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Self-Reliance

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INSIDE:

ISLR State-of-the-Art Report

Alcohol Fuel from Municipal Waste

Most of the research and debate over alcohol fuels centers on agricultural production. But increasing attention is being paid to the alcohol potential in urban waste streams and the related possibility of small-scale* alcohol fuel plants in urban areas. As with most any manufacturing business, the key factors in determining the viability of a small-scale alcohol fuel plant are access to raw materials, the cost of conversion, and demand for the finished product.

Alcohol fuels can be produced from any starch or sugar source in the same fermentation process used by breweries and liquor distillors. Farms are the obvious source for these raw carbohydrates (called feedstock). But wastes suitable for alcohol fuel production can be found off the farm as well. In the food processing industry, for example, suitable feedstock is created in almost every step from farm to dinner tables. Waste by-products are generated when potatoes are peeled, fruit juices squeezed, vegetables canned, or milk is transformed into various dairy products. In some cases the production is seasonal, as with apples. In others, such as cheese processing, a reasonably constant supply of the cheese whey by-product is available year-round.

Much of this food processing is done in or near urban areas, creating wastes which, it most cases, are disposed of at considerable expense.

Urban feedstocks for alcohol fuel

When foods enter an urban area for final distribution and consumption, more sources for alcohol fuel feedstock can be found. Supermarkets trim wilting leaves off vegetables and remove bruised or spoiled produce from their shelves. Foods are frequently damaged in transport to the store and must be disposed. Such wastes from a medium-size supermarket total between 50 and 200 pounds a day.

In the food preparation business, more wastes are generated. Restaurants, cafeterias and catering services all create potential feedstocks, both in preparing food and when disposing of uneaten portions. The volume generated is similar to that of a supermarket.

Household organic waste is also a potential source of alcohol fuel feedstock. But these wastes are generated in such low densities that a suitable collection network would be both complex and costly. A more logical final use for this material would be the household compost pile.

Larger volume sources of wastes pose their own access problems. A food processor, for example, may generate tons of suitable feedstock, but may not have storage facilities. If the food processing is done seven days a week, then collection must be done each day as well.

The economics of collecting wastes also depend on the volume of alcohol the wastes will produce. Paper in a municipal waste stream is relatively easy to collect. But the cellulosic percentage of this waste makes it unsuitable for alcohol fuel production, except perhaps on a large scale. De- (continued on page 5)

*"Small-scale" alcohol production is generally defined as less than one million gallons per year.

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Notes

A municipal "compost strategy"—perhaps the most detailed in the country, has been designed for the city of Seattle. The plan covers backyard, neighborhood-scale and centralized city-wide composting. It includes actions that city officials can take toward a goal of composting all of the organic yard waste generated in Seattle. Copies of the report are available from: **Recycling and Resource Recovery Program, 807 Municipal Building, Seattle WA 98104, 206/625-5127.**

Two new studies have added specific data to the argument that low-cost and low-technology energy strategies such as conservation and solar are more job intensive and cost-effective than high-technology, high cost solutions like nuclear power plants. A 300-page study of energy options in eastern Long Island, one of the most specific we've seen, is available for $10 from: **Council on Economic Priorities, 84 Fifth Avenue, New York NY 10011, 212/691-8550.** An investigation by the Prairie Alliance of Illinois reaches similar conclusions about a nuclear power plant proposed in Clinton, Illinois. The Illinois Power Plan is available for $5 from: **Prairie Alliance, Box 2424, Station A, Champaign, IL 61820.**

Something about Boston neighborhoods seems to produce good films. First came *Neighbors,* about displacement in the South End. Now we have *Mission Hill and the Miracle of Boston.* Billed as an oral history of neighborhood growth and decay, the film explores how the neighborhood originally formed, what led to its decay and who is making decisions about its future. The film, in 16mm, is 60 minutes long and rents for $70, beginning in April from: **Cine Research Association, 32 Fisher Avenue, Boston MA 02120, 617/442-9756.**

Utility involvement in financing solar energy installations has been recommended by a California Public Utilities Commission study. The Commission examined 70 different solar energy financing programs involving utilities. State utilities have been asked by the Commission to prepare demonstration programs modeled after the most promising plans. Copies of the complete report are free from: **California Public Utilities Commission, Civic Center, San Francisco CA 94102, 415/557-0647.**

Who's doing what in renewable energy? A massive directory of more than 1700 projects has been compiled by the Center for Renewable Resources. The complete directory is geared to libraries and government agencies; but a smaller list of about 500 leading renewable energy projects is in the works. For more information, contact: **Center for Renewable Resources, 1001 Connecticut Avenue NW, Washington DC 20036, 202/466-6880.**

March of "Progress"

Soft Path to Nuclear Holocaust The Department of Energy and Department of Defense are looking to sources to figure out a way to provide ground power for the proposed MX missile system through renewable energy sources. The official price tag for the MX is now $33 billion, though estimates, including one from weapon-lover Senator Jesse Helms, place the eventual cost at $100 billion. Apart from cost, the MX would make further strategic arms limitations talks with the Soviets virtually impossible. And some critics say the MX will be obsolete before the decade is over.

High and Dry in New York City [illegible] private business [illegible] New York City have found a [illegible] way to "get rid" of their garbage. To avoid [illegible] a landfill site [illegible] the businesses dump their wastes in vacant [illegible] officials, not to be outmaneuvered, have launched an 11-man "anti-[illegible] surveillance crew. Operating in teams, driving unmarked cars and [illegible] the special force uses a new city law to impound [illegible] and impose heavy fines on drivers and owners. But [illegible] Lately they have been observed using "[illegible] clean-looking vehicles" that might be [illegible] of the city's [illegible] force.

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Financing and Regulating the Transition to Energy Self-Reliance

In *Self-Reliance* #21, we reported on various approaches to financing and regulating investments in energy conservation and renewable energy. In the second part of this report, we outline financing mechanisms used by banks, savings and loans, federal and state programs and utilities to promote solar energy and energy conservation. Also discussed are new solar leasing arrangements and energy laws and regulations.

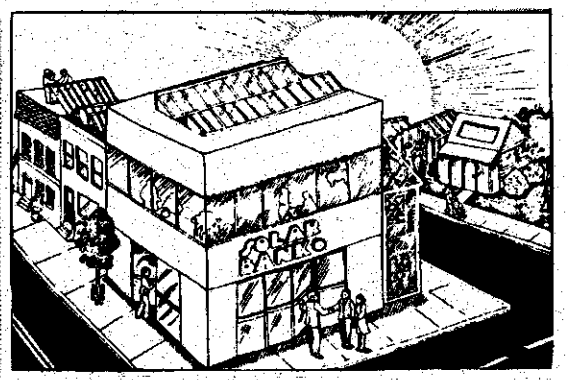
Financing Mechanisms

Financial Institutions: A March 1977 Act of the Massachusetts state legislature authorizes banking institutions to make secured loans of up to $2,000 above their home improvement loan limit for the purchase and installation of solar, wind-powered or heat pump systems. The term of the loan cannot exceed ten years. In June 1977, the Act was extended, increasing the amount of home improvement loans made by co-operative banks from $5,000 and eight years to $10,000 and ten years. In January 1978, the Governor of Massachusetts announced that 115 Bay State banks had agreed to a voluntary program in which they would reduce interest rates for home improvement loans which would save energy.

Rockford, Illinois Home Federal Savings and Loan Association gives a 1/2 percent reduction in its regular rate for solar homes on its regular 29 year mortgage. It also gives a 1/4 percent reduction for energy efficient homes. Homeowners with Rocky Mountain Federal Savings and Loan Association in Cheyenne, Wyoming can save up to 3/10 percent for 30 year mortgages with purchases of energy efficient homes. San Diego Federal Savings and Loan Association's program permits a homeowner to get a 1 percent reduction in the normal rate of a home improvement loan for 5 to 10 year terms. It will finance up to 80 percent of the value of the home, and up to 80 percent of the cost of energy savings investments in a single conventional mortgage. The dollar amount of the energy saving improvements cannot be greater than 10 percent of the value of the home prior to the installation of these improvements.

San Diego Federal also permits an energy saver loan to be part of its "flexi mortgage payment program." Interest only is paid during the first five years of the 30 year mortgage, and the mortgage amortization is compressed into the last 25 years of the loan.

Local Government Loan Programs: Wichita, Kansas provides for zero interest loans for attic insulation for homeowners. The loan is repaid over a varying period, from 6 to 60 months depending on the borrower's income. Dayton, Ohio uses Community Development Block Grant (CDBG) money to lower the interest rate for conservation efforts. Cambridge, Massachusetts uses CDBG money to pay part of home improvement loans which bring buildings up to code, depending on income level. Energy conservation expenses can be included. Portland, Oregon has mandated that all buildings



within the city must meet state conservation standards within five years. To finance this for commercial buildings, it will be using Industrial Revenue Bonds at 6 percent, matched by bank money at 12 percent, and is seeking federal money for a revolving loan fund that can bring the interest rate down further. Portland has also amended regulations pertaining to tax increment districts (called local improvement districts in Oregon) to permit financing through property tax increases for energy/conservation.

