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Self-Reliance

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Self-Reliance

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Solar Technology Transfer

Theory into Practice

Through their first three demonstration cycles, ERDA and HUD have spent thirty million dollars on the promotion of solar hot water and space heating. The only official feedback on the program is through periodic newsletters such as *HUD Solar Status* that report on which demonstration homes have been sold to which private owners. The solar underground, on the other hand, passes on horror stories about cracked collectors, burst pipes, defaulted contracts, and the persistent lack of system performance data. Perhaps more importantly, nothing has been reported with respect to the teaching or "technology transfer" of information about solar energy as it relates to our everyday lives. There are problems enough with fledgling solar technologies, but equally serious are the problems involved in passing on the technology to inexperienced people. If we expect appropriate technologies to be of use to the uninitiated, we must make sure that the presentation is simple, clear, and suitable.

The Background

In March 1977, the Tri-City Citizens Union for Progress in Newark, New Jersey, a ten-year-old community organization based on the western edge of Newark, received funding to install a demonstration solar hot water system. The system was to be placed on a three-story, three-family building, part of the ninety-six unit housing cooperative that the group manages. Funding for the project came from the Victoria Foundation. The Institute for Local Self-Reliance provided the technical assistance.

The system installed on the building of Tri-City's Amity Village I co-op utilized commercial collectors and an anti-freeze circulation loop between the collectors and the heat exchangers in the storage tanks. This system was selected because it offered the potential of trouble-free operation during the winter months when freezing can occur both at night and during cloudy days. The installation was done by Tri-City's own maintenance crew. It took a total of fifteen days to make the system operational.

On July 25, four months after funding was received, Tri-City sponsored an "opening day" for the hot water system. Interested individuals from the neighborhood and local media representatives were invited to come and learn about the system and to see both the roof-top collectors and the basement storage tanks and piping first-hand. They saw a system that worked, but they did not see what actually went into making it work.

The obvious advantage of any hands-on project is that you have a chance to learn what to do and what not to do the next time. To provide individuals and groups with information that will help them to organize and to implement their own projects, we present the following feedback report.

Technological and Construction Problems

Never overlook certain rather obvious construction practices. It seems silly to say, but make sure that all large components can fit through doorways and around stairs. At Tri-City, the two large 120-gallon storage tanks just barely made it down the basement stairs.

All materials should be assembled before the work starts and the people installing the components should be given a thorough orientation by either the supplier or the de-

signer of the system. We had intended to use rigid foam insulation on all the hot water and anti-freeze piping. We deferred the purchase of the insulation until the system was installed, assuming that we could make a more accurate calculation of the material needed after installation. As a result of failing to take into account the width of the insulation, some of the piping was installed too close to walls and ceilings to allow for the full 1.5 inches of insulation. Had the material or even a representative sample been available from the start, the insulation job would have gone much more smoothly.

Organizers should remember that solar energy is a new concept and that many people are both cautious and suspicious.

The collectors used in the Tri-City project were high-efficiency devices with plastic components that are subject to deformation at high temperatures if certain precautions are not taken. Even with the careful installation and start-up procedures we used, there was some materials deformation. For a first installation by an inexperienced crew, it would be best to keep to the simple designs of flat-plate collectors. With flat-plate collectors, high temperature stagnation conditions do not pose as great a problem as they do with high-efficiency collectors. After installation and operating skills are developed on these simple systems, high-efficiency collectors can be installed with a considerably reduced risk of damage to the materials.

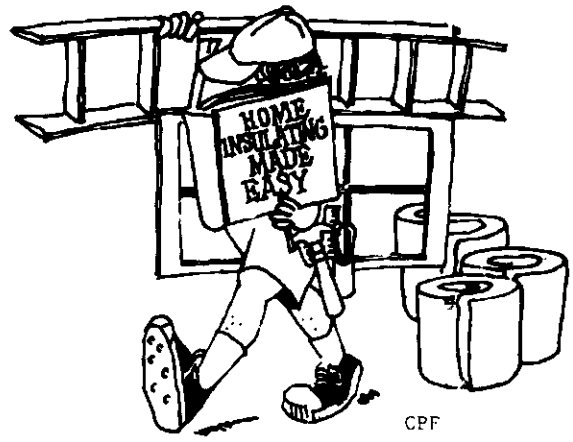
Good monitoring provisions are crucial to any system's success. If the system has a closed anti-freeze loop, some method must be designed for determining leakage from the system. A pressure gauge can determine whether the system is losing pressure. A clear bottle under each relief discharge line can record any liquid lost as a result of high temperature or pressure conditions.

To determine whether the circulator is actually working and solar energy is being collected, it is important to install temperature gauges or thermometers on the liquid lines going both to and from the collectors. Water coming down the pipes should be 10-15° warmer than water going up. It is also important to have thermometers mounted on both the cold water supply and the hot water discharge from the solar storage tank. These items should cost under ten dollars each and they will greatly improve a crew's understanding of the system and how it works. The thermometers should have a range from 0° F to 250° F so that all possible collector conditions can be monitored.

Technology Transfer Problems

Choices made for technically-sound reasons are not always the best choices from a human learning perspective. The decision to use an anti-freeze loop made sense from an engineering standpoint, but, in retrospect, it was not the best solution. The alternative to an anti-freeze loop with its many extra pipes and heat exchanger is the drain-down system in which the tap water that is circulated through the collectors is drained out automatically when freezing conditions occur. This system is much easier to understand. And if inexperienced crews are supposed to grasp the principles of solar energy from their installation work, the simpler the system the better. Anti-freeze loops and heat exchangers can be introduced after the crews are already familiar with the basics.

When we began working with Tri-City, we did not appreciate some of the educational difficulties involved. We sent blueprints of the piping to Tri-City so that they could begin work. When we went to Newark to oversee the project, it became clear that the blueprints had been difficult to use. Most of the members of the maintenance crew were plumbers and house repairmen and were unfamiliar with solar systems. They were being introduced to new principles and new components. We were naive to think that blueprints alone—without some personal guidance—would be sufficient. When we took a large sheet of plywood and mapped out a step-by-step diagram of the system and its connections, the crew was able to follow the plans. Walking the crew through the paces was successful and the installation continued from there.
Having finished one installation, the crew will most likely be able to use drawings more efficiently on its next project.



For both the crew and the residents in whose homes the systems are installed, it is crucial that the function of every valve and pipe be adquately understood. We color-coded the pipes so that it was easier to tell which pipe was carrying which liquid. Different valve colors and clear labels are also important. At one point, because the valves were not labelled well enough, the anti-freeze was partially drained from the Tri-City system.

Finally, organizers should remember that solar energy is a new concept and that many people—especially in low-income areas—are both cautious and suspicious. Community outreach and involvement should be important parts of any new project. The sooner residents become initiated into the jargon and concepts of solar energy, the sooner that distrust will disappear. Involving residents in the planning and siting of the solar systems will speed the process. Solar workshops for neighbors should also be part of any project.

The crew at Tri-City has now learned the basics. And the staff at the Institute has also learned to avoid some pitfalls. Tri-City will be installing two more three-family domestic hot water systems this fall. In addition, more work will be done this fall on insulation and weatherization. The next step in the Tri-City energy program is to investigate a centralized solar space heating system for a one-block area of 350 residents. Since good feedback is crucial to the success of other similar projects, we will keep our readers informed of Tri-City's progress. It is easy to get swept up in the fervor for solar energy but arguing the point and actually getting your hands warm are two very different things.

—Jack Nelson

Whatever Happened to Public Access?

The global village, so the argument went, would soon become reality. You would be able to go shopping by television, go to school by television, even conduct business over the cable lines. Access to public information, services, and officials would be immediate. Your television would connect you to all the services and information you could need. These were the claims made by the cable television industry during its boom period in the early 1970's, when cable companies desperately fought each other for access to markets and when cities and towns eagerly courted cable systems offering a broad range of services and sizeable potential revenues.

The euphoria, however, did not last long. By 1975, both the economic and the political climates had changed. The Federal Communications Commission issued its body of rules governing cable television in 1972. The effect of the regulations, some of which limited the retransmission capability of cable systems, was to severely limit the potential profitability of cable systems in the major urban television markets. When the recession hit in late 1973, the industry was forced to retrench. The recession left cable companies with little money left over for new construction. Most companies found themselves struggling to keep their heads above water.

Now, four years later, cable television is not only still alive but is growing again. It is still primarily a broadcast relay medium. Cable continues to have the greatest market penetration in areas where over-the-air television reception is poor because of terrain or distance from the signal origination point. But the industry has made real progress. Today, thirty years after the first cable system was installed, over eleven million homes are hooked into cable systems. One out of every seven American families watches cable television.

