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O.U.E. Update

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REDIRECTING OUR ENERGY

At the June meeting, the OUE Board agreed to allocate $2,500 to help finance the construction of solar panels for heating water at a site that we currently are working to determine. This decision, details of which are in following pages, reflects a new direction for OUE that began in May. At that time, the Board and representative members of the Task Force on Hog Factories decided to dissolve the Task Force and return to an organizational structure in which OUE operates autonomously. We did this because when OUE put together the Task Force in March 2003, our principal business was working with four separate groups who were fighting applications for hog factories the area. (For the details about these groups and the battles they waged, please see previous issues on our web site.) Three of these groups were successful in stopping applications, and the fourth is currently monitoring the operations of a hog factory it could not stop. The upshot is that the principal reason for starting the Task Force no longer holds and our new concerns also demand our attention.

Further, for the past two years, OUE has spent most of its energy on these hog factory applications. In doing that, we have moved away from an organization model that we had adopted in the mid-1990s after the dust had settled from the burner fight (and, again, see our website for the details). Using this model, we regularly engaged in public education about environmental issues, and our members continued to monitor the operations of the Lycoming County landfill. Most of our work, however, was with people fighting polluters, and we consistently urged such citizens to attend our monthly meetings to discuss possible strategies and tactics, for seed money, and for other kinds of support. As examples, we worked with groups battling tire-burning incinerators, fly-ash pollution, landfill expansions, polluted water, and with people cleaning up watersheds.

In focusing our attention on hog factories for two years, we avoided doing anything about an undeniably crucial issue, conservation and alternative energy sources. We intend to focus on this matter for the foreseeable future, and that begins with the next article. This new direction does not mean that we have turned away from the issue of CAFOs, and we are currently working with a newly formed group in Lycoming County up against the expansion of an existing hog factory. Further, we continue to urge people confronted with any kind of polluter to come to one of our meetings to discuss possible ways to fight back. ◆

The Case for Conservation and Alternative Energy Sources

Currently, the best known and most dramatic reason for conservation and alternative energy is global warming. In its barest essentials, this problem is caused by the burning of fossil fuels, especially the rapidly expanding fleet of private vehicles in the U.S. and elsewhere. Burning fossil fuels generates carbon dioxide, which is increasingly trapping heat in the earth's environs and is creating a warmer planet. Our arctic seas are melting, our weather is becoming increasingly unmanageable, our agriculture is poised to be overwhelmed by these changes, and we could all end up in a horrific battle for food, water, and shelter.

Though there are some scientists who not believe that such warming is occurring, and while the Bush Administration suggests we simply learn to live with it, the overwhelming majority of the world scientific community is convinced that we are flirting with catastrophe. We made a recent internet search on "global warming" and found over two million entries. Randomly sampling them made clear that virtually all included discussion of the dire threat this problem poses for everyone, everywhere. We urge our readers to sample the web on this issue to prove to themselves that global warming is real, and that its disastrous consequences are fast on our heels.

There is another problem out there, just as threatening but relatively unknown compared with how many people know about global warming. That problem is the coming exhaustion of petroleum reserves. A recent, widely influential book by Richard Heinberg, The Party's Over: Oil, War and the Fate of Industrial Societies (New Society Publishers, 2003), argues that within a few years the production of oil in the world will reach a peak and forever after that a growing demand for oil will increasingly outstrip a declining supply. Because industrial civilization, and in particular its transportation system, has been built on oil, Heinberg argues that in order for us to avoid an indescribably awful scramble for resources, we need to begin a massive effort to conserve and to develop alternative energy sources. Fortunately, British journalist George Monbiot has written an excellent summary of Heinberg's argument, and on the next page we have included an abridged version of it. ◆

The Bottom of the Barrel

George Monbiot, The Guardian, 2nd December 2003. The references for this and related articles on the environment by Monbiot can be found at: www.monbiot.com

In November, 2003, the British government approved the development of the biggest oil deposit discovered in British territory for at least ten years. Everywhere we are told that this is a "huge" find, which dispels the idea that North Sea oil is in terminal decline. You begin to recognize how serious the human predicament has become when you discover that this "huge" new field will supply the world with oil for five and a quarter days. Every generation has its taboo, and ours is this: that the resource upon which our lives have been built is running out. We don't talk about it because we cannot imagine it.

