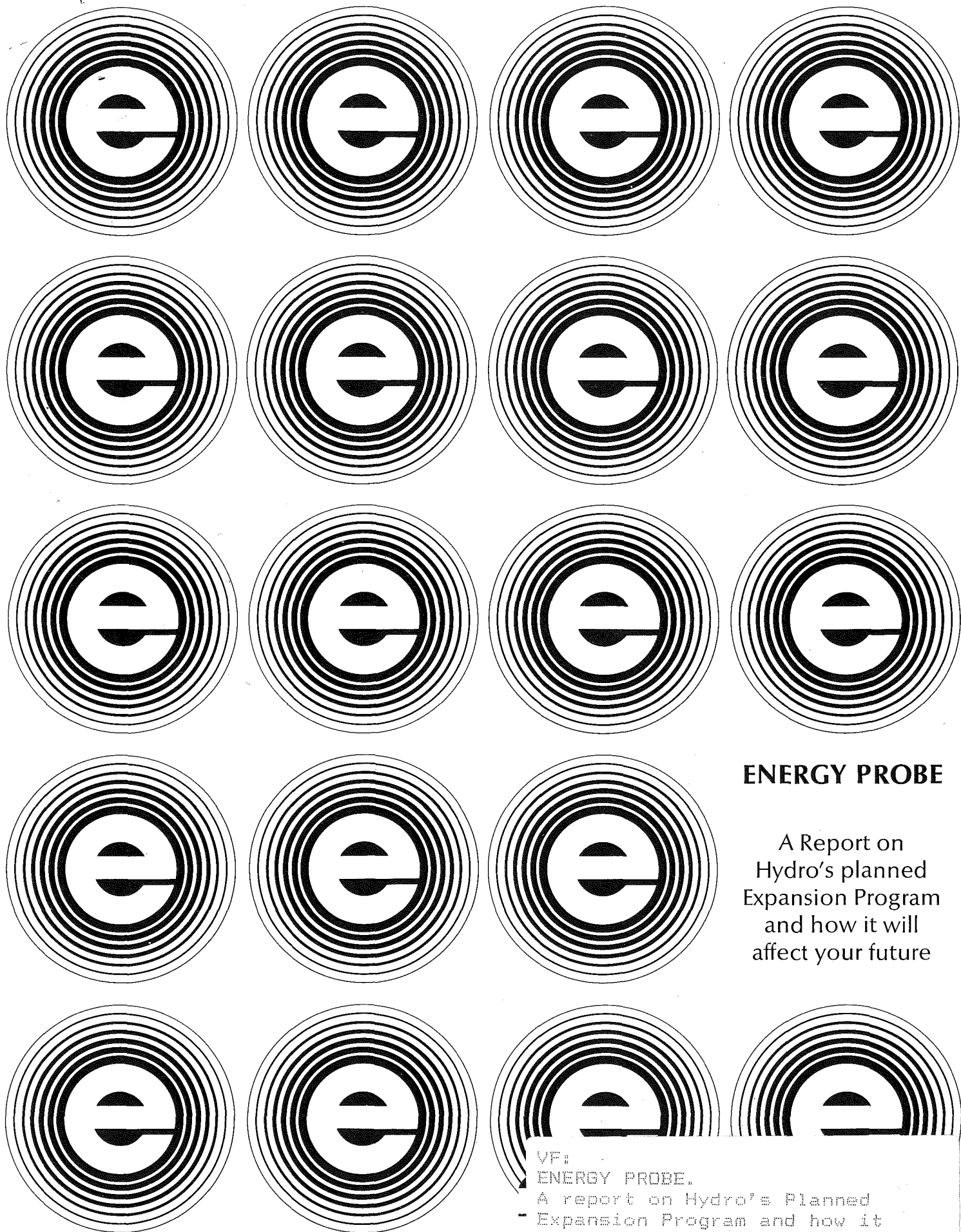




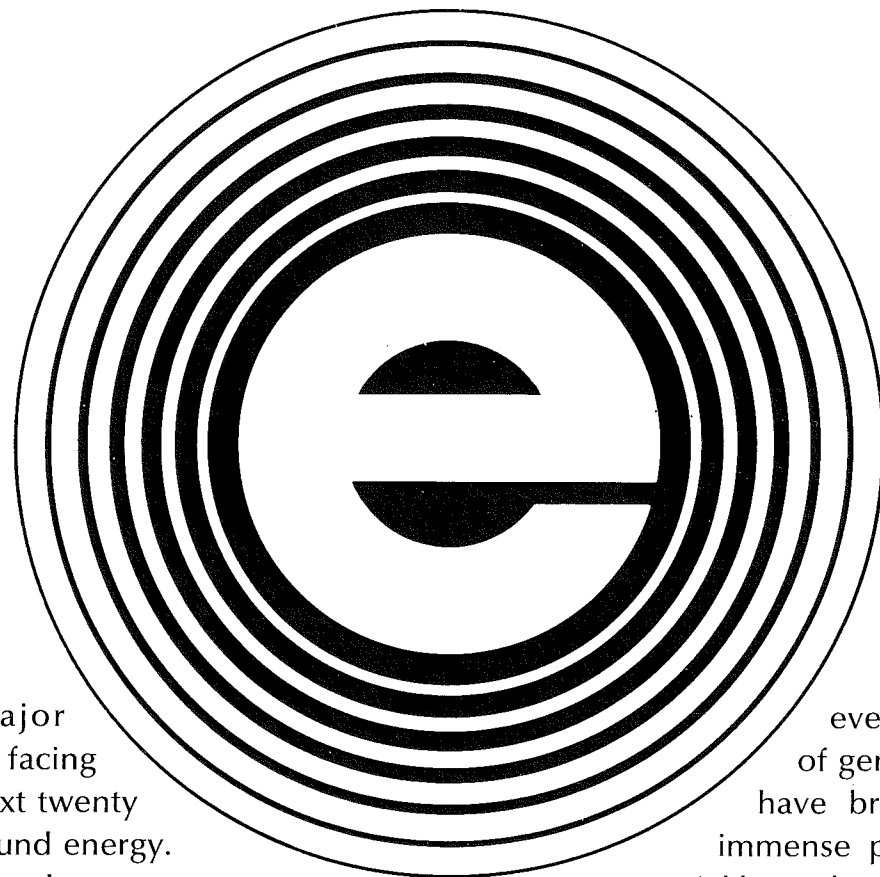
ENERGY PROBE

A Report on
Hydro's planned
Expansion Program
and how it will
affect your future

VF:
ENERGY PROBE.

A report on Hydro's Planned
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will affect your future....RN5063

INTRODUCTION



Many of the major social problems facing Ontario in the next twenty years revolve around energy.

The solutions we choose to our energy problems will largely determine what kind of people we will become and what kind of society we will live in. At present, Ontario Hydro is in the process of a massive expansion program which will have profound effects upon our lives and the lives of our children.

Hydro is no longer building large dams which generate cheap electricity. For the past 20 years it has been generating increasing amounts of electricity by burning coal. Recently it has turned to oil and natural gas as well. In the future, Hydro is gambling that nuclear fission will be able to provide most of the power for Ontario's soaring electrical needs. How-

ever, these new forms of generating electricity have brought with them immense problems and potential hazards.

