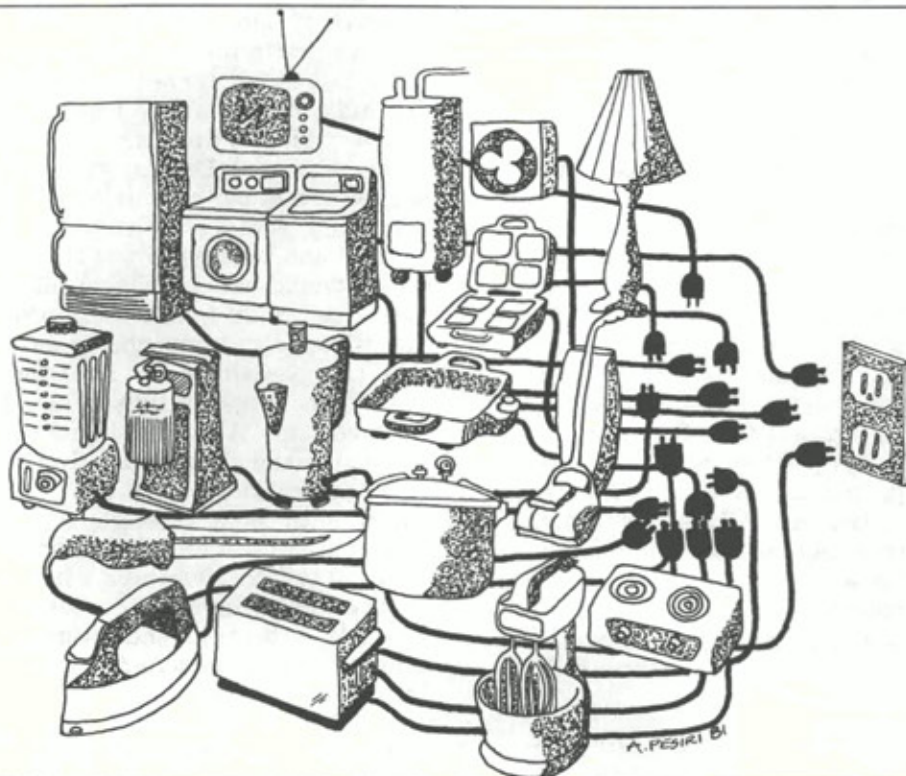


Vermont Environmental Report

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Are We Drifting Toward Energy Growth at Any Cost?

Leigh Seddon

In June of last year, Governor Richard Snelling proposed a sweeping plan for a New England "electric community" which would band together to invest \$45 billion in Canadian hydro-power development. In return, New England would receive 20,000 megawatts of hydroelectric power.

In February of this year, Richard Saudek, Commissioner of the Public Service Department, publicly speculated that in the next few years Vermont will need to build a new base load electrical generating facility. Most likely, it would be a large coal-fired plant located on the shores of Lake Champlain near Vermont's major load center, Burlington.

In March, John Zuckernick, President of the Vermont Electric Power Company (VELCO), unveiled before the Legislature plans for a 450 kilovolt direct current transmission line which would carry Canadian power through Vermont. The lines would carry up to 2000 megawatts of power and would be among the largest direct current transmission lines in the country.

Clearly, the Governor, his planners, and the Vermont util-

ities have big plans for Vermont's electrical future. Unfortunately, in the scramble to secure new power sources, conservation, Vermont's best option for meeting its future electrical needs, has been totally ignored.

CONSERVATION AS A SOURCE

Conservation is our most abundant, economical and environmentally-sound energy supply. A member of the House Energy Committee said recently that "producing energy through conservation is like increasing the food supply through starvation." But conservation does not mean simply curtailing energy use. It means increasing efficiency of energy consumption and generation through peak load management, cogeneration and the use of more efficient appliances, heating devices and lighting systems. For every kilowatt-hour saved through increased efficiency, there is a free kilowatt-hour ready to do new work. If our homes, offices and factories can be heated and lighted with 30% less electricity by using it more efficiently, then we can, in effect, create a surplus which can be used to meet future demand.

A recent study prepared for (Energy Growth, Page 2)

Clean Air Act Revisions: Fine-tuning or Tampering?

Jeanne Keller

The following article concerns one of the most important battles of the upcoming Congressional session. The outcome will significantly affect the quality of life in Vermont.

Should the Federal Clean Air Act be improved or weakened? The new administration and a wide array of industries would like to reduce the impact of the law on business. They would like to eliminate the Prevention of Significant Deterioration program, which protects the quality of clean air. If this provision is removed, the quality of Vermont's air could fall to the minimum standard set for the nation as a whole.

Acid rain is another problem of great importance to Vermont. It affects our soils, water, buildings and aquatic life. The Clean Air Act does not adequately address this issue and Congress must come to grips with it during the current debate.

This year, Congress will debate and amend the Clean Air Act, the cornerstone of our national air pollution control program. The issues and the people involved are reminiscent of last year's Alaska lands battle: wildlife, environmental and safe energy groups arguing for protection and reasoned development of our natural resources versus industrial and government forces promoting the quick fix and the fullest possible exploitation of those resources. But this year's battle asks more fundamental political questions.

The Clean Air Act is currently designed to protect the health of our citizens as well as the quality of our environment. But if the Reagan Administration prevails, we will have to weigh the value of human life and health against industry profits. We will have to answer questions such as, "how many early deaths can we absorb before an additional flue-gas scrubber is worth it?"

HISTORY OF THE CLEAN AIR ACT

Between 1955 and 1967, Congress enacted several pieces of legislation aimed at controlling air pollution. But in the absence of uniform federal guidelines, some states refused to enact strict controls because they feared that would place them at a competitive disadvantage in attracting new industry. Consequently, in 1970, Congress enacted the Clean Air Act Amendments, the first comprehensive nationwide effort to control air pollution. The 1970 Amendments:

- required the newly-formed Environmental Protection Agency

to establish National Ambient (surrounding) Air Quality Standards, with attainment of the standards targeted for 1975

- directed states to develop implementation plans for attainment of the national standards

- authorized the EPA to set emission limits for new stationary pollution sources (power plants, factories, etc.)

- authorized the Federal Government to monitor and enforce the Clean Air Act

Subsequent lawsuits and major amendments to the Act in 1977 extended compliance deadlines, set penalties for non-compliance, created the Prevention of Significant Deterioration (PSD) Program, and put into effect many of the EPA's policies for reviewing existing pollution sources and granting permits to new sources.

Vermont's air quality program began in 1968, when the General Assembly gave the Health Department the authority to operate a statewide air pollution control program. The Agency of Environmental Conservation took charge of the program in 1972.

The current Clean Air Act regulates emissions of the six most common pollutants: total suspended particulates (TSP), sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone and lead. The Act directs the EPA to set acceptable limits for each pollutant. Areas of the country that are not in compliance with the standards are called "non-attainment areas."

Vermont has relatively clean air, but it also has several non-attainment areas:

(Clean Air, Page 8)

Energy Growth at Any Cost?

