



Motors Standard & Labeling Program in Thailand

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Ministry of Energy, Thailand



voluntary certification mark



mandatory certification mark





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

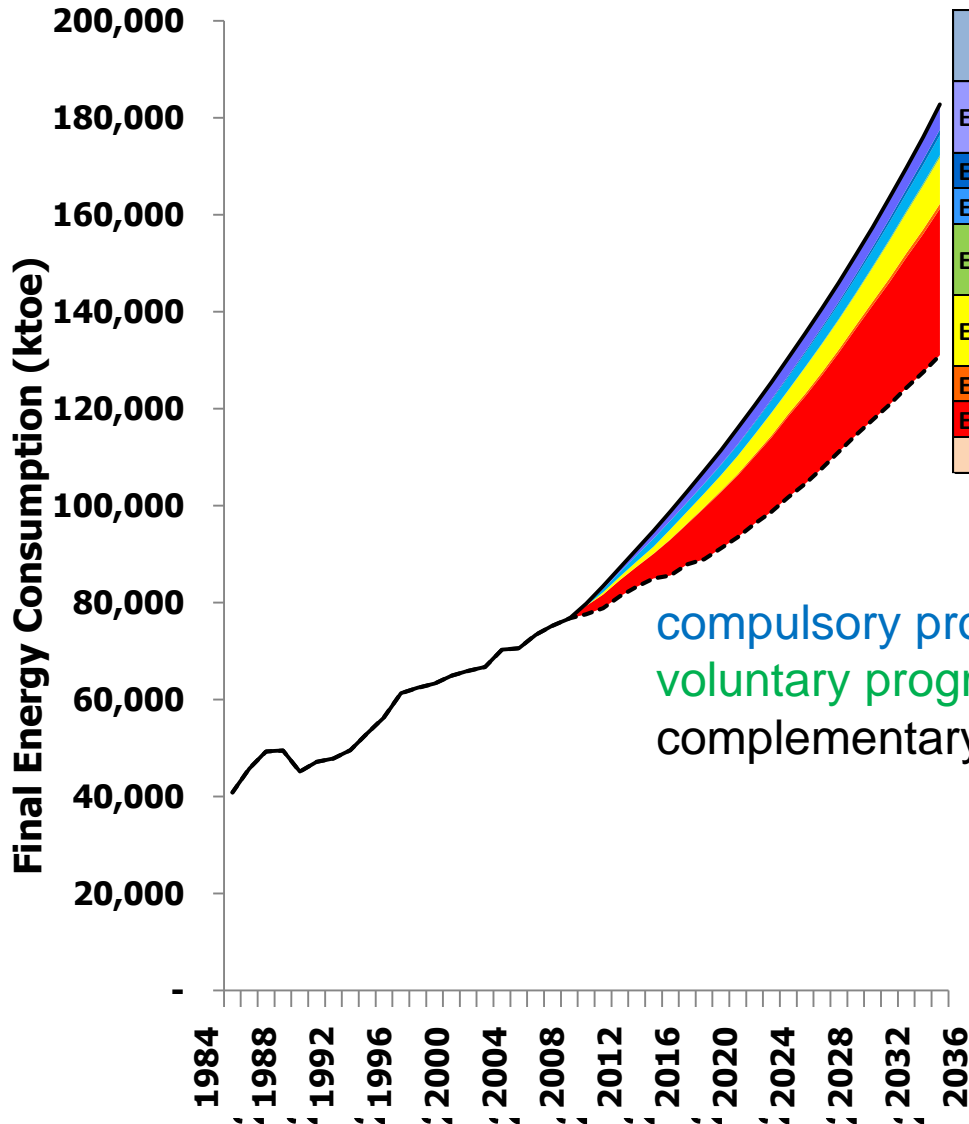
AEDP

GAS

OIL

TIEB

Summary of EEP Target by Measures

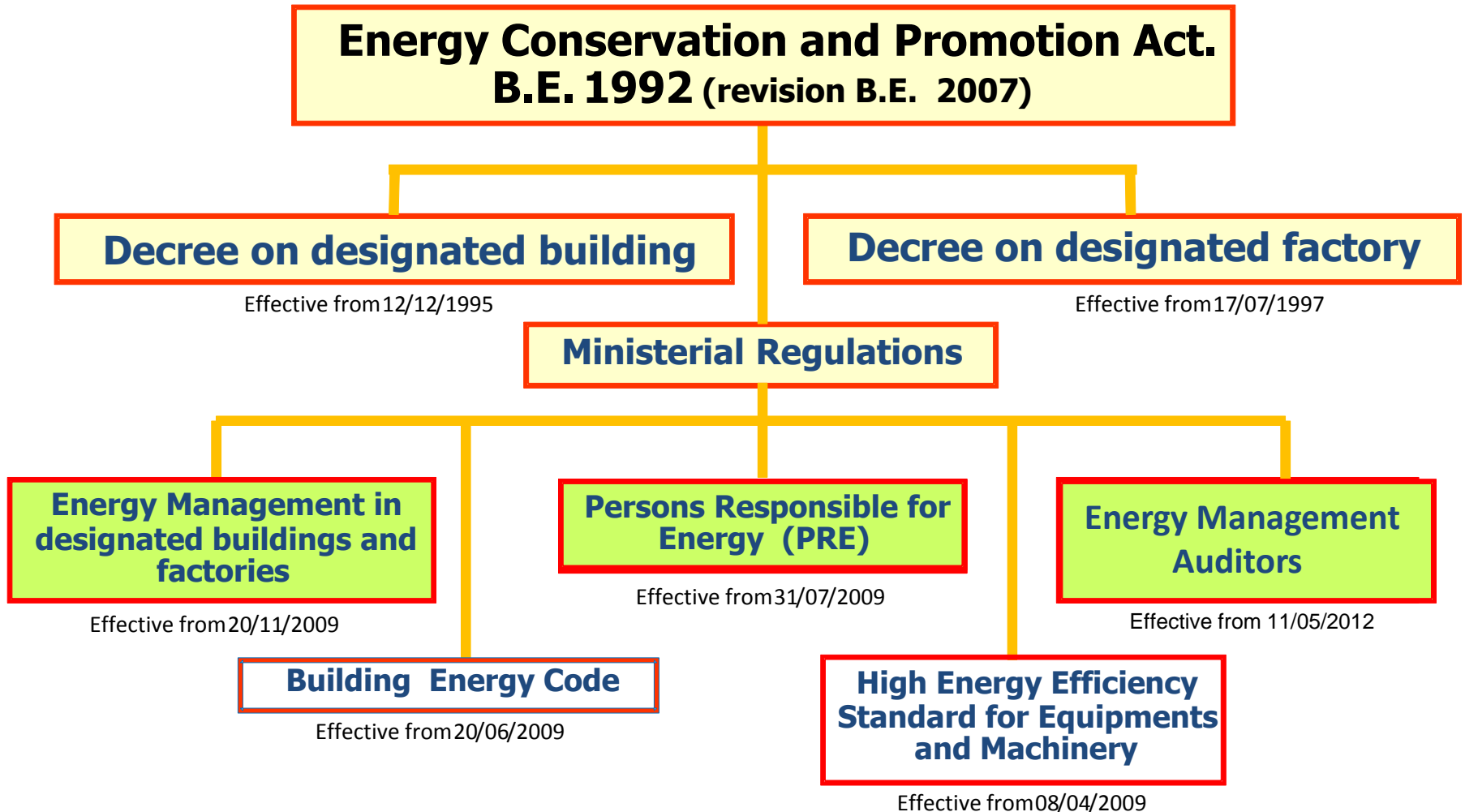


Expected Energy Saving by Economic sector		Total	
		(ktoe)	(%)
EE1	Enforcement of energy conservation standard in designated factory/building	5,156	10%
EE2	Building Energy Code (BEC) for the new buildings	1,166	2%
EE3	Energy Labeling (HEPs & MEPs)	4,149	8%
EE4	Energy Efficiency Resource Standard (EERS) 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%

