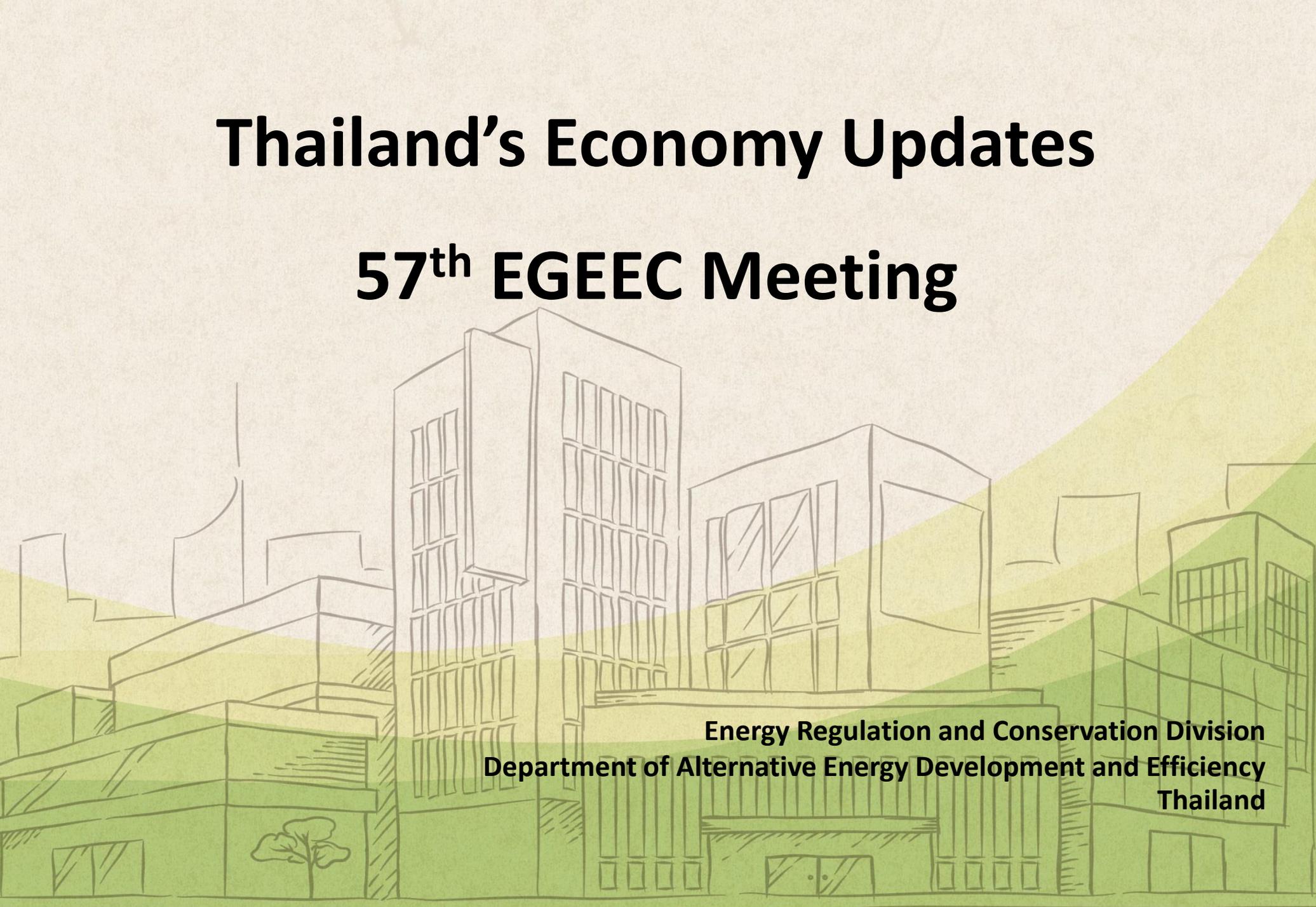


Thailand's Economy Updates

57th EGEEC Meeting



Energy Regulation and Conservation Division
Department of Alternative Energy Development and Efficiency
Thailand

Thailand's Energy Situation 2020

Final Energy Consumption (Total)

76,928 ktoe ↓ 10.3%



Total Value:
718.6 Billion Baht
(Approx. 23.1 Billion USD)