(Continued from Page One)

gubernatorial candidate Jerry Diamond quantifies the potential of energy conservation. The study found that increases in end-use efficiency and the use of cogeneration could displace between 150 and 300 megawatts of electrical demand or between 16% and 33% of last winter's peak demand of 900 megawatts (see table 2).

ods so they can turn off unnecessary lights and appliances and a cogeneration facility which uses waste steam heat to produce electricity have enabled Middlebury to cut its electrical consumption by 24% since 1978. And it has done this while expanding its building area by 50%! Last year alone, Middlebury saved \$90,000 through its conservation efforts.

TABLE 1: WHERE VERMONT'S ELECTRICITY COMES FROM*

Source	Megawatts
Vermont Yankee	289
In-state fossil fuel	192
In-state hydro	91
PASNY hydro	150
NEPOOL & Canadian	300
Total	1022

*Source: Public Service Department Estimates, February, 1981

The study further estimates that conservation and cogeneration combined with electricity derived from new small-scale hydro, wood and wind would enable Vermont to meet its power demands until the year 2000 without building new nuclear, oil or coal facilities and without buying Canadian hydro-power (see table 3).

"A member of the House Energy Committee said recently that 'producing energy through conservation is like increasing the food supply through starvation.'"

Public Service Commissioner Richard Saudek disputes this contention and expects Vermont's electrical consumption to increase sharply as other sources of energy become more expensive. Nevertheless, it is clear that conservation can make a significant contribution to Vermont's electrical capacity. And it can do so at a fraction of the cost of investing in new power plants. A recent study by the Environmental Defense Fund showed that conservation can provide additional electricity for \$397 per kilowatt versus \$1200 per kilowatt for a new nuclear or coal plant. And while coal and nuclear plants only operate about 70 to 80% of the time, insulation and other conservation measures work 24 hours a day, seven days a week.

"Conservation is our most environmentally-sound energy option. It does not produce atmospheric pollution, it requires no transmission lines which mar our countryside and deplete our agricultural land base, and it does not further deplete our stock of fossil and nuclear fuels."

Vermont's Middlebury College has set an excellent example in the conservation field, demonstrating both the potential and the economic benefits associated with a comprehensive energy conservation program. A "peak alert" program which warns students during peak demand peri-

Conservation is also our most environmentally-sound energy option. It does not produce atmospheric pollution, it requires no transmission lines which mar our countryside and deplete our agricultural land base, and it does not further deplete our stock of fossil and nuclear fuels.

TABLE 2: ALTERNATE SOURCES OF POWER*

Source	Megawatts
Conservation (demand displacement)	100 - 200
Cogeneration	50 - 100
Solar hot water	80
New small hydroelectric	100 - 134
Wind	100 - 150
Wood	50 - 100
Total	480 - 764

*Source: Energy Position Paper, M. Jerome Diamond, July, 1980

"Conservation can provide additional electricity for \$397 per kilowatt versus \$1200 per kilowatt for a new nuclear or coal plant."

Nevertheless, political leaders, planners and utility executives have virtually ignored this benign and economical energy option. Governor Snelling and many legislators feel that the incentives of the "free market" will spur conservation to its most economical extent. There are two major problems with this theory: first of all, homeowners are often unaware of the savings associated with conservation and more often than not they lack the technical expertise to improve end-use efficiency in their homes; secondly, many homeowners who are aware of conservation options can't afford to invest in energy-saving home improvements.

Nationally, conservation has proceeded most rapidly in the industrial sector precisely because these barriers have been surmounted. Large corporations

have engineering staffs and access to capital that have allowed them to take advantage of advanced conservation techniques. IBM cut its energy use 39% between 1973 and 1978, saving over \$90

ties and the Administration are making most of the decisions regarding electrical energy, usually with very little public input. The result has been a *de facto* policy of energy growth at any cost.

"The point is often made that as the price of electricity rises, people will eventually be forced to conserve. This is certainly true, but by the time energy prices impose mandatory conservation on us, it will be too late. We will have squandered our money on costly new power plants and transmission lines and destroyed the natural beauty of our state in the process."

million.

Electric utilities have very little incentive to invest in conservation. Utilities are regulated monopolies. They are guaranteed a return on plants they build or invest in because the cost can be included in the rate base. Also, subsidies for new plant construction in the form of investment tax credits and accelerated depreciation make new construction very attractive. A recent Cornell study concluded that 75% of the cost of a new nuclear power facility is covered by tax subsidies.

The point is often made that as the price of electricity rises, people will eventually be forced to conserve. This is certainly true, but by the time energy prices are high enough to impose mandatory conservation on us, it will be too late. We will have squandered our money on costly

The Legislature must participate in energy decision-making in order to ensure that Vermonters have a voice in their energy future. But so far, there have been few indications that the Legislature is willing to do this.

The Vermont Legislature considered a number of energy bills this year. Perhaps the most important and timely bill was H.220, which would have involved utilities in statewide conservation programs including home energy audits, energy-saving home improvement loans, cogeneration and load management. After considerable discussion and vocal opposition from the utilities, H.220 was tabled until the next session. The Legislature also failed to act on a bill to boost Vermont's home energy audit program, a conservation retrofitting bill, and several other important energy-saving bills.

Currently, the Public Service Department is responsible for developing a ten-year electrical energy plan for the State. The Legislature may be postponing action on energy bills until this plan is adopted, but that could take several years. By then, the utilities will have decided our electrical energy future.

Prompt legislative action is essential if we are to reverse the current trend toward energy growth at any cost. Only conservation and reliance on renewable energy sources will ensure affordable power and energy independence for Vermont. It is a simple decision, but it will require a great deal of courage on the part of our Legislators to take control of energy decisions that in simpler and easier times were the exclusive domain of private utilities. Legislators will be studying the energy question over the summer. If you think conservation should be a legislative priority in the second half of the 1981-1982 session, please write or your call your representatives.

Leigh Seddon is Chairperson of Vermont Friends of the Earth. He also serves on VNRC's Legislative Action Committee.

TABLE 3

ELECTRICAL DEMAND AND CAPACITY UNTIL THE YEAR 2000*

Year	Peak	Capacity	Reserve
1980	894MW	1022MW	14%
1990	1074MW	1210MW	13%
2000	1353MW	1556MW	15%

*Source: VELCO Estimates

Calendar

Thursday-Friday, June 11 & 12

The Vermont State Energy Office is co-sponsoring a two-day workshop on **Site-built Solar Collectors** at the Holiday Inn in Brattleboro. Contractor-built collectors cost about half as much as pre-fabricated models. For more information, write Total Environmental Action, Harrisville, New Hampshire 03450.

Wednesday, June 17

The Vermont Institute of Natural Science will present a **Bog Slide Lecture** by State Naturalist Charles Johnson beginning at 7:30 p.m. at VINS in Woodstock. \$2.00 for members and \$2.50 for non-members. Call 457-2779 for more information.

Tuesday, June 23

Vermont Ground Water Protection Strategy Public Meeting. The Department of Water Resources and Environmental Engineering will present a preliminary draft of a ground water protection strategy at a meeting in Montpelier's Pavilion Auditorium. Sessions run from 1:30 - 4:30 and 7:00 - 9:00. You can obtain the draft strategy by calling Cheryl King at 828-2761.

Wednesday-Friday, June 24-26

Shelburne Farms will conduct an intensive seminar on **Food Systems: Issues and Opportunities**, including discussions of regional production and marketing facilities and new food and tool businesses. Request a brochure by calling 985-3222 or by writing Shelburne Farms, Shelburne, Vermont 05482.

