**EAS 375**

**Spring 2011**

**Lecture questions - Solar and Wind Power**

What are the two major types of solar power?

Photovoltaic, solar thermal.

Briefly, describe what the Photoelectric Effect is?

Photons absorbed by semiconductors, energy is transferred to an electron, electrons escape their locations leaving a hole. Charged particles move towards grid and produce an electrical current.

What are the advantages of photovoltaic generated power?

Pollution free, Multiple applications, Long lived.

What are the disadvantages of photovoltaic generated power?

High cost of production, Uses rare earth elements (limited supply), Disposal of used solar cells.

What are three major types of solar thermal generation?

Parabolic mirror, Solar tower, Parabolic trough.

What are the advantages of solar thermal power?

Pollution free, no fuel costs, use for a long time, high efficiency.

What are the disadvantages of solar thermal power?

Utilized only during daylight hours, depend on the weather, expensive, environmental concerns (habitat loss, species extinction, not aesthetically pleasing).

What is the underlying cause for the formation wind?

Warm air rises at the equator and moves north, cool air sinks at the pole and flows towards the equator

What are the two major types of wind turbines?

Small scale wind power (domestic system), large scale wind power (grid systems).

What are the major problems with wind generation?

Intermittent wind, highly variable timescales, high demand may not correspond to peak winds, instantaneous electrical generation and consumption must remain in balance for grid stability.

What are the major advantages of wind power?

No fuel consumed, no air pollution, energy needed to build a wind plant gets back in a few months, multiple land usage.

What are the major environmental effects that concern environmentalist about wind power generation?

Danger to birds and bats, health problems (noise), aesthetics.

Will clean alterative sources for electricity keep pace with our increasing demand for electricity in the next couple of decades?

No it won’t. Won’t be build fast enough to keep pace with the world’s demand of electricity.