Hydro's projected expansion program will have a tremendous impact upon Ontario's agriculture, economy, environment, industrial development, and recreation. The whole thrust of Ontario's future will be shaped by a handful of Hydro "Experts" who are involved in making the crucial decisions. Yet, taken as a whole, Hydro's expansion program appears to be blind to the immense social and environmental problems it implies for the future. Furthermore, it provides no opportunity to avoid these problems, consider alternatives and decide on other courses.

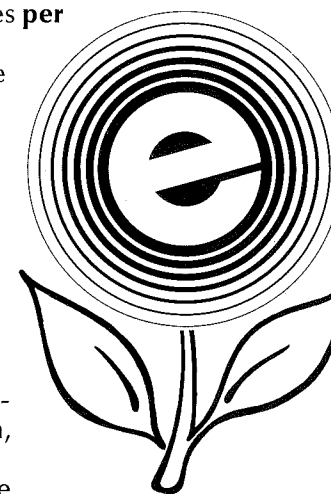
THE MAJOR PROBLEMS

1 Agriculture and Land Use

An estimated 25% of Ontario's prime farmland has gone out of production over the past ten years. According to Edward Kowal, chairman of the Government's farm classification committee, prime agricultural land is now disappearing at the rate of somewhere between 43 to 86 acres per hour!

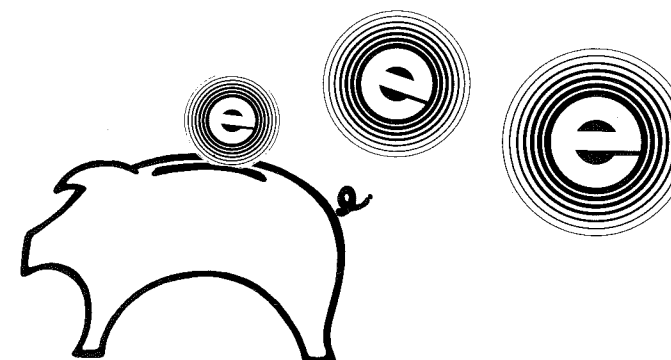
At this rate, there will be almost no agricultural land left by the turn of the century, making us completely dependent upon outside sources for our food supply.

Hydro must accept a large part of the blame for this erosion of prime land in Southern Ontario. Hydro's expansion program is concentrated in the already overdeveloped areas of the South, thereby helping to promote needless growth. At the same time Hydro will be using large amounts of productive land as corridors for a vast network of transmission and distribution lines needed to move this bulk power.