Renewable Energy

6,347 ktoe ↓ 27.7%



Traditional Renewable Energy*

3,802 ktoe ↓ 23.9%

Commercial

66,779 ktoe ↓ 7.3%



Petroleum Products

37,131 ktoe ↓ 11.8%



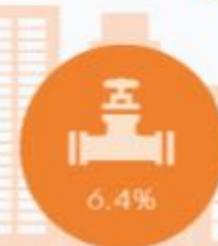
Coal/Lignite

7,974 ktoe ↑ 12.6%



Electricity

16,771 ktoe ↓ 3.0%



Natural Gas

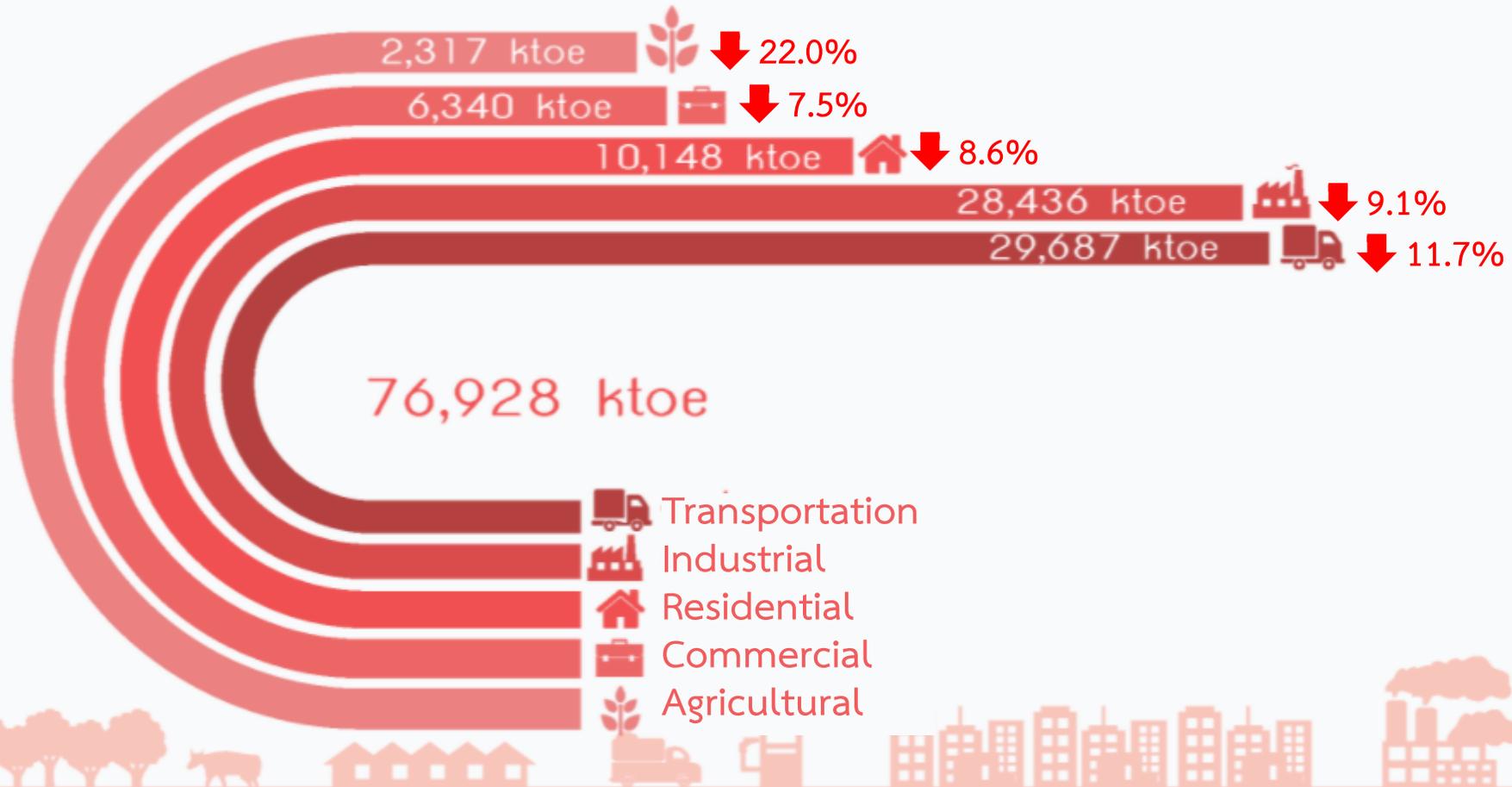
4,903 ktoe ↓ 11.9%

Source: Thailand's Energy Situation (Jan – Dec 2020), DEDE

* Fuel wood, charcoal, paddy husk, agricultural waste

Thailand's Energy Situation 2020

Final Energy Consumption (by sector)



