

# THAILAND

## ENERGY EFFICIENCY GOALS

### 1. GOVERNMENT POLICY ON ENERGY EFFICIENCY

Thailand Integrated Energy Blueprint (TIEB) was specially designed in 2015 to synchronise all the major energy policy related plans into a single comprehensive national plan, aimed to balance economy, ecology and security of the country. TIEB consists of five long-term plans – the Energy Efficiency Plan (EEP 2015); Power Development Plan (PDP 2015); Alternative Energy Development Plan (AEDP 2015); Natural Gas Supply Plan (Gas Plan 2015); and Oil Supply Management Plan (Oil Plan 2015).

EEP 2015 set the target of energy intensity reduction of 30 percent by 2036 (with the base year of 2010) in four major economic sectors including industry, commercial and governmental buildings, residential and transportation. Some of the main measures applied in the plan are:

- Standards for energy conservation and energy management in factories and buildings
- Building standards for new construction for energy conservation
- Standards and labelling of machinery and materials equipment used for energy conservation
- Mandatory standards of energy conservation for manufacturers and distributors
- Assistance and subsidies for operations relating to energy conservation
- Using energy saving lighting system and energy conservation in transportation

### 2. ENERGY EFFICIENCY STRATEGY

EEP 2015 features 10 measures classified into three major categories (compulsory, voluntary, and complementary) targeting all major sectors (industrial, commercial and government, residential, and transport). The measures in the voluntary category contributed to a majority of the energy saving (40,728 ktoe or 79% of total) while the measures in the compulsory (10,971 ktoe, 21%) contributed to the rest.

Thailand also has the Energy Conservation Promotion Act, B.E. 2535 (1992) (amended to No. 2, B.E. 2550 (2007)) to enforce energy conservation, particularly in designated factories and buildings. The act stipulates the duties of owners of designated factories/buildings with regard to energy conservation in their facilities and promotes the use of energy-efficient machinery/equipment as well as materials contributing to energy conservation. The act also establishes penalties for noncompliance with the regulations issued under this act.

### FUNDING

The ENCON Fund was established under the ENCON Act to serve as working capital, grants, or subsidies for implementation of energy conservation programmes in the public and private sectors. The programmes can be in the areas of renewable and alternative energy, R&D projects, human resource development, and public awareness and education. In FY2016, THB 2.7 billion (approximately USD 90 million) was allocated for the energy

efficiency programme. In addition, there are many other financial tools to be used such as energy efficiency revolving fund, tax incentives, joint venture, soft loan and grants.

#### LINKS

Policy and measures on EEP: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/eeep> (pages 3-17)

ENCON fund (2016 balance sheet): <http://www.enconfund.go.th/pdf/56-financial.pdf> (pages 12-13)

### 3. ENERGY EFFICIENCY ACTION PLAN

The 10 measures of EEP 2015 are:

- Measure for designated factories and buildings management
- Measures for buildings standard
- Measure on energy efficiency standard and labelling
- Measure on Energy Efficiency Resource Standards (EERS) for energy/utility producers\
- Measure on financial support
- Measure on the use of LED
- Measure on energy conservation in the transportation sector
- Measure for promotion of education, research and development on energy conservation
- Measure on personnel development in energy conservation fields
- Measure to create public awareness on energy conservation

#### FUNDING

Government funding via the ENCON fund

#### LINKS

Thailand Integrated Energy Blueprint:

[http://www.eppo.go.th/images/Infromation\\_service/journalissue/ISSUE-SPECIAL2559.pdf](http://www.eppo.go.th/images/Infromation_service/journalissue/ISSUE-SPECIAL2559.pdf)

### 4. ENERGY EFFICIENCY, INTENSITY OR EMISSIONS REDUCTION TARGETS

The EEP, ratified by the National Energy Policy Council (NEPC) in 2015, stated an energy intensity reduction target of 30% by 2036 (compared with 2010), equivalent to a decrease of final energy consumption by 56 Mtoe.

Additionally, at the UNFCCC (COP20), Thailand had adopted the goal to reduce greenhouse gas emissions in the transportation and energy sectors by 7%-20% (compared with 2005) in accordance with Thailand Climate Change Master Plan enacted by the Office of Natural Resources and Environmental Policy and Planning (ONEP).