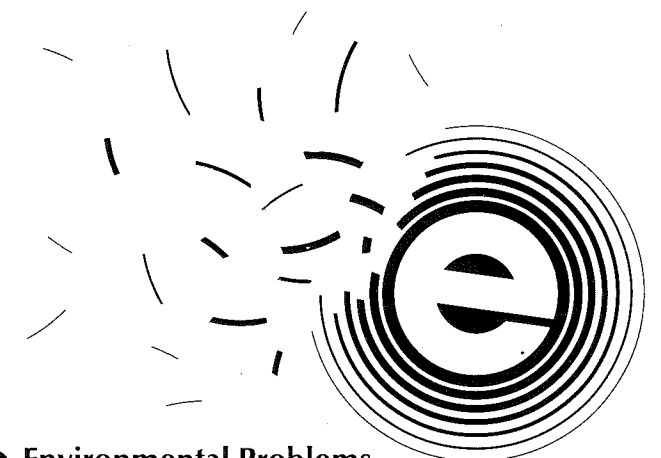
2 Economic Problems

Hydro's expansion program will cost over 40 billion dollars by 1986 alone. This represents nearly a seven fold increase of Hydro's present 6 billion dollar assets and over 100 times Canada's share of The St. Lawrence Seaway costs.



To pay for this expansion, Hydro plans to raise its electricity rates — nearly 100%, in the next five years alone — and borrow heavily from foreign money markets, primarily the United States. Hydro's present policies and rate structures encourage consumption and even waste of electricity, especially by heavy consumers. Hydro's own staff economists report that industry and large users are not paying anywhere near their share of the cost for producing electrical power.

The counsel for the Ontario Energy Board, a government commission that studied Ontario Hydro's proposed rate increases, recently criticized Hydro for being "unconcerned about efficiency, bound up in inflation psychology . . . And unfair in allocating its costs among its users."



3 Environmental Problems

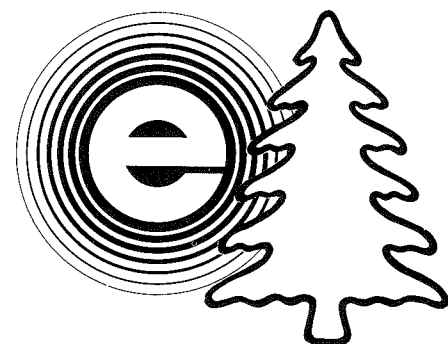
No question about it — electricity pollutes! Whether in the process of extracting fuel to supply the generating stations, or in the generating process itself, Hydro's proposed expansion will definitely bring about disruption of the natural world, adversely affecting human health and welfare.

Land

Extraction of coal, oil and uranium severely damages land through strip mining, acid drainage, ecologically unsound methods of extraction and by the disposal of huge quantities of solid wastes.

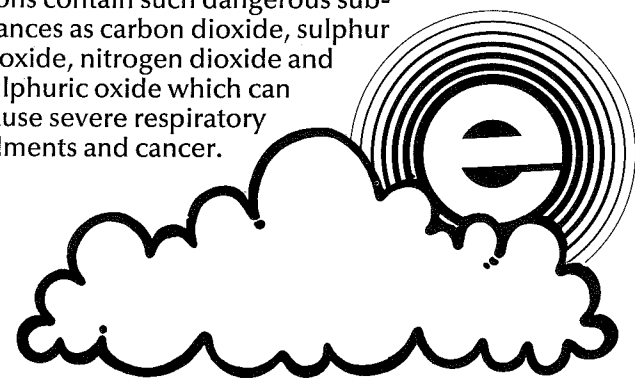
Hydro dams take large areas of land out of use and destroy ecological life patterns through flooding.

The massive distribution of electricity over a vast network of transmission lines also affects large quantities of land (26 acres per mile of transmission corridor) and at the same time destroys the aesthetics of the Ontario countryside.



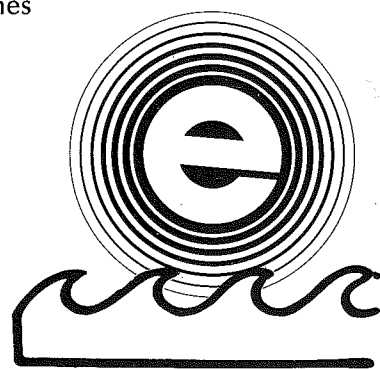
Air

Burning of coal and oil to generate electricity produces huge amounts of hazardous gas, fly ash, slag and fine particles which are thrown out into the atmosphere and which cannot be satisfactorily controlled given the present state of our pollution technology. These emissions contain such dangerous substances as carbon dioxide, sulphur dioxide, nitrogen dioxide and sulphuric oxide which can cause severe respiratory ailments and cancer.



Water

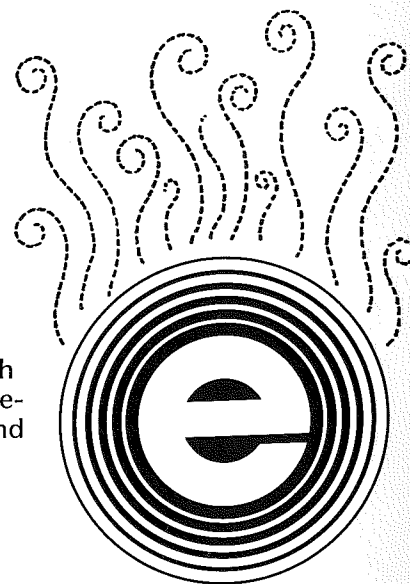
Our water is polluted by oil spills and waste discharges from mines and generating plants. Nuclear plants will contribute enormously to the thermal pollution of our Great Lakes system. Huge quantities of water are being returned to these lakes at temperatures up to 20 degrees warmer, thus changing the ecology and micro organisms of the lakes.



