

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This thesis examines various scenarios of energy consumption 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 from the current (2010) of electricity 47,863 GWh and LPG 2,360 kton to electricity 98,904 GWh and LPG 3,538 kton in next twenty years (2030). Although the consumptions by the main activities i.e. lighting, cooking, entertainment reach saturation, the increase of units of air-conditioners and electric water heaters in the sectors results in dramatic electricity consumption.

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

The scenarios mentioned above warrant the importance of energy efficiency in the residential and small commercial sectors in Thailand. This study demonstrates that implementing various energy conservation programs can saved the energy consumption of these sectors by 23,904 GWh and 829 kton or equivalent to 23% from its BAU scenario. The programs comprise:

No.	Program	Fuel	Savings	Percent
1	energy labeling for fluorescent lamp and ballast	Electricity (GWh)	3,024	3.1
2	replacement of incandescent lamp	Electricity (GWh)	257	0.3
3	energy labeling for small air-conditioner	Electricity (GWh)	9,667	9.8
4	the use of heat pump for air-conditioning and producing hot water	Electricity (GWh)	10,006	10.1
5	the substitution of conventional air-conditioner with solar cooling system in far future	Electricity (GWh)	1,100	1.1
6	energy labeling for cooking LPG stove	LPG (1,000 ton)	829	23

5.2 Recommendations

Determination of the energy consumption of the residential and small commercial sectors requires knowledge of the use of household appliances. This study adopted the energy consumption models of residential house and small commercial building researched in last 10 years. There is no more activity conducted in this research field. To achieve the accurate prediction of the consumptions of the sectors, the research survey of the energy use in residential and small commercial sectors should be conducted every five years. The knowledge is very crucial and informative for development of the energy conservation programs for the sectors.