compulsory program
 voluntary program
 complementary program

Economic Sector

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





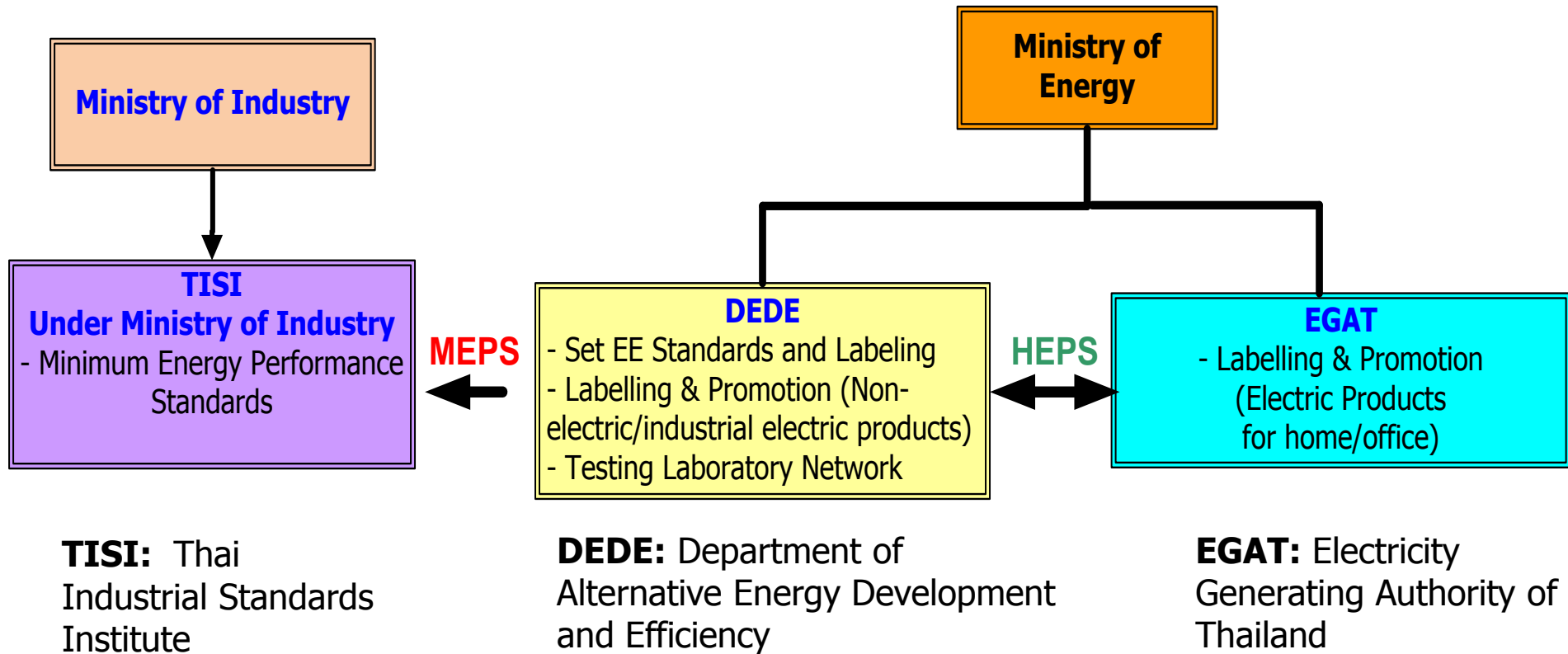
Key improvement of new EE plan

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



Thailand Energy Efficiency S&L Structure for appliances, equipments & material (MEPS & HEPS)