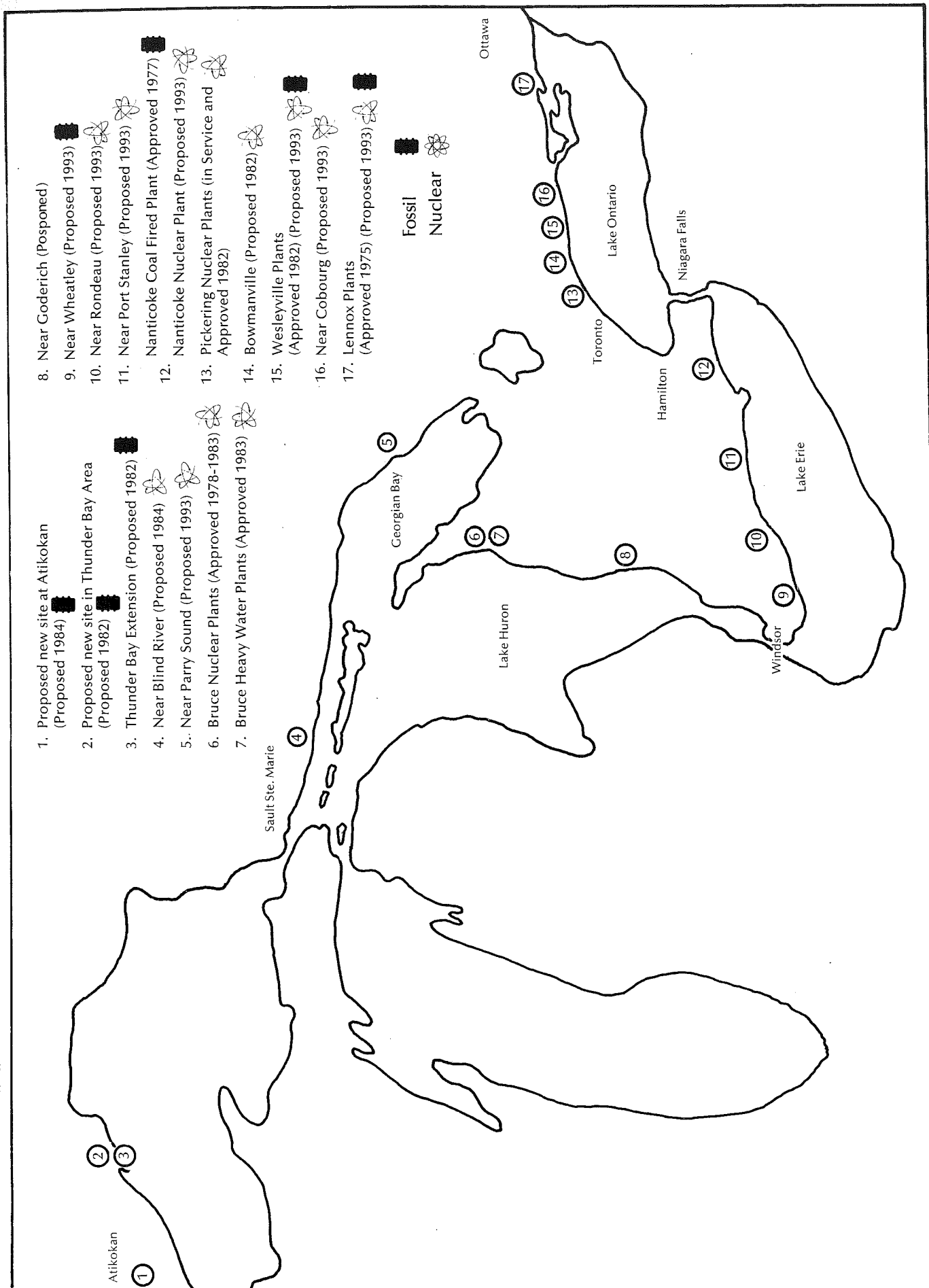
Global Effects

Added to all the above is a growing concern about the overall thermal pollution of our planet. Vast quantities of waste heat from generating plants and industry are just being released into our atmosphere.

Some scientists are alarmed that this will alter our climate within a few years bringing with it such disastrous consequences as flooding and widespread droughts.



Approved and Proposed Hydro Stations in Ontario, 1974-93.



THE NUCLEAR QUESTION

Hydro believes the answers to our environmental problems and the solution to our energy needs lie in the development of nuclear power. But recent research has revealed enormous problems and hazards associated with a reliance upon nuclear generation.

Nuclear power plants are actually just a new kind of steam-electric plant in which the heat to produce the steam comes from the splitting of atoms. The Canadian "CANDU" systems use natural uranium as fuel and a heavy water "moderator". The uranium is contained in metal assemblies known as fuel bundles. These are inserted into tubes running through a tank called a reactor. When the fuel is surrounded by the heavy water moderator, a chain reaction of atom-splitting is set up. This causes the fuel inside the tubes to become hot and this heat is used to produce steam to turn the turbines which rotate the generator to produce electricity.