State Loan Programs: Minnesota has amended its Pollution Control Bonding laws to make loans for energy conservation and solar technologies eligible. California is in the process of doing this.

California has a Solar Energy Revolving Loan Fund. The eligibility is limited to owners of dwellings 1) damaged or destroyed by a disaster for which a state emergency has been proclaimed by the Governor on or after July 1, 1977; 2) located within the area designated in the Governor's proclamation. Loans cannot exceed $2,000 per dwelling and are repaid in 18 monthly installations starting 12 months from the date of disbursement. These are no interest loans. However, the borrower must pay a loan origination fee to defray the cost of making and servicing the loan. The loan origination fee cannot exceed 3 percent of the loan. Montana permits utilities to make loans for conservation at 7 percent interest, with the difference between this and the current market rate to be made up by the state.

Oregon requires utilities to arrange financing of conservation with commercial lending institutions at 6.5 percent interest, with the difference between this and the current market rate, up to 12 percent, made up by the state in tax credits. Oregon also authorizes 6.5 percent loans for residential solar/alternative energy devices. The state will grant a tax credit to commercial lending institutions to make up the difference between 6.5 percent and the commercial lending rate, or 12 percent, whichever is lower. There is a $10,000 loan limit per dwelling. The law is effective January 1, 1980.

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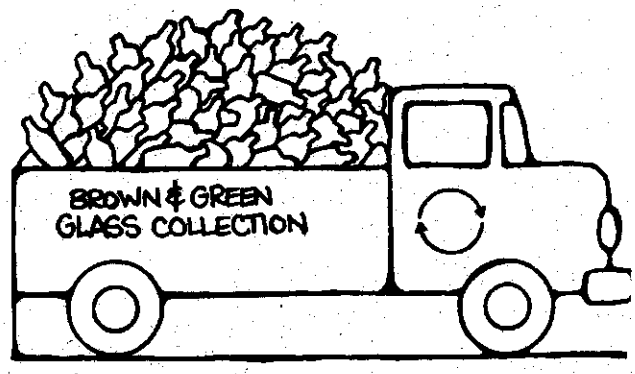
Community-based Recycling: Three Successful Models

In *Self-Reliance* #21, we profiled three types of community-based recycling programs and discussed the basic decisions that must be made before getting a recycling program off the ground. Particularly important is an implementation plan, with specific goals for the program one year after start-up. Also, it is often best to design a program backwards, by analyzing the market potential of recycled goods, and working out a program to fit those limitations. In this issue, we present experiences in management, publicity and special problems encountered by many recycling programs.



The hardest item to determine is how much money is needed to draw upon until the center starts paying its own way. Expect that it may take up to three months to actually receive payment for materials once a load is shipped. Unless absolutely sure of payment arrangements and volume, it is best to have all operating money for the first four months on hand.

Preparing a budget

The following costs are experienced by recycling centers in California. Although each center's costs will be different, these figures can assist in roughing out first cost estimates.

Wages—$4 to $7 per hour for production people, depending on skill level. $12,000 to $18,000 for administrators who oversee the program, write grants, and conduct fundraising activites. Allow 20 percent for fringe benefits which include FICA, Workmen's Compensation, vacation and sick leave.

Site—$400 to $1200 per month depending on size, location and the amount of pavement and size of structures. For leases, first and last month's rent are usually paid in advance.

Utilities—For gas, electricity and telephones, allow $150 per month. That can increase to $300 a month, depending on telephone usage and equipment with electric motors.

Insurance—Liability insurance will be needed, fire insurance for the structure, and auto/truck insurance for all vehicles. Depending on rates and exposure, this can be as high as $1000 per month, not counting Workmen's Compensation.

Hauling—A roll-off bin truck will cost about $35 an hour. Trucking with flatbeds and end dumps will run about $100 to $150 per full day of work. For shorter hauls, it will fall off to a minimum of around $50 per load. These are generalities, as the hauling is billed by the hour, mile or tons and miles. Also, California regulates trucking fees, but other states do not. In all cases it pays to shop around.

Repairs and Improvements—This depends on how many pieces of equipment and how much work the site needs. This is one item routinely left out of budget estimates. A $100 minimum per month for repairs on each large piece of equipment should be budgeted, and at least $100 per month for improvements and modifications.

Office Expenses—Publicity, bookkeeping and other office support services require equipment: typewriter, duplicator, desks, files, and so forth. This will be about $200 for payments, if they cannot be donated.

Equipment—Costs will vary from area to area:

1. Roll off bins, to rent, when available at $2 per day; to purchase at $1,500-$2,000, depending on size. Twenty cubic yards is most common. Usually bins are furnished free by a hauler if they are hauled at least once a month.
2. Roll-off bin truck—$45,000 new, $25,000 used.
3. Fork lift—$25,000 new, $5,000 to $15,000 used.
4. Aluminum can magnetic separator—$2,000 to $5,000 new, not available used. With a flattener—$5,000 to $15,000 new, not available used.
5. Collection vehicles for routes—$10,000 to $25,000 new, $5,000 to $10,000 used.
6. Paper balers—$10,000 to $40,000 new. Difficult to find used. This price range is for capacity up to 300 tons per month. Larger equipment will cost a lot more.
7. Aluminum shredders—$40,000 to $75,000, many options available, large range of prices.
8. Yard bins—$50 to $150 each, with capacities of one to two cubic yards.
9. Hanging scale—$50 to $200, small platform scale—$2,000 to $6,000, depending on capacity and bed size, and whether it is flush mounted or portable.

Assessing the market

There are regional differences that must be recognized before generalities can be made. The East and West Coasts, as well as the Gulf States, can export easily. The central part of the country cannot, and therefore, prices are not as active or as high, especially for newspaper. Additionally, newspaper moves off the West Coast at a higher value to markets in the Orient. The same is true for aluminum cans, but because of their higher value, they can be hauled further to reach a port. Glass at this time is not exported. Its value depends on distance from a glass factory. Prices are therefore not regionalized in the same way. Steel and bi-metal cans are not moving well, with the exception of a few local markets where steel mills are consuming the material directly.

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Producing Alcohol Fuel from Municipal Waste: Small-scale Plants Have Considerable Potential

(Continued from page 1)

pending on the feedstock, a ton of organics will produce anywhere from zero to 80 or more gallons of ethanol fuel. Assuming sufficient demand for alcohol fuel at $1.50 a gallon, therefore, shows that the cost of buying, hauling and storing even a high yielding feedstock must be below $120 a ton. The variables here can be critical. Cheese whey is usually available free for the hauling. But hauling costs are so high that this waste source is usually unsuitable if the processing plant is more than 40 miles away from the alcohol fuel plant.

The economics of feedstock conversion and production capacity do not necessarily follow the traditional "bigger is cheaper" rule. True, capital costs per gallon annual production capacity may decrease with greater size, but capital costs represent only 10 to 20 cents of the selling price for a gallon of alcohol.

By far the most important considerations in determining production capacity are access to supply and demand for both the fuel and by-product of the fermentation process.

The market for alcohol fuel at present is in the form of gasohol (10 percent ethanol, 90 percent gasoline). There is a guaranteed, immediate market here, because gasohol can be used in automobiles without any modification. But to sell into this market, the alcohol must be anhydrous (virtually 100 percent alcohol) or the gasoline and alcohol will separate. The problem is, removing that last bit of water requires a substantial amount of additional energy and capital.

The economics of feedstock conversion and production capacity do not necessarily follow the traditional "bigger is cheaper" rule.

Alcohol is an excellent fuel by itself, and, in fact, optimal engine performance results with a small amount of water in the alcohol. But even though pure alcohol would be much cheaper to produce than gasohol, most of today's engines are not designed to run on pure alcohol, so the demand is very limited.

Creating demand

The best approach to marketing alcohol is to create demand. A good place to start is any fleet of vehicles with a prescribed travelling area: taxis, postal and government vehicles. With this approach, the cars can be modified all at once, and a base station established to supply the fuel. Alcohol can also replace fuel oil for space heating. A single residential furnace conversion creates a demand for up to 2500 gallons of alcohol a year.

An important difference between urban and farm alcohol production will be the disposal of the spent feedstock after the alcohol is produced. On farms, spent solids can be fed to livestock or easily composted. In urban areas, the solids will most likely have to be dried for shipping to distant markets. This requires additional energy input and probably greater costs for on-site processing and storage.

Fuel from potatoes in North Dakota

Currently there are almost no non-farm alcohol fuel plants of any kind. But a considerable amount of research and experimentation is being done. **In Grand Forks, North Dakota, the Minnkota Power Cooperative, Inc.** has been testing a still for the past year, and is just now running it on a regular basis.

The still converts wastes from a local potato processing plant. To date, seven batches have been made, using 2800 gallons of potato mash to produce 190 gallons of alcohol fuel that is between 170 and 175 proof. Spokesperson Gary Kapity says the operation could produce a steady 200 gallons of fuel per week, with the potential for 400 gallons a week. Minnkota runs a conventional pot column still, assembled from off the shelf and scrounged parts for about $15,000. The spent feedstock is given back to the potato company for disposal or use as cattle feed.

