

Renewable Energy Technology in P.E.I.

How P.E.I. leads the nation.

by Bruce McCallum

L'Île-du-Prince-Édouard s'est beaucoup plus engagée à mettre au point la technologie des sources d'énergie renouvelable que ne l'a fait toute autre province ou même le gouvernement fédéral. A cet effet, elle a accordé des subventions importantes à la recherche en matière d'énergie solaire et éolienne et pourrait relancer son industrie forestière. Bruce McCallum décrit certains des programmes les plus importants et les plus réussis et montre comment le gouvernement provincial doit maintenant s'efforcer d'intéresser un plus grand nombre de ses citoyens aux méthodes efficaces de conservation.

People seem to regard P.E.I. as a Mecca of renewable energy development in Canada, with Arks, wind generators, solar systems and wood-fired electrical plants sprouting up all over the Island. Strictly speaking, this is not the case. The use of renewable energy sources in P.E.I. is currently not higher per capita than in many other parts of Canada. But there is considerably more potential for comprehensive development and use of renewable energy in P.E.I. than elsewhere, largely due to the strong interest of the provincial government and, more specifically, of Premier Alex Campbell.

Campbell appears to have developed an interest in the subject through his advisor, Andy Wells. Their interest resulted in the establishment of the Institute of Man and Resources (IMR), a quasi-government agency headed by Wells. Most of the work in the renewable energy field in P.E.I. centres around the Institute, whose primary function to date has been to promote the development and use of renewable energy in the province.

P.E.I. makes an interesting contrast with the other provinces. In P.E.I. the government takes an active role in promoting the use and development of renewable energy. In most other provinces and at the federal level the situation is reversed; public and grass roots organizations are pressuring the various governments to become more interested and responsive in the field of renewable energy.

The top-down approach situation in P.E.I. has certain advantages; it means that the considerable financial and other resources of the provincial government are available for the development of renewables. On the other hand, because of the very activities of the IMR, there is little activity on the part of environmental and other citizen groups such as the Solar Energy Society. There is no close network of people working in the field outside of government as there is in most other provinces. And this poses obstacles to the spread of appropriate technologies throughout the population. The close identification of the Premier with the IMR also embodies certain risks. If Campbell's Liberal government were to be defeated in a future election, the succeeding government might have a less favorable view of renewable energy and withdraw its support.

IMR has put together a fairly comprehensive program of renewable energy development funded jointly by both the federal and provincial governments. Its wind energy program has three parts. The first part involves investigating the wind energy resources of the province through examination of available wind data and with the aid of four monitoring stations, three fixed and one mobile. The second part of this program tests small-scale wind generators, for example, an 8 to 10 kilowatt heat-generating wind turbine. The third part of the wind program involves the study of large (50 kilowatt plus) wind generators and their incorporation into the existing electrical utility grid. As part of this program, a 50 kilowatt vertical axis wind generator is soon to be erected on St. Elinore's school. It will employ an induction generator and will be tied directly to the P.E.I. electrical grid.

Under the solar program IMR has conducted a study of available solar insulation and the optimal angle for solar panels on the Island. It is also investigating ways to improve the efficiency of air collectors as well as various glazing materials.

L'inconvénient d'un tel engagement provincial envers l'énergie renouvelable est que si le gouvernement change, les efforts peuvent être stoppés. Au contraire des autres provinces, l'I.P.E. ne dispose d'aucune organisation puissante de citoyens dans le domaine de l'énergie renouvelable car elle ne semble pas en avoir besoin.

The most concrete part of the solar program is a solar water heater demonstration program under which 15 solar water heaters are being given out free to Islanders. The program is intended to demonstrate the use of solar energy to the public and to test various components and systems. Five units were installed in 1977 and the rest will be installed this summer. The Institute has experienced considerable difficulties with component supply and high installation costs.