The major problems known to be inherent in our nuclear power system are:

- A) radioactive emissions
- B) storage and disposal of long-lived radioactive wastes
- C) the possibility of nuclear accidents
- D) thermal pollution.

Radioactive Emissions

In the operation of nuclear power plants, some radioactive material is constantly discharged into the outside environment through water and air effluents. These radioactive discharges, although small, cannot be completely removed from these effluents, given our present state of technology. They are dispersed into our air, our lakes and our land.

On the question of low-level radiation emissions, no one really knows the answers. It's known that the unborn fetus and rapidly growing child are the most susceptible to radioactive risks. The evidence of some U.S. atomic scientists strongly indicates that the emission from nuclear plants is already causing a tremendous increase in leukemia deaths and

birth defects. Other scientists reject these arguments, claiming that the present radiation emission levels are safe. Unfortunately, neither contention can be conclusively proven or refuted scientifically at present.

In view of the fact that the Canadian nuclear capacity is forecast to increase 1000 fold between 1971 and the year 2000, this controversy must be resolved before we proceed further along the nuclear path. The effects of radioactivity are irreversible.

Storage and Disposal of High Level Radioactive Wastes

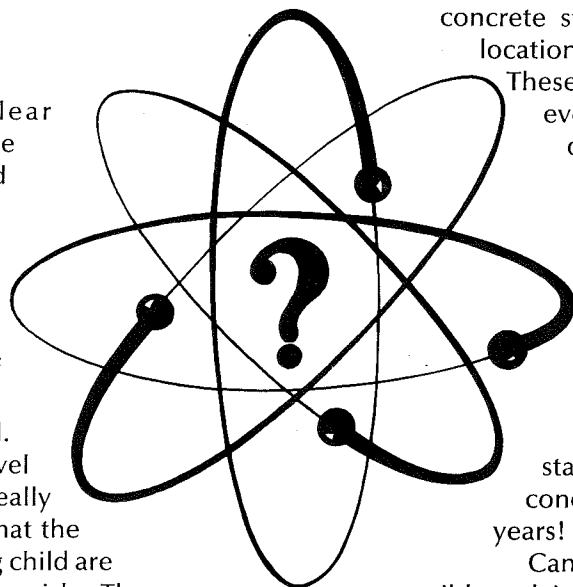
The most significant potential environmental problem from nuclear power is the safe transportation, storage and disposal of high level radioactive wastes. Some of these wastes, particularly plutonium, remain **extremely** hazardous for over a quarter of a million years. No country has yet found reliable methods of permanent "disposal" or containment, despite the fact that several have been tried and abandoned due to leaks.

Canada plans to build large, above ground concrete storage buildings in some "central location" in Ontario, to store its wastes.

These buildings will require replacements every 100 years or so due to radiation damage and will need very careful monitoring for thousands of years.

This solution would appear to be only an act of avoiding responsibility and bestowing this dubious legacy of waste upon our future generations — for it **assumes** that an eternally failsafe system to monitor the wastes will be devised and that we will have stable social, political and geological conditions for at least the next 240,000 years!

Canada does have some plans to possibly reclaim its spent rods and reprocess them into enriched uranium. This is an extremely hazardous, energy-intensive process which should not be seriously considered at present.



When dealing with this problem we must remember that we have no way to render radiation harmless. Radioactivity cannot be caught and stored again, nor can it be neutralized. If, for example, a storage tank leaks, the released radiation will continue to affect the environment and living things until it loses its radioactivity—sometimes a quarter of a million years later.

Reactor Safety — Accidents

In the matter of reactor safety, the Canadian CANDU system has many inherent advantages over the extremely dangerous American system. However, the horrendous destruction and contamination that would result from a nuclear accident raises the question whether any possible risk would be too high.

Nuclear proponents suggest that the likelihood of a reactor accident is not "credible". The opponents, on the other hand, point out that accidents will happen since every human activity is subject to human error. In spite of the small number of reactors currently in existence, there had already been 12 accidents throughout the world by early 1971.

Thermal Pollution

A nuclear reactor is only 30% efficient which means that the rest of the heat (70%) is released into nearby bodies of water in the form of returned cooling water. This water is returned to the lake (under the Canadian system) approximately 20° warmer. The effect upon local aquatic life could be disastrous although little is now known about the long-term effects. Scientists do know, however, that thermal pollution changes the habits of fish and modifies the ecological patterns in the area of the discharge. If we look at the projected expansion of nuclear power plants along both the U.S. and Canadian shores of the Great Lakes, we see that significant changes in the temperatures and ecologies of these lakes are almost inevitable.

Auxiliary Hazards

Recent revelations concerning lung cancer and silicosis (Black Lung) in large numbers of uranium miners at Elliot Lake, Ontario have confirmed the fears about the safety of workers in uranium mines. Over 16% of the veteran miners are already found to be suffering from severe forms of cancer and lung disease. The rapid expansion of Hydro's nuclear program and the export of uranium is being accomplished at the expense of human life, cancerous lungs and impoverished, broken families. This cannot be allowed to continue.