Kapity cautions that the Minnkota process is still being tested, and that many variables have affected their output. Potato processing is done several ways, for example, and some potato wastes are well suited for fermentation, while others are not. The company, Kapity says, is still not in a position to respond to inquiries about its work.

In Juneau, Wisconsin, Milbrew, Inc. (6101 N. Tuetonia, Milwaukee, WI 53209, 414/462-3700) has been experimenting with cheese whey, one of the non-grain feedstocks regarded as having the most potential for conversion to alcohol fuel. Milbrew has been processing cheese whey into potable alcohol and industrial alcohol for the past six years, but only recently began looking into the potential for alcohol fuels. Milbrew's process for producing 96 percent ethanol at 193 proof is well tested, but company spokesperson Dr. Gerald Reed says "we are not pushing the market," mostly because demand is so limited. Reed also cautions that the cheese processing industry as a whole produces only 30 billion pounds of cheese whey a year. "If every drop went into alcohol fuel production, you would still only yield 100 million gallons of ethanol," Reed says. "That's not much of an impact when you consider total gasoline consumption." (estimated at 100 billion gallons a year).

Reed, who says his company's goal is "to make money, not alcohol fuel," says Milbrew is putting more effort into expanding the market for industrial uses of alcohol, such as the manufacturing of cosmetics and detergents, and also into disposal of the spent cheese whey. Towards this end, Reed says, Milbrew is perfecting a liquid cattle feed from spent cheese whey which it expects will make the alcohol conversion process much more profitable.

Reed says cheese whey alcohol fuel production has excel-

(Continued on page 6)

This was prepared with funds from the National Center for Appropriate Technology to fulfill a grant requirement. NCAT is funded in part by the U.S. Community Services Administration. The opinions expressed in this report are those of the waste utilization staff of the Institute for Local Self-Reliance and do not necessarily represent the views or policies of NCAT or CSA.

Battle Emerging over Scale of Alcohol Fuel Plants

(continued from page 5)

lent small-scale potential, because the whey cannot be transported more than 20 or 30 miles. Also, suitable processors can be found throughout New England, upstate New York and the upper Midwest. Milbrew, Reed says, is looking to build more plants, and receives about five inquiries a day about its process.

Laboratory research looks promising

Other efforts in non-farm applications for alcohol fuels are still in the laboratory stage. In Natick, Massachusetts, the U.S. Army Research and Development Command is testing a special enzyme which breaks down cellulose into fermentable sugars. If the project proves feasible on a larger scale, a host of feedstocks—everything from municipal waste to computer paper to wood pulp—would become feasible for alcohol fuel production. Leo Spano, spokesperson for the Natick project, estimates that urban waste cellulose alone, if converted entirely to alcohol, could result in two to three billion gallons of fuel per year. If just 25 to 30 percent of all agricultural, urban, industrial and forestry cellulose wastes were converted, Spano says, alcohol fuel production could reach 10 billion gallons per year.*

Obviously, alcohol fuel production is an evolving field, and this is particularly true for non-farm applications. Perhaps most important is the question of scale and ownership (see related story, below). But more research is needed on improving the actual fermentation process, and developing better hardware. With a rapidly changing technology, the field to date is largely left to researchers and a handful of individual entrepreneurs, while industrial and the finance community take a "wait and see" attitude.

In their absence, community-based organizations and local officials will have to take the initiative in identifying potential feedstocks in their area and designing demonstration projects to convince others than the process can work.

*The Natick research project is one of several around the country testing enzymes to break down cellulose into fermentable sugars. Descriptions of these projects can be found in a directory published by the *Bio-Energy Council, 1625 I Street, NW, Washington DC 20036, 202/833-5656.* The directory costs $75, but a good local library may have a copy.

Alcohol fuels: A battle over scale

There is little doubt that Americans will eventually become as familiar with alcohol fuels as they are with gas alone. The question is, will we buy alcohol fuel produced in huge, capital-intensive plants owned by a few companies able to carefully control both supply and price? Or will the fuel come from a network of thousands of small-scale, relatively low-cost plants more sensitive to local supply and demand?

The advantages of small-scale production are forcefully argued by Dr. Gene Schroeder, a Colorado farmer who is both a leader in the American Agricultural Movement and the fight for small-scale alcohol fuel production.

Small-scale plants require less financial backing, says Schroeder. "With a shortage of investment capital and high interest rates, finding long-term financing to build an expensive land-grain facility is difficult."

Even planning for a large-scale plant can be expensive. Two years ago, the town of St. Paul, Nebraska coughed up $36,000, much of it in small $100 donations from local residents, to do a feasibility study on a 30 to 40 million gallon a year alcohol plant. But even though people in St. Paul spent months evaluating different expenditure items, the final report proved to be of little use to the New York investment community needed to finance the project.

Schroeder notes that large-scale operations are more vulnerable to shortages in feedstock supply and fluctuating prices, as well as to mechanical failure and labor disputes. Small-scale projects, on the other hand, offer benefits to local economies. "Large-scale energy production facilities, removed from the immediate farming environment, tend to attract money and jobs from rural economies, while farm-based production could create employment locally, keep the kids on the farm, reduce outflow of money, and bring back to the farmer a greater measure of control over the costs of his operation," says Schroeder. Small-scale plants in low-income urban areas could have much the same effect for cities.

Predictably, large grain processors and engineering firms are pushing large-scale plants, arguing that the economies of scale are not attractive and that competition will lead to unstable prices which will ultimately hurt the small-scale producer. Some companies are also in a better position to market fuel by a product, a fact in their favor in an economically uncertain market. Outlining the problems of small-scale plants, Schroeder says that "the capital for production engineering, land and plant construction is more used to building [illegible] of million dollar projects for large food companies." [illegible] Schroeder [illegible] Dwayne Andreas, a [illegible] Chairman of Archer Daniels Midland, [illegible] "Those are the kind of people we are going to have to compete with."

If a few large companies are able to dominate the alcohol fuel market, they will probably try to keep their product price just under that of gasoline, leaving consumers not much better off than they are now.

Here is where government can make a difference, if it decides to encourage, rather than discourage, small-scale production. Federal actions, such as the 4.6 cent-per-gallon highway tax exemption for gasohol, [illegible] state fuel [illegible] could create for a host of industries. Federal or state governments could also assist in the formation of gasohol fuel cooperatives, with local plants producing the less expensive 180 to 190 proof fuel for sale to a centralized "cooping" plant to distill the fuel to 200 proof, much as is being done now in the production of dairy products. Finally, state and local officials can help community-based groups identify sources of feedstock supply and assist, through fleet conversions of public vehicles, in increasing demand for the less expensive pure alcohol.

Resources

Alcohol fuel from municipal waste

Information

The easiest first step for obtaining alcohol fuel information is the **National Alcohol Fuels Information Center,** which has a toll-free number (800/525-5555, 800/332-8339 in Colorado). This center is new, and its inexperienced staff will not have quick answers to detailed questions. They will make referrals, however, and have access to the more informed staff at the **Solar Energy Research Institute,** where the Information Center is based. A private counterpart to Information Center is the **National Alcohol Fuel Producers Association** (1700 South 24th, Lincoln NE 68502, 402/474-1977). This group maintains a list of manufacturers, suppliers and producers in the field. A $75 membership fee gets you a newsletter and a copy of their 350-page *Learning Guide for Alcohol Fuel Production,* one of the best sources for general and technical information on the subject. Two good shopping lists for alcohol fuel information are a 60-cent bibliography published by the **National Center for Appropriate Technology** (Box 3838, Butte, MT 59701, 406/494-4572) and the January 1980 issue of the *Energy Consumer,* published free by the **U.S. Department of Energy Office of Consumer Affairs** (1000 Independence Avenue SW, Washington DC 20585, 202/252-5880). The latter has a relatively up-to-date, state-by-state listing of alcohol fuel activity, with addresses and phone numbers. One of the better single publications we've seen is *Makin' It On the Farm,* by Micki Nellis, published by American Agriculture News ($3.50 postpaid, Box 100, Iredell TX 76649, 817/364-2474). Also worth a look is *Fuel from Farms: A Guide to Small-Scale Ethanol Production,* produced by SERI's Energy Information Data Bank and available free to the first 100,000 requestors (U.S. Department of Energy, Box 62, Oak Ridge TN 37830, attn: Fuel from Farms). Both these publications explain the basics of alcohol fuel production on or off the farm.