This is a civilization in denial. Oil itself won't disappear, but extracting what remains is becoming ever more difficult and expensive. The discovery of new reserves peaked in the 1960s. Every year, we use four times as much oil as we find. All the big strikes appear to have been made long ago: the 400 million barrels in the new North Sea field would have been considered piffling in the 1970s. Our future supplies depend on the discovery of small new deposits and the better exploitation of big old ones. No one with expertise in the field is in any doubt that the global production of oil will peak before long.

The only question is how long. The most optimistic projections are the ones produced by the US Department of Energy, which claims that this will not take place until 2037. But the US energy information agency has admitted that the government's figures have been fudged: it has based its projections for oil supply on the projections for oil demand, perhaps in order not to sow panic in the financial markets. Other analysts are less sanguine. The petroleum geologist Colin Campbell calculates that global extraction will peak before 2010. In August the geophysicist Kenneth Deffeyes told New Scientist that he was "99 per cent confident" that the date of maximum global production will be 2004. Even if the optimists are correct, we will be scraping the oil barrel within the lifetimes of most of those who are middle-aged today.

The supply of oil will decline, but global demand will not. Today we will burn 76 million barrels; by 2020 we will be using 112 million barrels a day, after which projected demand accelerates. If supply declines and demand grows, we soon encounter something with which the people of the advanced industrial economies are unfamiliar: shortage. The price of oil will go through the roof. As the price rises, the sectors which are now almost wholly dependent on crude oil - principally transport and farming - will be forced to contract. Given that climate change caused by burning oil is cooking the planet, this might appear to be a good thing. The problem is that our lives have become hard-wired to the oil economy. Our sprawling suburbs are impossible to service without cars. High oil prices mean high food prices: much of the world's growing population will go hungry. These problems will be exacerbated by the direct connection between the price of oil and the rate of unemployment. The last five recessions in the US were all preceded by a rise in the oil price.

Oil, of course, is not the only fuel on which vehicles can run. There are plenty of possible substitutes, but none of them is likely to be anywhere near as cheap as crude is today. Petroleum can be extracted from tar sands and oil shale, but in most cases the process uses almost as much energy as it liberates, while creating great mountains and lakes of toxic waste. Natural gas is a better option, but switching from oil to gas propulsion would require a vast and staggeringly expensive new fuel infrastructure. Gas, of course, is subject to the same constraints as oil: at current rates of use, the world has about 50 years' supply, but if gas were to take the place of oil its life would be much shorter. Vehicles could be run from fuel cells powered by hydrogen, which is produced by the electrolysis of water. But the electricity which produces the hydrogen has to come from somewhere. To fill all the cars in the US would require four times the current capacity of the national grid. Coal burning is filthy, nuclear energy is expensive and lethal. Running the world's cars from wind or solar power would require a greater investment than any civilization has ever made before. New studies suggest that leaking hydrogen could damage the ozone layer and exacerbate global warming. Turning crops into diesel or methanol is just about viable in terms of recoverable energy, but it means using the land, on which food is now grown, for fuel. My rough calculations suggest that running the United Kingdom's cars on rapeseed oil would require an area of arable fields the size of England...

We seem, in other words, to be in trouble. Either we lay hands on every available source of fossil fuel, in which case we fry the planet and civilization collapses, or we run out, and civilization collapses. The only rational response to both the impending end of the Oil Age and the menace of global warming is to redesign our cities, our farming and our lives. But this cannot happen without massive political pressure, and our problem is that no one ever rioted for austerity. People take to the streets because they want to consume more, not less. Given a choice between a new set of matching tableware and the survival of humanity, I suspect that most people would choose the tableware.... ◆

The OUE Board holds its meetings at 7:00 p.m., the second Monday of every month at the Watsontown United Methodist Church. Our meetings are open to the public. We invite citizens in the area who want to join our various efforts, or those who are wondering how they might best fight against pollution threats in their area, such as hog factories and landfills. ◆

OUE'S 2004 SCHOLARSHIPS

Each year, OUE awards a modest scholarship to three high school seniors, one each from Lewisburg, Milton, and Warrior Run High Schools, who plan to pursue environmental studies in college. The staffs at these schools select the students, and this year those receiving the scholarships are Jesse Suders from Lewisburg; Matthew Swallow from Milton; and Andrew Heebner from Warrior Run. We wish them all well in their studies!

