

Economic Study of 500 kW_p Photovoltaic Grid – Support System At Mae Hong Son Province.

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Abstract

Mae Hong Son province located on the northern part of Thailand about 250 km from Chiangmai. Most of its area is mountain and covered by thick forest approximately 78 % of total area.

Mae Hong Son city electricity demand, about 7-8 MW, is supplied by two small hydro power plants. There is 4.7 MW Mae Sa Nga Hydro power plant and 350 kW Pa Bong hydro power plant, 6 MW Mae Hong Son diesel power plant and Provincial Electricity Authority (PEA) 22 kV power distribution line from Chiangmai province.

Nowadays, Mae Hong Son still does not have high capacity 115 kV power transmission line, because of its remote location and the unreasonable cost of investment.

Thai government began a 500 kW_p photovoltaic grid-support (PVGS) system project in February 2003 and will be completed in October 2004 by using budget about 4.5 million USD.

This document presents a simple method for calculating operating cost of PVGS in economic scale after it completely operates. Calculate for Internal Rate of Return is 8.46%. It is expected that the PVGS will generate electricity about 650,000 kWh per year, reduce fossil fuel consumption about 215,000 liter per year and reduce CO₂ release about 520,000 kg per year.

Keywords: Photovoltaic grid-support, PVGS, economic calculation, cost saving, Mae Hong Son