Instruction

Those who are serious about alcohol fuel will eventually have to put down the books and get their hands dirty. There are a number of courses in alcohol production, but finding really useful instruction can be difficult. Perhaps the least expensive route is through one of the **40 community colleges** which have received grants from the U.S. Department of Energy to conduct classes on alcohol fuels. A list of the participating colleges is available from the national toll-free number listed above. One of the most publicized programs is at **Colby Community College,** where the **Alcohol Fuel Workshop Center** (Box 686, Colby KS 67701, 913/462-3984) has been offering five-day workshops since the spring of 1979. Thousands have passed through these workshops, but according to some experts, recent sessions have not been of the same caliber as early sessions. Before paying any fee, ask course organizers for a printed curriculum and make sure the instruction includes hands-on experience. Also contact people who have recently completed the course. Additional help in finding the best instruction for your needs is available from Richard Moore and Lawrence Akers at the **U.S. Department of Energy Office of Consumer Affairs** (1000 Independence Avenue SW, Washington DC 20585, 202/252-5141).

Funding

Finding funds for an alcohol fuel project will be even trickier than finding information or instruction. Chances are your local bank won't know what you are talking about, and is not interested in being enlightened. If you are planning a demonstration project rather than an actual business, the best sources will likely be government agencies or foundations. Two likely federal sources for funding small-scale, community-based projects are the **Community Services Administration** (1200 19th Street NW, Washington DC 20506, 202/632-6503) and the **U.S. Department of Energy Office of Small-Scale Technology** (1000 Independence Avenue SW, Washington DC 20585, 202/252-9104). The Community Services Administration plans to fund several alcohol fuel projects in low-income areas over the next year. The Office of Small-Scale Technology is opening a second round of its popular appropriate technology grants, beginning in April. To keep up with the myriad of larger-scale alcohol fuel programs developing at the U.S. Department of Energy, contact Donald Walters at the **Community Technology Systems Branch,** 20 Massachusetts Avenue NW, Washington DC 20585, Beverly Berger at the **Biomass Division,** 600 E Street, Washington DC 20585, and E. Steven Potts, **Alcohol Fuels,** also at 600 E Street NW. Another federal sources is the **Economic Development Administration of the U.S. Department of Commerce,** which has grants for small-scale rural projects by non-profit groups and loans for urban and rural projects of any kind. Contact your regional Economic Development Administration office for more details. Finally, **state energy offices** may have leads on programs which can lend support to an alcohol fuels projects in your area.

Government policy

Can ambitious alcohol fuel production goals be met without sacrificing small business and community participation or environmental standards? A newly organized advocacy group is studying ways the federal government can encourage—or discourage—small-scale and community-based distilleries. The group, called the **Citizen Implementation Plan for Renewable Alcohol Production** (CIPRAP) consists of the **Center for Renewable Resources,** the **National Gasohol Commission** and the **American Agriculture Foundation.** Community groups and local officials can receive CIPRAP's guidelines for government policy on alcohol fuels and make comments, which CIPRAP will pass along to the U.S. Department of Energy. What happens from there is unclear, but the effort should help crystalize the issue for local planners. Contact: Center for Renewable Resources, 1001 Connecticut Avenue NW, Room 510, Washington DC 20036, National Gasohol Commission, 521 South 4th Street, Suite 5, Lincoln NE 68508, or American Agriculture Foundation, Inc., Box 57, Springfield CO 81073.

Progress Reports

Economic Development In 'Service' Programs

While most community groups view economic development in terms of commercial and business development, **a group in Bedford-Stuyvesant, New York has generated jobs, cash flow and business opportunities through "service" programs.**

The Consumer Action Program of Bedford-Stuyvesant, (CABS) using its ten year history of modest economic development activity, secured a loan from the New York State Medical Finance Agency to construct a nursing home in its community. The facility employs 200 people, most of whom are community residents, in jobs that require minimal specialized training. Average salaries range from $12,000 to $15,000.

Generating subcontracts for local firms was a primary motive for CABS sponsorship of the nursing home. In 1978, these subcontracts included $100,000 in lab services, $40,000 in pharmacy bills, $60,000 in security, $400,000 in food service operations, $60,000 in laundry services, $350,000 in housekeeping and $15,000 in computer services. At present, most of these services are subcontracted to minority-owned businesses in Brooklyn.

CABS's experiences in health care delivery illustrate the significant income opportunities available to community development groups in low-income areas. While poor in disposable income, low-income communities have considerable money that individuals control in the form of guaranteed Medicaid dollars. Most of this money is exported to other areas of the city or to the suburbs in the form of profits, jobs and subcontracts. CABS has stopped much of this leakage, while providing health care service superior to programs usually provided by government agencies.

Another opportunity for economic development ventures in low-income communities are contracts with the government for services it is legally required to offer. CABS has a contract with the New York City Department of Social Services to provide part-time housekeeping services for welfare recipients and the elderly. It employs 450 women with a budget of $1.7 million.

There has been a significant growth in service industries, and many conglomerates such as ITT, R.J. Reynolds and the Upjohn Corporation have established service-oriented subsidiaries to cash in on it. To compete, community-based groups will have to establish track records in economic development and sound administration procedures. But the experience at the Consumer Action Program of Bedford-Stuyvesant shows that much of this business activity can be locally controlled. For more information, contact: **National Economic Development and Law Center, 2150 Shattuck Avenue, Berkely CA 94704, 415/548-2600.**

Supermarket Chain Discovers Recycling

A New England-based supermarket chain is now recycling a major portion of its waste, saving both landfill space and money.

Stop & Shop uses custom designed containers to compact corrugated cardboard—three-fourths of a food store's waste stream. The cardboard is then hauled to local paperstock dealers from each of the chain's 150 stores. Revenues from 30,000 tons of recycled cardboard brought in $614,000 last year, enough to cover half the cost of Stop & Shop's entire waste management program.

The special containers also allow Stop & Shop stores to recycle food wastes. Some stores are already selling the organics to local hog farmers. Eventually, the chain expects between $100,000 and $200,000 in revenue from recycling the organics.

With a typical 32,000 square-foot store generating eight tons of waste a week, recycling drastically cuts down on the amount of materials going to local landfills. And Stop & Shop says the recycling system makes waste handling inside each store more efficient, cutting down on operating costs.

For more information on the system, contact: **Stop & Shop Main Office, PO Box 369, Boston MA 02101, 617/463-7000.**

State Expands Market for Recycled Paper

Three years ago, Maryland became the first state to mandate the use of recycled paper in state government paper purchases. Starting slowly, by requiring just five percent of state paper purchases to be recycled paper, Maryland reaped immediate benefits in energy savings, reduced waste and lower costs.

Since 1977, the state has saved about 36 billion BTUs, enough to oil heat almost 300 homes a year. Using recycled paper also cut Maryland's solid waste stream by about 700 tons. And because Maryland found that recycled paper is generally less expensive than regular bond paper, the state has so far saved $17,000 in paper supply costs, without loss in quality. By 1985, Maryland's state government, by law, will be required to use recycled paper in 40 percent of its stock.

The Maryland program has also worked well on the local level. Ten local governments there have purchased recycled paper from a state warehouse under a state law which permits such cooperative purchases. The only other state purchasing large quantities of recycled paper is California, which buys printing and writing paper, paper towels, chipboard and toilet tissues made from recycled paper under a 1977 law requiring "preference, wherever feasible" of recycled paper, but setting no mandatory levels.

An excellent 11-page report is now available on the Maryland recycling program, including a copy of the state law, and potential problems in implementing similar programs elsewhere. Copies of the report are free (don't forget a self-addressed stamped envelope) from: **Richard Keller, Maryland Energy Office, 301 West Preston Street, Suite 1302, Baltimore MD 21201, 301/383-6810.**

Health Center Wants To Share Success

With four years of experience under its belt, a community health center in Eugene, Oregon is ready to share what it has learned with other health organizers around the country.

The Community Health and Education Center is a full service operation: primary care, in-patient hospital care, examinations for all ages, nutrition and family planning, and dental care. Staff includes a physician, women's health care specialist, lab technicians and medical aides.

The Center, however, is not a typical neighborhood health care facility. It is non-profit, managed by the staff and run by a board of community residents and local health care specialists. There is strong emphasis on self-care, preventative health care, and outreach to residents who might not otherwise take advantage of the center's services.

The Eugene health center model is often proposed as an alternative to health care controlled by the American Medical Association or a nationalized health care system. Experience has shown that the model can work, but not without difficulty.

Funding is a not-too-surprising problem. The average cost per patient visit, including overhead, salaries and equipment, is $32, with $15 paid out-of- pocket by the client, and $17 in subsidies through grants and community donations. This cost per unit figure is conservative, not reflecting center staff who work below their professional peer salary levels.

Improved business management has helped bring financial problems under control. Increased efficiency has lowered unit costs, and through careful accounting the center now knows exactly what it costs to provide certain services. Outreach and education, for example, are non-fee generating and cannot be paid for by the community that most needs them. So the center knows it must solicit outside government and foundation sources to fund these operations.

Self-management and outreach have posed more unique problems. Staff unity

and a solid community reputation have evolved through patient, sometimes painful effort. Most of the center's success, in fact, can be traced not to an alternative system, but to commited individuals who want the center to work.

