Policy and Plan on Energy Conservation in Thailand

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Ministry of Energy
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Promotion of Energy Conservation in Thailand

Energy Conservation Promotion Act

- Established in 1992
- Royal decrees for designated factories and buildings
- Ministerial regulations for designated factories and buildings to implement energy conservation measures

Energy Conservation Promotion Fund (ENCON Fund)

- Established under the Energy Conservation Promotion Act
- The government tool to promote energy conservation, energy efficiency and renewable energy development
Energy Conservation Program

Policy and Strategy

1. Energy Efficiency Improvement Program
   - Industrial & Commercial Sector
   - Government Sector
   - Transportation Sector
   - Energy Consumption Management
   - R&D and Demonstration

2. Renewable Energy Development Program
   - Biodiesel & Gasohol
   - Biomass
   - Biogas
   - Solar Energy
   - Wind Energy & Hydropower
   - R&D and Demonstration

Supportive Program
- Human Resources Development
- Public Relations
- Administration and Management
Energy Conservation Program

Phase 1: 1995 - 1999
Phase 2: 2000 - 2004
Phase 3: 2005 - 2011
Phase 4: 2012 - 2016
Energy Conservation Program;
Phase 4 (2012 - 2016)

**Energy Efficiency Improvement Program**
1.1 EE Projects Operating
1.2 Research & Development
1.3 Demonstration & Initiation
1.4 Public Relations
1.5 Human Resources Development
1.6 Environmental Problems Concerns

**Renewable Energy Development Program**
2.1 RE Projects Operating
2.2 Research & Development
2.3 Demonstration & Initiation
2.4 Public Relations
2.5 Human Resources Development
2.6 Environmental Problems Concerns

**Strategic Management Program**
3.1 Education Support
3.2 Research & Development
3.3 Training
3.4 Meeting & Conference
3.5 Advertising
3.6 Information Dissemination
3.7 Public Relations
3.8 Administration & Management

Department of Alternative Energy Development and Efficiency

MINISTRY OF ENERGY

Energy Policy and Planning Office

MINISTRY OF ENERGY
Thailand’s Policy on Energy Conservation

From the Policy Statement delivered by PM Yingluck Shinawatra to the National Assembly on 23 August 2011

Promote and Drive Energy Conservation

through reduction of energy intensity by 25% within the next 20 years as well as comprehensive development and improvement. The use of high energy-efficiency equipment and buildings will be promoted, while Clean Development Mechanism (CDM) will be used to reduce greenhouse gas emissions and to tackle global warming. Consumer awareness of economical and efficient use of energy will be raised systematically and continuously in order to save energy in the manufacturing, transport and household sectors.
20 years Roadmap for Thailand’s Energy Efficiency

Phase 1
1995 - 1999

Phase 2
2000 - 2004

Phase 3
2005 - 2011
2012 - 2030
Thailand 20-Year Energy Efficiency Development Plan

(2011 - 2030)
Thailand 20-Year Energy Efficiency Development Plan

Energy Conservation Target (as per the present government policy statement on August 23rd, 2011)

- A target to reduce energy intensity by 25% in 2030, compare with that in 2010
- The reduction of final energy consumption 38,200 ktoe in 2030

**BAU Case**

- With EE Plan

<table>
<thead>
<tr>
<th>Annual Average Growth Rate (2010-2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (*NESDB, November 29th, 2011)</td>
</tr>
<tr>
<td>Population</td>
</tr>
</tbody>
</table>

*GDP\textsubscript{2030} at constant price 1988 = 355 billion Dollars (Exchange rate at 30 Baht/1 U.S. Dollar)

*Office of the National Economic and Social Development Board

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1.7 ktoe/billion baht

15.6 ktoe/billion baht

25% Reduction

11.7 ktoe/billion baht

162,715 ktoe

124,515 ktoe

38,200 ktoe

15.6

11.7

25% Reduction

With EE Plan

BAU Case

GDP (*NESDB, November 29th, 2011) 4.3%

Population 0.3%
Focus is placed on **4 key economic sectors.**

<table>
<thead>
<tr>
<th>Economic Sector</th>
<th>Specified Target (ktoe)</th>
<th>Saving (ktoe)</th>
<th>Budget (million Baht)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>15,100</td>
<td>15,323</td>
<td>13,010*</td>
</tr>
<tr>
<td>Industry</td>
<td>16,100</td>
<td>16,257</td>
<td>69,066</td>
</tr>
<tr>
<td>Large commercial building</td>
<td>3,600</td>
<td>3,630</td>
<td>19,640</td>
</tr>
<tr>
<td>Small commercial &amp; residential building</td>
<td>3,400</td>
<td>3,635</td>
<td>27,024</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38,200</strong></td>
<td><strong>38,845</strong></td>
<td><strong>128,740</strong></td>
</tr>
</tbody>
</table>

*Exclude investment in the infrastructure construction of transportation sector such as mass transit, double track railway*
## Actual Energy Saving in Recent Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Industry (ktoe)</th>
<th>Building (ktoe)</th>
<th>Transport (ktoe)</th>
<th>Total (ktoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specified target</td>
<td>Actual saving</td>
<td>Specified target</td>
<td>Actual saving</td>
</tr>
<tr>
<td>2011</td>
<td>18.00</td>
<td>305.86</td>
<td>86.00</td>
<td>233.48</td>
</tr>
<tr>
<td>2012</td>
<td>50.00</td>
<td>459.32</td>
<td>184.00</td>
<td>408.32</td>
</tr>
<tr>
<td>2013</td>
<td>429.00</td>
<td>598.88</td>
<td>478.00</td>
<td>521.20</td>
</tr>
</tbody>
</table>