Municipal Ownership of CATV

Four years ago, Thomas Brom and Edward Kirshner of the Community Ownership Organizing Project wrote an article on municipal ownership of cable television ("Cable TV: Money to the People," *Working Papers,* Winter 1974). At the time, fourteen cities owned and operated their own cable systems. Then the recession hit. There have been no new municipal systems since the article appeared.

Unable to benefit from tax write-offs, municipal systems must operate in the black or pass on the deficit to taxpayers. This reality has made municipal ownership seem like too risky a proposition in these years of cable television's marginal profitability. But not everyone is pessimistic. Leo Van Dusen is the director of the municipally-owned cable system in the 40,000-resident-town of San Bruno, California. He thinks that a well-managed system in a city with poor over-the-air reception can indeed be profitable: "There is no question that this can be done in any city with a reasonable chance of getting good market penetration—and it can be done profitably." Last year, the city earned a net profit of $117,824 from the system. For more information, contact: Leo Van Dusen, Department of Public Works, 567 El Camino Real, San Bruno CA 94066.

The future evolution of access cable broadcasting is central to the development of independent and democratic media

Were cable television to remain a retransmission system, its growth would not be very noteworthy. However, cable television can provide almost limitless informational and entertainment services with a flexibility unrivaled by other media. Cable has the potential to break down the network monopoly over television, to give citizens access to the kinds of information needed for intelligent decision-making, to give a voice to groups that are not being heard on over-the-air television and whose needs are not being met, and to change the traditionally passive audience/television relationship into a vital and active participatory one. Cable television systems are mandated by the FCC to provide public access channels for their viewers. The future evolution of these channels is central to the development of independent and democratic media.

Access Channels

In the 1972 regulations, the FCC specified that a number of different access channels must be made available by each cable system. These included: at least one noncommercial public access channel that had to be made available without charge on a first-come, non-discriminatory basis; a noncommercial educational channel; a local government channel; and at least one leased access channel.

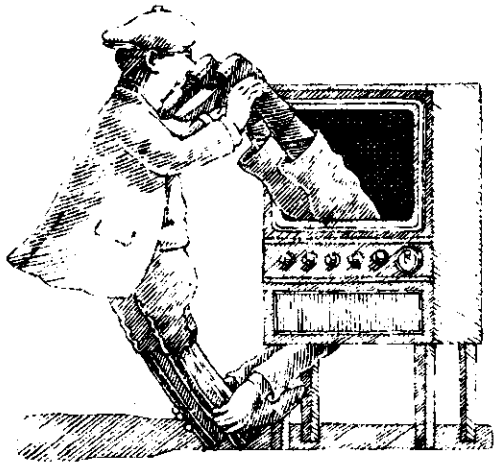
During the period when competition for markets was fiercest, cable systems were willing to negotiate generous franchise contracts with cities. As a way of enticing city officials away from the competition and as a way of placating citizen opposition, cable companies offered various services in the franchise agreement. Invariably, one of the bargaining chips was the set of access stations. As a result, many cities emerged from the franchise negotiations with commitments for more than the FCC-specified minimum. A good example is Madison, Wisconsin, where strong community pressure and aggressive negotiations with the company resulted in the creation of community viewing centers around town and the founding of the non-profit Madison Community Access Center.

Cities that could negotiate from strength in those years were lucky. With the financial crunch of the recession, public access and the local origination of programming were among the first casualties. United Cable, one of the largest companies, cut back on local origination in most of its systems. So did other companies. In 1974, the FCC repealed its previous requirement that large systems (those with under 3500 subscribers had always been exempt) provide for local origination of programming, arguing that it constituted too heavy a financial burden on cable operators. As Mary Padilla of East Lansing's city cable commission says, "The companies aren't volunteering with access and the FCC isn't helping."

Access to Information

Historically, the promise of public access cable television, like the promise of the cable industry itself, has been more impressive than has its actual development. In many cities across the country, however, access television is well-developed, well-equipped, and well-financed. And its impact is being felt.

On a very basic level, access channels are able to provide useful information to interested citizens. Many channels broadcast city council meetings and public hearings. In Tulsa, Oklahoma, Channel 24 broadcasts the two weekly City Commission meetings live in the afternoon and then repeats them at night for people who work during the day. The government access channel in Madison, Wisconsin, broadcasts a program called "The Video Encyclopedia to Survival Services," which is a citizen's guide to essential municipal services. Many access channels broadcast documentaries and panel talk shows of local or regional interest. When they are not originating programming, some stations, like the government access channels in Hayward, California, and East Lansing, Michigan, broadcast "character-generated" information over the cable. This presentation of information in printed form can include city government agendas, voting results, community bulletin boards, or information about city services.



This informational relationship does not stop with passive, one-way communication. The viewer does not just sit back and take it all in. On most access channels, two-way informational programs are very popular. It is one thing to hear what a city councillor has to say about an issue. It is quite another to be able to direct your city councillor to talk about what concerns *you*. Manhattan Cable TV's access system broadcasts thirty phone-in programs weekly. Some city assembly members have regular Wednesday evening call-in "office hours." If you do not like your representative's response, you can challenge it. One innovative program that promotes governmental accountability is Madison's municipal version of *You Asked For It*. A roving reporter asks people in the street if they have any specific complaint about city services or disservices in their neighborhoods. The complaint is then taken to the responsible city official who is asked to respond. The response is taped and both the complaint and the response are broadcast over the cable.

Access to Participation

Information is one part of access television's appeal. The other is the potential for active participation. People are able to make their views known in public service spots or five-minute presentations over the cable. They also learn to produce their own shows. At Manhattan Cable TV, for example, two hundred people are involved with public access channel production. Most systems have some kind of training program for interns. All provide interested volunteers with basic video skills.

How widespread public access will become depends upon whether the cable systems can profit from it or be pressured into it

An interactive participation project for senior citizens in Reading, Pennsylvania, is a good example of the medium's potential. For two hours a day, between ten in the morning and noon, a group of seniors produce a variety of programs. Each show allows for some kind of telephone participation. Programming includes answers to specific Social Security questions, interviews with different city agency officials, and the chance for seniors to reminisce and compare notes with one another. Fifty-five percent of the senior citizens who are cable subscribers watch the programs more than two days a week. Many hold coffee klatches and invite friends who are not cable subscribers. The programming is so popular that it has become a working community information system. Twenty-one percent of the subscribers who do not have seniors in their homes watch the public access channel more than twice a week between ten and noon.

Access and participation mean a change in the relationship between viewers and their television sets. TV is not to be watched; it is to be used. It is a tool, not a filler. Public access cable television is creating new forms of entertainment, news, and culture. Entertainment in Reading now revolves around communication with others. News programming in many systems is determined by and for residents of the same community. They are free to decide for themselves what is newsworthy and what is not. Local, unprofessional Johnny Carsons can do interview shows with people who are of interest to the local community. They do not have to rely on Los Angeles-based celebrities for their entertainment. Local musicians and dancers can perform and can develop an audience.

Public access television is maturing. The Manhattan Cable TV system now broadcasts 125 hours of original programming each week. Six channels are used nightly. In the past year, the system has introduced an important new project—public access leasing channels. Most access channels do not charge for air time; but they are also noncommercial. As a

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New Opportunities for Local Economic Development

The unprecedented growth of energy-related industries in the past three years will continue in the next decade. Sales of solar energy systems could reach $1 billion by 1980 and $10 billion by 1985. Over half of the states have already initiated some form of tax incentive for installing solar energy systems or weatherizing materials.

At present, the supply cannot meet this rapidly-growing demand. In at least one state, there is already a six-month backlog in orders for cellulose insulation. Across the country, there is a shortage of personnel who are trained in installing conservation equipment and alternative energy systems.

The boom in energy-related businesses presents an unusual opportunity for community organizations and development corporations. Both installation and manufacturing enterprises can be started on a small scale. The initial capital investment can be fairly low. These businesses can create jobs, train employees, and reduce energy needs. Most importantly, these new industries can provide long-term employment that does not require sophisticated training or previous job-related experience.

The Institute for Local Self-Reliance has produced a booklet that is intended to catalyze communities into setting up their own energy-related businesses. The booklet covers five enterprises: cellulose insulation fabrication plants, energy retrofit analysis services, combined newspaper recycling/insulation installation services, domestic solar hot water system installations, and combined storm door and window manufacturing and installation businesses. For each of these enterprises, the booklet provides a discussion of how the industry works, an analysis of the optimal point of entry for a community-based enterprise, and possible problems that a potential manufacturer or installer should consider.

