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SOLAR ENERGY

The sun alleviates depressions

Despite a gloomy situation, promoters of solar energy are confident people will soon see the light. Believed to be a solution to the energy crisis of the 1970s, solar power has lost some

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of its glow: the price of a barrel of oil has dropped and people wrongly think the sunny side of the street is always more expensive.

Power is political

Most of all, solar power is not a priority among federal and provincial governments who recently cut back on solar and other renewable energy projects in order to tackle major threats breathing down their necks: budget deficits, the fear of an impending recession and free trade with the United States.

In that context, government priorities focus on a more efficient use of traditional energy by existing industries.

Yet solar advocates say nearsighted politicians who look for quick fixes to economic woes will make us all pay in the long term. Solar groupies say the sun is already coming out of the shadows as the public becomes aware of how traditional forms of energy harm the environment.

The dangers of unwise choices

Featured on a long casualty list: polychlorinated biphenyls (PCBs), cancer-causing agents which are still used as insulation in some electrical transformers, have been recently involved in two major environmental accidents in Quebec: the recent Exxon Valdez oil spill has wiped out a good part of the fauna and flora of the Alaskan coast; the burning of fossil fuels such as natural gas and coal is destroying Quebec maples via acid rain and warming the earth through the greenhouse effect (sun rays trapped in the atmosphere overloaded with carbon dioxide created by combustion); and while electricity is touted as clean energy, it also warms the earth's atmosphere, and building hydroelec-

tric dams destroys northern plants and wildlife while high-tension power lines are strongly believed to cause cancers.

Hefty price

While governments say there is no accurate way to put a price on the environmental damage, Robert Côté of the Quebec Solar Association said West Germans have been calculating it since 1982 but that governments simply won't face up to the facts. Experts such as François Allard, an engineer in charge of renewable energy projects at the federal Department of Energy, Mines and Resources (EMR), agree that "as soon as we will ask to put a price on environmental damage (caused by traditional forms of energy), many things will have to be reconsidered socially."

Côté and Christian Ouellet, who organized the April 12-13 solar energy colloquium held in Montreal by the Solar Association and the Association québécoise pour la maîtrise de l'énergie, say government priorities do not mean that the public is not interested in solar energy.

Ouellet is a former Université de Montréal architecture professor who heads the non-profit GRACE Institute, which promotes solar energy. He said the institute received 70 phone calls in one day after a Montreal daily had discussed his work.

Passive solar energy

Allard of EMR recognized Ouellet as the authority on passive solar energy in Quebec. Passive solar energy is produced when sunlight enters a building through windows, as opposed to active solar energy which is harnessed by costly solar collectors (generally installed on roofs).

Beginning in May, the GRACE Institute will offer contractors courses in the basics of passive solar energy—using high-performance windows to reduce heat loss, building more windows on the south side and less on the north side of a building for the same reason, planting trees on the south side to provide shade and reduce overheating in the summer, and so on.

Ouellet is also developer of the Gemini system, which has solved the problem of overheating in passive solar homes. The system, which combines electrical and solar energy to heat a home, is a way of keeping ambient temperatures constant: when the house is too warm, a blower sends warm air under a concrete slab in the basement and the warm air is later sent back through the home when temperatures decrease.

Building a first

The Gemini system costs one to two percent of the price of a new home (it can also be added to an existing home for slightly more) and is claimed to reduce heating costs by 30 to 50 percent, thus paying for itself within three years. With some government support, the first passive solar home functioning with the Gemini system was built last year in St. Hyacinthe. On March 1, a computer began a year-long monitoring of temperature changes in the home. Ouellet already has people interested in the system and he said it will sell like hotcakes once the study's results prove its cost-effectiveness.

Alain Côté, who built the St. Hyacinthe home, shares Ouellet's optimism. He said both the Federal and Provincial Governments were involved in the project because they did not want get beaten out of a good thing by their counterpart.

Ouellet said governments should promote his system because he claims it has a great potential for export: he said it is unique in North America and prefabricated homes can



be transported on a single truck and put together in one day. "There are no gadgets and the only maintenance needed is washing windows!"

Though the architect earns a living by building solar homes, he said his institute is non-profit and has "handed the Gemini system on a silver platter" to private contractors. Ouellet said if 50 percent of Quebec homes used passive solar heating, the government would save money because demand for electricity would be lower during peak periods (4 to 7 P.M. on cold winter days). "When it's very cold, we always have beautiful sunshine," he said, glowing.

But beyond the financial savings, Ouellet said the greatest advantage of solar energy is that sunlight is non-polluting and that it increases quality of life: Scandinavian studies have shown that increased sunlight decreases the rate of psychological depressions, Ouellet said, adding that seniors' homes, hospitals and rehabilitation centres could certainly benefit from that.

Active to make comeback

Côté of the Solar Association said governments dealt solar energy a harmful blow by writing it off as too expensive. Though active systems are still too costly to heat homes, they are cost-efficient when used to heat industries, apartment buildings and pools. Ouellet is certain that active systems will

make a comeback when research reduces their cost.

Solar activists also want governments to push research in other forms of active solar energy to reduce their cost, and plan for the future, when oil prices rise and environmental damage is more evident.

Some of the promising "active" devices include domestic hot water heating systems which reduce heating costs by 40 percent (with the energy crisis over, Energy, Mines and Resources stopped subsidizing the systems in March 1988). While a traditional hot water heating system costs \$ 500, a solar one costs on average \$ 1,800 to \$ 2,500; without the government subsidy, Allard, of EMR, said the system only pays for itself in 10 to 15 years, by which time the system might have to be replaced anyway.

Current uses

Photovoltaic cells convert sunshine into electricity. They are mostly used where electrical power lines are not present—to power satellites, "racing" cars (up to 80 km/hour), pocket calculators and telephones along the Eastern Townships autoroutes.

But at a cost of 25 to 50 cents per kilowatt/hour produced, photovoltaic energy is far from competitive compared to hydroelectricity, which only costs about four cents per kw/hour.

Slashing research and development

Such economic realities and political priorities have led the Federal Government to stop subsidizing energy-saving devices such as insulation and solar water heaters. More recently, Finance Minister Michael Wilson halved existing research on energy conservation and renewable energies and trimmed staff in those areas. (Renewable energy includes that produced by the sun, the wind, tides and animal and plant waste.)

In Quebec, where the Government's interest is in promoting and exporting electricity, the department of renewable energies has been closed and the focus has been put on electricity, oil and uranium.

Though Quebec has not totally given up on solar energy, Ouellet said "right now, we can't ask for a research grant." A Sherbrooke

developer interested in the Gemini system took his grant application to Ottawa, where projects are considered on a case-by-case basis.

Natalie Gallimore, executive coordinator of the Solar Energy Society of Canada, said the federal cuts are unfair, considering that Ottawa has invested millions in the "uneconomical" Hibernia oil project off Newfoundland.

But solar activists are confident that governments are only delaying progress and that they will jump on the bandwagon as soon as public demand for solar energy increases. Gallimore said it was ironic that Hydro Quebec blamed the last blackout on magnetic storms around the sun: tongue in cheek, she said it was "another indication of the solar force taking over."