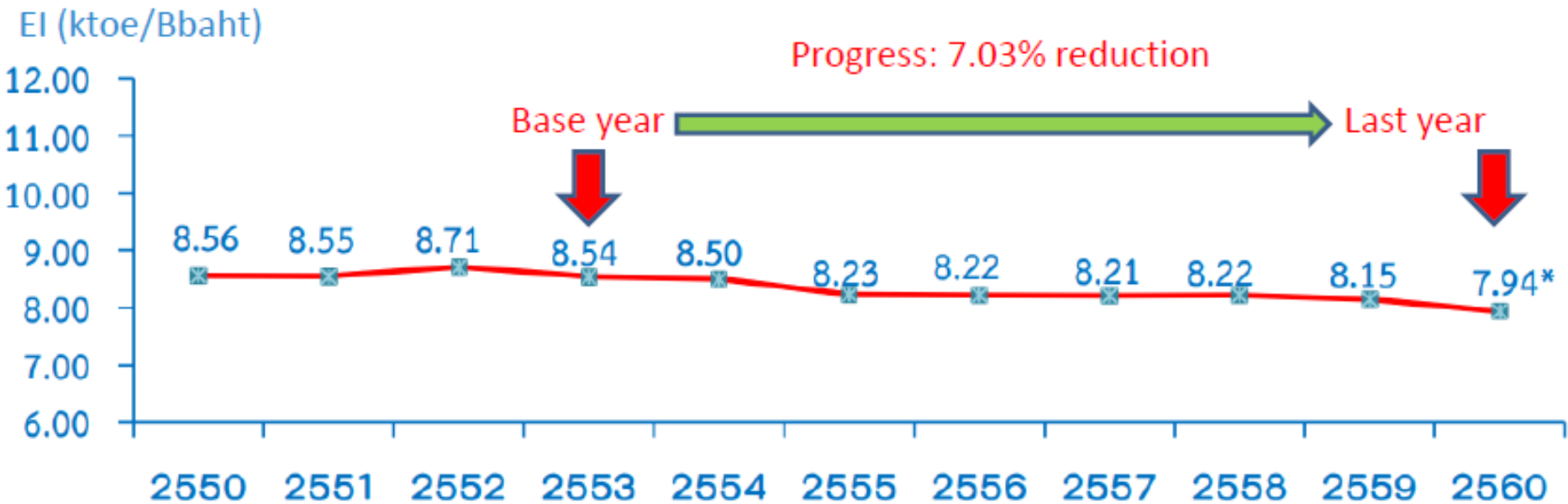
IoT technologies implementation (either with new or existing system) in designated buildings and factories

Program detail:

- Subsidize 20% of total cost but no more than 2 million Baht (around 46,000 USD) per entity, with a minimum of 50,000 Baht (around 1,600 USD)
- Payback period no longer than 7 years
- Must include **BOTH** monitoring and control

# of projects	Total investment (Mbaht)	Investment via ENCON Fund (Mbaht)	Investment via bank/applicant (Mbaht)	Energy saved (ktoe)	Energy saved (Mbaht)
65	700.79	121.20	579.59	4.54	206.75

EEP2015 : Current Progress





Thank you...

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www.dede.go.th