

PRACTICE PROBLEM #1: A large, natural gas-fired electrical power facility produces 15 million kilowatt-hours of electricity each day it operates. The power plant requires an input of 13,000 BTUs of heat to produce 1 kilowatt-hour of electricity. One cubic foot of natural gas supplies 1,000 BTUs of heat energy.

1. Showing all steps in your calculations, determine the
 - a) BTUs needed to generate the electricity produced by the power plant in 24 hours.
 - b) Cubic feet of natural gas consumed by the power plant each hour.
 - c) Cubic feet of carbon dioxide gas released by the power plant each day. Assume that methane combusts with oxygen to produce only carbon dioxide and water vapor and that the pressures and temperatures are kept constant.
 - d) Gross profit per year for the power company. The power company is able to sell electricity at \$50 per 500 kW-h. They pay a wholesale price of \$5.00 per 1,000 cubic feet of natural gas.
2. What environmental effect might the production of electricity through the burning of natural gas pose?

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