Monday, June 29

Fern Facts and Folklore. Henry Potter, a fern expert well-known to three generations of Vermont naturalists, will give a lecture at VINS at 7:30 p.m.

Monday-Friday, June 29-July 3

The Historic Preservation Summer Institute is offering a five-day course on **Energy Conservation Potential and Techniques for Historic Buildings.** Write the Historic Preservation Summer Institute, Grasse Mount, UVM, Burlington, VT 05405 for more information.

Monday-Friday, July 6-10

Environmental Education Teachers' Workshop at Shelburne Farms. Graduate credit available.

Thursday, July 16

VNRC Brown Bag Lunch. Debbie Brighton will discuss the effectiveness of the Current Use Tax. 12:15 to 1:30 at VNRC.

Thursday, July 30

VINS Annual Meeting. Bring a picnic and enjoy a program on "Owls of Vermont." 6:00 p.m. at VINS.

Friday-Sunday, August 20-23

The theme of the 7th Annual **Natural Organic Farmers Conference** at Johnson State College in Johnson, Vermont, is "Farming on a Small Planet: New Concepts for Regional Agriculture." Several workshops will explore new ideas in farm design, farming techniques, marketing and public education. Register by July 25th. Call 456-7456 for more information.

I-93 SUIT HEADS FOR A HEARING IN NEW YORK CITY

As anticipated, District Court Judge Albert Coffrin denied VNRC's request for an injunction to halt construction of Interstate 93 near St. Johnsbury. VNRC, Green Mountain Grange No. 1, the Vermont State Grange and four St. Johnsbury area farmers have appealed to the Second Circuit Court of Appeals in New York City. The Appeals Court recognizes that construction is proceeding rapidly on the 11-mile-long segment of the highway and has agreed to expedite the case. A hearing is scheduled for Friday, June 5th.

VNRC has argued that there are routes for the road which would do far less damage to operating dairy farms. At the trial, Dr. Robert Morris, a transportation planner, testified that alternative routes around the farms were feasible from engineering and environmental standpoints. By not studying any routes but the one under construction, the highway planners violated the National Environmental Policy Act and the Federal-Aid Highway Act.

If VNRC prevails in the Court of Appeals, the Vermont Agency of Transportation and the Federal Highway Administration will have to hold hearings to assess the agricultural impact of the proposed route. VNRC believes that if the damage to agricultural land and other effects of the highway were fully disclosed to the public and if alternatives were presented, Federal and State decision-makers would not proceed as planned.

Meanwhile, Vermont's Agency of Transportation has allowed bulldozers to begin scraping away the rich topsoil on the Gingue farms in spite of Judge Coffrin's warning that they may have to restore the land to its original condition if VNRC wins the appeal.

(The photo below by Robert Platt shows a barn belonging to Joe and Pauline Gingue. The white stake in the foreground marks the I-93 right-of-way).



The 1980-1981 Vermont General Assembly

The Legislative Action Committee coordinated VNRC's lobbying efforts this year. The Committee concentrated on agriculture, energy and growth management. Members analyzed and followed bills, provided testimony before House and Senate committees, and worked with the Endangered Species Coalition and the Clear Air Coalition.

Agriculture. The most significant pieces of agricultural legislation this session were the "right-to-farm" law and the institutional marketing law. H.345, the "right-to-farm" law, protects reasonable farming activities from lawsuits based on the nuisance theory, but it does not bar municipal ordinances governing farm machinery operation, manure-spreading and other practices. S.132, the institutional marketing law, requires that State institutions purchase Vermont farm products if they are of comparable quality and price and if there is a dependable supply.

More substantive agricultural revitalization and protection efforts included bills to block construction of I-93, make possible purchase of development rights to farmland, identify prime agricultural land, aid in obtaining credit for farm acquisition, create an agricultural development authority and assess the economic value of Vermont's agricultural production. Many of the bills were flawed, and none had the whole-hearted support of farm organizations, the Agriculture Department and environmental groups. Agriculture Commissioner George Dunsmore has organized a study group which will attempt to assemble a comprehensive agricultural enhancement package for consideration by the second session of the biennium.

Energy. No significant new energy legislation emerged, but several key appropriations breathed new life into existing programs.

Representative Anne Just's bill to double the size of the Home Energy Audit Program died early in the session. A substitute request for \$157,000 to make up for a one-third cut in Federal funding and maintain the program at its present level was whittled down to \$100,000 before it was passed and signed by the Governor.

H.370, passed by both Houses, authorizes the Mortgage Guarantee Board to guarantee loans of up to \$7500 for energy conservation and related purposes and raises the total amount of guarantee authority.

H.352, an Energy Committee bill, languished in the House Appropriations Committee. It would have appropriated \$200,000 from the

General Fund to the Vermont Housing Finance Agency to authorize up to \$5,000,000 in low interest loans for residential energy conservation and conversion to alternate energy sources.

One of the most promising energy bills of the session needed no appropriation. H.220 would have required electric utilities to demonstrate that they had used all reasonable measures to improve the efficiency of their procedures and to assist customers in energy conservation before they could be granted a permit from the Public Service Board to construct additional facilities. It died in the House Energy Committee, but Committee members expressed hope that it could be resurrected next session.

Clean Air Act Resolution. VNRC and other members of the Vermont Clean Air Coalition successfully supported a resolution calling upon Vermont's Congressional delegation to play a leading role in securing reauthorization of the Clean Air Act and enhancing its ability to regulate acid rain. The resolution sailed through both Houses with only minor changes in wording. It was the only strictly pro-environmental action on the part of the 1980-1981 General Assembly.

Endangered Species. The beleaguered Endangered Species Bill came out of the Senate Agriculture Committee and passed the Senate late in the session. The Agriculture Committee added several amendments reducing the power of the Environmental Secretary and changing the composition of the Endangered Species Committee (which recommends additions and deletions to the list of endangered and threatened species). The Endangered Species Coalition decided not to push the bill this year but to wait until next session with the hope of obtaining more thoughtful consideration from the House Natural Resources Committee.

Chapter 117 Revisions. VNRC Attorney Darby Bradley is working with a committee of regional and State planners and members of the House Natural Resources Committee on bills to revise Vermont's Municipal and Regional Planning and Development Act. Two bills were introduced this session: a priority bill dealing with topical issues in regional and town planning and an omnibus bill involving substantive changes in the law. The priority bill passed the House and is now before the Senate Committee on Energy and Natural Resources, where it will remain over the summer.

Commentary

There is More to Wind Power than Wind

Lester Anderson

The Department of Energy's giant wind turbine test program has been dropped from the Reagan Administration's budget. Funds have also been withdrawn for the meteorological tower that was to determine the suitability of wind on Lincoln Ridge in Lincoln, Vermont. But the Green Mountain Power Company (GMP) which proposed the Lincoln site to the government, says that it will go ahead with the project without Federal financing. As a first step, the utility will set up its own meteorological tower if the Forest Service grants a permit.

So far, whether or not the project makes sense as a whole economically, environmentally, technologically and aesthetically has not been considered as part of the permit process. The GMP insists that the pros and cons of a test turbine on Lincoln Mountain cannot be considered until wind conditions have been monitored by the met tower.