## LINKS

EEP targets: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/EEP> (pages 1-2)

## 5. SECTORAL ENERGY EFFICIENCY TARGETS

The EEP has sectoral energy efficiency targets out to 2036 in ktoe:

Sector	Reduction	Share
Industrial	14,515	28.1%
Commercial + government	4,819	9.3%
Residential	2,153	4.2%
Transport	30,213	58.4%
<b>Total (EEP 2015) covering 2015-2036</b>	<b>51,700</b>	<b>100%</b>
• Energy reduction achieved during 2010-2014	4,442	
<b>Total</b>	<b>56,142</b>	

## LINKS

EEP targets: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/EEP> (pages 6-16)

## 6. LEAD ENERGY EFFICIENCY INSTITUTIONS

## INSTITUTIONAL SETTINGS AND RESPONSIBILITIES

The following departments/entities under the Ministry of Energy of the Royal Thai Government deal with energy efficiency policy and programmes:

- Energy Policy and Planning Office (EPPO) – As the policy and action plan development agency, it examines economy-wide energy conservation policies, management and development plans, and budget allocation. In addition, EPPO also coordinates the follow-up and evaluation of policy implementation outcomes.
- Department of Alternative Energy Development and Efficiency (DEDE) – As the implementation and regulation agency, its duties include promotion, support, and monitoring of energy efficiency and conservation activities. In addition, DEDE also develops energy efficiency standards and research as well as information dissemination for awareness and training.

## STAFF AND BUDGET

No estimation of staffing numbers since there are many organisations involved directly and indirectly with these programmes.

## BUDGET USE

Information on the daily operation budget is not available.

## LINKS

Energy Policy and Planning Office: <http://www.eppo.go.th/index.php/th/>

Department of Alternative Energy Development and Efficiency: <http://weben.dede.go.th/webmax/>

## 7. OTHER ENERGY EFFICIENCY AGENCIES

- National Energy Policy Council (NEPC) – It is responsible for the oversight of energy agencies to ensure that they operate in accordance with the provisions specified in the ENCON Act (1992) and the management of the Energy Conservation Promotion Fund (ENCON Fund).
- Electricity Generating Authority of Thailand (EGAT) – This is the owner-operator of power generation, transmission, and distribution systems. It includes a Demand-Side Management Office to promote energy conservation, especially in electrical appliances through standard and labelling schemes. The EGAT is also a significant player in encouraging energy efficiency in major industries via energy service companies (ESCOs).
- Energy Conservation Centre of Thailand (ECCT), established in 1987 (pursuant to a cabinet resolution) as an agency to promote energy conservation activities in the economy, is responsible to provide technical expertise and services in energy conservation by working closely with DEDE.

## LINKS

NEPC: [http://www.eppo.go.th/images/policy/PDF/docs/p01\\_EnergySectorManagement.pdf](http://www.eppo.go.th/images/policy/PDF/docs/p01_EnergySectorManagement.pdf)

Electricity Generating Authority of Thailand:

[https://www.egat.co.th/en/index.php?option=com\\_content&view=article&id=149&Itemid=186](https://www.egat.co.th/en/index.php?option=com_content&view=article&id=149&Itemid=186)

Energy Conservation Centre of Thailand: <http://www.ecct-th.org/main/aboutus.htm>

## 8. ENERGY EFFICIENCY INFORMATION DISSEMINATION

There are several information dissemination activities including:

- Production of a series of television commercials on energy saving methods and their benefits.
- Dissemination of energy conservation issues through various types of media (newspapers, magazines, energy talks via television programmes, etc.).
- Energy mobile units undertaken by regional energy offices.

- Energy camps for students.
- Plays and cultural shows based on energy conservation themes
- Establishment of energy information centre to disseminate materials, posters, and other printed materials regarding issues related to energy conservation and renewable energy.

## LINKS

Information dissemination efforts under the Energy Efficiency Development Plan (2011 – 2030): [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (pages 42, 74)

## 9. ENERGY EFFICIENCY AWARENESS RAISING

Public Awareness (PA) Creation and Behavioural Change, comprising three measures as follows:

- Public relations and provision of knowledge about energy conservation to the general public, via the teaching/learning process in educational institutions, fostering youth awareness, and other PA activities; e.g., eco-driving and Thailand Energy Award.
- Putting forth the concept and promoting activities related to the development of low carbon society and low carbon economy, which will bring about cooperation between local administration organizations and the business sector in the planning and implementation of activities that will lead to reduction of GHG emissions and efficient use of energy.
- Determination of energy prices to reflect the actual costs and application of tax measures as an important tool to promote energy conservation with a view to fostering public awareness and changing their energy consumption behaviour.

