CHAPTER I

INTRODUCTION

1.1 Rationale

Electricity is one of the most important energy of the world . It has been useful part of our lives such as food cooking , comfortable living , communication , entertainment , education and medical care. Electricity powers that we use in forms of our light, heating, electronic appliances such as computers and television, and a host of essential services that we take for granted.Electricity has much more important aspects because it is a fundamental feature of all matter. Moreover , Electricity energy is an essential factor for economic and social development for the country.

In Thailand , increasing in people population and changing in lifestyle from country community to the urban community , expanding in industrial sectors and trading , growth of household and employment and people in the community need to have better quality of life cause increasing electricity power demand continuously every year in Thailand. Therefore , there is vital to have plan for preparedness , generation and procurement of electricity power to adequately serve that increasing demand in each year for support continuously economic and social development and hold on electricity power reliability and security.

Ministry of Energy collaborate with Electricity Generating Authority of Thailand(EGAT) to create Power Development Plan (PDP) for preparedness , generation and procurement of electricity power to adequately serve that increasing demand follow the frame of power energy policy by the government in many issue such as reliability and security of power generating system , mix of source of energy , power procurement from neighborhoods and load demand forecasting in the future.

The Thailand Power Development Plan 2007–2021 (PDP 2007 Revision 2) was an update of the PDP 2007 Revision 1. The original PDP 2007 was issued in June 2007 followed by a revised PDP 2007 (PDP 2007 Revision 1) in December 2008.Since then, the electricity demand has decreased significantly due to depressed economic condition. To illustrate a clear picture of

power energy sector development, the Ministry of Energy has appointed a subcommittee to prepare a new Thailand PDP revision and a working group to work on the relevant assumptions, respectively. The new PDP was designated as a "Green PDP" which highlights on greenhouse gas emission reduction and promotions of efficient energy utilization and electricity production through cogeneration system, in addition to system reliability. Not only did it corporate power purchsing from domestic producers and neighborhood countries that were approved by the Cabinet but also power generation from renewable energy from the Alternative Energy Development Plan (AEDP) 2008–2022. Moreover, opinions and comments obtained from the public hearing of PDP 2007 Revision 2 were taken into implementation. Therefore,the new PDP could be a complete guideline for power system development that encourages generation from renewable energy and lessens greenhouse gas emission, and thus a balance of generation energy sources. EGAT, as a member of the subcommittee and the working group, formulated the Thailand Power Development Plan 2010–2030 (PDP 2010) within the following frameworks : extend the planning horizon from 15 years to 20 years (2010-2030) , revise Thailand's Load Forecast based on NESDB's long term economic growth ,analyze and integrate the effects of DSM projects in both the load forecast and the generation expansion planning ,combine the re-estimated amount of power purchase from renewable energy regarding AEDP 2008–2022 into the plan,review the amount of power purchase from SPPs in 2009-2015 and further regarding the NEPC's resolution on 24 August 2009 to promote power production by cogeneration system , reconsider power import from neighboring countries and identify only promising projects and lower greenhouse gas emission.

PDP 2010 still use main fuel 33% for electricity generation from natural gas 21,668 MW .The second is from coal 19% 12,669 MW , 15 % 9,827 MW from Hydro-imports , 11% 7,024 MW from Cogeneration system , 7% 4,804 MW from renewable energy and 6% 3,936 MW from Hydro – EGAT and 619 MW from Malaysia transmission line in 2030.

PDP2010 Revision 3 (2010-2030) The PDP 2010 Revision 3 is revised from PDP 2010 Revision 1 and 2 because of 1) Increasing electricity demand on infrastructure policy as 2 lines high speed sky train and 10 major lines sky train. 2) The new target of power generation from renewable energy the Alternative Energy Development Plan (AEDP) from 6% to 10 % and for energy conservation from Energy Efficiency Plan (EE) 20 years that need to lessen electricity demand to 96,653 GWh in 2030. 3) Decreasing affect of greenhouse gas as the policy of PDP2010 Rev.2 that limit CO_2 Commission will be not exceed than 0.386 $kgCO_2$ / kWh . PDP

2010 Revision 3 will have electricity generation from natural gas 25,451 MW .The second is from renewable energy 14,617 MW , thermal plant (coal,oil,nuclear) 8,623 MW and 6,374 MW from Cogeneration power plant.

PDP2012 (2012 – 2030 by NGOs) NGOs (Non Governmental Organizations) presents their Power Development Plan (PDP) called PDP2012 in this paper. This PDP 2012 need to lessen electricity demand capacity from 52,256 MW (PDP 2010 Revision 3) to 35,579 MW , the different is 16,677 MW, by seriously implement Energy Efficiency Plan (EE) and Demand Side Management (DSM) policy. PDP 2012 also focus on Co-generation power which will be 11,824 MW (33%) of electricity production, 27% as 9,572 MW of natural gas and 14% as 4,804 MW of renewable energy , 11% as 3,936 MW of hydro power , 9% as 3,087 MW from clean coal power plant and 5% as 1,737 MW from power purchasing from neighborhood country in 2030.