Source: Thailand's Energy Situation (Jan – Dec 2019), DEDE

* Industrial sector includes manufacturing, mining, and construction

Thailand Integrated Energy Blueprint



Integration



Harmonized Time Frame



Better Balanced Focus

Security Economy Ecology

PDP

POWER DEVELOPMENT PLAN

แผนพัฒนากำลังผลิตไฟฟ้าของประเทศไทย*

EEP

ENERGY EFFICIENCY PLAN

แผนอนุรักษ์พลังงาน*

AEDP

ALTERNATIVE ENERGY DEVELOPMENT PLAN

แผนพัฒนาพลังงานทดแทนและพลังงานทางเลือก

GAS

GAS PLAN

แผนบริหารจัดการก๊าซธรรมชาติ

OIL

OIL PLAN

แผนบริหารจัดการน้ำมันเชื้อเพลิง



TIEB

THAILAND INTEGRATED ENERGY BLUEPRINT

Energy Efficiency Plan 2018

Long-term Energy Efficiency Implementation 2018 - 2037

To reduce energy intensity (EI) by **30%** within 2037 (Base year 2010)

Energy consumption reduction target: 49,064 ktoe via 3 main strategies

Compulsory

- Energy Management Standards
- Energy Codes (Industrial, Buildings, Residential)
- Energy Efficiency Resource Standard (EERS)



Promote

- Equipment Standards and Labeling
- Financial Supports
 - Grants and Subsidy / Soft loan
 - Tax incentive / Credit Guarantee
- Innovations (IOT, Smart Building, Big Data)
- Energy Efficiency in Agricultural Sector (Smart Farming, Switch to Machinery)
- Energy Efficiency in Transportation Sector (Mode shifting, Smart transport)

Complementary

- Human Resources Development (HRD)
 - Energy Manager / Auditor
 - Technologies
- Public Relation/Awareness
- Research and Development