The residents around the Bruce heavy water (a substance required for the CANDU reactor) plant are experiencing the discomforts of hydrogen sulfide, the rotten egg gas. This gas not only stinks but is dangerous to health, even fatal in concentrated doses.

Added to all of the above problems is the possibility of sabotage or terrorism by political extremists, madmen or foreign powers. With the proliferation of nuclear facilities and the increased transfer of nuclear waste (on our highways, lakes and air space), the opportunity for theft or sabotage of enormously dangerous nuclear materials is greatly increased.

Public Debate

Whether Ontario Hydro should continue with or accelerate its nuclear power plant expansion is a question of public values. It is **not** merely a question of scientific expertise, nor economic expertise, nor any expertise at all. (In most cases the "Experts" throw up their hands and admit they just don't know what the medium and long-range consequences of nuclear pollution will be.) It is a common sense question—Do the benefits justify the risks? It is a question to be answered by an informed general public. A public that is made aware that nuclear power is not the final answer to our growing energy problems.

THE ALTERNATIVES

In a sense, Hydro has the same basic philosophy as the highway planners. They forecast greater highway requirements which generate more traffic which regenerate the need for more highways. To a certain extent Hydro is caught in a vicious never-ending cycle without seriously looking into other possible alternatives.

With an honest effort by both consumers and industry to conserve energy, it has been estimated that we could cut our electrical needs by nearly one half! If we made consumption and production efficiency the focal point of our energy policy rather than increased supply, we could substantially reduce our energy requirements to far below those of Hydro's future load projections. This would permit us a much greater flexibility of choice as to energy alternatives, yet still provide us with a very high quality of life. If we went further and altered our styles of life by emphasizing durability rather than disposability of goods; and substituted the ethic "enough is best" for our present idea that "more is better", we would find ourselves in a position to really develop solutions to our pressing energy concerns—without serious disruption to our environment or injury to our health.

Conservation and Efficiency

Even a cursory examination will point out that we can increase the efficiency of our energy utilization thereby reducing the total energy demand for practically all areas: Space heating and cooling, district heating, lighting, manufacturing and transportation.

- Better insulation practices would reduce heating fuel needs by up to 40%.
- Most modern buildings are lighted far more than necessary, sometimes 10 to 20 times too much. Lighting levels could be reduced on an average, by 50% without the slightest reduction in work efficiency. And lighting consumes 25% of all electrical energy!
- Products can be better designed to use less energy and a "Truth in Energy" tag attached to goods

so the consumer will know how much energy the product will use.

- Better recycling practices would greatly reduce energy demands because it requires a much smaller fraction of energy to reclaim metals like aluminum, iron or lead than is used in their production from raw materials. It is even possible to design industrial products so that they are easy to recycle.

- And perhaps most important, greater stress placed on the durability of many manufactured products would be a major energy saver. Think of it as making planned obsolescence **obsolete**.

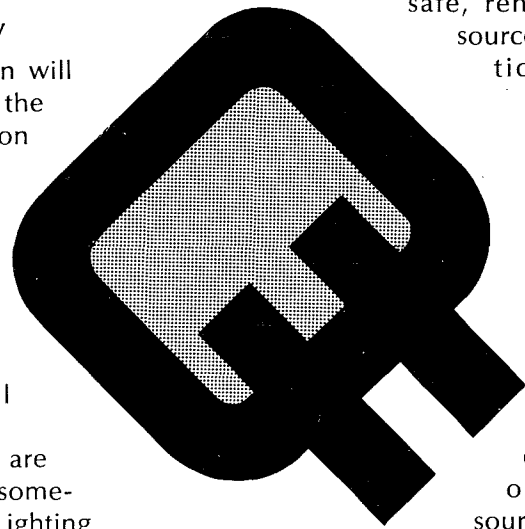
These are only a few of the possible approaches we could take in reducing our energy requirements. Hydro, which feels these problems more than anyone else, should be strongly pushing the people and the Ontario Government toward serious energy conservation policies instead of passively accepting the present doubling and redoubling of energy demands.

Alternate Sources

The beneficial effects from lowered energy consumption will be severely minimized without a massive step up in research and development expenditures directed towards the development of clean safe, renewable forms of energy. Such sources as solar radiation wind generation, methane gas from organic wastes, hydrogen fuel cells, geothermal power, magnetohydrodynamics and electronic power boosters already exist and must be made economically feasible.

Present government and industrial research and development funds are aimed at the search for new supplies of energy from existing sources with almost no funds earmarked for energy consumption technology or the development of alternate sources of energy. This is a direct

serious blow to the solving of our energy problems. Continuing to follow the same historical pattern which Hydro proposes, and the government acquiesces to, is keeping us from finding real and long lasting solutions to our energy problems.



WHO MAKES THE DECISIONS?

When Hydro puts forward its expansion program and advocates nuclear power, it claims moral impunity by stating that it is only responding to public demand and to the mandate given it by the government of Ontario. However, Hydro formulates its own growth rate predictions, which tend to be simple extensions of past trends and which ignore the potential to reduce demand and redirect growth. It is obvious from its economic policies that Hydro favors and encourages the massive consumption of electricity by large commercial and industrial users. It is hard to see how Hydro can claim impunity when it has knowingly subsidized large users, thereby prejudicially encouraging a demand for growth; and, at the same time, it has a history of hindering responsible public participation and choice.

