

## **Energy Trends of the Future\***

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Energy needs of the United States are huge – 100 Quadrillion BTUs per year. The Energy Information Administration predicts that for the next 25 years over 60% percent of the US energy supply will come from oil and natural gas. During that period, the oil and gas industry is expected to provide the largest increase in the amount of energy supply.

When compared to other sources of energy, the products that petroleum geologists produce –both oil and natural gas – are unlike any other substances. Oil is vital, and incredibly valuable, because of the tremendous amount of energy stored in an easily transportable form. Because of this, 99% of all transportation is powered on oil. Natural gas – energy in a vapor – is important because it is efficiently converted to heat and electricity. Earning the label, "a clean-burning fuel", 900 out of the next 1,000 electrical generation plants will burn natural gas.

The energy industry has entered a new era with the "blockbuster" combination of horizontal drilling and hydraulic fracturing. This has led towards the economic recovery of significant amounts of natural gas and now - oil. In this lecture we will "drill down" into the EIA supply and demand data. Then, we'll "explore" the fundamental geology of oil and natural gas: hydrocarbon states at reservoir conditions, rock reservoirs, exploration techniques and extraction methods. By examining the geology, the difficulties and opportunities of hydrocarbon recoverability will become clear. Finally, we will "dig into" the challenges faced in developing oil and gas. Will we go to the ends of the earth for this resource?