Cellulose Insulation

Cellulose insulation, which is manufactured by mixing fire retardant chemicals into pulverized newspaper (see article, next page), provides an excellent and inexpensive material for retrofitting buildings. However, cellulose fabrication plants require a level of capital investment that may be beyond the reach of the typical community development corporation. Instead of manufacturing cellulose initially, a community corporation might choose to combine a home insulating service and a newspaper recycling operation. This enterprise would buy and pick up newsprint from individual homes and offices. The paper would be hauled to the nearest cellulose insulation plant where it would be exchanged for ready-to-use insulation. The cellulose would then be used by the enterprise's insulating service. On today's market, a reliable supply of clean newsprint delivered to the factory is worth as much as $35 per ton or fourteen 25-pound bags of cellulose per ton of delivered paper.

A typical operation of this type could deliver forty tons of newspaper weekly in exchange for approximately 550 25-pound bags of insulation, enough to perform ten average insulation jobs. On this scale, ten installers, four truckers, and six office workers could be employed. Total monthly operating expenses would be about $19,000. Each installation job would gross $500.

Retrofit Analysis Service

There is no shortage of contractors willing and able to weatherize homes. However, the increase in demand since last winter's severe weather has not been as large as contractors had expected. The contractors whom we interviewed believed that the reluctance of homeowners to weatherize their homes is a result of their not knowing what kind of work needs to be done, how much it will cost, who could perform the work, and what the payback period will be. A simple retrofit-oriented inspection service could answer all of these questions on a house-by-house basis.

A retrofit analysis service has many of the advantages of an insulating enterprise. It requires very little start-up capital and the investment per job is low. The business can easily expand or modify its services in the face of changing market conditions. The enterprise also provides a valuable service. Residents can easily recoup the small inspection fee many times over in reduced utility bills and in savings from money that might have been spent for unnecessary or poorly-planned retrofits.

An analysis service that could do between 200 and 300 jobs per month would employ three office workers and five workers in the field. Monthly operating costs would run between $5000 and $8000. Homeowners and landlords would be charged between $26 and $32 per inspection.

Type of Enterprise	Initial Capital Investment*	Monthly Labor Costs	Number of Jobs Created	Capital Investment Per Job
Insulating and Recycling	$189,300	$17,600	20	$9,465
Manufacturing Cellulose Insulation	300,000	14,080	16	18,750
Retrofit Analysis	15,900	7,040	8	1,988
Installing Solar Hot Water	25,225	6,160	7	3,604
Manufacturing and Installing Storm Doors Windows	116,000	19,360	22	5,273

*These figures do not include: staff training, working capital, initial inventory, debt service, expense variations with volume, and taxes, if applicable.

Solar Hot Water System Installation

The solar energy industry is able to supply all current demand with its present manufacturing capacity. If the need arose, the industry could even expand the supply on short notice. In the very near future, solar systems will be mass-produced by large corporations that can realize substantial economies of scale. When that happens, many small-scale manufacturers will be priced out of the field.

The real bottleneck in the solar industry lies not in manufacturing but in distributing and installing solar space heaters and hot water heaters. Technically and mechanically, space heating is far more complex and the technology is less developed. A solar-heated hot water system, on the other hand, can usually be fitted onto an existing hot water system. Designing and installing the system from stock components requires skills that are easily learned.

A small business that installs solar hot water systems should begin by using partially assembled manufacturers' kits. Later, the business might expand into assembling collectors from component parts. An enterprise that could do a minimum of two installations a day would employ four regular workers in the field, a supervising master plumber, and two office workers. On this scale, the business would have a monthly operating cost of between $4900 and $8500 and would charge between $1350 and $1425 for a standard installation.

Storm Door and Window Installation

According to people in the industry, there is a definite need for competent, reasonably-priced storm door and window installations. In addition, although the manufacturing aspect of the industry is becoming highly concentrated, few existing manufacturers produce windows and doors that satisfy the needs of low-and moderate-income families by providing a product that is simple, highly functional, durable, and affordable. After studying many of the available models, we believe that a sturdy, functional combination storm window and screen can be designed to sell at a price comparable to or lower than those currently being mass-marketed. These windows could be made to order and could be installed by a community enterprise. Because storm doors are more difficult to make and could double the capital requirements, a community-based enterprise should initially purchase doors from suppliers at wholesale.

An average installation job would involve twelve windows and two doors. A factory manufacturing fifty windows per day could meet the daily requirements for four installations. Operating on this scale, a community enterprise could employ ten shop workers, four installers, and four office workers. Monthly operating expenses would range between $14,800 and $26,000. Customers would be charged approximately $430 for a typical job.

These business are not "get rich quick" schemes. They will require careful planning and thorough market studies, adequate capitalization, considerable entrepreneurial skills, and many hours of hard, dedicated labor. Yet, we believe that each of these enterprises can be a viable small scale vehicle for community economic development.

—Avrom Bendavid-Val

Avrom Bendavid-Val, former director of the Center for Growth Alternatives, is a public interest economist.

Cellulose Manufacturing: A Warning to Producers and Consumers

As many community organizations and development corporations are learning, the manufacture of cellulose insulation can be an attractive small-scale economic development project. Groups in Remsen IA, Fresno CA, Somerville MA, and Hartford CT have already established or plan to set up cellulose manufacturing plants. Unlike the manufacturing of fiberglass insulation, which is dominated by three major corporations, the cellulose industry has relatively low barriers to entry—small manufacturers number in the hundreds. When it is properly manufactured, cellulose insulation has a high thermal resistance or R factor and is an ideal material for retrofits. The manufacturing process is not energy-intensive, is fairly safe, and has the advantage of using a readily-available renewable resource (newsprint).

Ease of entry into the industry can be a problem. Anyone can go down into the basement, shred newspaper with a composting machine, add a few chemicals, and sell the material as cellulose insulation. These homemade products, however, can cause fires, may have very little capacity to insulate, and can be corrosive. Before entering into cellulose fabrication or installation, a community should be aware of three potential problems: the lack of adequate quality control and testing standards, the questionable safety and performance of inexpensive noncommercial machinery, and the current shortage of adequate fire retardant chemicals.

* Aside from a set of inadequate regulations governing cellulose insulation used in VA, FHA, and FmHA programs, there are no national standards. For a modest fee, Underwriters Laboratories will conduct ongoing unannounced on-site tests for fire retardancy and proper consistency. Although only twenty-five manufacturers currently use the UL test, all manufacturers should invest in this or a similar testing program.

* The equipment used to manufacture cellulose is made up of readily-available industrial components. A commercial cellulose fabrication equipment package can cost anywhere from $75,000 to $300,000 and up. Some manufacturers are trying to slash their initial captial needs by assembling plants from modified agricultural equipment. It is too early to tell whether these experiments will work. Any group planning to manufacture cellulose should consult with an experienced and reputable industrial engineer.

* A number of fire retardant chemicals, all in the borate or sulfate families, can be used in manufacturing cellulose. The sulfates meet fire retardancy standards, but all of them—and ammonium sulfate in particular—absorb water, leach out, and corrode metal fixtures. A mixture of borates and boric acid in a 2:1 ratio is the ideal additive. Although there is no shortage of unrefined borates, there is a definite shortage of boric acid and new cellulose manufacturers are finding it difficult if not impossible to secure adequate supplies. Both the cellulose industry and small chemical companies are presently seeking alternatives, but how long it will take to find a substitute remains unclear.

These problems should not deter communities from pursuing plans to manufacture cellulose. However, ignoring them can result in a failed business, the production of a hazardous and useless material, or both.

—Virginia Brennan

Off the Shelf

Know the Enemy:

Regular readers of SELF-RELIANCE have probably noticed that we generally review books that suggest solutions rather than detail and analyze problems. We write more about the potential of solar energy than about the dangers of nuclear energy, more about urban food production than about the evils of agribusiness. This is a conscious decision. Many magazines review critiques of American society. We are interested in publicizing those works that go beyond criticism, that provide a blueprint for democratic development and action. For this issue, however, we have decided to review a few well-articulated critiques that people who are interested in local self-reliance should read. The subjects are important and the treatments thorough. And each book does, in some way, present an alternative to the situation being described. An overload of negative information can frustrate people into inactive apathy; but any effective struggle involves a knowledge and an understanding of the opposition.

Jack Newfield and Paul DuBrul,
The Abuse of Power
Viking Press, New York NY, 1977.

This is a horror story of the worst kind because it is a true story. Newfield and DuBrul spent four years unraveling the strands of power in New York City, researching the incestuous interconnections of the permanent government, of the "Golden Triangle" of politicians, bankers, and real estate developers that has destroyed a city in the name of personal gain. The authors examine the various scandals that are business as usual for New York: the crucial role of the banks in precipitating and orchestrating the city's fiscal crisis; the legal graft that has been elevated to an art in New York; the World Trade Center fiasco; the arrogance of Con Edison; the nursing home and day care scandals; the corrupt and irresponsible political machine. It is a painful story of privilege and power and disregard for the needs of the powerless; but it is not a story without hope. The authors cover the resistance and victory of Co-op City residents and also make specific recommendations for saving New York City. "What happened in New York was neither inevitable nor inescapable," they note. "New York and the rest of our cities *can* be saved." How? "Reform comes only when movements of common people rally around an idea and create new leaders from the bottom up."

