CHAPTER 4

QUALITATIVE ANALYSIS

4.1 Overview

The study was conducted to determine whether the deregulation of power generation sector improves the efficiency of the operation of power plant and ultimately reduces the generation cost, by comparing the performance of two power plants under different ownership, in terms of:

- generating cost, and,
- NPV per installed capacity.

To evaluate the performance of both power plants, the Profit and Loss Statements, Cashflow Statements, and Free Cashflow Statements were prepared based on the information provided by the respective Operation Managers of both the power plants.

4.2 Serdang Power Station

Serdang power station is a peaking station with an installed capacity of 625MW. It commenced commercial operation in 1994. The power station output for the year 1995 to 1999 was 2200 GWh/year, and it operated 41,000 hours per year. The power station output is assumed to increase its capacity to 2400 GWh/year from year 2001 to 2004 and 2700 GWh/year from year 2005 to 2015. In addition to the above assumption, the following information provided by the Operation Manager is used as the basis to calculate the future revenue and expenses for

the Profit and Loss Statement, Cashflow Statement and Free Cashflow Statement:

i. Fuel cost = RM6.5 / MMBTU
ii. Heat rate = 1300 BTUs/kWh
iii. Available rate = 92 %
iv. Efficiency = 29%

a) Generating Cost

The generating cost is calculated using the equation 3(a) as described in Chapter 3 (p. 32). The calculated average generating cost is 12.43 sen per kWh. Table 4.1 shown the generating cost for year 1995 to year 2015.

b) NPV per installed capacity

To compute the NPV per installed capacity, Profit and Loss Statement, Cashflow Statement, Free Cashflow Statement, WACC and cost of equity (k_e) are established. The calculated NPV per installed capacity is RM 0.51 million per MW.

- **WACC**

$$WACC = W_d k_d(1-T) + W_e k_e$$

Where:

$W_d = 0.8$

$k_d = 10\%$

$T = 30\ \%$

$W_e = 0.2$

$k_e = k_{RF} + (k_M - k_{RF})\, b$

Where:

k_{RF} = 6.32 percent 10 years Malaysian Government Securities November 1999

k_M = 3.18 percent

b = 0.847[10]

$k_e = 6.32 + (3.18 - 6.32) \times 0.847$

$k_e = 3.66\ \%$

$WACC = W_d k_d(1\text{-}T) + W_e k_e$

$WACC = (0.8 \times 10\ (1 - 0.3)) + (0.2 \times 3.66)$

$WACC = 6.33\ \%$

The Profit and Loss Statement, Cashflow Statement and Free Cashflow Statement for Serdang Power Station are shown in Tables 4.2 and 4.3 respectively.

[10] Corporate Handbook Malaysia – June 1995 (p. 669)

4.4 Analysis of Results

Table 4.7 summaries the financial analysis results for the Serdang Power Station and PD Power.

The average generating cost for PD power is calculated to be 11.91 sen/kWh, compared to that of Serdang Power Station which is 12.43 sen/kWh (average). PD Power station has a lower generation cost of 4.30 percent or 0.51 sen/kWh than Serdang Power Station.

The NPV per installed capacity for Serdang Power Station is RM 0.51 million per MW, while that for PD Power is RM 1.04 million per MW. Serdang Power Station output has lower NPV per kWh compared to PD Power, even though the output per year for the former is very much higher than that of the latter.

Table 4.7 - Comparison of the Generation Cost and NPV installed capacity.

Power Station	Generating Cost (Average) (Sen/KWh)	NPV Per MW (RM Million)
Serdang Power Station	12.43	0.51
PD Power	11.91	1.04