In the past Hydro has operated pretty much on its own. It drew up its expansion plans and submitted them to the government for "Rubber Stamp" approval. There was little opposition from local residents since they were seldom informed of Hydro's plans in advance. In many cases the democratic process was flaunted by groups with special interests that benefited only the few.

Fortunately, this situation may be changing. In 1972, prompted by strong opposition in the areas affected, Premier Davis set up an independent inquiry, the Solandt Commission, to examine the proposed transmission line between Pickering and Nanticoke (on Northeastern Lake Erie). The Solandt Commission studied alternate routing possibilities, held a series of very well attended public meetings in the local communities, and recommended a substantially different route which was accepted by the Provincial Cabinet in place of Hydro's recommendations. Perhaps the Solandt Commission signals the winds of change, for here it was shown that people can have an impact upon Hydro's policies.

In the same vein, the Ontario Energy Board, a semi-independent government body, was recently commissioned to study Hydro's rate increase proposals. It released a report critical of Hydro's policies particularly in regard to the inequities in its rates, its high reserve margins and the acceleration of its nuclear program in view of the uncertainties involved.

Hydro's "Public Participation Procedures"

In order to ensure favorable local response to its proposed expansion plans, and to avoid the embarrassment of another Solandt inquiry, Hydro has recently introduced "Public Participation Procedures" into its decision-making machine. These are concessions which allow citizens groups to comment on the proposed location of the new generating sites or to suggest what colour Hydro should paint its new plant. But there is no place to question the need for the plant, or indeed, to examine Hydro's "Growth Ethic" which is responsible for the local expansion.

These far reaching questions were supposed to be considered at the recent Ontario Energy Board hearings. However, because of undue haste, formal barriers and lack of assistance to citizens groups, no public interest groups were able to participate fully at the hearings and no evidence was presented to challenge Hydro's expansion plans in any major way. At the same time, Ontario Hydro spent well over a million dollars preparing its case before the OEB.

Proposed Public Inquiry into Hydro's Long-Range Generating Program

The Minister of Energy, Darcy McKeough, recently announced plans to set up an inquiry into Hydro's longer term expansion program. It can only be hoped that this proposed public inquiry will be able to open itself up to the broad questions underlying Hydro's assumptions about the future, that it will provide the means for a full, in depth assessment of the energy related problems Ontario faces for the next 30 years or more, and finally that it will be open to the public in a real and concrete sense.

Probe has proposed, and is working to assure, that this inquiry will be taken to local communities all over Ontario, that citizen groups and individuals will be given adequate, objective information, and that everyone concerned will be provided the opportunity for effective involvement. Only when the overall perspective of Hydro's expansion program is considered by the public, can there be any chance of informed democratic participation in the fundamental decision which will shape the future of Ontario and the lives of its citizens.

CONCLUSION

Hydro defends its projected growth in Ontario and the "doubling and redoubling" of its electrical generating capacity by emphasizing the benefits this will bring to our standard of living. The public is given the impression that it has no alternatives to the choices Hydro is making for them. Without this massive expansion and development, according to Hydro, we risk the possibility of black outs, brown outs, shortages and potential economic depressions.

However, growing evidence indicates that exactly the opposite is true. If Hydro's expansion, and the development which will accompany it, is allowed to continue unchecked, we all face a severe loss—not only in our standard of living but, more importantly, in the quality of life in our province.

"Hydro's" Ontario

- Hydro's choices will promote inflation which will mean an increasing loss in the value of our wages and savings.
- Hydro's choices will promote an emphasis upon an energy-intensive, consumer-oriented industrial society rather than a shift to a service-oriented economy. This will mean a growing loss of jobs and an era of high unemployment.
- Hydro's choices will also mean a loss of land for housing, recreation and agriculture, combined with a

disruption and pollution of our external environment.

• In particular, Hydro's choice to rush headlong into nuclear energy before its obvious uncertainties are reconciled runs the risk of horrendous potential hazards to ourselves and our posterity. Hazards which may be irreversible for thousands of years.

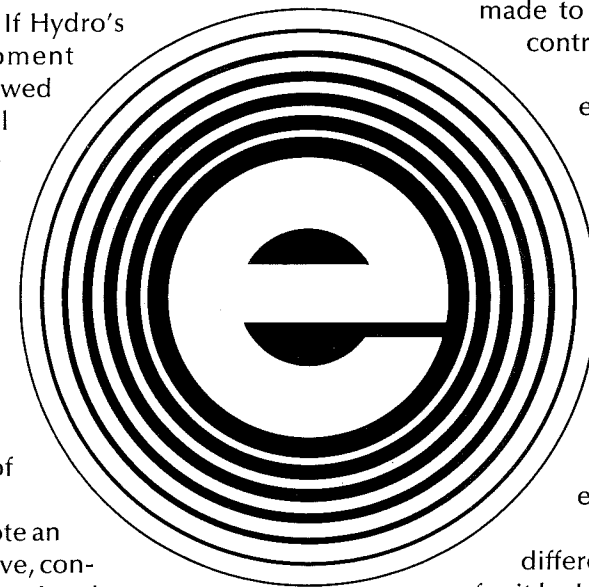
Alternatives to "Hydro's" Ontario

On the other hand, if a serious effort were made to check Hydro's expansion and to control growth by such means as:

- Implementing comprehensive energy utilization and conservation programs
- Strongly regulating the use of land—in particular farm, recreation and development land
- Emphasizing a transition to a service-oriented, ecologically-balanced economy
- And promoting an intense, well-supported research and development program for alternate sources of clean, safe energy

Then, Ontario could have a vastly different future from the one "chosen" for it by Hydro's experts. A future where the "quality of life" standard would be among the highest in the world.