5 Economic Sectors

Industry

Building

Household

Agriculture

Transport

Energy Management System

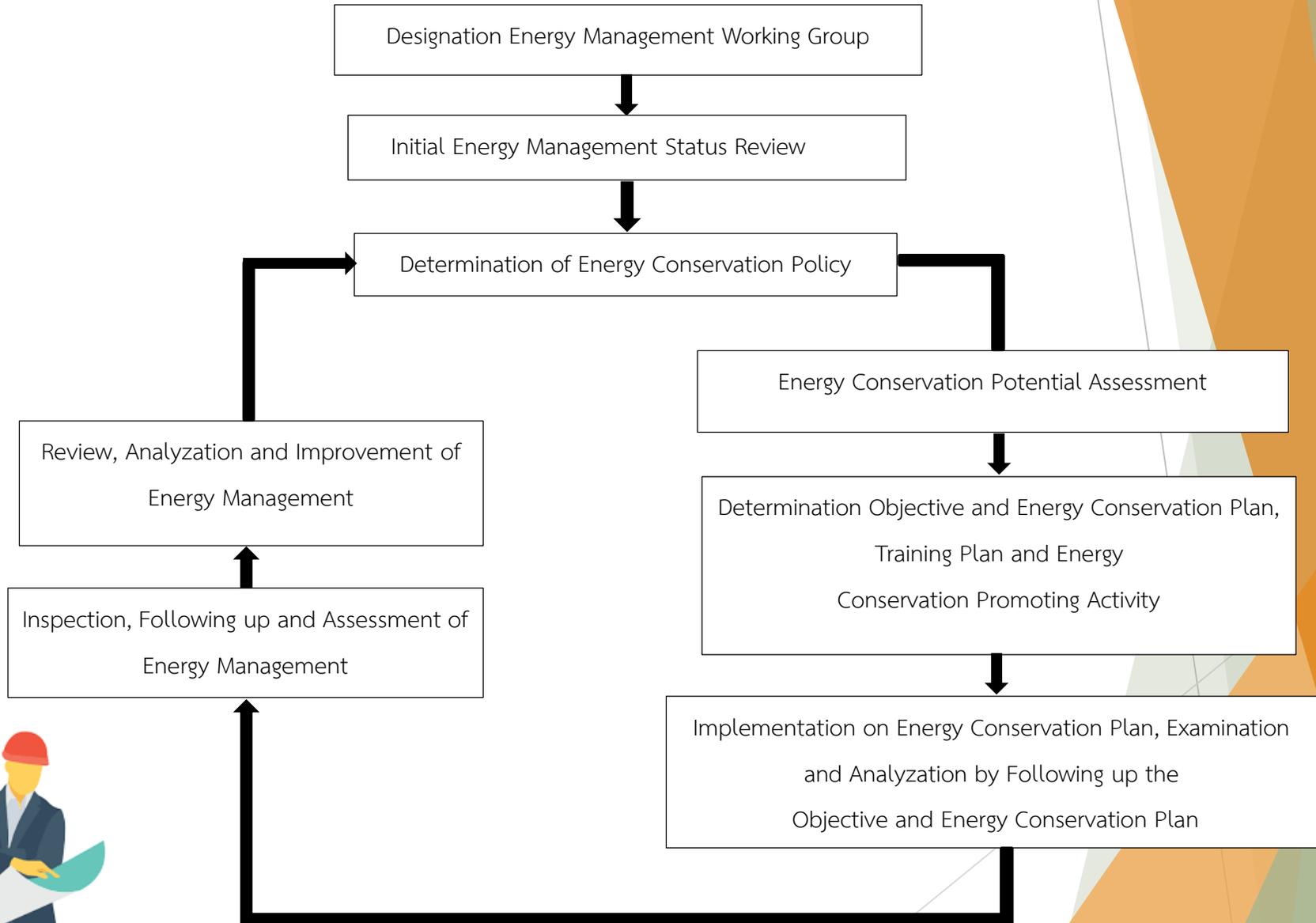
including numbers of Energy Managers and Auditors

Thailand has the designated factories or buildings according to Energy Conservation Promotion Act, B.E. 2535 (1992) (Amended) B.E. 2550 which shall become effective in 120 days after it is published in the Ministerial Regulation Prescribing Standard, Criteria, and Energy Management Procedures In Designated Factories and Buildings B.E.2552.

According to Ministerial Regulation Prescribing Standard, Criteria, and Energy Management Procedures in Designated Factories and Buildings B.E. 2552 prescribes that Designated Factories and buildings must have energy management procedure in order to cause the most efficiency energy usage, the procedure is provided into 8 steps



Energy Management Procedure (8 steps)





Who is PRE ?



Duty of Personnel Responsible for Energy

- 1) Maintenance and monitoring efficiency of machine and equipment periodically
- 2) Improve energy use following energy conservation measures
- 3) Help owner to conduct energy management system
- 4) Help owner to follow the order of Director General of DEDE



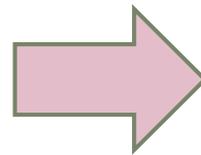
PRE-Building



PRE-Factory

PRE Training Course

- Conventional PRE
 - Factory
 - Building
- Senior PRE
 - Theory
 - Practical



Registered PRE

- ✓ Work in energy conservation measures which are certified by owner
- ✓ Pass PRE Training Course
- ✓ Pass National Test

Personnel Responsible for Energy (PRE)