In 2017, Thailand also launched the "Thailand Energy Efficiency Week 2017". This activity aims to provide networking and business matching opportunity to connect ESCOs with both government sectors and private companies that are interested in developing energy efficiency projects.

### **Energy Conservation Market Stimulation and Promotion via Energy Service Companies (ESCOs)**

ESCOs are firms with the capabilities to provide consultation and expertise regarding energy conservation and renewable energy under energy management contract (EPC). The Ministry of Energy realises their importance and assigns DEDE, in cooperation with the Federation of Thai Industries (FTI), to help promote the utilisation of ESCOs. The stimulation and promotion conducted by DEDE are in the form of awareness promotions through networking and business matching as well as the regulation and improvement of various aspects concerning ESCO standards e.g., Measure and Verification (M&V) methods, Energy Performance Contracts (EPCs), and ESCO Accreditation.

## LINKS

Awareness raising efforts under the Energy Efficiency Development Plan (2011-2030): [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 41-42)

Thailand Energy Award: <http://www.thailandenergyaward.com/TH/home.php>

Thailand Energy Efficiency Week 2017:

<http://www.eco-business.com/press-releases/thailand-energy-efficiency-week-2017-launches-business-matching-event/>

## 10. GOVERNMENT SUPPORTED ENERGY EFFICIENCY TRAINING

The implementation of the Strategic Management Programme for capacity building which is carried out under the ENCON Programme includes the following:

- Policy research to provide recommendations, options or situation overviews comprising several dimensions. Examination of the economic, social, and environmental impacts of energy supply/demand, the findings of which can be used to enhance the Energy Efficiency Improvement Programme or Renewable Energy Development Programme so that the programmes can correspond with the changing situations. The research outcomes can also serve as guides for setting and implementing work priorities and budget allocation.
- Monitoring and management to ensure efficient and effective implementation of the Energy Conservation Programme.
- Special tasks to support and enhance implementation that is of particular importance or urgency.

Additional capacity-building measures and policies aimed at the community include the following:

- Development of curriculum and teaching materials that integrate energy efficiency and the environment into the education system to increase awareness in younger generations.
- Short-term projects/activities (e.g., school recycling banks and energy conservation competitions) to increase participants' knowledge and understanding of energy conservation, stimulate improvement in their energy consumption behaviour, and share their experiences and knowledge with their peers.
- Short-term human resource development and technical visit abroad.
- Undergraduate and post-graduate scholarships (both local and abroad).
- Provision of funds to encourage students in public and private universities to seriously consider research on energy management, energy efficiency, and renewable energy technologies.

In addition, there is also a Bureau of Human Resource Development under DEDE with the following responsibilities:

- Studying, analysing, conducting and developing training courses, media, manuals as well as human resource development in the energy field.
- Establishing standards and criteria for certification for trainers on energy sector.
- Setting action plans and providing training for human resource development concerning alternative energy and energy efficiency technologies, supporting educational Institutions, public and private organisations in personnel training on energy and offering testing knowledge and performances for those personnel who wants to be registered as responsible persons for energy.
- Managing the Energy Technology Learning Centre.

## LINKS

Government supported training under the Energy Efficiency Development Plan (2011 – 2030): [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 42)

Bureau of Human Resource Development under DEDE: <http://weben.dede.go.th/webmax/content/bureau-human-resource-development>

## 11. PRIVATELY OPERATED TRAINING

Human Resources and Institutional Capability Development, comprising two measures as follows:

(11.1) Support for the development of professionals in the energy conservation field to be persons responsible for energy management and operation, verification and monitoring, consultancy and engineering services provision, and the planning, supervision and promotion of the implementation of energy conservation measures.

(11.2) Support for the development of institutional capability of agencies/organisations in both public and private sectors, responsible for the planning, supervision and promotion of the implementation of energy conservation measures.

## LINKS

Support by EPPO on professional development: [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 42)

## 12. GOVERNMENT SUPPORTED RESEARCH & DEVELOPMENT

The government, via the ENCON Fund, supports R&D by allocating more than THB 100 million (approximately USD 3 million) each year for energy conservation technologies. This funding can be accessed by academic institutions, public sector research institutions, and non-profit private institutions. The R&D work under the Energy Conservation Programme must demonstrate its practical application in line with the short-term measures designed for energy efficiency improvements.