**Industry**

**Building**

**Transport**
The Energy Efficiency Development Plan is now being revised in order to conform to the Thailand Power Development Plan (PDP 2015) and the GDP shown in the 11th National Economic and Social Development Plan (2012-2016).
A target to reduce El by 30% in 2036, compare with that in 2010
## Strategic Issues of the EE Plan (2015-2036)

1. **Employ integrated compulsory measures through laws, regulations and standards, together with promotion through various incentives.**

2. **Employ energy measures which create widespread effects on awareness, behavior change, decision-making of entrepreneurs & market transformation.**

3. **Promote public-private partnership for supporting and implementing energy conservation measures.**

4. **Employ professionals and ESCO, as vital mechanisms, in terms of consultation & implementation of EE projects requiring high technology.**

5. **Increase self-reliance on energy technology to foster technology accessibility, together with promoting high EE products, manufacturers & businesses.**

6. **Escalate the energy efficiency in every economic sector to the international level.**

7. **Promote energy efficiency measures intensively to support the regional energy stability.**
5 Strategic Approaches

- Enforcement of laws, regulations & standards
- Promotion of energy efficiency activities
- Promotion of R&D in technology and innovation
- Creation of public awareness & behavioral change
- Strengthening human resources & institutional capacity
# Energy Efficiency Guideline by Sector

<table>
<thead>
<tr>
<th>Economic Sector</th>
<th>Energy Efficiency Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>• Elevate SEC (Specific Energy Consumption) of each industry to be the world’s best in 2013</td>
</tr>
<tr>
<td>Large Commercial Building</td>
<td>• Elevate BEC (Building Energy Code for minimum performance) to Economic building</td>
</tr>
<tr>
<td>Small Commercial &amp; Residential Building</td>
<td>• Elevate the energy efficiency and increase proportion of high-performance equipment</td>
</tr>
<tr>
<td>Transportation</td>
<td>• Remodel the transport and mode shift to rail systems</td>
</tr>
<tr>
<td></td>
<td>• Enhance the standards of automotive fuel economy</td>
</tr>
<tr>
<td></td>
<td>• Develop the eco-driving program as well as energy saving management system</td>
</tr>
</tbody>
</table>
Industrial sector consumes 36% of current total energy consumption.

**Guideline:** Elevating of SEC in Industrial Factories

<table>
<thead>
<tr>
<th>Target</th>
<th>2010</th>
<th>2030</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>15,900 ktoe</td>
<td>SEC average in 2010</td>
<td>SEC average in 2030</td>
<td>SEC average in 2036</td>
</tr>
<tr>
<td>24,000 ktoe</td>
<td>Target of 2036; the SEC average of each factory is equal to the average of 2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The world’s best SEC average in 2010
The world’s best SEC average in 2013
Large commercial building sector consumes 8% of current total energy consumption.

**Guideline:** Elevating of BEC in Large Commercial Building

<table>
<thead>
<tr>
<th>Target</th>
<th>2010</th>
<th>2030</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference</td>
<td>Ref.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building energy code</td>
<td>Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher performance standards</td>
<td>HEPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic building</td>
<td>Econ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Zero energy building</td>
<td>ZEB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BEC is at average level of current building.**

BEC is at the Econ level in 2030

BEC is at the ECON and ZEB level in 2036
Small commercial & residential building consumes 15% of current total energy consumption.

**Guideline**: Elevating of the energy efficiency & the proportional use of high-performance appliances

<table>
<thead>
<tr>
<th>Target</th>
<th>2010</th>
<th>2030</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Energy Efficiency of Appliances</td>
<td>35% using No.5 air conditioner and T8 light bulb</td>
<td>Using high-performance appliances e.g. 70% of users use No.5 air conditioner &amp; T5 CF1 bulb</td>
<td>100% Using No.5 air conditioner &amp; LED</td>
</tr>
<tr>
<td>3,300 ktoe</td>
<td>5,000 ktoe</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Transport sector consumes 36% of current total energy consumption.

### Energy Efficiency Guideline in Transport Sector

#### Guideline:

1. **Mode shift into high-performance travel & transportation systems**
   - Public transport: 45% → 52% → 60%
   - Rail system: 3% → 15% → 17%

2. **Elevating the minimum standards & using high performance vehicles**
   - New vehicles’ fuel consumption is more efficient.
     => Fuel consumption average decreases.
   - Ref. Japan: +15% → +20% → +60%

3. **Developing the eco-driving program & energy saving management system**
   - The number of transport entrepreneur with a transportation management system & the trained truck drivers are increased.
     - +50% → +80%
The reduction of final energy consumption **57,400 ktoe** or **28%** of BAU in 2036

<table>
<thead>
<tr>
<th>Economic Sector</th>
<th>Target Saving EEDP (2010-2030) (ktoe)</th>
<th>Target Saving EEDP (2015-2036) (ktoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>16,257</td>
<td>24,000</td>
</tr>
<tr>
<td>Large Commercial &amp; Residential Building</td>
<td>7,265</td>
<td>10,700</td>
</tr>
<tr>
<td>Transportation</td>
<td>15,323</td>
<td>22,700</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38,845</strong></td>
<td><strong>57,400</strong></td>
</tr>
</tbody>
</table>
Summary of Thailand Energy Efficiency Development Plan 2015 – 2036 (Revision)

- Revise the EI target from 25% to 30%
- Emphasize the implementation in all sectors through 5 strategies approaches
- Industrial sector: Elevate the SEC of each sub-industrial sector to be the world’s best in 2013
- Large commercial Building sector: Elevate BEC to Econ level
- Residential building: Increase the proportional use of high-performance equipment
- Transport sector: Remodel into rail systems and escalate automotive standard
- Increase the final energy consumption target from 38,845 ktoe to 57,400 ktoe
Thank you for your kind attention