Number of PRE in Thailand

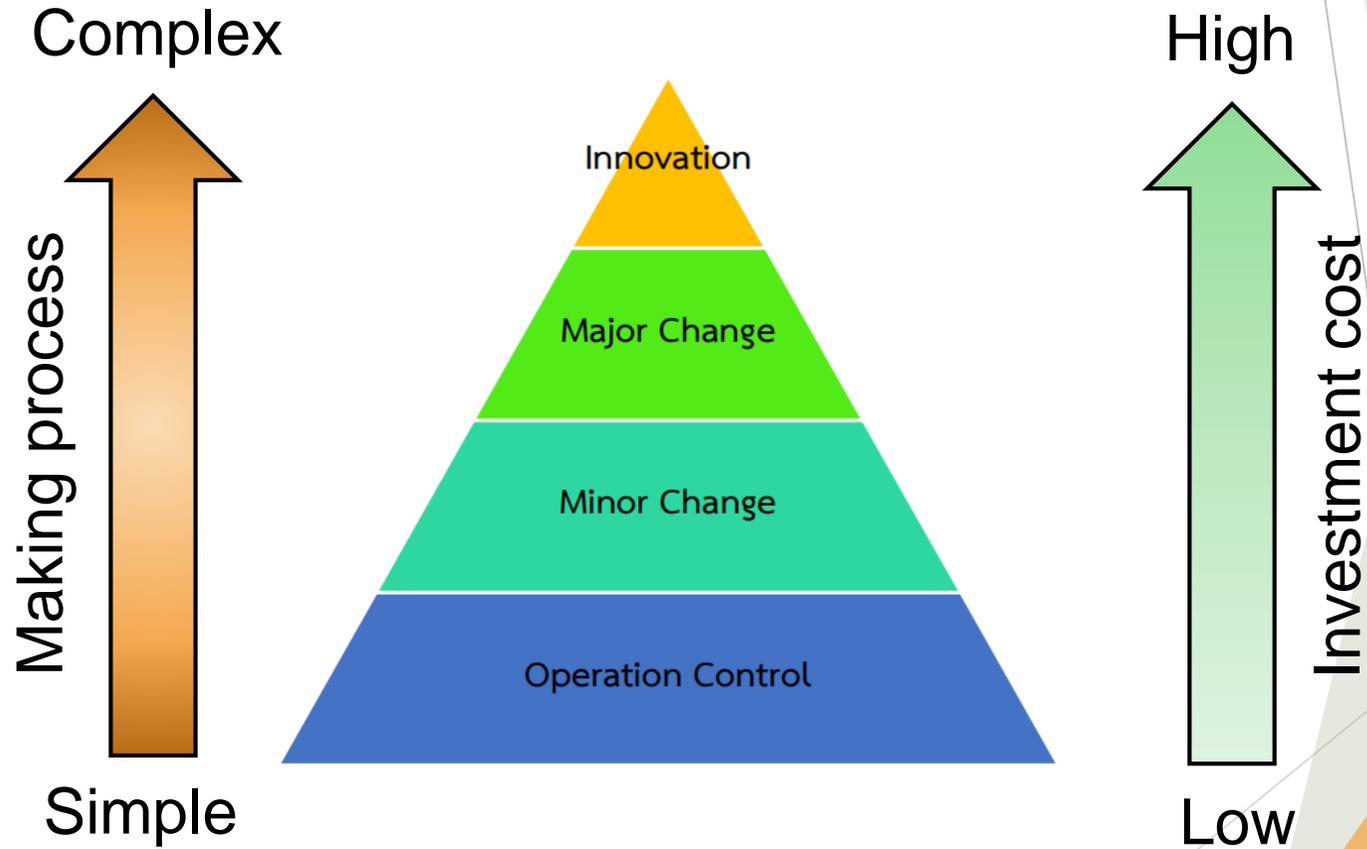
No.	Type	Registered PRE
1	Conventional-PRE (Factory)	9,266
2	Conventional-PRE (Building)	6,391
3	Senior-PRE (Building)	1,054
4	Senior-PRE (Factory)	3,505
Total		20,216

Update: 16 September 2020

The Numbers of External Auditors

Type	Amount	Unit
A number of license in total (Personal 181, Juristic Person 110)	291	licenses
External Energy Auditor team	435	teams
A number of External Energy Auditor in total	1,877	persons
External Energy Auditor Experts	448	persons
External Energy Auditor Expert Assistants	1,429	persons

Energy Efficiency Improvement



THAILAND

Energy Innovation and Technology Awards

2019



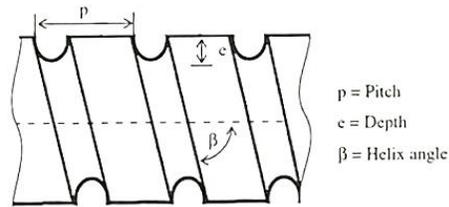
Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

