Green Energy: Solar, Wind and Geothermal System Installations

Owners may wish to consider sources of Green energy to lower the carbon footprint of the apartment complex. Green energy is the term used to describe sources of energy that are considered to be environmentally friendly and non-polluting, such as geothermal, wind and solar. Green energy sources are often considered "green" because they are perceived to lower carbon emissions and create less pollution.

Geothermal:

While temperatures above ground change a lot from day to day and season to season, temperatures in the upper 10 feet of the Earth's surface hold nearly constant between 50 and 60 degrees Fahrenheit. For most areas, this means that soil temperatures are usually warmer than the air in winter and cooler than the air in summer. Geothermal heat pumps use the Earth's constant temperatures to heat and cool buildings. They transfer heat from the ground (or water) into buildings in winter and reverse the process in the summer.

According to the U.S. Environmental Protection Agency (EPA), geothermal heat pumps are the most energy-efficient, environmentally clean, and cost-effective systems for temperature control. Although, most homes still use traditional furnaces and air conditioners, geothermal heat pumps are becoming more popular. In recent years, the U.S. Department of Energy along with the EPA have partnered with industry to promote the use of geothermal heat pumps.

Geothermal heat pumps--also know as ground-source heat pumps--transfer heat extracted from the ground and water sources such as lakes and ponds, rather than produce heat. Geothermal units are at least 30 percent more efficient than air source heat pumps which transfer heat from the air, and twice as efficient as electric resistance heating. Geothermal heat pumps use a system of pipes, pumps, and glycol/water solutions to extract heat from the ground, lakes, and ponds in the heating mode, and reverses its flow to discharge heat in the air conditioning mode. Geothermal heat pumps also provide maintenance benefits to since they have no outdoor coils or components that can be damaged. Geothermal heat pumps replace central furnaces, heat pumps, air conditioners, and water heaters

Installing geothermal systems for space and water heating, in addition to air conditioning requires large up-front capital expenditures. However, geothermal heat pumps have the lowest life-cycle costs for space heating, water heating, and air conditioning. In addition, geothermal heat pumps have lower maintenance costs than furnaces, boilers, and air conditioners.

Geothermal heat pumps are:

- 2.5 to 4 times more efficient than electric-resistance space heating.
- 2.5 to four times more efficient than electric-resistance water heating.
- 75 percent more efficient than oil furnaces.
- 48 percent more efficient than gas furnaces.
- 40 percent more efficient than air-source heat pumps.

Additional information at: http://www.hud.gov/offices/pih/programs/ph/phecc/strat_h10.cfm