## LINKS

Promotion of technology and innovation: [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 42)

# ENERGY EFFICIENCY MEASURES

## 13. COLLECTION AND MONITORING OF ENERGY EFFICIENCY OUTCOMES

The EPPO is entrusted to supervise, monitor and evaluate the implementation of national energy policies and energy management plans. The Alternative Energy and Efficiency Information Centre under DEDE also has the responsibilities to collect and analyse the energy efficiency data with the following key tasks:

- Surveying, studying, analysing, conducting, and administrating Information on alternative energy and energy efficiency.

- Disseminating statistical information on alternative energy and energy efficiency.
- Conducting and managing DEDE's Information system

#### LEGAL POWER

Under the energy acts and regulation, EPPO is empowered to collect energy data from related organisations to monitor and evaluate the implementation of national energy policies and energy management plans.

#### LINKS

NEPC Act B.E. 2535, 2550, 2551: <http://www.eppo.go.th/index.php/en/related-laws/acts-royal-ordinance>

### 14. EVALUATION OF ENERGY EFFICIENCY PROGRESS OR POTENTIAL

The evaluation of the energy efficiency progress is included as a part of the action plan monitoring report issued on a quarterly basis by EPPO.

#### LINKS

Quarterly report on EPPO activity progress: [http://www.eppo.go.th/index.php/th/plan-policy/evaluation/eva-operate?orders\[publishUp\]=publishUp&issearch=1](http://www.eppo.go.th/index.php/th/plan-policy/evaluation/eva-operate?orders[publishUp]=publishUp&issearch=1)

### 15. SELF-EVALUATION OF ENERGY EFFICIENCY PROGRAMMES

No information available.

### 16. CROSS-SECTOR ENERGY EFFICIENCY INITIATIVES

#### **High Energy Performance Standards and Labelling (HEPS)**

##### OBJECTIVE

To educate public on the energy efficient appliances/equipment and simultaneously build awareness of the energy efficiency in the consumer sector.

##### OUTLINE

Thailand established HEPS, known as the Energy Efficiency Labelling No. 5 Programme, on a voluntary basis. It seeks to inform consumers that No. 5 labelled appliances/equipment are highly energy efficient and can help reduce their electricity bills. This will also enhance competition among manufacturers and further improve the energy efficiency of their products. This programme, in operation since 1993, applies to the industrial, commercial, and residential sectors. The project finances and budget allocation come from various sources, including GEF grants and the Australian Government (1993–2000), concessional loans from the JBIC (OECD) (1994–2002), reimbursements through the Automatic Electricity Tariff Adjustment Mechanism (Ft) (1993–2000), and since 2000, reimbursement through the base tariff (in EGAT's annual budgeting).

The programme's main purpose is to provide consumers with better awareness regarding the importance of energy-efficient appliances and equipment, especially when making purchasing decisions. Thus, it will gradually help to remove low energy-efficient products from the market. The labelling of appliances is the responsibility of EGAT, which has labelled 19 types of typical household appliances.

In 2015, Thailand established another energy efficiency labelling programme for non-appliances on a voluntary basis, under the responsibility of DEDE. Currently, there are eight labelled products including liquefied petroleum gas (LPG) cooking stoves (low-pressure), LPG cooking stoves (high-pressure), glazing panes, three-phase motors, variable speed drives, fiberglass insulation, small diesel engines, and small gasoline engines.

#### LINKS

HEPS programme and structure:

[http://www.dede.go.th/ewtadmin/ewt/dede\\_intra/ewt\\_dl\\_link.php?nid=125&filename=innovation55](http://www.dede.go.th/ewtadmin/ewt/dede_intra/ewt_dl_link.php?nid=125&filename=innovation55)

### **Promoting Use of Light Emitting Diode (LED)**

#### OBJECTIVE

To replace the traditional fluorescent bulb with LED to reduce energy consumption.

#### OUTLINE

It is estimated that LEDs can save approximately 50% in energy consumption (equivalent to 928 ktoe) with a longer service life when compared to that of the fluorescent light bulbs. Other than replacing these traditional light bulbs with LEDs, the project also aims to use monetary measures to expedite the affordability of LEDs.

The initial stage of the plan is to use LEDs for streetlights (3 million bulbs) and in governmental buildings (3 million bulbs) with the price subsidy mechanism.

#### LINKS

Promoting Use of LED: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep> (page 4)

### **Stand-alone PEA Renewable Energy and Energy Efficiency Project**

#### OBJECTIVE

Improve energy efficiency.