Enhanced Tube

Dimensions of ICT

Number	p (mm)	e (mm)	w (mm)	β (degree)	d_i (mm)	L (mm)
1	5.08	1	Effect of e	79.47	8.7	2000
2	5.08	1.25		79.47	8.7	2000
3	5.08	1.5	Effect of p	79.47	8.7	2000
4	8.46	1.5		74.20	8.7	2000
5	6.35	1.5		76.56	8.7	2000
6	Smooth tube				8.7	2000



(Internally Corrugated Tube)

- Increasing tube surface for Heat Transfer for max. 60%
- Increasing Heat Transfer Coefficient about 50% than the regular tube

Application:

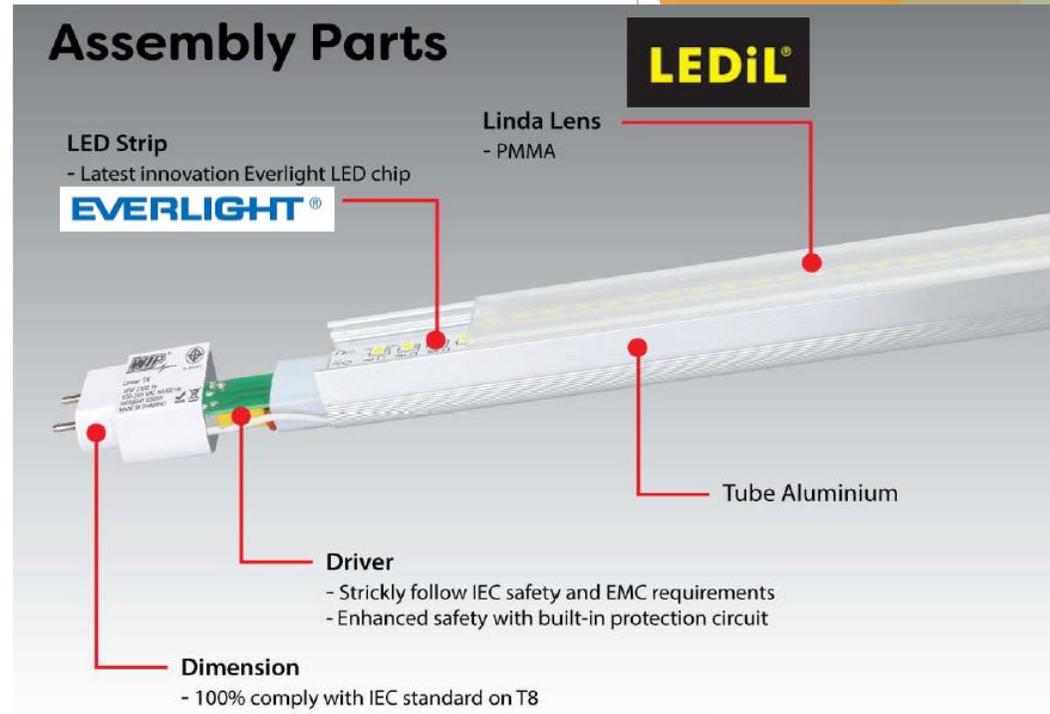
- Replacing the regular tube in Condenser and Evaporator