The center would like to share its experiences and contact other groups doing similar work. For more information, contact: **Eugene Community Health and Education Center, 433 West 10th, Eugene OR 97401, 503/485-8445.**

Food Coop Fights Back

It's not often we can take an item from March of "Progress"—our regular report on not-so-nice developments in local self-reliance—and turn it around to a Progress Report. Happily, the Gordon Park Food Coop troubles with the Internal Revenue Service are taking a turn for the better. Last year, the coop was assessed $3500 in back taxes and Social Security payments when the IRS ruled that discounts for volunteer time at the store are a "wage" paid to members. Because so many coops depend on volunteer labor, the ruling threatened the existence of many small coops around the country.

To meet the immediate crisis, Gordon Park launched a fundraising drive which has already netted $1800 towards the $3500 IRS bill. A new sustaining member program promises to raise even more money.

For the long term, the coop has won a commitment from Congressman Henry Reuss (D-Wisconsin) to draft legislation needed to change existing IRS regulations on coops. Gordon Park staff members say that, partly as a result of publicity in *Self-Reliance,* small coops from around the country have written to Gordon Park expressing concern with the IRS action and pledging support in changing the IRS regulations. For more information, contact: **Carl Hedman, 821 East Locust Street, Milwaukee WI 53212, 414/265-4040.**

Cutting Costs By Cutting Pesticides

Modesto, California has found that it can reduce the amount of pesticides it applies to city-maintained trees and cut costs at the same time.

Through a program of integrated pest management, key pests were identified and surveys revealed their local life cycles, natural enemies, habitat preferences and population peaks during the season. The number and timing of pesticide treatments were also monitored.

The results were startling. Careful monitoring alone produced a 91 percent reduction in pesticide treatment for city elms, with no increase in injury levels. Over a three-year period, pesticide treatments were reduced overall approximately 99 percent. During the same period, total costs of city pest management decreased by 41 percent, despite an increase in labor costs.

A report on the Modesto project is available from: **The Center for Integratation of Applied Sciences, John Muir Institute, 1307 Acton Street, Berkeley, CA 94706, 415/524-8404.**

Community Woodlots In Maine

Locally operated woodlots are being organized by a coalition of community groups and local banks in Maine in an effort to keep the cost of heating with wood affordable. The Firewood Project, sponsored by Maine COIN (Consumers Opposed to Inflation in the Necessities) has started one woodyard in Portland, while another in Bangor is in the final planning stages. A description of the Bangor project, which includes information on possible sources of wood supply, labor and financing for a local woodyard is available for 50 cents from: **Main COIN, 122 State Street, Augusta ME 04330, 207/622-5863.**

Off the Shelf

Ivan J. Tether
Government Procurement and Operations
1977 208 pp. $15.50

Joe W. Russell, Jr.
Economic Disincentives for Energy Conservation
1979 176 pp. $17.50

Norman L. Dean
Energy Efficiency in Industry
Available Spring 1980

Grant P. Thompson
Building to Save Energy—Legal and Regulatory Approaches
1979 288 pp. $22.50

Corbin Crews Harwood
Using Land to Save Energy
1977 366 pp. $19.50

Robert A. Friedrich
Energy Conservation for American Agriculture
1978 192 pp. $18.50

Gail B. Hayes
Solar Access Law
1979 320 pp. $18.50

Raymond J. Burby, A. Fleming Bell, eds.
Energy and the Community
1980 140 pp. $18.50

All of the books listed above are available from the Ballinger Publishing Company, 17 Dunster Street, Cambridge MA 02138.

The Ballinger Publishing Company has proved itself a leader in the dissemination of practical information about the energy crisis. The company that published Amory Lovins' *Soft Energy paths* has added dozens of new titles to its energy bookshelf.

Ballinger's collaboration with the Environmental Law Institute's State and Local Conservation Project has been especially fruitful. Begun in the mid 1970's, funded in part by the National Science Foundation, the Department of Housing and Urban Development, and the Department of Energy, the ELI project was a "how-to" approach to policy making. The books that have come out of that research provide concrete and specific information on legal and administrative strategies for conserving American energy supplies. They focus on what is legally possible, weaving legal theory and practical examples throughout. Written by attorneys, these books are richly footnoted. The citations to recent ordinances, federal and state legislation, and court cases are particularly useful to newcomers to the field.

Each book concentrates on a different area: industrial energy conservation, land use ordinance, solar access, building energy conservation. There is surprisingly little overlap. It would be marvelous if the books could be updated every two or three years. But that might be too much to ask. As it is, interested readers can pick up where the books leave off by writing to those jurisdictions whose innovations made it into these initial research efforts.

There are nuggets of gold throughout the series. We learn from Grant Thompson about Minnesota's innovative grant and loan program for low-income energy conservation which "deserves to be emulated" according to the author. Corbin Crews Harwood describes Oregon's use of energy as a factor in its environmental impact statements concerning land development, Ivan Tether tells us about Florida's use of life cycle costing for leased state buildings, and Gail Boyer Hayes tells us about the solar access ordinances in New Mexico and California.

These books are not, however, smorgasbords of examples. The energy crisis is also an institutional crisis. In order to rapidly reconstruct society in a more energy efficient manner, we will confront basic constitutional questions. What is the authority of local government over its citizens, particularly when it tries to force the upgrading of existing physical stock? At what point does legislation become a "taking" of property without adequate compensation? How should localities write their legislation to make it acceptable to the judiciary? How much research must be done to satisfy the courts that the legislation is an acceptable response to an emergency situation? What is the relationship of local government to their states, and the federal government? Over what issues do higher levels of government have supremacy over localities? Are there ways in which states or cities can move beyond federal regulations, even where the federal government has pre-empted them in that area?

The books deal in detail with these issues. While not extensive in their analysis of the "taking" issue or the pre-emptive issue, they are excellent sources for lay people, and provide sufficient footnotes to those interested in pursuing the question.

The books are surprisingly well written, given the dryness of the subject. Gail Boyer Hayes' journalism background is evident throughout *Solar Access Law.* Grant Thompson, current director of the Conservation Foundation, acknowledges his debt to the new generation of electronic text editing typewriter: "A perfect man-machine relationship." There is nothing machine-like, however, in this analysis of federal building energy legislation and equipment efficiency standards.

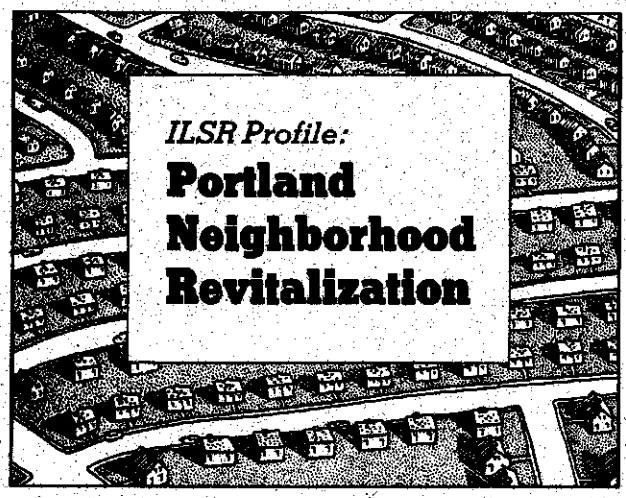
Ballinger publishes other energy books, and any researcher would do well to get their list. I recommend *Energy and the Community,* edited by Raymond J. Burby and A Fleming Bell. It is an anthology of brief articles on an extraordinary variety of energy related issues. Owen Carroll tells the reader how to calculate community energy demands, while Jerry Edwards discusses the effect of land use on transportation energy consumption, and Bruce Hannon talks about energy efficiency from a different perspective. It is a good introduction to the subject.

James Ridgeway
Energy-Efficient Community Planning
1979 221 pp. $9.95
Available through ILSR

This is a pioneering book. Based on earlier writings by Ridgeway and Len Rodberg, it describes local government efforts to achieve energy efficient communities. From urban food production plans in Hartford, to water conservation strategies in Northglenn, Colorado, to energy conservation codes in Davis Seattle, the book gives us a picture of innovative cities.

It is a good beginning, but suffers from the burden of being a pioneer. Some of the promise of early programs has been tarnished in the harsh light of technical and economic reality. The Ames plant, as well as the Hempstead plant, have proved as uneconomical as most of the early "burn" technologies. The Hartford food plan was never implemented, and

(continued on page 15)



It is becoming fashionable to document failures in local economic development and appropriate technology projects. We are older and wiser now, and presumably these lessons allow us to get on to more serious planning.

The Neighborhood Revitalization Project in Northwest Portland was not a total failure, but it had its share of problems. Most of them are discussed in a recently published evaluation of the project, which reads almost like a "how-not-to" manual.

Northwest Neighborhood Revitalization was a potpourri of projects: physical improvements such as community gardens, bikeways, clean-ups and handicapped access; economic development such as a credit union, a small business association and displacement research; social needs such as crime prevention and health care.

On paper, Neighborhood Revitalization had considerable appeal. Each of the projects called for participation by neighborhood residents and organizations. Though decentralized, the projects were designed to compliment one another. The year-long effort was backed with considerable resources: a staff of 31 (paid for by CETA funds) and a budget of $371,000.