This summer a 16-unit multiple family dwelling heated by an air/rock solar system will be built in Charlottetown. Nick

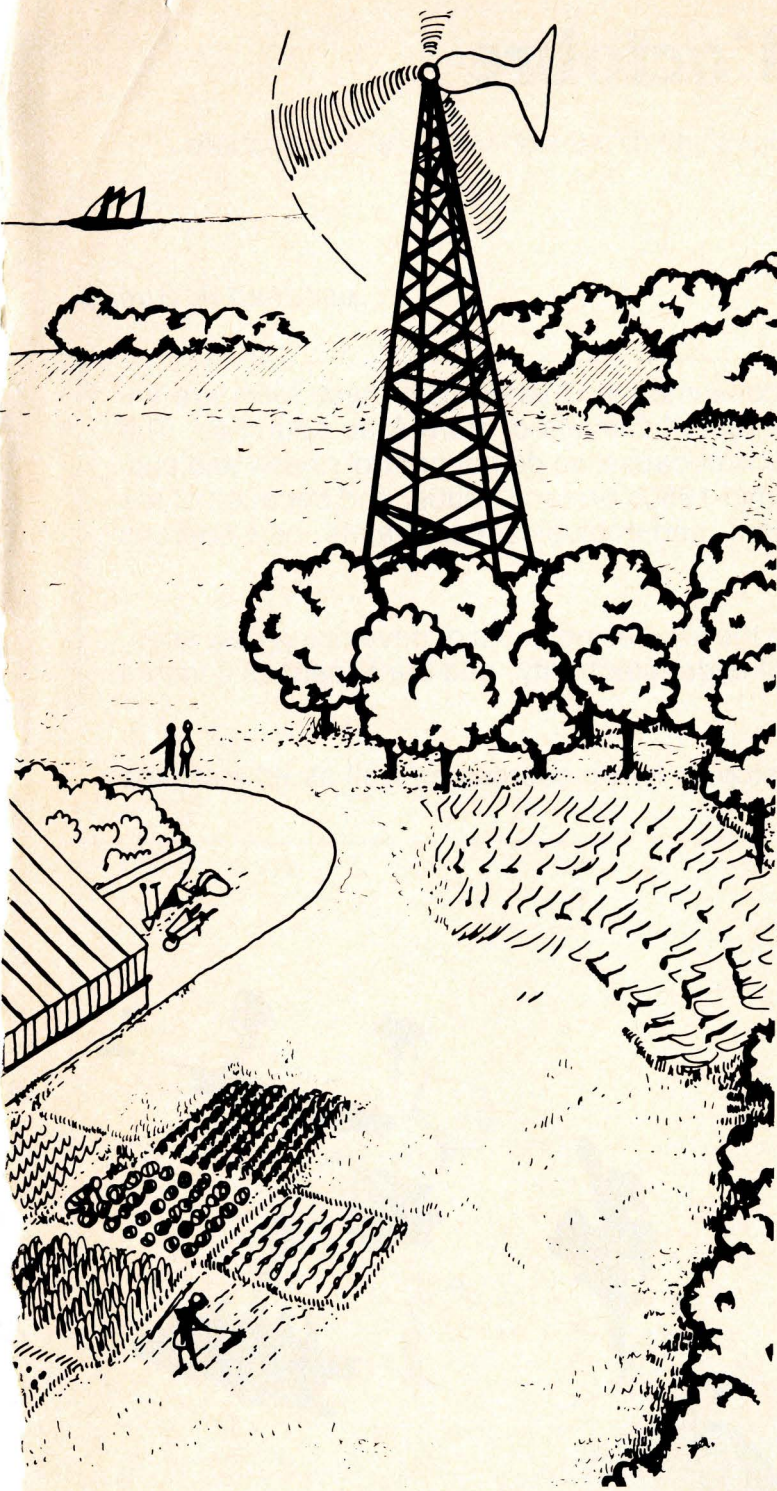


Nicolson is designing the solar system. IMR is also planning a workshop on the construction of the solar water heaters.