LED Linear T8

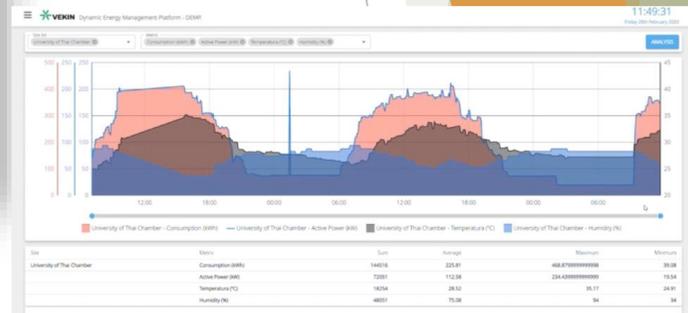
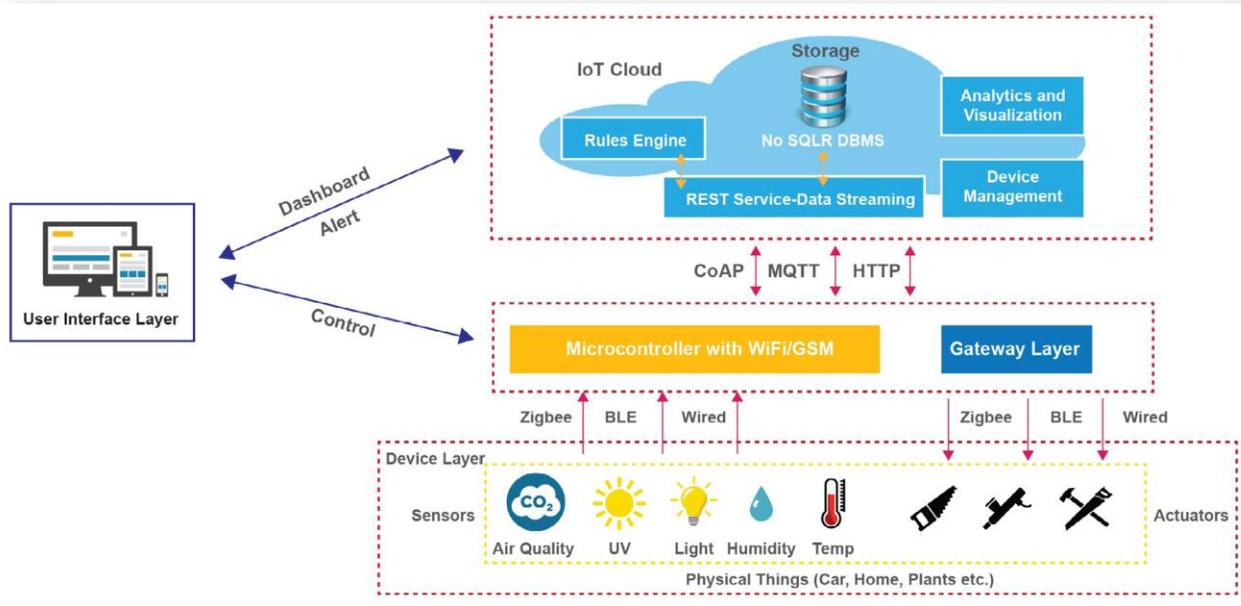


- New designs in LED Strip, Lens and Driver for LED Linear T8 9W
- Using to replace LED T8 16W with result in 50% energy saving while having the same Lux



Details	Units	LED T8 Linear	LED T8
Power	W	9	18
Electricity Consumption	Unit/Year	34	67
Electricity Bills	Baht/Year	135	270
Price	Baht/unit	390	200
Energy Saving	Baht/Year	134.8	
Payback Period	Year	1.4	

