The Role of Energy Efficiency in a Sustainable, Secure Thai Electricity System

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In 2014, IEA countries avoided primary energy imports totalling 190 Mtoe, saving USD 80 billion in energy import bills and improving trade balances.
Energy Efficiency Development Plan (EEDP) 2015-2036

- Package of measures to seek 89,672 GWh of savings by 2036
- Equivalent to:
  - annual output of 16 coal-fired power plants
  - energy savings of 17,020 installed wind turbines
  - carbon sequestered by 1.59 billion tree seedlings grown for 10 years
  - Energy savings equal to energy used to drive 147 billion miles by an average passenger vehicle
- And EEDP is only skimming the surface of energy savings available in Thailand!!
What does EEDP cover?

- Mandatory requirements via rules, regulations and standards
- Energy conservation promotion and support
- Public awareness of energy efficiency and behaviour change
- Promotion of technology development and innovation
- Human resources and institutional capacity development
Where will EEDP Energy Efficiency Improvements be Made?

<table>
<thead>
<tr>
<th>Measure</th>
<th>Residential</th>
<th>Industry</th>
<th>Commercial</th>
<th>Total (GWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enforcement of energy conservation standards in designated factory/building</td>
<td>-</td>
<td>10,814</td>
<td>8,834</td>
<td>19,649</td>
</tr>
<tr>
<td>2. Building Energy Code (BEC) for the new buildings</td>
<td>-</td>
<td>-</td>
<td>13,686</td>
<td>13,686</td>
</tr>
<tr>
<td>3. Energy Labeling (HEPs &amp; MEPs)</td>
<td>8,936</td>
<td>6,226</td>
<td>8,598</td>
<td>23,760</td>
</tr>
<tr>
<td>4. Energy Efficiency Resource Standard (EERS) for large energy producers and distributors</td>
<td>1,343</td>
<td>2,367</td>
<td>2,162</td>
<td>5,872</td>
</tr>
<tr>
<td>5. Financial Incentives and support for energy performance achievement</td>
<td>-</td>
<td>9,133</td>
<td>5,941</td>
<td>15,074</td>
</tr>
<tr>
<td>6. Promoting greater use of LED</td>
<td>3,355</td>
<td>3,303</td>
<td>4,975</td>
<td>11,632</td>
</tr>
<tr>
<td><strong>Total (GWh)</strong></td>
<td>13,633</td>
<td>14,516</td>
<td>44,196</td>
<td>89,672</td>
</tr>
</tbody>
</table>

Or Total saving 7,641 ktoe

- Government 7,144 GWh (8%)
- Residential 13,633 ktoe (15%)
- Commercial 37,052 GWh (41%)
- Industry 31,843 GWh (36%)
Minimum Energy Performance Requirements (MEPs)

- MEPS cover residential ACs, refrigerators, ballasts, fluorescent lamps & CFLs
- MEPS only mandatory for ACs and refrigerators
High Energy Performance Standards (HEPs)

- HEPS cover eight products: ACs, refrigerators, AC electric fans, chillers, glazing, electric water heaters, rice cookers and electric pots.
Criteria for MEPS and HEPS

MEPS fails ~ 3%

HEPS passes ~ 20%
Labels

- **EGAT label (left)** covers 25 products.
- **DEDE’s label (right)** covers 8 non appliances.
# No.5 Labeling Program by EGAT

## Year | Products
--- | ---
1994 | Refrigerator
1995 | Air Conditioner
1996 | Compact Fluorescent Lamp
1998 | Electromagnetic Ballast
2001 | Electric fan
2004 | Rice Cooker
2009 | Oscillator Electric Fan
2009 | Fluorescent T5 Lamp
2009 | Electronic Ballast for T5
2010 | Standby Power: TV
2010 | Standby Power: monitor
2010 | Electric Pot
2010 | Luminaries for T5
2011 | Water Heater
2011 | Iron
2011 | Ventilation fan
2012 | Washing Machine
2012 | LED Lamp
2013 | Microwave Oven
2013 | Induction Cooker
2014 | TV: on mode
2014 | Electric Kettle
2015 | Refrigerated Display Cabinet
2015 | Automatic Water Pump

(upto 31 Dec 2014)
Energy Efficiency Label by DEDE

- Low Pressure LPG stove
- High Pressure LPG stove
- Fiberglass Insulator
- Window Glass
- VSD
- Diesel engine
- Gasoline engine
- 3-phase Induction motor
Energy Conservation Promotion (ENCON) Act

- ENCON Fund – USD 200 million from levy on petroleum products; used for R&D, incentives, soft loans and capacity building

- Finances the Energy Efficiency Revolving Fund (ended) & the ESCO Revolving Fund
Incentive Measures:
Revolving Fund

- **7,000 mill. Baht** allocated from Gov’s **ENCON FUND**
- 2-Stepped Loan **mix w/ Bank’s Money** (approx. 1:1)
- **Max. Interest Fix at 4%** (Bank pay 0.5% Int. to Encon Fund)
- **Max. 7 yr. loan period**
- **Max. 50 Mill. Baht / project**
- **11 major banks are participating**
Incentive Measures:
Direct Subsidy 20:80

• For EE measures
• Subsidy 20% of EE measures for Designated Building and Factory
• Subsidy 30% of EE measures for Non-Designated Building and Factory
  • maximum 3 million baht (∼ USD 93,800)
  To buy EE products
• Payback period ≤ 7 years

High eff. motor  VSD  LED
Incentive Measures:

Tax Incentive for EE Products

- Cooperation program with Revenue Dept.
- 25% tax credit from purchasing of EE products
- 19 products are announced for tax incentive;
  Mostly label No.5 products

http://www.energy-tax.com/
ESCO FUND

Energy Conservation Promotion Fund

Investment Committee

Fund Managers

1. Energy Conservation Foundation of Thailand (EFCT)
2. Energy for Environment Foundation (EFE)

ESCO Venture Capital
Equity Investment
Equipment Leasing
Carbon Market
Technical Assistant
Credit Guarantee Facility

– 500 + 500 mil.B allocated from Gov’s ENCON FUND
– 2 Fund Managers assigned & given 3 years window of investment
– **Equity Investment** 10-50% equity holding, Max. 50 mill. B./project, Investment period 5-7 years
– **Equipment Leasing** 100% of total cost with max. 10 mill. B. Maximum leasing period 5 years
– As of now, 54 projects invested with total investment of 6.1 billion Bt.(510 mill. B. from ESCO Fund)
– Total Energy saving of 1.06 billion B.
Key Recommendations

- Thailand actively engaged in energy efficiency!
- Could further integrate energy efficiency planning into resource planning
- More measures could and should be taken:
  - Strengthen and expand the coverage of MEPS, HEPS and labels and make more of these measures mandatory
  - Improve energy efficiency of commercial buildings and shopping malls
  - Further develop MRV systems