In an article in a recent issue of the *Vermont Environmental Report*, Professor Richard Mixer said there must be a study of wind conditions before a turbine can be designed for Lincoln Mountain and that no intelligent decisions can be made about the site without such an evaluation. But the Save Lincoln Mountain Committee believes that certain aspects of the Lincoln Ridge site are at least as important as its wind power potential. Furthermore, since we know the design parameters of the large and medium sized turbines under development, we can project probable environmental impacts and related problems of access and construction. What we know about climate, fog and icing and their predictable effects raises questions as to why this site was considered at all.

Professor Mixer says in his article that, "in order to determine the best machine for a particular site, or conversely, the best site for a particular machine, the basic data must be available. The design engineer cannot plan the wind turbine generator without knowing what the winds are and how they work." This implies that wind turbines are designed to meet site-specific conditions. In fact, one of the goals of the aero-space companies is to develop giant wind turbines that can be mass-produced for application at a wide range of sites.

At a meeting last June in Waitsfield, DOE representatives said that, "the approach in the R and D contracts [with the aerospace firms] is to develop machines which will be economical over as broad a span as possible...machines are designed to a hypothetical set of specifications and the final analysis is done after site selection."

In short, the goal is a standard design, with component options and fine-tuning dependent on conditions at the user's site. The object of a meteorological tower is to find locations where the winds fit these hypothetical specifications.

There are already designs and prototypes for turbines that could go on Lincoln Mountain. The range of the machines and their structural masses are known, and their impacts are predictable. This article concentrates on the larger machines, since they produce the most electricity, but similar issues are involved in constructing a cluster of smaller machines.

is not unknown. In Goodnoe Hills, Washington, a DOE tower crashed under a load of ice. And a wind turbine siting study in New Hampshire by the Arthur D. Little Company advised against sites over 3500 feet in elevation because of ice and safety problems.

Access is another major problem associated with building and maintaining giant wind turbines. Figure 2 shows the equipment needed to move the blade sections of a MOD-2 machine; the MOD-5 is substantially larger. A cluster of turbines on Lincoln Ridge would require a road large enough to accommodate a low-bed trailer

clearing die back in a widening periphery. This is evident around the upper lift terminals and ski slopes of the Mt. Mansfield region where the "dieback" area substantially exceeds the cleared area.

A large wind turbine may also require a sizeable safety zone. Large safety zones were originally prescribed for the mega-scale wind turbines, but they were pared down as confidence in machine integrity grew. However, if a row of turbines were constructed on Lincoln Ridge, some sort of safety zone would be required due to ice accumulation. According to a television station engineer, the Mt. Mansfield towers shed chunks of ice as big as bath tubs. Any safety zone on the Lincoln Ridge site would probably mean re-routing the Long Trail.

One vital regulatory question remains unanswered. The Lincoln Ridge site is within Forest Service Management Area III, which precludes the construction of power-generating equipment. It seems illogical to permit the erection of a met tower to test the feasibility of a wind turbine generator if generating equipment is forbidden.

Wind power has its place in large, readily-accessible sites which can accommodate 25 to 50 machines. NASA's calculations of the cost-effectiveness of giant turbines assume a cluster of 25 production models, but the 3 1/4-mile-long Lincoln Ridge site could accommodate only about five turbines. A cluster of five machines would make a minimal contribution to Vermont's electrical energy output. The largest turbine on the drawing board today would produce less than one per cent of GMP's 1980 average peak capacity of 300 megawatts.

Conservation and load management alternatives are much more promising. The Pacific Gas and Electric Company is minimizing load growth by funding low-cost loans for conservation and solar hot water systems. In Oregon, several utilities are making no-interest loans to customers for home insulation in order to avoid building new generating facilities. In Massachusetts, utilities have formed a statewide non-profit organization which offers low-cost energy audits. Here in Vermont, the Home Energy Audit Program is saving many times the electrical output of a large wind turbine at a fraction of the projected cost of a single commercial multi-megawatt machine.

Obviously, there are many critical factors besides wind speed, direction and duration which must enter into the decision to build a meteorological tower or a wind turbine generator. We think a careful consideration of these factors clearly reveals the insufficiency of the Lincoln Ridge site.

Lester Anderson serves on the Board of Directors of the Save Lincoln Mountain Committee.

FIGURE 1: COMPARATIVE DIMENSIONS OF MULTI-MEGAWATT WIND TURBINES UNDER TEST OR DEVELOPMENT

	Nominal Rated Power	Tower Height	Rotor Diameter
MOD-1* **	1.5MW	140 ft.	200 ft.
MOD-2*	2.5MW	200 ft.	300 ft.
MOD-5*	5MW	250 ft.	400 ft.
Hamilton-Standard	3&4MW	200 ft.	260 ft.
Mehrkam Energy Development Corp.	2MW	120 ft.	130 ft.
Bendix	3MW	110 ft.	166 ft.

Sources: Electric Power Research Institute, NASA, DOE

* Government-financed machines. Their future is uncertain.

**The MOD-1 machine at Boone, North Carolina, is currently inoperative because of 22 sheared drive-shaft bolts.

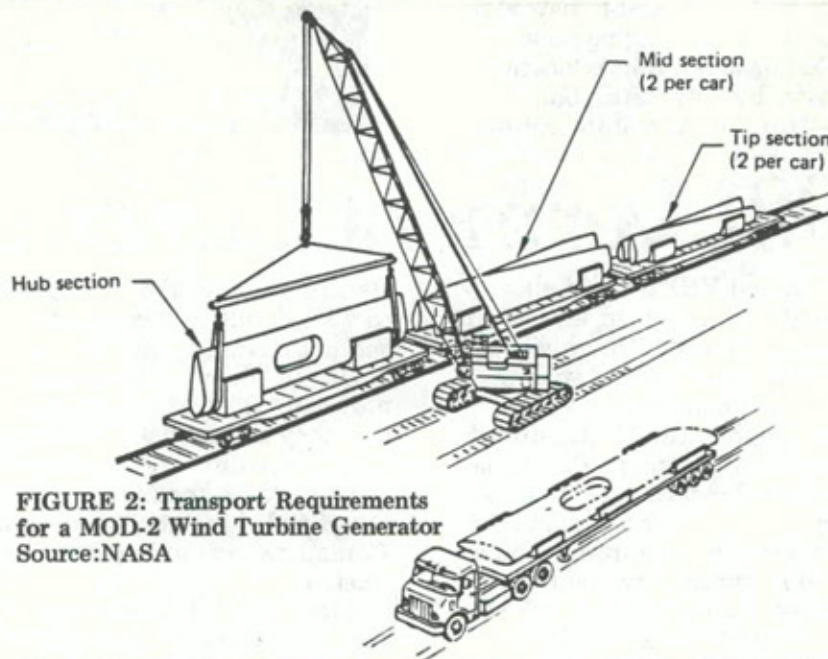


FIGURE 2: Transport Requirements for a MOD-2 Wind Turbine Generator
Source: NASA

Some of the characteristics of the larger machines are shown in Figure 1. To be cost-effective, the large machines require a mean annual wind speed of around 14 miles per hour. But even under ideal wind conditions, ice will reduce performance. The MOD-2 turbine shuts down when .05 inches collects on the blades, and does not start up again until the ice is gone. The blades can be heated to remove the ice, but this reduces net power output and increases costs. NASA estimates that the MOD-2 tower can withstand five feet of rime ice in a 100 mph wind. But WCAX engineers state that four to six feet of rime ice is a typical accumulation on their television tower on Mt. Mansfield, and up to 12 feet

and other heavy vehicles, including earth-moving equipment. Professor Mixer says that "a construction way need be only 10 feet wide with a cleared area 20 feet wide," but construction engineers scoff at the idea of building and servicing a 25- to 30-story-high piece of machinery without a substantial all-weather road. Would the Forest Service condemn part of Sugarbush for such a road? And is this in any way a "compatible use" of the National Forest?