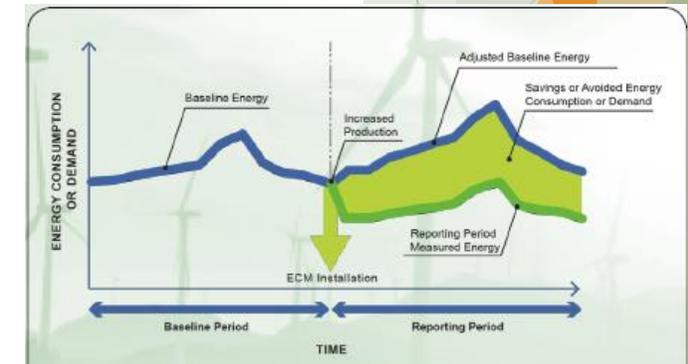
Dynamic Energy Management Platform



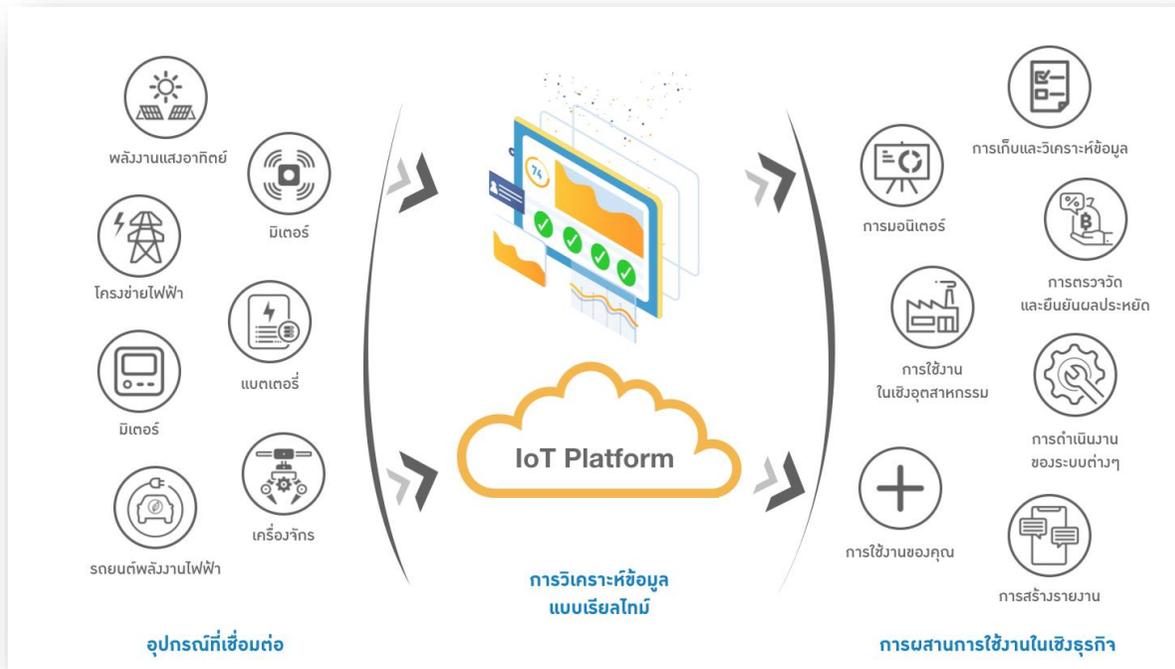
- DEMP
- Master Platform for Energy Management
- Increasing Energy Saving 10-20% per year
- Reducing technology import and promote local innovation

Functions:

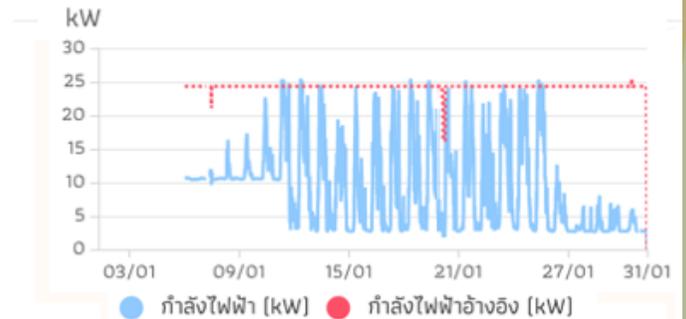
1. Self-Customization
2. Auto-Notifications and Alerts
3. Borderless Connectivity
4. Real-Time Engine
5. Big Data Analysis
6. Cloud-Based/ Mobility
7. Open Source (Open API)
8. Cyber Security



IOT Platform for Energy Efficiency using AI



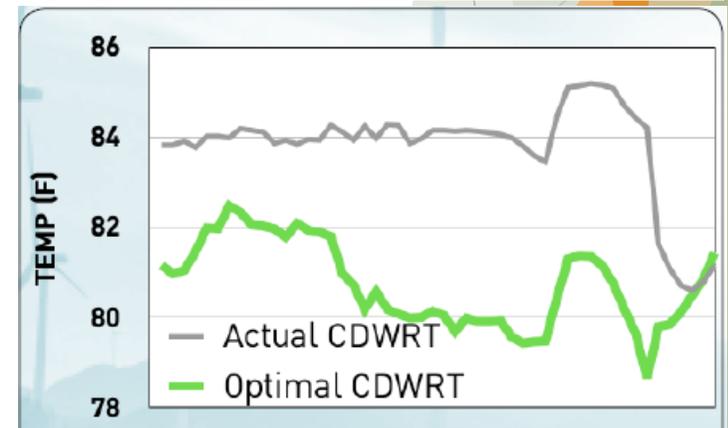
Energy Consumption Reference



Total Saving



- BMS and SCADA Interface
- Integrated with EE and RE
- AI analysis and fault reporting system
- Real Time analysis
- Energy performance optimization
- Increasing Energy Saving and Efficiency



**Thank you
for your attention**