#### OUTLINE

The Provincial Electricity Authority (PEA) is collaborating with the Forest Industry Organisation (FIO) to invest in a pilot biomass power-generation project (using biomass residuals from FIO plantations) in order to scale up to approximately 100 sites (approximate total capacity of 100 MW) in the next five years, in addition to associated transmission lines and substations. The PEA also includes a plan to improve the energy efficiency of streetlights on highways, with private participation by ESCOs.

In addition, the PEA includes a Master Plan for Energy Conservation that focuses on the following: energy conservation projects for public and street lighting; energy efficiency for PEA buildings (air conditioning and lighting); and consulting services in energy management for PEA customers. The PEA estimates a reduction in energy consumption of at least 300 GWh per year, which is equivalent to THB 750 million (approximately USD 23 million). The financing structure of the energy efficiency activities includes the following items: a public-private partnership scheme to finance energy-efficient street lighting; the turn-key method for building retrofitting; and normal energy efficiency consultancy services for PEA customers.

## LINKS

PEA plans on improving energy efficiency: <http://www.pea-encom.com/index.php?mo=10&art=41906580>

## 17. INDUSTRY ENERGY EFFICIENCY INITIATIVES

### **Minimum Energy Performance Standards and Labelling (MEPS)**

#### OBJECTIVE

To prevent the production and import of sub-standard and non-efficient equipment.

#### OUTLINE

With collaboration between DEDE and Thailand Industrial Standard Institute (TISI), Minimum Energy Performance Standards (MEPS) were implemented on the basis that only the equipment with high standard is eligible for certification marks. The certification schemes include mandatory and voluntary certification options for different product classes. Mandatory certification is required for air conditioners and refrigerators, while voluntary certification is optional for the following types of equipment:

- Lighting: Double-capped fluorescent lamps, self-ballasted lamps, single-capped fluorescent lamps, magnetic ballasts, and electronic ballasts.
- Appliances: Microwaves, rice cookers, electric ovens, electric kettles, irons, and LPG cooking stoves.
- Three-phase motors and water pumps.
- Fiberglass insulation.
- Diesel engines and motorcycles.

## LINKS

MEPS: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep> (page 4)

### **Energy Efficiency Resources Standard (EERS)**

#### OBJECTIVE

To involve the electric service sector in promoting energy efficiency awareness and performance for their customers.

#### OUTLINE

Electric utility companies, under the revised Energy Efficiency Plan (EEP 2015), must help their customers reduce their energy consumption. While the specifics of the measure are still under consideration, the measure is expected to reduce final energy consumption by 0.3%.

## LINKS

EERS: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep> (page 4)

## 18. TRANSPORT ENERGY EFFICIENCY INITIATIVES

### **Improvement of Energy Efficiency of Motor Vehicles**

#### OBJECTIVE

To assess energy efficiency improvement potential of motor vehicles.

#### OUTLINE

Thailand has a large untapped energy conservation potential in the transport sector, as reflected by the expected energy savings of more than 30,000 ktoe over the course of EEP 2015. The measures that will be implemented in the transport sector consist of the following:

- Remove subsidies from fossil fuels, allowing the market prices to reflect the true cost.
- Implement CO<sub>2</sub> emission-based excise tax for cars.
- Increase efficiency in cars/trucks/buses via energy labelling for tires, eco-driving techniques, and logistics management.
- Improve infrastructure e.g., double-track railway and elevated transit systems.
- Implement pipeline transport of fuels.

#### LINKS

Improvement of Energy Efficiency of Motor Vehicles:

[http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (pages 28-29)

### **Energy Efficiency Improvement by Shifting the Modes of Travel and Goods Transport**

#### OBJECTIVE

To assess energy saving potential as a result of a travel and goods transport mode shift.

#### OUTLINE

Private cars consume 2.8 and 5.5 times more energy than buses and public rail systems respectively and freight trucks consume 3.1 times more energy than water freight and about 10 times higher than rail.

The assessment of energy saving potential is divided into two zones: urban and intercity. For the urban zones, the assessment is made with reference to the outcomes of relevant studies commissioned by the Office of Transport and Traffic Policy and Planning (OTP), Ministry of Transport:

- The Mass Rapid Transit Master Plan in Bangkok Metropolitan Region: M-MaP,
- The Report on Integrated Plan of Bus Rapid Transit (BRT) System Routing Network in Bangkok Metropolitan Region.

