

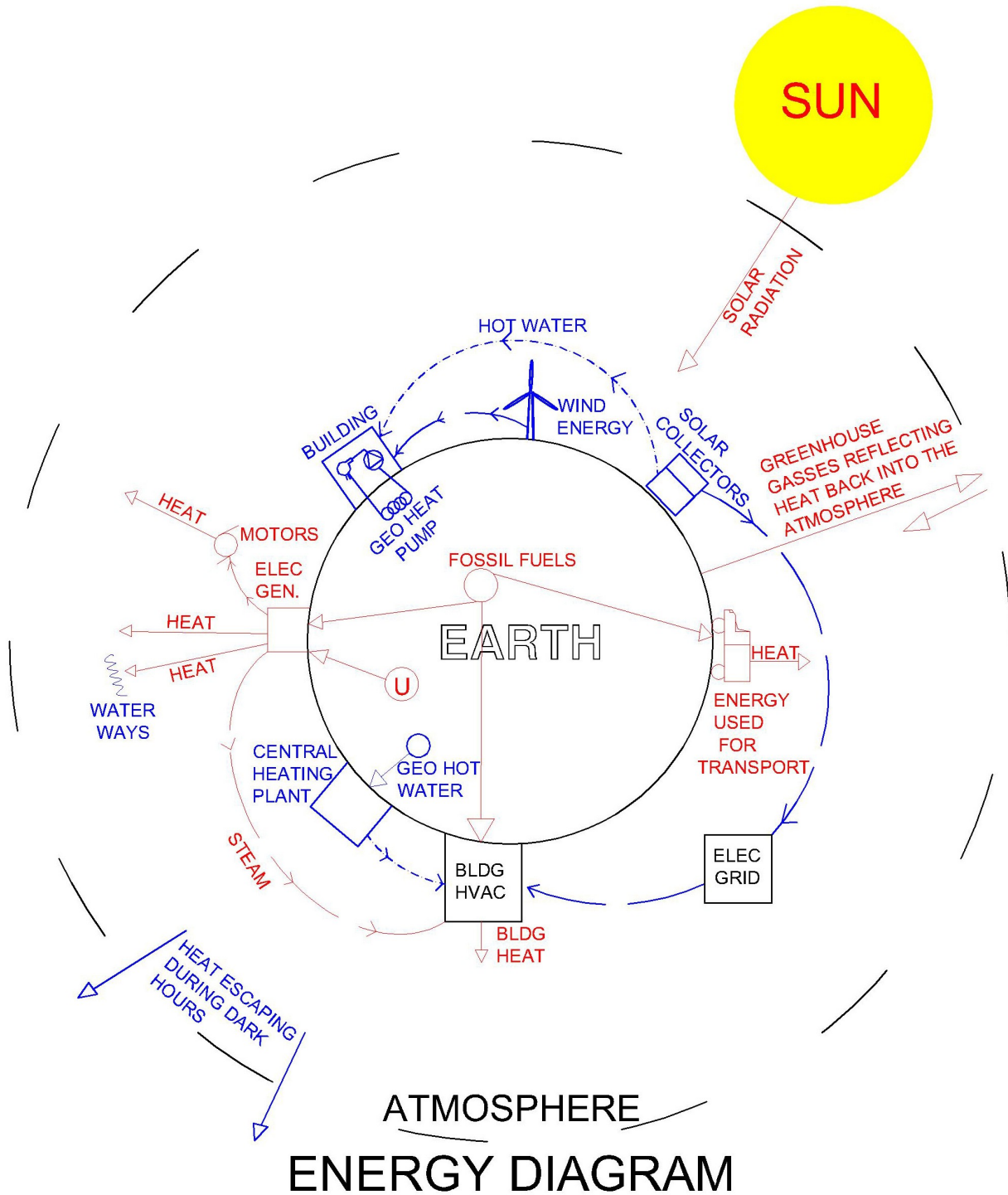
Position Paper on Global Warming

Global warming is the result of wasting resources and energy. Rising ocean levels, melting ice, and warmer cities are the result of missed opportunities to work with nature.

The first law of thermodynamics states that energy cannot be created or destroyed only changed in form. Consider the earth as an enclosed thermal system. Any heat energy that is added to the system must equal the heat escaping or global temperatures will increase.

Burning fossil fuels, nuclear fusion, or mechanical work to create heat are examples of energy changing states. Potential energy, previously sequestered underground, is brought to the surface and released into the atmosphere. In much the same way, the potential energy stored in an atom's nucleus is released during fission reactions at nuclear power plants. Energy used for motors or engines becomes heat. The end result for either method is the same. Heat is added to the Earth's system.

Energy obtained from sources such as solar, wind, geothermal, moving water, tidal action and other alternative sources does not add significant heat to the system. Our goal must be to reduce the total amount of heat generated on the planet and to harvest the energy coming in.





Some solutions to reduce the amount of waste heat and pollution contributing to global warming:

- Use solar collectors to generate hot water and electricity.
- Use geothermal heat pumps to send waste heat into the ground and then harvest it in the winter months.
- Maximize insulation, building mass, and seal leaks.
- Use windows to optimize daylight, views, and ventilation so that we can work with nature.
- Limit building heat gain and loss while improving comfort.
- Bio-fuels must be made from waste (cellulose), not food.
- Fossil fuels may be used as feed stock for products, but only sparingly.
- Eat locally grown foods cooked from scratch rather than remanufactured “food.”
Avoid highly processed food.
- Eat fruits and vegetables; factory production of meat creates a lot of waste heat and carries a high carbon price. Eat as close to raw as possible.
- Conserve water; it takes energy to transport and clean the waste.
- Conserve electricity; electrical power is only 30% efficient. 70% of the heat input is rejected to water or the atmosphere.
- Keep buildings comfortable (yes – discomfort leads to waste as it reduces human productivity).
- Walk more, bike, and use public transportation.

Project: Position Paper

Subject: Global Warming



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- Stay home and enjoy your home. Vacation locally.
- Grow a garden and compost to avoid energy intrusive petroleum based soil additives.
- Avoid franchise restaurants (especially “fast food”).
- Practice wellness and exercise.
- Buy local.
- Avoid gimmicks. Use old technology wisely.

Applying these steps can make a major contribution to solving our problems and improving our quality of life.

World War II taught us how to innovate quickly. In less than a decade we advanced to nuclear power and computers. The space race and subsequent research and development brought us advances in material science and new technologies such as the solar cell and the fuel cell. The energy utilization challenge is equally important and deserving. It should excite our best local and national efforts.