Electricity generation with each method , technology and fuel source bring to different cost that conclude production cost ,environmental cost and social cost . In this study not only consider cost of production but also consider environmental cost and social cost. This paper is aim to investigate cost performance and do analysis cost performance and find out how is cost performance along each Thailand Power Development Plan (PDP) following :

1) Thailand Power Development Plan (PDP 2010)

2) Thailand Power Development Plan (PDP 2010 Revision 3)

3) Thailand Power Development Plan (PDP 2012)

1.2 Objective

The objective of this thesis is to investigate cost performance and to do cost performance analysis as well to find out how is cost performance getting along with Thailand Power Development Plan (PDP)

1.3 Research Scopes

This thesis is to investigate cost performance and analysis cost performance under the Thailand Power Development Plan (PDP). The study has been scoped as follows:

1) Thailand Power Development Plan (PDP 2010)

2) Thailand Power Development Plan (PDP 2010 Revision 3)

3) Thailand Power Development Plan (PDP 2012)

1.4 Research Methodology

1.4.1 Theory and Literature review

1.4.2 Study in details of Thailand Power Development Plan (PDP) as PDP 2010 , PDP 2010 Revision 3 and PDP 2012.

1.4.3 Study of electricity cost criteria and condition in present.

1.4.4 Problem analysis.

1.4.5 Cost performance analysis.

1.4.6 Comments on cost performance of each Power Development Plan(PDP).

1.4.7 Conclusion.

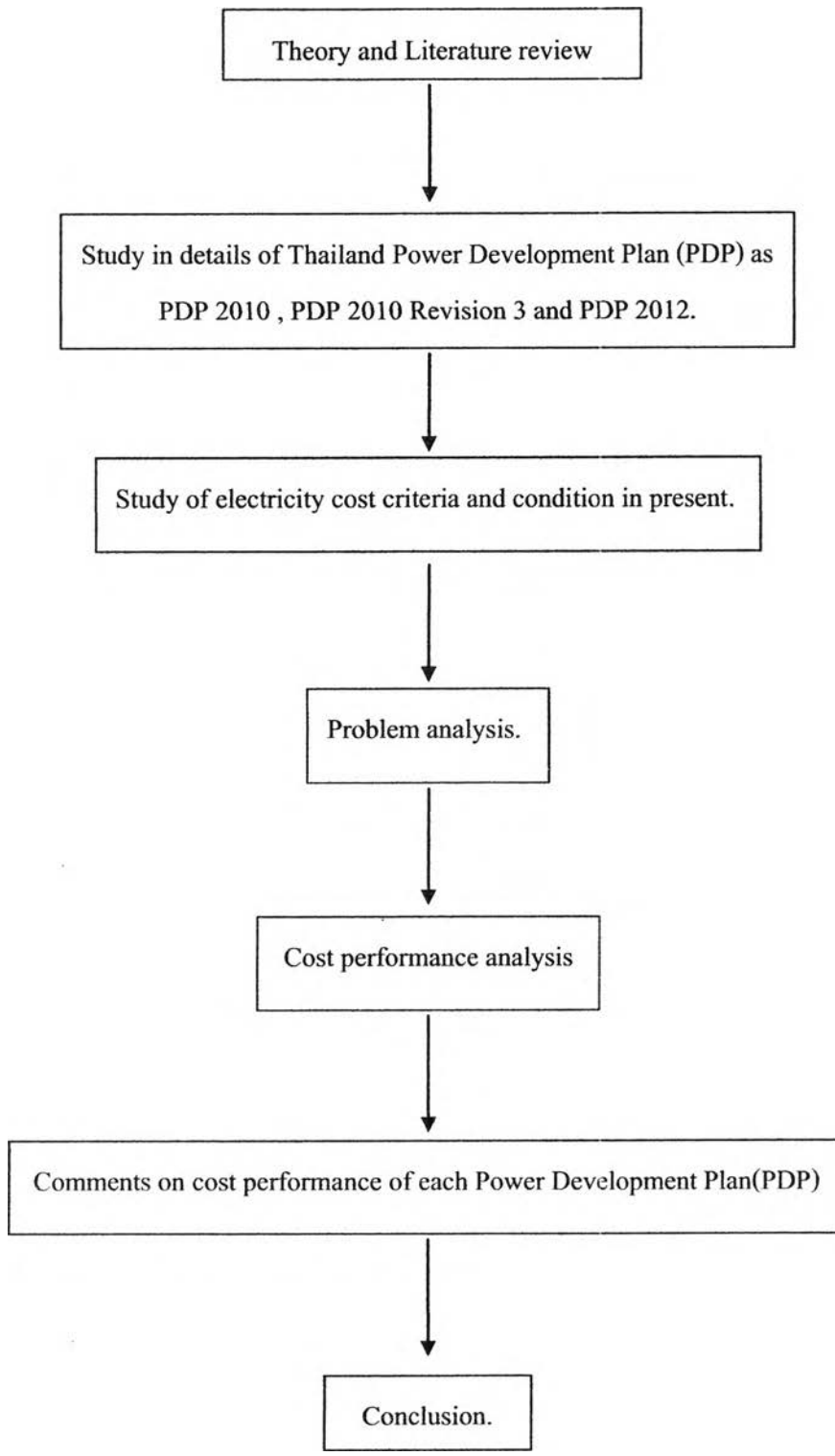

Figure 1.1 Research Methodology of this thesis