CETA bureaucracy

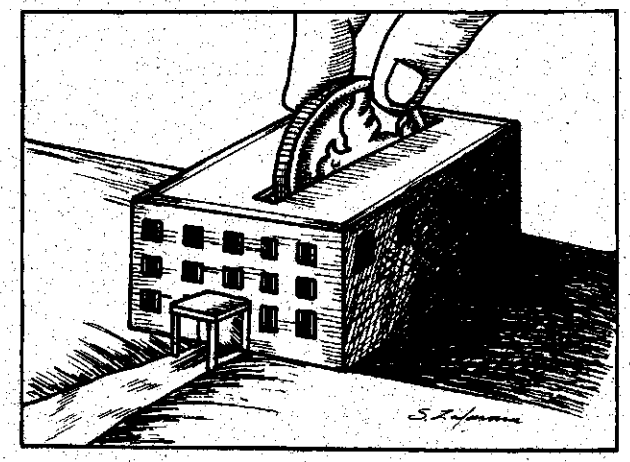
All of the problems one would expect to happen did. The large variety of projects turned out to be a grab-bag rather than comprehensive approach. Some good projects got little attention, while resources were squandered on bad projects. The CETA bureaucracy produced the usual delays, regulation headaches and budget hassles. Coordinating the work quality and political direction of 31 people became impossible.

Some of the discouraging lessons are more subtle, particularly as one reads between the lines of the comments on the project from staff members and community leaders in Northwest Portland. Most of the "positive effects" cited are vague and ephemeral: the project generated a lot of publicity, it identified needs, it provided individual skills, it was a learning experience. One is reminded of political strategist Francis Piven's observation that, "One excuse we all use when we don't accomplish much in any particular organizing effort is to say that, 'Well, at least we raised people's consciousness.' "

Many of the criticisms in the evaluation are hedged, citing problems with "groundwork," "planning" and "communication between administration and staff." But weaknesses in the project as a whole were larger than what could have been solved with administrative tinkering.

The most obvious flaw was the "top-down" nature of the project. Funds and staff slots were regarded as "free money" and "an offer we couldn't refuse." But the project brought its own demands, and when these did not match neighborhood needs, the project almost always prevailed. Almost immediately, the point became to hire, not to train or educate. When projects bogged down, tasks were redesigned to what could be quickly and easily managed, not around what was needed to correct the problem. Though the process of getting things done seemed at times impossibly slow, in the end, the project itself moved too fast. "I would not recommend that anyone anywhere set up a 31-person one-year project to do anything," said one frustrated participant. Another suggested that "a staff of four or five could be used for five or six years, but not 31 for one year."

A second flaw, though less obvious, was the lack of distinction between "good" projects and projects which empower people and organize new participants. Resources for a neighborhood clean-up made the job easier for those who were already interested in this sort of project. But projects like the credit union, which could affect people regardless of their level of neighborhood consciousness, were rare. As a result, one observer noted, workloads tended to fall on those already involved, and the things which worked were already there in the neighborhood. When it was all over, Northwest Portland had little new to show for its effort.



Though copies of the evaluation of the Neighborhood Revitalization Project are not available to the public, project organizers are willing to discuss their experience with others. Contact: **Joseph Hertzberg, N.W. District Association, 817 NW 23rd, Portland, OR 97210, 503/225-0192.**

Managing a Successful Recycling Program

(continued from page 4)

Quoted prices usually assume that material is delivered to the user, or at point of export. In some cases, they will be F.O.B. (Freight on Board, i.e. picked up by the buyer's transport at the recycling center), if the market is strong and a broker/user wants your material. The following prices are as of September 1979:

Newspaper—$35/ton ± $10, depending on local markets and proximity to a western port. This price assumes bales or hand stacked in export containers.

Corrugated—$50/ton ± $10, depending on proximity to a western port and in some cases mills that will use it directly.

C.P.O. (Computer Print Out) and tab cards—$150/ton ± $40, same as corrugated.

Ledger—$45/ton ± $15, same situation as corrugated.

Glass—whole bottles—$75/ton, extremely rare markets, but more will be developing.

Color separated cullet (broken glass)—$35/ton ± $5, separated into amber, flint and green.

Mixed cullet—$30 ± $5 per ton, either all colors mixed together or just the flint and green.

Aluminum—35¢ lb. ± 5¢, depending on the extent of processing, free of contamination and being densified, as well as quantity per month. The street price for cans brought to the buy-back programs run by the aluminum companies ranges from 23¢ to 30¢ per pound.

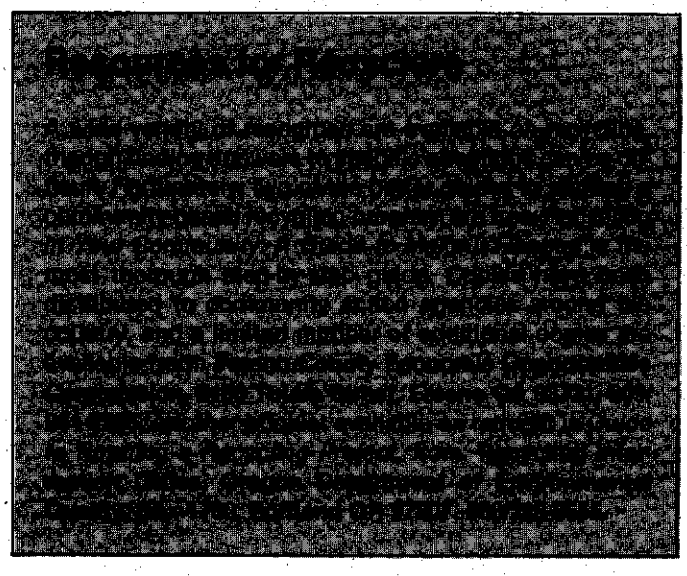
All steel—$60/ton ± $20. This spread is the difference between delivering cans loose to a scrap yard that deals with cans, or delivering bales to a steel mill, an unlikely option for most centers.

Bi-metal—$20/ton ± $20. In many cases, metal dealers will not handle bi-metal cans. But there is one steel mill that uses the aluminum content in their alloying techniques.

Again, markets must be investigated locally.

Community involvement

Community involvement is the key to a successful recycling program. Individuals taking the time to pre-sort the newspapers, bottles and cans largely determine the success or failure of a program. Community involvement results in citizens being aware of potential conservation and economic development benefits.



Media exposure, leaflets and speaking before groups and in schools are techniques that can develop this community involvement. Door-to-door contact—talking to people and leaving information that explains how to take part in the recycling program—is one of the most effective means of gaining participation. Enlisting the aid of groups such as churches, youth groups, neighborhood organizations, Rotary Clubs, scouts and League of Women Voters helps to make the program become one that is part of and accepted by the whole community.

Changing habits

Remember that people are being asked to change their habits, to save, pre-sort and reuse instead of throwing away. People have to learn and take part in a new activity. Community involvement must be sought and pride in the program as a community activity should be encouraged.

Garbagio's of Eugene, Oregon has two distinct levels of community involvement. First, Garbagio's is seeking new customers who like the service they have to offer. Then, once the household becomes a member, it is kept up-to-date through personal contact on how to take part in the program. All members are expected to volunteer some time. In the first instance, Garbagio's is involved with all Eugene. In the second, they focus on only a few hundred co-op members.

Ecocycle of Boulder, Colorado, on the other hand, focuses on all of Boulder on two Saturdays each month. To raise participation, they have used a wide variety of mostly donated advertising: newspaper articles and ads, radio and television public service ads, notices in church bulletins, in city water bills, on milk cartons, bumper stickers, t-shirts and leaflets distributed in schools, door-to-door and at supermarkets. Ecocycle is producing a four-minute movie for theaters and has begun developing a door-to-door volunteer network, seeking one volunteer from each neighborhood who would in turn personally contact 20 other neighbors. This approach is needed, they feel, to reach everyone.

Ecology Action of Modesto, California, has had the most success with door hangers followed up by a phone call. The door hanger is left at least a week before the next pick-up, and the call two to three days before. The call is made to ask if they received the information and if they have any recyclables this time.

Ecology Action's curbside recycling calendars have proved to be almost essential. For four years, all the homes in Modesto and Turlock have been receiving an annual calendar with the recycling pick-up days circled. The purchase program has grown through word of mouth and advertising in the smaller newspapers, especially those that carry information on garage sales and used items for sale.

Organization identity and management procedures

Recycling programs can be operated successfully by non-profit organizations, consumer co-ops, city and county governments, and small businesses. Each entity has its own benefits and its own drawbacks. It is possible in states such as California for all types of recycling centers to receive grants for equipment and site improvement. City and counties

have immediate subsidies by using the tax base for start-up. Non-profit organizations have tax-deductible fundraising capabilities, but small businesses can obtain loans much easier.

All programs must comply with state and federal tax and employment laws. Non-profit organizations probably have the most governmental scrutiny once they have accepted public funding. But, no matter which type of structure is used to develop the recycling program, sound management practices are essential. Standard bookkeeping and accounting systems, fair employment practices, and an experienced supervisorial or management staff are needed to implement a successful program.