Robert Engler,
The Brotherhood of Oil
University of Chicago Press, 1977.

Seventy pages of documentation follow this carefully argued and important book. Engler analyzes the workings of power in the oil industry, focusing on the close ties between oil interests and the federal government and on that marriage's impact upon the public interest. The best lobbyists are ones who can vote and who can exercise decision-making authority. Knowing this, the oil industry has recruited Congresspeople, Cabinet members, and Executive officers as its lobbyists. So, while the industry claims that government should let business lie, the industry refuses to let government be. Engler's response is clear: "Rather than depoliticize oil, the requirement is to place energy planning within the arena of democratic politics." The author discusses in great detail the Oil Crisis of 1973-74 and the imperial designs of the oil industry both abroad and at home. In almost every crisis of the past twenty years—the Cuban blockade, American involvement in Asia, the Middle East conflict, and the fate of both our rural and urban environments—the oil interests have been a factor.

Frances Moore Lappé and
Joseph Collins,
Food First
Houghton Mifflin Co., Boston MA, 1977.

This is one of those books that people were talking about long before its publication. Written by the co-directors of the Institute for Food and Development Policy, *Food First* strikes at the many myths that make a full understanding of the problem of hunger so difficult. The authors claim that there is enough food-growing potential in every country of the world for each nation to become food self-reliant. And it can be done without the technological dependence fostered by the Green Revolution. The legacy of colonialism, the dictates of an imperial foreign policy, the exploitation of the poor by the rich both within and among countries—these are the real problems. This short review cannot do the book justice: *Food First* answers many questions that we all have about hunger, scarcity, foreign aid, and agricultural productivity and answers them in a way that is simple, direct, and compelling.

William Worthy,
The Rape of Our Neighborhoods
William Morrow, New York NY, 1976.

The "bad guys" in this story are the non-profit "public interest" institutions like hospitals, universities, libraries, and government complexes that, quite often, push their own expansion at the expense of neighboring communities. The author writes first of his own personal involvement in a five-year struggle against the expansion of Columbus Hospital in New York City and then of several different community struggles in and around Boston. He details tactics used by these large institutions to harass tenants into moving, to coax landlords into selling, and to railroad projects before the community is aware of the consequences. Worthy also describes how a tenant counter-offensive can successfully challenge a faceless institutional bureaucracy. His approach is significant. Not content simply to introduce his readers to the adversary, Worthy provides a detailed blueprint for community action.

Progress Reports

Cooperatives

In 1950, the apartment house at 1915 16th Street NW in Washington DC was a run-down building. The plumbing was bad, the kitchens were outdated, the electrical wiring was dangerous. The thirty-two tenants decided to organize. They incorporated and began plans to buy the building and to turn it into a cooperative. Today, the building is wholly-owned by the residents, most of whom are black senior citizens. The $240,000 purchase cost was paid off in 1973. Each tenant now owns an equal share of the cooperative. Over the years, the tenants have set aside enough money for maintenance and have contributed enough of their own labor to outfit the building with modern plumbing, a new boiler, and completely new electrical wiring. The stairwells and doors have been fireproofed and a new intercom security system has been installed. Not only have living conditions improved, but the conversion to a cooperative has also preserved reasonably-priced housing for tenants in an area where expensive renovations and condominium conversion have become common. Had the tenants not bought the building, it is very likely that the structure, which may now be worth as much as $2 million, would have been sold and that the tenants would have been forced to relocate.

Group Health Cooperative (GHC), the largest medical cooperative in the world, serves over 200,000 people in the Seattle area. GHC owns and operates a 301-bed hospital and runs ten neighborhood and suburban clinics. Members make an initial $175 interest-free loan to GHC and then pay an annual fee for comprehensive health care. For a family of four, the annual fee is about $815. This provides members with full coverage for unlimited medical, surgical, and hospital care, including visiting nurse and physician house call services, X-rays and other lab services, physical therapy, worldwide emergency insurance, prescription drugs, eye examinations, and psychiatric consultations. GHC's fees are far lower and its service is far more comprehensive than most other group plans. In 1974, when the national per capita cost of health care was $345, GHC's was only $205. In the same year, GHC's per capita hospital cost was $59, while the national average was $176. GHC is able to offer comprehensive high-quality care at a reasonable cost for a number of reasons. Doctors are salaried and are not paid on a fee-for-service basis. Doctors actually have an incentive to cut costs through preventive medicine since their salaries are paid from the fixed pool of members' annual fees. By covering both hospitalization and outpatient care, GHC eliminates the costly incentive to hospitalize patients so that they qualify for group plan benefits. Where GHC differs from a Health Maintenance Organization is in the degree of control and influence which members have. Patients can choose their doctor and, if dissatisfied with their treatment, they can complain to the Member Relations Department, which investigates and reviews each complaint. Members elect the Board of Trustees, which oversees GHC operations. Both patients and staff serve on policy-making, administrative, and fund-raising committees. For more information, contact: Group Health Cooperative, 200 15th Avenue East, Seattle, WA 98112.

Energy

Co-op City, whose 60,000 tenants conducted the longest rent strike in New York's history, has submitted a proposal to the Energy Research and Development Agency for the establishment of an urban energy laboratory at the sprawling complex. Money has already been set aside for such a laboratory at an initial funding level of a few million dollars, but a final funding decision has not yet been made. If there is to be any urban energy laboratory funded by ERDA, it will be at Co-op City. The proposal calls for the use of Co-op City's buildings as a testing ground for research into energy usage per unit, into the effectiveness of incentives in reducing energy usage, and into the commercialization potential of energy-saving devices and techniques. Because Co-op City's thirty-five high-rise buildings are nearly identical, they can provide an excellent laboratory for comparative studies of the feasibility and the impact of retrofitting large urban buildings with insulation and energy-saving devices. Co-op City residents would benefit directly from the experimental retrofitting by reductions in their own monthly energy costs. The proposal has one drawback: solid waste accumulating at the nearby Pelham Bay landfill would be burned for its BTU value, even though recycling many of the landfill materials would make better economic sense. For more information contact: Riverbay Corporation, 2049 Bartow Avenue, New York NY 10475.

In 1974, the huge British Columbia hydroelectric company, B.C. Hydro, decided to investigate the potential for wind power in the province. At a capital cost of $66,841, the company chose two sites for windmills; but the installations ran into so many problems that neither windmill ever produced even one kilowatt of power. In April 1976, B.C. Hydro issued a terse press release that explained that "Commercial wind generating units presently available have been found unsuitable for the provision of electrical energy in areas served by B.C. Hydro." In 1974, the three-member Swets family installed the same type of windmill on their home. It has been working perfectly for three years. B.C. Hydro spent $33,000 for each non-functioning windmill; the Swets family spent a grand total of $4800. The windmill was raised and installed by Mr. Swets and his ten year-old son.

Ingham County could become one of the first Michigan counties to adopt an energy plan, if a proposal presented to the Physical Resources Committee of the County Board of Commissioners is approved. The proposal, developed by a special county energy committee, calls for the creation of both a county energy commission and an energy audit team.

The plan also establishes guidelines for energy-conscious county purchasing decisions and for the monitoring of county energy. The energy audit team would analyze energy use in individual homes in response to citizen requests and would provide homeowners with information about how to conserve energy. Funding for the team would come through CETA. Under the present plan, the auditors would operate out of the Cooperative Extension Office. For more information, contact: Lansing Energy Affairs Network, P.O. Box 245, East Lansing MI 48925.

Agriculture

In *Thirup v. Commissioner of Internal Revenue,* the U.S. Court of Appeals ruled that commercial greenhouses are not to be considered "buildings" for tax purposes and that, as a result, investments made to build or improve greenhouses are eligible for tax credits. The court based its decision on the argument that the principal function of a greenhouse is to supply a controlled growing environment for plants. That is, greenhouse structures function more like manufacturing equipment than like buildings. The ruling allowed the growers to claim a $4755 investment tax credit on $79,841 that they had spent to build a new greenhouse and to upgrade the structures of several existing greenhouses.

The appropriations for next year's Urban Gardening Program and for the Farmer-to-Consumer Direct Marketing Act have been set. The House Agriculture Appropriations Subcommittee decided to double the $1.5 million spent last year for the Urban Gardening Program, but the Senate subcommittee refused to go along with the increase. Although the appropriation for this year remains at $1.5 million, the Department of Agriculture Extension Service will be mandated to expand the program by offering technical assistance to garden programs in sixteen major cities. Last year's money went only to the six most heavily populated cities. An unbudgeted increase of $1.5 million has been appropriated for the Farmer-to-Consumer Direct Marketing Act. This money will also go to the Cooperative Extension Service of the Agriculture Department. The funds will be available to pay for educational programs and for research and technical assistance on farmers' markets and on ways to encourage direct marketing. For further information, contact: Eric Hochstein, Office of Congressman Fred Richmond, U.S. House of Representatives, Washington DC 20515.

