Bethel College Mennonite Church Creation Care Committee
Creation Stewardship Notes # 7, February 2004

Energy efficiency and the use of renewable energy sources are important issues as we face the future with a growing world population, a growing per capita energy demand and atmospheric change from the gas emissions of energy production. "Between the late 1990s and 2020, global energy consumption is projected to rise nearly 60%. . .(State of the World 2003). The most recent issue of *Our Planet*, journal of the United Nations Environmental Program, was devoted to energy issues. Both problems and positive developments were described. Ted Turner pointed out, "Of the world's 6 billion people, one third enjoy the kind of 'energy on demand' that North Americans take for granted, and another third have such energy services intermittently. The final third - 2 billion people - simply lack access to modern energy services." He also pointed out that 60% of the emissions that are causing global warming are due to the burning of fossil fuels.

In the early 1990s, Germany had virtually no renewable energy industry; yet by the end of the 1990s, Germany had more than one-third of the total global installed wind energy capacity. Gerhard Schroeder, Chancellor of the Federal Republic of Germany, in an article in *Our Planet*, stated that Germany was now working on energy efficiency and intended to double 1990 energy efficiency levels by 2020. Margaret Beckett, Secretary of State for the Environment, Food and Rural Affairs in the United Kingdom, stated, "In February 2003, we published our Energy White Paper - the United Kingdom's first comprehensive forward-looking statement of energy policy in over 20 years, acknowledging the fundamental interdependence of economic growth, social progress and environmental objectives. A long-term strategy, its key aim is a 60 per cent cut in carbon dioxide emissions by about 2050."

There was no statement of energy goals or long-term strategy from our U.S. Administration. However the average American uses five times as much energy as the average world citizen, ten times as much as the average Chinese, and twenty times as much as the average Indian. If "the average Chinese consumer used as much oil as the average American uses, China would require 90 million barrels per day - 11 million more than the entire world produced each day in 2001." (State of the World 2004) Although the U.S. produces about one quarter of current global emissions of greenhouse gases that cause climate change, the U.S. Administration has dropped out of negotiations on the Kyoto Protocol to control those emissions. Eileen Claussen, President of the Pew Center on Global Climate Change, pointed out, "With more than 100 countries now committed to the Kyoto Protocol, this landmark agreement may soon enter into force. . . . But it will be only a first step. With the United States not joining, the Protocol will cover just 40 per cent of global emissions, and only for the next decade." Even though U.S. Government policy has repudiated the Kyoto Protocol, we need to consider our Christian responsibility to use energy wisely and improve energy efficiency. Marion Deckert suggests one way of improving energy efficiency in our homes:

As Lois and I have grown older we find ourselves needing more light. As time has gone by we have begun using two or even three 75 to 100 watt bulbs in our room fixtures and we have looked for ways to increase the wattage in our lamps. If we have three 75

watt bulbs burning for four and a half hours we have used one kilowatt hour of electricity.

An energy and money saving alternative is becoming readily available. The compact fluorescent light bulb can be purchased at most stores. These bulbs produce about 4 times as much light per watt as an incandescent bulb. A 20 watt compact fluorescent bulb gives about the same amount of light as a 75 watt incandescent bulb.

These fluorescent bulbs are not exactly flying off the shelves. Why not? The primary reason is cost. Locally you can find fluorescent bulbs equivalent to 75 watt incandescent bulbs for ten to twelve dollars. These costs are 10 to 15 time what we would pay for an equivalent incandescent bulb. This initial cost difference seems too steep for most people. But if we look at the long term cost there is a dramatic difference. Fluorescent bulbs tend to last 10 times as long as incandescent bulbs. When this is figured into the cost equation along with the energy savings, it is estimated that over three years using a 20 watt fluorescent bulb instead of a 75 watt incandescent will save about $20 (assuming that the bulb is illuminated an average of 4 hours a day). The Davis Energy Efficient Project claims that, according to the U.S. Energy Department, “if every household in the U.S. replaced just one bulb [with a fluorescent bulb], we could save more than 8 billion KWh - equivalent to removing 1 million cars from the road per year.” In any case, it is clear that continuing to buy incandescent bulbs is being penny wise and pound foolish.

There are a few considerations other than cost. The fluorescent bulbs tend to be a bit bulkier than the normal bulb and may not fit into a tight fixture. Fluorescent bulbs normally cannot be used with a dimmer are not rated for use in recessed ceiling fixtures, and may interfere with TV reception under some conditions. Many fluorescent bulbs take a moment to come on after the switch is turned on, though you can find instant-on fluorescent bulbs (e.g. ParaLite).

One other feature of fluorescent bulbs is “color." The Color Replacement Index (CRI) is an international standard for measuring how close to sun light a given light is. The ordinary incandescent bulb has a CRI of between 60 and 75. Fluorescent bulbs tend to have higher CRI ratings; locally available bulbs rate in the low 80s . You can get so-called sun light bulbs on the Internet that rate in the 90s. You can learn more about fluorescent bulbs at such Internet sites as <fullspectrumsolutions.com>, <naturallighting.com>, and <city.davis.ca.us/deep/cfl.cfm>.

BCMC has taken steps to improve energy efficiency by converting many incandescent lights to fluorescent. About 5 years ago, Miner Seymour installed approximately thirty 80-watt fluorescent fixtures to replace 300-watt incandescent fixtures on main and second floors. In 2003, another 20 or so were replaced in the basement. This is a 73% decrease in electricity needed to provide equivalent lighting in those rooms and halls. If we burn each of these 50 lights for only four hours per month, we will use 192 KWh rather than 720 KWh, a saving of more than 525 KWh. Miner Seymour and the Trustees are to be congratulated on this improvement in energy efficiency!