Ecocycle has used funding from various sources: a $55,000 Environmental Protection Agency Demonstration Grant, $17,000 cash donation from the City of Boulder, and a CETA program subsidy amounting to a value of $110,000. Additionally, their recycling center land is loaned by the city, and they can buy old city vehicles at a discount price.

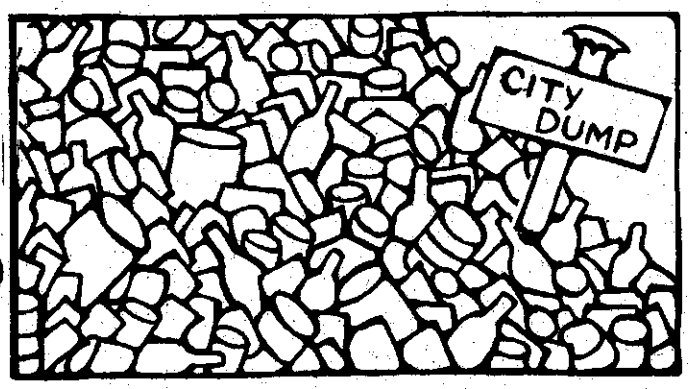
Garbagio's has turned to its own members/owners for help as well as money. The membership can decide what balance to maintain between the fixed charges and the additional effort needed to get the job done. Members are also active in recruiting new member/owners which will help Garbagio's to reach the break even point.

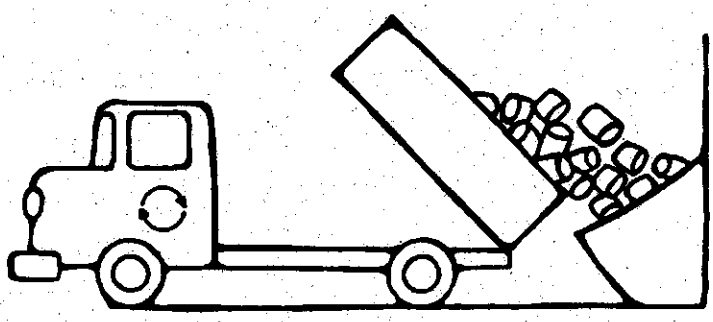
Ecology Action operated for seven years before receiving governmental aid and grants for their recycling programs. They met their needs from fundraising drives and benefits. Through bike-a-thons, music benefits (Country Joe and the Fish, Pete Seeger) and direct appeals, they raised amounts averaging $8000 a year. More recently, they have received a $55,000 Environmental Protection Agency grant, $20,000 grant from the city of Modesto, and are now in the process of purchasing equipment with a $100,000 State of California recycling grant.

In other cities, revenue sharing and Community Development Block Grant monies have been used to start recycling programs. All these sources of funding may appear quite attractive, but it does take time and a certain ability to prepare successful grants. It is also true that the time from the initial drafting to actual receipt of funds may take from six months to two years, depending on the agency. In many cases, programs have been started by people concerned with saving resources who hope that the city or the garbage company will take over the program. In Fresno and El Certito, California, the cities have done this. In Davis, California, the garbage hauler now runs the recycling program.

Special problems

Several problems have repeated themselves so often at existing recycling centers they deserve special mention. Zoning requirements have been very troublesome. In many cases, a program started with no improvements made on the site—thus no building permit required. As long as the program remained small, not too much traffic, little noise and "unsightliness," there were no complaints. But as the recycling center expands, everyday operations can become problems, bringing complaints. If the zoning is not correct, the center can be forced to close. Generally, recycling centers that include storage and processing are required to locate in industrial zones. In some cases, they can locate in heavy commercial zones, as has Ecology Action.





In many cases when equipment is bought, no thought has been given to installation costs. In some cases, this can be several thousand dollars for a five thousand dollar item (for example, if additional electrical service has to be supplied, or concrete work is needed to sink a scale or install a pit for a baler). What has to be done to get the equipment on line should always be investigated. Salesmen will help, but usually their estimates are low.

Drainage is another problem. When looking at low value properties, it is almost certain that many of them will have drainage problems. They may not be serious, and they may be solved economically, but make sure this point is covered.

A related problem is the improvements that will have to be made if and when a building permit is taken out. Ecology Action once found a perfect location, but when a building permit was taken out to put walls in the existing warehouse, the following improvements were required: the street had to be widened, and curbs, gutters and sidewalks put in.

Undercapitalization—not having enough funds to secure the equipment to do an efficient and economical job—has been a problem facing most centers. When proper equipment is not available and centers resort to homemade or outdated equipment, productivity is low, prices earned for the materials are low, and there may be safety and morale problems. Recycling can be hard and boring work without the equipment to do it well.

Once the recycling program is underway, the major problem to be overcome is finding staff with the necessary skills to run the program. In many cases, dedicated innovators start projects, but have to hire out for welding, some of the bookkeeping, as well as equipment repairs. As many of these skills as possible should be held by staff members in order to cut costs, but more importantly to make the program responsive, flexible and one that avoids down time. Vocational and employment training programs can be oriented to provide recycling skills training.

Starting a program that an entire community takes part in and is proud of can be a rewarding experience. There may be many problems and considerations, but there are many experienced people around the country who can help you get it started. (See box, page 12 for recycling resources.)

Financing the Transition to Energy Self-Reliance

(continued from page 3)

Utilities: The Tennessee Valley Authority provides zero interest loans for attic insulation, storm windows, and wood stoves. The building is first audited by TVA. After installation, TVA returns to inspect the work, and if it was properly done, TVA pays the contractor. The customer repays TVA $5 per month until the loan is repaid.

In Memphis, TVA established a financial mechanism which spread out the monthly payments to customers. They paid for solar domestic hot water systems through energy savings. It was estimated that the average Memphis resident paid $14/month for electricity for hot water. Assuming a solar system would displace 75 percent of this load, the customer is billed $12/month in loan payments for 20 years. This in effect is a 20 year loan by TVA at 3.7 percent interest. TVA borrows money at 9 percent. Over the life of the loan, TVA is, in effect, subsidizing solar technology by $880 (the difference between the rate at which TVA borrows the money and what it lends to the customer). Since new capacity coming on line costs $2000 per kilowatt, TVA actually saves money. The solar systems have an oversized hot water tank equipped with a clock timer which stops the customers from using peak electricity. Thus the utility is assured that solar energy is directly displacing peak capacity.

In Nashville, Tennessee, TVA is using a different financing mechanism. Financing will be done through local financing institutions using a variable or graduated loan payment schedule. Payments will be lower during the initial years when energy savings are modest. As energy prices increase, so will the payments. TVA will guarantee and service this system. Southern California Edison will also guarantee and service certified solar systems installed by an approved contractor, although no loan payment schedule has been developed with financial institutions.

The Santa Clara Department of Water borrowed money from its municipally-owned utility reserves. It leases systems for swimming pools and domestic hot water. The program met with a favorable response initially, but since neither the 55 percent California income tax credit or the federal solar tax credit can be used by those leasing a system, this program remains small.

In Oregon, by mandate of the state legislature, utilities must provide energy conservation audits and financing through additions to their rate bases. The customer requests an audit. This is performed by the utility, which recommends energy conservation measures. A private contractor does the work. The utility puts the investment into its rate base and receives a 10 percent return on its investment. A lien is placed on the house. When the property is transferred, the seller pays the utility the original installation cost with no interest.

Reversing electric meters

There are other, more indirect ways to help finance solar projects, and that is through contractual agreement to purchase energy. Southern California Edison permits household wind electric systems to reverse electric meters, in effect, paying the customer the retail price for the electricity. In New Hampshire, the Limited Electric Energy Production Act was passed in 1979, requiring utilities to purchase electricity

generated by hydroelectric facilities smaller than 5MW. Recently the Public Service Commission, using the energy prices to be generated by the Seabrook plant in 1983, established a 4 to 4.5 cents per kilowatt hour payment, effectively doubling the then current price of two cents per kilowatt hour, and thereby making investments in small scale hydro much more economically attractive. The state legislature in the summer of 1979 passed another act permitting small scale producers to sell at retail to up to three customers.

In California, the Department of Water Resources signed a contract with U.S. Windpower for 1000 Megawatts of power at 3.5 cents per kilowatt hour. This contract permitted the company to raise the capital to establish the wind generators.

Federal Financing Mechanisms: The mortgage loan ceiling for FHA loans and guarantees has been raised by 20 percent if solar equipment is purchased and installed with mortgage financing. The Government National Mortgage Association (GNMA) has been authorized $3 billion for the purchase of loans of up to $2500 at interest rates ranging from 9 to 12 percent interest for energy conservation by low-income families. It has also been authorized $100 million for the purchase of solar energy loans with a maximum of $8000 at interest rates of 9 to 12 percent. There have been no appropriations yet, and guidelines are not yet published.

