NATIONAL UNIVERSITY OF SINGAPORE

Department of Electrical Engineering

EE2022 ELECTRICAL ENERY SYSTEMS

(Tutorial #8) (Cost of Electricity)

1. A small industry operating night and day, 7 days/week, consumes 260,000 kWh/month. The maximum demand is 1530 kW.

   Calculate the electricity bill for this customer using the rate schedule shown below.

Demand charge	$3.00 per month per kW of billing demand
Energy charge	$0.04/kWh for the first 100 hours of billing demand
	$0.02/kWh for the next 50,000 kWh/month
	$0.012/kWh for the remaining energy

2. A small business can elect to use either the time-of-use (TOU) rate schedule shown below (column A) or the rate structure involving a demand charge (column B). During the peak demand period they use 100 kW of power and 24,000 kWh/month, while off-peak they use 20 kW and 10,000 kWh/month. Which rate schedule would give the lowest bills?

A. TOU Rate Schedule		B. Demand Charge Schedule	
On-peak	12¢/kWh	Energy charge	6¢/kWh
Off-peak	7¢/kWh	Demand charge	$9/mo-kW

3. Two consumers A and B each use 100,000 kWh/month. Customer A has a load factor of 15% and customer B has a 60% load factor (load factor, defined as the ratio of a customer's average power demand to its peak demand, is a useful way for utilities to characterize the cost of providing power to the customers). Using a rate structure with energy charges of $0.06/kWh and demand charges of $10/kW-month, compare their monthly utility bills.