Whatever the area needed to build and maintain the turbines, it is just the beginning. Professor Mixer understates the problem when he says that the total land area disturbed is about two acres. Whenever a mountain area is cleared, the trees surrounding the

Garbage In, Garbage Out

Landfills and Ground Water in Vermont

The "throwaway society" is one of those hopelessly overworked cliches which has lost all of its original meaning through repeated application. But the ever-increasing amount of solid waste which Americans generate and must therefore dispose of is a very real, very current problem. We are just beginning to recognize the environmental consequences of decades of indiscriminate dumping of household wastes. Poorly-designed landfills are among the major sources of contamination of underground water supplies. This article on landfills and ground water in Vermont is the third in a five-part series prepared by the Vermont Natural Resources Council under a public information grant from the Environmental Protection Agency.

What happens when you throw something away? Where does it go? If you burn paper wastes, they give off heat and leave behind ash. Composted food wastes decompose and make great fertilizer for next summer's garden. But what about the bottles, cans, plastic bags and small appliances which usually end up in the local landfill? These materials may disappear, but they don't go away when they are crushed and covered with earth. They sometimes hang around for quite a while, and if you're not careful, they may come back to haunt you.

Anything that is in the ground can become part of the hydrological cycle. Solid wastes in a landfill decompose through biological, chemical and physical processes. When water in the form of rainfall, snow or fog percolates through the refuse, it picks up solid matter and microbial waste products and forms a highly-mineralized fluid called "leachate."

"A 1978 study by the Wisconsin Department of Natural Resources found that one-third of reported cases of ground water contamination could be traced to landfill leachate and to seepage from pits, ponds and lagoons."

The composition of leachate depends on what types of wastes are dumped in the fill. Ordinary household wastes contain chloride, iron, lead, copper, sodium, nitrate and a variety of organic chemicals. As leachate moves through the soils under and around the landfill, most of the contaminants filter out through a process known as "attenuation." But if the landfill becomes saturated with rainfall, or if the water table is too close to the refuse, leachate can enter the ground water. A 1978 study by the Wisconsin Department of Natural Resources found that over one-third of reported cases of ground water contamination could be traced to landfill leachate and to seepage from pits, ponds and lagoons.

Solid waste disposal has come a long way in the last decade. Not too many years ago, most Vermonters unloaded their household trash in town dumps, which were just what the name implies: places where people simply "dumped" their garbage and made no attempt to compact or cover it or to prevent it from entering ground or surface water supplies. Some dumps burned their trash, which reduced volume but created aesthetic and air quality problems. In 1970, when the Clean Air Act banned open burning, many dumps began covering their wastes to discourage rodents and other scavengers, but just dumping garbage in a hole and sprinkling a little dirt over it does little to protect water quality. In a state-of-the-art landfill, wastes are spread out in thin layers, compacted to the smallest practical volume, and covered with soil at least once a day. The hydraulic connection between the landfill and the water table is minimized, usually by reducing the amount of water entering the fill.

Most Vermont dumps are in the process of becoming sanitary landfills. In 1977, the Vermont Legislature directed the Agency of Environmental Conservation to adopt a statewide

solid waste management plan and made it illegal to operate a waste treatment or disposal facility without a permit from the Agency. There would be no "grandfathering": all landfills in the state were to be reviewed and certified by January, 1980.

Over a year after the deadline, only 34 of Vermont's 87 landfills have actually been certified. The State has entered into "assurances of discontinuance" (agreements to either close or upgrade existing sites) with 15 landfill operators and another 26 sites are still under review. In spite of the fact that the State uses guidelines rather than regulations as general requirements for certification, many Vermont towns are having a hard time either making existing facilities certifiable or finding suitable sites for relocation.

"In New England, there's no way you can build a landfill and not produce leachate," according to Dennis Gagne, a geologist with the Region I Office of the Environmental Protection Agency. The Northeast is very humid - Vermont receives 30 to 40 inches of rainfall per year - and since most of the trees lose their leaves in the winter, plants don't absorb and transpire as much water as they do in more temperate climates. High humidity and low evapotranspiration mean that there is a lot of water moving through the ground, and leachate production is directly related to the amount of water in a landfill.

The Green Mountain State has special problems because of its peculiar topography and geology. "In Vermont, you're either on the side of a mountain or in a river valley," says Gagne. River valleys often contain thick layers of sand and gravel soils deposited by retreating glaciers. These permeable soils carry high volumes of good quality water rather easily, but they also permit rapid infiltration of pollutants from the overlying land surface. The thin layer of crusty glacial till on a mountainside may not provide adequate separation between the landfill and bedrock aquifers, which supply much of the state's drinking water.

"Garbage is not something people want to spend a lot of time thinking about, and they certainly don't want to give over a prime piece of property to it."

Good land is hard to find in Vermont. The best sites for landfills are often the best sites for agricultural, industrial and residential uses as well. "Garbage is not something people want to spend a lot of time thinking about," says geohydrologist David Stoner, "and they certainly don't want to give over a prime piece of property to it."

Since landfills must compete with more profitable uses of the land, they have often been built on sites which were considered unfit for other purposes, such as marshes, abandoned gravel pits and played-out granite and marble quarries. Until about ten years ago, landfilling was promoted as an ideal way of "reclaiming" wet and swampy areas, but wetlands are now recognized as critical nesting and feeding grounds for wildlife. Gravel pits are poor landfill sites because they usually contain highly-



(Photo by MM)

permeable soils which permit rapid infiltration of landfill leachate, while quarries tend to collect water and have a very limited capacity for soil attenuation.

Less-than-ideal sites can sometimes be "engineered" to minimize leachate production. The amount of water in the fill can be reduced by restricting or diverting upland drainage, using relatively impermeable cover materials, or lining the landfill with asphalt or clay or rubber. But site alterations of this sort are extremely expensive and may be beyond the means of small rural communities.

The shortage of good sites and the high cost of making poor sites serviceable have forced some Vermont towns to look beyond their own borders in search of solutions to the problem of solid waste disposal. Several northwestern Vermont towns are looking at sites for a regional landfill. The Rutland County Solid Waste District (nine towns in Rutland County) and the New Hampshire-Vermont Solid Waste Recovery Project (eleven towns in New Hampshire and 15 in Vermont) are also taking the regional approach to solid waste disposal and treatment. Both are investigating heat-producing trash incinerators. The City of Burlington, which must vacate its present landfill within two years, is also considering a trash burner.

The big burners may be safer than landfills, but they are very expensive to operate efficiently, and it's not easy to find a reliable market for the hot water or steam heat they

generate. Problems of scale have also hampered recycling efforts in this state. Vermonters do not produce enough waste paper, aluminum, steel or glass to make local recycling centers self-supporting, and high energy costs often prevent them from shipping the wastes to out-of-state remanufacturing facilities.