Doing Something About Global Warming and Peak Oil Production: OUE'S Alternative Energy Project

The kind of information in the previous two articles marshaled us in the direction of our recent decision to allocate $2,500 toward the purchase and installation of some kind of alternative energy system. To that end, starting in June a sub-committee did research on the most prominent alternative energy technologies, and it met with Pamela Downey, president of SOLAIR, a company that markets and installs alternative energy equipment. Our research and our meeting with Ms. Downey allowed us to consider more carefully which energy system was most reasonable and realistic as our demonstration project. Shortly, we give a brief review of our findings.

However, before that review, we need to make the crucial point that, as the planet warms up and as we run out of cheap oil, research and development on alternative energy systems will rapidly shift into high gear. As a consequence, we can expect, as we have experienced with computing systems and other electronic equipment, cheaper and better systems for a long time to come.

In any case, what follows are our findings concerning our three alternative energy systems and what they would cost us now, rather than what they might cost us tomorrow.

Wind Power

Wind power machines generate electricity when the wind turns the blade and the energy from its revolutions is transferred to an electric generator. The electricity generated is converted and applied either directly to the electrical system in the building or it is stored in batteries for future use. Wind power machines are increasingly being designed to reduce two of their principal drawbacks, noise and the threat they pose to flying birds. But for our purposes the main drawback of wind machines is their current cost. The smallest wind power machine feasible for a small business or a residence in a region with regularly moderate winds would cost at least $10,000 and would have a very, very long payback period (this is the number of years it would take for the estimated savings in the electric bill to pay for the investment in the equipment).

In some parts of Pennsylvania, particularly in the Allegheny Mountains and in the Scranton area, the winds are regularly strong enough to make a $10,000 machine pay for itself in a much shorter period. Indeed, in relatively high-wind areas it becomes economically feasible to construct "wind farms," a grid of dozens or even hundreds of machines, and such farms are sprouting up all over the world. Scotland, the world leader in the use of wind power, uses wind from the North Atlantic Ocean to fuel a growing host of wind farms, and by 2010 the government plans to supply about one fifth of its energy needs from wind power machines. However, as it turns out almost all of the Central Susquehanna Valley has some of the regularly weakest winds in the state, and this combination of too little wind and too few resources led us to abandon a technology which is quite attractive in many ways, and which will likely be providing a growing proportion of total energy throughout the world.

Solar Panels of Photovoltaic Cells

The name of this kind of system explains itself: "photo" means light and "voltaic" means electricity. Here's how it works. Modules of silicon chips are mounted on panels and when the sun's rays hit the chips, which are "semi-conductors," the chips conduct a small amount of electricity. This electricity is converted and then directed into the building's electrical system, or stored in batteries. The panels are usually on roofs facing south and are on tracking mechanisms that allow them to follow the sun, which in Pennsylvania averages about 4.3 hours per day (compared to about 6.5 hours per day in much of the southwest). Though photovoltaic technology is tried and true, in our area a minimal system, say for the electricity needs of a sizeable barn, would cost about $7,500 with a payback period of about twenty-five years. Economies of scale work here, too, and some of our readers might well have seen great expanses of these panels in the southwest where scale is added to much, much greater average periods of sunlight. Unfortunately, the initial cost of installing such a system was too high, and the payback period too long, for us to see ourselves reasonably going in this direction.

Solar Water Heaters

The technology for these systems is the simplest one of the three discussed here. Such a system has panels, typically on roofs, aimed southward, that may or may not be on trackers. The panels for systems in our area contain tubing filled with a non-toxic anti-freeze that automatically circulates through the tubes when the sun is out. After this material has been heated from the sun it is pumped through a heat exchanger that transfers its heat to water from the building's intake system, which is then pumped into a solar storage tank. This "pre-heated" water in the storage tank is then pumped into a back-up water heater that will increase its temperature to the level desired by those using the water.

The great advantage of this system, in terms of our wanting to provide a demonstration project for our area, is its relatively lower cost. For example, such a system for a medium sized house would cost about $5,000-6,000, would pay for itself in about 15 years, and typically last 20 to 30 years. These numbers made our decision for us, the details of which follow.