Steering Committee

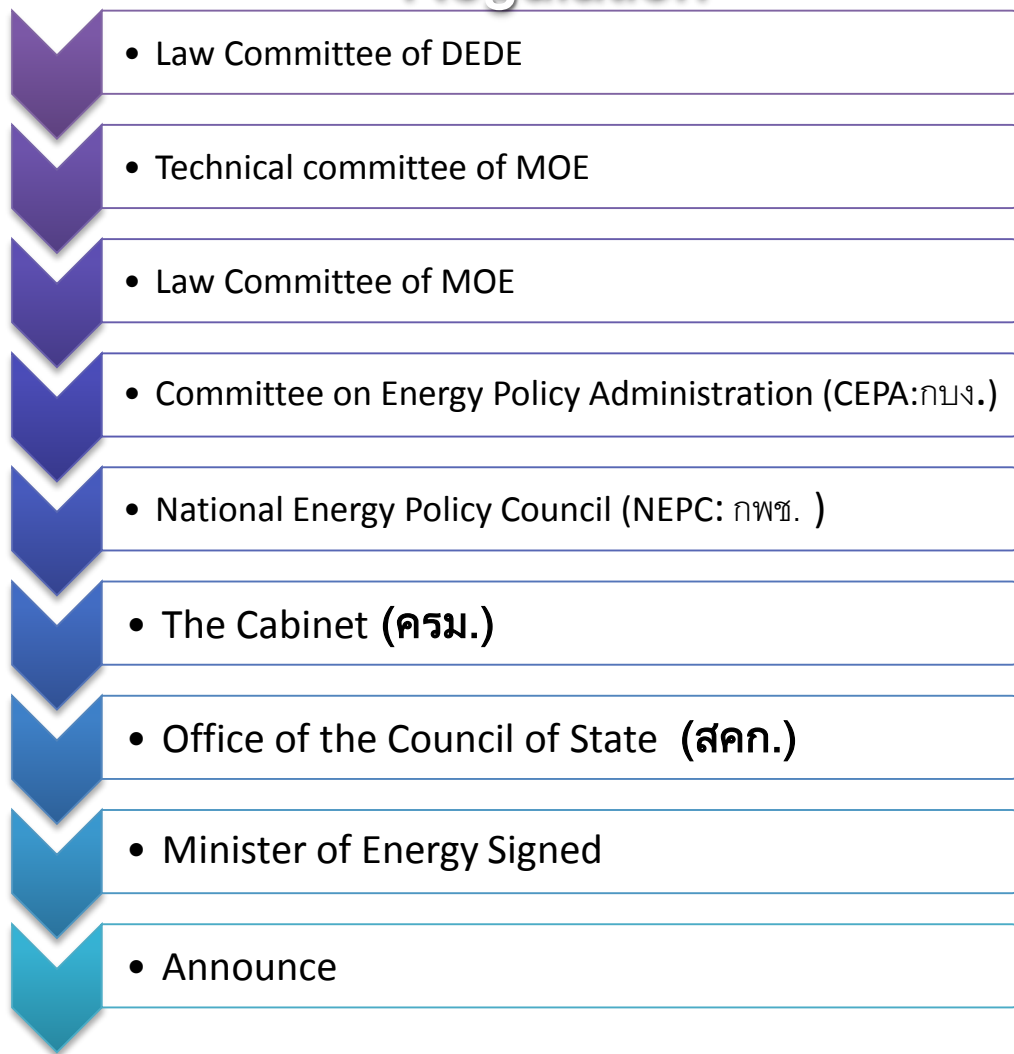
Structure & Duties

Consider

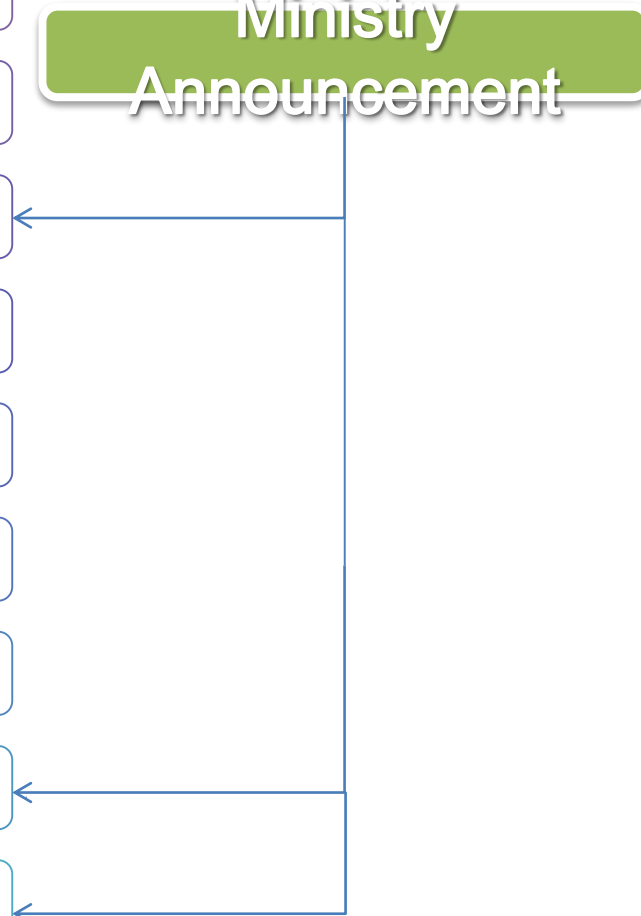


- Data of Marketing / Technical & Set Scope
- Standard test method
- Testing Laboratory
- Type / Size / Number of samples
- Test Result
- Set Criteria for HEPS & MEPS