The Sprout Co-op in Madison, Wisconsin, produces between 350-400 pounds of mung, lentil, alfalfa, and sunflower sprouts each week. Located in a ground-floor room at Martha's, a thirty-five member housing cooperative near the University of Wisconsin, the co-op grosses about $175 from its weekly sales. Much of that money goes to paying salaries for the seven part-time workers who put in anywhere from two to twenty hours weekly and receive between $2.25-2.75 an hour. The rest of the income goes toward capitalizing the business. Most of the sprouts are sold to co-op stores, health food stores, and restaurants. This summer, the crop is also being sold every Saturday morning at the local Farmers' Market. For more information, contact: The Sprout Co-op, c/o Martha's, 225 Lakelawn Place, Madison WI 53703. *Environment Action Bulletin,* July 23, 1977.

The Media

The Federal Communications Commission has granted construction permits to three members of the National Federation of Community Broadcasters that are seeking to build new community radio stations. Great Silence Broadcasting Foundation of Pacific Grove, California, had the easiest time getting its application through the FCC. The group is planning a ten-watt station that will have a very strong local orientation. Much of the broadcasting equipment is already on hand, so the station should be on the air soon. The other two groups—Fresh Air, Inc., of Minneapolis and Sunrise Communications of Lincoln, Nebraska—have waited several years for their permits. Fresh Air's initial permit application, submitted over four years ago, was blocked by Minnesota Public Radio (MPR) which claimed that the Fresh Air station would interfere with MPR's off-the-air relay system and which also challenged Fresh Air's financial ability to build and operate a station. After lengthy delays and legal maneuvering, MPR's petition to deny was rejected. Sunrise Communications encountered opposition to its permit application soon after its submission in early 1974. Chronicle Broadcasting Co., the licensee of television station WOWT in Omaha, claimed that the Sunrise outlet would cause interference with the reception of WOWT's channel 6 television signal in Lincoln. This petition to deny was also rejected. Both groups will now proceed with their plans to bring community radio to their areas. *National Federation of Community Broadcasters Newsletter,* July 1977.

In the past eighteen months, over six hundred new radio and television stations have begun broadcasting in Italy. This new diversity comes as a relief for the Italian public which, for the past twenty-four years, has had no choice but to listen to the one government-owned radio network and to watch the one government-owned television network. The sudden proliferation of new stations is the result of a decision by the Italian Supreme Court that allows the state to continue its national monopoly but prohibits monopoly at the local level. The ruling has cleared the way for new stations that present the views of groups from all parts of the political spectrum. The proliferation of new stations is a good indication of how sorely they were needed.

When writing to any of the contacts mentioned in SELF-RELIANCE, please send a self-addressed stamped envelope. It will speed the reply and will save these folks some money.

Can the Inner-City Get the Credit It Deserves?

Fannie Mae, Freddie Mac, FHA, VA—strange names, which, if they are recognized at all, are rarely understood. These are the various institutions of the secondary mortgage market (see box). In the past decade, these little-known and largely invisible financial institutions have assumed an increasingly important role in the residential market. For example, Fannie Mae, which had a mortgage portfolio of $7 billion in 1968 when it became a private corporation, now carries a portfolio of over $32 billion. Each year, more and more mortgage loans pass through both the hands of these institutions and the hands of the mortgage companies that serve as the primary processors for the secondary market. This development is significant, for it means that the control of housing credit has been shifting to institutions that are even less accountable to local communities than are local primary lenders, such as Savings and Loan Associations and Mutual Banks.

The secondary market differs from the primary market in several ways that limit accountability. The secondary market does not use locally-generated funds as its loan money. The investor is never in direct contact with the actual borrower.

A Guide to the Secondary Market

Federal Home Loan Mortgage Company (FHLMC): Known in the trade as Freddie Mac, FHLMC is a federally-sponsored corporation that buys and sells conventional mortgages. Freddie Mac works solely with Savings and Loans Associations, buying mortgages so that the S&Ls can have ready cash.

Federal National Mortgage Association (FNMA): Fannie Mae is a federally-related institution established in 1938 to buy and sell mortgages. In 1968, FNMA became a public corporation. It is now the third largest corporation in America. By 1974, FNMA held more than $2 billion in non-FHA or -VA conventional mortgages.

Federal Housing Administration (FHA): Established during the Depression to restimulate the housing market, the FHA insures loans made by financial institutions for 100% of the outstanding loan balance.

Veterans Administration (VA): After World War II, the VA program was established to guarantee mortgage loans for former members of the armed services. The program also guarantees loans for 100% of the outstanding balance.

Private Mortgage Insurance (PMI): Begun in 1958, PMI is a private program that provides services similar to FHA, but will insure only a portion of the loan. Offered by only a few large companies, PMI was established as a remedy to the slow bureaucratic process of FHA.

The secondary market is basically a mechanism for shifting capital from institutions with an investable excess to those that are short on capital. It is a mechanism for tapping centralized pools of capital and for moving funds "from there to here," from the large insurance and pension funds, from the government and from other large institutional markets, to the individual homebuyer who is in need of credit. The secondary market relies upon intermediary institutions, upon processors who locate both the prospective borrowers and the prospective investors. These intermediaries, the mortgage companies, are highly centralized institutions that have no geographical limitations to the area that they can serve, no responsibility to local investors, and little federal regulation of their procedures and policies. Leverage over secondary market markets is practically non-existent.

The secondary market is a mechanism for shifting capital from centralized pools to the individual homebuyer

The loan criteria and the business policies of the mortgage industry have a powerful impact on the shape and stability of low-and moderate-income urban neighborhoods. FHA-insured and VA-guaranteed loans have always been the cornerstones of the secondary mortgage market; and the effect of FHA loan criteria and policies in the inner-ceity has been the deterioration of whole neighborhoods. In many cities, whole blocks of FHA housing lie abandoned. Between 1968 and 1975, HUD acquired 313,000 homes from foreclosed FHA loans. The US Treasury has paid out over $1.7 billion in insurance commitments on FHA homes.

The historical bias of FHA towards both suburban lending and investors persists in the various secondary market institutions. As it becomes increasingly clear that the secondary market has been structurally unable to answer the needs of inner-city homebuyers, community organizations are beginning to demand changes. People are insisting that the invisible institutions become both more visible and more accountable, that the increasingly important secondary mortgage market become more responsive to homebuyers' needs.

The Homebuyers' Needs

The housing finance market consists of two distinct groups with very different interests and expectations: the homebuyers and the investors, those who are looking for credit and those who can provide credit. The homebuyers' needs are very specific. Rarely do two potential homeowners use the same evaluation criteria in choosing their homes. In inner-city areas, where the housing stock and the residents' economic

situations are so varied, this diversity is even more pronounced.

Frederick Case of UCLA has written that "Each inner city is unique, with many kinds of housing markets, each requiring some variation in the lending approach if that market is to be well-served." Unlike suburban markets, which are fairly homogenous in terms of housing age and conditions and in terms of homebuyer characteristics, there are countless combinations of borrower/property traits in urban areas. An equitable and viable mortgage market must be flexible enough to adjust its lending criteria to accommodate this diversity.

An equitable and viable mortgage market must be flexible enough to adjust its lending criteria to accommodate the diversity of inner-city borrower/property traits

The inner-city housing market can be a marginal one. Much work and individualized attention are needed if the market is to be well-served. Some of the leading criteria of the secondary market institutions guarantee that certain sections of many cities will not be adequately served. For example, Freddie Mac has had a stated policy of not buying or selling mortgages of under $10,000. In parts of many cities, residential property purchase prices of under $10,000 are common. Since Freddie Mac will not buy mortgages on these properties, Savings and Loan Associations have less incentive to originate them.

Moreover, the secondary market's standardized loan criteria cannot address the diversity of inner-city properties and purchasers adequately. As a result, many potentially sound loans are left unmade. The problem is that individual attention to each loan, necessary for an effective inner-city mortgage market, stands in direct opposition to the basic principles and operating procedures of the centralized, distant secondary mortgage market.

