A STUDY OF ENERGY CONSERVATION PLANS FOR RESIDENTIAL AND SMALL COMMERCIAL SECTORS IN THAILAND

MISS JINTALUK KIDHEN
ID: 52910418

A THESIS SUBMITTED AS A PART OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ENGINEERING
IN ENERGY TECHNOLOGY AND MANAGEMENT

THE JOINT GRADUATE SCHOOL OF ENERGY AND ENVIRONMENT
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Topic: A Study of Energy Conservation Plans for Residential and Small Commercial Sectors in Thailand

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ABSTRACT

This thesis examines various scenarios of energy consumption trends of residential and small commercial sectors in Thailand. It is expected that without implementing any energy conservation measures, the consumption of these sectors will increase about twofold from the present (2010) in the next twenty years (2030). Although consumption by the main activities of lighting, cooking, and entertainment have reaches saturation, the increase in units of air-conditioners and electric water heaters in these sectors have resulted in dramatic electricity consumption.

This study also examines particular shifts in energy sources used by the sectors. For one case, it was assumed that electricity was totally used by cooking. The situation would lead to a crisis in the affordability of electricity in the country. Another case assumed fuel wood and charcoal for cooking were substituted by LPG. This would lead to serious scarcity of LPG. However, the shift of fuel wood to charcoal offers an opportunity for energy efficiency improvement.

The scenarios mentioned above warrant a serious investigation of energy efficiency in the residential and small commercial sectors in Thailand. This study demonstrates that implementing various energy conservation programs can reduce the energy consumption of these sectors by 23% of electricity and 23% of LPG from its BAU scenario. The programs include:

- energy labeling for fluorescent lamp and ballast,
- replacement of incandescent lamp,
- energy labeling for small air-conditioners,
- the use of heat pumps for air-conditioners and for producing hot water,
- the substitution of conventional air-conditioners with solar cooling systems in the far future,
- energy labeling for cooking with LPG stoves.

Keywords: Appliance Energy efficiency, Development scenario, End-use energy consumption, Long-term energy conservation, Residential sector, Small commercial sector

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LIST OF ABBREVIATIONS

Abbreviation	Description
BAU	Business as Usual
CFL	Compact Fluorescence Lamp
EER	Power per ton
FL	Fluorescence
LPG	Liquid Petroleum Gas
MEPs	Minimum Energy Performance standard
HEPs	High Energy Performance standard