Ministry Regulation



Ministry Announcement





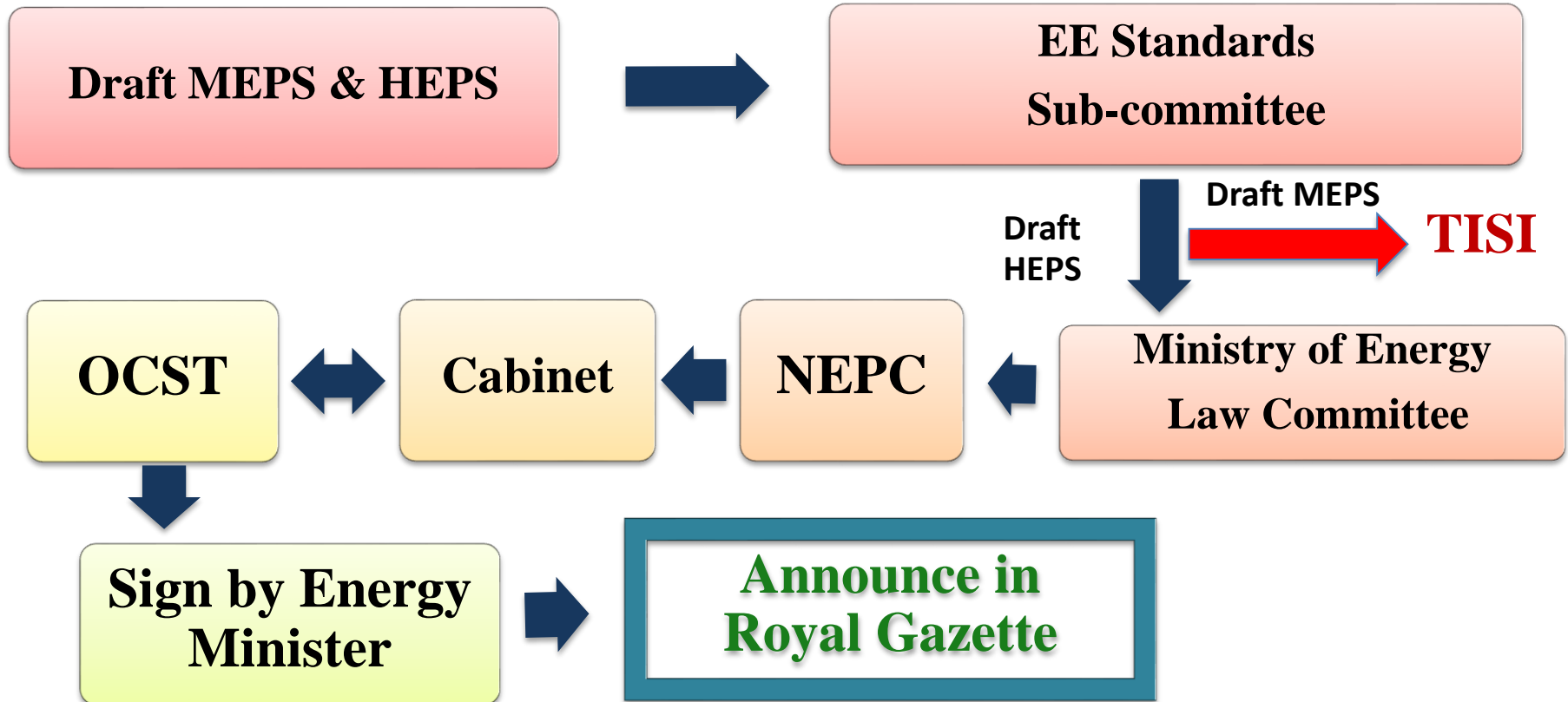
Draft HEPS to be legislated

Approved by:

TISI : Thai Industrial Standards Institute

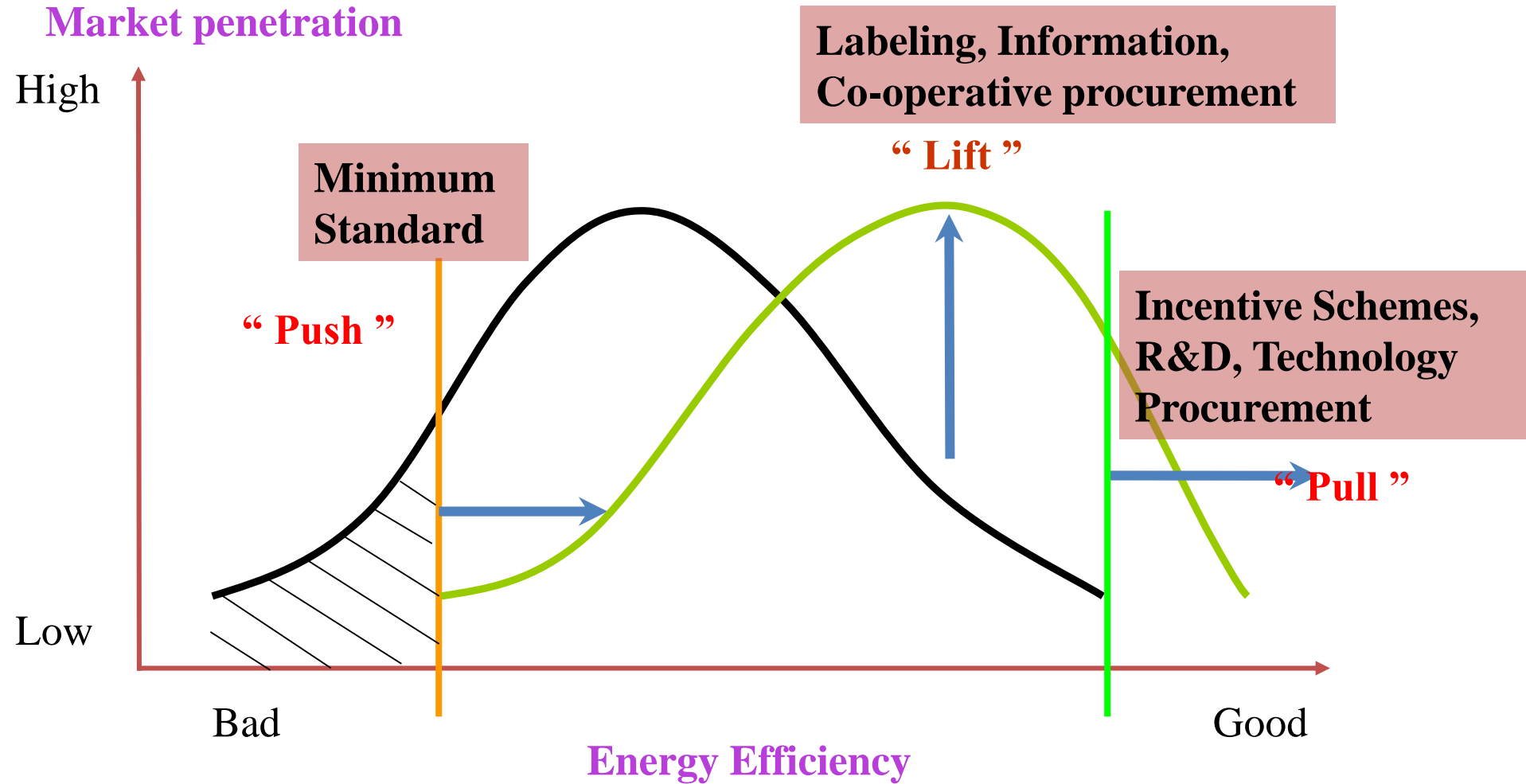
NEPC: National Energy Policy Committee

OCST: Office of the Council of State of Thailand



Market Transformation

Market penetration





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



Labeling for non-electric/industrial electric products



Number 5 is shown the highest efficiency mark

Energy Saving High Efficiency

Percentage of Efficiency Value

Authority

Name of Product



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



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

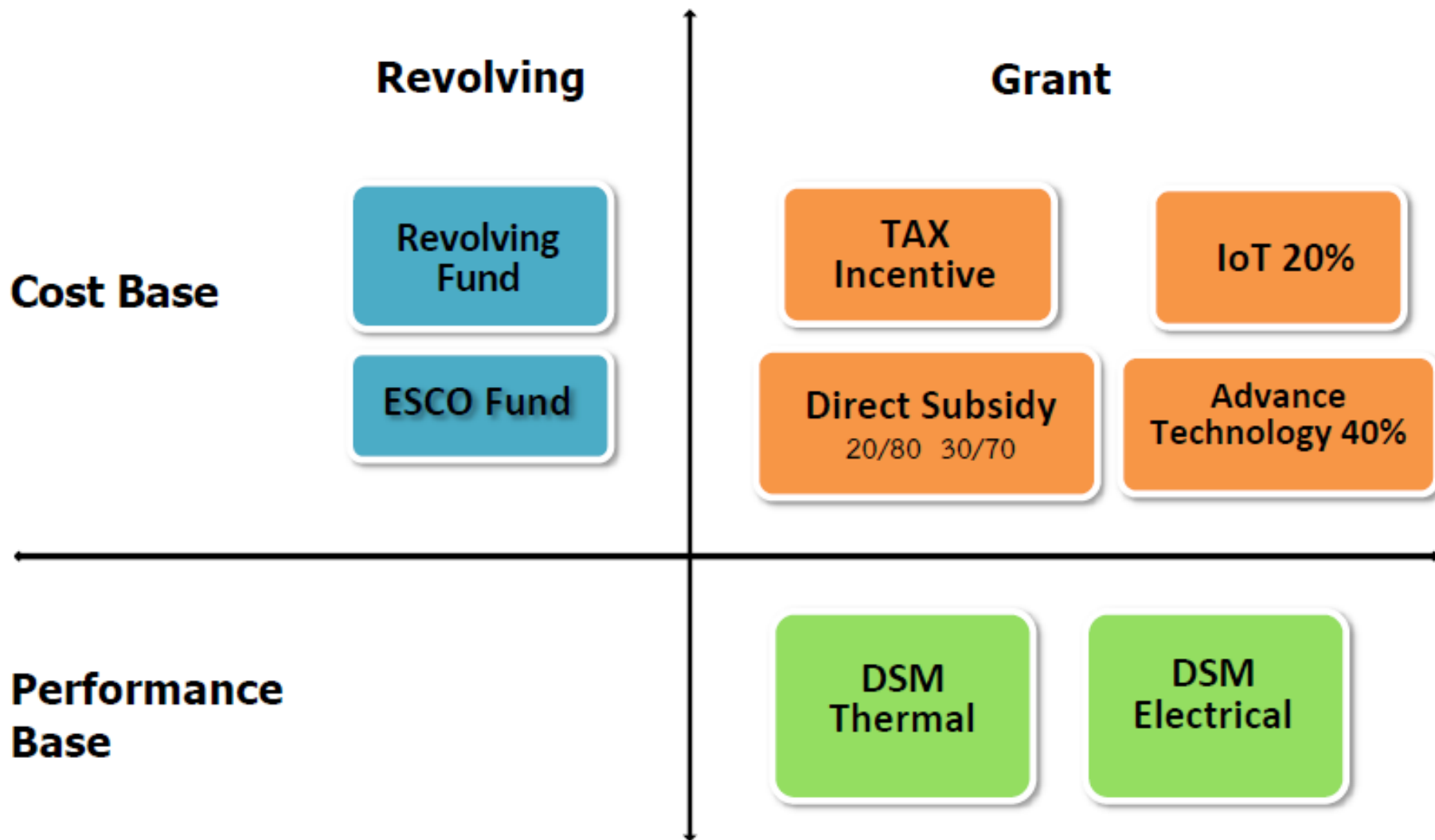


EE Networking

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



Financial Incentive Overview

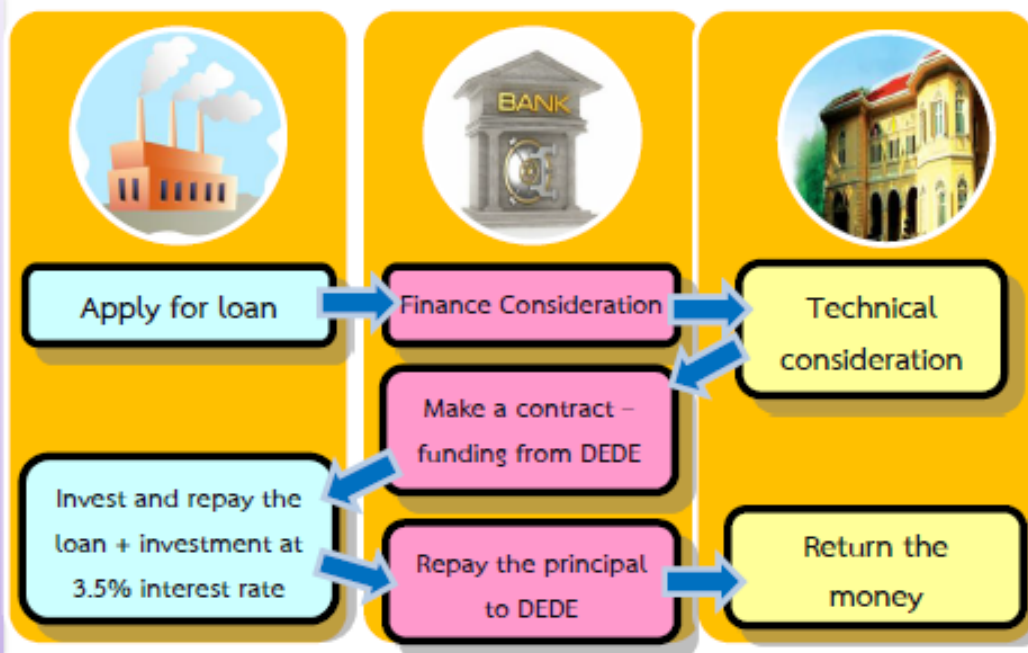




EE5: Financial Incentive – Revolving Fund

Criteria:

- Available for factories/buildings/project developers for both EE and RE (RE ~ 37%)
- DEDE loans the funding via financial institutions to familiarize the bank with EE/RE investment
- Maximum loan of no more than 50M baht with interest rate of no more than 3.5%
- Payback period of 7 years



Phase	# of projects	Total investment (Mbaht)	Investment via ENCON Fund (Mbaht)	Investment via bank/applicant (Mbaht)	Energy saved (ktoe)	Energy saved (Mbaht)