The Investors' Needs

The secondary market investor's main concern is that mortgages be easily marketable. Mortgage insurance is central to the functioning of this market, as a basic textbook explains:

> *Since individual mortgages are relatively small and often differ greatly from others in the market, it is difficult and costly for a distant lender to appraise loan quality directly. . . . However, loans insured by FHA or guaranteed by VA are protected against loss through deficit, and thus the problem of lender appraisal of credit quality is largely removed. As a result, FHA and VA loans are readily marketable.*

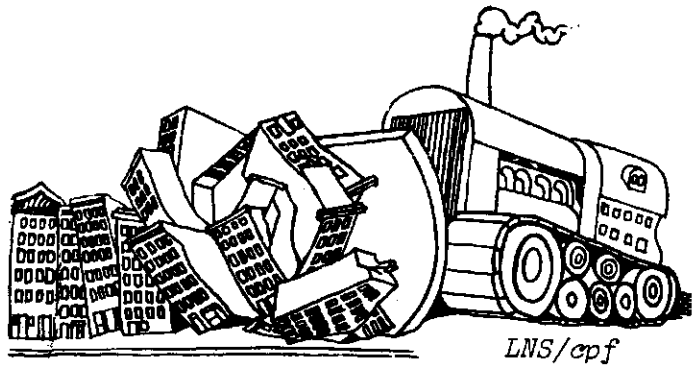
The bottom line is marketability. Dependability, transferability, and minimal risks—these are what the industry considers "the essential elements of a smoothly functioning nationwide mortgage market." Mortgage insurance, by guaranteeing the lender's investment against loss, frees the lender from any concern about the credit-worthiness of the borrower or the quality of the collateral, i.e., the property. It makes the rapid brokeraging of mortgages possible.

In secondary market operations, profits are maximized over the long-term by reductions in overhead costs. This is done in a number of ways. Increasing the size and volume of mortgages sold cuts overhead costs per mortgage. Streamlining the process of arranging and selling mortgages also cuts costs. There are economies of scale in the industry: it is cheaper and therefore more profitable to originate and process one $40,000 mortgage than it is to originate and process four mortgages of $10,000. Large institutional lenders have fostered the growth of fairly uniform lending requirements and procedures in order to lower their overhead. Government insurance is part of this strategy. Mortgages can be turned over quickly without any financial risk to the investor.

The Mortgage Company

The degree of investor bias in the urban housing finance market is evident in the nature and performance of the lending institution that specializes in handling FHA and VA mortgages—the mortgage company. The workings of this institution provide an important perspective on some of the key structural problems in the federally-assisted housing market.

Mortgage bankers are intermediaries for financial institutions (for life insurance companies in particular) and for the federal government. These companies originate mortgages and sell them to long-term investors. They usually continue to service the loans, collecting the monthly payments and initiating foreclosure if necessary. Mortgage bankers originate and service close to 75% of all FHA and VA loans. These loans constitute almost half the portfolio of mortgage companies, a portfolio that represents one-fifth of the entire mortgage market.



Mortgage bankers are uniquely ill-adapted to meet the needs of the inner-city homebuyer. Most companies have only one office for an entire metropolitan area. Their centralized operations make accessibility and accountability quite difficult. Their business is also highly automated; the computerized management of "mortgage warehouses" is a standard procedure.* Seven hundred and thirty mortgage companies are responsible for over 85% of the industry's activity. In 1976, these firms originated over $23 billion in mortgages, an average of $32 million per firm. A comparative profile of the Savings and Loan industry is instructive. There are over 4855 S&L's in this country. In 1976, each firm averaged only $10 million in residential mortgage loans. Foreclosure statistics also illustrate the dangers of the centralized and rapid activity of mortgage bankers. A 1975 study found that mortgage companies averaged a 7.7% foreclosure rate for FHA loans in the city of Baltimore, while the rate for local Savings and Loans was only 1.8%.

*One company describes its method: "The lender simply stipulates the size of the investment portfolio desired and as many descriptive parameters as appropriate, covering the types of properties to be included. . . . The system prints a listing of the appropriate properties at high speed. Thus, tailor-made portfolios can be put together for investors in a matter of hours."

Mortgage companies are unregulated by the federal government. FHA considers them "unsupervised lenders." More importantly, mortgage companies are not restricted to the service of any particular geographic area. Depository institutions, such as Savings and Loan Associations, are limited to activity within one state. Mortgage companies can and do operate on a national level. They can open and close offices wherever and whenever they want. If the mortgage market is more profitable in the Sun Belt than in the older Eastern cities because of larger volume and mortgage size, mortgage companies can follow the profits. As a result, inner-city areas are left without adequate credit servicing. If your mortgage is serviced by the local S&L, you can go to the office, talk with someone you know, and explain any problems or confusions you may have. If your loan is being serviced by a mortgage banker whose office is in another city, you are forced to communicate with the office by mail or long distance telephone calls. You deal with someone whom you have never met. Your access to the lender is both limited and impersonal. The cost of this insensitivity to the needs of urban homebuyers is the deterioration of urban neighborhoods. And it is a cost that all Americans, through their tax dollars, are forced to pay.

Strategies for Change: Illinois . . .

If inner-city credit demand is to be met, change is imperative. Groups working towards solutions are pursuing two strategies: the regulation of the excesses of the mortgage companies and the creation of finance mechanisms that can provide for the diversity of inner-city credit needs.

The State of Illinois was the first state to pass comprehensive legislation regulating the activities of mortgage bankers. The bill passed the legislature by a large margin on July 21 of this year. The governor now has until September 21 to sign or veto the bill. If he vetoes it, an attempt to override his veto is expected.

Under the Mortgage Banking Bill, all mortgage bankers will have to be licensed to do business in Illinois. The state will set a maximum allowable foreclosure rate on FHA and VA loans, pegged to the national foreclosure rate, which is now 3.91%. By the fourth year after enactment, the foreclosure rate in Illinois must not exceed the national average. Any lender whose average foreclosure rate for a five-year period is above the legislated ceiling will be audited by the Commissioner of Savings and Loans. The commissioner will appoint a five-member Mortgage Banking Board, no more than two of whom can have any interest in the mortgage banking industry. This board will have the power to levy fines of up to $10,000. The board will also be able to suspend or revoke the guilty party's license. On an annual basis, mortgage bankers will be required to disclose, by zip code, the total actual loans made, their locations, and the number and location of all defaults and foreclosures.

This bill is important in that little discretion will be left to the regulators. If the mortgage company's foreclosure rate is too high, the law stipulates exactly what action must be taken. The effectiveness of the commission will depend largely upon its membership. The Illinois Public Action Council, which has been instrumental in getting this bill passed, is already gearing up for a campaign to make sure that the non-industry members of the commission are capable and determined public advocates.

. . . and Philadelphia

Regulation is one approach. Another is the creation of new local institutions that answer unmet inner-city needs. The Philadelphia Mortgage Plan was an attempt made by local conventional lenders—after much community pressure—to change the appraisal and underwriting criteria for inner-city lending. The plan ran into trouble when lenders went to the secondary market with their new criteria. Having come up with guidelines that they considered to be sound, Philadelphia lenders found that Freddie Mac and Fannie Mae would not buy their mortgages. The impact of the secondary market's refusal to buy is clear. Conventional lenders, seeing that they were unable to sell certain mortgages to the secondary market, hesitated to grant those mortgages. When the federal government considers urban loans "too risky", private lenders look elsewhere for borrowers.

Faced with this contradiction, Philadelphia's Housing Development Corporation has created its own local reinvestment incentive program. PHILGAP, the Purchase and Home Improvement Loan Guarantee Assistance Program, began operations in July. As its name implies, PHILGAP is designed to fill gaps in the availability of home financing, gaps that neither federal nor private insurance programs have been able to fill. One million dollars has been placed in a reserve fund, half of it coming from HUD Community Development Block Grant funds and half from the William Penn Foundation. The self-perpetuating fund is being leveraged and is expected to generate up to $25 million worth of guaranteed mortgages and rehab loans. Lenders who make financing available in so-called "higher-risk areas" will be guaranteed against loss on the top 25% of mortgages on existing owner-occupied homes and on the first 40% where rehabilitation is involved. The program reviews each application on an individual basis and stresses the rehabilitation of delinquent accounts by loan modifications prior to any foreclosure action.

PHILGAP is designed to fill gaps in the availability of home financing, gaps that neither federal nor private insurance programs have been able to fill

This program is an important attempt to show that the mortgage industry can change its priorities and place the needs of the homebuyers—and hence the city—above the priorities of the money market. Through the creation of the locally-funded and-controlled PHILGAP guarantee program, Philadelphia hopes to lessen the pressures that encourage conventional lenders to avoid inner-city lending. The lender will still have guarantees, but the borrower will be able to get a mortgage and to develop a personal relationship with the institution servicing the loan. Individual treatment, temporary support for delinquent borrowers, and small mortgages—all the things that the secondary market has not provided—will be available in Philadelphia. The test will be whether PHILGAP can actually generate additional conventional financing. If it can, we should look forward to similar programs in other cities where homebuyers' needs are being ignored by the institutions of the secondary mortgage market.