There is no easy answer and no cheap way out. All Vermont landfills contaminate the ground water to some extent. We cannot continue to bury all our household wastes in the ground and still preserve our most important source of drinking water. We may find that protecting Vermont's aquifers from landfill contamination means making major adjustments in the way we live, either by committing ourselves to recycling and resource recovery or drastically reducing the amount of solid waste we generate, or both.

MM



New Prosperity, Old Problems in the Lake Memphremagog/St. Francis River Basin

Lake Memphremagog is 27 miles long, has shoreline in two countries, and drains an area 806 miles square. Three major tributaries flow into it, and the lake itself drains northward through a depression created by retreating glaciers.

The Burlington office of the New England River Basins Commission, in cooperation with the Agency of Environmental Conservation and the State Planning Office, has just completed a report on water resources and related land use problems in the Lake Memphremagog/St. Francis River Basin. The report integrates existing research and knowledge and takes a "holistic" view of the potential and problems of this international ecosystem.

The following article includes excerpts and summaries from a public review draft of the report released last August. Copies of the final report entitled "Lake Memphremagog/St. Francis River Basin Overview" will be available for the public to read at the Goodrich Memorial Library and other local offices in Newport, at VNRC, and at the Agency of Environmental Conservation. For further information, write the New England River Basins Commission, 177 Battery Street, Burlington, Vermont 05401. (Note: Funding for all seven regional river basins commissions was eliminated when Congress approved the Reagan budget).

In the mid-1800s, the railroad arrived in Newport, Vermont, bringing tourists and prosperity to the Lake Memphremagog Basin. Luxury hotels graced the Memphremagog shores and steamers plied between Newport and Magog. Trees felled in Quebec were floated down the lake to Newport and milled into lumber for eastern cities.

The boom collapsed toward the end of the century. Clearcutting gradually depleted the timber supply in the region in the early 1900s as it did in the rest of Vermont. Tourism dropped off sharply as better transportation brought northeasterners to other previously remote areas. Population in the Vermont portion of the basin declined steadily from 1900 to a low of 17,893 in 1970.

The Basin area still lags behind the rest of Vermont in per capita income and employment. In 1977, the average yearly income for people in the Vermont part of the Basin was about 17% less than that of other Vermonters and 32% less than that of the average U.S. citizen. Unemployment in 1979 was 7.2% compared with 5.2% for the rest of the state. Population density averages 32 people per square mile compared with 48 per square mile statewide.

In the 1970s, population began to increase due to a turnaround in the Basin's economy. The economy of the Lake Memphremagog/St. Francis River Basin has traditionally depended on natural resources — farming, forestry and outdoor recreation — but manufacturing is playing a more significant role today. Employment in a variety of manufacturing industries increased 16% during the 1960s. By the year 2000, the number of people living in the Vermont part of the Basin is expected to increase by about 30%.

Accelerated population growth will increase the pressures on land and water resources. But high unemployment and low per capita income combined with a strong local tradition of fiscal conservatism will create obstacles to water resource projects.

FLUCTUATING LAKE LEVELS

Human beings have manipulated the level of Lake Memphremagog ever since Indians constructed a boulder dam on the Magog River 200 years ago. Today there are 28 dams in the Vermont part of the Basin serving a variety of purposes including recreational use, hydroelectric generation and water supply.

The single most important dam in terms of its effects on the Basin's hydrology is a dam owned and operated by Dominion Textile, Inc., in Magog, Quebec. There has been great controversy surrounding the company's management of the dam, and, consequently, the level of Lake Memphremagog.

A 1935 international agreement sets minimum and maximum levels for the lake and allows a fluctuation of slightly less than four feet. But lakeshore residents claim that the dam holds the lake too high in the spring, contributing to shoreline erosion, and that the level is undependably regulated in the summer, creating problems for navigation, boating access and beach use. High lake levels also reduce the gen-

erating capacity of hydroelectric dams on the Magog River and produce water quality standard violations downstream from the dam. Low levels are a threat to wetlands and other critical habitat areas.

WATER QUALITY

Water quality in the Lake Memphremagog/St. Francis River Basin is generally good. There is, however, some localized degradation due to municipal, agricultural and individual waste discharges. Of the 241 miles of Vermont rivers in the Basin, 67 miles have been affected by municipal/industrial waste discharges. The rivers also carry significant phosphorous loads which accelerate eutrophication, the lake's natural aging process. Nearly 20% of the Basin lakes are in the early stages of eutrophication, while just over 40% of the lakes are already eutrophic.

Lake Memphremagog itself is eutrophic at its southern end, and recent research indicates that 84% of the phosphorous and 58% of the nitrogen enter the lake near Newport. Improved centralized and individual sewage treatment systems are essential, but the pace of designing and constructing needed facilities has been slowed by changing governmental regulations over the past few years, as well as by the reluctance of local communities to agree to finance the projects.

Other sources of phosphorous and sediment include eroded topsoil from cropland and timber harvesting, animal manure and milkhouse waste. Over 75% of the farms in the watershed need improvement in manure handling and about one-third of the farms do not have satisfactory milkhouse waste disposal systems.

FISH AND WILDLIFE RESOURCES

Fishing is an important part of the economy of the Lake Memphremagog/St. Francis River Basin. It contributed over \$4 million to total expenditures in Orleans County in 1975. But the perpetuation of the Lake Memphremagog fishery depends largely upon the availability of spawning habitat in four Vermont tributaries which drain into the southern end of the lake. The Clyde, Barton, Black and Johns Rivers have rainbow and brown trout, walleyes and smelt. The Clyde River is the home of a species of landlocked salmon unique to Lake Memphremagog.

Salmon were first stocked in the Clyde River in 1899, but the species declined in the 1940s when hydroelectric power plants on the lower Clyde began creating extreme variations in water levels and stream flow in order to generate peaking power. Landlocked salmon were reintroduced in the mid-1970s. The results to date have been encouraging, but the success of the program depends on maintaining minimum stream flow and providing for the passage of migrating fish around dams on the Clyde River.

Fish and game personnel as well as local environmentalists are also concerned about the encroachment of development on wetlands along Lake Memphremagog. A 1979 VNRC study identified 191 wetland areas totalling 9754 acres in the Lake Memphremagog/St.

Francis River Basin, but water level fluctuations and the lack of protective legislation could affect these important fish and wildlife habitat areas.

OTHER WATER RESOURCE ISSUES

The water resources of the Lake Memphremagog/St. Francis River Basin must serve many overlapping and sometimes competing interests. There are no figures on how much money swimming, boating and sight-seeing bring into the area, but most people agree that outdoor, water-oriented recreation plays an important role in the economy of the Basin, both in Quebec and Vermont. Obviously, water quality and lake level fluctuations directly affect these activities.

Low water levels in Lake Memphremagog also create problems for the cities of Sherbrooke and Magog, which together take 17.5 million gallons per day from the lake. More and more Basin communities are turning to ground water for municipal water supplies, but if population projections are accurate, there will be rapid growth in the Newport-Derby area. Inappropriate land use and development could create contamination problems in aquifers around Lake Memphremagog and South Bay because of the character of the soils.