If banks were to use the GNMA secondary mortgage, it would be able to sell its home improvement loans. GNMA conservation loans have a minimum duration of five years and a maximum of 15. Solar loans have a maximum duration of 15 years, and no minimum.

Community Development Block Grants are lump sum payments from the federal government to any local government with more than 50,000 people. In January, 1978, the CDBG regulations were changed so that cities can borrow against their next three years CDBG obligations. This loan must be repaid in six years, at 10 percent interest. This money, in combination with other sources of financing, can be used to develop financing mechanisms that permit the individual or business to repay the loan through energy savings.

Solar Leasing

Leasing of solar systems is a relatively recent phenomenon.

Given the rapidly rising energy prices, a leasing payment schedule can be developed which will immediately improve the cash flow of commercial enterprises. Usually the solar systems are designed for a five to seven year payout.

The New England Merchants Funding Corporation, a subsidiary of New England Merchants Bank, has established such a leasing arrangement with the Catch Penny Motor Chalet in Lexington, Massachusetts. The bank establishes a payback schedule with lower payments in the front end, and higher payments afterwards as energy prices increase. In Arizona, J&J Solar, Hal Grammer Construction, Augspurger Engineering, and Diversified Mechanical combined forces in a joint venture, Energy Conservation Associations. The consortium developed a leasing program with the Arizona Eastern Star nursing home in Phoenix, Arizona. The nursing home pays the company 80 percent of the monthly utility savings that result from the installation of the equipment, thereby lowering its utility bills immediately from what it would have been paying if it continued using 100 percent fossil fueled hot water heating. The lease runs for eight years, after which a buyout agreement transfers ownership of the equipment to the nursing home. The nursing home maintains the equipment.

A similar type arrangement was developed, but never implemented, in Ocala, Florida, between a private company, Wilcon, Inc., and the city-owned electric utility. Wilcon financed solar domestic hot water systems, installing them at no charge in homes of people with electric hot water systems. A BTU meter would be installed at the same time, measuring the amount of useable heat coming from the solar panels. The total BTU's could be converted into kilowatt hours, and multiplied by the current price of electricity to give the amount the customer would have been paying if he or she had not shifted to solar. The customer reduces this by 25 percent, and pays the utility the remainder. The utility takes 10 percent of the remainder for covering bookkeeping and billing costs, and 5 percent for covering reduced electricity revenues. The rest goes to Wilcon. After five years, the customer reduces the equivalent electrical bill by 50 percent, and after 10 years, has the option of purchasing the system for $1.

Tax credits, interest rate subsidies and even longer term loans will not substantially accelerate conservation and solar efforts.

Mandating

One final word on financing mechanisms. Experience in California and Oregon supports the contention that tax credits, interest rate subsidies, and even longer term loans will not substantially accelerate conservation and solar efforts. They are quite helpful, but if the energy crisis is viewed as an urgent national security issue, the various economic perspectives outlined at the beginning of this paper often make energy saving investments less profitable for the commercial and residential owner than for the country at large. As a result, a growing number of local and state governments are looking to mandate conservation and solar.

In August 1979, Portland, Oregon enacted a measure which requires all buildings in the city to meet state energy conservation standards within five years. In California, San Diego County requires new construction in unincorporated areas of the county to use solar for domestic hot water heating after November, 1980. Santa Barbara prohibits the use of natural gas for swimming pool heating, and will pass an ordinance requiring it for domestic hot water heating on new construction in unincorporated areas by the fall of 1979.

The mandate by Portland was made possible, in part, by the Oregon plan whereby utilities finance conservation at no cost to the customer. The San Diego ordinance was made possible through the 55 percent California income tax credit for solar, which can be given to the builder as well as the homeowner. Thus there is a direct relationship between mandating and financing mechanisms. One can mandate only if there are financing mechanisms available to permit investors to repay the loan through energy savings.

—David Morris

Off the Shelf

(continued from page 10)

the Community Energy Corporation became a hot political potato, so much so that it contributed to the loss by Nick Carbone of the mayoralty election. Although Davis has provided the rest of the nation an excellent example of energy efficient planning, figures from Davis and small cities surrounding it (which did not enact comprehensive conservation codes) find parallel reductions in electrical and natural gas consumption. Burlington, Vermont, dropped its plans to use wood for large electrical generation when it purchased low-cost hydroelectricity from Quebec Hydro. Uncertainties about the transportation costs of wood, and its future availability, added to Burlington officials' desire for caution.

These are minor complaints, but they indicate that when offering innovations, a researcher is putting a stamp of approval on projects, and owes it to the reader to evaluate the projects closely. The best example of the need for context is in the case of Seattle. Ridgeway does an excellent job of describing the political infighting around the adoption of the energy conservation plan, but does not add other factors. Private utilities are moving much more aggressively than public utilities in Washington for two reasons. One, the state constitution prohibits the use of public money for private gain (a constitutional amendment approved by the voters in 1979 modified this to allow Seattle City Light to finance conservation measures). Two, Bonneville Power Authority, which supplies the region with low-cost hydroelectricity, has given notice that after 1983 it will not be able to guarantee electricity to its non-priority users, which includes private utilities. Interestingly, the fact that Seattle City Light has a high priority relationship to BPA puts conservation at a disadvantage. BPA's latest plan for allocating low cost electricity after 1983 is to do so on the basis of the market share that a utility has at that time. Thus, premature conservation could, in fact, "lose" money by losing future allocations.

Seattle is certainly a city moving in the right direction. Its new superintendent, Robert Murray, is very much in favor of energy efficient planning. But his confirmation by the City Council took six months, and ended in a 5-4 decision in his favor (but, as he says, "It was much closer than that."). Meanwhile, the city is going through a reorganization that will create a Department of Energy under the mayor, and few are clear about the lines of authority between this new department and Seattle City Light.

—Reviews by David Morris

Notes

Here is a good example of two booklets with completely different approaches to the same subject. *Understanding CETA* outlines the various titles and regulations in this complex federal jobs program. But except for some slightly more readable language than one would find in the actual law, there is little here that contributes to new understanding. What is missing is the political context and point of view found in *Making CETA Work*. This booklet describes how CETA has been used by neighborhood organizations to develop new enterprises involving job opportunities in energy conservation, recycling, housing rehabilitation and food production. The strengths and weaknesses of CETA are spelled out, as well as what neighborhood groups using CETA have done right and what they have done wrong. Single copies of *Understanding CETA* are available free from: **National Urban Coalition, 1201 Connecticut Avenue NW, Washington DC 20036, 202/331-2400.** Copies of *Making CETA Work* are $4 from: **Center for Neighborhood Technology, 570 W. Randolph Street, Chicago IL 60606, 312/454-0126.**

Localism, decentralism and self-reliance are terms which have taken on many meanings these days. A new booklet, *Localism: Research Themes on Urban Smallness,* helps straighten out some of the thinking on the subject, at least from an academic point of view. Included are neighborhood research proposals geared to academics who want to work with citizen groups and local planners. This booklet is an excellent introduction for students and non-specialists who would like to get on firmer ground in the theories of localism. Single copies are free from: **the Kettering Foundation, 5335 Far Hills Avenue, Dayton, OH 45429, 513/434-7300.**

***Reel Change, A guide to Social Issue Films,* became such a hit when first issued almost a year ago that an expanded version has been produced.** The new edition includes over 500 films, all evaluated and indexed by subject, with cross-references. Also included is an annotated directory of over 300 distributors. Unfortunately, the price has been expanded too. It now costs $8.20 postpaid from: **The Film Fund, Box 909, San Francisco CA 94101.**

Grassroots organizing for renewable energy only interests the lefties, eco-freaks and anti-corporate types, right? Not so, according to that embodiment of political conservatism, Ronald Reagan. In his nationally syndicated column, Regan praised the Franklin County, Massachusetts Energy study, which urged community-based projects in solar, wood and biomass to decrease the county's dependence on fossil fuels. In words that could have been taken right out of *Self-Reliance,* Regan said, "exporting of energy dollars does very little to strengthen their local economy ... I suspect quite a few communities and counties across the country are going to undertake the kind of study the people in Franklin County have pioneered ... That's a spirit worth bottling and spreading around."

Despite long distances and short budgets, resource sharing between local communities continues to grow. Now the federal government is trying to get in on the action without, we hope, getting in the way. The *Neighborhood Information Sharing Exchange* will match community organizers with others doing similar work. The Exchange is also building a library of books, newsletters and directories on local development. The key is a toll-free number which groups can use to get information they need without going broke. Call 800/424-2852 or contact: **NISE, 1725 K Street NW, Suite 1212, Washington DC 20036.**

Support Self-Reliance

The Institute for Local Self-Reliance is a research and consulting organization that explores the potential for, and the implications of, high-density population areas becoming independent and self-reliant. The Institute, incorporated five years ago as a nonprofit organization, conducts basic research, develops working demonstration models of new technologies, institutions and small-scale production systems, develops educational materials, and disseminates information.

The best way to keep up with developments at the Institute and around the country that are relevant to the movement toward urban decentralization is to subscribe to SELF-RELIANCE. The best way to support the Institute is to become an Associate member.

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