—Jeff Zinsmeyer

Illinois Public Action Council, 59 E. Van Buren St., Chicago IL 60605.
PHILGAP, 11th Floor, City Hall Annex, Philadelphia PA 19107.

Planning for Citywide Source Separation

Source separation—the setting aside of recyclable materials at the point of generation for subsequent collection, processing, and delivery to markets—is by no means a new form of resource recovery. People who lived through the World War II era, when the demand for secondary materials was high, remember their daily chores: bundling newsprint, flattening cans, and returning bottles. In the post-war era of material abundance, a multi-billion dollar industry has developed for the sole purpose of exploiting virgin resources. And as that industry has developed and consumers have become increasingly oriented toward the use and disposal of virgin materials, recycling has declined. At the same time, responsibility for the increasingly costly management and disposal of solid waste has been passed on to the public sector in most communities. The actual costs of collection and disposal are being paid by citizens in higher annual tax bills rather than in monthly collection charges.

The throw-away mentality is still dominant today, but the latent capacity for source separation is being tapped in more and more cities and states. Vermont and Oregon have initiated successful mandatory returnable bottle programs. And a growing number of cities and towns are looking toward source separation as one solution to their garbage problems.

The First Step

The first step for city officials considering source separation is to familiarize themselves with some basic information. Is there enough waste to justify its extraction? Does the material have sufficient market value to cover the costs of extraction? Who will buy the recyclables?

Not all wastes are recyclable. Of the non-organic fraction, close to 50% of the waste stream can be reused.* The most commonly recycled materials are: newsprint, which usually represents 7-12% of the total waste stream; corrugated, which accounts for 10%; high grade office paper, representing 4%; and mixed paper, about 14%. Concentrated flows of corrugated come from supermarkets. Office buildings are a good source of high grade paper. Mixed glass represents 8% of the waste stream, while steel cans account for approximately 4%. Although aluminum constitutes only .5% of a city's total waste, its high market value makes recovery economically feasible in many cases.

Can these recyclable materials bring in sufficient revenues? Municipal officials will have to keep a careful eye on the prevailing market rates for the various materials and will also have to shop around to find the most lucrative sales arrangements. In the current market for secondary materials, mixed paper is worth between $10-20 per ton, steel cans and color-sorted glass $20-30 per ton, newsprint and corrugated from $15-30 per ton, high grade office paper from $50-100 per ton, and aluminum approximately $300 per ton.

Market rates can fluctuate dramatically. In general, the less abundant the material, the more it is worth; but values depend greatly upon local market conditions, the quality of the material, and marketing arrangements for storage and transportation. Paper markets, in particular, have experienced tremendous fluctuations in the past. The crash in the paper market in the winter of 1974-5 seriously undermined the long-term viability of many recycling programs. To circumvent price fluctuations and to protect both the seller and the buyer during swings in the market, municipalities should negotiate favorable long-term contracts with buyers.

Drop-off Centers or Collection?

Solid waste planners will have to decide what kind of system they want to use to collect the recyclables. The choices are: pick-ups from conveniently-located drop-off points, door-to-door collection from each building, or a combination of the two systems. The direct costs of separately collecting recovered materials from residences or commercial establishments are considerably higher than the direct costs of a drop-off system, but separate collection encourages the participation of two to three times as many people. Drop-off centers divert an average of 2.5% of the total waste stream but generally provide higher quality, less contaminated recyclables. Separate collection diverts an average of 6%; and this figure can be raised substantially through an aggressive campaign of publicity and community outreach. In Marblehead, Massachusetts, the diversion rate has reached as high as 25% of the total waste stream.

When the costs are figured on a per-ton basis, separate collection systems appear to be the most economically attractive choice. According to a study by SCS Engineers, a solid waste management consulting firm, the cost of operating a separate collection system is about $31 per ton while the cost of operating a drop-off center system is $35 per ton. This accounting system allocates all of the costs of the recycling system, including administration, equipment, and labor, to the program.

The SCS study further concluded that, based on secondary materials market prices from the unusually healthy year of 1974, separate collection systems costing $31 a ton can actually result in net savings to the municipality of $8 a ton. Revenues and diverted disposal costs for an average ton of recycled municipal wastes were worth $39 that year in some areas of the country. Drop-off centers, on the other hand, generated only $17 per ton of waste in diverted disposal costs and revenues during the healthy, 1974 market. Costing $35 a ton to operate, drop-off centers' net costs average $18 per ton. A sys-

*Organics usually make up 30% of the total waste stream. These materials, consisting mainly of kitchen and yard wastes, can be composted.

tem that depends solely upon drop-off centers for its supply of recyclables will always have to be subsidized by the city.*

Equipment and Other Needs

Because municipal source separation systems are a relatively new phenomenon, there is an unfortunate lack of standardized equipment. Trade secrecy is an accepted characteristic of the secondary materials industry and slows the transfer of technology. Furthermore, successful materials handling systems and procedures are usually oriented to specific local markets and conditions. They can seldom be replicated.

Rough equipment cost estimates are available. A truck suitable for the collection of recyclables costs about $19,000, or $16,000 less than a regular garbage truck. A fully-equipped recycling plant will need: a glass crusher, which costs $3,000; a paper baler, costing between $2,500-3,000; a $3,000 magnetic separator; and either a can crusher, costing anywhere between $900-4,000, or a can shredder, which costs $3,000. A municipality will be spared the cost of containers because they are usually provided by the companies that buy the recycled materials.

Any system will also require processing and storage space for the collected materials. The collection centers studied by SCS Engineers had an average of 11,000 square feet of outside space and 2,000 square feet of indoor space. In most cases, land for source separation systems is donated. As a result, it is difficult to formulate cost estimates for space requirements.

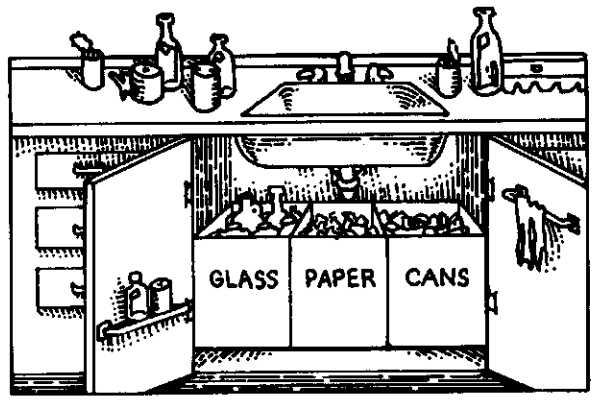
Potential Problems

Cities must be sure that they can both collect enough recyclables and find favorable market arrangements. One immediate problem they may encounter with markets is that purchasers will not sign contracts until the system builds up a "track record." Systems like the one in Lewiston, Idaho, and the Neighborhood Ecology Corporation in Washington, DC, have found that they must prove their reliability, material quality, and consistent volume levels before they can enter into contract arrangements that guarantee revenues. On the other hand, many programs elect not to enter into contracts in order to maintain flexibility to shop for the best prices.

A serious collection problem that must be faced is that of scavenging. A significant percentage of recyclables can be lost if nothing is done to stop people from rifling through the waste and removing the valuable newsprint or aluminum fractions. Cities may have to enact and enforce laws that prohibit scavenging.

A source separation system succeeds or fails on the basis of its participation rate. High participation guarantees a high, steady volume and gives the city some leverage over buyers. The key to any system's success is the extent of its education and outreach programs. These should be initiated well before operations begin and should be an ongoing component of any program. The EPA-sponsored recycling programs in Somerville and Marblehead, Massachusetts, provide examples of excellent community awareness campaigns. These programs have utilized a variety of strategies, such as media spots, mass mailings to residents, a highly visible recycling logotype and other graphic aids, a recycling program calendar, and meetings with schools and community groups.

Continuity of leadership is also crucial to a program's longevity and success. Several municipal programs have failed either because of changes in leadership or because of poor leadership. In college towns where personnel turnover is rapid, this can be a particularly serious problem.



Municipal solid waste planners will have to plan the pick-up schedule carefully, taking into account residential and commercial storage limitations. Single-family dwellings will have to be serviced far less frequently than multi-tenant dwellings, apartment buildings, and office complexes. Working out an efficient route plan is a significant task. Ecocycle of Boulder, Colorado, developed a collection route consisting primarily of right hand turns to minimize cross-traffic travel time. Another concern is that materials be prepared for collection, processed, and stored in a way that is compatible with buyers' requirements. These technical questions must be considered carefully, for they have a significant impact on transportation costs and on purchase agreements.