Here is our plan. First of all, we are working to locate a proper site for the solar water system to be used as the demonstration project. Most promising in our search are recent conversations OUE Board members have had with Dan Sheaffer, Principal of Warrior Run High School, and Steve Fisher, President of the School's Board, who both expressed a keen interest in our project. When OUE Board members met with them in mid-July, all agreed the next step should be to arrange to have the school's maintenance supervisor meet with Pamela Downey of SOLAIR to discuss a feasible solar water heating system for use at the school. The system would be maintained by staff at the school and would be regularly accessible to both students and the public. We hope to report in our next issue that the project is underway.

The second part of our plan is to raise enough money to pay

for a system that could be efficiently operated at the location we select. We don't know now how much such a system would cost, but we do know that our $2,500 allocation would be far from enough to finance it. For that reason, the Board has decided to add to that allocation all the donations we receive in response to this newsletter. Further, we are planning to apply for grant money for this kind of equipment, but we do not want to wait until we find out if such funds might be available to us – which can be many months – before we get started.

We do know that whatever amounts we might raise from these other sources, we need your help! To that end, on the extra page of our newsletter, our usual "Letter from the OUE Board," we have made a special appeal for your support, and we urge you to consider it. We are hoping that a strong response from you, along with eventual funds from grants and other sources, will allow us eventually to go onto a second and third, and perhaps more OUE demonstration projects.

We will also hope to use funds in the future to subsidize conservation projects, and we will put a major focus on this matter in our next newsletter. Many key conservation methods, such as pressure testing houses for leaks and plugging those leaks, typically demand a much smaller initial investment and thus have a relatively short payback period, when compared to that of alternative energy machines. The point of all this is that the future soon will force us to choose both alternative energy and conservation, and the sooner we learn about them the better we will be able to navigate the stormy conditions that global warming and peak oil production are going to bring our way. ◆

Update on Lycoming County Landfill

As many readers know, OUE got its start in 1974 when current Board members Liz Steward and Clyde Peeling joined others to fight the siting of the Lycoming County Landfill (LCL). Though they lost that part of the fight, OUE gained the right regularly to monitor the landfill's operations and has done that now for thirty years. This monitoring mostly amounts to meetings at the landfill where its staff provides a broad overview of its operations. OUE Board member, Tim Fink, wrote this accounting of our latest meeting with LCL.

On July 12, 2004 the OUE Board and two of its guests attended an informational meeting at the Lycoming County Landfill. Steven Tucker, director at the landfill, and his staff discussed with us the following aspects of current landfill operations.

- LCL has acquired satellite-tracking equipment to be used to track how well the waste material is being compacted as it is laid into the ground. Doing so will help alleviate settling and provide the landfill with more room to put trash. Tracking information will be stored by computer for future reference and can also be used to track placement of hazardous waste, such as asbestos, and gas pipes to transport the methane gas that landfills continually generate.
- Concerning off-site odors, LCL has found that, due to settling, some of the pipes that transport fluids collected in the landfill were being exposed, and this allowed fumes to escape. They have taken action to cover up the pipes and believe they have gotten the problem under control.
- Another problem that has arisen is wind shifts at the daily work area that blow trash off-site. LCL will be investing in a portable fence system to keep the trash contained. LCL will soon place a weather station on a hill above the landfill to help it monitor and predict weather conditions.
- A new tire and undercarriage cleaner will be introduced so that vehicles leaving the landfill will not scatter debris on Route 15.
- As a part of a system that now tracks all vehicles dumping at the center, LCL has begun to track the number of tires brought in by haulers. This tracking allows LCL to discover if haulers are trying to bypass the tire fees imposed by the state.
- A new recycling facility is now operating, and is impressive enough to merit a visit there to see it working. This building accepts recyclables from six counties in the area and separates them for dispersion to businesses that return them to consumable use.
- As another way to save landfill space, for three years LCL has been researching ways to recycle food products. Professor Tom DiStefano of Bucknell, who has been leading this research effort, gave a presentation on "Green Tech.," which is the use of municipal and food waste to make gas for energy. Such wastes are composted in an anaerobic digester, and the gases that are released are used for fuel. The leftover waste is then put back into the landfill, using less space than the original material. LCL currently is studying the feasibility of a full-scale project. ◆

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