The "biomass" program of the Institute has focused mainly on the use of wood as a source of energy for electricity generation and the heating of large buildings employing a system known as co-generation. A study carried out for IMR in 1977 indicated that electricity generation and heating from wood is economic if one calculates the jobs created in supplying the wood and the additional benefits of spending money in the local economy rather than exporting it to buy foreign oil. Having determined that wood-fired power generation can be economic and that there is an adequate resource base (nearly

60% of P.E.I. is forested), the Institute is presently conducting another study to determine which agencies (private and public) will be needed and which actions will be necessary to construct wood-fired power plants and to ensure a supply of fuel wood for them.

IMR's interest in wood-electric plants dovetails well with the reforestation plans of the provincial Agriculture and Forestry Department. The department plans to reforest some 200,000 acres in P.E.I. over the next 10 years, replacing slow growing low-quality trees with a variety of rapid growth high-quality species. Wood-fired generating plants offer a possible economic use for the existing poor-quality wood.



Large wood heating and in some cases co-generation systems are also being considered for a number of institutional buildings in P.E.I., including a new airport building, several hockey rinks, schools, and a hospital. The new Elmsdale school in West Prince County will likely employ a wood gasification unit to provide fuel for both heat and electricity generation.

IMR also has an information program through which the public can obtain information on renewable energy and energy conserving house designs. As part of this program the Institute has produced a question and answer booklet on wood heating.

The Institute also plays a unique facilitating role. It advises people who come forward with project ideas and in some cases assists them in plugging into federal renewable energy funding programs. With this assistance a solar greenhouse project and a farm-scale methane digester will probably be built in P.E.I. with federal funding. People in other provinces who come forward with such ideas cannot get this assistance and often fail to obtain federal funding.

The best-known of P.E.I.'s projects is the Ark, a solar/wood heated greenhouse, aquaculture, and living structure built by the New Alchemy Institute on Spry Point. The New Alchemists have also conducted a number of workshops on solar, wind, and wood energy across the Island. In conjunction with IMR, they recently sponsored a major conference on ecological agriculture.

A number of people are active in wind generation in P.E.I. John and Donna Ramsay of Emyvale power their home with a two kilowatt Australian Dimlite wind generator. Their company, Alternattech, sells wind generators across Canada, primarily to utilities such as Manitoba Hydro for power at remote sites. Solar water heaters and furnaces are also appearing. In addition, an increasing number of people are incorporating elements of passive solar design into their homes.

The renewable energy source most popular at the individual family level is, not surprisingly, wood. Sales of wood stoves and furnaces have approximately doubled each year for the last three years. Most of these sales have been to middle class urban and sub-urban people. They purchase stoves primarily for aesthetic reasons—for example, putting free-standing combination fireplaces into their rec rooms—and for security, to have a source of heat in the event of a power failure, which is not uncommon during P.E.I. winters. Economizing on fuel oil is a secondary consideration for many of these people. Younger people, most of them recent immigrants to the Island, are another, somewhat smaller group who buy wood stoves and furnaces. They generally use wood for all or at least a major portion of their heating. Economic self-sufficiency and environmental concerns are their main reasons for heating with wood.

Rural Islanders also commonly use wood cookstoves for a portion of their space heating, water heating and cooking needs. However, these people for the most part do not use modern efficient stoves and furnaces. If the Island is to make a transition to a renewable energy base, it will be necessary for this large section of the population to move into efficient woodburning units and to use wood for a major portion of their space, water heating and cooking needs.

The work of the Institute of Man and Resources is in many respects impressive. It gives P.E.I. a more comprehensive renewable energy program than any other province or the federal government. The main shortcoming is that most of its activities are of an academic and research nature. These activities are not visible to the public and they have not affected their lives in any tangible way. A major task ahead for both the Institute and the provincial government must be to educate and involve Islanders in the renewable energy field.

Thus, the transition to a renewable energy based economy in P.E.I. is progressing slowly. Certainly prospects are brighter here than elsewhere—but P.E.I. still has to convince the majority of its people that renewable energy isn't a luxury but a necessity. ■