

VILLAGE VIEW

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What's happening in the solar industry? It's spotty, but making definite progress. People like me who are impatient with details of studies, surveys, tests, and trials may feel discouraged and may almost have resigned themselves to a future without the availability of solar energy, but dozens of isolated instances in different parts of the country are proving the feasibility of harnessing the sun's energy, saving thousands of barrels of oil, and slowly but surely bringing the cost of solar installations down to affordable levels.

Near Reno, Nevada, the Sierra Pacific Power Company is planning to convert one of its two 110 megawatt units to solar. Ten thousand sun-tracking mirrors will save the equivalent of 550,000 barrels of oil annually if the plans are carried out. The heliostat mirrors will occupy a 500-acre field adjacent to the Fort Churchill plant and focus sunlight on the central receiver topping a 700-foot high tower.

At Cape Canaveral, Florida, an experimental solar house near the Kennedy Space Center uses energy-producing photovoltaic devices installed in roof panels to generate 75% of the electrical energy needed by the three bedroom, two-bath house. Sunlight striking the panels generates direct current which goes to an inverter box that turns it into alternating current to run household appliances such as ranges, air conditioners, and dishwashers. The solar panels contribute 750 kilowatt hours each month to the electricity used in the house; there are no moving parts, and experts estimate cell life to be 20 years.

The experimental house is one of eight in the country, and Arthur Litka, director of the Florida Solar Energy Center, believes that the price of photovoltaic panels can be brought down to \$10,000 per installation which would make the system cost-effective for residential use.

Dr. Charles E. Backus, director of solar research at Arizona State University, believes that up to 10% of the nation's electric power can come from solar cells by the year 2000.

The Solar Energy Industries Association projects residential sales of solar systems will more than double in 1982, and exceed \$157 million. Both Backus and Litka recognize the industry is in its infancy now, but with Mobil, Atlantic Richfield, and Westinghouse all working on solar technology, they are optimistic.

"Big oil companies know they won't be in business 50 years from now if they depend on fossil fuels," says Backus. "They have the money to invest and the scientific know-how

to reduce the cost of silicon-semiconductor cells." Power companies, too, hope photovoltaic systems will negate the need to build new power plants. Tracy Smith of Florida Power and Light says, "It's always cheaper not to build a new plant. The more options we have, the better off we all are."

Architect Rodney Wright, in an analysis of 31 cities across the nation, shows that in Seattle, Washington, solar heating can provide 94% of total residential requirements, ranging from 89% in January to 100% from February through November; in Burlington, Vermont, the sun can provide 92% of a home's total heating requirement, he writes in his book, **Passive Solar House**.

In Roxbury, Massachusetts, a solar project sponsored by the Urban Solar Energy Association of Somerville, the Greater Roxbury Development Corp., and the Northeast Solar Energy Center, is retrofitting housing units with solar collectors that fit under the three-window bays typical of the city apartment buildings. The panels cost about \$300 each, or \$10 a square foot, for materials and are expected to save about \$50 worth of fuel each season. For additional information, write the Urban Solar Energy Association at 277 Broadway, Somerville, MA 02145.

A new ten-room house on two acres of land in Carlisle, Massachusetts, designed by Solar Design Associates of Lincoln and built by Builders Collaborative of Acton, is roofed with solar cells which convert sunlight into electricity. The system is engineered to produce about 9500 kilowatt-hours a year or 86% of the household's projected demand. In addition to generating photovoltaic electricity, domestic hot water is supplied by the roof-integrated solar thermal collectors. A wood-burning stove provides back-up, and an electric air-to-air heat pump supplements both space heating and the hot water supply.

Are these concrete examples of solar energy development but isolated slices of a pie-in-the-sky dream? Or are they prototypes of the future direction the country will take before fossil fuel supplies are entirely exhausted?

In 1980 world population stood at four billion people; fifty years from now (unless wars and food supply depletion exercise devastating controlling influences) Planet Earth will support a population double that size. To supply the energy needs of all those people and to maintain or develop the quality of life Americans have come to accept as their prerogative, will require far more energy than is currently available.

Our best hope for averting future wars and the starvation of millions of the planet's people lies in the development of energy supplies that cannot be depleted and that are and always will be (as long as the sun remains viable), available for harnessing. Answers to the problem of power sources for future generations may well depend upon the development of solar power satellites which would orbit Earth 22,300 miles in space and transmit continuously the sun's rays back into our atmosphere on microwave beams.

Solar power satellites could supply our hungry world with far more than energy. Advocates foresee them helping to grow food, stimulating industrial activity in space, and encouraging the migration of the human species beyond the confines of this solar system.

If such projections of technological advances appear unrealistic, review some of the changes of the past 150 years. Machinery largely replaced man and animal power. Trains, buses, trucks, cars and aircraft replaced horses and oxen. Electricity replaced candles and kerosene lamps, as well as powering machinery. The telegraph, the telephone, the radio, the television, and now the computer, supplement conventional communication such as published material, letter-writing and conversation.

Many of us well remember aunts, uncles and grandparents whose lives began over a hundred years ago, before what we call today "modern technology" brought these changes to our society. What will the grandchildren of today's little children consider "hopelessly old-fashioned" when they look back at the closing days of the 20th century?

Will the tug-of-war between nuclear and solar power seem to them ludicrous? Whatever their opinions may ultimately be of our choices, it's certain the world they live in will be profoundly affected by the decisions we make in our time. Certain, too, that their world will be profoundly different from ours, either for better or for worse.

Try to imagine what our world would be like if 17th century Europeans hadn't dared immigration to the New World, if global explorers had remained safely at home and dreamed without action, if Thomas Edison, Robert Fulton, Ben Franklin, the Wright brothers, and hundreds of others like them, had been discouraged at their ideas and derided their notions?

The challenges to our minds posed by problems that seem insoluble are the seeds of change and progress. If necessity is the mother of invention, innovation may be its father. Surely the solar solution is not one to be overlooked simply because it's relatively uncomplicated. So is the wheel.