Hydropower from dams on the Clyde River supplies about 3200 kilowatts or 12.6% of the total power output consumed by people in the Vermont part of the Lake Memphremagog/St. Francis River Basin. Local utilities purchase the rest from other sources, mostly Hydro Quebec, PASNY and VELCO. The uncertainty of the Hydro Quebec and PASNY agreements leaves area residents vulnerable to shortages and price hikes, but further development of local hydropower resources appears unlikely. According to an NERBC study, only a few local sites could economically generate appreciable amounts of electricity. Local residents could reduce their dependence on out-of-state power by reducing consumption and by relying more heavily on small-scale energy systems such as wood heat.

CONCLUSION

Since the headwaters for Lake Memphremagog are in Vermont, problems there affect the entire lake. But a dam in Magog controls the water level, and its operation directly affects landowners and others who use the lake in the United States and Canada. Though two countries share the lake, the Vermont and Quebec lakeshore residents make up one community. The authors of this report call for international cooperation and coordination of water resource and related land use problem-solving. The Agency of Environmental Conservation should support economic and environmental resource studies including the effects of lake level fluctuations on shorelines, recreation, wetlands, fisheries and wildlife habitat. Vermont also needs a ground water protection plan, minimum streamflow and wetland protection legislation, and public financing for shoreline erosion control measures on Lake Memphremagog.

The Council

MEMBERSHIP SURVEY RESULTS:

WE'RE GETTING YOUNGER, BIGGER AND MORE INVOLVED

VNRC mailed out its first membership survey in six years in January, and the results have been pouring into our offices as rapidly as membership renewals! In all, 521 households responded in time to be tabulated by the computer.

The response to a request to rank environmental issues in order of importance underlined the Council's long-standing interest in agricultural land preservation. 28% of the respondents said farmland conservation was the most critical environmental issue. Six years ago, 32% of the survey respondents placed farmland protection at the top of their lists, anticipating by several years widespread public recognition of the importance of this issue.

Almost 34% said that land use in general was the all-important issue. Six years ago, 21.5% said that "regulation of development" was the top issue.

Energy and water pollution ranked well below land use issues at 16% and 13%. Watershed management and ground water protection were pegged as the most critical water issues, acid rain was labeled as the key air quality problem and habitat was far and away the most significant wildlife issue. Survey respondents viewed solar energy development and radioactive waste disposal as key energy issues. Natural areas protection and use-value taxation were the top contenders in the land use category.

Turning to the characteristics of VNRC's membership, the survey confirms that the Council is indeed getting younger. There were far more members under 35 years of age in 1981 than there were six years ago. Educational experience was similar to the first survey with over half of the respondents indicating that they hold graduate degrees.

One-fifth of this year's survey respondents live in Chittenden County, followed by Washington, Windsor, Windham and Bennington. Almost 40% of those responding have lived in Vermont five to nine years. Predictably, most said they had moved to Vermont to achieve a desired lifestyle, and environmental quality was the next most popular reason.

Well over half the respondents said that influencing environmental legislation was the Council's most important activity; the Environmental Law Service was a distant second.

The vast majority said the new Vermont Environmental Report is better than its predecessor and almost 80% said they thought well of our present funds solicitation methods.

We were encouraged by the number of members who said they were willing to put their skills and knowledge to work for VNRC. We plan to follow up on many of these offers, particularly once the Board of Directors completes its five-year plan for the Council.

Most of the survey questions used an "either-or" format. The limitations of this format make it difficult to interpret the survey results, but VNRC's Planning Committee is studying the survey data in depth. We'll keep you posted on their work and on how the Board responds to the new information.

Many, many thanks to all those who took the time to respond to the questionnaire.

-Seward Weber

VNRC'S 19TH ANNUAL MEETING, featuring our usual magnificent mixture of fascinating field trips, sparkling speakers and brisk business, will be held on Saturday, September 12th, in the St. Johnsbury area. Watch future VERs for further information on the day's events.

VNRC is pleased to welcome the following new members who joined us in March and April of this year: Brendon Cote, Beecher Falls; Gurney Brothers Construction, North Springfield; Solar Association of Vermont, Montpelier; Peter Millett, Rutland; David Fretz, Pittsfield; Paul Harsch, Williamstown, Massachusetts; L. Raymond Massucco, Bellows Falls; M. Doran Pierce, Bristol; Mrs. A.B. Wadsworth, Arlington; Michael S. Bicknell, Winooski; Peter Moynihan, Johnson; Mrs. Elsie Hastings, Taftsville; Hulbert Outdoor Center, Fairlee; Barbara G. Van Raalte, South Burlington; Georgina Williamson, Woodstock; Mr. and Mrs. Bruce Zeiser, Springfield; Debbie Fox, Waterbury; Mrs. Nan Vitter, Greensboro Bend; Dave and Catrine Goska, Montpelier; Appalachian Mountain Club, Gorham, New Hampshire; Virginia Farley, Tunbridge; Mrs. Hugh Folsom, West Townshend; May Peavey, Springfield; Daniel Batchelder, Fairfield; Warren and Karen Kitzmiller, Montpelier; Peter S.H. Moore, Windham; Mr. and Mrs. Andrew Guyette, Pittsford; Brown Insurance Company, Montpelier; Clark Hamilton Bensen, South Burlington; Joel Bernstein, Waitsfield; Massachusetts Farm and Conservation Land Trust, Beverley, Massachusetts; Susi and Jack Learmonth, Corinth; Patti Prunhuber, Somerville, Massachusetts; Beth McCurdy, Carlisle, Massachusetts; Howard Fisher, Montpelier; Breard Hawks, Bennington; Jean Bongartz, Manchester Center; Barry Rossinoff, North Troy; Emily Bateson, Boston, Massachusetts; Donald S. Harry, Wilmington; Harold Marsh, Montpelier; Walter Hastings, South Royalton; Loretta Gaidys, Shelburne; Jeffery Glassberg, Burlington; Gail Osherenko and Oran Young, Wolcott; Linda McShane, Hartland; Kathryn B. Blough, Providence, Rhode Island; Jeb and Susan Spaulding, Montpelier; Sharon Faulkner, Westminster; Eric S. Palola, Burlington; Gabor Rona, Montpelier; Peter Cross, St. Albans; James Seivwright, Montpelier.

CONFERENCE CALLS FOR COMMUNITY ENERGY PLANNING

"If we don't invest in conservation, our communities will go bankrupt, and so will we." This was the theme of a March 20th Community Energy Planning Conference in Montpelier as presented by keynote speaker Jim Benson. Benson, a former Division head of the Energy Research and Development Office and current Director of the Institute for Ecological Policies, is one of the main architects of the "soft energy path" theory. In his two books, *Energy and Power in Your Community* and *County Energy Plan Guidebook*, he argues that energy conservation and development of renewable resources (the soft approach) not only is less expensive and less environmentally-damaging, but that it creates more jobs than large investments in nuclear power, coal and synthetic fuels (the hard path).

Benson claims that many Vermont communities spend 85-90% of their funds on energy from outside sources. Statewide, we send as much as \$570 million each year out of the state for energy purchase. Investments in conservation can substantially reduce this drain on local resources and help ensure a secure economic future.

Margaret Garland, Director of the State Energy Office, also spoke of the critical need for community energy planning. She told the audience that there will be far less help from the Federal Government in the future and that local people must work together on energy development and conservation issues.

Several other speakers addressed the day-long conference on subjects ranging from implementing town energy plans to preparing for energy emergencies.

