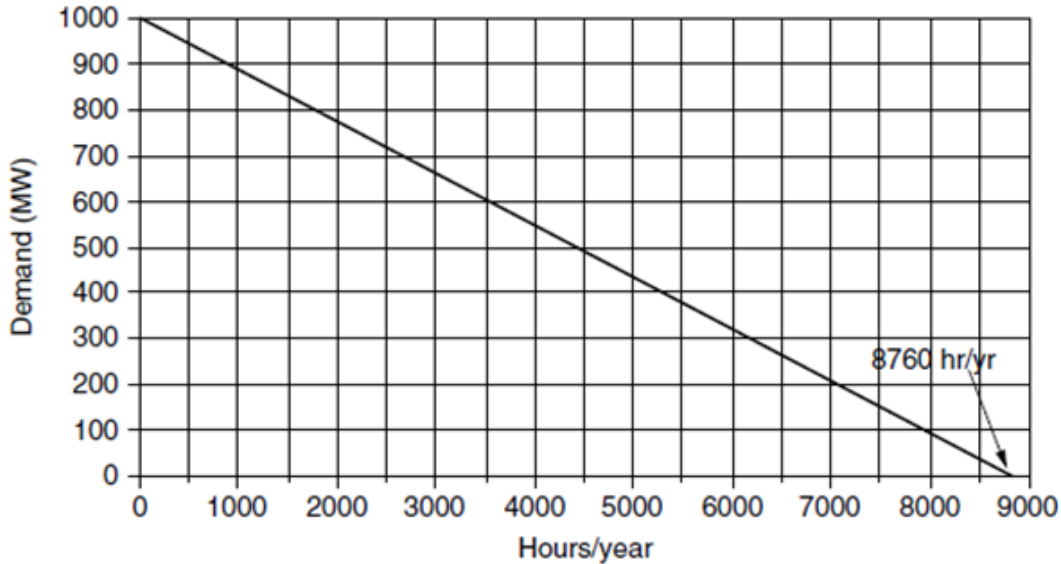


Homework 4 - Electricity Cost in Generation Mix

A. INSTRUCTION(a) No submission required. Practice/Exercise only.B. PROBLEM

A utility company has the following very simplified load duration curve.



To serve the customers, the company runs 3 power plants: 500 MW coal-steam to cover the base load, 300 MW combined-cycle for the intermediate load, and 200 MW gas turbine for the peak load. The cost parameters of the power plants are as shown below. The fixed charge rate (FCR) for the capital cost is 0.16 per year.

Generation Type	Capital Cost (\$/kW)	Heat Rate (Btu/kWh)	Fuel Cost (\$/M Btu)	Variable Costs (\$/kWh)
Coal-Steam	1,400	9,700	1.50	0.0043
Combined-Cycle	600	7,700	4.50	0.0037
Gas Turbine	600	9,100	4.50	0.0050

Fill out the table below. **Show your works.**

Generation Type	CF	Annualized Fixed Cost (\$/Yr)	Annualized Variable Cost (\$/Yr)	Total Annualized Cost (\$/yr)	Annual Generation (kWh/yr)	Electricity Cost (\$/kWh)
Coal-Steam						
Combined-Cycle						
Gas Turbine						
Overall						