The people of Ontario deserve to be allowed to know the alternatives available to them and to have the means whereby they can make a real choice.



WHAT YOU CAN DO

Concerned about where Hydro's expansion plans are taking us? Your choices of action run all the way from writing your M.P.P. to sitting down in front of Hydro's bulldozers. Here are some of Probe's suggestions:

1. Obtain clear, pertinent information about Hydro's future plans both in your area and for the whole province.
2. Find out what alternative choices are really possible rather than accepting the "Experts" decisions.
3. Join a group of concerned citizens, or if none exists in your area, start one.
4. Make sure that the people of your local community know and understand what Hydro's expansion will mean to them and that they are aware of the alternatives which exist. Use local newspapers, television and radio stations, talk shows, community meetings, and so on, for this purpose.
5. Be aware of and give thought to participation in any public meetings concerning Hydro developments in your area and in the proposed independent inquiry into Hydro's long-range generating program which should begin early in 1975.

Remember, it is only by sustained and constant **public** pressure upon the government and Hydro that any fundamental changes can be accomplished. The more you participate in choosing your future, the more channels will open up for real public involvement.

If you need any information concerning Hydro's expansion program and the possible alternatives to it, contact:

Ministry of Energy
12th Floor, 56 Wellesley Street West
Toronto, Ontario M7A 2B7
965-4286

Ontario Hydro
620 University Avenue
Toronto, Ontario
368-6767

Ministry of Environment
135 St. Clair West
Toronto, Ontario M4V 1P5
965-1658

Energy Probe
University of Toronto
Toronto, Ontario M5S 1A1
928-7014

Energy Probe is a citizens' organization concentrating on energy problems facing Canada over the next few decades. It will work to ensure that longer-term solutions to our energy crisis are being formulated and pursued. It will also help groups and individuals across Canada who are concerned about energy issues. Energy Probe is a non-profit project of the Pollution Probe Foundation.

QUOTES

For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?

Luke 14:28

"Prime Ontario farmland is disappearing at the rate of somewhere between 43 and 86 acres per hour".

Edward Kowal, Chairman of
the Ontario Government's Farm
Classification Committee

"An ecological sysytem in dynamic balance is like a finely tuned car engine, and damage to any component can disable or impair the entire mechanism".

John R. Clark,
"Thermal Pollution and Aquatic
Life," **Scientific American**

(referring to radiation) "it is now generally agreed that there is no 'threshold'—no level so low that the possibility of producing an adverse health effect completely disappears"

Dr. A. H. Booth of the Department
of National Health and Welfare

"The operation of nuclear power stations inevitably involves the production of radioactive waste products. Complete removal of radioactivity from effluents discharged to the environment is practically impossible to achieve, so that these effluents will always contain some amounts, although small, of radioactive waste material."

From a report to the
Canadian Nuclear Association
by R. J. Wilson of Ontario Hydro

(The effect of radiation on living things) "Dose effect relationships have been studied, with special attention to the low end of the response curve. Induced mutations and malformations . . . vary linearly with dose down to lowest doses studied".

AECL, 1973 Annual Report

"If we accept the principle, as I think we must for practical economic reasons, that at least for some-time to come, some [radioactive] waste gases will be discharged to the atmosphere then we must expect occasions when the resultant pollution may reach unpleasant levels. The aim of control measures will be to make such occasions sufficiently rare that the unpleasantness will be bearable in exchange for such benefits as employment and the products of industry."

P. J. Barry in Atomic Energy
of Canada Ltd. publication
Chalk River, Ontario

"The crucial gap [other than safety] between nuclear and solar electricity is the multi-billion dollar subsidies for nuclear fission."

Dr. Hannes Alfvén,
1970 Nobel Prize Winner for Physics,
Bulletin of the Atomic Scientist, May, 1972

"A higher energy rate could drive out industry. We can't be indifferent to the attractiveness of the economic and industrial climate of Ontario".

George Gathercole
Chairman of Ontario Hydro
(At the O.E.B. hearings)

"Unfortunately in some cases we (Ontario Hydro) failed to recognize the change in the community's attitude soon enough. On the other hand in some cases the democratic process was flouted by groups with special interests which benefitted the few".

J. J. Durand, Director of
Public Relations, Ontario Hydro

"Too much energy is as fatal to life as too little; hence the regulation of energy input and output; not its unlimited expansion, is in fact one of the main laws of life"

Lewis Mumford
Pentagon of Power