-Robert Howland



NEW COMMITTEES ARE HIGHLIGHT OF SPRING BOARD MEETING

Last summer, in an effort to stimulate greater Board participation in Council activities, Chairman Carl Reidel increased the number of Board committees and gave them responsibility for specific Council programs. The Spring Directors' meeting was the first chance for these committees to show their stuff. After a morning of committee reports, it was generally agreed that the committees were working hard and focusing on important issues.

The most significant decision of the Board was to explore opportunities for the Council to become more involved in the field of environmental health. Richard Brooks, Director of the Environmental Law Center at the Vermont Law School and a member of the Council's Planning Committee, said that this field will become an increasingly important part of environmental enhancement and protection. The Board endorsed a motion to cooperate with Brooks and the Law Center in determining the feasibility and the need for VNRC to make environmental health issues a significant part of its work program.

The nominating committee reported that it planned to offer a single slate of nominees for at-large members of the VNRC Board for consideration at the Annual Meeting. It also proposed two amendments to the by-laws which were accepted by the Board for consideration by the membership at the Annual Meeting.

-Seward Weber

VNRC BOARD CALLS FOR NOMINATIONS

Each year, VNRC singles out several individuals, businesses or agencies for their outstanding service to the state's environment. You can help by nominating candidates for this distinction. Send your nomination to Seward Weber, Secretary, VNRC Board of Directors, 7 Main Street, Montpelier, Vermont 05602. Please give us your telephone number in case we need more information.

The VNRC Board is also looking for new members. Four at-large and two organizational members will be elected at the Annual Meeting. Council members can nominate candidates for the four at-large positions until August 12th, 30 days before the Annual Meeting. Please send your nomination to the Secretary of the VNRC Board as soon as possible so that biographical information can be included in the July/August issue of the Vermont Environmental Report.

Clean Air

(Continued from Page One)

- ozone: Chittenden County, Addison County, Windsor County
- carbon monoxide: Winooski City, Essex Town, Essex Junction, Burlington, South Burlington
- TSP: Essex Town, Essex Junction, Burlington, South Burlington, Winooski, Barre City

Each state with non-attainment areas must develop a strategy for reducing the release of pollutants from existing and new sources. This plan, called the "State Implementation Plan" (SIP), includes an inventory of emissions, estimates of the reductions needed to meet the standards, and a program designed to achieve the reductions. **AN OUNCE OF PREVENTION....**

Because most of Vermont is "attainment," the heart of the Air Program's effort is prevention. Through the "Prevention of Significant Deterioration" program, Vermont's Air Program uses a key feature of the Clean Air Act designed to prevent clean areas from becoming polluted. A permit system requires that new sources demonstrate that their emissions will not contribute to concentrations of air pollutants exceeding EPA limits. Under PSD, there is a "budget" (called an "increment") for allowable pollution. Pollution from new sources is permitted only up to the point where the "budget" is spent. Once that point is reached, no new pollution permits can be granted unless an existing source reduces its emissions.

Another major feature of the Act is the New Source Performance Standards. The NSPS require that all major new pollution sources, whether they are in attainment or non-attainment areas, meet specific minimum pollution emission standards. These standards, established by the EPA on an industry-by-industry basis, attempt to maintain air quality and economic growth while minimizing emissions from new plants and forcing industries to develop new pollution control technology.

There are some areas of the Act which need fine-tuning. Several environmental groups, organized as the National Clean Air Coalition, have pinpointed the following problems which they believe need attention



"We should not forget that our air is as clean as it is principally because of the Clean Air Act."
(Photo by MM)

during the year's Congressional deliberations:

Fine Particles. The TSP standards are weighted toward heavy particles. Particles smaller than 2.5 microns (1/10,000 of an inch) include sulfates, nitrates, toxic organic compounds and trace metals. They are the most dangerous air-borne pollutants because they are inhaled deeper into the lungs and are often absorbed into the bloodstream. They also affect vegetation, aquatic life and visibility, and they are a component of acid rain.

Toxic Air Pollutants. As many as 10% of all cancer cases result from toxic air pollutants. As the chemical and synfuel industries grow, exposure to airborne toxics will increase. The EPA has the authority to control toxic pollutants, but so far, only asbestos, beryllium, mercury and vinyl chloride are subject to EPA regulations.

Acid Precipitation. Environmental Secretary Brendan Whitaker has described acid precipitation as "the environmental problem of the eighties." Existing legislation cannot control the sources of this killing rain, which blows in from the industrial areas of the midwestern and mid-Atlantic states.

The National Clean Air Coalition wants to fine-tune the Act; industries, on the other hand, are presenting a platform designed to fundamentally alter the instrument. They are concerned that the cost of reducing pollution

emissions will interfere with the Reagan Administration's so-called "reindustrialization" program. They have proposed a cost-benefit approach to air pollution control. Simply put, the battle ahead will be over whether the Clean Air Act should place a premium on public health and the integrity of our environment, or weigh environmental and health benefits against industry profits.

The cost-benefit approach to environmental protection, supported by the Reagan Administration and many industry leaders, downplays the costs of air pollution to crops, water resources, timber and buildings, and the cost to our health care system associated with illness and disease caused by polluted air. It also requires the Federal Government to assign a monetary value to human life and health. Congressman Henry Waxman, Chair of the House Subcommittee on Health and the Environment, recently asked the National Clean Air Coalition, "What kind of society would we have when we would allow people to die, children to be born with defects or brain damage in order to maximize the profits from a power plant?"

THE VERMONT CLEAN AIR COALITION

In response to the National debate over the Clean Air Act, a coalition has been formed here in Vermont with the twin goals of educating Vermonters about the importance of clean air and demonstrating public support for a strong Clean Air Act. The Co-

alition, which currently includes the Vermont Public Interest Research Group, the Vermont Natural Resources Council, the Vermont Lung Association, the Sierra Club, the League of Women Voters, Friends of the Earth and the Audubon Society, is developing position papers on key issues, scheduling discussions and public appearances to raise awareness of the Act, and meeting with Vermont's Congressional delegation.

Until now, air quality has not been perceived as a major issue in this state, perhaps because Vermont has relatively clean air. But acid rain is eating away at our soils, crops and water resources. Furthermore, we should not forget that our air is as clean as it is principally because of the Clean Air Act. Its reauthorization and the addition of provisions regulating long-range transportation of pollution, are critical to our future air quality.

Vermont can play a key role in the reauthorization of the Clean Air Act. Our senior Senator, Robert Stafford, chairs the Senate's Committee on the Environment and Public Works, which has jurisdiction over the Act. Stafford recognizes the importance of the Act to public health and has said that its "fundamental provisions are sound" and "should not require any change." Stafford has not announced his position on the cost-benefit approach to air pollution control, nor have we heard from Senator Leahy or Congressman Jeffords. But that could be because they haven't heard from us. Readers of the VER are urged to write their Congressional representatives about this important environmental and health issue. Their addresses are:

Senator Robert Stafford
Room 5219
Dirksen Senate Office Building
Washington, D.C. 20510

Senator Patrick Leahy
232 Russell Building
Washington, D.C. 20510

Congressman James Jeffords
1510 Longworth
Washington, D.C. 20515

Jeanne Keller is the Director of the Vermont Public Interest Research Group.

Vermont Environmental Report

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