The Scale of the Energy Challenge

The average U.S. power consumption is 3 terawatts. That’s 3,000,000,000,000 watts.

1 terawatt of power is equivalent to the energy released from burning every second:

- 22,000 gallons of fuel oil
- OR
- 150 tons of coal

How can we produce 1 terawatt of power using alternative energy sources?

Biomass

- Corn crop (2012): 246% of cultivated land
- Grass for cellulosic ethanol: 205% of cultivated land

The area required for biomass fuel exceeds the total amount of currently cultivated land (408 million acres).

Nuclear

- The average nuclear reactor produces 1 gigawatt of power. We would need 1,000 reactors to produce 1 terawatt of power. In 2011, 104 reactors produced 20% of the US’s electrical needs.

Wind

- Wind farms would cover about 80,000 square miles. That’s a size as big as Nebraska, or half of California.

Solar

- Solar cells would require 10,000 square miles, an area comparable to that covered by all the roadways and rooftops in the United States.

Photo by Robert English <bobindrums@yahoo.com>