1	78	3,427	1,902	1,525	98	1,805
2	83	3,330	1,735	1,595	99	1,713
3	98	5,878	2,702	3,176	93	2,329
4	12	1,282	377	905	13	421
5	24	2,042	489	1,554	17	539
6	76	1,284	1,215	69	7.3	236
6 (extended)	84	1,681	1,641	40	5.7	276
Total	455	18,924	10,061	8,864	333	7,319





EE5: Financial Incentive – Direct Subsidy

Measure Overview

- **Eligible parties:**
 - Designated buildings and factories
 - SMEs
- **Allocated fund:**
Subsidize for equipment and installation cost
 - **20%** for Designated buildings and factories
 - **30%** for SMEs
- **Supports up to 1,500,000 baht per measure**
- **Payback period no longer than 7 years**

For the 2017's project,

- **494 Applicants 724 Measures**
- **278 million baht subsidized**
- **Energy Saving 15 ktoe**

Examples measures

- ❖ **Installing variable speed motors used with the machine.**
- ❖ **Switching to high-efficiency light bulbs.**
- ❖ **Replacement air compressors, high efficiency**
- ❖ **To improve the power factor.**
- ❖ **Replacing high-performance electric motor**
- ❖ **Insulation**
- ❖ **The use of heat pumps**



80
20



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



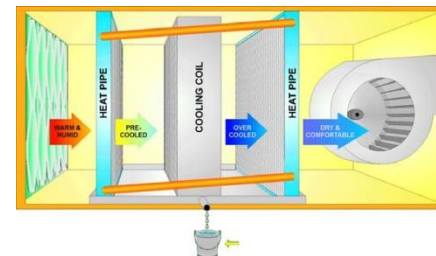
High eff. motor



VSD



LED



Heat Pipe



Heat Pump

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

High Efficiency Motors in Farms



Last 10 years,
- 15 M USD
EE investment in farm
with 5 M USD subsidy
from Gov. mainly
focus on motors.



Thailand New PDP Plan Target

- 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



Stakeholders survey....

Manufacturers/suppliers

- Energy efficiency labeling can affect product performance improvement
- Ready to supply high performance products for the Ministry of Energy in order to do testing and set a benchmark in energy efficiency





Stakeholders survey...

Consumers

- Consumers still do not choose energy-efficient products for the first decision
- If higher income or higher energy prices they will buy high performance products
- The price of high-performance products should not exceed 5 % more expensive





Conclusion...

- Driven strategy depends on domestic politics
- Assessment the cost-benefits of using high performance devices is necessary for a consumer to consider in selecting the appliances.





Thank you...

Department of Alternative Energy Development and Efficiency
Ministry of Energy, Thailand
www.dede.go.th