Political Pressure Mounts

As source separation recycling systems become more appealing, the political pressures against them mount. Here are just a few examples:

- In May, the Connecticut Resource Recovery Authority forced the closure of an EPA-sponsored community-based recycling program operating in Bridgeport, apparently fearing that it would compete with a $53 million high-technology plant in the area.
- Emerging community-oriented businesses that provide source separation services in Portland, Oregon, may be forced to close down because of a franchising law that will restrict collection to older businesses that do not provide the recycling option.
- In Andover, Massachusetts, municipal officials and executives of United Oil Products, a company scheduled to build a high-technology plant for the town, tried to include clauses in the United Oil contract that would restrict recycling and give the company control over all area recycling. Fortunately, citizen lobbying against the clauses barely defeated them.

—Neil Seldman

*Market prices vary greatly. In April 1973, revenues and direct disposal costs were worth only $14 per ton of collected garbage. This meant a net system cost of $17 rather than a net savings of $8 per ton.

There is one final problem that planners should avoid, and that is undercapitalization. Without sufficient initial capital, neither strong participation nor a good "track record" can be established. Cities should not doom a program at the outset by selling it short.

The Prognosis

With all of these considerations and potential problems, one wonders what the chances are for the successful operation of a source separation recycling system. If success is measured in purely economic terms, the prognosis depends upon market conditions and upon the rising costs of both high-technology plants and traditional landfill operations. With today's secondary materials market, the chance for economic success is rather low. This may change in the near future, however, as local industries, such as cellulose insulation manufacturers, increase their demand for secondary materials and as the costs of conventional and high-technology systems continue to soar. If, on the other hand, success is measured in terms of decreasing the environmental costs of our traditional solid waste systems by diverting substantial portions of the waste stream, the potential for success is very high.

Presently, most source separation programs benefit from some subsidies. These can be in the form of subsidized labor, equipment, land, indoor space, or program coordination. There is nothing inherently wrong with subsidies; but it is clear that, the more self-sufficient the program, the greater are its chances of surviving through times of changing political, economic, and community support. It must be remembered, however, that the virgin materials industry is also subsidized. It is an artificial market with which secondary materials must compete. When this is considered, the prognosis for source separation looks better—and the question becomes as much a political one as an economic one. *—Stephen E. Howard*

Stephen E. Howard is a Resource Recovery Consultant working for SCS Engineers, Inc., in Reston, Virginia.

Whatever Happened to Public Access?

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result, producers who cannot raise sufficient funds to cover the costs of more sophisticated production often settle for primitive black and white equipment. Manhattan Cable has tried to solve that problem by aggressively developing its commercial leased access channel, Channel 6. Independent producers enlist the support of local businesses to pay for their production costs. Some producers are even able to make a small surplus from their programs. One third of the shows are now in color. People are paying up to $1000 in production costs for each show. Bob Mariano, director of the access program, explains that "These people are actually running small businesses. This could be the beginning of a cottage industry for independent television production." Already, $100,000 of Manhattan Cable's access system's $300,000 annual operating budget comes from leasing fees that are kept to a low $25 an hour.

The use of communications satellites to distribute independent productions could further improve their economic viability. Pat Tierney of the Grassroots Network explained that many of their programs *should* go out to a broader audience. Satellite linkages can make the creation of whole new networks for very specific minority groups and interests into an economically viable possibility. A program that could not pay for itself in the local market could be profitable nationwide. As Marilyn Rudick of the Cable Television Information Center explains, "If the small Spanish-speaking community of one town wanted a station for themselves, they could not do it. But a network available to Spanish-speaking people in many different communities could be feasible."

Citizen Action

How widespread and sophisticated public access television will become depends, in the final analysis, upon whether the cable systems can either profit from it or be pressured into its development. Leasing channels may spark some corporate interest. Significantly, citizen media groups in a number of cities have found ways to put pressure on reticent companies.

In San Diego, the Community Video Center was able to convince the Alternate Media Center in New York City to provide half the funding for one salary and a Sony Portapak. Armed with this support, the group was then able to convince Mission Cable to match the grant. In Madison, a strong Citizen's Cable Council, with help from the Cable Television Information Center, was able to convince the city and the company to support the Madison Community Access Center for training and production. In York, Pennsylvania, the Madison franchise agreement has been used as a model in franchise negotiations with the local system. And when Southern Allegheny Community Television of Johnstown, Pennsylvania, asked Teleprompter for equipment, a studio, and technical assistance, the company agreed to the group's requests in an effort to improve its public image.

Perhaps the most interesting case is that of Hayward, California. The private cable company has been managing the public access channel for four years with its own personnel. Now, the company is not very interested in keeping the channel going; so it has decided to lease the channel to a group called Public Access to Cable TV, the group that currently provides volunteers. Presently, PACT is negotiating with the company over the conditions of the lease. It may well be that, in other cities, companies would like to give up the obligations and headaches of running the access channel themselves. Concerned citizens and community groups should investigate the status of public access in their area. The cable company may actually be looking for community input and control.

The technology of cable is still developing. So, too, are marketing schemes and new programming packages. The future is still open. As with most communications media, cable television has great potential as a democratic public resource and tool. But two questions loom above all others: will the economics of the industry encourage the proliferation and increased sophistication of public access cable television; and, will citizens organize to demand their rights to be heard, to create, and to bring each other the real news about their cities and neighborhoods? The answers are important, for at stake are our freedom of expression and our right to know.

—Richard Kazis

Notes

Appropriate Technology and Community Economic Development is the title of a new publication from the Institute for Local Self-Reliance. Written by David Morris, the article explores the potential for new community economic development enterprises based on a variety of appropriate technologies. Energy house audits, cellulose fabrication, the installation of solar water heating and of insulation, large-scale composting, and greenhouse construction are some of the enterprises discussed. Capital and labor requirements are included for most ventures. Reprints of the article, which appeared in the April issue of the *CCED Newsletter,* are available for $1.00 plus 25¢ for postage and handling from the Institute, 1717 18th Street NW, Washington DC 20009.

Fundraising In the Public Interest, by David Grubb and David Zwick, is a citizen's guide to three types of fundraising campaigns: direct mail, door-to-door canvassing, and marathon events. Written by people who have had a good deal of experience with these fundraising techniques, the manual benefits from its concern with organizational and practical details. Each section includes a lengthy appendix of helpful sample letters, envelope forms, solicitations, and advertisements. The manual is available for $4.50 from: Public Citizen, Box 19404, Washington DC 20036.

Nonprofit Food Stores is a resource manual published by Strongforce, Inc. The manual presents in-depth studies of the development of four food co-ops: the Boston Food Co-op, the UAW Worker's Markets I and II, the New Haven Food Co-op, and the Common Market Cooperative supermarket in Denver. Each study analyzes the history, location and facilities, the pricing policies, the staff structure and salary levels, the problems, and the progress of one specific store. A final chapter offers some nuts-and-bolts suggestions on operating community food stores. Readable and informative, the manual is available for $3 from: Strongforce, 2121 Decatur Place NW, Washington DC 20008.

Support Self-Reliance

The Institute for Local Self-Reliance is a research and consulting organization which explores the potential for, and the implications of, high density population areas becoming independent and self-reliant. The Institute, incorporated two years ago as a tax-exempt non-profit 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 which are relevant to the movement toward urban decentralization is to subscribe to SELF-RELIANCE. You may continue to receive this newsletter every two months in one of two ways:

1) Subscribe to SELF-RELIANCE:

A year's subscription (six issues) costs $6 for individuals and $12 for institutions, libraries, government agencies and private businesses. Out of U.S., add $1.50/year for surface mail. U.S. first class, add $2.00/year. For air mail, add $2.60/year, North America; $4.20/year, Central America; $5.10/year, South America, Europe, Mediterranean Africa; $5.80/year, Asia, the Pacific, other Africa, USSR.

2) Become an Associate Member of the Institute for Local Self-Reliance:

The $25 annual dues ($40 for institutions) entitles you to a year's subscription to SELF-RELIANCE and a 20% discount on all Institute publications.

Our readers respond

The article in the last issue of SELF-RELIANCE on community-owned professional sports teams has prompted a good deal of interest and response. The sports section of the *Washington Star* carried an article on community ownership as a way to bring baseball back to the District. One of our readers, John McClaughry of the Institute for Liberty and Community in Concord, Vermont, sent us this note:

> *The Green Bay Packers deserve more attention than they got in the July/August issue. The Packers are non-profit; if dissolved, the assets remaining are to be turned over to the local American Legion Post! They are very healthy, financially. People fight to buy shares, even though they do not pay dividends nor do they entitle the shareholder to preference in season tickets.*

John also sent us an article about the City Council of Visalia, California, which when the Mets disbanded the town's minor league team in 1975, bought a California League franchise so that the town would not be without baseball.

On another matter: a few issues ago, we mentioned Suellen McDonough's Recycle-It container as an aid to source separation. Since then, Suellen has been swamped with inquiries. She is pleased with the response, but asks that people refer to the description in the Sears' Fall/Winter Catalogue for more information. Suellen is too busy recycling to answer all the letters.

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