- The Project on Master Plan and Preliminary Design of Mass Transit System for Chiang Mai City, in which comparisons of travel modes are made under the Base Case.

#### LINKS

Energy Efficiency Improvement by Shifting the Modes of Travel and Goods Transport:

[http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 29)

### **Energy Efficiency Improvement by Travel Demand Management (TDM)**

#### OBJECTIVE

To apply TDM to improve the travel behaviour and travel demand to be more energy efficient.

#### OUTLINE

TDM measures fit into three groups:

- Measures supporting travel modes with high transport vehicle occupancy such as the provision of “Park-and-Ride” areas in the suburbs increase in convenience to connect mass transit systems with other transport systems and discounts on public transport system fees during off-peak hours.
- Measures creating incentives to reduce travel demand such as:
  - Charges for the use of roads (“road pricing”) in heavily congested areas.
  - Limitation of car-parking areas or collection of high parking fees in city central areas.
  - Annual license plate taxation according to the distance travelled per year.
  - Prohibition of driving into inner-city areas on odd/even dates based on car plate numbers.
- Measures promoting alternative activities to reduce traveling such as working from home.

#### LINKS

TDM: [http://www.eppo.go.th/images/POLICY/ENG/EEDP\\_Eng.pdf](http://www.eppo.go.th/images/POLICY/ENG/EEDP_Eng.pdf) (page 29)

## 19. BUILDING ENERGY EFFICIENCY INITIATIVES

### **Compulsory Energy Management Programme for Designated Buildings and Factories**

#### OBJECTIVE

Assess the energy consumption characteristics in the commercial building and residential sector (both large and small commercial buildings and residential) and plan energy conservation potential programmes.

## OUTLINE

Buildings and factories with installed electricity meters of over 1000 kW, consume more than 20 TJ of energy per year, or with total transformer capacity of 1,175 kVA or more are required to implement energy management systems as prescribed in the regulations. An energy management report must be submitted to DEDE in March of each year (implemented since 2010). The energy efficiency improvements expected from the implementation of these energy management systems are around 5%–10%.

## LINKS

Compulsory Energy Management Programme for Designated Buildings and Factories:

<http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep> (page 3)

## Building Energy Code (BEC)

### OBJECTIVE

Project to improve energy efficiency in the design/construction of new/retrofitted buildings that occupy more than 2,000 m<sup>2</sup>.

### OUTLINE

A mandatory energy code has been set under the Ministerial Regulation Prescribing the Type or Size of Building and Standards, Criteria and Procedures for Designing Buildings for Energy Conservation, B.E. 2552 (2009). The code was set for major energy systems, including the building's envelope, lighting, air conditioning and heating system, to promote the concept of energy efficiency design as well as the utilisation of highly-efficient equipment and materials. In practice, the regulation will be initially applied to new/retrofitted buildings that occupy more than 10,000 m<sup>2</sup> to ensure regulation suitability and provide the time for adaptation. The regulation will be applied to smaller buildings (2,000 m<sup>2</sup>) over the next five years. This programme is expected to save approximately 10%-20% of energy, compared to conventional designs.

## LINKS

BEC: <http://www.eppo.go.th/index.php/th/plan-policy/tieb/eep> (page 3)

Coordinating Centre for BEC Design: <http://www.2e-building.com/index.php>

## 20.ENERGY EFFICIENCY COOPERATION

### COOPERATION AGREEMENTS WITH OTHER ECONOMIES OR ORGANISATIONS

Thailand has established close relationships in energy efficiency in the areas of capacity-building and technical assistance with neighbouring economies, such as Lao PDR, Cambodia, Myanmar, Malaysia and Vietnam.

### BILATERAL, REGIONAL OR MULTILATERAL COOPERATION AGREEMENTS

No information.

## 21. OTHER ENERGY EFFICIENCY EFFORTS

There is financial support from designated banks to support energy audits and investments in energy efficiency for university compounds, hospitals, and public buildings through the ENCON Fund. Other energy efficiency programmes also involve joint studies, R&D, and promotional activities to enhance the efficient use of energy in the transport, industrial, and household sectors as well as capacity-building and development of personnel dealing with energy efficiency improvement projects/activities through academic conferences, seminars, training, and technical visits. The latter activities include scholarships to pursue further study at the bachelor's, master's and Ph.D. levels, through the ENCON Fund.

### LINKS

ENCON fund: <http://iepd.iipnetwork.org/policy/energy-conservation-promotion-fund-encon-fund>